

La solution à votre mesure



/ Process



Edition 9

Display instrumentation for use in **hazardous**

and safe areas

Loop Powered Indicators

Panel Meters

Set Point Stations [Generators]

Rate Totalisers

Counters

Tachometers

Timers or Clocks

Serial Text Displays

Fieldbus Indicators & Displays

Flow Batch Controllers

Indicating Temperature Transmitters

Sounders & Beacons

LED Cluster Lamps









visit our website www.beka.co.uk













Contents

Welcome!

Thank you for spending time to review our latest catalogue.

There has been a considerable gap since the last edition. So much has changed in this printed version but

www.beka.co.uk

remains a live and constantly updated source of data sheets and application guides, plus installation manuals, numerous hazardous area certificates, declarations of conformity and some product related software downloads.

This edition 9 catalogue brings you the data sheets for the entire BEKA portfolio including those most recently developed.



Dave Turner, Sales Director

How to use this catalogue

Each section of this catalogue is devoted to a single product type and includes a summary to aid selection. The data sheets in each section are arranged in alphanumeric order and colour coded to show the product safety certification:

Instrinsically safe

Ex nA

Flameproof

General purpose

sales@beka.co.uk

2
3
4
5
33
75
87
135
159
183
207
231
255
273
285
297
303
321
331





News by email

If you would like to receive occasional updates from **BEKA** when new products, services or certifications become available, please send an email to **sales@beka.co.uk**

www.beka.co.uk

X3

Worldwide agents see www.beka.co.uk for details



Why Buy BEKA?

- > Three-Year warranty on all products
- > Fast manufacturing times, typically 3-5 working days
- > Widest range available of hazardous area indicators and displays
- > International certifications for global applications
- High reliability products for hazardous areas and general purpose applications
- > Privately owned by engineers designing products for engineers since 1984
- > Direct telephone or email contact to sales team and knowledgeable engineers
- > Excellent customer support pre and post sales
- > World-wide support network of agents and distributors
- > Set-up and scale printing on most models for no additional charge
- > Comprehensive website and easy access to all documentation



About **BEKA**

BEKA associates Ltd is an independent British company committed to the design and manufacture of cost effective display instrumentation, mainly for use in hazardous areas.

In addition to our well known 4/20mA loop powered indicators which are now fourth generation models, we can supply a wide range of rate totalisers, fieldbus and data indicators, plus annunciators such as flashing beacons, sounders and panel lamps. All have been designed by BEKA engineers and are manufactured in our modern Hitchin, UK, factory.

With a 3-year warranty, BEKA products are often commissioned for the latest processing equipment in the oil and gas, chemical, pharmaceutical and waste water industries. International certification is provided by ATEX and IECEx; FM and ETL for USA and Canada.



sales@beka.co.uk

New products



Universal process >>>> panel meters

High quality universal process panel meters featuring a bold five digit display and bargraph visible in most lighting conditions. The display colour is fully adjustable and can be linked to the meter's alarm status. *See page 297*

<<<< Stainless steel enclosure for large digit indicators

316 Stainless Steel enclosure option for the popular 'G' range field mounting 4/20mA loop powered indicators. Designed for applications in marine and harsh environments, the new enclosure provides IP66 protection. *See page 5*





Tachometers, speed and hours run indication >>>>

New easy to configure, externally powered instruments that measure and display speed in engineering units from a wide range of sensors. To assist with maintenance all models include a run-time display. *See page 207*



www.beka.co.uk

<<<< Flow rate totalisers

An extensive new range of easy to use field and panel mounting instruments that can display rate and total flow in engineering units from most pulse or 4/20mA output flowmeters.

See pages 135 and 159



<<<< Counter and position indicators

New one and two input, easy to use externally powered counters which can display total, rate and position in engineering units from a wide variety of sensors. *See page 183*

+44 1462 438301

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Contact us

Placing your order:



BEKA associates Ltd Old Charlton Road Hitchin Hertfordshire SG5 2DA, UK



+44 (0) 1462 453971



sales@beka.co.uk

Visit www.beka.co.uk or call +44 1462 438301 for further information

PRODUCT LEAD TIMES

Orders for small quantities of instruments can normally be despatched within three working days, but if required earlier despatches can usually be arranged.

WARRANTY

3 years warranty on return to factory basis.

OVERSEAS CUSTOMERS

BEKA products are available from our overseas agents network. The countries in which we are represented are shown on our web site at **www.beka.co.uk.** If we are not represented in your area, please contact us directly for an export quotation.

EVALUATION SERVICE

Our free evaluation service enables potential customers to prove the suitability of any BEKA product for up to three months. Please contact our sales department for details.

HOW TO FIND US

BEKA associates is located close to Hitchin town centre, adjacent to Hitchin Priory and historic Tilehouse Street. Parking for visitors is available. Hitchin railway station is less than one mile away.

GPS co-ordinates:

Latitiude: 51.946284 Longitude: -0.281168 51° 56' 46.583" N 0° 16' 52.759" W



4/20mA Loop Powered Digital Indicators Field Mounting



An extensive range of 4/20mA loop powered field mounting indicators in GRP and 316 stainless steel enclosures.

> Large high contrast displays with a wide viewing angle

- General purpose and certified hazardous area models International Ex ia gas and dust intrinsic safety Ex nA non sparking Ex t dust ignition protection certification.
- > Robust impact resistant GRP and 316 stainless steel IP66 enclosures

Compact 'G' models with GRP or stainless steel enclosure 'E' models with separate terminal compartment

> Internal calibrator, root extractor, lineariser & tare function

> -40 to +70°C operating temperature range

> Accessories

Dual isolated alarms Pipe & panel mounting kits Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.* Laser engraved stainless steel legend plates



Intrinsically safe Ex nA Flameproof General purpose





Slide-in scale card can be supplied printed with customer specified information for no extra charge.



'G' instrument panel mounted using BA494G panel mounting kit.



'G' instrument attached to pipe using BA393G panel mounted kit.

4/20mA Loop Powered Digital Indicators. Field mounting models available:

c FM US APPROVED

Intertek

IEC *TECEX*

		Display					Certification					
Model No. Enclosure		Digits		Bargi	Bargraph		Europe ATEX		International IECEx		A & nada	
		Number	Height	Segments	Length	Gas	Dust	Gas	Dust	Gas	Dust	
Ex ia intrinsi	cally safe - for use ii	n Zones 0, 1 &	2 and 20, 21	& 22								
BA304E	GRP - separate tml. compartment	4	34mm	-	-	~	~	~	•	~	~	
BA324E	GRP - separate tml. compartment	5	29mm	31	83mm	~	~	~	•	~	~	
BA304G	GRP Compact	4	34mm	-	-	~	~	~	v	~	v	
BA304G-SS	Stainless Steel	4	34mm	-	-	~	~	~	v	~	v	
BA324G	GRP Compact	5	29mm	31	83mm	~	~	~	V	~	~	
BA324G-SS	Stainless Steel	5	29mm	31	83mm	~	~	~	~	~	~	
Ex nA & Ex te	c - for use in Zones :	2 and 22 witho	out Zener barr	iers or galvani	c isolators							
BA304NE	GRP - separate tml. compartment	4	34mm	-	-	~	~	~	~	-	-	
BA324NE	GRP - separate tml. compartment	5	29mm	31	83mm	~	~	~	•	-	-	
BA304NG	GRP Compact	4	34mm	-	-	~	~	~	v	~	~	
BA324NG	GRP Compact	5	29mm	31	83mm	~	v	~	v	~	~	
Ex d Flamepi	roof for use in Zones	s 1, 2. 21 and 2	22									
BR323AL	Aluminium	5	10mm	-	-	~	~	-	-	-	-	
BR323SS	Stainless Steel	5	10mm	-	-	~	~	-	-	-	-	
General Purp	oose - for use in safe	areas										
BA504E	GRP - separate tml. compartment	4	34mm	-	-							
BA524E	GRP - separate tml. compartment	5	29mm	31	83mm							
BA504G	GRP Compact	4	34mm	-	-							
BA504G-SS	Stainless Steel	4	34mm	-	-							
BA524G	GRP Compact	5	29mm	31	83mm							
BA524G-SS	Stainless Steel	5	29mm	31	83mm							



The BA304E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA304D. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA304E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA304E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA304E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA304E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA304D, thus allowing the BA304E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324E which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

BA304E 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Intrinsically safe ATEX gas
 or ATEX gas & dust
 or FM, cFM & ATEX gas

All versions have IECEx certification.

- IP66 GRP enclosure with separate terminal compartment.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba304e





DIMENSIONS (mm)

C

Two M6 clearance holes

for surface mounting

12 13 14

Commor Terminals for optional backlight

All versions have

IECEx certification.

Separately powered

Loop powered

117

72



calibration information is not supplied. Can easily be recalibrated on-site



The BA304G loop powered 4/20mA indicator is an intrinsically safe field mounting instrument with a large 4 digit display housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA304G is to display a measured variable in engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304G indicator to be easily read in most lighting conditions. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 protection is provided by a robust GRP or 316 stainless steel enclosure, both have thick armoured glass windows and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA304G is surface mounting but can be pipe or panel mounting using accessories.

IECEx, ATEX and ETL intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge. If this is not requested, a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

BA304G BA304G-SS 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- IP66 GRP or stainless steel enclosure.
- Intrinsically safe ATEX, IECEx, ETL and cETL certification.
- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Optional backlight & alarms.
- Root extractor, lineariser and tare function.
- Easy scale card installation on-site.
- 3 year guarantee

www.beka.co.uk/ba304g





DIMENSION	S (mm)
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122

BA304G Stainless steel enclosure BA304G-SS XXXX XXXX |

Stainless legend plate Back-box terminals

Linear, root or lineariser Include position of decimal point & sign if negative.

Legend required Legend required Please specify if required Backlight Alarms Legend required BA393G BA394G, BA494G or BA494G-SS Back-box terminals

6



The BA304NE loop powered 4/20mA indicator is a fourth generation field mounting instrument that is mechanically compatible and electrically similar to the earlier BA304ND. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA304NE is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA304NE is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304NE indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens. ATEX and IECEx non sparking Ex nA certification allows the BA304NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA304NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA304NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324NE which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

BA304NE 2-wire 4/20mA 4 digit indicator

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Ex nA gas and Ex tc dust ATEX & IECEx certification.
- IP66 GRP enclosure with separate terminal compartment.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba304ne





DIMENSIONS (mm)





Shown with optional legend plate

TERMINAL CONNECTIONS



Pipe mounting kit

BA392D or BA393 #

instrument. #

See accessory datasheet for details

HOW TO ORDER

Model number

Display mode Display at: 4.000mA 20.000mA

Accessories External keypad Display backlight Dual alarms Escutcheon marking Scale Tag Stainless legend plate Pipe mounting kit Please specify BA304NE

Linear, root or lineariser*

XXXX XXXX I Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. *

Please specify if required External keypad Backlight Alarms

Legend required Legend required BA393D or BA393

Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA304NG loop powered 4/20mA indicator is a new field mounting instrument that supersedes the well established BA304NC. It is electrically and mechanically compatible with the earlier model but has a much larger full 4 digit display, dust certification and guaranteed performance between -40 and +70°C. Like it's predecessor, the BA304NG is housed in a robust IP66 enclosure which may be surface or pipe mounting.

Main application of the BA304NG is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304NG indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. An optional back-box terminal assembly, including a continuity diode in the 4/20mA loop, is available for users wishing to terminate field wiring before the indicator assembly is installed.

The scale card which show units of measurement and tag information slides into an internal slot and can easily be changed

on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site.

IECEx, ATEX and ETL non sparking Ex nA certification allows the BA304NG to be installed in Zone 2 hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA304NG offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification permits the BA304NG to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324NG which has a similar specification with a five digit 29mm high display plus a 31 segment bargraph.

BA304NG 2-wire 4/20mA 4 digit indicator

Ex nA & tc certified for use in Zones 2 & 22 hazardous areas

- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Ex nA gas and Ex tc dust ATEX, IECEx, ETL and cETL certification.
- Root extractor and 16 segment lineariser.
- IP66 GRP enclosure
- Easy scale card installation on-site.
- Optional backlight & alarms.
- 3 year guarantee

www.beka.co.uk/ba304ng



4 to 20mA HART® transparent

Less than 5V with optional loop powered

±200mA or ±30V will not damage indicator

Liquid crystal, non-multiplexed 4 digits

Adjustable between 0 & ±9999 for a

Adjustable between 0 & ±9999 with

Blanked apart from 0 in front of decimal point

9999 or -9999 with all decimal points flashing

Displays input in mA or as a % of span, has a

Less than 0.05% of span error for 1mA pk to

modified function when alarms are fitted.

Display may increase or decrease with

1 of 3 positions or absent

increasing 4/20mA input.

(Function in display mode)

Used for tare function

±0.02% of span ±1digit

±16µA at input ±1 digit

Less than 25ppm of span/°C

Less than 50ppm of span/°C

pk 50 or 60Hz interference.

Group II Category 3GD

Ex nÅ ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66

 $-40^{\circ}C \le Ta \le 70^{\circ}C$ ITS11ATEX47255

Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66

 $-40^{\circ}C \le Ta \le 70^{\circ}C$

IECEx ITS 11.0016

 $-40^{\circ}C \le Ta \le 60^{\circ}C$

-40 to +70°C -40 to +85°C

GRP IP66

1.1ka

to 95% at 40°C noncondensing

Indicator input voltage 5V

11V to 30V dc at 35mA

Shows display with 4mA input

Shows display with 20mA input

Automatic minus sign

Less than 1.2V at 20°C Less than 1.3V at -40°C

backlight.

34mm high.

4mA input.

2 per second

4/20mA input.

Input

Display

Туре

Span

Zero

Polarity

Direction

Overange

Push buttons

Decimal point

Zero blanking

Reading rate

Current

Voltage

Overrange

DIMENSIONS (mm)



assembly is installed. Includes continuity diode in 4/20mA loop. Pipe mounting kit BA393G 316 stainless steel # Panel mounting kits BA394G 316 stainless steel not sealing #

See accessory datasheet for details

HOW TO ORDER

Model number Display mode Display at: 4.000mA 20.000mA

Accessories

Dual alarms

Tag

Display backlight

Scale card marking Units

Stainless legend plate

Pipe mounting kit

Panel mounting kit

Back-box terminal assembly

Please specify BA304NG Linear, root or lineariser

XXXX XXXX] Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. *

Please specify if required Backlight Alarms

Legend required Legend required Legend required Terminal assembly BA393G BA394G

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

P

E

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Certification

Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No.

ETL & cETL USA & Canada

Code Class I, Zone 2, AEx nA ic IIC T5 Gc Zone 22, AEx ic tc IIIC T80°C Dc

> Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc $-40°C \le Ta \le 60°C$

Complies with EMC Directive 2014/30/EU

Black with screw clamp for 0.5 to 1.5mm² cable

Green, may be loop or separately powered

Two alarm outputs each of which may be

USA

ETL control No. 4008610

Environmental

Operating temp Storage temp Humidity Enclosure EMC

Mechanical Terminals Weight

Accessories Backlight Loop powered Separately

Alarms

Output Vmax Imax Ron Roff independently configured as a high or low alarm contact with a NO or NC output. Isolated solid state switch 30V200mA $5\Omega + 0.7V max$ $1M\Omega$ min



The BA324E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA324D. It has a much larger full 5 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA324E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA324E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA324E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens. International intrinsic safety certification permits the BA324E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA324E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA324D, thus allowing the BA324E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA304E which has a similar specification and an even larger four digit 34mm high display.

BA324E 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Intrinsically safe ATEX gas
 or ATEX gas & dust
 or FM, cFM & ATEX gas

All versions have IECEx certification.

- IP66 GRP enclosure with separate terminal compartment.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba324e



Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

Input

Display

Zero

'P

Έ

DIMENSIONS (mm)



117 Two M6 clearance holes for surface mounting Three cable entries ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug. FM certification 22.25 Ø plain holes Shown with optional legend plate

C

72

0

TERMINAL CONNECTIONS



Units of measurement marked onto display escutcheon. # Tag number or application marked onto display escutcheon. # Etched legend plate with tag number or application attached to front of the instrument. # BA392D or BA393 #

Please specify BA324E ATEX gas ATEX gas & dust

All versions have IECEx certification.

Linear, root or lineariser*] Include position of decimal point & XXXXX XXXXX sign if negative, plus intermediate points if linearisation is required.*

Please specify if required External keypad Backlight Alarms

Legend required Legend required Legend required BA392D or BA393

Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

controlled without removing cover.



The BA324G loop powered 4/20mA indicator is an intrinsically safe field mounting instrument with a large 5 digit display housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA324G is to display a measured variable in engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A large 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA324G indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 protection is provided by a robust GRP or 316 stainless steel enclosure, both have thick armoured glass windows and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA324G is surface mounting but can be pipe or panel mounting using accessories.

IECEx, ATEX and ETL intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge. If this is not requested, a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

BA324G BA324G-SS 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- IP66 GRP or stainless steel enclosure.
- Intrinsically safe ATEX, IECEx, ETL and cETL certification.
- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Root extractor, lineariser and tare function.
- Easy scale card installation on-site.
- 3 year guarantee

www.beka.co.uk/ba324g



Intertek



Input Current

Voltage

Overrange

Display

Туре Span . Zero Decimal point Polarity Zero blanking Direction

Reading rate Bargraph Overrange

Push buttons E

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Intrinsic safety Europe ATEX

Code

Input parameters Ui li Pi Output parameters

Cert No

International IECEx Code

Parameters Cert. No.

USA & Canada ETL & cETL Code

Zone 20 AEx ia IIIC T80°C Da USA -40°C ≤ Ta ≤ 60°C

Ex ia IIIC Da $-40^{\circ}C \le Ta \le 60^{\circ}C$

to 95% at 40°C noncondensing Complies with EMC Directive 2014/30/EU

Blue with screw clamp for 0.5 to 1.5mm² cable

information through display window.

Slide-in card showing units of measurement and tag

GRP or 316 stainless steel

Enclosure 7J, Window 4J

4008610

USA & Canada Nonincendive Code Class II, Div 2, Gp F, G

ETL control No.

ETL control No

Environmental Operating temp Storage temp Humidity EMC

Mechanical

Enclosure Material Ingress protection Impact protection . Weight GRP Stainless steel

Terminals

Scale card

4 to 20mA HART® transparent Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight. ±200mA or ±30V will not damage the indicator Liquid crystal, non-multiplexed 5 digits 29mm high Adjustable between 0 & \pm 99999 for a 4/20mA input Adjustable between 0 & \pm 99999 with 4mA input 1 of 4 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point Display may increase or decrease with increasing 4/20mA input. 2 per second 31 segments 80mm long 99999 or -99999 with all decimal points flashing (Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for tare function ±0.02% of span ±1digit ±16µA at input ±1 digit. Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference. Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 $-40^{\circ}C \le Ta \le 70^{\circ}C$ 30V dc 200mA 0 84W Comply with requirements for simple apparatus ITS11ATEX27253X (Special conditions only apply for Zone 0) Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C As ATEX IECEx ITS 11.0014X (Special conditions only apply for Zone 0) Class I, Div 1, Gp A, B, C, D. T5 USA & Canada

Class I, Zone 0, AEx ia IIC T5 Ga USA -40°C ≤ Ta ≤ 70°C Class II, Div 1, Gp E, F, G, Class III, Div 1 USA & Canada

Ex ia T5 Ga $\ -40^\circ C \leq Ta \leq 70^\circ C$ Canada

Class III, Div 2 -40°C ≤Ta ≤ 70°C

4008610

-40 to +70°C

-40 to +85°C

IP66

1.1kg 2.6kg

Class I, Div 2, Gp A, B, C, D T5 USA & Canada

Display mode Display at:

Scale card marking Units

Accessories Display backlight

Stainless legend plate Pipe mounting kit Panel mounting kit

18

DIMENSIONS (mm)



Including 4/20mA loop maintenance diode Back-box terminals for BA324G

Please specify

Legend required

Legend required

Legend required

Back-box terminals

Backlight

Alarms

BA393G

Please specify if required

BA394G, BA494G or BA494G-SS

Linear, root or lineariser

Include position of

decimal point &

sign if negative.

BA324G

XXXX

XXXX

BA324G-SS

See accessory datasheet for details

HOW TO ORDER

Model number GRP enclosure Stainless steel enclosure 4.000mA 20.000mA

Tag

Dual alarms

Back-box terminals

6



The BA324NE loop powered 4/20mA indicator is a fourth generation field mounting instrument that is mechanically compatible and electrically similar to the earlier BA324ND. It has a much larger full 5 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA324NE is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA324NE is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and has a very wide viewing angle, allowing the BA324NE indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -99999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens. ATEX and IECEx non sparking Ex nA certification allows the BA324NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA324NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA324NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA304NE which has a similar specification but has a four digit 34mm high display.

BA324NE 2-wire 4/20mA 5 digit indicator

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Ex nA gas and Ex tc dust ATEX & IECEx certification.
- IP66 GRP enclosure with separate terminal compartment.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba324ne





Input

Display

Type

Span

Zero

▲ 'P'

'F'

EMC

DIMENSIONS (mm





TERMINAL CONNECTIONS



Display mode Display at: 4.000mA 20.000mA

Pipe mounting kit

sign if negative, plus intermediate XXXXX points if linearisation is required.

XXXXX

Alarms

Accessories External keypad Display backlight Dual alarms Escutcheon marking Scale Tag Stainless legend plate Please specify if required External keypad Backlight

Include position of decimal point &

Linear, root or lineariser

Legend required Legend required Legend required BA393D or BA393

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA324NG loop powered 4/20mA indicator is a new field mounting instrument that supersedes the well established BA324NC. It is electrically and mechanically compatible with the earlier model but has a much larger full 5 digit display, bargraph, dust certification and guaranteed performance between -40 and +70°C. Like it's predecessor, the BA324NG is housed in a robust IP66 enclosure which may be surface or pipe mounting.

Main application of the BA324NG is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A large 29mm high 5 digit display and 31 segment bargraph provided maximum contrast and have a very wide viewing angle, allowing the BA324NG indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. An optional back-box terminal assembly, including a continuity diode in the 4/20mA loop, is available for users wishing to terminate field wiring before the indicator assembly is installed.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site.

New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site.

IECEx, ATEX and ETL non sparking Ex nA certification allows the BA324NG to be installed in a Zone 2 hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA324NG offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification permits the BA324NG to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA304NG which has a similar specification and an even larger four digit 32mm high display.

BA324NG 2-wire 4/20mA 5 digit indicator

Ex nA & tc certified for use in Zones 2 & 22 hazardous areas

- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Ex nA gas and Ex tc dust ATEX, IECEx, ETL & cETL certification.
- Root extractor and 16 segment lineariser.
- IP66 GRP enclosure
- Easy scale card installation on-site.
- Optional backlight & alarms.
- 3 year guarantee

www.beka.co.uk/ba324ng



4 to 20mA HART® transparent

Less than 5V with optional loop powered

±200mA or ±30V will not damage indicator

Liquid crystal, non-multiplexed 5 digits

Adjustable between 0 & ±99999 for a

Adjustable between 0 & ±99999 with

Display may increase or decrease with

99999 or -99999 with all decimal points

Displays input in mA or as a % of span, has a modified function when alarms are fitted.

Less than 0.05% of span error for 1mA pk to

Blanked apart from 0 in front of decimal point

1 of 4 positions or absent

increasing 4/20mA input.

31 segments 80mm long

(Function in display mode)

Used for tare function

±0.02% of span ±1digit

±16µA at input ±1 digit

Less than 25ppm of span/°C

Less than 50ppm of span/°C

pk 50 or 60Hz interference.

Group II Category 3GD

Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66 $-40^{\circ}C \le Ta \le 70^{\circ}C$

ITS11ATEX47255

Ex nA ic IIC T5 Gc

IECEx ITS 11.0016

Ex tc IIIC T80°C Dc IP66 $-40^{\circ}C \le Ta \le 70^{\circ}C$

Shows display with 4mA input

Shows display with 20mA input

Automatic minus sign

Less than 1.2V at 20°C Less than 1.3V at -40°C

backlight.

29mm high.

4mA input.

2 per second

flashing.

4/20mA input.

DIMENSIONS (mm)



backlight + 12 Comm	on
Scale card	Slide-in card showing through display window units of measurement and tag information.
Stainless steel legend plate.	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front.
Terminal assembly	Mounted in enclosure back-box for terminating field wiring before indicator assembly is installed. Includes continuity diode in 4/20mA loop.
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

See accessory datasheet for details

W TO ORDER

Model number Display mode Display at: 4.000mA 20.000mA

Accessories Display backlight Dual alarms Scale card marking Units

Tag Stainless legend plate Back-box terminal assembly Pipe mounting kit Panel mounting kit

Alarms

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

Overrange

Current

Voltage

Display Type

Input

Span

Zero

Decimal point Polarity Zero blanking Direction

Reading rate Bargraph Overange

Push buttons

P

E

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Certification Europe ATEX

Code

Cert. No.

International IECEx Code

ETL control No.

Operating temp

Storage temp

Environmental

Humidity Enclosure

EMC

Mechanical

Terminals

Weight

Accessories

Alarms

Backlight

Cert. No.

USA & Canada ETL & cETL Code Class I, Zone 2, AEx nA ic IIC T5 Gc Zone 22, AEx ic tc IIIC T80°C Dc

 $-40^{\circ}C \le Ta \le 60^{\circ}C$ Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Canada Ex ic tc IIIC T80°C Dc $-40^{\circ}C \le Ta \le 60^{\circ}C$

USA

4008610

-40 to +70°C -40 to +85°C to 95% at 40°C noncondensing GRP IP66 Complies with EMC Directive 2014/30/EU

Black with screw clamp for 0.5 to 1.5mm² cable 1.1kg

Green, may be loop or separately powered Indicator input voltage 5V 11V to 30V dc at 35mA

Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated solid state switch 30V 200mA $5\Omega + 0.7V \text{ max}$ $1M\Omega$ min

Please specify BA324NG Linear, root or lineariser*

Include position of decimal point & XXXXX sign if negative, plus intermediate XXXXX points if linearisation is required.

Please specify if required Backlight

Legend required Legend required Legend required Terminal assembly BA393G BA394G

Vmax Imax Ron Roff

Loop powered

Separately

Output



The BR323AL and BR323SS are flameproof field mounting loop powered indicators that only introduces a 2.3V drop making them suitable for inclusion in almost any 4/20mA loop. The two instruments are electrically identical but have different enclosure materials. The BR323AL is housed in an epoxy painted aluminium enclosure and the BR323SS in a 316 stainless steel enclosure. Both provide IP66 and NEMA Type 4X protection.

The main application of both instruments is to display a process variable or control signal in a hazardous process area. The zero and span are independently adjustable so the indicator may be calibrated to display any variable represented by a 4/20mA current, such as temperature, pressure or level. A fully adjustable lineariser is included which enables almost any non linear variable to be displayed in linear engineering units. For use with differential flow transmitters, a square root function is included with the lineariser.

ATEX flameproof certification allows the BR323AL and the BR323SS to be installed throughout Europe in Zones 1 and 2 gas hazardous and in Zones 21 and 22 dust hazardous areas.

Indicator configuration and calibration is performed for no additional charge so indicator arrives ready for use. Reconfiguration can easily be performed on-site using simple Windows® compatible software running on a personal computer connected to the instrument via a temporary serial communications cable. The free of charge software may be downloaded from the BEKA website, or is available on CD. A cable for temporarily connecting the indicator to an RS232 serial port and a USB to serial port converter are available from BEKA.

The 'View' button on the front of the indicator adjacent to the terminals provides a rapid check of loop function and instrument calibration with no risk of the calibration being accidentally changed. The first operation of the button changes the display from normal engineering units to the loop current in milliamps, subsequent operations of the button display the instrument calibration at 4 and 20 mA.

Units of measurement can be displayed by the BR323AL and BR323SS indicators. Up to five upper case alphanumeric characters may be entered via the configuration software, these are stored by the indicator and appear below the main instrument display.

A 128 segment lineariser is contained in the configuration software which can accurately linearise almost any curve. Data can be imported as a comma delimited csv file or typed point by point into a table. Again the software is very easy to use.

Both robust enclosures provide IP66 and NEMA 4X protection and have two M20 or 1/2 inch NPT tapped entries. The BR323AL, which has an aluminium enclosure, is suitable for general industrial application, whereas the BR323SS 316 stainless steel enclosure is intended for use in corrosive and marine environments. Both enclosures are available with an optional pipe mounting kit.

BR323AL and BR323SS

2 wire 4/20mA 5 digit indicators

Flameproof enclosure for use in gas & dust hazardous areas

- Loop powered
- ± 99999 display
 10mm high.
- IP66, NEMA Type 4X enclosures

BR323AL aluminium BR323SS 316 stainless steel.

- No additional charge for Configuration and calibration.
- ATEX certification
- Root extractor and lineariser.
- Programmable units of measurement legend.
- 3 Year guarantee

www.beka.co.uk/br323





DIMENSIONS (mm)





Two M20 x 1.5 cable entries (model number suffix 'M')~ Two 1/2 inch NPT cable entries (model number suffix 'N')~ or

TERMINAL CONNECTIONS

Pipe mounting kit



304 stainless steel 'U' bolt to fit up to 50mm outside diameter pipe.

RS232 cable Connects BR323 indicator to serial communications port or to USB serial converter. USB to serial converter Chipi-X10 cable converts USB to RS232 serial port. USB port must be configured as COM 1, 2, 3 or 4.

Please specify

RS232 cable is also required.

HOW TO ORDER

densing	Model number Aluminium enclosure Stainless steel enclosure	BR323AL BR323SS				
pe 4X ester powder coated.	Entry threads~ or	M20 x 1.5 (model number suffix 'M') ½ inch NPT (model number suffix 'N')				
el	Calibration					
th EU Directive 89/336/EU	Display at 4mA Display at 20mA	XXXXX Include position of decimal point XXXXX and sign if negative.*				
error for 20V/m field n 80MHz & 1GHz. ove background noise,	Units of measurement	XXXXX*				
ent 0.5 to 1.5mm ² cable.	Accessories Tag strip Tag plate Pipe mounting kit RS232 cable USB to RS232 converter required)	Please specify if required Legend BR391 Pipe mounting kit RS 232 cable Chipi-X10 Cable (RS232 cable also				
dilabel	* Will be set to display 0.00 units of measurement if ca	at 4mA and 100.00 at 20mA with 'PCT' as alibration information is not supplied.				

Unless otherwise requested indicators supplied in the UK will have M20 entries.

Etched tie-on stainless steel label



The BA504E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA504D. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA504E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA504E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA504E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional wiring is required, but the indicators voltage is increased. Powering from a separate supply produces a brighter backlight but requires an additional field wiring.

Optional dual alarm outputs which can switch low power loads such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA524E which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

If flammable atmospheres are present either the BA304E or BA304NE should be used. Both have the same features as the BA504E but have been certified for use in hazardous area.

BA504E 2-wire 4/20mA 4 digit indicator

General purpose

- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- IP66 GRP enclosure with separate terminal compartment.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba504e



DIMENSIONS (mm)

Input		
Current	4 to 20mA	
Voltage	Less than 1.2V at 20°C	
	Less than 1.3V at -40°C	
	Less than 5V with optional	
	loop powered backlight.	
Overrange	±200mA or ±30V will not damage	
	the indicator.	
Display		
Туре	Liquid crystal, non-multiplexed	
	4 digits 34mm high.	
Span	Adjustable between 0 & ±9999 for a 4/20mA	
	input.	
Zero	Adjustable between 0 & ±9999 with 4mA	
	input.	
Decimal point	1 of 3 positions or absent	
Polarity	Automatic minus sign	
Zero blanking	Blanked apart from 0 in front of decimal	
	point	
Direction	Display may increase or decrease with	
	increasing 4/20mA input.	
Reading rate	2 per second	
Overange	9999 or -9999 with all decimal points	
	flashing.	
Push buttons	(Function in display mode)	
•	Shows display with 4mA input	
A	Shows display with 20mA input	
'P'	Displays input in mA or a % of span, has a	
	modified function when alarms are fitted.	_
'E'	Used for tare function	
Accuracy at 20°C		
Linear	±0.02% of span ±1 digit.	
Root extracting	±16µA at input ±1 digit	
Temperature effect on:		
Zero	Less than 25ppm of span/°C	
Span	Less than 50ppm of span/°C	
Series mode rejection	Less than 0.05% of span error for 1mA pk	
	to pk 50 or 60Hz interference.	
Environmental		
Operating temp	-40 to 70°C	
Storage temp	-40 to 85°C	
Humidity	to 95% at 40°C noncondensing	
Vibration	Report available	
Enclosure	IP66	
EMC	Complies with EMC Directive 2004/108/EC.	
Mechanical		
Terminals	Screw clamp for 0.5 to 1.5mm ² cable	N
Weight	1.7kg	C
0	5	C
Accessories		
Backlight	Green, may be loop or separately powered.	
Loop powered	Indicator input voltage 5V	
Separately powered		A
V supply	11V to 30V dc	E
Lin	35mA	C
		C
Alarms	Two alarm outputs each of which mav be	E
	independently configured as a high or low	
	alarm contact with a NO or NC output	
Output	Isolated solid state switch	S
Vmax	40V dc	F
Imax	200mA	
Ron	5Ω + 0.7V max	
Roff	1MΩ min	
External keypad	Membrane keypad enables indicator to be	
	controlled without removing cover.	
Scale legend	I laits of measurement marked onto display	
Codie legend	escutcheon #	
Tag legend	Tag number or application marked onto	
i ay ieyellu	ray number or application marked onto	
	uispidy esculutieoff. #	
Stainloss staal lagand plat-	Stainloss stool plate stobed lossed plate	
Stanness steer legend plate	with tag number or application attached to	
	front of the instrument #	
Pine mounting kit	B4392D or B4393 #	
ripe mounting kit	DA032D UI DA030 #	



Shown with optional legend plate

TERMINAL CONNECTIONS



HOW TO ORDER

Model number Display mode Display at: 4.000mA 20.000mA

Accessories External keypad Display backlight Dual alarms Escutcheon marking Scale Tag Stainless legend plate Pipe mounting kit Please specify BA504E

Linear, root or lineariser*

XXXX Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.*

Please specify if required External keypad Backlight Alarms

Legend required Legend required Legend required BA393D or BA393

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA504G is a general purpose, loop powered 4/20mA field mounting indicator, with a large four digit display housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA504G is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA504G indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 and impact protection are provided by a robust GRP or 316 stainless steel enclosure. Both have a thick armoured glass window and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA504G and BA524G are surface mounting, but can be pipe or panel mounted using accessories. **Display backlighting** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination enabling the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA524G which has a similar specification with a five digit 29mm high display plus a 31 segment bargraph.

If flammable atmospheres are present either the 4 digit BA304G or the 5 digit BA324G, should be used. Both have the same features as the BA504G, but are intrinsically safe and have international certification for use in hazardous, gas and dust areas worldwide.

BA504G BA504G-SS 2-wire 4/20mA 4 digit indicator

General purpose

- IP66 GRP or stainless steel enclosure.
- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Optional backlight & alarms.
- Root extractor and 16 segment lineariser.
- Easy scale card installation on-site.
- 3 year guarantee

www.beka.co.uk/ba504g



Input

Current Voltage

Overrange

Display Туре

Span

Zero

Decimal point Polarity Zero blanking

Direction

Reading rate Overrange

Push buttons

P

E

Accuracy at 20°C

Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Environmental

Operating temp Storage temp Humiditv EMC

Mechanical

Enclosure Material Ingress protection Impact protection Weight GRP Stainless steel Terminals

Scale card

Accessories Backlight

Loop powered

Separately powered V supply l in Alarms

Output

Vmax Imax Ron Roff

4 to 20mA Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.

+200mA or +30V will not damage the indicator.

Liquid crystal, non-multiplexed 4 digits 34mm high. Adjustable between 0 & ±9999 for a 4/20mA input. Adjustable between 0 & ±9999 with 4mA input. 1 of 3 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point Display may increase or decrease with increasing 4/20mA input. 2 per second 9999 or -9999 with all decimal points flashing.

(Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for tare function

±0.02% of span ±1digit ±16µA at input ±1 digit

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

-40 to +70°C -40 to +85°C To 95% at 40°C noncondensing Complies with EMC Directive 2014/30/EU.

GRP or 316 stainless steel IP66 Enclosure 7J, Window 4J

1.1kg 2.6kg Orange with screw clamp for 0.5 to 1.5mm² cable. Slide-in card showing units of measurement and tag information through display window.

Green, may be loop or separately powered. Indicator input voltage increases to 5V.

11 to 30V dc 35mA Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated, voltage free solid state switch. 40V dc 200mA $5\Omega + 0.7V \text{ max}$ $1M\Omega$ min

DIMENSIONS (mm)



See accessory datasheet for details

HOW TO ORDER

Please specify **BA504G**

BA504G-SS

Model number **GRP** enclosure Stainless steel enclosure

4.000mA

20.000mA

Scale card marking

Display mode

Display at:

Units

Tag

Linear, root or lineariser'

Include position of XXXX decimal point & XXXX sign if negative.*

Legend required Legend required

Accessories

Display backlight Dual alarms Stainless legend plate Pipe mounting kit Panel mounting kit Back-box terminals

Please specify if required Backlight Alarms Legend required BA393G

BA394G, BA494G or BA494G-SS Back-box terminals



The BA524E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA524D. It has a much larger full 5 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA524E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA524E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA524E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA504E which has a similar specification and an even larger four digit 34mm high display.

If flammable atmospheres are present either the BA324E or BA324NE should be used. Both have the same features as the BA524E but have been certified for use in hazardous area.

BA524E 2-wire 4/20mA 5 digit indicator

General purpose

- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- IP66 GRP enclosure with separate terminal compartment.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba524e



Input

ΎP

Έ

DIMENSIONS (mm)

Current 4 to 20mA Less than 1.2V at 20°C Voltage 141 Less than 1.3V at -40°C Less than 5V with optional loop powered backlight. Overrange ±200mA or ±30V will not damage the indicator. Display Liquid crystal, non-multiplexed 5 digits Type 29mm high & 31 segment bargraph. 212 Span Adjustable between 0 & ±99999 for a 4/20mA Ø input. Adjustable between 0 & ±99999 with 4mA Zero input. 1 of 4 positions or absent Decimal point Ø Automatic minus sign Polarity Zero blanking Blanked apart from 0 in front of decimal point. Direction Display may increase or decrease with increasing 4/20mA input. Removable cover 2 per second Reading rate 31 segment 80mm long provides access Bargraph to controls Overange 99999 or -99999 with all decimal points flashing. (Function in display mode) Shows display with 4mA input Push buttons Shows display with 20mA input 91 Displays input in mA or a % of span, has a modified function when alarms are fitted. Used for tare function Accuracy at 20°C ±0.02% of span ±1digit Linear ±16µA at input ±1 digit. Root extracting Temperature effect on: Zero Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to Terminals 2 & 4 internally linked for joining return 4/20mA wire. Span Series mode rejection. pk 50 or 60Hz interference. E Environmental Operating temp -40 to 70°C -40 to 85°C Storage temp to 95% at 40°C noncondensing Humidity 4/20mA Report available Vibration Enclosure IP66 EMC Complies with EMC Directive 2004/108/EC. Mechanical Screw clamp for 0.5 to 1.5mm² cable Terminals Weight 1.7kg Model number Display mode Accessories Display at: 4.000mA Backlight Green, may be loop or separately powered. Loop powered Indicator input voltage 5V 20.000mA Separately powered V supply 11V to 30V dc l in 35mA Accessories External keypad Alarms Two alarm outputs each of which may be Display backlight independently configured as a high or low Dual alarms alarm contact with a NO or NC output. Escutcheon marking Isolated solid state switch Output Scale . Vmax 40V dc Tag 200mA Imax Stainless legend plate $5\Omega + 0.7V \text{ max}$ Ron Pipe mounting kit Roff $1M\Omega$ min External keypad Membrane keypad enables indicator to be controlled without removing cover. Scale legend Units of measurement marked onto display escutcheon.

Tag number or application marked onto

or applicationattached to front of the

Stainless steel plate etched with tag number

display escutcheon. #

BA392D or BA393 #

instrument #





one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS



HOW TO ORDER

Please specify BA524E Linear, root or lineariser*

Include position of decimal point & sign XXXX if negative, plus intermediate points if XXXX linearisation is required.

Please specify if required External keypad Backlight Alarms

Legend required Legend required Legend required BA393D or BA393

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

Tag legend

Stainless steel

Pipe mounting kit

legend plate.

30



The BA524G is a general purpose, loop powered 4/20mA field mounting indicator, with a large five digit display and a bargraph housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA524G is to display a measured variable in engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser also enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The large 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA524G indicator to be easily read in most lighting conditions over a wide temperature range. Optional factory fitted backlighting is available for installations in poorly illuminated areas. The five digit display, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 and impact protection are provided by a robust GRP or 316 stainless steel enclosure. Both have a thick armoured glass window and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA524G and BA524G-SS are surface mounting, but can be pipe or panel mounted using accessories. **Display backlighting** which may be loop or separately powered is available as a factory fitted option. t provides green background illumination enabling the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA504G which has a similar specification with an even larger 4 digit, 34mm high display.

If flammable atmospheres are present either the BA324G or BA304G, should be used. Both have the same features as the BA524G, but are intrinsically safe and have international certification for use in hazardous gas and dust atmospheres.

BA524G BA524G-SS 2-wire 4/20mA 5 digit indicator

General purpose

- IP66 GRP or stainless steel enclosure.
- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Root extractor and 16 segment lineariser.
- Easy scale card installation on-site.
- 3 year guarantee

www.beka.co.uk/ba524g



Input

Current Voltage

Overrange

Display Type

Span

Zero

Decimal point Polarity Zero blanking

Direction

Reading rate Bargraph Overrange

Push buttons

E

Accuracy at 20°C

Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Environmental

Operating temp Storage temp Humidity EMC

Mechanical

Enclosure Material Ingress protection Impact protection Weight GRP Stainless steel Terminals

Scale card

Accessories Backlight

Loop powered

Separately powered V supply I in Alarms

Output

Vmax Imax Ron Roff 4 to 20mA Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.

±200mA or ±30V will not damage the indicator.

Liquid crystal, non-multiplexed 5 digits 29mm high. Adjustable between 0 & ±99999 for a 4/20mA input. Adjustable between 0 & ±99999 with 4mA input. 1 of 4 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point. Display may increase or decrease with increasing 4/20mA input. 2 per second 31 segments 80mm long 99999 or -99999 with all decimal points flashing.

(Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for tare function

 $\pm 0.02\%$ of span ± 1 digit $\pm 16\mu$ A at input ± 1 digit

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

-40 to +70°C -40 to +85°C To 95% at 40°C noncondensing Complies with EMC Directive 2014/30/EU.

GRP or 316 stainless steel IP66 Enclosure 7J, Window 4J

1.1kg 2.6kg Orange with screw clamp for 0.5 to 1.5mm² cable. Slide-in card showing units of measurement and tag information through display window.

Green, may be loop or separately powered. Indicator input voltage increases to 5V.

11 to 30V dc 35mA Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated, voltage free solid state switch. 40V dc 200mA $5\Omega + 0.7V$ max 1M Ω min

DIMENSIONS (mm)





Back-box terminals Including 4/20mA loop maintenance diode

See accessory datasheet for details

HOW TO ORDER

for BA524G.

Model number

GRP enclosure

Stainless steel

enclosure

Display mode

4.000mA

20.000mA

Scale card marking

Display at:

Units

Accessories

Dual alarms

Display backlight

Pipe mounting kit

Panel mounting kit

Back-box terminals

Stainless legend plate

Tag

Please specify

BA524G BA524G-SS

Linear, root or lineariser*

XXXXX XXXXX Include position of decimal point & sign if negative.*

Legend required Legend required

Please specify if required Backlight Alarms Legend required BA393G BA394G, BA494G or BA494G-SS Back-box terminals

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

4/20mA Loop Powered Digital Indicators Panel Mounting



An extensive range of panel mounting 4/20mA loop powered indicators in Noryl[®] or rugged 316 stainless steel enclosures.

- > Large high contrast displays with a wide viewing angle
- General purpose and certified hazardous area models International Ex ia intrinsic safety and Ex nA non sparking certification.
- > Rugged stainless steel Ex ia models May be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
- > Combined analogue and digital display indicators
- > IP66 front panels
- > Internal calibrator, root extractor, lineariser & tare function
- > -40 to +70°C operating temperature range

> Accessories

Dual isolated alarms Display backlight may be loop or separately powered Scale card - *can be supplied printed with units of measurement and tag information for no additional charge.* BA495 rear IP66 sealing kit



Intrinsically safe

Ex nA

General purpose







Rugged indicator maintains panel enclosure's impact & ingress protection and does not invalidate its certification.



Gasket provides IP66 seal to panel



Sturdy panel clamps supplied with unit



Easy scale card installation without the need to remove indicator from the panel.

An indicator for every application delivered ready for installation

4/20mA Loop Powered Digital Indicators. Panel mounting models available:

		Display				Certification					
Model No.	Enclosure	Digits		Bargraph		Europe ATEX		International IECEx		US Car	A & nada
		Number	Height	Segments	Length	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsical	Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22										
BA304G-SS-PM*	Rugged 120 x 122	4	34mm	-	-	~	~	~	v	-	-
BA324G-SS-PM*	Rugged 120 x 122	5	29mm	31	83mm	~	V	~	v	_	_
BA307E	96 x 48	4	15mm	-	-	~	V	~	~	~	_
BA308E	144 x 72	4	34mm	-	-	~	~	~	~	~	_
BA327E	96 x 48	5	11mm	31	44mm	~	~	~	~	~	_
BA328E	144 x 72	5	29mm	31	83mm	~	~	~	~	~	_
BA326C	144 x 48 Combined	41⁄2	5.5mm	100	95mm	~	-	~	-	-	-
BA307E-SS*	Rugged 105 x 60	4	15mm	-	-	~	~	~	v	~	-
BA327E-SS*	Rugged 105 x 60	5	11mm	31	44mm	V	~	~	~	1	-

* Certification allows installation in an Ex e, or Ex p or Ex t panel enclosure without invalidating enclosure certification

Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators

BA307NE	Rugged 105 x 60	4	15mm	-	-	~	v	v	~	-	-	
BA327NE	Rugged 105 x 60	5	11mm	31	44mm	•	•	1	•	-	-	
General Purpos	e - for use in safe area	s										
BA504G-SS-PM	Rugged 120 x 122	4	34mm	-	-							
BA524G-SS-PM	Rugged 120 x 122	5	29mm	31	83mm							
BA507E	96 x 48	4	15mm	-	-							
BA508E	144 x 72	4	34mm	-	-							
BA527E	96 x 48	5	11mm	31	44mm							
BA528E	144 x 72	5	29mm	31	83mm							
BA526C	144 x 48 Combined	41⁄2	5.5mm	100	95mm							
BA507E-SS	Rugged 105 x 60	4	15mm	-	-							
BA527E-SS	Rugged 105 x 60	5	11mm	31	44mm							

sales@beka.co.uk

www.beka.co.uk


The BA304G-SS-PM loop powered 4/20mA indicator is an intrinsically safe panel mounting instrument with a large 4 digit display. It has a rugged, impact resistant IP66 stainless steel front allowing it to be safely mounted in an Ex e, Ex p or Ex t panel enclosure.

IECEx and ATEX intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

of Main application the BA304G-SS-PM is to display a measured variable in engineering units when mounted in an Ex e. Ex p or Ex t panel enclosure or cubicle. The front of the indicator has IECEx and ATEX impact and ingress certification allowing it to be installed in a certified panel enclosure without invalidating the enclosure's certification. The rugged front and IP66 protection also make the indicator ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, thus the BA304G-SS-PM indicator is easily read in most lighting conditions. An optional backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for simple apparatus. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

A Zener barrier or galvanic isolator is not required when the indicator is installed in an Ex pxb, Ex pzc or Ex t panel enclosure. See Application Guide AG300 for details.

BA304G-SS-PM 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in Ex e, Ex p or Ex t panel enclosures and in harsh environments.

- IP66 stainless steel indicator front maintains Ex e, Ex p or Ex t panel enclosure certification.
- Intrinsically safe ATEX and IECEx certification.
- Loop powered only 1.2V drop.
- 4 digit 34mm high display
- Optional backlight & alarms.
- Root extractor, lineariser and tare function.
- Easy scale card installation on-site.
- 3 year guarantee

beka.co.uk/ba304g-ss-pm





DIMENSIONS (mm)



1



The BA307E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry standard BA307C, but has a much larger full 4 digit display providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted

The main application of the BA307E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A bold 15mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA307E indicator to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA307E indicator is installed.

International intrinsic safety certification permits the BA307E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA307E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA307C, thus allowing the BA307E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring. Two backlights may be separately powered from one intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA327E which has a similar specification with five 11mm high digits and a 31 segment bargraph.

BA307E 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- 4 digit 15mm high display.
- Intrinsically safe ATEX, FM, cFM & IECEx.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 96 x 48mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba307e



Input Current

Display

Type

Span

Zero

Polarity

Direction

Overange

۴P

Έ'

Linear

Zero Span

Code

l li

li

Pi

USA FM

Code

Code

File

File

Code

Voltage

DIMENSIONS (mm)



Environmental

Operating temp Storage temp Humidity Vibration Enclosure EMC

Mechanical Terminals

Weight

Group IIIC conductive dusts)

-40 to 70°C -40 to 85°C to 95% at 40°C noncondensing Report available Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks. 0.2kg

Include position of decimal point & XXXX sign if negative, plus intermediate XXXX points if linearisation is required.*

Accessories Display backlight Dual alarms Scale card Tag

Display at:

4.000mA

20.000mA

Rear cover and sealing kit

Backlight Alarms Legend required Legend required BA495

Please specify if required

Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA307E-SS intrinsically safe, panel mounting loop powered Indicator has a rugged stainless steel housing allowing it to be safely installed in an Ex e or Ex p panel, in marine environments or where the front of the instrument is likely to be impacted. The indicator has a full 4 digit display with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

Main application of the BA307E-SS is to display a measured variable in engineering units when mounted in an Ex e or Ex p panel enclosure located in Zones 1 or 2. The front of the indicator has IP66 ingress and impact protection which allows it to be installed in a certified Ex e or Ex p panel enclosure without invalidating the enclosure certification. The indicator's rugged stainless steel housing and 10mm thick toughtened glass window also make the BA307E-SS ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

The bold 15mm high 4 digit display provides maximum contrast and has a wide viewing angle, allowing the BA307E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal point positions and a negative sign, may be configured to display any variable between -9999 and 9999.

International intrinsic safety certification allow the BA307E-SS to be installed worldwide. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, permit connection to most intrisically safe circuits. For applications in combustible dusts the BA307E-SS may be installed in a certified Ex t panel enclosure without invalidating the enclosure's certification.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring are required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface. Two backlights may be separately powered from one intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA307E-SS from the panel or opening the instrument enclosure.

Application Guide AG300 explains how the BA307E-SS and similar instruments may be safely installed in gas and dust hazardous areas. Copies may be downloaded from the BEKA website or requested from the BEKA sales office.

Other models in this range include the BA327E-SS which has a similar specification with five 11mm high digits and a 31 segment bargraph.

BA307E-SS Rugged 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in Zone 1 Ex e or Ex p panel enclosures and in harsh marine environments

- Rugged IP66 stainless steel enclosure.
- Intrinsically safe Ex ia ATEX, FM, cFM & IECEx.
- Front of indicator maintains Ex e, Ex p and Ex t enclosure certification.
- Loop powered only 1.2V drop.
- 4 digit 15mm high display.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- Root extractor and 16 segment lineariser.
- 3 year guarantee

www.beka.co.uk/ba307e-ss



backlight. Over range

4 to 20mA

hiah.

input.

point.

30V dc

200mA

0.84W

3041487

3041487C

Input Current

Display

Туре

Span

Zero

Polarity

Direction

Decimal point

Zero blanking

Reading rate

Over range

Accuracy at 20°C

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li

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Code

International IECEx

Cert. Number

Root extracting

Temperature effect on:

Series mode rejection

Hazardous area certification Europe ATEX

Input parameters

Output paramters

Cert. Number

Linear

Push buttons

▲ P

Е

Voltage

DIMENSIONS (mm)



Environmental Operating temperature Storage temperature Humidity Vibration Enclosure Ingress protection Material EMC

Mechanical

Terminals

Weight

Accessories Backlight

Loop powered Separately powered

-40 to 70°C -40 to 85°C To 95% at 40°C non-condensing Report available

Front IP66, rear IP20 Stainless steel BS 3146-2:1977 ANC4B (316) Complies with 2004/108/EC

Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks. 0.85kg

Green may be loop or separately powered Indicator input voltage increased to 5V max. 9V at 22mA from IS interface XXXX

Accessories Display backlight Dual alarms Scale card Tag Legend required Support plate Rear cover and sealing kit

4.000mA

20.000mA

Display at:

negative. Together with intermediate points if linearisation is required.* Backlight Alarms

Include position of decimal point & sign if

1 2 3 4

are

4/20mA

Legend required

Support plate BA495

Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

XXXX



The BA307NE loop powered, panel mounting Indicator has a rugged stainless steel housing allowing it to be safely installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure located in Zone 2 or 22, without the need for Zener barriers or galvanic isolators. The indicator has a full 4 digit display with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

The main application of the BA307NE is to display a measured variable in meaningful engineering units in Zone 2 or 22. The front of the indicator has certified impact and ingress protection allowing it to be installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure without invalidating the panel's impact and ingress protection.

The bold 15mm high 4 digit display provides maximum contrast and has a wide viewing angle, allowing the BA307NE to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal point positions and a negative sign, may be configured to display any variable between -9999 and 9999.

ATEX, IECEx and ETL Ex nA non sparking certification allows the BA307NE, when installed in a Ex n, Ex p, or Ex e panel, to be operated in a Zone 2 gas hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA307NE offers a less expensive alternative to intrinsically safe and flameproof indicators.

Ex tc dust certification also allows the BA307NE, when installed in an

Ex tc panel enclosure, to be operated in a Zone 22 dust hazardous area, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop increases. Powering from a separate supply produces a brighter backlight but requires additional wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA307NE from the panel or opening the instrument enclosure.

Application Guide AG310 which explain how Ex nA certified instruments should be installed may be downloaded from the BEKA associates website, or requested from the BEKA sales office.

Other models in this range include the BA327NE which has a similar specification with five 11mm high digits and a 31 segment bargraph.

BA307NE Rugged 2-wire 4/20mA 4 digit indicator

Ex nA and Ex tc certified for installation in Ex n, Ex e, Ex p or Ex tc panel enclosure located in Zones 2 or 22

- Rugged IP66 stainless steel enclosure.
- Ex nA & Ex tc certification eliminates the need for Zener barriers and galvanic isolators.
- Loop powered only 1.2V drop.
- 4 digit 15mm high display.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- Root extractor and 16 segment lineariser.
- 3 year guarantee

www.beka.co.uk/ba307ne



DIMENSIONS (mm)

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Terminals Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks. M4 earth stud Weight 0.85kg Accessories Backlight Green may be loop or separately powered Indicator input voltage increased to 5V max. Provides impact and IP66 protection for rear of instrument. # Alarms Green may be loop or separately powered Separately powered Indicator input voltage increased to 5V max. BA495 rear cover and sealing kit Provides impact and IP66 protection for rear of instrument. # Alarms Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. BA495 rear cover and sealing kit Please specify Output Isolated solid state switch S0 + 0.7V max Solated solid state switch 100 min Baaks card fitted to each indicator can be supplied printed with specified units of measurement cards and 2 blank cards. Model number 20.000mA Please specify BA307NE Printed scale card Blank card fitted to each indicator can be supplied printed with specified units of measurement cards and 2 blank cards. Accessories XXXX Include position of decimal point & sign for all alarms Scale card Tag legend Specified tag number or application information laser etched on rear of instrument. Tag Backlight	ETL control No. Environmental Operating temperature Storage temperature Humidity Vibration Enclosure Ingress protection Material EMC	Class I, 20ne 2, AEx nA IC IIC TS GC Zone 22, AEx ic tc IIIC T80°C Dc $-40°C \le Ta \le 60°C$ Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc $-40°C \le Ta \le 60°C$ 4008610 Canada -40 to $70°C-40$ to $85°CTo 95\% at 40°C non-condensingReport availableFront IP66, rear IP20Stainless steel BS 3146-2:1977 ANC4B (316)Complies with 2014/30/EU$	TERMINAL CON	NECTIONS
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Accessories and sealing kit rear of instrument. # rear of instrument. # Backlight Green may be loop or separately powered Loop powered Separately powered and sealing kit rear of instrument. # Alarms Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. # See accessory datasheet for details Output Isolated solid state switch Roff Isolated solid state switch 1MΩ min HOW TO ORDER Printed scale card Blank card fitted to each indicator can be supplied printed with specified units of measurement. Model number 14.000mA 20.000mA Backlight 20.000mA Backlight 11 mearisation is required.* Pack of printed scale Contains 26 common units of measurement cards and 2 blank cards. Tag legend Specified tag number or application information laser etched on rear of instrument. Display backlight Dual alarms Backlight Alarms Backlight Legend if required BA495	ETL control No. Environmental Operating temperature Storage temperature Humidity Vibration Enclosure Ingress protection Material EMC Mechanical Terminals Weight	Class I, 20ne 2, AEx in a LeTIC TS Ge Zone 22, AEx is to LIIC T80°C Dc $-40°C \le Ta \le 60°C$ Ex nA is LIC T5 Ge: Ex n IIC T5 Ge Ex is to LIIC T80°C Dc $-40°C \le Ta \le 60°C$ 4008610 Canada -40 to 70°C -40 to 85°C To 95% at 40°C non-condensing Report available Front IP66, rear IP20 Stainless steel BS 3146-2:1977 ANC4B (316) Complies with 2014/30/EU Screw clamp for 0.5 to 1.5mm ² cable with removable terminal blocks. 0.85kg	TERMINAL CON	NECTIONS $ \begin{array}{c} $
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calibration information is not supplied. Can easily be recalibrated on-site.



The BA308E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA308C, but has a much larger full 4 digit display providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA308E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA308E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA308E indicator is installed.

International intrinsic safety certification permits the BA308E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA308E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA308C, thus allowing the BA308E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA328E which has a similar specification with five 29mm high digits and a 31 segment bargraph.

BA308E 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Intrinsically safe ATEX, FM, cFM & IECEx.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 144 x 72mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba308e



Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

Input Current

Display

Type

Span

Zero

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Direction

Reading rate

Overange

Push buttons

ΎP

'Ε'

Linear

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Intrinsic safety

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Storage temp

Environmental

Humidity Vibration

Enclosure EMC

Terminals

Mechanical

Weight

Standard

Standard

Canada cFM

Voltage

Overrange

DIMENSIONS (mm)



Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA324G-SS-PM loop powered 4/20mA indicator is an intrinsically safe panel mounting instrument with a large 5 digit display. It has a rugged, impact resistant IP66 stainless steel front allowing it to be safely mounted in an Ex e, Ex p or Ex t panel enclosure.

IECEx and ATEX intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Main application of the BA324G-SS-PM is to display a measured variable in engineering units when mounted in an Ex e, Ex p or Ex t panel enclosure or cubicle. The front of the indicator has IECEx and ATEX impact and ingress certification allowing it to be installed in a certified panel enclosure without invalidating the enclosure's certification. The rugged front and IP66 protection also make the indicator ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

A large 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA324G-SS-PM indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for simple apparatus. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

A Zener barrier or galvanic isolator is not required when the indicator is installed in an Ex pxb, Ex pzc or Ex t panel enclosure. See Application Guide AG300 for details.

BA324G-SS-PM 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in Ex e, Ex p or Ex t panel enclosures and in harsh environments.

- IP66 stainless steel indicator front maintains Ex e, Ex p or Ex t panel enclosure certification.
- Intrinsically safe ATEX and IECEx certification.
- Loop powered only 1.2V drop.
- 5 digit 29m high display
 & 31 segment bargraph.
- Optional backlight & alarms.
- Root extractor, lineariser and tare function.
- Easy scale card installation on-site.
- 3 year guarantee

beka.co.uk/ba324g-ss-pm





DIMENSIONS (mm)



Current Voltage

.

Overrange

Display

Type Span Zero Decimal point Polarity Zero blanking Direction

Reading rate Bargraph Overrange

Push buttons

E

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Intrinsic safety

Europe ATEX Code

> Input parameters Ui Ii Pi Output parameters

Cert. No.

International IECEx Code

> Parameters Cert. No.

Environmental

Operating temp Storage temp Humidity EMC

Mechanical

Enclosure Material Ingress protection Impact protection Weight Scale card ±200mA or ±30V will not damage the indicator Liquid crystal, non-multiplexed 5 digits 29mm high Adjustable between 0 & ±99999 for a 4/20mA input Adjustable between 0 & ±99999 with 4mA input 1 of 4 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point Display may increase or decrease with increasing 4/20mA input. 2 per second 31 segments 80mm long 99999 or -99999 with all decimal points flashing

4 to 20mA HART® transparent

Less than 1.2V at 20°C

Less than 1.3V at -40°C

loop powered backlight.

Less than 5V with optional

(Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for tare function

±0.02% of span ±1digit ±16µA at input ±1 digit.

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C \leq Ta \leq 70°C

30V dc 200mA 0.84W Comply with requirements for *simple apparatus*. ITS11ATEX27253X (Special conditions only apply for Zone 0)

Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C \leq Ta \leq 70°C As ATEX IECEx ITS 11.0014X (Special conditions only apply for Zone 0)

-40 to +70°C -40 to +85°C to 95% at 40°C noncondensing Complies with EMC Directive 2014/30/EU

316 stainless steel IP66 Enclosure 7J, Window 4J 1.2.kg Slide-in card showing units of measurement and tag information through display window.



TERMINAL CONNECTIONS



Loop powered Separately powered

Ala

Indicator input voltage 5V 11V at 35mA from IS interface

larms	Two alarm outputs each of which may be
	independently configured as a high or low alarm
	contact with a NO or NC output.
Output	Isolated, voltage free solid state switch complying
	with requirements for simple apparatus.
Ron	5Ω + 0.7V max
Roff	1MΩ min

HOW TO ORDER

Model number Display mode Display at: 4.000mA 20.000mA

Accessories Display backlight Dual alarms Scale card marking Units Tag Please specify BA324G-SS-PM Linear, root or lineariser*

XXXX Include position of decimal XXXX point & sign if negative.*

Please specify if required Backlight Alarms

Legend required Legend required

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA326C is an intrinsically safe loop powered indicator that displays the 4/20mA input current on both a 100 segment analogue bargraph and in accurate engineering units on a digital display.

Main application of the BA326C is to display a measured variable or control signal in a hazardous process area. For level and similar measurements the combination of an analogue and digital display provides magnitude and trend information from the bargraph, plus accurate readings in engineering units from the digital display. The relative magnitude of variables can be effectively presented by mounting BA326C indicators side by side. An optional 16 point lineariser enables the BA326C to display non linear variables in linear engineering units.

Control and calibration of the combined indicator is performed via the front panel tactile push buttons. Using these buttons the operator can temporarily display the measured variable as a percentage of span, the input current in mA and the numerical display at 4 and 20mA input. All the calibration functions are contained in easy to understand menus which may be protected by a four digit user selectable security code.

Intrinsic safety certification to the ATEX Directive allows installation throughout Europe. The 4/20mA input terminals comply with the requirements for *simple apparatus* allowing the BA326C to be connected in series with most certified intrinsically safe circuits without the need for an additional system certificate. This, together with the low voltage drop, makes the BA326C very easy to apply. The optional backlight is electrically segregated from the indicator and has been certified as a separate intrinsically safe circuit which may be powered from a Zener barrier or galvanic isolator. Similarly, the two optional alarms are galvanically isolated and each is certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*. IECEx certification permits international installation.

The analogue bargraph which contains 100 segments, provides a rapid indication of the input current, enabling an operator to quickly assess the magnitude and trend of a process variable. The bargraph displays zero to full scale for a 4 to 20mA input, but may be calibrated to show deviation from any input current. Either a column or a single segment display may be selected and if only the analogue display is required, the digital display may be disabled.

Separately powered backlighting is available as an option. The orange output enhances daylight contrast and enables the display to be read when the instrument is installed in a poorly illuminated area.

Optional alarms provide two galvanically isolated solid state outputs which may be independently programmed. For easy comparison with the 4/20mA input, both setpoints are displayed on a second bargraph with annunciators showing the alarm status. Each alarm can control a certified hazardous area load or the output may be transferred to the safe area via a Zener barrier or galvanic isolator.

The IP65 front panel is a robust, easy to clean Noryl moulding surrounding an armoured glass window. A captive neoprene gasket provides a seal between the instrument enclosure and the panel.

BA326C

2-wire 4/20mA analogue & digital indicator

Intrinsically safe for use in all gas hazardous areas

- Loop powered only 1.2V drop.
- Optimum visibility
- Intrinsically safe ATEX & IECEx certification.
- 100 segment bargraph plus digital display.
- Optional: Display backlight Alarms Lineariser
- 144 x 48mm DIN enclosure with IP65 front.
- 3 year guarantee

www.beka.co.uk/ba326c





DIMENSIONS (mm)





The BA327E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry standard BA327C, but has a larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted

The main application of the BA327E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 11mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA327E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block

allowing panel wiring to be completed before the BA327E indicator is installed.

International intrinsic safety certification permits the BA327E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA327E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA327C, thus allowing the BA327E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA307E which has a similar specification with four larger 15mm high digits without a bargraph.

BA327E 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- 5 digit 11mm high display & 31 segment bargraph.
- Intrinsically safe ATEX, FM, cFM & IECEx.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 96 x 48mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba327e



DIMENSIONS (mm

4 to 20mA Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight. ±200mA or ±30V will not damage the indicator.	Panel cut-out	Recommended panel cut-out To achieve an IP66 seal between the instrument and the panel 90 +0.5 / -0.0 x 43.5 +0.5 / -0.0 DIN 43 700 92.0 +0.8 / -0.0 x 45 +0.6 / -0.0
Liquid crystal, non-multiplexed 5 digit 11mm high & 31 segment bargraph. Adjustable between 0 & ±99999 for a 4/20mA input. Adjustable between 0 & ±99999 with 4mA input. 1 of 4 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point Display may increase or decrease with increasing 4/20mA input. 2 per second	0000	
 (Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or a % of span, has a modified function when alarms are fitted. Used for tare function 		BA327E Scale card ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ►
	TERMINAL CON	NECTIONS
16μA at input ±1 digit. Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference. Group II Category 1GD	1 2 3 4 + 4/20mA Terminals 2 & 4 are internally linked for joining return 4/20mA wire	8 9 10 11 + - + Separately powered Lerminals for optional alarms Terminals for optional backlight
Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20	Annoning	
Tamb = -40 to 70°C 30V dc 200mA	Backlight Loop powered Separately powered	Green, may be loop or separately powered. Indicator input voltage 5V max. 9V at 22.5mA from IS interface
0.84W Complies with requirements for <i>simple apparatus</i> .	Alarms Output	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated solid state switch complying with
ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)	Ron Roff	requirements for simple apparatus. $5\Omega + 0.7V$ max $1M\Omega$ min
3610 Entity CL I: Div 1	Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
T5 @ 70°C	Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
3611 Nonincendive CL I, II, III: Div 2 Gp A, B, C, D, E, F & G T5 @ 70°C	Tag legend	Specified tag number or application thermally printed onto rear of the instrument.
3041487	BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

See accessory datasheet for details

HOW TO ORDER

Model number Display mode Display at: 4.000mA 20.000mA

Accessories **Display backlight** Dual alarms Scale card Tag Rear cover and sealing kit

Please specify BA327E

Linear, root or lineariser*

Include position of decimal point & XXXXX sign if negative, plus intermediate XXXXX points if linearisation is required."

Please specify if required Backlight Alarms Legend required Leaend required BA495

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

Input Current

Voltage

Overrange

Display

Туре Span

Zero

Decimal point Polarity Zero blanking Direction

Reading rate Bargraph Overange

Push buttons

ΎP

'Ε'

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Intrinsic safety Europe ATEX Code

Input parameters Ui li Pi

Output parameters

Cert. No.

USA FM Standard Code

> Standard Code

File

Canada cFM File

International IECEx Code

Cert No

Environmental

Operating temp Storage temp Humidity Vibration Enclosure EMC

Mechanical Terminals

Weight

0.84W Complies with requirements for simple apparatus. ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts) 3610 Entity CL I: Div 1 Gp A, B, C, & D

3041487C

Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)

-40 to 70°C -40 to 85°C to 95% at 40°C noncondensing Report available Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks. 0.2kg



The BA327E-SS intrinsically safe, panel mounting loop powered Indicator has a rugged stainless steel enclosure allowing it to be safely installed in an Ex e or Ex p panel, in marine environments or where the front of the instrument is likely to be impacted. The indicator has a full 5 digit display plus a 31 segment bargraph with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

Main application of the BA327E-SS is to display a measured variable in engineering units when mounted in an Ex e or Ex p enclosure located in Zones 1 or 2. The front of the indicator has IP66 ingress and impact protection which allows it to be installed in a certified Ex e or Ex p panel enclosure without invalidating the enclosure certification. The indicator's rugged stainless steel housing and 10mm thick toughtened glass window also make the BA327E-SS ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

The bold 11mm high 5 digit display and 31 segment bargraph provides maximum contrast and have a wide viewing angle, allowing the BA327E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal point positions and a negative sign, may be configured to display any variable between -99999 and 99999.

International intrinsic safety certification allow the BA327E-SS to be installed worldwide. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, permit connection to most intrinsically safe circuits. For applications in combustible dusts the BA327E-SS may be installed in a certified Ex t panel enclosure without invalidating the enclosure's certification.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring are required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface. Two backlights may be separately powered from one intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA327E-SS from the panel or opening the instrument enclosure.

Application Guide AG300 explains how the BA327E-SS and similar instruments may be safely installed in gas and dust hazardous areas. Copies may be downloaded from the BEKA website or requested from the BEKA sales office.

Other models in this range include the BA307E-SS which has a similar specification with four 15mm high digits.

BA327E-SS Rugged 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in Zone 1 Ex e or Ex p panel enclosures and in harsh marine environments

- Rugged IP66 stainless steel enclosure.
- Intrinsically safe Ex ia ATEX, FM, cFM & IECEx.
- Front of indicator maintains Ex e, Ex p and Ex t enclosure certification.
- Loop powered only 1.2V drop.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- Root extractor and 16 segment lineariser.
- 3 year guarantee

www.beka.co.uk/ba327e-ss



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DIMENSIONS (mm)





See accessory datasheet for details

HOW TO ORDER

Model number Display mode Display at: 4 000mA 20.000mA

Accessories

Dual alarms

Support plate

Rear cover and sealing kit

Scale card Tag

XXXXX Display backlight

Backlight Alarms Legend required Legend required Support plate BA495

Please specify

Linear, root or lineariser

Include position of decimal point & sign if

05

negative. Together with intermediate

points if linearisation is required.*

BA327E-SS

XXXXX

Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site

Over range

backlight.

Voltage

Display Туре

Input Current

Span

Zero Decimal point Polarity Zero blanking

Direction

Reading rate Over range

Push buttons

Р

Е

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Hazardous area certification Europe ATEX Code

> Input parameters Ui li Pi Output paramters Cert. Number

USA FM Standard

Code

Standard Code

File

Canada cFM File

International IECEx Code

Cert. Number

Environmental

Operating temperature Storage temperature Humidity Vibration Enclosure Ingress protection Material EMC

Mechanical

Terminals

Weight

Accessories Backlight

Loop powered Separately powered Automatic minus sign Blanked apart from 0 in front of the decimal point. Display may increase or decrease with increasing 4/20mA input. 2 per second 99999 or -99999 with flashing decimal points Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for Tare function

±0.02% of span ±1 digit ±16µA at input ±1 digit

4 to 20mA

input.

Less than 1.2V at 20°C Less than 1.3V at -40°C

high & 31 segment bargraph.

1 of 4 positions or absent

Less than 5V with optional loop powered

±200mA or ±30V will not damage the indicator

Liquid crystal, non-multiplexed 5 digits 11mm

Adjustable between 0 & ±99999 for a 4/20mA

Adjustable between 0 & ±99999 with 4mA input

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Ta = -40 to 70°C

30V dc

200mA 0.84W Comply with requirements for simple apparatus ITS14ATEX28077X (Special conditions permit installation in Ex e, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts)

3610 Entity CL I: Div 1: Gp A, B, C, & D CL I: Zone 0: AEx ia IIC T5 @ 70°C May be installed in an AEx e, AEx p or AEx n panel without invalidating panel's certification. 3611 Nonincendive

CL I, II, III: Div 2: Gp A, B, C & D CL I: Zone 2: Gp IIC T5 @ 70°C 3041487

3041487C

Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Ta = -40 to 70°C IECEx ITS 14.0048X (Special conditions permit installation in Ex e, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts)

-40 to 70°C -40 to 85°C To 95% at 40°C non-condensing Report available

Front IP66, rear IP20 Stainless steel BS 3146-2:1977 ANC4B (316) Complies with 2004/108/EC

Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks. 0.85kg

Green may be loop or separately powered Indicator input voltage increased to 5V max. 9V at 22mA from IS interface



The BA327NE loop powered, panel mounting Indicator has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure located in Zone 2 or 22, without the need for Zener barriers or galvanic isolators. The indicator has a full 5 digit display plus a 31 segment analogue bargraph with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

The main application of the BA327NE is to display a measured variable in meaningful engineering units in Zone 2 or 22. The front of the indicator has certified impact and ingress protection allowing it to be installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure without invalidating the panel's impact and ingress protection.

The bold 11mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a wide viewing angle, allowing the BA327NE indicator to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal point positions and a negative sign, may be configured to display any variable between -99999 and 99999.

ATEX, IECEx and ETL Ex nA non sparking certification allows the BA327NE, when installed in an Ex n, Ex p or Ex e panel to be located in a Zone 2 gas hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA327NE offers a less expensive alternative to intrinsically safe and flameproof indicators. **Ex tc dust certification** also allows the BA327NE, when installed in an Ex tc panel enclosure, to be locateded in a Zone 22 dust hazardous area, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop increases. Powering from a separate supply produces a brighter backlight but requires additional wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA327NE from the panel or opening the instrument enclosure.

Application Guide AG310 which explain how Ex nA certified instruments should be installed may be downloaded from the BEKA associates website, or requested from the BEKA sales office.

Other models in this range include the BA307NE which has a similar specification with four 15mm high digits.

BA327NE Rugged 2-wire 4/20mA 5 digit indicator

Ex nA and Ex tc certified for installation in Ex n, Ex e, Ex p or Ex tc panel enclosure located in Zones 2 or 22

- Rugged IP66 stainless steel enclosure.
- Ex nA & Ex tc certification eliminates the need for Zener barriers and galvanic isolators.
- Loop powered only 1.2V drop.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- Root extractor and 16 segment lineariser.
- 3 year guarantee

www.beka.co.uk/ba327ne



DIMENSIONS (mm)





TERMINAL CONNECTIONS



See accessory datasheet for details

OW TO ORDER

Display backlight Rear cover and sealing kit Please specify BA327NE

Linear, root or lineariser*

Include position of decimal point & sign XXXXX if negative. Together with intermediate XXXXX points if linearisation is required.*

Backlight Alarms Leaend required Leaend required BA495

Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA328E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA328C, but has a much larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA328E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA328E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be

completed before the BA328E indicator is installed.

International intrinsic safety certification permits the BA328E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA328E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA328C, thus allowing the BA328E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA308E which has a similar specification with four larger 34mm high digits without a bargraph.

BA328E 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Intrinsically safe ATEX, FM, cFM & IECEx.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 144 x 72mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba328e



Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail <u>sales@beka.co.uk</u> www.beka.co.uk

Input Current

Display

Туре

Span

Zero

Polarity

Direction

Bargraph

Overange

Push buttons

Έ

Έ

Linea

Zero Span

Intrinsic safety

Code

Ui

li

Pi

Cert. No.

Standard

Standard

Canada cFM

Code

File

File

Code

Cert. No

Storage temp Humidity

Environmental

Vibration

Enclosure

Terminals

FMC

Mechanical

Weight

USA EM

Code

Europe ATEX

Decimal point

Zero blanking

Reading rate

Voltage

Overrange

DIMENSIONS (mm)



to 95% at 40°C noncondensing Report available Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable, removable. 0.35kg

Accessories

Dual alarms

Scale card

Tag

Display backlight

Please specify if required

Backlight

Legend required

Legend required

Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display

if calibration information is not supplied. Can easily be recalibrated on-site.

Alarms



The BA504G-SS-PM loop powered 4/20mA indicator is a rugged, general purpose panel mounting instrument with a large 4 digit display. It has an impact resistant IP66 stainless steel front which maintains the integrity of the panel enclosure in which it is mounted.

Main application of the BA504G-SS-PM is to display a measured variable in engineering units within a harsh process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. Root extraction and an adjustable sixteen segment lineariser enable flow and variables such as tank levels to be shown in linear engineering units. For weighing applications a tare function is included.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, thus the BA504G-SS-PM indicator is easily read in most lighting conditions. An optional backlight is available for installations in poorly illuminated areas. The four digit display, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 and impact protection are provided by a rugged 316 stainless steel front with a 6mm thick armoured glass window and silicone gaskets. Impact and ingress protection have been independently assessed by a UKAS accredited authority.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination enabing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicators voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other panel mounting models in this range include the five digit BA524G-SS-PM and the smaller 4 digit BA507E-SS and 5 digit BA527E-SS.

If flammable atmospheres are present the intrinsically safe BA304G-SS-PM has the same features as the BA504G-SS-PM with international gas and dust certification.

BA504G-SS-PM Rugged 2-wire 4/20mA 4 digit indicator

General purpose panel mounting for use in harsh environments.

- Rugged IP66 stainless steel front maintains panel enclosure's IP66 protection.
- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Optional backlight & alarms.
- Root extractor and 16 segment lineariser.
- Easy scale card installation on-site.
- 3 year guarantee

beka.co.uk/ba504g-ss-pm



Input

Current Voltage

Overrange

Display

Туре

Span

Zero

Decimal point Polarity Zero blanking

Direction

Reading rate Overrange

Push buttons

E

Accuracy at 20°C

Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Environmental

Operating temp Storage temp Humidity EMC

Mechanical

Front of indicator Material Ingress protection Impact Rear Weight

Terminals

Scale card

Accessories Backlight

Loop powered

Separately powered V supply I in 4 to 20mA Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.

 \pm 200mA or \pm 30V will not damage the indicator.

Liquid crystal, non-multiplexed 4 digits 34mm high. Adjustable between 0 & ±9999 for a 4/20mA input. Adjustable between 0 & ±9999 with 4mA input. 1 of 3 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point. Display may increase or decrease with increasing 4/20mA input. 2 per second 9999 or -9999 with all decimal points flashing.

(Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for tare function

±0.02% of span ±1digit ±16µA at input ±1 digit

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

-40 to +70°C -40 to +85°C To 95% at 40°C noncondensing Complies with EMC Directive 2014/30/EU.

316 stainless steel IP66 7J, Window 4J IP20 1.1kg

Orange with screw clamp for 0.5 to 1.5mm² cable.

Slide-in card showing units of measurement and tag information through display window.

Green, may be loop or separately powered. Indicator input voltage increases to 5V

11 to 30V dc 35mA



TERMINAL CONNECTIONS



Output	
Vmax	
Imax	

Ron Boff which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated, voltage free solid state switch 40V dc200mA $5\Omega + 0.7V max$ $1M\Omega min$

HOW TO ORDER

Model number

Display mode Display at: 4.000mA

20.000mA Scale card marking

Tag Accessories Display backli

Units

Display backlight Dual alarms Please specify BA504G-SS-PM

Linear, root or lineariser*

XXXX I Include position of decimal point & sign if negative.*

Legend required Legend required

Please specify if required Backlight Alarms

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA507E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry standard BA507C, but has a much larger full 4 digit display providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70°C and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA507E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 15mm high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA507E indicator to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA507E indicator is installed.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA527E which has a similar specification with five 11mm high digits and a 31 segment bargraph.

If flammable atmospheres are present the BA307E should be used. This has the same features as the BA507E but has been certified for use in hazardous areas.

BA507E 2-wire 4/20mA 4 digit indicator

General purpose

- Loop powered only 1.2V drop.
- 4 digit 15mm high display.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 96 x 48mm DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba507e



DIMENSIONS (mm)





The BA507E-SS rugged general purpose, panel mounting 4/20mA loop powered Indicator, has a stainless steel housing allowing it to be safely installed in harsh industrial and marine environments, or where the front of the instrument is likely to be impacted. Incorporating a full 4 digit display with guaranteed performance between -40 and 70°C, the indicator can be calibrated to show the 4/20mA input current in almost any engineering units.

Main application of the BA507-SS is to display a measured variable in meaningful engineering units within an industrial process area. The rugged stainless steel housing and robust construction make the BA507E-SS ideal for installation in panel enclosures located in harsh environments such as agricultural vehicles and waste water processing plant. The indicator includes a square root extractor for flow applications, a sixteen point fully adjustable lineariser and a tare function which enable most types of 4/20mA process variables to be displayed in linear units.

The stainless steel cast front provides IP66 front of panel ingress protection and a captive silicone gasket seals the joint between the BA507E-SS and the panel enclosure in which it is mounted. The ingress and impact protection provided by the indicator's stainless steel housing, including the 10mm thick glass display window, have been independently tested at maximum and minimum operating temperatures by Intertek Testing and Certification.

A bold 15mm high 4 digit display provides maximum contrast and has a wide viewing angle, allowing the BA307E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal point positions and a negative sign, may be configured to display any variable between -9999 and 9999. An optional backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional wiring and another power supply.

Optional dual alarm outputs which can switch low power loads, such as a sounder, beacon or solenoid valve are available as a factory fitted option. The two galvanically isolated single pole solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA507E-SS from the panel enclosure or opening the instrument case.

Reliability is ensured by component conformal coating, protection from incorrect connection and from radio frequency interference. The indicator has been subjected to thermal endurance and vibration testing and is supported by a three year guarantee.

Other rugged models in this range of loop powered indicators, all of which have a stainless steel enclosure, include the BA527E–SS general purpose indicator which has a similar electrical specification as the BA507E-SS, but has five 11mm high display digits plus a 31 segment bargraph. Intrinsically safe Ex ia and Ex nA 4 and 5 digit models are also included, please see datasheets for the BA307E-SS, BA327E-SS, BA307NE and the BA327NE.

BA507E-SS Rugged 2-wire 4/20mA 4 digit indicator

General purpose for use in harsh & marine environments

- Rugged IP66 stainless steel enclosure.
- Loop powered only 1.2V drop.
- 4 digit 15mm high display.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- Root extractor, 16 segment lineariser and Tare function.
- 3 year guarantee

www.beka.co.uk/ba507e-ss



DIMENSIONS (mm)

SPECIFICATION	
Input	
Current	4 to 20mA
Voltage	Less than 1.2V at 20°C
	Less than 1.3V at -40°C
	Less than 5V with optional backlight loop
	powered.
Over range	±200mA or ±30V will not damage the indicator.
Display	
Туре	Liquid crystal, non-multiplexed
	4 digits 15mm high.
Span	Adjustable between 0 & ±9999 for a
_	4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA
De sins el se sint	input.
Decimal point Polority	1 of 3 positions or absent
Zero blanking	Blanked apart from 0 in front of the
Zero blanking	decimal point
Direction	Display may increase or decrease with
	increasing 4/20mA input.
Reading rate	2 per second
Over range	9999 or -9999 with flashing decimal points
Push buttons	
▼	Shows display with 4mA input
A	Shows display with 20mA input
Р	Displays input in mA or as a % of span,
	has a modified function when alarms are
	fitted.
E	Used for Tare function
Accuracy at 20°C	
Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Environmental	
Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
FIICIOSUIE	

Front IP66, rear IP20 Front 7J, window 4J Stainless steel BS 3146-2:1977 ANC4B (316) Complies with 2004/108/EC

Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks. 0.85kg

Green may be loop or separately powered Indicator input voltage 5V

9 to 30V dc 22.5mA at 9 to 30V

Ingress protection

Impact protection

Loop powered

Separately powered

Supply voltage

Supply current

Material

EMC

Mechanical Terminals

Weight

Accessories Backlight

Alarms

Output Vmax

Imax

Ron

Roff

cards.

Printed scale card

Pack of printed scale

Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated solid state switch 30V dc200mA $5\Omega + 0.7V max$ $1M\Omega min$

Blank card fitted to each indicator can be supplied printed with specified units of measurement

Contains 28 common units of measurement and 2 blank cards.



TERMINAL CONNECTIONS



See accessory datasheet for details

HOW TO ORDER

Model number Display mode Display at: 4.000mA 20.000mA

Accessories Display backlight Dual alarms Scale card Tag Legend required Support plate Rear cover and sealing kit Please specify

BA507E–SS Linear, root or lineariser* XXXX XXXX XXXX Include position of decimal point & sign if negative. Together with intermediate points is linearisation is required.*

Backlight Alarms Legend required

Support plate BA495

Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA508E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA508C, but has a much larger full 4 digit display providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40 & 70°C, and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA508E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA508E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -9999 and 9999. **IP66 front panel protection** and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA508E indicator is installed.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wirings.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA528E which has a similar specification with five 29mm high digits and a 31 segment bargraph.

If flammable atmospheres are present the BA308E should be used. This has the same features as the BA508E but has been certified for use in hazardous areas

BA508E 2-wire 4/20mA 4 digit indicator

General purpose

- Loop powered only 1.2V drop.
- 4 digit 34mm high display.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 144 x 72mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba508e



DIMENSIONS (mm)





The BA524G-SS-PM loop powered 4/20mA indicator is a rugged, general purpose panel mounting instrument with a large 5 digit display and a bargraph. It has an impact resistant IP66 stainless steel front which maintains the integrity of the panel enclosure in which it is mounted.

Main application of the BA524G-SS-PM is to display a measured variable in engineering units within a harsh process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. Root extraction and an adjustable sixteen segment lineariser also enable flow and variables such as tank levels to be shown in linear engineering units. For weighing applications a tare function is included.

The large 29mm high 5 digit display provides maximum contrast and has a very wide viewing angle, thus the BA524G-SS-PM indicator is easily read in most lighting conditions. An optional backlight is available for installations in poorly illuminated areas. The five digit display, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 and impact protection are provided by a rugged 316 stainless steel front with a 6mm thick armoured glass window and silicone gaskets. Impact and ingress protection have been assessed by a UKAS accredited authority.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination enabling the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other panel mounting models in this range include the four digit BA504G-SS-PM and the smaller BA507E-SS and 5 digit BA527E-SS.

If flammable atmospheres are present the intrinsically safe BA324G-SS-PM has the same features as the BA524G-SS-PM with international gas and dust certification.

BA524G-SS-PM Rugged 2-wire 4/20mA 5 digit indicator

General purpose panel mounting for use in harsh environments.

- Rugged IP66 stainless steel front maintains panel enclosure's IP66 protection.
- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Root extractor and 16 segment lineariser.
- Easy scale card installation on-site.
- 3 year guarantee

beka.co.uk/ba524g-ss-pm



Input

Current Voltage

Overrange

Display

Туре

Span

Zero

Decimal point Polarity Zero blanking

Direction

Reading rate Bargraph Overrange

Push buttons

E

Accuracy at 20°C

Linear Root extracting Temperature effect on: Zero Span Series mode rejection

Environmental

Operating temp Storage temp Humidity EMC

Mechanical

Front of indicator Material Ingress protection Impact Rear of indicator Weight

Terminals

Scale card

Accessories Backlight

Loop powered

Separately powered V supply I in 4 to 20mA Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.

 ± 200 mA or ± 30 V will not damage the indicator.

Liquid crystal, non-multiplexed 5 digits 29mm high. Adjustable between 0 & ±99999 for a 4/20mA input. Adjustable between 0 & ±99999 with 4mA input. 1 of 4 positions or absent Automatic minus sign Blanked apart from 0 in front of decimal point. Display may increase or decrease with increasing 4/20mA input. 2 per second 31 segments 80mm long 99999 or -99999 with all decimal points flashing.

(Function in display mode) Shows display with 4mA input Shows display with 20mA input Displays input in mA or as a % of span, has a modified function when alarms are fitted. Used for tare function

 $\pm 0.02\%$ of span ± 1 digit $\pm 16\mu$ A at input ± 1 digit

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

-40 to +70°C -40 to +85°C To 95% at 40°C noncondensing Complies with EMC Directive 2014/30/EU.

316 stainless steel IP66 7J, Window 4J IP20 1.1kg

Orange with screw clamp for 0.5 to 1.5mm² cable.

Slide-in card showing units of measurement and tag information through display window.

Green, may be loop or separately powered. Indicator input voltage increases to 5V

11 to 30V dc 35mA





TERMINAL CONNECTIONS



Output Vmax Imax

Ron Roff configured as a high or low alarm contact with a NO or NC output. Isolated, voltage free solid state switch. 40V dc 200mA $5\Omega + 0.7V$ max 1M Ω min

HOW TO ORDER

Model number

Display mode Display at: 4.000mA 20.000mA

Scale card marking Units Tag

Accessories Display backlight Dual alarms Please specify BA524G-SS-PM

Linear, root or lineariser*

XXXXX I Include position of decimal point & sign if negative.*

Legend required Legend required

Please specify if required Backlight Alarms

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



The BA526C is a new combined analogue and digital indicator which replaces the BA526. It offers enhanced features and improved visibility in a shorter enclosure. Like its predecessor, the BA526C displays the current flowing in a 4/20mA loop on a 100 segment bargraph and in accurate engineering units on a digital display. The instrument is loop powered but only introduces a 1V drop allowing it to be installed in series with almost any 4/20mA loop.

Main application of the BA526C is to display a measured variable or control signal in a process area. For level and similar measurements the combination of an analogue and digital display provides magnitude and trend information from the bargraph, plus accurate readings in engineering units from the digital display. The relative magnitude of variables can be effectively presented by mounting BA526C indicators side by side. An optional 16 point lineariser enables the BA526C to display non linear variables in linear engineering units.

Control and calibration of the combined indicator is performed via the front panel tactile push buttons. Using these buttons the operator can tem-porarily display the measured variable as a percentage of span, the input current in mA and the numerical display at 4 and 20mA input. All the calibration functions are contained in easy to understand menus which may be protected by a four digit user selectable security code.

The analogue bargraph which contains 100 segments, provides a rapid indication of the input current, enabling an operator to quickly assess the magnitude and trend of a process variable.

The bargraph displays zero to full scale for a 4 to 20mA input, but may be calibrated to show deviation from any input current. Either a column or a single segment display may be selected and if only the analogue display is required, the digital display may be disabled.

Separately powered backlighting is available as an option. The orange output enhances daylight contrast and enables the display to be read when the instrument is installed in a poorly illuminated area.

Optional alarms provide two galvanically isolated solid state outputs which may be independently programmed for high or low operation with a normally open or closed output. For easy comparison with the 4/20mA input, both setpoints are displayed on a second bargraph together with annunciators showing the status of both alarms.

The IP65 front panel is a robust, easy to clean Noryl moulding surrounding an armoured glass window. A captive neoprene gasket provides a seal between the instrument enclosure and the panel.

Reliability is ensured by an ISO9001 approved quality control system supported by a three year guarantee. The BA526C is protected from reverse connection and overrange input currents, and incorporates extensive radio frequency filtering to comply with the European EMC Directive.

If flammable atmospheres are present the BA326C should be used. This has the same features as the BA526C and has been certified intrinsically safe in both Europe and the USA.

BA526C

2-wire 4/20mA analogue & digital indicator

General purpose

- Loop powered only 1.1V drop.
- Optimum visibility
- 100 segment bargraph plus digital display.
- Optional:

Display backlight Alarms Lineariser

 144 x 48mm DIN enclosure with IP65 front.

3 year guarantee

www.beka.co.uk/ba526c



DIMENSIONS (mm)

Input		
Current	4 to 20mA	
voltage	Less than 1.1V at 20°C Less than 1.2V at -20°C	0000 0000
Overrange	±200mA will not cause damage	л
Display		
Type Booding rate	Liquid crystal	
Analogue	4 per second	
Digital	2 per second	
Analogue	95mm long 100 segment column or single	
D	segment.	
Range	0 to100% for 4 to 20mA input 41% digit (19999 to 1999) 5 5mm high:	
Digital	selectable dummy trailing zero extends display	
	range to (-19990 to 99990).	Fou
Span	Adjustable between 0 & ±19999	me
Zero	Adjustable between ±19999 with 4mA input	
Decimal point Polarity	1 OF 5 POSITIONS OF ADSENT	
Direction	Display may increase or decrease with	
2	increasing current.	DIN 138.0
Over &	4 least significant digits are blanked	cut-out -0.0 c
underrange.		
Puch buttons	(In operating mode)	
Down button	Shows displays with 4mA input	
Up button	Shows displays with 20mA input	
'P' button	Displays input current in mA or as a percentage	
	of span.	
Accuracy at 20°C		
Analogue	+0.5%	45.0 +0.6
Digital	Linear ±0.02% ±1 digit	-0.0
-	Root extracting 16µA at input ±1 digit	
Temp. effect	10 F^{g} between 20 \$ 60°C	
Digital	±0.5 % between -20 & 60 C	TERMINAL CONN
Zero	Less than 25ppm/°C	TERMINAE CONN
Span	Less than 50ppm/°C	
Series mode	Less than 0.5% error for 1mA pk to pk	
Environmental		
Operating temp	-20 to 60°C	
Storage temp	-40 to 85°C	
Final Active	Front IP65 room IP20	4/20mA
EMC	In accordance with EU Directive 2004/108/EC.	Terminals 2 & 4 are
	full report available.	internally linked for
Mashawiaal		Joining return 4/20mA wire
Terminals	Removable terminal block for 0.5 to	
1 of finitial o	1.5mm ² cables.	
Weight	0.5kg	HOW TO ORDER
Accessories		now to onben
Separately	LED backlight	Please s
powered		Model number BA526C
backlight.	10 to 00) (do not be discussed by undering	Display mode Linear or
Vin	18 to 30V dc, may be dimmed by reducing	Display at 4mA XXXX*
lin	40mA typical	Display at 20mA XXXX*
Alarms	Two independent alarms each of which may be	
	programmed for high or low operation with a	Assessmine Disease
Outrouto	NC or NO output.	Separately Backlight
Oulpuis	Bon less than $50 \pm 0.6V$	powered backlight.
	Roff greater than 180k	Alarms Alarms
	3 1 1 1	Lineariser Lineariser
Lineariser	Provides 16 fully adjustable straight lines which	Scale card Legend
	may be adjusted to compensate for almost any	Tag number Legend
	non-inteal variable.	rag hamber Eegena
Typeset scale	Blank scale card fitted to each indicator can	
card.	be supplied typeset with units of measurement.	
Bargraph scale	Blank scale fitted to each indicator can be	
-argraph oodio	supplied typeset with analogue scale.	
Tennessee	The sum all the substant of a start start start of the	*Will be set to display 0.00 at
ray number	instrument.	#Contact BEKA if calibration



ſ

CONNECTIONS



RDER

Model number	BA526C
Display mode	Linear or root extracting*
Digital display Display at 4mA	XXXX*] Include position of decimal point.
Display at 20mA	XXXX* dummy zero if required & sign if negative.
Accessories	Please specify if required
Separately powered backlight.	Backlight
Alarms	Alarms
Lineariser	Lineariser#
Scale card	Legend
Bargraph scale	Required scale graduations
Tag number	Legend
•	Logona

Please specify

olay 0.00 at 4mA and 100.00 at 20mA with a linear on information is not supplied. #Contact BEKA if calibration of accessories is required.



The BA527E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry tandard BA527C, but has a larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70°C and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA527E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 11mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA527E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. **IP66 front panel protection** and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA527E indicator is installed.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA507E which has a similar specification with four larger 15mm high digits without a bargraph.

If flammable atmospheres are present the BA327E should be used. This has the same features as the BA527E but has been certified for use in hazardous areas.

BA527E 2-wire 4/20mA 5 digit indicator

General purpose

- Loop powered only 1.2V drop.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 96 x 48mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba527e



DIMENSIONS (mm)




The BA527E-SS rugged general purpose, panel mounting 4/20mA loop powered Indicator, has a stainless steel housing allowing it to be safely installed in harsh industrial and marine environments, or where the front of the instrument is likely to be impacted. Incorporating a full 5 digit display plus a 31 segment bargraph with guaranteed performance between -40 and 70°C, the indicator can be calibrated to show the 4/20mA input current in almost any engineering units.

Main application of the BA527-SS is to display a measured variable in meaningful engineering units within an industrial process area. The rugged stainless steel housing and robust construction make the BA527E-SS ideal for installation in panel enclosures located in harsh environments such as agricultural vehicles and waste water processing plant. The indicator includes a square root extractor for flow applications, a sixteen point fully adjustable lineariser and a tare function which enable most types of 4/20mA process variables to be displayed in linear units.

The stainless steel cast front provides IP66 front of panel ingress protection and a captive silicone gasket seals the joint between the BA527E-SS and the panel enclosure in which it is mounted. The ingress and impact protection provided by the indicator's stainless steel housing, including the 10mm thick glass display window, have been independently tested at maximum and minimum operating temperatures by Intertek Testing and Certification.

A bold 11mm high 5 digit display and 31 segment bargraph provides maximum contrast and has a wide viewing angle, allowing the BA327E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal point positions and a negative sign, may be configured to display any variable between -99999 and 99999. An optional backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional wiring and another power supply.

Optional dual alarm outputs which can switch low power loads, such as a sounder, beacon or solenoid valve are available as a factory fitted option. The two galvanically isolated single pole solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA527E-SS from the panel enclosure or opening the instrument case.

Reliability is ensured by component conformal coating, protection from incorrect connection and from radio frequency interference. The indicator has been subjected to thermal endurance and vibration testing and is supported by a three year guarantee.

Other rugged models in this range of loop powered indicators, all of which have a stainless steel enclosure, include the BA507E–SS general purpose indicator which has a similar electrical specification as the BA527E-SS, but has four 15mm high display digits. Intrinsically safe Ex ia and Ex nA 4 and 5 digit models are also included, please see datasheets for the BA307E-SS, BA327E-SS, BA307NE and the BA327NE.

BA527E-SS Rugged 2-wire 4/20mA 5 digit indicator

General purpose for use in harsh & marine environments

- Rugged IP66 stainless steel enclosure.
- Loop powered only 1.2V drop.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- Root extractor and 16 segment lineariser.
- 3 year guarantee

www.beka.co.uk/ba527e-ss



DIMENSIONS (mm)





Model number Display mode Display at: 4.000mA 20.000mA

Accessories Display backlight Dual alarms Scale card Tag Support plate Rear cover and sealing kit Backlight Alarms Legend required Legend required Support plate BA495

Please specify

Linear, root or lineariser*

is required.*

Include position of decimal point &

intermediate points if linearisation

sign if negative. Together with

BA527E-SS

XXXXX

XXXXX

Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

Input

4 to 20mA Current Less than 1.2V at 20°C Voltage Less than 1.3V at -40°C Less than 5V with optional backlight loop powered Over range ±200mA or ±30V will not damage the indicator. Display Liquid crystal, non-multiplexed Туре 5 digits 11mm high & 31 segment bargraph. Adjustable between 0 & ±99999 for a Span 4/20mA input. Adjustable between 0 & ±99999 with 4mA Zero input. 1 of 4 positions or absent Decimal point Automatic minus sign Polarity Blanked apart from 0 in front of the Zero blanking decimal point.

Direction

Reading rate Over range

Push buttons

P

Ε

Accuracy at 20°C Linear Root extracting Temperature effect on: Zero Span

Series mode rejection

Environmental

Operating temperature Storage temperature Humidity Vibration Enclosure Ingress protection Impact protection Material EMC

Mechanical

Terminals

Weight

Accessories

Backlight Loop powered Separately powered Supply voltage Supply current

Alarms

Output Vmax Imax Ron Roff

Printed scale card

Pack of printed scale cards.

±0.02% of span ±1 digit ±16µA at input ±1 digit

Used for Tare function

Less than 25ppm of span/°C Less than 50ppm of span/°C Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Display may increase or decrease with

99999 or -99999 with flashing decimal

Displays input in mA or as a % of span, has a modified function when alarms are

increasing 4/20mA input.

Shows display with 4mA input

Shows display with 20mA input

2 per second

points.

fitted.

-40 to 70°C -40 to 85°C To 95% at 40°C non-condensing Report available

Front IP66, rear IP20 Front 7.J. window 4.J Stainless steel BS 3146-2:1977 ANC4B (316) Complies with 2004/108/EC

Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks. 0.85kg

Green may be loop or separately powered Indicator input voltage 5V

9 to 30V dc 22.5mA at 9 to 30V

Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output. Isolated solid state switch 30V dc 200mA $5\Omega + 0.7V \text{ max}$ $1M\Omega$ min

Blank card fitted to each indicator can be supplied printed with specified units of measurement.

Contains 28 common units of measurement and 2 blank cards.

4



The BA528E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA528C, but has a much larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40°C & 70°C and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA528E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and tank level variables in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA528E indicator to be read easily in most lighting conditions. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between

the indicator and the panel, making the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA528E indicator is installed.

A Backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional alarm outputs which can switch low power loads such as sounders, beacons and solenoid valves are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of each output.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA508E which has a similar specification with four even larger 34mm high digits without a bargraph.

If flammable atmospheres are present the BA328E should be used. This has the same features as the BA528E but has been certified for use in hazardous areas.

BA528E 2-wire 4/20mA 5 digit indicator

General purpose

- Loop powered only 1.2V drop.
- 5 digit 29mm high display & 31 segment bargraph.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- Root extractor and 16 segment lineariser.
- 144 x 72mm
 DIN enclosure.
- 3 year guarantee

www.beka.co.uk/ba528e



DIMENSIONS (mm)



Serial Text [Data] Displays



Low cost operator interfaces which are ideal for simple machine and process control applications in hazardous and safe areas.

- > Intrinsically safe and general purpose models.
- > Field and panel mounting models with IP66 protection.
- > High contrast display with backlight, operator push buttons and two switch outputs.
- > Selectable Modbus, BEKA or Legacy protocol.
- > General purpose models have RS232 or RS485 ports.
- > Displays up to eight variables on one of eleven standard screens, some with bargraphs.
- > Free BEKA ScreenWriter software simplifies design of custom screens.
- > BA201 galvanic isolator has ATEX, IECEx and FM certification.

Intrinsically safe General purpose





FHEE simulation and ScreenWriter software







In_1	Ta9	10.000	Units
In_2	Ta9	20.000	Units
In_3	Ta9	30.000	Units
In_4	Ta9	40.000	Units
In_5	Ta9	50.000	Units
In_6	Ta9	60.000	Units
In_7	Ta9	70.000	Units
In_8	Ta9	80.000	Units



Serial Text [Data] Displays available:

Model No.	Mounting	Operator buttons	Communication	Eur A1 Gas	rope TEX Dust	Certif Intern IEC Gas	ication ational CEx Dust	US Car Gas	A & nada Dust
Ex i intrinsica	ally safe - for use	in Zones 0, 1	& 2 and 20, 21 & 22 where certified						
BA484D	Field	4		~	~	~	v	~	v
BA488C	Panel 144 x 72	6	Via BEKA BA201 galvanic isolator	~	_	~	-	~	_
General Purp	ose - for use in sa	afe areas							
BA684D	Field	4							
BA688C	Panel 144 x 72	6	RS232 or RS485						



Galvanic Isola	ator				
				Certification	
Model No.	Mounting	Communication	Europe ATEX	International IECEx	USA & Canada
[Ex ia] IIC inti	rinsically safe as	sociated apparatus			
BA201	35mm DIN rail	RS232 or RS485	 	 ✓ 	 ✓

sales@beka.co.uk

www.beka.co.uk



The BA484D is an intrinsically safe instrument that can display text and simple graphics in a hazardous area. Incorporating six pushbuttons and two solid state outputs, the BA484D is a low cost operator interface ideal for simple machine and process control applications. Incorporating Modbus RTU, BEKA and Legacy protocol the instrument may be used for new installations or to upgrade existing intrinsically safe systems.

Data and power are supplied via a 2 wire serial data link from a galvanic isolator in the safe area. Two isolators are available, the BA201 has RS232 and RS485 safe area ports and the MTL5051 can be configured with an RS232 or an RS422 port. Both isolators can power and communicate with one or two BA484D serial text displays. Using a 3 wire system, the BA201 can power and communicate with up to four serial text displays.

The high contrast liquid crystal display incorporates a green backlight that is powered by the serial data link enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Four push-buttons which may be used for operator acknowledgments or controls are included below the display. If larger industrial switches are required, up to six external pushbuttons may be connected to the text display. When the remote switches are activated, the front panel push-buttons are automatically disabled.

Two isolated switch outputs, which are controlled via the serial data link, comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Eleven selectable standard screen formats display one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens. The use of a standard display screen format greatly simplifies system design.

The BA484D is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA484D communication parameters and writing each Modbus variable into the BA484D Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

Legacy protocol enables the BA484D to replace an MTL643 to provide ATEX certification and a display backlight. No software or galvanic isolator changes are required.

ATEX, FM, cFM & IECEx intrinsic safety certification allows installation in most gas and dust hazardous areas. Both solid state outputs comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA484D text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature that allows the BA484D to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The enclosure which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection. A separate terminal compartment allows the BA484D to be installed and terminated without exposing the display electronics.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

BA484D Serial text [Data] display

Intrinsically safe for use in gas and dust hazardous areas

 Intrinsically safe ATEX gas or ATEX gas & dust or FM, cFM & ATEX gas

All models have IECEx certification.

- High contrast display with backlight.
- Modbus RTU slave
- BEKA and Legacy protocols.
- 11 standard screen formats.
- Four operator push-buttons & two switch outputs.
- IP66 field mounting GRP enclosure.
- Free simulator and ScreenWriter software.
- 3 year guarantee
 www.beka.co.uk/ba484d



DIMENSIONS (mm)

Display		I
Type	120 x 64 pixel liquid crystal.	< 141
Size Rooklight	86.5mm x 45mm. Reward from acrial link	
Screens	Powered from senar link.	0
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include:	This instrum
	units of measurement and tag information	display one o
Custom format	See Programming Guide	a custom de
Hiddon oproon	ASCII character set, 5 font sizes	screen
Hidden screen	when required	
Operatural		
Front nanel	Four push-buttons which can be software	
i toni panei	interrogated	
External switches	Control may be transferred to six external switches,	
	front panel buttons are inhibited.	0
Switch cable length	5m max	
Outputs	Two software controlled switch outputs.	
Contacts	Isolated single pole solid state switch certified as	Two M6 clearance holes
	Bon less than $5\Omega + 0.7V$	
	Roff greater than $1M\Omega$	-
Intrinsic safety	Ui = 28Vdc	
parameters	Ii = 200 mA	
	PI = 0.85W	
Data transmission		
Baud rate	0.3, 0.6, 1.2, 2.4, 4.8, 9.6 or 19.2k bps.*	_ _
Cable length	100m max at Baud rate of 9.6k bps*	
between isolator(s)	*Depends upon configuration & type of cable _ cos	
a untotu.	instruction manual.	TERMINAL CO
Format	1 or 2 stop hits: odd even or no parity hit:	
ronnat	7 or 8 data bits.	
Protocol	Selectable Modbus RTU REKA or Logoov that is	
FIOLOCOI	compatible with the MTI 643 & MTI 644	654321
Address		
Modbus protocol	1 – 247	IIIII Rx Tx Vsig 0V V+
BEKA protocol	0 – 247 Zero reserved for single	
Legacy protocol	0 – 15 instrument applications	
Intrinsic safety		CONNECTION
Europe ATEX		CONNECTION
Code	Group II Category 1G Ex ia IIC T5 Ga	
	$(Tamb = -40 \text{ to } 60^{\circ}\text{C})$ Dust	Hazardous area
or	Group II Category 1D Ex ia IIIC T80°C Da <i>option,</i>	
	$(1amb = -40 \ 10 \ 60^{\circ} \text{C})$ (1966 J see now to order	
Cert. No.	ITS02ATEX2035	
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22	
Interface	BA201 (See datasheet)	
or	MTL5051 serial communications isolator	
	Input/output RS232 or RS422	
2-wire system	Powers one or two text displays	
3 wire system	With MTL5025 powers up to four text displays	
USA FM	Option, see How to order	
Standard		
Code	T4 @ 60°C	▼
File	3025514	1111
Standard	3611 Nonincendive	
Code	CL I: Div 2: GP A, B, C & D, T4 @ 60°C	©
	CL II, III: Div 2: GP E F & G, T4 @ 60°C	
File	3025514	
Canada cFM		21.8 C 1.8 bar 85L/
File No	3032633C	
International IECEx		
Code	Ex ia IIC T5 Ga	
	(Tamb = -40 to 60°C)	0
or	Ex la IIIC T80°C Da Dust option, see	·
	$(1 \text{ amb} = -40 \text{ to } 60^{\circ}\text{ C})$ IP66] How to order	
Cert. No	IECEx ITS 07.0020	S7 S6 S5 S4 S3 S2
Environmental		11111
Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)	Optional external swit
Storage temp	-40 to 85°C	Madhur Outri
Humidity	To 95% @ 40°C	NOODUS GUIDE Programming Guide
Enclosure	IP66	Instrument simulator
	No error for 10V/m field strength between 150kHz	
	and 1GHz.	HOW TO ORD
Emissions	Complies with the requirements for Class B	
	equipment	
Mechanical	Correct clower for 0.5 to 1.5	Model number
i erminals Weight	Screw clamp for U.S to 1.5mm Cable.	Certification
Accessories	LONG	or
Stainless legend plate	Stainless steel plate etched with tagging or	Accessories
oranness regenu pidle	applicational information secured to the front of	Stainless legend plate
	the instrument	Modbus Guide
Pipe mounting kit	BA392D or BA393	Programming Guide
		Instrument simulator
		DEINA SCIERIIWIIIR



CONNECTIONS



ION



ide ator

May be downloaded from www.beka.co.uk

RDER

Please specify BA AT AT FN

A484D	
TEX gas	All vers
TEX gas & dust	certifica
M, cFM & ATEX gas .	differ fo

ions have IECEx ation. **Note:** Cable entries or FM & ATEX versions

Please specify if required Legend BA392D or BA393 Serial Text Display - Modbus Guide Serial Text Display - Programming Guide Instrument simulator for personal computer Custom screen design aid for personal computer

14



The BA488C is an intrinsically safe instrument that can display text and simple graphics in a hazardous area. Incorporating six push buttons and two solid state outputs, the BA488C is a low cost operator interface ideal for simple machine and process control applications. Incorporating Modbus RTU, BEKA and Legacy protocol the instrument may be used for new installations or to upgrade existing intrinsically safe systems.

Data and power are supplied via a 2 wire serial data link from a galvanic isolator in the safe area. Two isolators are available, the BA201 has RS232 and RS485 safe area ports and the MTL5051 can be configured with an RS232 or an RS422 port. Both isolators can power and communicate with one or two BA484D serial text displays. Using a 3 wire system, the BA201 can power and communicate with up to four serial text displays.

The high contrast liquid crystal display incorporates a green backlight that is powered by the serial data link enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Six push buttons which may be used for operator acknowledgments or controls are included on the instrument front panel. If larger industrial switches are required, these may be connected to the text display rear terminals. When activated, the front panel push-buttons are automatically disabled.

Two isolated switch outputs, which are controlled via the serial data link, comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Eleven selectable standard screen formats display one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens. The use of a standard display screen format greatly simplifies system design.

The BA488C is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA488C communication parameters and writing each Modbus variable into the BA488C Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

Legacy protocol enables the BA488C to replace an MTL644 to provide ATEX certification and a display backlight. No software or galvanic isolator changes are required and the BA488C will fit into the existing panel cut-out.

ATEX, FM, cFM & IECEx intrinsic safety certification allows installation in all gas hazardous areas. Both solid state outputs comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA488C text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature which allows the BA488C to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The front panel of the BA488C has IP66 protection and a neoprene gasket seals the joint between the text display and the panel, making it suitable for use in areas that will be hosed.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

BA488C Serial text [Data] display

Intrinsically safe for use in gas hazardous areas

- Intrinsically safe ATEX, FM, cFM & IECEx certified.
- High contrast display with backlight.
- Modbus RTU slave
- BEKA and Legacy protocols.
- 11 standard screen formats.
- Six operator push buttons & two switch outputs.
- IP66 front panel
- Free simulator and ScreenWriter software.
- 3 year guarantee

www.beka.co.uk/ba488c



120 x 64 pixel liquid crystal.

1, 2, 3, 4 or 8 variables plus bargraph can include units of measurement and tag

Six push buttons which can be software

interrogated. Each button function may be

displayed on the screen. Buttons may be

Control may be transferred to six external switches; front panel buttons are inhibited.

Two software controlled switch outputs.

0.3, 0.6, 1.2, 2.4, 4.8, 9.6 or 19.2k bps.*

100m max at Baud rate of 9.6k bps*

less than $5\Omega + 0.7V$ greater than $1M\Omega$

Powered from serial link.

See Programming Guide

ASCII character set, 5 font sizes May be written to at any time and displayed

86.5mm x 45mm.

information

when required.

disabled.

5m max

Ron

Roff

Ui =

=

li

Pi

as simple apparatus.

28Vdc 200mA

0.85W =

- see instruction manual.

DIMENSIONS (mm)





CONNECTION



Tag number

Modbus Guide Programming Guide Instrument simulator

OW TO ORDER

Model number Accessories Tag strip Modbus Guide Programming Guide Instrument simulator **BEKA ScreenWriter**

Please specify BA488C Please specify if required Legend Serial Text Display - Modbus Guide Serial Text Display - Programming Guide Instrument simulator for personal computer Custom screen design aid for personal computer

Thermally printed strip on rear of instrument.

May be downloaded from www.beka.co.uk

Display Type Size Backlight Screens Standard format

> Custom format Hidden screen

Controls Front panel

External switches

Switch cable length

Outputs Contacts

> Intrinsic safety parameters

Data transmission Speed

Cable length between isolator(s) & BA488C

Format

Protocol

Address Modbus protocol **BEKA** protocol Legacy protocol

Intrinsic safety Europe ATEX Code

Cert. No.

Location Interface

2-wire system 3 wire system or

USA FM Standard Code

File No

Standard Code

File No

Canada cFM File No

International IECEx Code

Cert. No

Environmental

Operating temp Storage temp Humidity Enclosure EMC Immunity

Emissions

Mechanical Terminals

Weight

1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644 1 – 247 0 – 247 Zero reserved for single 0 – 15 instrument applications Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C) ITS02ATEX2036X Special condition only apply for installations in Zone 0 Zone 0, 1 or 2 BA201 (See datasheet) MTL5051 serial communications isolator Input/output RS232 or RS422 owers one or two text displays With MTL5025 powers up to four text displays 3610 Entity CL I; Div 1; GP A, B, C & D T4 @ 60°C 3025514 3611 Nonincendive CL I; Div 2; GP A, B, C & D T4 @ 60°C 3025514 3032633C Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C) IECEx ITS 07.0021X Special condition only apply for installations in Zone 0 -20 to 60°C (certified for use at -40°C) -40 to 85°C To 95% @ 40°C Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU No error for 10V/m field strength between 150kHz and 1GHz. Complies with the requirements for Class B

Removable with screw clamp for 0.5 to 1.5mm² cable. 0.7kg

equipment

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The BA684D is a dc powered instrument that can display text and simple graphics in a process area. Incorporating four pushbuttons and two single pole outputs, the BA684D is a low cost robust operator interface ideal for simple machine and process control applications.

Available with either an RS485 or RS232 port and incorporating Modbus RTU, BEKA and Legacy protocol, the BA684D may be directly connected to many industrial networks and instruments, including new installations and upgrades to existing systems.

A high contrast liquid crystal display incorporates a green backlight allowing the display to be read in all lighting conditions from full sunlight to total darkness. The BA684D text display is therefore suitable for mounting in almost any process location.

Four push-buttons, which may be used for operator acknowledgments or controls, are mounted on the instrument front panel below the display. If larger industrial switches are required for operator acknowledgements, these may be connected to the text display terminals. When external switches are activated, the front panel push-buttons are automatically disabled.

Two switch outputs, which are controlled via the serial data link, may be used to control a small load such as a valve, actuator or sounder.

Standard screen formats contain one, two, three, four or eight variables, together with units of measurement, tag descriptions and bargraphs on some of the screens. Use of one of these eleven standard screens greatly reduces the amount of programming required and will satisfy most display requirements. If a custom display format is required, this can be developed using BEKA protocol.

The BA684D is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA684D communication parameters and writing each Modbus variable into the BA684D Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol allows custom screens using five different font sizes together with, lines, boxes and bargraphs to be produced and stored in non-volatile memory. Simple bit map graphics may be downloaded and stored. Information can also be written to a hidden screen that may be displayed when required.

Legacy protocol enables the BA684D to replace an MTL643 for safe area applications without the need for a galvanic communications isolator and with the added advantage of a display backlight. If required, simple modifications to the host software will allow the enhanced features of the BA684D to be used i.e. five font sizes, simple graphics, additional operator buttons and a second solid state output.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA684D text display, that can be executed by the instrument without intervention from the host. For example, a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature that allows the BA684D to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The robust enclosure which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection. A separate terminal compartment allows the BA684D to be installed and terminated without exposing the display electronics.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

BA684D Serial text [Data] display

General purpose

- High contrast display with backlight.
- Modbus RTU slave
- BEKA and Legacy protocols.
- 11 standard screen formats.
- Four operator push-buttons & two switch outputs.
- IP66 field mounting GRP enclosure.
- Free simulator and ScreenWriter software.
- 3 year guarantee

www.beka.co.uk/ba684d



DIMENSIONS (mm)

Power supply Voltage Current	20 to 36V dc 95mA max
Display Type Size Screens	120 x 64 pixel backlit liquid crystal 86.5 x 45mm
11 standard formats	1, 2, 3, 4 or 8 variables plus units of measurement & tag information, some include bargraphs.
Custom format	See Programming Guide ASCII character set, 5 font sizes
Hidden screen	May be written to at any time and displayed when required.
Controlo	
Front panel	Four push-buttons which can be software interrogated.
External switches	Control may be transferred to six external switches, front panel buttons are inhibited.
Switch cable length	5m max
Outputs Rating	Two software controlled single pole relay contacts 250V; 5A ac 30V; 5A dc Reactive loads must be suppressed
Data transmission	
Speed	0.3, 0.6, 1.2, 2.4, 4.8, 9.6,19.2, 38.4, 67.6 &115.2k bps.
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.
Protocol	Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644
Address	
Modbus protocol	1 – 247
BEKA protocol	0 - 247] Zero reserved for single
Legacy protocol	0 – 15 instrument applications
Environmental	
Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC.
Immunity	No error for 10V/m field strength between 150kHz
Emissions	Complies with the requirements for Class B equipment
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable.
Weight	1.6kg
Accessories	
Stainless legend plate	Stainless steel plate etched with tagging or applicational information secured to the front of the instrument
Pipe mounting kit	BA392D or BA393



TERMINAL CONNECTIONS



CONNECTION



Connections for RS485 communication



Connections for RS232 communication

HOW TO ORDER

Model number	
Communication	ł

Modbus Guide Programming Guide

Instrument simulator

Accessories

Stainless legend plate Legend Pipe mounting kit Modbus Guide Programming Guide Instrument simulator BEKA ScreenWriter

Please specify BA684D RS485 or RS232 port

Please specify if required BA392D or BA393 Serial Text Display - Modbus Guide

Serial Text Display - Programming Guide Instrument simulator for personal computer Custom screen design aid for personal computer

May be downloaded from www.beka.co.uk



The BA688C is a dc powered instrument that can display text and simple graphics in a process area. Incorporating six push buttons and two single pole outputs, the BA688C is a robust low cost operator interface ideal for simple machine and process control applications.

Available with either an RS485 or RS232 port and incorporating Modbus RTU, BEKA and Legacy protocol, the BA688C may be directly connected to many industrial networks and instruments, including new installations and upgrades to existing systems.

A high contrast liquid crystal display incorporates a green backlight allowing the display to be read in all lighting conditions from full sunlight to total darkness. The text display is therefore suitable for mounting in control panels or incorporated into measuring instruments.

Six push buttons which may be used for operator acknowledgments or controls are included on the instrument front panel. If larger industrial switches are required, these may be connected to the text display rear terminals. When activated, the front panel push buttons are automatically disabled.

Two single pole switch outputs, which are controlled via the serial data link, may be used to switch a small load such as a valve, actuator or sounder.

Standard screen formats contain one, two, three, four or eight variables, together with units of measurement, tag descriptions and bargraphs on some of the screens. Use of one of these eleven standard screens greatly reduces the amount of programming required and will satisfy most display requirements. If a custom display format is required, this can be developed using BEKA protocol.

The BA688C is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA688C communication parameters and writing each Modbus variable into the BA688C Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

Legacy protocol enables the BA688C to replace an MTL644 for safe area applications without the need for a galvanic communications isolator and with the added advantage of a display backlight. No software changes are required and the BA688C will fit into the existing panel cut-out. If required, simple modifications to the host software will allow the enhanced features of the BA688C to be used i.e. five font sizes, simple graphics, additional operator buttons and a second output.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA688C text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature which allows the BA688C to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The front panel of the BA688C has IP66 protection and a neoprene gasket seals the joint between the text display and the panel, making it suitable for use in areas that will be hosed.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

BA688C Serial text display

General purpose

- High contrast display with backlight.
- Modbus RTU slave
- BEKA and Legacy protocols.
- 11 standard screen formats.
- Six operator push-buttons & two switch outputs.
- IP66 front panel
- Free simulator and ScreenWriter software.
- 3 year guarantee
 - www.beka.co.uk/ba688c



DIMENSIONS (mm)

Power supply			
Voltage	20 to 36V dc		Recommended panel cut-out
Current	95mA max		to achieve an IP66 seal between the instrument and the panel
Display		Panel cut-o	136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must
Type	120 x 64 pixel backlit liquid crystal		be used
Size	86.5 x 45mm		DIN 43 700
Screens			138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0
11 standard formats	1, 2, 3, 4 or 8 variables plus units of		
	measurement & tag information, some		
Custom format	Include bargraphs.		
Custom tormat	ASCII character set 5 font sizes	00000000	
Hidden screen	May be written to at any time and		
	displayed when required.		
Controls			
Front panel	Six push-buttons which can be software		
	Interrogated. Each button function may		
	may be disabled		
	may be disabled.		Ŧ
External switches	Control may be transferred to six	144	
	external switches; front panel buttons	← 144	→
	are inhibited.	B=(A	BA688C
Switch cable length	5m max	This instrument	can lo
Outpute	Two software controlled single pole	display one of el	even
outputs	relav contacts.	standard screens	or a R
Rating	250V; 5A ac	custom designed s	screen
3	30V; 5A dc		
	Reactive loads must be suppressed		
Data transmission	0.2 0.6 1.2 0.4 4.8 0.6 10.0 28.4	TERMINAL CON	NECTIONS
Speed	0.3, 0.0, 1.2, 2.4, 4.0, 9.0, 19.2, 30.4, 67.6 $8.115.2k$ hps		
	07.0 & 115.2k bps.	Case	
Format	1 or 2 stop bits; odd, even or no parity		S1 S2 S3 S4 S5 S6 S7 A1 A2 A3 A4
	bit; 7 or 8 data bits.		
		V+ 0V 0V B A RS485	External switches Switch outputs
Protocol	Selectable Modbus RTU, BEKA or	Power Comms supply	
	Legacy that is compatible with the		
		CONNECTION	
Address			
Modbus protocol	1 – 247		
BEKA protocol	0 – 247 Zero reserved for single		
Legacy protocol	0 - 15 j instrument applications.	Insti Tag	
Environmontal		0 21 835	4 3 B RS485
Operating temp	-20 to 60°C	21.005	2+ Power
Storage temp	-40 to 85°C	Status Good Units	
Humidity	To 95% @ 40°C	S1 S2 S3 S4 S5 S6 S7	
Enclosure	Front IP66, rear IP20	<u> </u>	
EMC	Complies with EMC Directive	Optional external switches	6
Improve the	2014/30/EU.	Connecti	ons for HS485 communication
ininunity	NO ERIOR IOF IOV/M HEID SITENGIN	BA688C	Host connections
Emissions	Complies with the requirements for		5 4 Tx 4 Tx 4 S S S S S S S S S S S S S S S S S S
	Class B equipment.	28- 2- 59-	3 OV OV 'D' connector
		0- 1- 0- 21.8 C 1.8bar 85L/m	+ Power
Mechanical			
Terminals	Removable with screw clamp for 0.5 to		
Woight	1.5mm Cable.		
weigilt	U.7 KY	Connecti	ons for RS232 communication
Accessories			
Tag number	Thermally printed strip on rear of		
	instrument.		
Modbus Guide		Please specify	
Programming Guide	May be downloaded from www.beka.co.uk	Model number	BA688C
Instrument Simulator	J Custom screen design aid for personal	Communication port	RS485 or RS232
	computer.	Accessories	Please specify if required
		Lag number	Legend Serial Text Display Modbus Guide
		Programming Guide	Serial Text Display - Modbus Guide Serial Text Display - Programming Guide
		Instrument simulator	Instrument simulator for use on personal

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computer.



The BA201 communications isolator is a dedicated interface for connecting intrinsically safe BEKA Serial Text Displays to a safe area computer system. The isolator provides intrinsically safe galvanic isolation between the safe and hazardous areas, plus conversion of the RS232 or RS485 safe area serial data to the dedicated communications signalling required by BEKA Serial Text Displays.

The isolator also powers the Serial Text Displays and depending upon the wiring configuration, up to four displays may be connected to each BA201. To prevent earth loops both communications ports are functionally isolated from the BA201 power supply terminals allowing an earthed or floating supply to be used.

No configuration is required it is only necessary to connect to the required RS232 or RS485 safe area port, the isolator will automatically function at any of the serial text display communication rates between 300 and 19.2k baud. The RS485 driver turnaround is automatic and optimised for the baud rate in use. Four green LEDs on the top of the isolator indicate status. One LED shows that the device is powered; the others indicate when the RS232 port is being used and when the isolator is transmitting to, or receiving from the serial text display.

The enclosure, which is moulded in ABS and polycarbonate, is DIN rail mounting and only 22.6mm wide making it compatible with many proprietary galvanic isolators and Zener barriers. To simplify installation and commissioning the terminals are colour coded and removable.

IECEx and ATEX associated apparatus certification permits the BA201 isolator, when mounted in a safe area, to power and communicate with up to four BEKA intrinsically safe serial text displays mounted in a hazardous area. Either BA484D field mounting or BA488C panel mounting models text displays may be used, or a mixture of both models may be connected to one BA201 communications isolator.

FM and cFM intrinsic safety certification allow the BA201 communication isolator to be used for applications in the USA and Canada. Both certifications permit the BA201 to power and communicate with up to four hazardous area BA484D and BA488C serial text displays. The BA201 isolator may be mounted in the safe area, or in Division 2 or Zone 2.

BA201 Communications isolator

Interface for BEKA intrinsically safe Serial Text Displays

- Powers and communicates with BA484D & BA488C serial text displays.
- RS232 and RS485 safe area port.
- ATEX, FM, cFM and IECEx certification.
- DIN rail mounting
- 3 year guarantee

www.beka.co.uk/ba201



FM APPROVED





Power supply Voltage 20 - 35V dc Current 100mA typical at 24V powering two Text Displays in a three wire system. Safe area communication RS232 or RS485 Port Unused port should not be connected. Intrinsic safety Associated apparatus Туре Location Safe area **Europe ATEX** EN60079-11:2007 Standard Group II Category (1) G [Ex ia] IIC Code Cert. No. ITS07ATEX25602 USA FM Standard 3610 Entity Intrinsically safe associated apparatus for connection to: Code CL I, II, III; Div 1 GP A, B, C, D, E, F & G AEx ia IIC Ta 60°C In accordance with Control Drawing Cl201-12 BA201 may be located in safe (unclassified) Location area or in Div 2 / Zone 2 See certificate for details Nonincendive 3029711 File Canada cFM CSA 22.2 No 157 Standard Code Intrinsically safe associated apparatus for connection to: CL I, II, III; Div 1 GP A, B, C, D, E, F & G Ex ia IIC Ta 60°C In accordance with Control Drawing Cl201-12 Location BA201 may be located in safe (unclassified) area or in Div 2 / Zone 2 Nonincendive See certificate for details 3029711C File International IECEx Standard IEC60079-11:2006 Code [Ex ia] IIC IECEx ITS 07.0014 Cert. No. Environmental Operating temp -20 to 60°C (ATEX & IECEx Certified for use between -40 and 70°C) Storage temp -40 to 85°C To 95% @ 40°C noncondensing Humidity Polycarbonate and ABS moulding IP20 Enclosure EMC Complies with EU Directive 2014/30/EU Mechanical Screw clamp for 0.5 to 1.5mm² cable. Terminals Removable terminal blocks. Colour Hazardous area wiring blue Mounting 35mm 'top hat' DIN rail Weight 0.15kg Accessories Tag number Thermally printed strip on top of instrument.

NUMBER OF TEXT DISPLAYS

The BA201 can power and communicate with multiple BA484D or BA488C Serial Text Displays, the maximum number depends upon the wiring configuration.

Two-wire connection

No. of Text Displays	Backlight brilliance	
1 2	Full Reduced	
Three-wire connection		
No. of Text Displays	Backlight brilliance	
1 2 3 4	Full Full Reduced Reduced	

HOW TO ORDER

Model number
Accessories

Tag strip

Please specify BA201 Please specify if required Legend

DIMENSIONS (mm)



TERMINAL CONNECTIONS



SYSTEM CONNECTIONS



Fieldbus Indicators & Displays



An extensive range of bus powered, single and eight variable Displays, Indicators and Listeners for use with FOUNDATION fieldbus and Profibus PA systems in hazardous or safe areas.

FIELDBUS INDICATORS

5 digit 20mm high LCD digits with a 31 segment bargraph

- > Single variable FOUNDATION fieldbus models
- 8 variable FOUNDATION fieldbus models which can be nodes or listeners.
- > 8 variable Profibus PA models which can be nodes or listeners.
- > Ex ia and Ex ic certification permits use with higher voltages in Zone 2.

FIELDBUS DISPLAYS Graphical display which can show up to 8 variables

- > Models for FOUNDATION fieldbus or Profibus PA applications.
- > Choice of 11 standard display screen formats, some with bargraphs.
- > Backlight
- > 6 optional outputs



Fieldbus indicator digits shown full size





Eioldhuoln	diantara and	Dioploy	vo ovoiloblo
FIEIDIOUS	0.0210152100		vs avaliane

							Certifi	cation		
Model No.	Mounting	Variables		Protocol	Eu A1	rope TEX	Interna	ational Ex	US Car	A & nada
					Gas	Dust	Gas	Dust	Gas	Dust
Ex ia & Ex ic intrinsically	safe - for us	se in Zones ()	, 1 & 2 a	and 20, 21 & 22 where	certifi	ed				
INDICATORS										
BA414DF	Field	1		FF ITK 6 compliant	~	v	~	v	~	v
BA444DF Node or Listener	Field	8		FF or Profibus PA	~	v	~	v	~	v -
BA418CF	Panel	1		FF ITK 6 compliant	~	-	~	-	~	-
BA448CF Node or Listener	Panel	8		FF or Profibus PA	~	-	~	-	~	_
Ex ia intrinsically safe - f	or use in Zo	nes 0, 1 & 2 a	and 20, 2	21 & 22 where certified	d					
DISPLAYS										
BA484DF *	Field	8	۱	FF ITK 6 compliant	~	×	~	v	1	v
BA488CF *	Panel	8	ſ	or Profibus PA	~	_	~	-	~	_
*Not Canada										
Ex nL & Ex tD - for use in	Zones 2 an	d 22 without	Zener b	arriers or galvanic iso	olators	. Only	for lega	су арр	licatio	ns
INDICATORS										
BA414NDF	Field	1		FF ITK 6 compliant	~	~	~	~	-	-
BA444NDF Node or Listener	Field	8		FF or Profibus PA	~	v	 ✓ 	×	-	-
General Purpose - for us	e in safe are	as								
INDICATORS										
BA614DF	Field	1		FF ITK 6 compliant						
BA644DF Node or Listener	Field	8		FF or Profibus PA						
BA618CF	Panel	1		FF ITK 6 compliant						
BA648CF Node or Listener	Panel	8		FF or Profibus PA						
DISPLAYS										
BA684DF	Field	8	1	FF ITK 6 compliant						
BA688CF	Panel	8	ſ	or Profibus PA						
	Hazardous ar	rea		Safe area						
	BIN	BA488CE								
	U3 Te	mp Stirrer rFM								
		1.45 42.424			Λ Γ	Vienla	vorl	ndiaa	tor f	or
	9.8	724 2.5780			AL	ispia	y 01 I	nuica		JI .
	And a second	12			eve	ery ap	plica	tion -	deliv	ered
					rea	dy for	[•] insta	allatio	n	
	Fieldbus			FISCO Power						
Terminator		Ter	minator	Supply & Host Segment						
				Coupler						
	EIECO									
Field	Field Device									
sales@beka.	co.uk	WW	w.be	eka.co.uk		+44	146	2 43	830	



The BA414DF-F Fieldbus Indicator is a cost-effective intrinsically safe field mounting instrument that displays a single fieldbus process variable in a hazardous area. Housed in a robust IP66 GRP enclosure, the instrument has a large, high contrast five digit display, plus a horizontal bargraph. The BA414DF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA414DF-F only requires a 2-wire connection to the intrinsically safe fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION[™] fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle which enables the BA414DF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the fieldbus variable's range.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection, which has been independently assessed by Intertek Testing Services - report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX intrinsic safety certification allows the BA414DF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA414DF-F indicator may therefore be connected to almost any intrinsically safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada, plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification. Details of the versions available are shown in the How to Order section on the reverse side of this datasheet.

The FOUNDATION[™] fieldbus Interface Guide contains commissioning information for the BA414DF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. For users who require a stainless steel identification label, the indicator can be supplied with a laser engraved stainless steel legend plate mounted on the front of the instrument.

For panel mounting applications see the BA418CF-F datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

BA414DF-F FOUNDATION™ fieldbus Fieldbus indicator Single variable

Intrinsically safe for use in gas and dust hazardous areas

- 20mm high easy to read
 5 digit display.
- 31 segment bargraph
- FOUNDATION[™] fieldbus protocol, ITK 6.3 compliant.
- Compatible with most system hosts.
- Intrinsically safe ATEX gas or ATEX gas & dust or FM, cFM & ATEX gas

All models have IECEx certification.

- Entity Ex ia & Ex ic parameters, FISCO compliant.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba414df-f



DIMENSIONS (mm)

Display			
Туре	Liquid crystal		
	5 digits plus sign, 20mm high (-99999 to 99999)		
	31 segment bargraph	<u>ح 141</u>	>
Variables	Single		
Fieldbus communicati	ion	TAG NUMBER	
Voltage	9 to 32V (Limited by intrinsic safety	9999	7
	parameters)		
Current	13mA		ALE
Compliant with	Clauses 11 and 22	0	0
Protocol	FOUNDATION [™] fieldbus, ITK 6.3 compliant		
Function block	1 x IS (input selector)	⊕ LEGEND PL/	
		0	22
Intrinsic safety			
Europe ATEX		_ <u>+</u>	
Code	Group II Cat. 1G EX IA IIC 14 Ga		terminal
	Group II Cat. 3G Ex ic IIC T4 Gc		compartment Two M6 clearance holes
	$Ta = -40^{\circ}C$ to $70^{\circ}C$		ior surface mounting
0 "			Three cable entries
01	FISCO field device Ex ia IIC T4 Ga		ATEX certification M20 x 1.5 tapped.
	Group II Cat. 3G Ex ic IIC T4 Gc		and one temporary hole plug.
	Group II Cat. 1D Ex ia IIIC T100°C IP66 Da		FM certification 22.25 Ø plain holes
	Group II Cat. 3D Ex ic IIIC T100°C IP66 Dc । क्व 🛱	<u> </u>	Shown with optional legend plate
	Ta = -20°C to 60°C		
Input parameters	FISCO Ex ia entity Ex ic entity		
	Ui 17.5V 22.0V 32V		
	li 380mA 250mA 125mA	TERMINAL CO	ONNECTIONS
Location	PI 5.32W 1.2W IW		
Gas	Zone 0, 1 or 2		0 Ø
Dust	Zone 20, 21 or 22		Ca
Cert No	ITS06ATEX25313X		1 2
USA FM			
Code	GP A, B, C, D, F, F & G		Fieldbus
	T4 @ 70°C	Accessories	
		Scale legend	Units of measurement marked onto display
Standard		0	escutcheon.
Code	GP A, B, C, D, E, F & G	Tag legend	Tag number or applicational information
	T4 @ 70°C	Stainless legend	Stainless steel plate etched with tagging
Filo	2027021	plate.	or applicational information secured to the
1 IIC	3027031		front of the instrument.
Canada cFM		Dina mounting kit	
File	3027031C	Pipe mounting kit	BA392D OF BA393
International IECEx	C C C C C C C C C C C C C C C C C C C	FOUNDATION ™	May be downloaded from www.beka.co.uk
Code	As ATEX codes shown above	Fieldbus interface	
Cert. No	IECEX ITS 06.0012X	guide.	
		HOW TO ORD	FR
Environmental	22 14 7020		
Operating temp	-20 to 70°C ATEX & IECEX certification		Please specify
	gas -40°C to 70°C	Model number	BA414DF-F
	dust -20°C to 60°C	Certification	ATEX gas & dust
Storage temp	-40 to 85°C	or	FM, cFM & ATEX gas differ for FM &
Enclosure	IP66		ATEX versions.
EMC	In accordance with EU	Accessories	Place encoder if required
	Directive 2014/30/EU	Escutcheon markings	ricase specify if required
Mechanical		Scale	Scale legend
Terminals	Screw clamp for 0.5 to 1.5mm ² cable.	Tag	Tag legend
Weight	1.6kg	Stainless legend plate	Legend BA392D or BA393



The BA414NDF-F Fieldbus Display is a new cost-effective Type nL field mounting instrument that can display a single fieldbus process variables in a Zone 2 or Zone 22 hazardous area. Housed in a robust IP66 GRP enclosure, the instrument has a large, high contrast five digit display, plus a horizontal bargraph. The BA414NDF-F uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA414NDF-F only requires a 2-wire connection to the Type nL fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION[™] fieldbus hosts is ensured by the use of a single *Input Selector* function block which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has been registered by The Fieldbus Foundation and Device Description Files may be downloaded from their web site or from www.beka.co.uk.

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle which enables the BA414NDF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the fieldbus variable's range.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection, which has been independently assessed by Intertek Testing Services - report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX Type nL certification allows the BA414NDF-F to be installed in Zone 2 gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Non-incendive Concept (FNICO) simplifying system design and documentation. Separate entity input safety parameters also allow connection to most non-FNICO Type nL systems. A BA414NDF-F indicator may therefore be connected to almost any Type nL fieldbus segment, provided the segment can supply 13mA to power the instrument.

IECEx approvals allow installation in the growing number of countries accepting IECEx certificates. The approval includes FNICO certification.

The FOUNDATION[™] fieldbus Interface Guide contains commissioning information for the BA414NDF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk.

Units of measurement and the instrument application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom engraved stainless steel plate mounted on the front of the enclosure.

For nonincendive applications in the USA & Canada please see datasheets for the BA414DF-F and BA418CF-F. These field and panel mounting fieldbus indicators have FM and cFM nonincendive approval.

BA414NDF-F FOUNDATION™ fieldbus Fieldbus indicator Single variable

Type nL certified for use in Zones 2 and 22

- 20mm high easy to read 5 digit display.
- 31 segment bargraph
- FOUNDATION[™] fieldbus protocol.
- Type nL certification ATEX & IECEx gas & dust
- Entity parameters & FISCO compliant.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba414ndf-f



DIMENSIONS (mm)

Display		
Туре	5 digits plus sign, 20mm high	◄ 141
	(-99999 to 99999)	1
Variables	Single	
Fieldbus communicat	tion	s
Voltage	9 to 32V 13mΔ	12
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode	N
Protocol	Clauses 11 and 22 FOUNDATION [™] fieldbus	0
Function block	1 x IS (input selector)	e e e e e e e e e e e e e e e e e e e
Type nL certification Europe ATEX		
Code	Group II Category 3G	
	EX NL IIC 14 ENICO Field Device Ex nl IIC T4	
and	Group II Category 3D	_
	Ex tD A22 IP66 T100°C	
	$Iamb = -20 \text{ to } 60^{\circ} \text{C}$	
Input parameters		
Entity	Ui = 36V	
	Pi = 1.2W	TERMINAL C
ENICO	lli = 17.5V	
11100	ii = 380 mA	
	Pi = 5.32W	
Location		
Gas	Zone 2	
Dust	Zone 22	Accessories
Type Examination Certificate	ITS06ATEX45315	Scale legend
		Tag legend
Code	Ex nL IIC T4	rag legend
	FNICO Field Device Ex nL IIC T4	Stainless legend
and	Ex tD IIIC T100°C Dc IP66 Ta = -20 to 60° C	tagging secured to the
	Ta = -20100000	
Cert. No.	IECEx ITS 06.0015	Pipe mounting kit
Environmental		Fieldhus interface
In flammable gas	-20 to 70°C	guide
In combustible dust	-20 to 60°C	
Storage temp	-40 to 85°C	HOW TO ORL
Humidity	To 95% @ 40°C	Model number
Enclosure	IP66	
EMC	In accordance with EU Directive	Accessories Escutcheon markings
Immunity	BS EN 61326:1998	Scale
	Operates normally with conducted 3Vrms	Tag
	Operates normally with conducted 3Vrms between 0.15kHz and 80MHz.radiated 10V/m between 80MHz and 1GHz.	Tag Stainless legend plate Pipe mounting kit
Emissions	Operates normally with conducted 3Vrms between 0.15kHz and 80MHz.radiated 10V/m between 80MHz and 1GHz. CISPR16-1/2 Class A	Tag Stainless legend plate Pipe mounting kit
Emissions	Operates normally with conducted 3Vrms between 0.15kHz and 80MHz.radiated 10V/m between 80MHz and 1GHz. CISPR16-1/2 Class A	Tag Stainless legend plate Pipe mounting kit
Emissions Mechanical Terminals	Operates normally with conducted 3Vrms between 0.15kHz and 80MHz.radiated 10V/m between 80MHz and 1GHz. CISPR16-1/2 Class A Screw clamp for 0.5 to 1.5mm ² cable.	Tag Stainless legend plate Pipe mounting kit



ONNECTIONS



Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or applicational information marked onto display escutcheon.
Stainless legend agging secured to the	Stainless steel plate engraved with plate or applicational information
	front of the instrument.
Pipe mounting kit	BA392D or BA393
Fieldbus interface guide	May be downloaded from www.beka.co.uk
HOW TO ODD	ED

Please specify if required

Please specify BA414NDF-F

Scale legend Tag legend e Legend BA392D or BA393



The BA418CF-F Fieldbus Indicator is a cost-effective intrinsically safe panel mounting instrument that displays a single fieldbus process variable in a hazardous area. Housed in a robust panel mounting enclosure with an IP66 front, the instrument has a large, high contrast five digit display and a horizontal bargraph. The BA418CF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA418CF-F only requires a 2-wire connection to the intrinsically safe fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION[™] fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle, thus enabling the BA418CF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the range of the fieldbus variable.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA418CF-F indicator is installed.

ATEX intrinsic safety certification allows the BA418CF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA418CF-F indicator may therefore be connected to almost any intrinsically safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada, plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification.

The FOUNDATION[™] fieldbus Interface Guide contains commissioning information for the BA418CF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. Tag information can also be thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA414DF-F datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

BA418CF-F FOUNDATION™ fieldbus Fieldbus indicator Single variable

Intrinsically safe for use in all gas hazardous areas

- 20mm high easy to read
 5 digit display.
- 31 segment bargraph
- FOUNDATION[™] fieldbus protocol, ITK 6.3 compliant.
- Compatible with most system hosts.
- Intrinsically safe ATEX, FM, cFM & IECEx certification.
- Entity Ex ia & Ex ic parameters, FISCO compliant.
- 144 x 72mm
 DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba418cf-f



DIMENSIONS (mm)

					Build
Display					
Туре	Liqu	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph Single			
	31 s				
Variables	Sing				
Fieldbus communicat	ion				
Voltage	9 to	32V (Limite	ed by intrinsic s	afety	
Current	para 13m	ameters)			
Compliant with	IEC	61158-2 3 [.]	1.25kbits/s Volt	age Mode	
Protocol	Fou	NDATION [™] f	ieldbus, ITK 6.3	compliant.	
Function block	1 x	IS (input se	lector)		
Intrinsic safety					
Europe ATEX	0.10				
Code	FIS	up II Catego CO field de	vice Ex ia IIC T	7 14 Ga 4 Ga	
	Gro	up II Catego	ory 3G Ex ic IIC	T4 Gc	←──
	Ta =	= -40°C to 7	∕0°C		
Input parameters		FISCO	Ex ia entity	Ex ic entity	
	Ui	17.5V	22.0V	32V	
	li Di	380mA	250mA	125mA	
	FI	5.5277	1.200	1 V V	
Location	Zon	e 0, 1 or 2			
Cert. No.	ITS	06ATEX253	314X		TER
USA FM					
Standard	361	0 Entity			
Code	GP	LUV1	h		
	T4	@ 70°C	•		
	0.04	4			
Code	361 CL	1 Nonincen	dive		
0000	GP	A, B, C & C)		
	T4 (@ 70°C			Accesso
File	302	7031			Scale
T lie	002	/001			
Canada cFM	000	70010			Tag le
File	302	/0310			rugio
International IECE	x				T
Code			shown above		Tag si
Cert. No	IEC	EX 115 06 (J013X		
Environmental					FOUN
Operating temp	-20	to 70°C			Fieldb
	(AI	EX, FM & II ification -40	ECEX		guide.
Storage temp	-40	to 85°C	010700)		HOW
Humidity	To 9	95% @ 40°	С		
Enclosure FMC	Fror	nt IP66, rea Innlies with I	r IP20 FMC Directive 2	2014/30/FU	Model nu
EMO	001	iplies with i		2014/00/20	Model Ha
Mechanical	-				Accesso
Ierminals	Ren	novable wit	n screw clamp f	or 0.5 to	Escutche
Weight	0.7	ini cable.			Tag
-		-			_
					Tag strip



TERMINAL CONNECTIONS



Accessories Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon
Tag strip	Tag number or application thermally printed onto rear of instrument
FOUNDATION ™ Fieldbus interface guide.	May be downloaded from www.beka.co.uk
HOW TO ORD	ER
Nodel number	Please specify BA418CF-F

essories tcheon markings	Please specify if required
cale	Legend
ag	Legend



The BA444DF-F FOUNDATION™ fieldbus Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports FOUNDATION[™] fieldbus protocol; for PROFIBUS ΡA systems an alternative version is available - please see the BA444DF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION™ fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.

When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444DF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX intrinsic safety certification allows the BA444DF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept FISCO simplifying system design and documentation. Separate Ex ia & Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA444DF-F may therefore be connected to almost any intrinsically safe fieldbus segment that can supply an additional 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the many countries accepting international IECEx certificates. All approvals incorporate FISCO certification. Details of the versions available are shown in the How to Order section on the reverse of this datasheet.

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA448CF-F FOUNDATION™ fieldbus indicator datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

BA444DF-F FOUNDATION™ fieldbus Fieldbus Indicator 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- Large 5 digit display with bargraph.
- ◆ FOUNDATION[™] fieldbus protocol.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- Intrinsically safe ATEX gas
 or ATEX gas & dust
 or FM, cFM & ATEX gas

All versions have IECEx certification.

- Entity Ex ia & Ex ic parameters, FISCO compliant.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba444df-f



DIMENSIONS (mm)





The BA444DF-P PROFIBUS Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see BA444DF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA444DF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons. As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA444DF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444DF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX intrinsic safety certification allows the BA444DF-P to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept FISCO simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA444DF-P may therefore be connected to almost any intrinsically safe fieldbus segment that can supply an additional 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the many countries accepting international IECEx certificates. All approvals incorporate FISCO certification. Details of the versions available are shown in the How to Order section on the reverse of this datasheet.

Operator acknowledgements may be returned to the fieldbus host when the BA444DF-P is configured as a fieldbus Node. Six digital Input function blocks in the indicator which are supported by most PROFIBUS hosts enable the status of the four front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA444DF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA448CF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

BA444DF-P PROFIBUS PA Fieldbus Indicator 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- Large 5 digit display with bargraph.
- PROFIBUS PA protocol
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- Intrinsically safe ATEX gas
 or ATEX gas & dust
 or FM, cFM & ATEX gas
 or INMETRO

All models have IECEx certification.

- Entity Ex ia & Ex ic parameters, FISCO compliant.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba444df-p



DIMENSIONS (mm)





The BA444NDF-F FOUNDATION[™] fieldbus Indicator is a Type n instrument that can display up to eight fieldbus process variables within a Zone 2 or 22 hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the instrument supports FOUNDATION[™] fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA444NDF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION[™] fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.

When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444NDF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator's electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The instrument may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX Type n and tD certification allows the BA444NDF-F to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Non-incendive Concept FNICO simplifying system design and documentation. Separate entity input safety parameters also allow connection to most non-FNICO Type n systems. A BA444NDF-F may therefore be connected to almost any Type n fieldbus segment that can supply an additional 13mA to power the instrument.

IECEx approval permits installation in the many countries already accepting international IECEx certificates. The approval incorporate FNICO certification and dust approval for use in Zone 22.

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For nonincendive applications in the USA and Canada please see datasheet for the BA444DF FOUNDATION fieldbus™ Listener which has FM and cFM nonincendive approval.

BA444NDF-F FOUNDATION™ fieldbus Fieldbus indicator 8 variable

Type n certified for use in Zones 2 and 22

- Large 5 digit display with bargraph.
- FOUNDATION[™] fieldbus protocol.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- Type n ATEX & IECEx certification for gas & dust.
- Entity parameters & FNICO compliant.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba444ndf-f





DIMENSIONS (mm)

Display

Type

уре

Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph 8

Controls

Front panel

Variables

Four push buttons for selecting displayed variable and configuration.

Fieldbus communication

Fieldbus communication Voltage 9 to 32V Current 13mA. Compliant with IEC61158-2 31.25kbits/s Voltage Mode. FOUNDATION™ fieldbus Protocol Function blocks 2 x IS (input selector) 6 x DI (digital input) Function Fieldbus Node or Listener selected by front panel push buttons.

Type n and tD certification

Europe ATEX Code

Group II Category 3GD FNICO Field Device Ex nL IIC T4 Ex tD A22 IP66 T100°C Ta = -20 to 60°C

Location Gas Dust Cert. No.

Zone 2 Zone 22 ITS06ATEX45315

International IECEx

Code

Ex nL IIC T4 FNICO Field Device Ex nL IIC T4 Ex tD IIIC T100°C Dc IP66 Ta = -20 to 60°C IECEx ITS 06.0015

Environmental

Cert. No.

Operating temp Storage temp Humidity Enclosure -20 to 60°C -40 to 85°C To 95% @ 40°C IP66

In accordance with EU Directive 2004/108/EC

Mechanical

EMC

Terminals

Weight

Screw clamp for 0.5 to 1.5mm² cable. 1.6kg

Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend plate.	Stainless steel plate etched with tag number or application attached

to front of the instrument. Pipe mounting kit BA392D or BA393



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA444NDF-F FOUNDATION™ fieldbus
Accessories	Please specify if required
Escutcheon markings Scale Tag Stainless legend plate Pipe mounting kit	Scale legend Tag legend Legend BA392D or BA393



The BA444NDF-P PROFIBUS Indicator is a Type n instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see BA444NDF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA444NDF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons. As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA444NDF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444NDF-P Profibus indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX Type n and tD certification allows the BA444NDF-P to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Non-incendive Concept FNICO simplifying system design and documentation. Separate entity input safety parameters also allow connection to most non-FNICO Type n systems. A BA444NDF-P may therefore be connected to almost any Type n fieldbus segment that can supply an additional 13mA to power the instrument.

IECEx approval permits installation in the many countries already accepting international IECEx certificates. The approval incorporate FNICO certification and dust approval for use in Zone 22.

Operator acknowledgements may be returned to the fieldbus host when the BA444NDF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the four front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA444NDF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For nonincendive application in the USA and Canada please see datasheet for BA444DF-P PROFIBUS indicator which has FM and cFM nonincendive approval.

BA444NDF-P PROFIBUS PA Fieldbus indicator 8 variable

Type n certified for use in Zones 2 and 22

- Large 5 digit display with bargraph.
- PROFIBUS PA protocol
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- Type n ATEX & IECEx certification for gas & dust.
- Entity parameters & FNICO compliant.
- IP66 field mounting GRP enclosure.
- 🔶 3 year guarantee

www.beka.co.uk/ba444ndf-p





Profibus interface

guide

DIMENSIONS (mm)

Display Type	Liquid crystal	
	(-99999 to 99999) 31 segment bargraph	_
Variables	8	
Controls Front panel	Four push buttons for selecting displayed variable and configuration. May be used for returning operator acknowledgements when configured as a fieldbus node.	
Fieldbus communication	1	
Voltage	9 to 32V	-
Current Compliant with	ISMA IEC61158-2 31.25kbits/s Voltage	
	Mode.	
Protocol Profibus User Organisation	PROFIBUS PA Approval certificate Z01505	
Function	Fieldbus Node or Listener selected via front panel push buttons.	
Function blocks		
Profibus PA node Listener	8 x AO; 6 x DI Captures data in DS-33 format	Т
Type n and tD certification	on	
Code	Group II Category 3GD	
	Ex tD A22 IP66 T100°C	
1	Ta = -20 to 60°C	
Gas	Zone 2	
Dust	Zone 22	
Cert. No.	ITS06ATEX45315	
International IECEx		
Code	Ex nL IIC T4	
	FNICO Field Device EX nL IIC 14	
	$Ta = -20 \text{ to } 60^{\circ}\text{C}$	
Cert. No.	IECEx ITS 06.0015	H
Environmental		
Operating temp	-20 to 60°C	Ν
Storage temp	-40 to 85°C	4
Enclosure	IP66	E
EMC	In accordance with EU Directive 2004/108/EC	5
Mechanical		Г
Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable. 1.6kg	
Accessories Scale legend	Units of measurement marked onto	
	display escutcheon.	
Tag legend	Tag number or application marked onto display escutcheon.	
Stainless legend plate	Stainless steel plate etched with tag number or application attached to front of the instrument.	
Pipe mounting kit	BA392D or BA393	

May be downloaded from

www.beka.co.uk



ERMINAL CONNECTIONS



OW TO ORDER

Nodel number Accessories Please specify if required Escutcheon markings Scale Tag Stainless legend plate Pipe mounting kit BA392D or BA393

BA444NDF-P PROFIBUS

Please specify

Scale legend Tag legend Legend



The BA448CF-F Fieldbus Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the instrument supports FOUNDATION ™ fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA448CF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION[™] fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.

When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA448CF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA448CF-F indicator is installed.

ATEX intrinsic safety certification allows the BA448CF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept FISCO simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA448CF-F indicator may therefore be connected to almost any intrinsically FOUNDATION™ safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification.

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA444DF-F FOUNDATION[™] fieldbus datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

BA448CF-F FOUNDATION™ fieldbus Fieldbus Indicator 8 variables

Intrinsically safe for use in all gas hazardous areas

- Large 5 digit display with bargraph.
- FOUNDATION[™] fieldbus protocol.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- Intrinsically safe ATEX, FM, cFM & IECEx.
- Entity Ex ia & ic parameters, FISCO compliant.
- 144 x 72mm
 DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba448cf-f



DIMENSIONS (mm)





The BA448CF-P PROFIBUS Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION[™] fieldbus systems an alternative version is available - please see BA448CF-F FOUNDATION[™] fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA448CF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons.

As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA448CF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA448CF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the

joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA448CF-P indicator is installed.

ATEX intrinsic safety certification allows the BA448CF-P to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA448CF-P indicator may therefore be connected to almost any intrinsically safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification.

Operator acknowledgements may be returned to the fieldbus host when the BA448CF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA448CF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA444DF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

BA448CF-P PROFIBUS PA Fieldbus Indicator 8 variables

Intrinsically safe for use in all gas hazardous areas

- Large 5 digit display with bargraph.
- PROFIBUS PA protocol
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- Intrinsically safe ATEX, FM, cFM, INMETRO & IECEx.
- Entity Ex ia & ic parameters & FISCO compliant.
- 144 x 72mm
 DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba448cf-p



DIMENSIONS (mm)

Display			
Туре	Liquid crystal		Decommonded need out out
	5 digit 20mm high		Recommended panel cut-out
	(-99999 to 99999) 21 cogmont bargraph		To achieve an IP65 seal between the instrument and the panel
Variables	8	Panel cut-ou	ut 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Vanabioo			be used
Fieldbus communication	on		DIN 43 700
Voltage	9 to 32V (Limited by intrinsic safety parame-		138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0
a .	ters)		
Current	13mA		
Compliant with	IEC61158-2 31.25KDits/s Voltage Mode		
Protocol			
Profibus User	Approval certificate Z01505		
Organisation.			
Function	Fieldbus Node or Listener selected via front		
	panel push buttons.		
Function blocks			
Profibus PA node	8 x AO; 6 x DI		
Listener	Captures date in DS-33 format		
Intrinsic safety			
Europe ATEX			اسودوندوسا _ الوسم
Code	Group II Category 1G Ex ia IIC T4 Ga		₽
	FISCO field device Ex ia IIC T4 Ga		
	Group II Category 3G Ex ic IIC T4 Gc		
	$Ta = -40^{\circ}C$ to $70^{\circ}C$. 144	
		← 111	>
Input parameters	FISCO Ex ia entity Ex ic entity	associates B	A448CF
	Ui 17.5V 22.0V 32V	TAG	
	II 380mA 250mA 125mA		
	PI 5.32W 1.2W IW		
Location	Zone 0, 1 or 2		SCALE
Cert. No.	ITS06ATEX25314X		
Standard		TERMINAL CON	NECTIONS
Code	GPABC&D		
	T4 @ 70°C	Q.	
Standard	3611 Nonincendive		1 2
Code	CL I: Div 2	The second se	
	GP A, B, C & D		
	14 @ 70°C		Fieldbus
Filo	3027031	N	on polarised
FIIE	3027031		
Canada cFM			
File	3027031C	Accessories	Linite of management mayled ante
		Scale legend	display escutcheon
International IECEx		Tag legend	Tag number or application marked onto
Code	As ATEX code shown above	rug legena	display escutcheon.
Cert. No	IECEx ITS 06 0013X		
	NCC 10 0070V	PROFIBUS interface	May be downloaded from
	NGC 12.0873A	guide.	www.beka.co.uk
Environmental			
Operating temp	-20 to 70°C	HOW TO ORDER	2
	(ATEX, FM & IECEx		
	certification -40°C to 70°C)		Please specify
Storage temp	-40 to 85°C		
Humidity	10 95% @ 40°C	iviodei number	DA4480L-L LKOLIRO2
Frankary	Enant ID00 man ID00		
Enclosure	Front IP66, rear IP20	Accessories	Please specify if required
Enclosure EMC	Front IP66, rear IP20 In accordance with EU Complies with EMC Directive 2014/30/EU	Accessories Certification	Please specify if required INMETRO
Enclosure EMC	Front IP66, rear IP20 In accordance with EU Complies with EMC Directive 2014/30/EU	Accessories Certification Escutcheon markings	Please specify if required INMETRO
Enclosure EMC Mechanical	Front IP66, rear IP20 In accordance with EU Complies with EMC Directive 2014/30/EU	Accessories Certification Escutcheon markings Scale	Please specify if required INMETRO Legend
Enclosure EMC Mechanical Terminals	Front IP66, rear IP20 In accordance with EU Complies with EMC Directive 2014/30/EU Removable with screw clamp for 0.5 to	Accessories Certification Escutcheon markings Scale Tag	Please specify if required INMETRO Legend Legend
Enclosure EMC Mechanical Terminals	Front IP66, rear IP20 In accordance with EU Complies with EMC Directive 2014/30/EU Removable with screw clamp for 0.5 to 1.5mm ² cable.	Accessories Certification Escutcheon markings Scale Tag	Please specify if required INMETRO Legend Legend
Enclosure EMC Mechanical Terminals Weight	Front IP66, rear IP20 In accordance with EU Complies with EMC Directive 2014/30/EU Removable with screw clamp for 0.5 to 1.5mm ² cable. 0.7kg	Accessories Certification Escutcheon markings Scale Tag Tag strip	Please specify if required INMETRO Legend Legend Legend


The BA484DF-F Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA484DF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Fieldbus Foundation or the BEKA websites

Powered by the fieldbus the BA484DF-F only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA484DF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA484DF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

Comprehensive documentation includes a FOUNDATION[™] fieldbus Interface Guide. ATEX, FM and IECEx intrinsic safety certification allows the BA484DF-F to be installed in gas and dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe systems is possible using the entity concept.

This allows a BA484DF-F display to be directly connected to almost any hazardous fieldbus segment, provided that the segment can supply the 25mA consumed by the display.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for simple apparatus allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA484DF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

For panel mounting applications

see the BA488CF-F datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

BA484DF-F FOUNDATION™ fieldbus Fieldbus display 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- FOUNDATION[™] fieldbus protocol, ITK 6.3 compliant.
- Compatible with most system hosts.
- High contrast display with backlight.
- Intrinsically safe ATEX gas or ATEX gas & dust or FM & ATEX gas
 All models have IECEx certification.
 FISCO compliant.
- Six optional local alarm outputs.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba484df-f



DIMENSIONS (mm)

Display Type Size Backlight Screens Standard format	 120 x 64 pixel liquid crystal 86.5mm x 45mm Powered from fieldbus 1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information 	This instrum can displi one of elev	nent ay ven
Controls Front panel	Four push buttons scroll the indicator display between screens when the BA484DF-F is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms.		
Fieldbus communication Voltage Current Compliant with Protocol Function blocks FOUNDATION™ fieldbus	9 to 32V (Limited by intrinsic safety parameters) 25mA IEC61158-2 31.25kbits/s Voltage Mode FOUNDATION [™] fieldbus, ITK 6.3 compliant 1 x MAQ (Multiple Analogue Qutput)] <i>Selectable</i>	Two M6 clearance holes fo	or surface mounting
or Intrinsic safety Europe ATEX	2 x IS (Input Selector) on-site	19	Three cable entries ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug.
Code or	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C) Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66		FM certification 22.25 Ø plain holes
Cert. No.	ITS04ATEX22778	TERMINAL CO	ONNECTIONS
Intrinsic safety parameters	Ui = 17.5V li = 380mA Pi = 5.32W	2 1	A6 A5 A4 A3 A2 A1
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22	Fieldby	
USA FM Standard Code	<i>Option, see How to order</i> 3610 Entity CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C	u elabe	Optional local alarm outputs
File Standard Code File	3022546 3611 Nonincendive CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP F & G, T4 @ 60°C 3022546	Cas	A12A11 A10 A9 A8 A7
International IECEx Code	Group II Category 1G Ex ia IIC T5 Ga		Optional alarm outputs
or	$ \begin{array}{l} (\text{Tamb} = -40 \text{ to } 60^\circ\text{C}) \\ \text{Group II Category 1D Ex ia IIIC T80^\circ\text{C} Da} \\ (\text{Tamb} = -40 \text{ to } 60^\circ\text{C}) \text{ IP66} \end{array} \begin{array}{l} \text{Dust option,} \\ \text{see How} \\ \text{to order} \end{array} $	Contacts	Isolated single pole solid state switch certified as simple apparatus. Ron less than $5\Omega + 0.7V$
Cert. No Environmental Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)	Intrinsic safety parameters	Roff greater than 1MΩ Ui = 28Vdc li = 200mA Pi = 0.84W
Storage temp Humidity	-40 to 85°C To 95% @ 40°C	Tag strip	Printed legend behind the display window
Enclosure EMC	IP66 In accordance with EU Directive 2014/30/EU	Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Mechanical Terminals	Screw clamp for 0.5 to 1.5mm ² cable.	Pipe mounting kit	BA392D or BA393
Weight Accessories	1.6kg	FOUNDATION [™] fieldbus interface guide	May be downloaded from www.beka.co.uk
Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument	HOW TO ORD	ER
	push buttons as: combined high and low alarm high or low alarm	Model number	Please specify BA484DF-F All models have JECEy
	Note: Alarms are not accessible from the fieldbus system host	Certification or or	ATEX gas & dust FM & ATEX gas & lost FM & ATEX gas
		Accessories Six alarms Tag strip Tag plate Pipe mounting kit	Please specify if required Alarms Tag strip legend Tag plate legend BA392D or BA393



The BA484DF-P Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA484DF-P only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA484DF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is re-quired. Configuration of the BA484DF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

ATEX, FM and IECEx intrinsic safety certification allows the BABA484DF-P to be installed in gas and dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe systems is possible using the entity concept. This allows a BA484DF-P display to be directly connected to almost any hazardous fieldbus segment, provided that the segment can supply the 25mA consumed by the display. Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for simple apparatus allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA484DF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

The four push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA484DF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For panel mounting applications see the BA488CF-P datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA484DF-F fieldbus display.

BA484DF-P PROFIBUS PA Fieldbus display 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- PROFIBUS PA protocol.
- Compatible with most system hosts.
- High contrast display with backlight.
- Intrinsically safe ATEX gas or ATEX gas & dust or FM & ATEX gas or INMETRO

All models have IECEx certification. FISCO compliant.

- Four operator push buttons & six optional local alarm outputs.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba484df-p



DIMENSIONS (mm)

Display Type Size Backlight Screens Standard format Controls Front panel	 120 x 64 pixel liquid crystal 86.5mm x 45mm Powered from fieldbus 1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information Four push buttons scroll the indicator display between screens when the BA484DF-P is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms and may be used to return operator inputs to the system host. 	This ins can di one of standard	41 trument isplay eleven screens P E P
External switches Switch cable	Control may be transferred to six external switches; front panel buttons may be inhibited or operated in parallel. Length 5m max		
		I wo M6 clearance hole	es for surface mounting 117
Fieldbus communication Voltage Current Compliant with Protocol Function blocks PROFIBUS PA	9 to 32V (Limited by intrinsic safety parameters) 25mA IEC61158-2 31.25kbits/s Voltage Mode PROFIBUS PA 8 x AO (Analogue Output) 6 x DI (Digital Input)		Three cable entries ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug. FM certification 22.25 Ø plain holes
Intrinsic safety			
Europe ATEX Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C) Group II Category 1D Ex ia IIIC T80°C Da see How	TERMINAL	CONNECTIONS
Cert. No.	(Tamb = -40 to 60°C) IP66 ^J to order ITS04ATEX22778	S7 S6 S5 S4	S3 S2 S1 2 1 A6 A5 A4 A3 A2 A1
Intrinsic safety parameters	Ui = 17.5V li = 380mA Pi = 5.32W FISCO compliant	External sv	witches Fieldbus - + - + - +
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22		Optional alarm outputs
USA FM Standard Code File	Option, see How to order 3610 Entity CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C 3022546		gg ▲12A11 ▲10 А9 А8 А7 ➡ ↓ ↓ ↓ ↓
Standard Code File	3611 Nonincendive CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP F & G, T4 @ 60°C 3022546		 - + - + - + Optional alarm outputs
	000.0		
International IECEx Code or	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C) Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66	Contacts Intrinsic safety	Isolated single pole solid state switch certified as simple apparatus. Ron less than $5\Omega + 0.7V$ Roff greater than $1M\Omega$ Ui = 28Vdc
Cert. No	IECEx ITS 05.0006	parameters	II = 200 mA Pi = 0.84W
Brazil INMETRO	NCC 12.0845	Tag strip	Printed legend behind the display window
Environmental Operating temp Storage temp	-20 to 60°C (ATEX gas certification -40 to 60°C) -40 to 85°C	Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Humidity Enclosure	To 95% @ 40°C IP66	Pipe mounting kit	BA392D or BA393
EMC Immunity	In accordance with EU Directive 2004/108/EC BS EN 61326:1998 Operates normally with conducted 3Vrms interfer- ance between 0.15kHz and 80MHz, or radiated	PROFIBUS PA interface guide	May be downloaded from www.beka.co.uk
Emissions	CISPR16-1/2 Class A	HOW TO OF	RDER
Maahaniaal			
Mechanical Terminals Weight Accessories	Screw clamp for 0.5 to 1.5mm ² cable. 1.6kg	Model number Certification	Please specify BA484DF-P ATEX gas r ATEX gas & dust r ATEX gas & dust r ATEX gas & dust
Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as:	10 10 10	r INMETRO gas for FM & ATEX models
	combined high and low alarm high or low alarm	Accessories Six alarms	Please specify if required Alarms
	Note: Alarms are not accessible from the fieldbus system host	Tag plate Pipe mounting kit	Tag plate legend BA392D or BA393



The BA488CF-F Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA488CF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Foundation fieldbus or the BEKA websites

Powered by the fieldbus the BA488CF-F only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA488CF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA488CF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons. ATEX, FM & IECEx intrinsic safety certification allows the BA488CF-F to be installed in gas hazardous areas worldwide. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe segments is possible using the entity concept. This allows a BA488CF-F to be directly connected to almost any hazardous fieldbus providing the segment can supply the 25mA consumed by the display.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for *simple apparatus* allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA488CF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

Comprehensive documentation includes a FOUNDATION[™] fieldbus Interface Guide.

For field mounting applications see the BA484DF-F datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

BA488CF-F FOUNDATION™ fieldbus Fieldbus display 8 variables

Intrinsically safe for use in all gas hazardous areas

- FOUNDATION[™] fieldbus protocol, ITK 6 compliant.
- Compatible with most system hosts.
- High contrast display with backlight.
- Intrinsically safe ATEX, FM and IECEx certification FISCO compliant.
- Six optional local alarm outputs.
- IP66 front panel
- 3 year guarantee

www.beka.co.uk/ba488cf-f



SPE

DIMENSIONS (mm)

SPECIFICATION	
Display	
Туре	120 x 64 pixel liquid crystal
Size Backlight	86.5mm x 45mm Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can
	Include:
	tag information
• • •	
Front panel	Six push buttons scroll the indicator display
	between screens when the BA488CF-F is
	configured to display more variables than fit
	optional local alarms.
Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	25mA
Compliant with	EC61158-2 31.25kbits/s Voltage Mode
Function blocks	Foundation ····· fieldbus, TFK 6.3 compliant
FOUNDATION fieldbus TM	1 x MAO (Multiple Analogue Output) Selectable
or	2 x IS (Input Selector) on-site
Intrinsic safety	
Europe ATEX	Crown II Category 10 Ev in IIC TE Ca
Code	(Tamb = -40° C to 60° C)
Cert. No.	ITS04ATEX22779X
	Special condition only apply for installations
Intrinsic safety	Ui = 17.5V FISCO
parameters	$\begin{array}{ll} II &= 380 \text{mA} \\ Pi &= 5.32 \text{W} \end{array}$ compliant
Location	Zone 0, 1 or 2
USA FM	
Standard	3610 Entity CL I: Div 1: GP A B C & D
0000	T4 @ 60°C
File No	3022546
Standard	3611 Nonincendive
Code	CL I; Div 2; GP A, B, C & D
File No	14 @ 60°C 3022546
	000.0
International IECEx	Group II Category 1G Ex ia IIC T5 Ga
Obde	$(Tamb = -40^{\circ}C \text{ to } 60^{\circ}C)$
Cert. No.	IECEx ITS 05.0007X
	in Zone 0
Environmental Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure FMC	Front IP66, rear IP20 Complies with FMC Directive 2014/30/FU
Mechanical	Removable with screw clamp for 0.5 to
101111111015	1.5mm ² cable.
Weight	0.7kg
Accessories	
Alarms	Six galvanically isolated outputs which may
	be linked to displayed variables.
	push buttons as:
	combined high and low alarm
	Note: Alarms are not accessible from the





HOW TO ORDER

Model number

Accessories Six alarms Tag strip

Please specify BA488CF-F

Please specify if required Alarms Legend

USA Sta Co

File



The BA488CF-P Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA488CF-P only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA488CF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA488CF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

ATEX, FM & IECEx intrinsic safety certification allows the BA488CF-P to be installed in gas hazardous areas worldwide. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe segments is possible using the entity concept. This allows a BA488CF-P to be directly connected to almost any hazardous fieldbus providing the segment can supply the 25mA consumed by the display. Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for simple apparatus allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA488CF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host

The six push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA488CF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For field mounting applications see the BA484DF-P datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA488CF-F fieldbus display.

BA488CF-P PROFIBUS PA Fieldbus display 8 variables

Intrinsically safe for use in all gas hazardous areas

- PROFIBUS PA protocol
- Compatible with most system hosts.
- High contrast display with backlight.
- Intrinsically safe ATEX, FM, INMETRO and IECEx certification FISCO compliant.
- Six operator push buttons & six optional local alarm outputs.
- IP66 front panel
- 3 year guarantee

www.beka.co.uk/ba488cf-p



DIMENSIONS (mm)

Display Type Size Backlight

Backlight Screens Standard format

Controls Front panel

External switches

Switch cable

Fieldbus communication

Voltage Current Compliant with Protocol Function blocks PROFIBUS PA

Intrinsic safety

Europe ATEX Code

Cert. No.

Intrinsic safety parameters

Location

USA FM Standard Code

File No

Standard Code

File No

International IECEx Code

Cert. No.

Brazil INMETRO

. .

Environmental Operating temp Storage temp Humidity Enclosure EMC Immunity

Emissions

Mechanical Terminals

Weight

Accessories

Alarms

120 x 64 pixel liquid crystal 86.5mm x 45mm Powered from fieldbus 1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information Six push buttons scroll the indicator display between screens when the BA488CF-P is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms and may be used to return operator inputs to the system host. Control may be transferred to six external switches; front panel buttons may be inhibited or operated in parallel. 5m max length. 9 to 32V (Limited by intrinsic safety parameters) 25mA EC61158-2 31.25kbits/s Voltage Mode PROFIBUS PA 8 x AO (Analogue Output) 6 x DI (Digitl Input) Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C) ITS04ATEX22779X

Special condition only apply for installations in Zone 0

Zone 0, 1 or 2

3610 Entity CL I; Div 1; GP A, B, C & D T4 @ 60°C 3022546 3611 Nonincendive

CL I; Div 2; GP A, B, C & D T4 @ 60°C 3022546

Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C) IECEx ITS 05.0007X Special condition only apply for installations in Zone 0

NCC 12.0833X

-20 to 60°C (certified for use at -40°C) -40 to 85°C To 95% @ 40°C Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU BS EN 61326:1998 Operates normally with conducted 3Vrms interference between 0.15kHz and 80MHz, or radiated 10V/m interference between 80MHz and 1GHz. CISPR 16-1/2 Class A

Removable with screw clamp for 0.5 to 1.5mm² cable.

Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm Note: Alarms are not accessible from the fieldbus system host



TERMINAL CONNECTIONS



 $\begin{array}{rl} \text{solution} & \text{isolated single pole solution date switch defined as simple apparatus.} \\ \text{Ron less than } 5\Omega + 0.7V \\ \text{Roff greater than } 1M\Omega \\ \text{Intrinsic safety} & \text{Ui} = 28Vdc \\ \text{parameters} & \text{Ii} = 200\text{mA} \\ \text{Pi} = 0.84W \\ \text{Tag number} \\ \end{array}$

PROFIBUS PA interface guide

HOW TO ORDER

Model number

Accessories Certification Six alarms Tag strip Please specify BA488CF-P

Please specify if required INMETRO Alarms Legend

May be downloaded from www.beka.co.uk



The BA614DF-F Fieldbus Indicator is a new cost-effective field mounting instrument that displays a single fieldbus variable in a process area. Housed in a robust IP66 GRP enclosure, the instrument has a large, high contrast five digit display, plus a horizontal bargraph. The BA614DF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA614DF-F only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION™ fieldbus hosts is ensured by the use of a single Input Selector function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk.

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle which enables the BA614DF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the fieldbus variable's range.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its

robust construction provides IP66 protection, which has been independently assessed by Intertek Testing Services report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

The FOUNDATION[™] fieldbus Interface Guide contains commissioning information for the BA614DF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. For users who require a stainless steel identification label, the indicator can be supplied with a laser engraved stainless steel legend plate mounted on the front of the instrument.

For panel mounting applications see the BA618CF-F datasheet. This instrument is electrically identical to the BA614DF-F but is housed in a 144 x 72 panel mounting enclosure with an IP66 front.

For use in hazardous areas the intrinsically safe BA414DF-F and Type nL BA414NDF-F single variable fieldbus indicators are available. These have similar specifications as the BA614DF-F plus international certification allowing installation in most gas and dust hazardous areas.

BA614DF-F FOUNDATION™ fieldbus Fieldbus indicator Single variable

General purpose

- Large easy to read
 5 digit display.
- 31 segment bargraph
- FOUNDATION[™] fieldbus protocol, ITK 6.3 compliant.
- Compatible with most system hosts.
- Bus powered, only 13mA consumption.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba614df-f



Pipe mounting

interface guide

kit

Fieldbus

BA392D or BA393

www.beka.co.uk

May be downloaded from

Liquid crystal 5 digits plus sign, 20mm high

Display Type

DIMENSIONS (mm)

141

Variables	(-99999 to 99999) 31 segment bargraph Single	TAG NUMBER	
Fieldbus communi	cation		
Voltage	9 to 32V	N Ø	
Current	13mA		o 9 🔒
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode		
Drotocol	Clauses 11 and 22	ø	12
FIOLOCOI	compliant		
Function block	1 x IS (input selector)		< <u>→</u>
			Two M6 clearance holes
		_	for surface mounting
Environmental		<u> </u>	_
Operating temp	-20 to 70°C	10	Three M20 x 1.5 tapped cable entries.
Storage temp	-40 to 85°C		one temporary hole plug.
Final Angle A			
Enclosure	In accordance with FU		
Emo	Directive 2014/30/EU		
		TERMINAL CONN	NECTIONS
Mechanical		Q	
Terminals	Screw clamp for 0.5 to 1.5mm ²	Cas	
	cable.		
Weight	1.6kg	4	₽
		-	
Accessories			Fieldbus
Scale legend	Units of measurement marked onto		
	display escutcheon.	HOW TO ORDER	
Ten levend			Please specify
rag legend	information marked onto display	Model number	BA614DF-F
	escutcheon		BROTIEL
		Accessories	Please specify if required
Stainless	Stainless steel plate etched with	Escutcheon markings	
legend plate	tagging or applicational information	Scale	Scale legend
- •	secured to the front of the	Tag	Tag legend
	instrument.	Stainless legend plate	Legend
		Pipe mounting kit	BA392D or BA393



The BA618CF-F Fieldbus Indicator is a cost-effective panel mounting instrument that displays a single fieldbus variable in a control room or process area. Housed in a robust panel mounting enclosure with an IP66 front, the instrument has a large, high contrast five digit display and a horizontal bargraph. The BA618CF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA618CF-F only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATIONTM fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle, thus enabling the BA618CF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the range of the fieldbus variable. The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA618CF-F indicator is installed.

The FOUNDATION Fieldbus Interface Guide contains commissioning information for the BA618CF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. Tag information can also be thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA614DF-F datasheet. This instrument is electrically identical to the BA618CF-F but is housed in a robust IP66 field mounting enclosure.

For use in hazardous areas the intrinsically safe BA418CF-F single variable panel mounting fieldbus indicator is available. This has a similar specification as the BA618CF-F plus international certification allowing installation in most gas hazardous areas. BA618CF-F FOUNDATION™ fieldbus Fieldbus indicator Single variable

General purpose

- Large easy to read
 5 digit display.
- 31 segment bargraph
- FOUNDATION[™] fieldbus protocol ITK 6.3 compliant.
- Compatible with most system hosts.
- Bus powered, only 13mA consumption.
- 144 x 72mm DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba618cf-f



Display

Туре	Liquid crystal
	5 digit 20mm high (-99999 to 99999)
	31 segment bargraph
Variables	Single

Fieldbus communication

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC
	Directive 2014/30/EU

Mechanical

Terminals	Removable with screw clamp for 0.5
	to 1.5mm ² cable.

Weight 0.7kg

Accessories

- Scale legend Units of measurement marked onto display escutcheon.
- Tag legendTag number or application marked
onto display escutcheon
- Tag stripTag number or application thermally
printed onto rear of instrument
- FieldbusMay be downloaded frominterface guidewww.beka.co.uk

DIMENSIONS (mm)



⊖ 12 Fieldbus

HOW TO ORDER

Model number

Please specify BA618CF-F

Accessories	Please specify if requi	red
Escutcheon mark	ings	
Scale	Legend	
Tag	Legend	

Legend

Tag strip



The BA644DF-F FOUNDATION[™] fieldbus Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports FOUNDATION[™] fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA644DF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION[™] fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.

When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA644DF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in

glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 which has protection been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator's electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA648CF-F FOUNDATION[™] fieldbus indicator datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

For use in hazardous areas the intrinsically safe BA444DF-F FOUNDATION[™] fieldbus and the Type n BA444NDF-F FOUNDATION[™] fieldbus indicators are available. These are similar to the BA644DF-F FOUNDATION[™] fieldbus indicator but have international certifications allowing installation in most gas and dust hazardous area.

BA644DF-F FOUNDATION™ fieldbus Fieldbus indicator 8 variables

General purpose

- Large 5 digit display with bargraph.
- FOUNDATION[™] fieldbus Listener.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- IP66 field mounting GRP enclosure.

3 year guarantee

www.beka.co.uk/ba644df-f



DIMENSIONS (mm)

Display Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph		
Variables	8	SCALE	
Controls Front panel	Four push buttons for selecting displayed variable and configuration.		o 0 25
Fieldbus communica Voltage	tion 9 to 32V	_¥_	Two M6 clearance holes
Current	13mA.		for surface mounting
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.		Fitted with two IP66 stopping plugs and one temporary hole plug.
Protocol	FOUNDATION™ fieldbus		
Function blocks	2 x IS (input selector) 6 x DI (digital input)	TERMINAL CON	NECTIONS
Function	Fieldbus Node or Listener selected by front panel push buttons.	Case	12
Environmental Operating temp	-20 to 70°C		 Fieldbus
Storage temp	-40 to 85°C	, in the second s	ion polanseu
Humidity	To 95% @ 40°C	HOW TO ORDER	2
Enclosure	IP66		Please specify
EMC	In accordance with EU Directive 2004/108/EC	Model number	BA644DF-F FOUNDATION™ fieldbus
Mechanical Terminals	Screw clamp for 0.5 to 1.5mm ² cable.	Accessories	Please specify if required
Weight	1.6kg	Scale Tag	Scale legend Tag legend
Accessories Scale legend	Units of measurement marked onto display escutcheon.	Stainless legend plate Pipe mounting kit	Legend BA392D or BA393
Tag legend	Tag number or application marked onto display escutcheon.		
Stainless legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument.		
Pipe mounting kit	BA392D or BA393		

The BA644DF-P PROFIBUS Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see the BA644DF-F FOUNDATION™ fieldbus datasheet.

Field

Device

Fieldbus

Field

Device

PROF

Terminato

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA644DF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons. As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the

Powered by the fieldbus the BA644DF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most Profibus hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

indicator's front panel up and down buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA644DF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

Power

Supply &

Segment Coupler Host

a626.4

•••

1 2

Terminato

Operator acknowledgements may be returned to the fieldbus host when the BA644DF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the four front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA644DF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA648CF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

For use in hazardous areas the intrinsically safe BA444DF-P PROFIBUS and the Type n BA444NDF-P PROFIBUS indicators are available. These are similar to the BA644DF-P PROFIBUS indicator but have international certifications allowing installation in most gas and dust hazardous area.

BA644DF-P PROFIBUS PA Fieldbus Indicator 8 variables

General purpose

- Large 5 digit display with bargraph.
- PROFIBUS PA protocol.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba644df-p



Display

DIMENSIONS (mm)

l ype Variables Controls Front panel	5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph 8 Four push buttons for selecting displayed variable and configura- tion. May be used for returning operator acknowledgements when configured as a fieldbus node.	CT CT CT CT CT CT CT CT CT CT CT CT CT C	
Fieldbus communication	on		Two M6 clearance holes
Voltage	9 to 32V		
Current	13mA	× 000	Three M20 x 1.5 tapped cable entries. Fitted with two IP66 stopping plugs and one temporary hole plug.
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.	<u> </u>	
Protocol Profibus User	PROFIBUS PA Approval certificate Z01505	TERMINAL CON	NECTIONS
Organisation. Function	Fieldbus Node or Listener selected via front panel push buttons.	ase	
Function blocks Profibus-PA node Listener	8 x AO; 6 x DI Captures data in DS-33 format	° ₹	12 Fieldbus
			le a cara le ale cal
Environmental		N	ion polarised
Environmental Operating temp	-20 to 60°C	Ν	ion polarised
Environmental Operating temp Storage temp	-20 to 60°C -40 to 85°C	HOW TO ORDEF	ion polarised
Environmental Operating temp Storage temp Humidity	-20 to 60°C -40 to 85°C To 95% @ 40°C	HOW TO ORDER	Please specify
Environmental Operating temp Storage temp Humidity Enclosure	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66	HOW TO ORDEF	Please specify BA644DF-P PROFIBUS
Environmental Operating temp Storage temp Humidity Enclosure EMC	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC	HOW TO ORDEF Model number Accessories Escutcheon markings	Please specify BA644DF-P PROFIBUS Please specify if required
Environmental Operating temp Storage temp Humidity Enclosure EMC	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC	Model number Accessories Escutcheon markings Scale Tag	Please specify BA644DF-P PROFIBUS Please specify if required Scale legend
Environmental Operating temp Storage temp Humidity Enclosure EMC Mechanical Terminals	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC	Model number Model number Accessories Escutcheon markings Scale Tag Stainless legend	Please specify BA644DF-P PROFIBUS Please specify if required Scale legend Tag legend Legend
Environmental Operating temp Storage temp Humidity Enclosure EMC Mechanical Terminals Weight	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC Screw clamp for 0.5 to 1.5mm ² cable. 1.6kg	HOW TO ORDEF Model number Accessories Escutcheon markings Scale Tag Stainless legend plate Pine mounting kit	Please specify BA644DF-P PROFIBUS Please specify if required Scale legend Tag legend Legend BA392D or BA393
Environmental Operating temp Storage temp Humidity Enclosure EMC Mechanical Terminals Weight Accessories Scale legend	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC Screw clamp for 0.5 to 1.5mm ² able. 1.6kg	Model number Model number Accessories Escutcheon markings Scale Tag Stainless legend plate Pipe mounting kit	Please specify BA644DF-P PROFIBUS Please specify if required Scale legend Tag legend Legend BA392D or BA393
Environmental Operating temp Storage temp Humidity Enclosure EMC Mechanical Terminals Weight Accessories Scale legend Tag legend	 -20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC Screw clamp for 0.5 to 1.5mm² able. 1.6kg Units of measurement marked onto display escutcheon. Tag number or application marked onto display escutcheon. 	Model number Model number Accessories Escutcheon markings Scale Tag Stainless legend plate Pipe mounting kit	Please specify BA644DF-P PROFIBUS Please specify if required Scale legend Tag legend Legend BA392D or BA393
Environmental Operating temp Storage temp Humidity Enclosure EMC Mechanical Terminals Weight Accessories Scale legend Tag legend Stainless legend plate.	 -20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC Screw clamp for 0.5 to 1.5mm² able. 1.6kg Units of measurement marked onto display escutcheon. Tag number or application marked onto display escutcheon. Stainless steel plate etched with tag number or application attached to front of the instrument. 	Nodel number Model number Accessories Escutcheon markings Scale Tag Stainless legend plate Pipe mounting kit	Please specify BA644DF-P PROFIBUS Please specify if required Scale legend Tag legend Legend BA392D or BA393

Profibus interface May be downloaded from guide. May be downloaded from www.beka.co.uk



The BA648CF-F Fieldbus Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the instrument supports FOUNDATION[™] fieldbus protocol; for PROFIBUS PA systems an alternative version is available please see the BA648CF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION[™] fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons. When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's pushbuttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA648CF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA648CF-F indicator is installed.

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA644DF-FFOUNDATION[™] fieldbus datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

For use in hazardous areas the intrinsically safe BA448CF-F FOUNDATION[™] fieldbus indicator is available. This is similar to the BA648CF-F FOUNDATION[™] fieldbus indicator but has international certifications allowing installation in most gas and dust hazardous areas.

BA648CF-F FOUNDATION™ fieldbus Fieldbus Indicator 8 variables

General purpose

- Large 5 digit display with bargraph.
- FOUNDATION™ fieldbus protocol.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- 144 x 72mm DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba648cf-f



DIMENSIONS (mm)

		Billerioio
Display Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph	P
Variables	8	
Fieldbus comm Voltage	unication 9 to 32V	

Current	13mA.
Compliant with	IEC61158
Protocol	FOUNDATION™ fieldbus
Function blocks	2 x IS (input selector) 6 x DI (digital input)

Function Fieldbus Node or Listener selected by front panel push buttons.

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU
Mechanical Terminals	Removable with screw clamp for 0.5 to 1.5mm ² cable.
Weight	0.7kg
Accessories Scale legend	Units of measurement marked
Tag legend	Tag number or application marked onto display escutcheon.
Tag strip	Tag number or application thermally printed onto rear of

the instrument.





The BA648CF-P PROFIBUS Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION[™] fieldbus systems an alternative version is available -please see BA648CF-FFOUNDATION[™] fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA648CF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons. As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA648CF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA648CF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any

starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA648C-P indicator is installed.

Operator acknowledgements may be returned to the fieldbus host when the BA648CF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA648CF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka. co.uk

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA644DF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

For use in hazardous areas the intrinsically safe BA448CF-P PROFIBUS indicator is available. This is similar to the BA648CF-P PROFIBUS indicator but has international certifications allowing installation in most gas and dust hazardous areas.

BA648CF-P PROFIBUS PA Fieldbus Indicator 8 variables

General purpose

- Large 5 digit display with bargraph.
- PROFIBUS PA protocol.
- Displays up to 8 fieldbus variables.
- Selectable Node or Listener modes.
- 144 x 72mm DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba648cf-p



SPECIFICATION DIMENSIONS (mm) Display Liquid crystal Type Recommended panel cut-out 5 digit 20mm high To achieve an IP65 seal between (-99999 to 99999) the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must be used 31 segment bargraph. Panel cut-out DIN 43 700 138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0 Variables 8 **Fieldbus communication** Voltage 9 to 32V Current 13mA Compliant with IEC61158-2 Δ Г Clauses 11 and 22 Δ Г 84 Protocol **PROFIBUS PA** Δ Л **Profibus User** Approval certificate Z01505 Г Organisation. Function Fieldbus Node or Listener selected ₽ via front panel push buttons. Function blocks Profibus PA Node 8 x AO; 6 x DI 144 34648CE Listener Format Captures date in DS-33 Environmental -20 to 70°C Operating temp SCALI Storage temp -40 to 85°C To 95% @ 40°C Humidity **TERMINAL CONNECTIONS** Enclosure Front IP66, rear IP20 EMC Complies with EMC Directive 2014/30/EU. 2 1 Mechanical Removable with screw clamp for Terminals 0.5 to 1.5mm² cable. Fieldbus Weight 0.7kg Non polarised Accessories Scale legend Units of measurement marked onto **HOW TO ORDER** display escutcheon. **Please specify** Tag legend Tag number or application marked **BA648CF-P PROFIBUS** Model number onto display escutcheon. Accessories Please specify if required May be downloaded from Profibus interface www.beka.co.uk guide. Escutcheon markings Scale Legend

Tag

Tag strip

Legend

Legend



The BA684DF-F Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA684DF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Foundation fieldbus or the BEKA websites

Powered by the fieldbus the BA684DF-F only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA684DF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA684DF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs

may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder. lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA684DF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

Comprehensive documentation includes a FOUNDATION[™] fieldbus Interface Guide.

Forpanel mounting applications see the BA688CF-F datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

If flammable atmospheres are present the intrinsically safe BA484DF-F fieldbus display should be used. BA684DF-F FOUNDATION™ fieldbus Fieldbus display 8 variables General purpose

- FOUNDATION[™] fieldbus protocol, ITK 6.3 compliant.
- Compatible with most system hosts.
- High contrast display with backlight.
- Six optional local alarm outputs.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba684df-f





DIMENSIONS (mm)

Display			
Type Size Backlight	120 x 64 pixel liquid crys 86.5mm x 45mm Powered from fieldbus	stal	
Screens Standard format	1, 2, 3, 4 or 8 variables can include: units of measurement tag information	plus bargraph	This in: can c one of standard
Controls Front panel	Four push buttons scroll display between screens BA684DF-F is configure more variables than fit o screen. Also used to cor optional local alarms.	the indicator s when the d to display nto a single nfigure	212 0
Fieldbus communication Voltage Current Compliant with Protocol Function blocks FOUNDATION™ fieldbus or	9 to 32V 25mA IEC61158-2 31.25kbits/ Mode. FOUNDATION [™] fieldbus, I compliant 1 x MAO (Multiple Analogue Output) 2 x IS (Input Selector)	's Voltage TK 6.3 Selectable on-site	
Environmental Operating temp Storage temp Humidity Enclosure EMC	-20 to 60°C -40 to 85°C To 95% @ 40°C IP66 In accordance with EU E 2014/30/EU	Directive	2 Field
Mechanical Terminals Weight	Screw clamp for 0.5 to 1 1.6kg	.5mm ² cable.	
Accessories Alarms	Six galvanically isolated which may be linked to o variables. Each alarm is configural instrument push buttons combined high and low high or low alarm Note: Alarms are not ac the fieldbus system host	outputs displayed ble from as: v alarm ccessible from t	Case
Contacts	Isolated single pole solid Ron less than $5\Omega + 0.7^{\circ}$ Roff greater than $1M\Omega$ Vmax= 30V dc Imax = 200mA	l state V	HOW TO O
Tag strip	Printed legend behind th window	ne display	Accessories Six alarms Tag strip
Tag plate	Engraved stainless stee attached to the side of the	l plate ne instrument.	Tag plate Pipe mounting kit
Pipe mounting kit	BA392D or BA393		
Foundation™ fieldbus interface guides	May be downloaded from www.beka.co.uk	n	



ERMINAL CONNECTIONS





OW TO ORDER

Model number	
Accessories	
Six alarms	
Tag strip	
Tag plate	

Please specify BA684DF-F

Please specify if required Alarms Tag strip legend Tag plate legend BA392D or BA393

Will be set to display 00.0 at 4mA and 100.0 at 20mA if calibration information is not supplied.



The BA684DF-P Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA684DF-P only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA684DF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA684DF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA684DF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

BA684DF-P applications vary from a simple single variable display using a standard format, to providing an operator interface with a custom display and control inputs via external buttons.

The four push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA684DF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For panel mounting applications see the BA688CF-P datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

If flammable atmospheres are present the intrinsically safe BA484DF-P fieldbus display should be used.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA684DF-F fieldbus display.

BA684DF-P PROFIBUS PA Fieldbus display 8 variables *General purpose*

- PROFIBUS PA protocol.
- Compatible with most system hosts.
- High contrast display with backlight.
- Four operator push buttons & six optional local alarm outputs.
- IP66 field mounting GRP enclosure.
- 3 year guarantee

www.beka.co.uk/ba684df-p









HOW TO ORDER

Please specify BA684DF-P

Accessories Six alarms Tag strip Tag plate Pipe mounting kit

Model number

Please specify if required

Alarms Tag strip legend Tag plate legend BA392D or BA393

120 x 64 pixel liquid crystal 86.5mm x 45mm Powered from fieldbus Backlight Screens Standard format can include: units of measurement

Controls

Display

Туре Size

Front panel

External switches

Switch cable

Fieldbus communication

Voltage Current Compliant with Protocol Function blocks PROFIBUS PA 9 to 32V 25mA IEC61158-2 31.25kbits/s Voltage Mode **PROFIBUS PA**

8 x AO (Analogue Output) 6 x DI (Digital Input)

In accordance with EU Directive

BS EN 61326:1998 Operates normally

with conducted 3Vrms interference between 0.15kHz and 80MHz. or radiated 10V/m interference between

tag information

Length 5m max

-20 to 60°C

-40 to 85°C

89/336/EEC

IP66

To 95% @ 40°C

80MHz and 1GHz.

CISPR16-1/2 Class A

Environmental

Operating temp Storage temp Humidity Enclosure EMC

Immunity

Emissions

Mechanical Terminals Weight

Screw clamp for 0.5 to 1.5mm² cable. 1.6kg

Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm Note: Alarms are not accessible from
Contacts	Isolated single pole solid state Ron less than $5\Omega + 0.7V$ Roff greater than $1M\Omega$ Vmax= 30V dc Imax = 200mA
Tag strip	Printed legend behind the display window
Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Pipe mounting kit	BA392D or BA393
PROFIBUS PA interface guide	May be downloaded from www.beka.co.uk



The BA688CF-F Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA688CF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Foundation fieldbus or the BEKA websites

Powered by the fieldbus the BA688CF-F only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA688CF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA688CF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs

may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA688CF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

Comprehensive documentation includes FOUNDATION[™] fieldbus Interface Guide.

For field mounting applications see the BA684DF-F datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

If flammable atmospheres are present, the intrinsically safe BA488CF-F fieldbus display should be used. BA688CF-F FOUNDATION™ fieldbus Fieldbus display 8 variables General purpose

- FOUNDATION[™] fieldbus protocol, ITK 6.3 compliant.
- Compatible with most system hosts.
- High contrast display with backlight.
- Six optional local alarm outputs.
- IP66 front panel
- 3 year guarantee

www.beka.co.uk/ba688cf-f



DIMENSIONS (mm)

Display Type	120 x 64 pixel liquid crystal	
Size	86.5mm x 45mm	_
Backlight	Powered from fieldbus	
Standard format	1, 2, 3, 4 or eight variables plus bargraph can include: units of measurement tag information	
Controls		
Front panel	Six push buttons scroll the indicator display between screens when the BA688CF-F is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms.	
Fieldbus communication	1	
Voltage	9 to 32V	
Compliant with Protocol	IEC61158-2 Clauses 11 and 22 FOUNDATION [™] fieldbus, ITK 6.3 compliant	U
Function blocks Foundation fieldbus™ or	1 x MAO (Multiple AnalogueOutput) 2 x IS (Input Selector)	~
Environmental		
Operating temp	-20 to 60°C	
Storage temp	-40 to 85°C	
Enclosure EMC	Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU.	
Mechanical		Т
Terminals	Removable with screw clamp for 0.5 to 1.5mm ² cable.	
Weight	0.7 kg	
Accessories Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm Note: Alarms are not accessible from the fieldbus system host	
Contacts	Isolated single pole solid state switch.	
	Ron less than $5\Omega + 0.7V$ Roff greater than $1M\Omega$ Vmax= 30V dc Imax = 200mA	
Tag number	Thermally printed strip on rear of instrument.	
Foundation™ fieldbus interface guide.	May be downloaded from www.beka.co.uk	Η



TERMINAL CONNECTIONS





HOW TO ORDER

Model number

Please specify BA688CF-F

Accessories Six alarms Tag strip Please specify if required Alarms Legend

132



The BA688CF-P Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA688CF-P only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA688CF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA688CF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA688CF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

BA688CF-P applications vary from a simple single variable display using a standard format, to providing an operator interface with a custom display and control inputs via external buttons.

The six push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA688CF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For field mounting applications see the BA684DF-P datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

If flammable atmospheres are present, the intrinsically safe BA488CF-P fieldbus display should be used.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA688CF-F fieldbus display.

BA688CF-P PROFIBUS PA Fieldbus display 8 variables *General purpose*

- PROFIBUS PA protocol.
- Compatible with most system hosts.
- High contrast display with backlight.
- Six operator push buttons & six optional local alarm outputs.
- IP66 front panel
- 3 year guarantee

www.beka.co.uk/ba688cf-p



120 x 64 pixel liquid crystal

1, 2, 3,4 or 8 variables plus bargraph

Six push buttons scroll the indicator display between screens when the BA688CF-P is configured to display more variables than fit onto a single

screen. Also used to configure optional local alarms and may be used to return

operator inputs to the system host.

external switches; front panel buttons

Control may be transferred to six

may be inhibited or operated in

IEC61158-2 Clauses 11 and 22

8 x AO (Analogue Output)

86.5mm x 45mm

Powered from fieldbus

units of measurement

tag information

can include:

parallel.

9 to 32V

25mA

5m max length.

PROFIBUS PA

6 x DI (digitl Input)

-20 to 60°C

-40 to 85°C

2014/30/EU.

1GHz

0.7kg

To 95% @ 40°C

Front IP66, rear IP20

BS EN 61326:1998

CISPR 16-1/2 Class A

1.5mm² cable.

Complies with EMC Directive

Operates normally with conducted 3Vrms interference between 0.15kHz and 80MHz, or radiated 10V/m interference between 80MHz and

Removable with screw clamp for 0.5 to

DIMENSIONS (mm)



Туре Size Backlight Screens Standard format

Controls

Front panel

External switches

Switch cable

Fieldbus communication

Voltage Current Compliant with Protocol Function blocks PROFIBUS PA

Environmental

Operating temp Storage temp Humidity Enclosure EMC

Immunity

Emissions

Mechanical

Terminals

Weight

Accessories

Six galvanically isolated outputs which Alarms may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm Note: Alarms are not accessible from the fieldbus system host Contacts Isolated single pole solid state switch. less than $5\Omega + 0.7V$ Ron Roff greater than $1M\Omega$ Vmax= 30V dc Imax = 200mATag number Thermally printed strip on rear of instrument. **PROFIBUS PA** May be downloaded from www.beka.co.uk interface guide.

Recommended panel cut-out To achieve an IP66 seal between the instrument and the panel $136.0 + 0.5/-0.0 \times 66.2 + 0.5/-0.0$ Panel cut-out Four panel mounting clips must be used DIN 43 700 138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0 000 凵 Δ 84 Δ Г ਗ਼ 144 BA688CF This instrument can display 72 one of eleven

TERMINAL CONNECTIONS

standard screens



HOW TO ORDER

Model number

Please specify BA688CF-P

Accessories Six alarms Tag strip

Please specify if required Alarms Legend

Rate Totalisers Field Mounting



This extensive range includes one and two pulse input instruments and loop powered 4/20mA rate totalisers. All models can display rate of flow and total flow on separate displays in the same or different engineering units. The pulse input instruments will operate with most types of sensor and all models include square root extraction and an adjustable lineariser enabling flow to be displayed in linear engineering units.

- Large high contrast separate rate and total displays with wide viewing angle
- General purpose and certified hazardous area models International Ex ia intrinsic safety Ex nA non sparking Dust certification
- Robust impact resistant IP66 GRP enclosures
 Compact 'G' models
 'E' models with separate terminal compartment
- > Isolated pulse output
- > -40 to +70°C operating temperature range

> Accessories

Dual isolated alarms Isolated 4/20mA output Backlight Pipe & panel mounting kits Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.* Laser engraved stainless steel legend plates

Intrinsically safe Ex nA General purpose \overbrace{k} \widehat{k} \widehat{k} \widehat{k} \widehat{k} \widehat{k}





'G' instrument panel mounted using BA494G panel mounting kit.



'G' instrument attached to pipe using BA393G panel mounted kit.



Rate Totalisers. Field mounting models available:

			_	Display	y digits	_		Certifi	cation		• •
Model No.	Enclosure	Input	Powered	TOTAL	RATE	A	rope TEX	Interna	Ex	Can	ada
				No. x height	No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsio	cally safe - for use i	n Zones 0, 1 d	& 2 and 20, 21	& 22 where ce	rtified						
BA334G	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm	~	 	~	v	~	v
BA334E	GRP- separate tml. compartment	Pulse	External	8 x 18mm	6 x 12mm	~	-	~	-	~	4
BA354E	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	5 x 12mm	~	4	~	~	~	4
BA384G	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm	✓	 	~	v	~	×
BA384E	GRP - separate tml. compartment	2 x Pulse	External	8 x 18mm	6 x 12mm	~	-	~	-	~	~
Ex nA & Ex to	c - for use in Zones	2 and 22 with	out Zener ba	rriers or galvan	ic isolators						
BA334NG	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm	~	v	v	v	~	v
BA384NG	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm	~	 ✓ 	~	×	~	v .
BA354NE	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	6 x 12mm	4	~	~	~	-	_
General Purp	ose - for use in saf	e areas									
BA534G	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm						
BA554E	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	5 x 12mm						
BA584G	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm						

A Rate Totaliser

for every application. . . delivered ready for installation



The BA334E is a third generation intrinsically safe field mounting rate totaliser housed in a robust IP66 GRP enclosure with a seperate terminal compartment. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International intrinsic safety certification permits worldwide installation.

The main application of the BA334E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA334E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International intrinsic safety certification allows the BA334E rate totaliser to be installed in gas hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing and allows the instrument to be easily read at night or when installed in a poorly illuminated area. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument electronics.

Isolated pulse and 4/20mA outputs which comply with the requirements for *simple apparatus* are included. The pulse output can synchronously retransmit the rate totaliser's pulse input, or a scaled pulse when the least significant digit of the total display is incremented. The 4/20mA output may be configured to produce an output proportional to any part of the rate or total display.

Dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. The two isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334E display show the status of both alarm outputs.

The escutcheon which shows the Rate Totaliser's units of measurement and tag information can be changed on-site. New instruments are supplied with a printed escutcheon showing customer specified marking, if this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

The compact BA334G has the same functions as the BA334E without a separate terminal compartment.

BA334E one input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays with backlight.
- Intrinsically safe
- IP66 GRP enclosure with separate terminal compartment.
- Lineariser
- Isolated dual alarms, pulse and 4/20mA outputs.
- 3 year guarantee

www.beka.co.uk/ba334e









ower	su	pply
Vol	tac	ie

F

Current

Input

Switch contact Proximity detector (N Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Frequency Switch contact Other inputs . All inputs

Display Туре

Backlight Zero blanking

Total ± Decimal point

Rate ‡ Decimal point

‡ Rate & Total can b

Grand total

Remote reset

Configurable functions Rate scale factor Flowmeter K-factor Lineariser Rate timebase Rate display filter Total scale factor

Pulse output Frequency

> Divisible by Pulse width Ron Roff I max

4/20mA output

Voltage drop

Dual alarms

Outputs Ron Roff

Intrinsic safety Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No

ETL & cETL Code

Nonincendive USA & C Code

ETL Control No.

Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

	10 to 28V from a Z 32mA	ener barrier or galvanic isola	tor	
JAMUR)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper switching thresholds 1kΩ 2.1mA 10kΩ +40mV 3V 28V max 10V 28V max	3	
	150Hz typical De 100kHz max and 0.01Hz min	pends upon pulse width d debounce setting.		212
	Liquid crystal Green LED interna Blanked apart from	lly powered 10 in front of decimal point.		
	8 digits 18mm high 1 of 7 positions or	absent		
	6 digits 12mm high 1 of 5 positions or	absent		-
oe shown on	either 6 or 8 digit di	splay		-
	Maximum count 10	16		ő (
	Contact closure with	th resistance less than $10k\Omega$		_ _
;	Adjustable betweer	n 0.0001 and 99999 pulses/u	nit vol.	TEDMU
	16 K-factors may b Rate may be displa Adjustable digital fi Adjustable between	be entered ayed per second, minute or h ilter n 0.0001 and 99999	our	TERMIN
	Isolated open colle 5kHz max, synchro least significant dig Divisible with selec 1, 10, 100, 1000 o 0.1, 0.5, 1, 2.5, 5, 51 Ω + 3V max 1M Ω min 10mA	ctor phous with input pulse, or who it of total display is incremen table width. r 10000 10, 25, 50, 100, 250 or 500m	en ted. Is	nfri
	Isolated current sir part of the rate or t 5 to 28V	nk, configurable to represent a total display.	any	Termina internal joining cat
	Two alarms each c configured as a rat NO or NC output.	of which may be independent ie or total, high or low alarm v	ly with a	Accessories Escutcheon
	Isolated single pole $5\Omega + 0.7V \text{ max}$ IM Ω min	e, voltage free solid state swi	tch	
				Legend plate
	$-40 \le Ta \le 70^{\circ}C$ ITS16ATEX28408)			Pipe mounting
	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C IECEx ITS 16.0004	4X		HOW T
	Class I Div 1 Gp Class II Div 1 Gp Class I Zone 0 Al	A, B, C, D T5] USA & E, F, G Class III] Canada Ex ia IIC T5 Ga] USA		Model number Input
	Zone 20 AEx ia III Ex ia IIC T5 Ga $-40^{\circ}C \le Ta \le 70^{\circ}C$	C T80°C Da] Canada] Canada		Rate scale factor
anada ETL	& cETL Class I Div 2 Gp	A, B, C, D T5		Rate timebase Total scale factor
	Class III Div 2 Gp Class III Div 2 -40°C \leq Ta \leq 70°C 4008610	0		Accessories Escutcheon mark Units Tag
	-40 to +70°C displa -40 to +85°C to 95% at 40°C por	ay -20 to +70°C		Stainless legend
	Report available			Pipe mounting kit

DIMENSIONS (mm



TERMINAL CONNECTIONS



316 Stainless steel plate secured to the front of the

If linearisation is required, up to 16 rate scale factors

may be entered for different flow rates.

Seconds, minutes or hours* XXXXX *

Please specify if required

Legend required No charge if ordered with totaliser

instrument laser engraved with tag number or

application information. #

Please specify

BA334E

XXXXX *

Type *

Legend plate

BA392D or BA393 # Pipe mounting kit

See accessory datasheet for details

OW TO ORDER

ccessories scutcheon marking Units Tag

tainless legend plate

Leaend required BA392D or BA393

Legend required

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.

Screw clamp for 0.5 to 1.5mm² 1.7kg

Complies with 2014/30/EU

GRP IP66



The BA334G is a third generation intrinsically safe field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International intrinsic safety certification permits worldwide installation.

The main application of the BA334G is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA334G will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International intrinsic safety certification allows the BA334G rate totaliser to be installed in gas and dust hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area. **IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the Rate Totaliser's units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output may be configured to synchronously retransmit the rate totalisers pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. The two isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334G display show the status of both alarm outputs.

Other field mounting rate totalisers include the BA334E which has the same functions as the BA334G, but incorporates a separate terminal compartment and supersedes the BA334D.

BA334G one input rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Intrinsically safe
- IP66 GRP enclosure
- Lineariser
- Isolated pulse output
- Simple on-site scale card installation.
 - Optional: Backlight Dual alarms 4/20mA output

3 year guarantee

www.beka.co.uk/ba334g









Input

Power supply Voltage Current Switch contact Proximity detector (NAMU Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high) Frequency Switch contact Other inputs All inputs Display Type Zero blanking Total # Decimal point Rate ‡ Decimal point ‡ Rate & Total can be sh Grand total Remote reset Pulse output Frequency Divisible by Pulse width Ron Roff I max Configurable functions Rate scale factor Flowmeter K-factor Lineariser Rate timebase Rate display filter Total scale factor Intrinsic safety Europe ATEX Code Cert. No. International IECEx Code Cert. No ETL & cETL Code Nonincendive USA & Canad Code ETL Control No. Environmental Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC Mechanical Terminals Weight Accessories Backlight 4/20mA output Voltage drop 5 to 28V

Dual alarms

Outputs Ron Roff

	10 to 28V from a Z 16mA max plus 16	ener barrier or ga mA for optional b	alvanic isolator acklight
JR)	Lower 100Ω 1.2mA 2kΩ	Upper switching 1kΩ 2.1mA 10kΩ	g thresholds
	0 1V	+40mV 3V 28V max	
	3V	10V 28V max	
	150Hz typical Dep 100kHz max and 0.01Hz min	pends upon pulse d debounce settin	ə width Ig.
	Liquid crystal Blanked apart from	0 in front of deci	mal point
	8 digits 18mm high 1 of 7 positions or	absent	
	6 digits 12mm high 1 of 5 positions or	absent	
own on	either 6 or 8 digit dis	splay	
	Maximum count 10	16	
	Contact closure wit	h resistance less	than 10kΩ
	Isolated open colle 5kHz max, synchro least significant dig Divisible with selec 1, 10, 100, 1000 or	ctor mous with input p it of total display table width. 10000	oulse, or when is incremented.
	0.1, 0.5, 1, 2.5, 5, 51Ω + 3V max 1MΩ min 10mA	10, 25, 50, 100, 2	30 or 500ms
	Adjustable betweer	n 0.0001 and 999	99 pulses/unit vol
	16 K-factors may b Rate may be displa Adjustable digital fi Adjustable between	e entered ayed per second, Iter n 0.0001 and 999	minute or hour 99
	Group II Category $-40 \le Ta \le 70^{\circ}C$ Group II Category $-40 \le Ta \le 60^{\circ}C$ ITS16ATEX28408>	1G Ex ia IIC T5 (1D Ex ia IIIC T80 (∂a °C Da
	Ex ia IIC T5 Ga -40 \leq Ta \leq 70°C Ex ia IIIC T80°C Di -40 \leq Ta \leq 60°C IECEX ITS 16.0004	a IX	
	Class Div 1 Gp J Class I Div 1 Gp I Class Zone 0 AE Zone 20 AEx ia IC Ex ia IC T5 Ga Ex ia IIC T80°C I -40°C \leq Ta \leq 70°C	A, B, C, D T5 E, F, G Class III Ex ia IIC T5 Ga C T80°C Da Da C] USA & Canada] USA] Canada
da ETL a	& cETL Class I Div 2 Gp / Class II Div 2 Gp Class III Div 2 -40°C ≤ Ta ≤ 70°C 4008610	A, B, C, D T5 F, G C	
	-40 to +70°C displa -40 to +85°C to 95% at 40°C nor Report available	ay -20 to +70°C	
	GRP IP66 Complies with 2014	4/30/EU	
	Screw clamp for 0. 1.1kg	5 to 1.5mm²	
	Green LED interna	lly powered	
	Isolated current sin	k	

Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.

Isolated single pole, voltage free solid state switch 5Ω + 0.7V max $IM\Omega$ min

DIMENSIONS (mm)





See accessory datasheet for details

HOW TO ORDER

Model number Input	Please specify BA334G Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase Total scale factor	Seconds, minutes or hours* XXXXX *
Accessories Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking Units Tag	Legend required Legend required No charge if ordered with totaliser
Stainless legend plate	Legend required
Pipe mounting kit	BA393G

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.

BA394G or BA494G

Panel mounting kit



The BA334NG is a third generation field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation cost.

The main application of the BA334NG is to process the pulse output from a hazardous area flowmeter, such as a turbine meter, and simultaneously display the rate and total flow in engineering units within a Zone 2 or 22 hazardous area. The BA334NG can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International Ex nA and Ex tc certification allows the BA334NG rate totaliser to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area. **IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the Rate Totaliser's units of measurement and tag information, slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this information is not specified a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output may be configured to synchronously retransmit the pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An isolated 4/20mA current sink output is available as a factory fitted option. It may be configured to represent any part of the rate or total display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334NG display show the status of both alarm outputs.

Other field mounting rate totalisers include the two input BA384NG which also has Ex nA and Ex tc certification and can display the sum or difference of two flowmeter outputs. Intrinsically safe and general purpose field and panel mounting models are also available.

BA334NG Ex nA one input rate totaliser

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Ex nA & Ex tc certified
- IP66 GRP enclosure
- Lineariser
- Isolated pulse output
- Simple on-site scale card installation.
 - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba334ng









SPECIFICATION		
Power supply Voltage Current	10 to 30V 16mA max plus 16	mA for optional backlight
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper switching thresholds 1kΩ 2.1mA 10kΩ +40mV 3V 30V max 10V 30V max
Frequency Switch contact Other inputs All inputs	150Hz typical De 100kHz max and 0.01Hz min	pends upon pulse width d debounce setting.
Display Type Zero blanking	Liquid crystal Blanked apart from	0 in front of decimal point
Total <i>‡</i> Decimal point	8 digits 18mm high 1 of 7 positions or	absent
Rate <i>‡</i> Decimal point	6 digits 12mm high 1 of 5 positions or	absent
‡ Rate & Total can be shown on	either 6 or 8 digit dis	splay
Grand total	Maximum count 10	16
Remote reset	Contact closure with	th resistance less than $10k\Omega$
Pulse output Frequency Divisible by Pulse width Ron Roff Ui I max	Isolated open colle 5kHz max, synchro least significant dig Divisible with select 1, 10, 100, 1000 on 0.1, 0.5, 1, 2.5, 5, 51 Ω + 3V max 1M Ω min 30Vdc 10mA	ctor phous with input pulse, or when it of total display is incremented. table width. 10000 10, 25, 50, 100, 250 or 500ms
Configurable functions Rate scale factor Flowmeter K-factor Lineariser Rate timebase Rate display filter Total scale factor	Adjustable between 99999 pulses/unit v 16 K-factors may b Rate may be displa Adjustable digital fi Adjustable between	n 0.0001 and <i>vol.</i> we entered ayed per second, minute or hour Iter n 0.0001 and 99999
Certification	Note: Ex ic codes contacts which are	refer to instrument push button nonincendive.
Code	Group II Category Group II Category -40 < Ta < 60°C	3G Ex nA ic IIC T5 Gc 3D Ex ic tc IIIC T80°C Dc 4
International IECEx Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C -40 < Ta < 60°C	Dc
Cert. No	IECEx ITS 16.0005	δX
ETL & CETL Code ETL Control No.	Class I Zone 2 Al Zone 22 AEx ic tc Ex nA ic IIC 75 Gc Ex ic tc IIIC 75 Gc Ex ic tc IIIC T80°C Class III Div 2, Cla -40° C \leq Ta \leq 60°C 4008610	Ex nA ic IIC T5 Gc] USA IIIC T80°C Dc] Canau Dc ss II Div 2, Gp F, G C
Environmental Operating temp Certification temp Storage temp	-40 to +70°C displa -40 to +60°C -40 to +85°C	ay -20 to +70°C

to 95% at 40°C non condensing

Complies with 2014/30/EU

Screw clamp for 0.5 to 1.5mm²

Green LED internally powered

Blank card fitted to all instruments.

charge at time of purchase. #

Two alarms each of which may be independently configured as a rate or total, high or low alarm with a

Isolated single pole, voltage free solid state switch

Can be supplied printed with specified units of measurement and tag information for no additional

Isolated current sink.

NO or NC output.

5Ω + 0.7V max

Report available

GRP

IP66

1.1kg

5 to 30V

 $\mathsf{IM}\Omega$ min 30Vdc

10mA

Canada

orage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

Accessories Backlight

4/20mA output Voltage drop Dual alarms

> Outputs Ron Roff Ui I max

Scale card

DIMENSIONS (mm)



TERMINAL CONNECTIONS



BA394G 316 stainless steel not sealing # Panel mounting kits

See accessory datasheet for details

OW TO ORDER

Model number Input	Please specify BA334NG Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Total scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Accessories Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking Units Tag	Legend required Legend required No charge if ordered with totaliser
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.


The BA354E loop powered 4/20mA rate totaliser is a third generation field mounting instrument that is electrically and mechanically compatible with the earlier BA354D, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA354E is housed in a robust IP66 GRP enclosure with a separate terminal compartment.

Main application of the BA354E is to integrate the 4/20mA output from a hazardous area flow transmitter and display the rate and total flow in engineering units within the hazardous area. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA354E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA354E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA354E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the totaliser to be connected in series with most intrinsically safe 4/20mA loops. The BA354E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA354D, thus allowing the BA354E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarms which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to extensive vibration testing and is supported by a three year guarantee.

For panel mounting applications the BA358E has a similar specification but is housed in a 144×72 DIN panel mounting enclosure with an IP66 front panel.

BA354E 2-wire 4/20mA rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- Total display 8 digit 18mm high Rate display 5 digit 12mm high
- Intrinsically safe ATEX gas
 or ATEX gas & dust
 or FM, cFM & ATEX gas

All versions have IECEx certification.

- IP66 GRP enclosure with separate terminal compartment.
- Uni-directional & bi-directional operation.
- Root extractor and 16 segment lineariser.
- Optional backlight & alarms.
- 3 year guarantee
 www.beka.co.uk/ba354e



Input

Display

Туре

Current

Voltage

Overrange

Zero blanking

Span

Zero Decimal point

Grand total

Timebase

Scaling factor Decimal point

Rate~

Total~

Push buttons

▲ 'P'

Έ

Accuracy

Linear

Total display

Rate display at 20°C

Span

Remote total reset

Europe ATEX

Ui

li

Р

USA FM

Code

Standard

Intrinsic safety

Code

Root extracting

Temperature effect on: Żero

Series mode rejection.

Input parameters

Output parameters

Cert. No.

DIMENSIONS (mm)



Standard Code

File

Canada cFM File

International IECEx Code

Cert. No

Environmental

Operating temperature Display Storage temperature Humidity Vibration Enclosure EMC

Mechanical Terminals Weight

Accessories

Backlight Loop powered Separately powered Alarms

Output

Ror Roff

3041487C Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66-Tamb = -40 to 70°C Dust option, see How to order IECEx ITS11.0014X (Special conditions only apply for installations in Zone 0) -40 to 70°C

3611 Nonincendive

GP A, B, C, D, E, F & G

CL I, II, III: Div 2

T5 @ 70°C

3041487

-20 to 70°C -40 to 85°C to 95% at 40°C noncondensing Report available IP66 Complies with EMC Directive 2004/108/EC

Screw clamp for 0.5 to 1.5mm² cable 1.7kg

Green, may be loop or separately powered Totaliser voltage 5V 10.5V at 35mA from IS interface Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output. Isolated solid state switch complying with requirements for Simple apparatus. 5Ω + 0.7V max $IM\Omega$ min

Rate display at:

or

or

Stainless steel legend plate.

See accessory datasheet for details

HOW TO ORDER

Pipe mounting kit

20.000mA Rate timebase Total scale factor

4.000mA

Model number

Display mode

Certification

Accessories External keypad Display backlight Dual alarms Escutcheon marking Scale Tag Stainless legend plate Pipe mounting kit

Please specify BA354E ATEX gas ATEX gas & dust

All versions have IECEx certification.

72

reset

FM. cFM & ATEX gas Linear, root or lineariser

escutcheon.

BA392D or BA393 #

Include position of decimal point & XXXXX sign if negative, plus intermediate XXXXX points if linearisation is required.

Stainless steel plate etched with tag number or

application attached to front of the instrument. #

Seconds, minutes or hours* (Units of rate display)÷(Units of total display)*

Please specify if required External keypad Backlight Alarms

Legend required Legend required Legend required BA392D or BA393

If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.

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The BA354NE loop powered 4/20mA rate totaliser is a third generation field mounting instrument that is electrically and mechanically compatible with the earlier BA354ND, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA354NE is housed in a robust IP66 GRP enclosure with a separate terminal compartment.

Main application of the BA354NE is to integrate the 4/20mA output from a hazardous area flow transmitter and display the flow rate and total flow in the same or different engineering units within Zone 2 or 22. When mounted in Zone 2 the BA354NE may be connected in series with the 4/20mA output from a flow transmitter installed in Zone 1 or 2 without the need for additional protection. Application Guide AG310, which may be downloaded from the BEKA website, describes how the BA354NE Ex nA rate totaliser may be directly connected to an Ex n, Ex e, Ex d or Ex p flow transmitter

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA354NE totaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

ATEX and IECEx non sparking Ex nA certification allows the BA354NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA354NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA354NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

BA354NE 2-wire 4/20mA rate totaliser

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- Loop powered only 1.2V drop.
- Total display
 8 digit 18mm high
 Rate display
 5 digit 12mm high
- Ex nA gas and Ex tc dust ATEX & IECEx certification.
- IP66 GRP enclosure with separate terminal compartment.
- Uni-directional & bi-directional operation.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

www.beka.co.uk/ba324ne





DIMENSIONS (mm





Shown with optional legend plate

TERMINAL CONNECTIONS



See accessory datasheet for details

/ TO ORDER

Model number

Display mode Rate display at:

4.000mA 20.000mA

Rate timebase Total scale factor

Accessories External keypad Display backlight Dual alarms Escutcheon marking Scale Taq Stainless legend plate Pipe mounting kit

Please specify BA354NE

Linear, root or lineariser*

~~~~~	1	Include position of decimal point &
		sign if negative, plus intermediate
XXXXX	]	points if linearisation is required. *

Seconds, minutes or hours* (Units of rate display)÷(Units of total display)*

Please specify if required External keypad Backlight Alarms

Legend required Legend required Legend required BA393D or BA393

If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.

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The BA384E is a two input, field mounting, intrinsically safe rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384E is easy to use and each input can be individually configured on-site to operate with a flowmeter having a variety of pulse outputs. International intrinsic safety certification permits worldwide installation.

The main application of the BA384E is to process the pulse output from two hazardous area flowmeters, and to calculate and display the sum or difference of the flowmeters within a hazardous area. Rate and total can be simultaneously displayed in the same or different engineering units. The BA384E will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

International intrinsic safety certification allows the BA384E rate totaliser to be installed in gas hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure. **Display backlighting** which is internally powered from the totaliser, provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

**Dual alarms have** galvanically isolated solid state outputs which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. Both may be independently configured as a rate or a total alarm monitoring either flowmeter, or the sum or difference of the two flowmeters. Annunciators on the BA384E display show the status of both alarm outputs.

**Other field mounting rate totalisers** include the BA384G which has the same functions as the BA384E, without a separate terminal compartment.

# BA384E two input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays with backlight
- Intrinsically safe
- IP66 GRP enclosure with separate terminal compartment
- Linearisers
- Isolated dual alarms, pulse and 4/20mA outputs.
- 3 year guarantee

## www.beka.co.uk/ba384e









Power	suppl
Vol	tage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off

> Voltage pulse (low) Voltage pulse (high) Frequency Switch contact Other inputs

All inputs

#### Display Tvpe

Zero blanking

Total + Decimal point

Rate # Decimal point

# Rate & Total can be shown on either 6 or 8 digit display

Grand total

#### Remote reset

#### Configurable functions Each input individually configurable Input function Flowmeter K-factor Lineariser Total scale factor

Rate timebase Rate scale factor Rate display filter

#### Pulse output

Frequency

Divisible by Pulse width Ron Roff I max

4/20mA output

#### Voltage drop

Dual alarms

Outputs Ron Roff

#### Intrinsic safety

Europe ATEX Code

Cert. No.

#### International IECEx Code

Cert. No

ETL & cETL

Code

Nonincendive USA & Canada ETL & cETL Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Code

#### ETL Control No.

Environmental Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

10 to 28V from a Zener barrier or galvanic isolato 32mA Upper switching thresholds Lower 100Ω 1kΩ 2.1mA 1.2mA 2kΩ 10kΩ 0 +40mV 1V зv 28V max 10V 28V max 3V 150Hz typical Depends upon pulse width 100kHz max ] and debounce setting. 0.01Hz min Liquid crystal Blanked apart from 0 in front of decimal point 8 digits 18mm high 1 of 7 positions or absent 6 digits 12mm high 1 of 5 positions or absent Maximum count 1016 Contact closure with resistance less than  $10 \text{k}\Omega$ Input A + input b or Input A - input b Adjustable between 0.0001 and 99999 pulses/unit vol 16 K-factors may be entered Adjustable between 0.0001 and 99999 Rate may be displayed per second, minute or hour Adjustable between 0.0001 and 99999 Adjustable digital filter Isolated open collector 5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width. 1, 10, 100, 1000 or 10000 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms  $51\Omega + 3V \max$  $1M\Omega$  min 10mA Isolated current sink, configurable to represent any part of the rate or total display. 5 to 28V Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch  $5\Omega + 0.7V$  max  $IM\Omega$  min Group II Category 1G Ex ia IIC T5 Ga  $-40 \le Ta \le 70^{\circ}C$ ITS16ATEX28408X Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C IECEx ITS 16.0004X Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIC T80°C Da Ex ia IIC T5 Ga Ex ia IIC T5 Ga -40°C  $\leq$  Ta  $\leq$  70°C

### DIMENSIONS (mm)



## **TERMINAL CONNECTIONS**



Accessories Escutcheon

Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

316 stainless steel plate secured to the front of the instrument, laser engraved with tag number or

If linearisation is required, up to 16 K-factors may be specified at different flow rates.

application information. #

Please specify for each input

Input A + b or Input A - b *

Seconds, minutes or hours'

Please specify if required

No charge if ordered with totaliser

XXXXX for each inputs *

BA392D or BA393 #

BA384E

XXXXX '

XXXXX

Type

Legend plate

Pipe mounting kit

# See accessory datasheet for details

### HOW TO ORDER

Model number Input function Input . Flowmeter K-factor

Total scale factor Rate timebase Rate scale factor

Accessories

Escutcheon marking Units Tag

Stainless legend plate

Pipe mounting kit

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds and direct pulse retransmission. Can easily be reconfigured on-site.

Leaend required

Legend required

Legend required

BA392D or BA393

Screw clamp for 0.5 to 1.5mm² 1.7kg

-40 to +70°C display -20 to +70°C

to 95% at 40°C non condensing

Complies with 2014/30/EU

Class III Div 2

Ex ia IIC T5 Ga

4008610

GRP

IP66

-40 to +85°C

Report available

 $-40 \le Ta \le 70^{\circ}C$ 



**The BA384G** is a two input, field mounting, intrinsically safe rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384G is easy to use and each input can be individually configured on-site to operate with flowmeters having a variety of pulse outputs. A slide-in scale card simplifies identification and international certification permits worldwide installation.

The main application of the BA384G is to process the pulse output from two hazardous area flowmeters, and to calculate and display the sum or difference of the two within a hazardous area. Rate and total can be simultaneously displayed in the same or different engineering units. The BA384G will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

**Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area. The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International intrinsic safety certification allows the BA384G rate totaliser to be installed in gas and dust hazardous area worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

**Optional dual alarms** with galvanically isolated solid state outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. Both may be independently configured as a rate or a total alarm. Annunciators on the BA384G display show the status of both alarm outputs.

**Other field mounting rate totalisers** include the BA384E which has the same functions as the BA384G, but incorporates a separate terminal compartment.

# BA384G two input rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Intrinsically safe
- IP66 GRP enclosure
- Linearisers
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output

3 year guarantee

www.beka.co.uk/ba384g









Power supply Voltage Current	10 to 28V from a Z 16mA max plus 16	ener barrier or galvanic isolator mA for optional backlight
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper switching thresholds 1kΩ 2.1mA 10kΩ +40mV 3V 28V max 10V 28V max
Frequency Switch contact Other inputs All inputs	150Hz typical Dep 100kHz max and 0.01Hz min	pends upon pulse width d debounce setting.
<b>Display</b> Type Zero blanking	Liquid crystal Blanked apart from	0 in front of decimal point
Total <i>‡</i> Decimal point	8 digits 18mm high 1 of 7 positions or a	absent
Rate <i>‡</i> Decimal point	6 digits 12mm high 1 of 5 positions or a	absent
‡ Rate & Total can be shown on	either 6 or 8 digit dis	splay
Grand total	Maximum count 10	16
Remote reset	Contact closure wit	h resistance less than $10k\Omega$
Pulse output Frequency Divisible by Pulse width	Isolated open colle 5kHz max, synchro least significant dig Divisible with selec 1, 10, 100, 1000 or	ctor nous with input pulse, or when it of total display is incremented. table width. 10000 10.25 50 100 250 or 500mc
Ron Roff	$0.1, 0.3, 1, 2.3, 3, 151\Omega + 3V max$ 1M $\Omega$ min	10, 23, 50, 100, 250 01 500115
	TUMA	
Configurable functions Each input individually configurable Input function Flowmeter K-factor Lineariser Total scale factor Rate timebase Rate scale factor Rate display filter	Input A + b or Inp Adjustable betweer 16 K-factors may b Adjustable betweer Rate may be displa Adjustable betweer Adjustable betweer	ut A – b 1 0.0001 and 99999 pulses/unit vol e entered 1 0.0001 and 99999 ayed per second, minute or hour 1 0.0001 and 99999 Iter
Code	Group II Category -40 $\leq$ Ta $\leq$ 70°C Group II Category -40 $\leq$ Ta $\leq$ 60°C ITS16ATEX28408>	1G Ex ia IIC T5 Ga 1D Ex ia IIIC T80°C Da K
International IECEx		
Code Cert. No	Ex ia IIC T5 Ga $-40 \le Ta \le 70^{\circ}$ C Ex ia IIIC T80°C Da $-40 \le Ta \le 60^{\circ}$ C IECEX ITS 16.0004	a X
ETL & cETL Code	Class I Div 1 Gp / Class II Div 1 Gp I Class I Zone 0 AE Zone 20 AEx ia III Ex ia IIC T5 Ga Ex ia IIC T80°C I -40°C $\leq$ Ta $\leq$ 70°C	A, B, C, D T5 ] USA & E, F, G Class III ] Canada Ex ia IIC T5 Ga ] USA C T80°C Da ] USA Da ] Canada
Nonincendive USA & Canada ETL a Code	& cETL Class I Div 2 Gp A, Class II Div 2 Gp F Class III Div 2 Ex ia IIC T5 Ga -40 < Ta < 70°C	, B, C & D T5 ; G.
ETL Control	No.4008610	
Environmental Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC	-40 to +70°C displa -40 to +85°C to 95% at 40°C nor Report available GRP IP66 Complies with 2014	ay -20 to +70°C n condensing 4/30/EU
Mechanical Terminals	Screw clamp for 0.	5 to 1.5mm²
Accessories Backlight		lly powered
		ny powereu
4/20mA output Voltage drop	solated current sin 5 to 28V	к.
Dual alarms	Two alarms each o configured as a rate	f which may be independently e or total, high or low alarm with

a NO or NC output.

#### **DIMENSIONS** (mm)



## **TERMINAL CONNECTIONS**



5Ω + 0.7V max IMΩ min

Outputs Ron Roff Scale card Legend plate

Pipe mounting kit Panel mounting kits

BA394G 316 stainless steel not sealing # BA494G GRP sealing #

BA393G 316 stainless steel #

Please specify for each input

Input A + b or Input A - b *

XXXXX for both inputs *

Seconds, minutes or hours'

Please specify if required

Legend required No charge if ordered with totaliser

BA384G

, XXXXX

XXXXX *

Backlight

Alarms

BA393G

4/20mA output

Legend required

Legend required

Туре

Blank card fitted to all instruments.

Isolated single pole, voltage free solid state switch

Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #

If linearisation is required, up to 16 K-factors may be specified at different flow rates.

4

# See accessory datasheet for details

#### HOW TO ORDER

Model number Input function Input

Flowmeter K-factor

Total scale factor Rate timebase Rate scale factor

Accessories Display backlight

4/20mA output

Dual alarms Scale card marking Units

Tag

Stainless legend plate

Pipe mounting kit

Panel mounting kit BA394G or BA494G

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



**The BA384NG** is a two input, field mounting, Ex nA and Ex tc certified rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384NG is easy to use and each input can be individually configured on-site to operate with flowmeters having a variety of pulse outputs. A slide-in scale card simplifies identification and international certification permits worldwide installation.

International Ex nA and Ex tc certification allows the BA384NG rate totaliser to be installed in Zone 2 gas and Zone 22 dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The main application of the BA384NG is to process the pulse output from two flowmeters and to calculate and display the sum or difference of the two within a Zone 2 or 22 hazardous area. Using the front panel push buttons, the display can be scrolled to show the rate and total output of either flowmeter separately. The BA384NG will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure. **Display backlighting** which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the rate or total display.

**Optional dual alarms** can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA384NG display show the status of both alarm outputs.

**Other rate totalisers** in this range include the single input BA334NG plus intrinsically safe, Ex n certified and general purpose models for field and panel mounting.

# BA384NG two input rate totaliser

Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Ex nA & Ex tc certified
- IP66 GRP enclosure
- Isolated pulse output
- Linearisers
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

### www.beka.co.uk/ba384ng









### Power supply Voltage Current

Switch contact Proximity detector (NAM Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Frequency Switch contact Other inputs All inputs

Display Type Zero blanking

Input

Total ± Decimal point

Rate ‡ Decimal point

‡ Rate & Total can be s

Grand total

Remote reset

Pulse output Frequency

> Divisible by Pulse width Ron Roff Ui I max

#### Configurable functions

Each input individually confi Input function Flowmeter K-factor Lineariser Total scale factor Rate timebase Rate scale factor Rate display filter

#### Certification

Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No

ETL & cETL Code

ETL Control No.

Environmental

Operating temp Certification temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

Accessories Backlight

> 4/20mA output Voltage drop

Dual alarms

Outputs Ron Roff Ui I max

5Ω + 0.7V max

IMΩ min

30V dc

10mA

	10 to 30V 16mA max plus 16	mA for optional backlight	
IUR)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper switching thresholds 1kΩ 2.1mA 10kΩ +40mV 3V 30V max 10V 30V max	
	150Hz typical De 100kHz max 0.01Hz min Liquid crystal Blanked apart from 8 digits 18mm high	pends upon pulse width d debounce setting. 0 in front of decimal point	
	1 of 7 positions or 6 digits 12mm high		
hown on	oithor 6 or 8 digit di	absent	
nown on	Maximum count 10	116	
	Contact closure wit	th resistance less than 10k0	
		ator	
	Isolated open colle 5kHz max, synchro least significant dig Divisible with selec 1, 10, 100, 1000 or 0.1, 0.5, 1, 2.5, 5, 5 51 $\Omega$ + 3V max 1M $\Omega$ min 30V dc 10mA	ctor onous with input pulse, or when it of total display is incremented. table width. 10000 10, 25, 50, 100, 250 or 500ms	Т
gurable	Input A + b or Inp Adjustable between 16 K-factors may b Adjustable between Rate may be displa Adjustable between Adjustable digital fi	ut A – b n 0.0001 and 99999 pulses/unit vol e entered for each input n 0.0001 and 99999 ayed per second, minute or hour n 0.0001 and 99999 Iter	
	Note: Ex ic codes contacts which an	refer to instrument push button re nonincendive.	5
	Group II Category Group II Category $-40 \le Ta \le 60^{\circ}C$ ITS16ATEX48409)	3G Ex nA ic IIC T5 Gc 3D Ex ic tc IIIC T80°C Dc <	L
	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C -40 $\leq$ Ta $\leq$ 60°C	Dc	F
	IECEX 113 10.000	22	# 54
	Class I Zone 2 AI Zone 22 AEx ic tc Ex nA ic IIC T5 Gc Ex n IIC T5 Gc	Ex nA ic IIC T5 Gc ] USA	H
	Ex ic tc IIIC T80°C Class III Div 2, Cla -40°C $\leq$ Ta $\leq$ 60°C 4008610	Dc Guildad ss II Div 2, Gp F, G C	Mod Inpu Inpu
	-40 to +70°C displa -40 to +60°C -40 to +85°C	ay -20 to +70°C	Flow
	to 95% at 40°C not Report available	n condensing	Rate
	GRP IP66 Complies with 2014	4/30/EU	Acc Disp
			4/20
	Screw clamp for 0. 1.1kg	5 to 1.5mm ²	Dual
	-		Scal
	Green LED interna Isolated current sin	lly powered ık.	-
	5 to 30V		Stair
	Two alarms each c configured as a rat	of which may be independently e or total, high or low alarm with	Pine
	a NO or NC output Isolated single pole	, voltage free solid state switch	Pan

## **DIMENSIONS (mm)**



### ERMINAL CONNECTIONS



	Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
egend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
ipe mounting kit	BA393G 316 stainless steel #
anel mounting kits	BA394G 316 stainless steel not sealing #

Please specify for each input Input A + b or Input A - b Type *

specified at different flow rates.

Seconds, minutes or hours'

Please specify if required

No charge if ordered with totaliser

If linearisation is required, up to 16 K-factors may be

XXXXX for both inputs *

XXXXX

XXXXX

Backlight

Alarms

4/20mA output

Leaend required

Legend required

Legend required

BA393G

BA394G

ee accessory datasheet for details

#### OW TO ORDER

lel number t function

meter K-factor

al scale factor scale factor timebase

essories lay backlight

mA output

alarms

e card marking Jnits Гад

nless legend plate

mounting kit Panel mounting kit

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The BA534G is a third generation, general purpose, field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output.

**Main application** of the BA534G is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA534G will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

**Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated open collector pulse output may be configured to synchronously retransmit the pulse input to the rate totaliser, or a scaled pulse when the least significant digit of the total display is incremented.

The scale card which shows the Rate Totaliser's units of measurement and tag information, slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this information is not specified a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available, which can be supplied with custom specified engraving.

An isolated 4/20mA current sink output is available as a factory fitted option. It may be configured to represent any part of the rate or total display.

**Optional dual alarms** can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA534G display show the status of both alarm outputs.

The BA584G is a two input version which enables the sum or difference of two flowmeters to be displayed. Other rate totalisers in this range include field and panel mounting models with intrinsic safety and Ex n certification, plus other general purpose models.

# BA534G one input rate totaliser General purpose

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- IP66 GRP enclosure
- Lineariser
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba534g



#### Power supply Voltage

Current

Input

Switch contact Proximity detector (N Open collector Magnetic pick-off Voltage pulse (low)

Frequency Switch contact Other inputs

Voltage pulse (high)

#### Display

Туре Zero blanking

Total # Decimal point

Rate ±

Decimal point

‡ Rate & Total can be

Grand total

#### Remote reset

Pulse output Frequency

> Divisible by Pulse width

Ron Roff Vmax I max

#### **Configurable functions**

Rate scale factor Flowmeter K-factor Lineariser Rate timebase

Rate display filter Total scale factor

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress FMC

Mechanical Terminals Weight

Accessories Backlight

> 4/20mA output Voltage drop

Dual alarms

Outputs

Ron Roff Vmax I max

Scale card

			וט
	10 to 30V dc 16mA max plus 16n	nA for optional backlight	_
AMUR)	Lower         Uj           100Ω         1k           1.2mA         2.2           2kQ         10	o <b>per</b> switching thresholds Ω 1mA	- 30
	0 +4 1V 3V 3V 10	lomV / 30V max /V 30V max	120
	150Hz typ. ] <i>Deper</i> 100kHz max.] <i>totalis</i>	nds upon pulse width & er debounce setting.	-
	Liquid crystal Blanked apart from	0 in front of decimal point	_
	8 digits 18mm high 1 of 7 positions or a	bsent	06
	6 digits 12mm high 1 of 5 positions or a	bsent	
e shown	on either 6 or 8 digit	display	
	Maximum count 10 ¹	6	TE
	Contact closure with than 10kΩ.	resistance less	
	Isolated open collect 5kHz max, synchror or when least signifit is incremented.	tor nous with input pulse, icant digit of total display	
	Divisible with select 1, 10, 100, 1000 or 0.1, 0.5, 1, 2.5, 5, 1 or 500ms.	able width. 10000 0, 25, 50, 100, 250	
	51Ω + 3V max 1MΩ min 30Vdc 10mA		Le
	Adjustable between	0.0001 and	Pi
	16 K-factors may be Rate may be display	ol. ∋ entered yed per second, minute	Pa
	or hour. Adjustable digital filt Adjustable between	er 0.0001 and 99999	#
	-40 to $\pm$ 70°C display	v -20 to ±70°C	Н
	-40 to +85°C	y -20 10 +70 0	
	Report available	condensing	Mode Input
	GRP IP66 Complies with 2014	/30/ELL	Rate
			Rate Total
	Screw clamp for 0.5 1.1kg	to 1.5mm ²	Acce Displa
	Green LED internall	y powered	4/20r
	Isolated current sink 5 to 30V	(	Dual
	Two alarms each of independently config high or low alarm w	which may be gured as a rate or total, ith a NO or NC output.	Scale Ui Ta
	Isolated single pole, state switch.	voltage free solid	Stain
	$5\Omega + 0.7V \text{ max}$ IM $\Omega$ min		Pipe
	30Vdc 200mA		Pane
	Blank card fitted to	all instruments	* Tot

Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

## **DIMENSIONS** (mm)



### **ERMINAL CONNECTIONS**



anel mounting kits BA394G 316 stainless steel not sealing # BA494G GRP sealing #

Please specify

Seconds, minutes or hours*

Please specify if required

Legend required No charge if ordered with totaliser

If linearisation is required, up to 16 rate scale

factors may be entered for different flow rates.

BA534G

XXXXX *

XXXXX

Backlight

Alarms

4/20mA output

Legend required

Legend required

See accessory datasheet for details

## OW TO ORDER

el number Туре

scale factor

timebase scale factor

essories lay backlight

mA output

alarms

e card marking Inits ag

nless legend plate

BA393G mounting kit

el mounting kit BA394G or BA494G

aliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The BA554E loop powered 4/20mA rate totaliser is a third generation, general purpose, field mounting instrument that is electrically and mechanically compatible with the earlier BA554D, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA554E is housed in a robust IP66 GRP enclosure with a separate terminal compartment

**Main application** of the BA554E is to integrate the 4/20mA output from a flow transmitter and display the rate and total flow in engineering units. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA554E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA554E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the totalisers voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

**Optional dual alarms** which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to extensive vibration testing and is supported by a three year guarantee.

**For panel mounting applications** the BA558E has a similar specification but is housed in a 144 x 72 DIN panel mounting enclosure with an IP66 front panel.

If flammable atmospheres are present either the BA354E or the BA354NE should be used. Both have the same features as the BA554E but have been certified for use in hazardous areas.

# **BA554E** 2-wire 4/20mA rate totaliser

# **General purpose**

- Loop powered only 1.2V drop.
- Total display
   8 digit 18mm high
   Rate display
   5 digit 12mm high
- IP66 GRP enclosure with separate terminal compartment.
- Uni-directional & bi-directional operation.
- Root extractor and 16 segment lineariser.
- Optional backlight, alarms & external keypad.
- 3 year guarantee

### www.beka.co.uk/ba554e



Input Current

Voltage

Overrange

Rate-

Span

Zero

Display

Туре

#### DIMENSIONS (mm)

SCAL





Shown with optional legend plate

### **TERMINAL CONNECTIONS**



instrument. #

BA392D or BA393 #

# See accessory datasheet for details

#### **HOW TO ORDER**

# BA554E

Please specify

Linear, root or lineariser'

Include position of decimal point & XXXXX sign if negative, plus intermediate XXXXX points if linearisation is required.*

stainless steel plate etched with tag number

or application attached to front of the

Seconds, minutes or hours* (Units of rate display)÷(Units of total

Please specify if required

External keypad Backlight Alarms

Legend required Legend required Legend required BA393D or BA393

If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.

# Push buttons

Total~

**Έ**Ρ

Έ'

#### Accuracy

Rate display at 20°C Linear Root extracting Temperature effect on: Zero Span Series mode rejection.

Total display

#### Remote total reset

Environmental

Operating temperature Display Storage temperature Humidity Vibration Enclosure EMC

#### Mechanical Terminals

Weight

#### Accessories Backlight

Loop powered Separately powered.

Alarms

Output Vmax Imax Ron Roff

External keypad

Scale legend

Tag legend

40V dc

200mA  $5\Omega + 0.7V \text{ max}$  $1M\Omega$  min

Membrane keypad enables totaliser to be controlled without removing cover.

Units of measurement marked onto display escutcheon.

Tag number or application marked onto display escutcheon.

Dual alarms

Scale

Tag

Escutcheon marking

Stainless legend plate

Pipe mounting kit



**The BA584G** is a two input, general purpose field mounting rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA584G is easy to use and each input can be individually configured on-site to operate with a flowmeter having a variety of pulse outputs. A slide-in scale card simplifies identification.

**Main application** of the BA584G is to process the pulse output from two flowmeters and to calculate and display the sum or difference of the two within a process area. Using the front panel push buttons, the display can be scrolled to show the rate and total output of either flowmeter separately, or their sum or difference. The BA584G will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

**Display backlighting** which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the rate or total display.

**Optional dual alarms** can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA584G display show the status of both alarm outputs.

**Panel mounting rate totalisers** with one or two inputs and a variety of display and enclosure sizes are available, see BA537E, BA537E-SS, BA538E and BA588E. For hazardous area applications certified field and panel mounting models are also available.

# BA584G two input rate totaliser

# **General purpose**

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba584g



#### Power supply Voltage

Current

#### Input

Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low)

Frequency Switch contact Other inputs

Voltage pulse (high)

#### Display

Туре Zero blanking

Total ‡

Decimal point

Rate # Decimal point

‡ Rate & Total can be showr

#### Grand total

Remote reset

Pulse output Frequency

> Divisible by Pulse width

Ron Roff Vmax I max

#### Configurable functions

Each input individually configural

Input function Rate scale factor Flowmeter K-factor Lineariser Rate timebase

Rate display filter Total scale factor

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

#### Mechanical Terminals

Weight

Accessories Backlight

> 4/20mA output Voltage drop

Dual alarms

Outputs

Ron Roff Vmax Imax

Scale card

10 to 30V dc 16mA max plus 16	mA for optional backlight
Lower         U           100Ω         1           1.2mA         2           2kΩ         1           0         +           1V         3           3V         1	lpper switching thresholds kΩ .1mA 0kΩ 40mV V 30V max 0V 30V max
150Hz typ. ] <i>De</i> 100kHz max. ] <i>tot</i> a	pends upon pulse width & aliser debounce setting.
Liquid crystal Blanked apart from	0 in front of decimal point
8 digits 18mm high 1 of 7 positions or a	absent
6 digits 12mm high 1 of 5 positions or a	absent
n on either 6 or 8 digi	it display
Maximum count 10	16
Contact closure wit	h resistance less than $10k\Omega$
Isolated open colle 5kHz max, synchro when least signification incremented. Divisible with select 1, 10, 100, 1000 or 0.1, 0.5, 1, 2.5, 5, or 500ms. $51\Omega + 3V max$ $1M\Omega min$ 30V dc 10mA	ctor nous with input pulse, or ant digit of total display is table width. 10000 10, 25, 50, 100, 250
ble Input A + b or Inp Adjustable betweer 99999 pulses/unit 1 16 K-factors may b Rate may be displa or hour. Adjustable digital fi Adjustable betwee	ut A – b n 0.0001 and /ol. e entered for each input ayed per second, minute lter n 0.0001 and 99999

-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available

GRP IP66 Complies with 2014/30/EU

Screw clamp for 0.5 to 1.5mm² 1.1ka

Green LED internally powered

Isolated current sink 5 to 30V

Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch.  $5\Omega + 0.7V \text{ max}$  $\mathsf{IM}\Omega$  min 30V dc 200mA

Blank card fitted to all instruments Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

#### **DIMENSIONS (mm)**



### **TERMINAL CONNECTIONS**



Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #		
Pipe mounting kit	BA393G 316 stainless steel #		
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #		

BA584G

XXXXX

Backlight

Alarms

4/20mA output

Legend required

Legend required

Type

Please specify for each input

If linearisation is required, up to 16 K-factors

may be specified at different flow rates.

Input A + b or Input A – b

XXXXX for both inputs *

Seconds, minutes or hours*

Please specify if required

No charge if ordered with totaliser

# See accessory datasheet for details

#### HOW TO ORDER

Model number Input function Input

Rate scale factor flowmeter K-factor

Rate timebase Total scale factor

Accessories Display backlight

4/20mA output

Dual alarms

Scale card marking Units Tag

Stainless legend plate Legend required BA393G Pipe mounting kit BA394G or BA494G

Panel mounting kit

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.

# Rate Totalisers Panel Mounting



Includes one and two pulse input instruments and loop powered 4/20mA rate totalisers which can display rate and total flow separately. The pulse input instruments will operate with most types of sensor and all models include square root extraction and an adjustable lineariser. The rugged stainless steel totalisers can be safely mounted in a certified Ex e, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification.

- > Large high contrast displays with wide viewing angle
- General purpose and certified hazardous area models International Ex ia intrinsic safety and Ex nA non sparking certification.
- > Rugged stainless steel Ex ia models May be installed in a certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
- > Isolated pulse output
- > IP66 front panels
- > -40 to +70°C operating temperature range

#### > Accessories

Dual isolated alarms Isolated 4/20mA output Backlight Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.* IP66 rear sealing kit.

# Intrinsically safe

#### Ex nA

### **General purpose**

IEC TECEX







Gasket provides IP66 seal to panel



Sturdy panel clamps supplied with unit



Easy scale card installation without the need to remove indicator from the panel.



#### Rate Totalisers. Panel mounting models available:

				Dioploy	v digito			Certifi	cation		
Model No.	Enclosure	Input	Powered	d		Europe International			US	USA &	
				TOTAL	RATE No v boight	AT	EX	IEC	CEx	Car	ada
				No. x neight	No. x neight	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsio	ally safe - for use in	n Zones 0, 1 d	& 2 and 20, 21	& 22 where ce	rtified						
BA337E	96 x 48	Pulse	External	8 x 9mm	6 x 6mm	×	-	×	-	×	<ul> <li></li> </ul>
BA337E-SS*	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm	•	<b>v</b>	×	<b>v</b>	~	<b>v</b>
BA338E	144 x 72	Pulse	External	8 x 18mm	6 x 12mm	~	-	~	-	1	v .
BA358E	144 x 72	4/20mA	Loop	8 x 18mm	5 x 12mm	~	<b>v</b>	~	v	~	-
BA388E	144 x 72	2 x Pulse	External	8 x 18mm	6 x 12mm	~	-	~	-	~	v
* Certification al	llows installation in an	Ex e, or Ex p o	or Ex t panel en	closure without ii	nvalidating enclos	sure cert	tification				
Ex nA & Ex to	- for use in Zones .	2 and 22 with	nout Zener ba	rriers or galvan	ic isolators						
BA337NE	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm	✓	<b>v</b>	✓	<b>v</b>	~	<b>v</b>
General Purp	ose - for use in safe	e areas									
BA537E	96 x 48	Pulse	External	8 x 9mm	6 x 6mm						
BA537E-SS	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm						
BA538E	144 x 72	Pulse	External	8 x 18mm	6 x 12mm						
BA558E	144 x 72	4/20mA	Loop	8 x 18mm	5 x 12mm						
BA588E	144 x 72	2 x Pulse	External	8 x 18mm	6 x 12mm						

# A Rate Totaliser

for every application. . . delivered ready for installation



**The BA337E** is a third generation intrinsically safe rate totaliser that has similar functions as the BA338E, but is housed in a smaller 96 x 48mm DIN enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

The main application of the BA337E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA337E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the totaliser and the instrument panel allows the BA337E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

**International intrinsic safety certification** allows the BA337E rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. **Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA337E rate totaliser. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display.

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA337E display show the status of both alarm outputs.

**Rugged versions and a larger display** are available in other models within the range. The BA337E-SS is identical to the BA337E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e or Ex p panel enclosure without invalidating the enclosure's certification. The BA337NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA338E offers similar features as the BA337E in a 144 x 72mm enclosure.

# **BA337E**

# One input rate totaliser

# Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 96 x 48mm DIN enclosure with IP66 front protection.
- Lineariser
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

## www.beka.co.uk/ba337e









Po	<b>wer supply</b> Voltage Current	10 to 28V from 16mA max plus	a Zener barrier or galvanic isolator s 22.5mA for optional backlight
Inp	ut Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper switching thresholds 1kΩ 2.1mA 10kΩ +40mV 3V 28V max 10V 28V max
	Frequency Switch contact Other inputs All inputs	150Hz typical 100kHz max 0.01Hz min	Depends upon pulse width and debounce setting.
Dis	<b>play</b> Type Zero blanking	Liquid crystal Blanked apart f	rom 0 in front of decimal point
	Total <i>‡</i> Decimal point	8 digits 9mm hi 1 of 7 positions	igh or absent
	Rate ‡ Decimal point	6 digits 6mm hi 1 of 4 positions	igh or absent
	‡ Rate & Total can be shown on	either 6 or 8 digi	it display
	Grand total	Maximum coun	t 10 ¹⁶
Rei	note reset	Contact closure	$e$ with resistance less than $10 k \Omega$
Co	nfigurable functions Rate scale factor Flowmeter K-factor Lineariser Rate timebase Rate display filter Total scale factor	Adjustable betw 99999 pulses/u Up to 16 K-fact Rate may be di Adjustable digit Adjustable betw	veen 0.0001 and nit vol. ors may be entered splayed per second, minute or hour al filter veen 0.0001 and 99999
Intr	insic safety		
	Code	Group II Catego	ory 1G Ex ia IIC T5 Ga
	Cert. No.	$-40^{\circ}C \le Ta \le 1$ ITS16ATEX284	70°C 108X
	International IECEx Code	Ex ia IIC T5 Ga -40°C $\leq$ Ta $\leq$ T	₹ 70°C
		1202X 113 10.0	000 <del>4</del> 7
	Code	Class I Div 1 Class I Div 1 G Class II Div 1 G Class I Zone 0 Ex ia IIC T5 Ga $-40^{\circ}C \le Ta \le T$	Gp A, B, C, D T5 (USA & Canada) p E, F, G. Class III Div 1(USA & Canada) A AEx ia IIC T5 Ga (USA) a (Canada) 70°C
No	nincendive USA & Canada ETL & Code	& cETL Class I Div 2 ( Class II Div 2	Gp A, B, C, D T5 Gp F, G. Class III Div 2
	ETL Control No.	-40°C ≤ Ta ≤ 1 4008610	70°C
Env	vironmental Operating temp Storage temp Humidity Vibration Enclosure EMC	-40 to +70°C di -40 to +85°C to 95% at 40°C Report available Noryl SE1GFN Complies with B	splay -20 to +70°C i non condensing e 3. Front IP66, rear IP20 EMC Directive 2014/30/EU
Me	<b>chanical</b> Terminals Weight	Screw clamp for removable term 0.15kg	or 0.5 to 1.5mm ² cable, ninal blocks.
Acc	cessories Backlight	Groop LED into	arnally poworod
	Scale card	Blank card fitto	d to all instrumente
		Can be supplie measurement for purchase. #	d typeset with specified units of or no additional charge at time of
	Tag legend	Specified tag no onto rear of ins	umber or application printed trument. #
	BA495 rear cover and sealing kit	Provides impaction instrument. #	and IP66 protection for rear of
One All con	e of the following three output acce have isolated outputs which have nply with the requirements for <i>simp</i>	essories may be been certified as <i>ble apparatus</i> .	factory fitted to each rate totaliser. s separate intrinsically safe circuits and
	Pulse output Source	Isolated open o Totaliser input:	ollector synchronous pulse output, 5kHz max.

## DIMENSIONS (mm)



## **TERMINAL CONNECTIONS**



 Pulse output
 Direct retransmission or scaled*

 4/20mA output
 4/20mA output

 Dual alarms
 Alarms

Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

4/20mA output Voltage drop

Ron

Roff

I max

10mA Isolated current sink 5 to 28V

 $51\Omega + 3V \max$ 1M $\Omega$  min

Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.

or

or

or



The BA337E-SS is an intrinsically safe rate totaliser housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA337E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the panel enclosures certification. The intrinsically safe totaliser may also be installed in any uncertified panel enclosure located in Zone 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card simplifies identification.

The main application of the BA337E-SS is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA337E-SS will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

International intrinsic safety certification allows the BA337E-SS rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. **Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA337E-SS rate totaliser. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the rate or total display.

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA337E-SS display show the status of both alarm outputs.

Zone 2 certification and a larger display are available in other models within the range. The BA337NE has the same features as the BA337E-SS, but is Ex nA and Ex tc certified allowing installation in Zones 2 or 22 without Zener barriers or galvanic isolators.

The BA338E offers similar features as the BA337E-SS in a 144 x 72mm Noryl enclosure with a larger display.

# BA337E-SS

# Rugged one input rate totaliser

Intrinsically safe gas and dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- Optional: Backlight dual alarms or 4/20mA output or pulse output
- 3 year guarantee

## www.beka.co.uk/ba337e-ss









#### Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector . Magnetic pick-off

Voltage pulse (low) Voltage pulse (high) Frequency Switch contact

Other inputs All inputs

#### Display Туре

Zero blanking Total Ø Decimal point Rate ø Decimal point

Ø Rate & Total can be shown on either 6 or 8 digit display

Grand total

#### Remote reset

Configurable functions Rate scale factor Flowmeter K-factor Lineariser Rate timebase Rate display filter Total scale factor

#### Intrinsic safety Europe ATEX Code

Cert. No

International IECEx Code

Cert. No.

ETL & cETL Code

+40mV 0 11/ 3V 28V max 10V 28V max ЗV 150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min

I ower

100Ω

1.2mA

2kΩ

10 to 28V from a Zener barrier or galvanic isolator

Upper switching thresholds

16mA max plus 22.5mA for optional backlight

1kΩ

2.1mA

10kΩ

Liquid crystal Blanked apart from 0 in front of decimal point 8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high 1 of 4 positions or absent

Maximum count 1016

Contact closure with resistance less than  $10k\Omega$ 

Adjustable between 0.0001 and 99999 pulses/unit vol. Up to 16 K-factors may be entered Rate may be displayed per second, minute or hour Adjustable digital filter Adjustable between 0.0001 and 99999

Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da  $-40^{\circ}C \le Ta \le +60^{\circ}C \ddagger$ ITS16ATEX28408X

Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡ IECEx ITS 16.0004X

Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class II Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada)  $-40^{\circ}C \le Ta \le 60^{\circ}C \ddagger$ 

Nonincendive USA & Canada ETL & cETL

Code

ETL Control No.

Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2  $-40^{\circ}C \le Ta \le 70^{\circ}C$ 4008610

+70°C when not relying upon the certified impact and ingress protection provided by the front of the BA337E-SS is mounted.

#### Environmental

Ν

Ρι

	Operating temp	-40 to +70°C* display -20 to +70°C
	Humidity	to 95% at 40°C non condensing
	Vibration	Report available
	Enclosure	
	Ingress	Front IP66, rear IP20
	Material	BS 3146-2:1977 ANC4B (316)
	EMC	Complies with 2014/30/EU
le	chanical	
	Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.
	Weight	0.85kg
c	cessories	
	Backlight	Green LED internally powered
	Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
	Tag legend	Specified tag number or application laser etched onto rear of instrument. #
	BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #
)n	e of the following three output acces	ssories may be factory fitted to each rate totaliser.

All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for simple apparatus

ilse output	Isolated open collector
Source	Totaliser input: synchronous pulse output, 5kHz max
	or
	Least significant digit of total display output: divisible
	by 1, 10, 100, 1000 or 10000; pulse width definable
	as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
l max	10mA

### **DIMENSIONS** (mm)



## **TERMINAL CONNECTIONS**



# See accessory datasheet for details

## **HOW TO ORDER**

Model number Input Rate scale factor

Rate timebase Total scale factor

Accessories Display backlight Scale card

Tag Rear cover and sealing kit

One of following three output options: Pulse output or 4/20mA output

Dual alarms or

Direct retransmission or scaled 4/20mA output Alarms

No charge if ordered with totaliser.

Seconds, minutes or hours * XXXXX *

Please specify if required Backlight

Legend required

Legend required

BA495

If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.

Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

Please specify

BA337E-SS

Type * XXXXX *



**The BA337NE** rate totaliser has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22 without the need for Zener barriers or galvanic isolators. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card simplifies identification.

**The main application** of the BA337NE is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units in a Zone 2 or 22 hazardous area. The BA337NE can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

International Ex nA certification permits the BA337NE rate totaliser to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and rate totaliser may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly, the BA337NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations. **Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA337NE rate totaliser.

**Optional isolated pulse output** will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the rate or total display.

**Optional dual alarms** can switch hazardous or safe area loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA337NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA337E-SS has the same features as the BA337NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA337E offers similar features in a Noryl 96 x 48mm enclosure and the BA338E has similar features in a  $144 \times 72$ mm Noryl enclosure with a larger display.

# BA337NE

# Rugged Ex nA & Ex tc one input rate totaliser

*Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.* 

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Ex nA & Ex tc certified
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output
- 🕈 3 year guarantee

## www.beka.co.uk/ba337ne









#### Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low)

> Frequency Switch contact Other inputs All inputs

Voltage pulse (high)

#### Display

Tvpe Zero blanking

Total + Decimal point Rate ‡ Decimal point

# Rate & Total can be shown on either 6 or 8 digit display

10 to 30V dc

Lowe

100Ω

1.2mA

2kΩ

0

1V

3V

0.01Hz min

Liquid crystal

8 digits 9mm high 1 of 7 positions or absent

1 of 4 positions or absent

Adjustable between 0.0001 and

99999 pulses/unit volume. Up to 16 K-factors may be entered

Rate may be displayed per second,

Adjustable between 0.0001 and 99999

Ex ic in codes refers to instrument push

button contacts which are nonincendive

Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40°C  $\leq$  Ta  $\leq$  +60°C

Class I Zone 2 AEx nA ic IIC T5 Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA)

6 digits 6mm high

Maximum count 1016

minute or hour.

Note:

Adjustable digital filter

ITS16ATEX48409X

Ex nA ic IIC T5 Gc

Ex ic tc IIIC T80°C Dc

 $-40^{\circ}C \le Ta \le +60^{\circ}C$ 

IECEx ITS 16.0005X

 $-40^{\circ}C \le Ta \le 60^{\circ}C$ 

4008610

-40 to +85°C

0.85kg

Report available

Front IP66, rear IP20

Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada)

Ex ic tc IIIC T80°C Dc (Canada)

-40 to +60°C display -20 to +60°C

to 95% at 40°C non condensing

BS 3146-2:1977 ANC4B (316) Complies with 2014/30/EU

removable terminal blocks.

Green LED internally powered

onto rear of instrument. #

Blank card fitted to all instruments.

Can be supplied typeset with specified units of

measurement for no additional charge at time of

Specified tag number or application laser etched

Provides impact and IP66 protection for rear of

Screw clamp for 0.5 to 1.5mm² cable,

16mA max plus 22.5mA for optional backlight

1kΩ

2.1mA

10kΩ

зv

150Hz typical Depends upon pulse width

Blanked apart from 0 in front of decimal point

Contact closure with resistance less than  $10 \text{k}\Omega$ 

100kHz max ] and debounce setting.

+40mV

Upper switching thresholds

30V max 10V 30V max

Grand total

#### Remote reset

#### Configurable functions Rate scale factor Flowmeter K-factor Lineariser Rate timebase

Rate display filter Total scale factor

#### Certification

Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No

ETL & cETL Code

ETL Control No.

Environmental Operating temp Storage temp Humidity Vibration

Enclosure Ingress Material EMC

Mechanical Terminals

Weight

Accessories Backlight

Scale card

Tag legend

BA495 rear cover and sealing kit

4/20mA output

Voltage drop

instrument. One of the following three output accessories may be factory fitted to each rate totaliser.

purchase. #

Pulse output Isolated open collector Source & output Totaliser input: synchronous pulse output, 5kHz max or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms Ron Roff  $51\Omega + 3V \text{ max}$ 1MΩ min l max 10mA

## DIMENSIONS (mm)



Totaliser can be supplied configured as required for no additional charge If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

Isolated current sink. 5 to 30V



**The BA338E** is a third generation intrinsically safe rate totaliser that is compatible with the earlier BA338C, but has a much larger display, a lineariser and an isolated synchronous pulse output. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA338E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA338E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA338E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

**Open collector pulse output** will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

International intrinsic safety certification allows the BA338E rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for simple apparatus reducing system design and documentation. All input safety parameters are the same or greater than those for the preceding BA338C, thus allowing the BA338E to safely replace the earlier model.

**Display backlighting**, which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA338E display show the status of both alarm outputs.

When panel space is limited the BA337E provides similar features in a smaller 94 x 48mm enclosure.

# **BA338E**

# One input rate totaliser

# Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 144 x 72mm DIN enclosure with IP66 front protection.
- Lineariser
- Isolated pulse output
- Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

## www.beka.co.uk/ba338e









## **DIMENSIONS** (mm)





The BA358E loop powered 4/20mA rate totaliser is a third generation instrument that is electrically and mechanically compatible with the earlier BA358C, but has a much larger display with a wider viewing angle providing maximum visibility from a 144 x 72mm instrument. The new model has an extended operating temperature range, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing it from the panel.

The main application of the BA358E is to integrate the 4/20mA output from a hazardous area flow transmitter and display the rate and total flow in engineering units within the hazardous area. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA358E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA358E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

**IP66 front panel protection** and a neoprene gasket sealing the joint between the totaliser and the panel making the instrument suitable for use in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the BA358E is installed.

International intrinsic safety certification permits the BA358E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for simple apparatus which, together with the low voltage drop, allow the totaliser to be connected in series with most intrinsically safe 4/20mA loops. The BA358E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA358C, thus allowing the BA358E to safely replace the earlier model.

A backlight that may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for simple apparatus. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

**Optional dual alarms** which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to vibration testing and is supported by a three year guarantee.

**For field mounting applications** the BA354E has a similar specification as the BA358E, but is housed in a robust IP66 GRP enclosure suitable for external mounting. For safe area applications the BA554E and BA558E are equivalent uncertified field and panel mounting models.

# BA358E 2-wire 4/20mA rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- Loop powered only 1.2V drop.
- Total display 8 digit 18mm high.
   Rate display
   5 digit 12mm high.
- Intrinsically safe ATEX, FM, cFM & IECEx.
- Uni-directional & bi-directional operation.
- Root extractor and 16 segment lineariser.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- 144 x 72mm
   DIN enclosure.
- 3 year guarantee

#### www.beka.co.uk/ba358e



### DIMENSIONS (mm)



Terminals

Weight

Screw clamp for 0.5 to 1.5mm² cable,

removable.

0.35kg

If calibration information is not supplied totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds

and a total scale factor of 1. Can easily be recalibrated on-site.



**The BA388E** is a two input intrinsically safe rate totaliser that can simultaneously display the total flow and the rate of flow of either flowmeter, or the sum or difference of the two inputs. Rate and total displays may have the same or different engineering units. The BA388E is easy to use and each input can be independently configured on-site to operate with a flowmeter having various pulse outputs. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA388E is to process the pulse output from two hazardous area flowmeters and calculate and display the sum or difference of the two within a hazardous area. Rate and total flow can be simultaneously displayed in the same or different engineering units and the output from each meter can also be shown. The BA388E will compensate for nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can be entered for each meter on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

An isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA388E to be installed in areas that will be washed down.

To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA388E rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Display backlighting**, which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the sum or difference of the two flowmeter rate or total displays. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

**Dual alarms** with galvanically isolated solid state outputs which can switch hazardous or safe area loads, such as sounders or solenoid valves, are available as a factory fitted option. Both may be independently configured as rate or total alarms operating on either flowmeter input, or on the sum or difference of the two inputs. Annunciators on the BA388E display show the status of both alarm outputs.

If panel space is limited the BA337E offers similar one input functions in a 96 x 48mm enclosure.

# **BA388E**

# Two input rate totaliser

# Intrinsically safe for use in all gas hazardous areas

- Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 144 x 72mm DIN enclosure with IP66 front protection.
- Isolated pulse output
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

## www.beka.co.uk/ba388e









## **DIMENSIONS** (mm)





## **TERMINAL CONNECTIONS**



See accessory datasheet for details

#### HOW TO ORDER

Model number	Please specify configuration for both inputs
nput	туре
-lowmeter K-factor	If linearisation is required, up to 16 K-factors may be entered each at a specified flow rate.
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission of either input or derived
	from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Accessories	Please specify if required
Display backlight	Backlight
1/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Leaend required
	No charge if ordered with totaliser.

Totaliser can be supplied configured as required for no additional charge If configuration information is not supplied, instrument will be configured for open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission of input A. Can easily be reconfigured on-site

Legend required



**The BA537E** is a third generation general purpose rate totaliser that has similar functions as the BA538E, but is housed in a smaller 96 x 48mm DIN enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card shows the units of measurement and simplifies identification.

**The main application** of the BA537E is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA537E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can easily be entered on-site.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

**Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA537E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser

has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

**One of the following three isolated outputs** may be fitted to a BA537E rate totaliser. All are factory fitted options.

**Optional open collector pulse output** will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional 4/20mA current sink** output may be configured to produce an analogue output proportional to any part of the rate or total display,

**Optional dual alarms** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA537E display show the status of both alarm outputs.

**Rugged version and a larger display** are available in other models within the range. The BA537E-SS is identical to the BA537E but is housed in a rugged stainless steel enclosure with a 10mm thick window that is ideal for applications in hostile environments where the front of the instrument may be impacted. If a larger display is required, the BA538E offers similar features as the BA537E in a 144 x 72mm enclosure.

For applications in flammable atmospheres the BA337E, which is identical to the BA537E, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

# **BA537E**

# One input rate totaliser

# **General purpose**

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- 96 x 48mm DIN enclosure with IP66 front protection.
- Lineariser
- Simple on-site scale card installation.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

www.beka.co.uk/ba537e



Power supply			
Voltage Current	10 to 30V dc 16mA max plus 22.5mA for optional backlight		
Input	Lower Upper switching thresholds		
Switch contact	100Ω 1kΩ		
Proximity detector (NAMUR)	1.2mA 2.1mA		
Open collector	$2k\Omega$ 10kΩ		
Magnetic pick-off	0mv +40mv 1V 2V 20V mov		
Voltage pulse (high)	3V 10V 30V max		
Frequency		0000	
Switch contact	100kHz max		
All inputs	0.01Hz min		
, an inputo			
Display			
lype Zana blanking	Liquid crystal		
Zero blanking	Blanked apart from 0 in front of decimal point		
l otal ‡ Decimal point	8 digits 9mm high 1 of 7 positions or absent		
Pate t	6 diaite 6mm high		
Decimal point	1 of 4 positions or absent	←	
		BEKA	
‡ Rate & Total can be shown o	on either 6 or 8 digit display		
Grand total	Maximum count 10 ¹⁶		
Remote reset	Contact closure with resistance less than $10 \ensuremath{\kappa\Omega}$		
Configurable functions			
Rate scale factor (K-factor)	Adjustable between 0.0001 and		
Lineariser	Jin to 16 K-factors may be entered		
Bate timebase	Bate may be displayed per second minute or bour		
Rate display filter	Adjustable digital filter	TEDM	
Total scale factor	Adjustable between 0.0001 and 99999.		
Environmental			
Operating temp	-40 to +70°C display -20 to +70°C	-	
Storage temp	-40 to +85°C		
Humidity	To 95% at 40°C non condensing	A1	
Vibration	Report available	+	
Enclosure	Complies with EMC Directive 2014/30/EU	Ala	
	Comples with LING Directive 2014/30/EU		
Mechanical Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable	opti	
Weight	0.15kg		
Accessories			
Backlight	Green LED internally powered		
Scale card	Blank card fitted to all instruments. Can be		
	supplied typeset with specified units of		
	of purchase. #		
Tag legend	Specified tag number or application printed		
	onto rear of instrument. #		
BA495 rear cover	Provides impact and IP66 protection for		
and sealing kit	rear of instrument. #		
One of the following three isolated totaliser.	output accessories may be factory fitted to each rate	HOW	
Pulse output	Isolated open collector	Model number	
Source & output	Totaliser input: synchronous pulse output,	Input	
	5kHz max.	<b>D</b>	
	or	Pate scale fac	

**DIMENSIONS (mm)** 



# **RMINAL CONNECTIONS**



## W TO ORDER

	or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000;	Rate scale factor
	pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms	Rate timebase Total scale factor
Ron Roff Lmax	51Ω + 3V max 1MΩ min 10mΔ	Accessories
THIAN		Scale card
4/20mA output	Isolated current sink.	_
Voltage drop	5 to 30V	l ag Rear cover and sealing kit
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.	One of following three outp Pulse output or 4/20mA output or Dual alarms
Outputs	Isolated single pole, voltage free solid state switch	
Ron	$5\Omega + 0.7V$ max	* Totaliser can be supplied
V max	30V dc	configuration information is
I max	200mA	input with rate and total sca

#### Please specify BA537E Type *

XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates. Seconds, minutes or hours* XXXXX *

Please specify if required Backlight Legend required No charge if ordered with totaliser Legend required BA495

ree output options: Direct retransmission or scaled * 4/20mA output Alarms

supplied configured as required for no additional charge. If nation is not supplied, instrument will be configured for open collector total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.

# See accessory datasheet for details



The BA537E-SS is a rugged general purpose rate totaliser housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is particularly suitable for use in hostile and marine environments or where the front of the instrument is likely to be impacted. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card shows the units of measurement and simplifies identification.

**The main application** of the BA537E-SS is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA537E-SS can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

**Display backlighting** which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area. **One of the following three isolated outputs** may be fitted to a BA537E-SS rate totaliser. All are factory fitted options.

**Optional open collector pulse output** may be configured to synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional 4/20mA current sink** output may be configured to produce an analogue output proportional to any part of the rate or total display,

**Optional dual alarms** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA537E-SS display show the status of both alarm outputs.

**For less hostile applications** the BA537E is identical to the BA537E-SS but is housed in a Noryl enclosure also providing IP66 front of panel protection. If a larger display is required, the BA538E offers similar features in a 144 x 72mm Noryl enclosure.

For applications in flammable atmospheres the BA337E-SS, which is identical to the BA537E-SS, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

# BA537E-SS

# Rugged one input rate totaliser

# **General purpose**

- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Lineariser
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

www.beka.co.uk/ba537e-ss



Power supply Voltage Current	10 to 30V dc 16mA max plus 22.5mA for optional backlight		
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	LowerUpperswitching thresholds $100\Omega$ $1k\Omega$ $1.2mA$ $2.1mA$ $2k\Omega$ $10k\Omega$ $0mV$ $+40mV$ $1V$ $3V$ $3V$ $10V$ $3V$ $10V$	Panel cut-out	Recommended panel cut-out 90 +0.5 / -0.0 x 43.5 +0.5 / -0.0
Frequency Switch contact Other inputs All inputs	150Hz typical 100kHz max 0.01Hz min		
Display Type Zero blanking Total ‡ Decimal point Rate ‡	Liquid crystal Blanked apart from 0 in front of decimal point 8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high		
becimai point			33 ↓
4 Hale & Total can be shown of	Maximum count 1016	← 105	
	Contact closure with resistance less than 10k0	BEKA BA53	17E-99
		DENA	
Configurable functions Rate scale factor ( <i>K</i> -factor) Lineariser Rate timebase Rate display filter Total scale factor	Adjustable between 0.0001 and 99999 pulses/unit volume. Up to 16 K-factors may be entered Rate may be displayed per second, minute or hour Adjustable digital filter Adjustable between 0.0001 and 99999		Terminals for output options not shown
Environmental			
Operating temp Storage temp Humidity Vibration	-40 to +70°C display -20 to +70°C -40 to +85°C To 95% at 40°C non condensing Report available	TERMINAL CONI	NECTIONS
Enclosure Ingress Material EMC	Front IP66, rear IP20 BS 3146-2:1977 ANC4B (316) Complies with 2014/30/EU		P1 P2 OR C1 C2 C3 C4
<b>Mechanical</b> Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable, removable 0.85kg	Alarm 1 Alarm 2 Terminals for optional dual alarms	Terminals for Terminals optional pulse for optional
Accessories Backlight	Green LED internally powered		output 4/20mA output
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #	1 2 RS1RS2 + Power Beset	2 3 4 5 6 E 77777 Add link Pulse Connect M4 earth
Tag legend	Specified tag number or application printed onto rear of instrument. #	supply	to energise input stud to panel pulse enclosure in which input instrument is mounted
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #		
One of the following three output at All have isolated outputs.	ccessories may be factory fitted to each rate totaliser.	HOW TO ORDER	
Pulse output Source & output	Isolated open collector Totaliser input: synchronous pulse output, 5kHz max. or	Model number Input Rate scale factor	Please specify BA537E-SS Type * XXXXX *
Pon	Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms	Rate timebase Total scale factor	If linearisation is required, up to 16 rate scale factors may be entered for different flow rates. Seconds, minutes or hours * XXXXX *
Roff	1MQ min	Annonation	Diseas enceify if you in a
I max	10mA	Display backlight	Backlight
4/20mA output Voltage drop	Isolated current sink 5 to 30V	Scale card Tag Rear cover and sealing kit	Legend required No charge if ordered with totaliser Legend required BA495
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.	One of following three output option Pulse output or 4/20mA output or Dual alarms	is: Direct retransmission or scaled * 4/20mA output Alarms
Outputs Ron	Isolated single pole, voltage free solid state switch $5\Omega$ + 0.7V max		

# **DIMENSIONS (mm)**

# See accessory datasheet for details

 $\mathsf{IM}\Omega$  min

30V dc 200mA

Roff

V max I max

**SPECIFICATION** 

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The BA538E is a third generation general purpose rate totaliser that is compatible with the earlier BA538C, but has a much larger display, a lineariser and an isolated synchronous pulse output. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card shows the units of measurement and simplifies identification.

**Main application** of the BA538E is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA538E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

**Display backlighting,** which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area. An open collector pulse output will synchronously retransmit the rate totaliser's input pulse to another instrument, or a pulse when the least significant digit of the total display is incremented.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA538E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display.

**Optional dual alarms** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA538E display show the status of both alarm outputs.

When panel space is limited the BA537E provides similar features in a smaller 96 x 48mm enclosure. A rugged version, the BA537E-SS, housed in a stainless steel enclosure is also available

For applications in flammable atmospheres the BA338E, which is identical to the BA538E, and the smaller BA337E have international intrinsic safety certification. For Zone 2 or 22 applications, the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

# **BA538E**

# One input rate totaliser

# **General purpose**

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- 144 x 72mm DIN enclosure with IP66 front protection.
- Lineariser
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba538e



# **DIMENSIONS (mm)**

Power supply Voltage Current	10 to 30V dc 16mA max plus 22.5mA for optional backlight		Province deduced and and
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	$\begin{array}{llllllllllllllllllllllllllllllllllll$	Panel cut-out	To achieve an IP66 seal between the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must be used DIN 43 700 138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0
Frequency Switch contact Other inputs All inputs	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min	00 000000	
<b>Display</b> Type Zero blanking	Liquid crystal Blanked apart from 0 in front of decimal point		3
Total <i>‡</i> Decimal point Rate <i>‡</i> Decimal point	8 digits 18mm high 1 of 7 positions or absent 6 digits 12mm high 1 of 4 positions or absent	144	
# Rate & Total can be shown	on either 6 or 8 digit display	ВЕКА	BA538E
Grand total	Maximum count 10 ¹⁶		Scale
Remote reset	Contact closure with resistance less than $10 \mathrm{k} \Omega$	DISPLAY	card N options not shown
Pulse output Source & output	Isolated open collector Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500mc		
Ron	510 + 3V max		
l max	10mA		
Configurable functions Rate scale factor ( <i>K-factor</i> ) Lineariser Rate timebase Rate display filter Total scale factor	Adjustable between 0.0001 and 99999 pulses/unit volume. Up to 16 K-factors may be entered Rate may be displayed per second, minute or hour Adjustable digital filter Adjustable between 0.0001 and 99999	A1 A2 A3 A4 + + Alarm 1 Alarm 2 Terminals for optional dual alarms	Pulse output Pulse dutput Pulse for optional 4/20mA output
Environmental Operating temp Storage temp Humidity Vibration Enclosure EMC	-40 to +70°C display -20 to +70°C -40 to +85°C To 95% at 40°C non condensing Report available Noryl SE1GFN3. Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU	12 + Power supply	IST RS2 3 4 5 6 L J + Reset Add link Pulse to energise input pulse input
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable		
weight	U.35Kg	HOW TO ORDEF	{
Accessories Backlight	Green LED internally powered	Model number Input	<b>Please specify</b> BA538E Type *
4/20mA output Voltage drop	Isolated current sink 5 to 30V	Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow
Dual alarms Outputs Ron Roff V max I max	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch $5\Omega + 0.7V$ max 1M $\Omega$ min 30V dc 200mA	Rate timebase Total scale factor Pulse output	rate. Seconds, minutes or hours* XXXX * Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~	Accessories Display backlight 4/20mA output Dual alarms Scale card	Please specify if required Backlight 4/20mA output Alarms Legend required
Tag legend	Specified tag number or application printed onto rear of instrument. $\ \sim$	Tag	Legend required

~ See accessory datasheet for details

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.


The BA558E loop powered 4/20mA rate totaliser is a third generation, general purpose, panel mounting instrument that is electrically and mechanically compatible with the earlier BA558C, but it has a larger display, extended operating temperature, and an even shorter enclosure depth than its predecessor. The new model has additional features such as a lineariser. bi-directional flow capabilities and a scale card that can easily be marked to show rate and total units of measurement and can be installed on-site without dismantling the totaliser enclosure, or removing it from the panel.

The main application of the BA558E is to integrate the 4/20mA output from a flow transmitter and display the rate and total flow in engineering units. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA558E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA558E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

**IP66 front panel protection** and a neoprene gasket sealing the joint between the totaliser and the panel make the instrument suitable for use in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the BA558E is installed.

A backlight that may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required and the totaliers voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

**Optional dual alarms** which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to vibration testing and is supported by a three year guarantee.

**For field mounting applications** the BA554E has a similar specification as the BA558E, but is housed in a robust IP66 enclosure suitable for external mounting.

If flammable atmospheres are present the BA358E should be used. This has the same features as the BA558E but has been certified for use in hazardous areas.

## **BA558E** 2-wire 4/20mA rate totaliser

## **General purpose**

- Loop powered only 1.2V drop.
- Total display
   8 digit 18mm high
   Rate display
   5 digit 12mm high
- Uni-directional & bi-directional operation.
- Root extractor and 16 segment lineariser.
- Optional backlight & alarms.
- Easy on-site scale card installation.
- IP66 front
- 144 x 72mm DIN enclosure.
- 3 year guarantee

## www.beka.co.uk/ba558e



Weight

Accessories Backlight

Alarms

Output

Vmax

Imax Ron

Roff

Printed scale card

Loop powered

Separately powered

## DIMENSIONS (mm)

		N N	
Input			
Current Voltage Overrange	4 to 20mA Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight. ±200mA or ±30V will not damage the instrument.	Panel cut-ou	t Becommended panel cut-out To achieve an IP66 seal between the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must be used DIN 43 700 138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0
Display			
Type	Liquid crystal, multiplexed 2:1		
Zero blanking	Blanked apart from 0 in front of decimal point.		
Rate~	5 digits 12mm high.	4	
Span	Adjustable between 0 & ±99999 for a 4/20mA input.		
Zero	Adjustable between 0 & ±99999 with 4mA input.		7.5 7
Decimal point Timebase	1 of 4 positions or absent Per second, minute or hour	века	BA538E
Total~	8 digits 18mm high		
Scaling factor	Adjustable between 0.0001 & 99999		Card Scale S
Decimal point	1 of 5 positions or absent		
Grand total	Maximum count 10 ¹⁶		
~ Rate & Total can be show	vn on either display	TERMINAL CON	NECTIONS
Push buttons	(Function in display mode)		
	Shows rate display with 4mA input	Terminals 2 & 4 internally linked for joining return	
́Р'	Displays input in mA or a % of span, has	4/20mA wire.	
	a modified function when alarms are fitted.		
Έ'	Time since total display was reset		
Accuracy Rate display at 20°C	0.00% of onen i 1 digit	↓ ↓ +	Separately powered Loop
Boot extracting	$\pm 0.02\%$ of span $\pm 10$ light $\pm 16$ light	+ — R 4/20mA	reset Common
Temperature effect on:		input	Terminals Terminals
Zero	Less than 25ppm of span/°C		optional optional
Span Sorian mode rejection	Less than 50ppm of span/°C		alarms backlight
Series mode rejection.	to pk 50 or 60Hz interference.		supplied printed with specified units of
Total display	Updated every second		measurement.
Remote total reset	Contact closure with resistance less than $1k\Omega$ .	Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
		Tag legend	Specified tag number or application
Environmental	40 to 70°C		thermally printed onto rear of the
Display	-40 to 70°C		instrument.
Storage temperature	-40 to 85°C		
Humidity	to 95% at 40°C noncondensing		
Vibration	Report available	TIOW TO UNDER	
Enclosure EMC	Complies with EMC Directive 2014/30/EU		Please specify
		Model number	BA558E
Mechanical	Correct closes for 0.5 to 1.5 mm ² achte	Bate display at:	Linear, root or lineariser"
reminais	Screw clamp for 0.5 to 1.5mm cable,	anoping an	

lineariser* XXXXX] Include position of decimal point XXXXX & sign if negative, plus

intermediate points if linearisation is required.*

Seconds, minutes or hours* (Units of rate display)÷(Units of total display)*

Please specify if required . Backlight Alarms Legends required Legend required

* If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.

 $5\Omega + 0.7V \text{ max}$ 

output.

40V dc

200mA

removable.

Green, may be loop or separately

Two alarms each of which may be

independently configured as a rate or

total, high or low alarm with a NO or NC

0.35kg

powered.

Totaliser voltage 5V

Isolated solid state switch

10.5V at 35mA

180

4.000mA

20.000mA

Rate timebase

Accessories

Dual alarms

Scale card

Tag

Total scale factor

Display backlight



**The BA588E** is a two input general purpose rate totaliser that can simultaneously display the total flow and the rate of flow of either flowmeter, or the sum or difference of the two inputs. Rate and total displays may have the same or different engineering units. The BA588E is easy to use and each input can be independently configured on-site to operate with a flowmeter having various pulse outputs. A slide-in scale card simplifies identification.

**Main application** of the BA588E is to process the pulse output from two process area flowmeters and calculate and display the sum or difference of the two. Rate and total flow can be simultaneously displayed in the same or different engineering units and the output from each flowmeter can also be shown. The BA588E will compensate for nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can be entered for each meter on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

**Display backlighting,** which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area. An isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA588E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the sum or difference of the two flowmeter rate or total displays. The output is galvanically isolated allowing direct connection to other instruments.

**Dual alarms** with galvanically isolated solid state outputs which can switch loads such as sounders or solenoid valves, are available as a factory fitted option. Both may be independently configured as rate or total alarms operating on either flowmeter input, or on the sum or difference of the two inputs. Annunciators on the BA588E display show the status of both alarm outputs.

If only one input is required the BA538E has the same functions and display but only one input. When panel space is limited the BA537E is a single input rate totaliser in a  $96 \times 48$ mm enclosure.

For applications in flammable atmospheres the BA388E is identical to the BA588E but has international intrinsic safety certification. For one input applications the intrinsically safe BA338E and the smaller BA337E are also available.

# **BA588E**

# Two input rate totaliser

## **General purpose**

- Each input independently configurable: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- 144 x 72mm DIN enclosure with IP66 front protection.
- Separate lineariser for each input.
- Simple on-site scale card installation.
- Isolated pulse output
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee
- www.beka.co.uk/ba588e



## **DIMENSIONS (mm)**

Power supply Voltage Current	10 to 30V dc 22mA max plus 16mA for optional backlight	Percommanded panel out out
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	LowerUpperswitching thresholds $100\Omega$ $1k\Omega$ $1.2mA$ $2.1mA$ $2k\Omega$ $10k\Omega$ $0mV$ $+40mV$ $1V$ $3V$ $3V$ $10V$ $3V$ $30V$ max	Panel cut-out Panel cut-out Pa
Frequency Switch contact Other inputs All inputs	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min	000 000000000 000 000 000 000 000 000
<b>Display</b> Type Zero blanking	Liquid crystal Blanked apart from 0 in front of decimal point	
Rate <i>‡</i> Decimal point Total <i>‡</i> Decimal point	6 digits 12mm high 1 of 4 positions or absent 8 digits 18mm high 1 of 7 positions or absent	
‡ Rate or Total of either input	t can be shown on 6 or 8 digit display.	BEKA BA588E
Grand total	Maximum count 10 ¹⁶	DICDLAY Scale Terminals for output
Remote reset	Contact closure with resistance less than $10 \mathrm{k}\Omega$	DISPLAY card options not shown
Pulse output	Isolated open collector	
Source & output	Either input: synchronous pulse output, 5kHz max.	<u>↓</u>
	or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms	TERMINAL CONNECTIONS
Ron	51Ω + 3V max	
l max	10mA	
Configurable functions Each input individually configurat Rate scale factor ( <i>K-factor</i> ) Lineariser Rate timebase Rate display filter Total scale factor Environmental Operating temp Storage temp Humidity Vibration	Adjustable between 0.0001 and 99999 pulses/unit volume. Up to 16 K-factors may be entered Rate may be displayed per second, minute or hour Adjustable digital filter Adjustable between 0.0001 and 99999 -40 to +70°C display -20 to +70°C -40 to +85°C To 95° at 40°C non condensing Report available	Terminals for optional 4/20mA output Alarm 1 Alarm 2 Terminals for optional dual alarms Alarm 1 Alarm 2 Alarm 2 Alarm 1 Alarm 2 Alarm 2 P1 P2 + Power supply P1 P2 + Power Supply P1 P2 + Power Supply P1 P2 P1 P2
Enclosure EMC	Noryl SE1GFN3. Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU	
Mechanical		HOW TO URDER
Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable, removable 0.35kg	Please specify configuration for both inputs           Model number         BA588E           Input         Type *
Backlight	Green LED internally powered	Rate scale factor XXXXX * If linearisation is required, up to 16 rate scale
4/20mA output Voltage drop	Isolated current sink representing any part of the sum or difference of the two inputs. 5 to 30V dc	factors may be entered each at a specified flov rate for each input. Rate timebase Seconds, minutes or hours*
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm	Total scale factor       XXXXX *         Pulse output       Direct retransmission of either input or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000;
Outputs Ron	with a NO or NC output operating on either input. Isolated solid state switch $5\Omega + 0.7V$ max	pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 2 50, 100, 250 or 500ms.*
Roff V max I max	IMΩ min 30V dc 200mA	AccessoriesPlease specify if requiredDisplay backlightBacklight4/20mA output4/20mA outputDual alarmsAlarms
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~	Scale card Legend required No charge if ordered with totaliser Tag Legend required
Tag legend	Specified tag number or application printed onto rear of instrument. ~	* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector inputs with rate and total scaling factors of 1.0 and a timebase of second with direct pulse retransmission of input A. Can easily be reconfigured on-site.

~ See accessory datasheet for details

## Counters Counter and position indicator





An extensive range of one and two input pulse counters which can display total and rate on separate displays in the same or different engineering units. The two input models can display the sum or differences of the inputs and can also decode a quadrature detector and display position.

- > Large high contrast displays with wide viewing angle
- General purpose and certified hazardous area models International Ex ia intrinsic safety Ex nA non sparking Dust certification

 Field mounting models have IP66 GRP enclosure Compact 'G' models 'E' models with separate terminal compartment Pipe and panel mounting accessories

### > Panel mounting models

Choice of sizes all with IP66 front panels. Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. Rear IP66 sealing kit

> Isolated pulse output Synchronous with input for retransmission

## > -40 to +70°C operating temperature range

### > Accessories

Dual isolated alarms Isolated 4/20mA output Backlight Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.* Laser engraved stainless steel legend plates



BA393G Pipe mounting kit



Slide-in scale card can be supplied printed with customer specified information for no extra charge.



Easy scale card installation without the need to remove indicator from the panel.



#### Counters available

			Display digits		Certification					
Model No.	Mounting	Input			Eui	rope	Intern	ational	US	A &
			TOTAL No. x height	RATE No. x height	Gae	Duet	Gae		Gas	Duet
			Ĵ	Ũ	Gas	Dust	Gas	Dust	Gas	Dusi
Ex ia intrinsic	ally safe - for use in Z	ones 0, 1 & 2 an	d 20, 21 & 22 wh	ere certified						
BA364G	Field compact	2 x Pulse	8 x 18mm	6 x 12mm	×	¥	× .	¥	× .	¥
BA364E	Field - separate tml. compartment	2 x Pulse	8 x 18mm	6 x 12mm	4	-	4	-	4	~
BA367E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm	~	-	×	-	~	V
BA367E-SS*	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	•	~	~	~	4	~
BA368E	Panel 144 x 72	2 x Pulse	8 x 18mm	6 x 12mm	~	-	×	-	~	V
* Certification al	lows installation in an Ex	e, Ex p or Ex t par	nel enclosure witho	ut invalidating enc	losure ce	ertification				
Ex nA & Ex to	- for use in Zones 2 a	nd 22 without Ze	ener barriers or g	alvanic isolators	s					
BA364NG	Field compact	2 x Pulse	8 x 18mm	6 x 12mm	<b>v</b>	¥	~	¥	~	¥
BA367NE	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	4	4	~	4	~	4
General Purpose - for use in safe areas										
BA564G	Field compact	2 x Pulse	8 x 18mm	6 x 12mm						
BA567E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm						
BA567E-SS	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm						
BA568E	Panel 144 x 72	2 x Pulse	8 x 18mm	6 x 12mm						



A **Counter** for every **application** - delivered ready for **installation** 

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The BA364E is a two input, field mounting, intrinsically safe counter which can display the sum or difference of the two pulse inputs, or the count direction of Input A may be controlled by input b, The output from a quadrature encoder can also be decoded to show speed and direction of movement. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. International intrinsic safety permits worldwide certification installation.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA364E, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

International intrinsic safety certification allows the BA364E counter to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The large display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing enabling the counter to be read at night or when installed in a poorly illuminated area. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour. **IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument's electronics.

**Isolated pulse and 4/20mA outputs** which comply with the requirements for *simple apparatus* are included. The pulse output can synchronously retransmit either of the pulse inputs, or a scaled pulse when the least significant digit of the total display is incremented. The 4/20mA output may be configured to produce an output proportional to any part of the rate or total display.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

**Dual alarms** with galvanically isolated solid state outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. Both may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA364E display show the status of both alarm outputs.

The escutcheon which shows the counters units of measurement and tag information can be changed on-site. New instruments are fitted with a printed escutcheon showing customer specified marking. If this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

**The compact BA364G** has the same functions as the BA364E without a separate terminal compartment.

## BA364E two input counter

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.
- Separate displays with backlight
- Intrinsically safe
- IP66 GRP enclosure with separate terminal compartment
- Isolated dual alarms, pulse and 4/20mA outputs.
- 3 year guarantee

www.beka.co.uk/ba364e







EMC

Power supply Voltage Current	10 to 28V from a 32mA	Zener barrier or galvanic isolator	
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper switching thresholds 1kΩ 2.1mA 10kΩ +40mV 3V 28V max 10V 28V max	
Frequency Switch contact Other inputs All inputs	150Hz typical D 100kHz max ar 0.01Hz min	epends upon pulse width nd debounce setting.	
Display			
Type Backlight Zero blanking	Liquid crystal Green LED intern Blanked apart fro	ally powered n 0 in front of decimal point	
Total <i>‡</i> Decimal point	8 digits 18mm hig 1 of 5 positions of	h r absent	
Rate <i>‡</i> Decimal point	6 digits 12mm hig 1 of 4 positions of	h r absent	
‡ Rate & Total can be shown on	either 6 or 8 digit o	lisplay	
Grand total	Maximum count 1	016	
Remote reset	Contact closure w	rith resistance less than $10k\Omega$	
Configurable functions Input function	Each input individ Input A + b: Input controlled by inpu (Inputs 90° out of	ually configurable A – b: Input A direction t b or quadrature encoder input phase).	
Total scale factor Rate scale factor Rate timebase Rate display filter	Adjustable betwee Adjustable betwee Rate may be disp Adjustable digital	en 0.0001 and 99999 en 0.0001 and 99999 layed per second, minute or hour filter	Ī
Pulse output	Isolated open coll intrinsically safe c requirements for a	ector, certified as a separate ircuit complying with the simple apparatus.	
Source and output	Either input can b 5kHz max. or	e synchronously retransmitted,	
Ron Roff	Least significant of divisible by 1, 10, Pulse width defina 50, 100, 250 or 50 $51\Omega + 3V \max$ 1 $M\Omega \min$ 10m A	ligit of total display pulse output 100, 1000 or 10000 able as 0.1, 0.5, 1, 2.5, 5, 10, 25, 00ms.	
4/20mA output	Isolated current s	ink. Configurable to represent any total display.	Me
vollage drop	510280		
Dual alarms	Two alarms each configured as a ra a NO or NC outpu	of which may be independently ate or total, high or low alarm with It.	Ac
Outputs Ron Roff	Isolated single po $5\Omega + 0.7V \text{ max}$ IM $\Omega$ min	le, voltage free solid state switch	
Intrinsic safety Europe ATEX Code Cert. No.	Group II Category -40 ≤ Ta ≤ 70°C ITS16ATEX28408	y 1G Ex ia IIC T5 Ga X	
International IECEx			_
Code Cert. No	$-40 \le Ta \le 70^{\circ}C$ IECEX ITS 16.000	)4X	ł
ETL & cETL Code	Class I Div 1 Gp Class II Div 1 Gp Class I Zone 0 A Zone 20 AEx ia I Ex ia IIC T5 Ga $-40^{\circ}C \le Ta \le 70$	A, B, C, D T5 ] USA & E, F, G Class III ] Canada KEx ia IIC T5 Ga ] USA IIC T80°C Da ] Canada °C	Mc Inp To Ra
Nonincendive USA & Canada ETI	& cETI		Ra
Code	Class I Div 2 Gp Class II Div 2 Gp Class II Div 2 Gp Class III Div 2 Ex ia IIC T5 Ga -40 < Ta < 70°C	A, B, C & D T5 F, G.	Ac Es
ETL Control No.	4008610		0.
Environmental			Sta
Operating temp	-40 to +70°C disp	lay -20 to +70°C	Pip
Humidity	to 95% at 40°C n	on condensing	
Vibration	Report available		
Material	GRP		* 0
1	IDEE		inf

Complies with 2014/30/EU

## **DIMENSIONS** (mm)





# See accessory datasheet for details

## **OW TO ORDER**

odel number out function

Weight

out tal scale factor ate scale factor

ate timebase cessories cutcheon marking

Tag

Units

ainless legend plate

pe mounting kit

Please specify for each input

BA364E Input A + b: Input A – b: Input A direction controlled by input b or quadrature encoder input Type * XXXXX * XXXXX * Seconds, minutes or hours*

#### Please specify if required

Legend required Legend required No charge if ordered with counter

Legend required BA392D or BA393

 *  Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The BA364G is a two input, field mounting, intrinsically safe counter which can display the sum or difference of the two pulse inputs, or the count direction of input A may be controlled by input b, The output from a quadrature encoder can also be decoded to show speed and direction of movement. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA364G, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

The large display has high contrast and a wide viewing angle, enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

**Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area. The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International intrinsic safety certification allows the BA364G counter to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

**Optional dual alarms** with galvanically isolated solid state outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. Both may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA364G display show the status of both alarm outputs.

**Other field mounting counters** include the BA364E which has the same functions as the BA364G, but incorporates a separate terminal compartment.

## BA364G two input counter

Intrinsically safe for use in all gas & dust hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.
- Separate displays
- Intrinsically safe
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba364g









Power supply Voltage Current	10 to 28V from a Z 16mA max plus 16	ener barrier or galvanic isolator mA for optional backlight
Input	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max
Frequency		nondo unon nulco width
Other inputs	100kHz max and	d debounce setting.
All inputs	0.01Hz min	
Display		
Type Zero blanking	Liquid crystal Blanked apart from	0 in front of decimal point
Tatal 4	2 divite 40mm bish	
Decimal point	1 of 5 positions or a	absent
Rate <i>t</i>	6 digits 12mm high	
Decimal point	1 of 4 positions or a	absent
‡ Rate & Total can be shown on	either 6 or 8 digit dis	splay
Grand total	Maximum count 10	16
Remote reset	Contact closure wit	h resistance less than 10kΩ
Puise output	intrinsically safe cir requirements for si	ctor, certified as a separate cuit complying with the mple apparatus.
Source and output	Either input, synchi	ronous pulse output 5kHz max
	or	ait of total diaplay pulsa output
	divisible by 1, 10, 1	00, 1000 or 10000
	Pulse width definat	ble as 0.1, 0.5, 1, 2.5, 5, 10, 25,
Ron	$51\Omega + 3V \text{ max}$	JIIS.
Roff	1MΩ min	
1 max	TOMA	
Each input individually configurable		
Input function	Input A + b: Input A	A – b: Input A direction
	(Inputs 90° out of p	b or quadrature encoder input hase).
Total scale factor	Adjustable between	0 0001 and 99999
Rate scale factor	Adjustable between	n 0.0001 and 99999
Rate timebase Bate display filter	Rate may be displa Adjustable digital fi	ayed per second, minute or hour
	najuotable algitar n	
Europe ATEX		
Code	Group II Category	1G Ex ia IIC T5 Ga
	Group II Category	1D Ex ia IIIC T80°C Da
Cert No	$-40 \le Ta \le 60^{\circ}C$	(
	11010/112/20400/	,
Code	Ex ia IIC T5 Ga	
	-40 ≤ Ta ≤ 70°C	
	$-40 \le Ta \le 60^{\circ}C$	a
Cert. No	IECEx ITS 16.0004	X
ETL & cETL		
Code	Class   Div 1 Gp / Class    Div 1 Gp	A, B, C, D T5 USA & F G Class III Canada
	Class I Zone 0 AE	Ex ia IIC T5 Ga USA
	Zone 20 AEx ia III	C T80°C Da
	Ex ia IIIC T80°C [	Da Canada
	$-40^{\circ}C \le Ta \le 70^{\circ}C$	0
Nonincendive USA & Canada ETL	& cETL	
Out	Class II Div 2 Gp A	, G.
	Class III Div 2	
	$-40 \le Ta \le 70^{\circ}C$	
ETL Control No.	4008610	
Environmental	40 to 17000 dt 1	
Operating temp Storage temp	-40 to +70°C displa -40 to +85°C	ay -20 to +70°C
Humidity	to 95% at 40°C nor	n condensing
VIDration Enclosure	neport available	
Material	GRP	
Ingress EMC	Complies with 2014	4/30/EU
Mechanical		
Terminals	Screw clamp for 0.	5 to 1.5mm ²
Weight	1.1kg	
Accessories Backlight	Green LED intornal	lly powered
4/20mA output Voltage drop	5 to 28V	ĸ

## **DIMENSIONS (mm)**



## **TERMINAL CONNECTIONS**



a NO or NC output. Isolated single pole, voltage free solid state switch Outputs Ron 5Ω + 0.7V max IMΩ min Roff Blank card fitted to all instruments. Scale card Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. # 316 stainless steel plate laser engraved with tag Legend plate number or application information attached to rear of the instrument, visible from the front. # Pipe mounting kit BA393G 316 stainless steel # Panel mounting kits BA394G 316 stainless steel not sealing # BA494G GRP sealing #

# See accessory datasheet for details

### **HOW TO ORDER**

Model number Input function

Rate scale factor Rate timebase

Display backlight

4/20mA output

Dual alarms

Scale card marking Units

Stainless legend plate

Pipe mounting kit

Panel mounting kit

Tag

Accessories

Input Total scale factor Please specify for each input

BA364G Input A + b: Input A - b: Input A direction controlled by input b or quadrature encoder input (Inputs 90° out of phase). * Type * XXXXX * XXXXX * Seconds, minutes or hours*

Please specify if required

Backlight 4/20mA output

Alarms

Legend required Legend required No charge if ordered with counter

Legend required

BA393G

BA394G or BA494G

* Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The BA364NG is a third generation field mounting two input counter housed in a compact IP66 GRP enclosure. The counter is easy to use and each input can be individually configured on-site to operate with sensors having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation cost.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA364NG, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

International Ex nA and Ex tc certification allows the BA364NG counter to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The large display has high contrast and a wide viewing angle, enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour. **Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

An optional isolated 4/20mA current sink output may be configured to produce an output proportional to any part of the rate or total display.

**Optional dual alarms** with galvanically isolated solid state outputs can switch hazardous or safe area loads such as a sounder or solenoid valve. Both may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA364NG display show the status of both alarm outputs.

**Other field mounting counters** include the intrinsically safe BA364E and BA364G which have the same functions as the BA364NG. The BA564G is a general purpose model for use in safe areas.

## BA364NG Ex nA two input counter

*Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators* 

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.
- Separate displays
- Ex nA & Ex tc certified
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 🔶 3 year guarantee

## www.beka.co.uk/ba364ng









#### Power supply Voltage

Current

Input

Switch contact Proximity detector (N Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Frequency Switch contact Other inputs All inputs

#### Display

Type Zero blanking

Total ± Decimal point

Rate *t* Decimal point

‡ Rate & Total can b

Grand total

Remote reset

Pulse output Source and output

> Ron Roff Ui I max

#### Configurable functions Each input individually co

Input function

Total scale factor **Bate scale factor** Rate timebase Rate display filter

#### Certification

Europe ATEX Code

Cert. No

International IECEx Code

Cert. No

ETL & cETL Code

ETL Control No.

#### Environmental

Operating temp Certification temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

Accessories Backlight

4/20mA output

Voltage drop Dual alarms

Outputs Ron Roff Ui li

	10 to	30Vdc	SmA for optional back	light
	10111/		Upper switching th	resholds
		100Ω 1.0mA	1kΩ	
AMUR)		2kΩ	2.1mA 10kΩ	
		0 1V	+40mV 3V 30V max	
		3V	10V 30V max	
	150H 100k 0.01H	Iz typical De Hz max an Hz min	epends upon pulse wi Id debounce setting.	dth
	Liqui Blanl of de	d crystal ked apart fror cimal point.	n 0 in front	
	8 dig 1 of s	its 18mm hig 5 positions or	h absent	
	6 dig 1 of 4	its 12mm hig 4 positions or	h absent	
e shown on d	either	6 or 8 digit d	isplay	
	Maxi	mum count 1	0 ¹⁶	
	Cont	act closure w	ith resistance less tha	in 10kΩ
	Isola Eithe or	ted open colle er input synch	ector ronous pulse output 5	kHz max
	Leas divisi Pulse 50, 1 51Ω 1MΩ 30Vc	t significant d ible by 1, 10, e width defina 00, 250 or 50 + 3V max min dc	igit of total display pui 100, 1000 or 10000 ble as 0.1, 0.5, 1, 2.5 00ms.	lse output , 5, 10, 25,
	10m/	A		
onfigurable	Input contr (Inpu	t A + b: Input rolled by input its 90° out of	A – b: Input A directic t b or quadrature inpu phase).	n t
	Adjus Adjus Rate Adjus	stable betwee stable betwee may be displ stable digital	en 0.0001 and 99999 en 0.0001 and 99999 ayed per second, min filter	ute or hour
	Note cont	Ex ic codes acts which a	s refer to instrument re nonincendive.	push button
	Grou Grou -40 ≤ ITS1	p II Category p II Category ≤ Ta ≤ 60°C 6ATEX48409	3G Ex nA ic IIC T5 G 3D Ex ic tc IIIC T80% X	ic C Dc
	Ex n. Ex ic -40 ≤ IECE	A ic IIC T5 Gé tc IIIC T80°C ≤ Ta ≤ 60°C Ex ITS 16.000	c Dc 5X	
	Class Zone Ex n. Ex n Ex ic Class -40°C 4008	s I Zone 2 A 22 AEx ic to A ic IIC T5 Gc IIC T5 Gc to IIIC T80°C s III Div 2, Cla $C \le Ta \le 60°$ 6610	Ex nA ic IIC T5 Gc IIIC T80°C Dc Dc Dc ass II Div 2, Gp F, G C	] USA ] Canada
	-40 to -40 to -40 to 50 Repo	o +70°C displ o +60°C o +85°C s% at 40°C no ort available	ay -20 to +70°C	
	GRP IP66 Com	plies with 201	4/30/EU	
	Scre 1.1kg	w clamp for 0 g	.5 to 1.5mm ²	
	Gree	n LED interna	ally powered	
	Isola 5 to 3	ted current si 30V	nk	
	Two confi	alarms each gured as a ra	of which may be inde te or total, high or low	pendently alarm with

a NO or NC output. Isolated single pole, voltage free solid state switch  $5\Omega + 0.7V \text{ max}$  $\mathsf{IM}\Omega$  min 30V dc 200mA

### **DIMENSIONS (mm)**



## **TERMINAL CONNECTIONS**



BA394G 316 stainless steel not sealing #

Please specify for each input

Input A + b: Input A - b: Input A direction

controlled by input b or quadrature input

# See accessory datasheet for details

Panel mounting kits

#### HOW TO ORDER

Model number Input function

Input Total scale factor Rate scale factor Rate timebase

Accessories Display backlight

4/20mA output

Dual alarms Scale card marking Units

Tag

Stainless legend plate Pipe mounting kit

Panel mounting kit

* Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.

Seconds, minutes or hours'

3

Please specify if required Backlight

(Inputs 90° out of phase).

4/20mA output

BA364NG

Type *

XXXXX *

XXXXX *

Alarms

Legend required Legend required No charge if ordered with counter

Legend required

BA393G BA394G



**The BA367E** is a one input intrinsically safe counter with one input that has similar functions as the two input BA368E, but is housed in a smaller 96 x 48mm DIN enclosure. The counter is easy to use and can be configured on-site to operate with magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA367E is to count the number of pulses received from a hazardous area sensor such as a 2-wire proximity detector and simultaneously display the rate and total number in engineering units within the hazardous area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the counter and the instrument panel, allows the BA367E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA367E counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. **Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA367E counter. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** will synchronously retransmit the counter input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the total or rate display,

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA367E display show the status of both alarm outputs.

**Rugged versions and a two input counter** are available in other models within the range. The BA367E-SS is identical to the BA367E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. The BA367NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

The BA368E is a two input counter with a larger display in a 144 x 72mm DIN enclosure.

# **BA367E**

# One input counter

## Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 96 x 48mm DIN enclosure with IP66 front protection.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output
- 3 year guarantee

## www.beka.co.uk/ba367e









#### Power supply Voltage

Current

Input

#### Switch contact Proximity detector (NAMUR) Open collector . Magnetic pick-off Voltage pulse (low)

Voltage pulse (high) Frequency Switch contact Other inputs All inputs

#### Display

Type Zero blanking Total # Decimal point Rate ± Decimal point

‡ Rate & Total can be shown on either 6 or 8 digit display

10 to 28V from a Zener barrier or galvanic isolator

Upper switching thresholds

28V max

10V 28V max

16mA max plus 22.5mA for optional backlight

1kΩ

2 1mA

10kΩ

зv

150Hz typical Depends upon pulse width

Blanked apart from 0 in front of decimal point

Contact closure with resistance less than  $10k\Omega$ 

Rate may be displayed per second, minute or hour

Class I Div 1 Gp A, B, C, D T5 (USA & Canada)

Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA)

Adjustable between 0.0001 and 99999

Adjustable between 0.0001 and 99999

Group II Category 1G Ex ia IIC T5 Ga

100kHz max and debounce setting.

+40mV

I ower

100Ω

1.2mA

2kΩ

0 1V

зv

0.01Hz min

Liquid crystal

8 digits 9mm high

6 digits 6mm high

1 of 7 positions or absent

1 of 4 positions or absent

Maximum count 1016

Adjustable digital filter

-40°C ≤ Ta ≤ 70°C

ITS16ATEX28408X

 $-40^{\circ}C \le Ta \le 70^{\circ}C$ 

IECEx ITS 16.0004X

Ex ia IIC T5 Ga

Grand total

#### Remote reset

#### Configurable functions

Total scale factor Rate scale factor Rate timebase Rate display filter

#### Intrinsic safety

Europe ATEX Code

#### Cert. No.

International IECEx Code

Cert. No

ETL & cETL

Code

Ex ia IIC T5 Ga (Canada)

Code

Environmental Operating temp Storage temp Humidity

> Vibration Enclosure EMC

#### Mechanical

Terminals

Weight

#### Accessories Backlight

Scale card

Tag legend

F

BA495 rear cover and sealing kit



Screw clamp for 0.5 to 1.5mm² cable. removable terminal blocks. 0.15kg

Green LED internally powered

Blank card fitted to all instruments Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. Specified tag number or application printed

onto rear of instrument. #

Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each counter. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for simple apparatus.

Pulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max
	or
	Least significant digit of total display divisible by:
	1, 10, 100, 1000 or 10000.
	Pulse width definable as:
	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
l max	10mA

## **DIMENSIONS** (mm)



## **TERMINAL CONNECTIONS**



Roff # See accessory datasheet for details

### HOW TO ORDER

Model number Input Total scale factor Rate scale factor Rate timebase

Accessories Display backlight Scale card

Tag

Rear cover and sealing kit

One of following three output options: Pulse output 4/20mA output or Dual alarms

4/20mA output Alarms

counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

Pulse output

Please specify

Seconds, minutes or hours*

Please specify if required

No charge if ordered with counter.

BA367E

XXXXX

XXXXX

Backlight

BA495

Legend required

Legend required

Type *

or



The BA367E-SS is an intrinsically safe counter housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA367E-SS to be safely installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification. The intrinsically safe counter may also be installed in any uncertified panel enclosure located in Zones 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA367E-SS is to count the number of pulses received from a hazardous area sensor such as a 2-wire proximity detector and simultaneously display the rate and total in engineering units within the hazardous area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

**IP66 front panel protection** with a silicone gasket to seal the joint between the counter and the instrument panel, allows the BA367E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA367E-SS counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. **Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA367E-SS counter. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** synchronously retransmits the counter input pulse to other instruments or a pulse when the least significant digit of the total display is incremented. When transmitting a pulse representing the total count the output pulse frequency may be divided and the output pulse width may be defined.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the total or rate display.

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA367E-SS display show the status of both alarm outputs.

Zone 2 certification and a larger display are available in other models within the range. The BA367E which is identical to the BA367E-SS but is housed in a Noryl enclosure. The BA367NE is also identical to the BA367E-SS but has Ex nA and Ex tc certification allowing installation in Zone 2 or Zone 22 without Zener barriers or galvanic isolators.

For a larger display the BA368E is a two input counter in a 144 x 72mm DIN enclosure.

## BA367E-SS

# Rugged one input counter

Intrinsically safe gas & dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous area

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- Optional: Backlight dual alarms or 4/20mA output or pulse output
- 3 year guarantee

## www.beka.co.uk/ba367e-ss









Power supply	10 to 29\/ from a 7a	por barrier or galvania isolator		
Current	16mA max plus 22.5mA for optional backlight.			
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	Upper         switching thresholds           lkΩ         2.1mA           l0kΩ         +40mV           3V         28V max           10V         28V max		
Frequency Switch contact Other inputs All inputs	150Hz typical ] Dep 100kHz max ] and 0.01Hz min	pends upon pulse width I debounce setting.		
Display Type Zero blanking Total ‡ Decimal point Rate ‡ Decimal point ‡ Rate & Total can be shown on ei	Liquid crystal Blanked apart from 1 8 digits 9mm high 1 of 7 positions or a 6 digits 6mm high 1 of 4 positions or a ither 6 or 8 digit displa	0 in front of decimal point bsent bsent ay		
Grand total	Maximum count 101	6		
Remote reset	Contact closure with	resistance less than $10k\Omega$		
Configurable functions Total scale factor Rate scale factor Rate timebase Rate display filter	Adjustable between Adjustable between Rate may be display Adjustable digital filt	0.0001 and 99999 0.0001 and 99999 red per second, minute or hour er		
Intrinsic safety Europe ATEX Code Cert. No.	Group II Category 1 Group II Category 1 -40°C $\leq$ Ta $\leq$ +60°C ITS16ATEX28408X	G Ex ia IIC T5 Ga D Ex ia IIIC T80°C Da C ≠		
International IECEx Code Cert. No.	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C $\leq$ Ta $\leq$ +60°C IECEx ITS 16.0004)	a C <i>‡</i> K		
ETL & cETL Code	Class I Div 1 Gp A Class II Div 1 Gp E, F Class I Zone 0 AE: Zone 20 AEx ia IIIC Ex ia IIC TS Ga (Ca Ex ia IIIC T80°C Da -40°C $\leq$ Ta $\leq$ 60°C	, B, C, D T5 (USA & Canada) , G. Class III Div 1 (USA & Canada) x ia IIC T5 Ga (USA) T80°C Da (USA) anada) (Canada) <i>‡</i>		
Nonincendive USA & Canada ETL & o Code	cETL Class I Div 2 Gp A Class II Div 2 Gp F -40°C ≤ Ta ≤ 70°C	, B, C, D T5 , G. Class III Div 2		

+70°C when not relying upon the certified impact and ingress protection provided by the front ‡ of the BA367E-SS enclosure to maintain the certification of the panel enclosure in which the BA367E-SS is mounted.

4008610

#### Environmental

FTI Control No

Operating temp Storage temp Humidity Vibration Enclosure Ingress	-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.
Weight	0.85kg
Accessories	
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each counter. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max
	or
	Least significant digit of total display divisible by:
	1, 10, 100, 1000 or 10000.
	Pulse width definable as:
	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

## DIMENSIONS (mm





Isolated single pole, voltage free solid state switch  $5\Omega$  + 0.7V max IMΩ min

# See accessory datasheet for details

## OW TO ORDER

Model number Input Total scale factor Rate scale factor Rate timebase

Outputs

Ron Roff

Accessories Display backlight Scale card

Tag Rear cover and sealing kit

One of following three output options: Pulse output 4/20mA output or or Dual alarms

Please specify BA367E-SS Type * XXXXX * XXXXX * Seconds, minutes or hours*

Please specify if required Backlight Legend required No charge if ordered with counter. Legend required **BA495** 

Pulse output 4/20mA output Alarms

counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.



The BA367NE has a rugged stainless steel enclosure with Ex nA and Ex tc certification allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 and 22, without the need for Zener barriers or galvanic isolators. The counter is easy to use and can be configured on-site to operate with a wide variety of sensors. A slide-in scale card simplifies identification.

**Main application** of the BA367NE is to count the number of pulses received from a hazardous area sensor such as a 2-wire proximity detector and simultaneously display the total number and their rate in engineering units within a Zone 2 or 22 hazardous area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

**IP66 front panel protection** with a silicone gasket to seal the joint between the counter and the instrument panel, allows the BA367NE to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International Ex nA certification permits the BA367NE counter to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and counter may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly the BA367NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides ExnAinstallation recommendations. **Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA367NE counter. All are isolated and have defined output parameters.

**Optional isolated pulse output** synchronously retransmits the counter input pulse to other instruments or a pulse when the least significant digit of the total display is incremented. When transmitting a pulse representing the total count the output pulse frequency may be divided and the output pulse width may be defined.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the total or rate display.

**Optional dual alarms** can switch suitably protected hazardous area loads such as an Ex e sounder or solenoid valve, or safe area loads. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA367NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA367E-SS has the same features as the BA367NE including a rugged stainless steel enclosure, but is intrinsically safe certified Ex ia.

The intrinsically safe BA367E offers similar features in a Noryl enclosure and the BA368E is a two input intrinsically safe counter in a 144 x 72mm Noryl enclosure with a larger display.

# BA367NE

## Rugged Ex nA & Ex tc one input counter

*Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.* 

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Ex nA & Ex tc certified
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.

Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

## www.beka.co.uk/ba367ne









#### Power supply Voltage

Current

Input

Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Frequency Switch contact Other inputs All inputs

#### Display

Туре Zero blanking Total ± . Decimal point Rate ‡ Decimal point

‡ Rate & Total can be shown of

Grand total

#### Remote reset

Configurable functions Total scale factor

Rate scale factor Rate timebase Rate display filter

#### Certification

Europe ATEX Code

Cert. No

International IECEx Code

Cert. No

ETL & cETL Code

ETL Control No.

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Ingress Material EMC

Mechanical

Terminals

Weight

Accessories Backlight

Scale card

Tag legend

Р

BA495 rear cover

	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min
	Liquid crystal Blanked apart from 0 in front of decimal point 8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high 1 of 4 positions or absent
on (	either 6 or 8 digit display
	Maximum count 10 ¹⁶
	Contact closure with resistance less than $10k\Omega$

16mA max plus 22.5mA for optional backlight

1kΩ

2.1mA

+40mV

3V 30V max 10V 30V max

 $10k\Omega$ 

Upper switching thresholds

10 to 30V dc

Lower

100Ω

2kΩ

0

1V ЗV

1.2mA

Adjustable between 0.0001 and 99999 Adjustable between 0.0001 and 99999 Rate may be displayed per second, minute or hour Adjustable digital filter

Ex ic in codes refers to instrument push Note: button contacts which are nonincendive

Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40°C  $\leq$  Ta  $\leq$  +60°C ITS16ATEX48409X

Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc  $-40^{\circ}C \le Ta \le +60^{\circ}C$ IECEx ITS 16.0005X

Class I Zone 2 AEx nA ic IIC T5 Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA) Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada) Ex ic tc IIIC T80°C Dc (Canada) -40°C ≤ Ta ≤ 60°C 4008610

-40 to +60°C display -20 to +60°C -40 to +85°C to 95% at 40°C non condensing Report available

Front IP66, rear IP20 BS 3146-2:1977 ANC4B (316) Complies with 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable. removable terminal blocks. 0.85ka

Green LED internally powered

#### Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. # Specified tag number or application laser etched onto rear of instrument. #

Provides impact and IP66 protection for rear of instrument. # and sealing kit

One of the following three output accessories may be factory fitted to each counter.

ulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max
	or
	Least significant digit of total display divisible by:
	1, 10, 100, 1000 or 10000.
	Pulse width definable as:
	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

## DIMENSIONS (mm)





Isolated single pole, voltage free solid state switch

5Ω + 0.7V max Ron Roff  $\mathsf{IM}\Omega$  min

# See accessory datasheet for details

### HOW TO ORDER

Model number Input . Total scale factor Rate scale factor Rate timebase

Outputs

Accessories Display backlight Scale card

Tag Rear cover and sealing kit

- One of following three output options: Pulse output 4/20mA output or
  - Dual alarms

counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

Please specify

Seconds, minutes or hours*

Please specify if required

No charge if ordered with counter.

Direct retransmission or scaled

BA367NE Type *

XXXXX *

XXXXX *

Backlight

BA495

Alarms

Leaend required

Legend required

4/20mA output

or



The BA368E is a two input intrinsically safe counter which can display the sum or difference between the two pulse inputs, or the count direction of Input A may be controlled by input b, The output from a quadrature sensor can also be counted. The BA368E is electrically compatible with the earlier BA368C but has a larger display and an isolated pulse output. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. Α slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Any application requiring the sum or difference of pulse outputs from two sensors, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume pumped in engineering units, can be performed by the BA368E. The counter's quadrature input also enables the position of a shaft or cable to be displayed together with its speed and direction of movement.

The large display has high contrast and a very wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the counter and the instrument panel allow the BA368E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

The isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the lease significant digit of the total display is incremented.

International intrinsic safety certification allows the BA368E counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. All input safety parameters are the same or greater than those for the preceding BA368C, thus allowing the BA368E to safely replace the earlier model.

**Display backlighting**, which is internally powered from the counter, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing allowing the display to be easily read at night or when the counter is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the BA368E display show the status of both alarm outputs.

When panel space is limited the BA367E provides similar one input counting features in a smaller 94 x 48mm enclosure.

# **BA368E**

# Two input counter

## Intrinsically safe for use in all gas hazardous areas

- Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Intrinsically safe
- 144 x 72mm DIN enclosure with IP66 front protection.
- Isolated pulse output
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

## www.beka.co.uk/ba368e









## **DIMENSIONS (mm)**





The BA564G is a third generation, field mounting two input counter housed in a compact IP66 GRP enclosure. The counter is easy to use and each input can be individually configured on-site to operate with sensors having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. Alternatively, the two counter inputs can be used for decoding the output from a quadrature position encoder.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA564G, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

The large display has high contrast and a wide viewing angle, enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

**Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

An optional isolated 4/20mA current sink output may be configured to produce an output proportional to any part of the rate or total display.

**Optional dual alarms** with galvanically isolated solid state outputs can switch loads such as a sounder or solenoid valve. Both alarms may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA564G display show the status of both alarm outputs.

**Panel mounting counters** with one and two inputs and a variety of display and enclosure sizes are also available, see BA567E, BA567E-SS and BA568E. Field and panel mounting models with similar specifications are available for hazardous area applications.

## BA564G two input counter

## General purpose

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.
- Separate rate and total displays.
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba564g



#### Power supply Voltage

Current

Input

Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low)

Frequency Switch contact Other inputs All inputs

Voltage pulse (high)

#### Display

Type Zero blanking

Total ‡ Decimal point

Rate # Decimal point

‡ Rate & Total can be shown of

#### Grand total

Remote reset

### Pulse output

Source and output

Ron Roff Vmax I max

#### Configurable functions

Each input individually configurable Input function

Total scale factor

Rate scale factor Rate timebase

Rate display filter

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

Accessories Backlight

> 4/20mA output Voltage drop

Dual alarms

Outputs

Ron Roff Vmax Imax

Scale card

10 to 30V dc 16mA max plus 16mA for optional backlight	
Lower         Upper         switching thresholds           100Ω         1kΩ           1.2mA         2.1mA           2kΩ         10kΩ	
0 +40mV 1V 3V 30V max 3V 10V 30V max	0
150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min	
Liquid crystal Blanked apart from 0 in front of decimal point	
8 digits 18mm high 1 of 5 positions or absent	č
6 digits 12mm high 1 of 4 positions or absent	
on either 6 or 8 digit display	TE
Maximum count 10 ¹⁶	
Contact closure with resistance less than $10 \text{k}\Omega$	
Isolated open collector Either input, synchronous pulse output 5kHz max. or	
Least significant digit of total display output divisible by 1, 10, 100, 1000 or 10000 Pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms. $51\Omega + 3V max$ $IM\Omega min$	
30V dc 10mA	Leg
le	
Input A + b: Input A – b: Input A direction controlled by input b or quadrature input	Pip
(inputs 90° out of phase).	Par
Adjustable between 0.0001 and 99999 Rate may be displayed per second.	# 5
minute or hour. Adjustable digital filter	НО
-40 to +70°C display -20 to +70°C	
-40 to +85°C to 95% at 40°C non condensing Report available	Model Input fi
GRP	Input
Complies with 2014/30/EU	Rate s Rate ti
Screw clamp for 0.5 to 1.5mm ² 1.1kg	Acces Display
Green LED internally powered	4/20m/
Isolated current sink	Dual a
5 to 30V	Scale (
Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.	Τα

Isolated single pole, voltage free solid

Blank card fitted to all instruments

Can be supplied printed with specified

units of measurement and tag information for

no additional charge at time of purchase. #

state switch.  $5\Omega + 0.7V \text{ max}$ 

 $\mathsf{IM}\Omega$  min

30V dc

200mA

## **DIMENSIONS (mm)**



## RMINAL CONNECTIONS



.egend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

BA564G

Type *

XXXXX '

XXXXX *

Backlight

Alarms

4/20mA output

Leaend required

Legend required

Please specify for each input

(Inputs 90° out of phase). *

Seconds, minutes or hours*

Please specify if required

Input A + b: Input A - b: Input A direction

controlled by input b or quadrature input

See accessorv datasheet for details

## W TO ORDER

number unction

cale factor cale factor mebase

sories y backlight

A output

larms

card marking its g

No charge if ordered with counter Stainless legend plate Legend required Pipe mounting kit BA393G

Panel mounting kit

* Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.

BA394G or BA494G



**The BA567E** is a general purpose counter with one input housed in a 96 x 48mm DIN enclosure. The counter is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card shows the units of measurement.

**Main application** of the BA567E is to count the number of pulses received from a process area sensor such as a 2-wire proximity detector and simultaneously display the rate and total number in engineering units within the process area or control room.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

**Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the counter and the instrument panel, allows the BA567E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

**One of the following three isolated outputs** may be fitted to a BA567E counter. All are factory fitted options.

**Optional open collector pulse output** will synchronously retransmit the counter input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional 4/20mA current sink output** may be configured to produce an analogue output proportional to any part of the total or rate display.

**Optional dual alarms** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state, voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA567E display show the status of both alarm outputs.

A rugged version and a two input counter with a larger display are available in other models within the range. The BA567E-SS is identical to the BA567E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window which is ideal for applications in marine or hostile environments where the front of the instrument may be impacted.

The BA368E is a two input counter with a larger display in a 144 x 72mm DIN enclosure. Both inputs can be displayed separately and, depending upon the configuration, their sum or difference.

For applications in flammable atmospheres the BA367E, which is identical to the BA567E, has international intrinsic safety certification. The BA367NE has Ex nA and Ex tc approval allowing use in Zone 2 or 22 without Zener barriers or galvanic isolators.

# **BA567E**

# One input counter

## **General purpose**

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- 96 x 48mm DIN enclosure with IP66 front protection.
- Simple on-site scale card installation.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

www.beka.co.uk/ba567e



Power supply Voltage Current	10 to 30V dc 16mA max plus 22.5mA for optional backlight	
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	LowerUpperswitching thresholds $100\Omega$ $1k\Omega$ $1.2mA$ $2.1mA$ $2k\Omega$ $10k\Omega$ $0$ $+40mV$ $1V$ $3V$ $3V$ $10V$ $3V$ $10V$	
Frequency Switch contact Other inputs All inputs	150Hz typical ] <i>Depends upon pulse width</i> 100kHz max ] <i>and debounce setting.</i> 0.01Hz min	
Display		
Type Zero blanking	Liquid crystal Blanked apart from 0 in front of decimal point	
Decimal point Rate ‡	8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high 1 of 4 positions or absent	
Deelmarpoint		≁
<i>‡ Rate &amp; Total can be shown</i> Grand total	<i>on either 6 or 8 digit display</i> Maximum count 10 ¹⁶	
Remote reset	Contact closure with resistance less than $10 k \Omega$	
Configurable functions	Adjustable between 0 0001 and 99999	
Rate scale factor Rate timebase	Adjustable between 0.0001 and 99999 Rate may be displayed per second, minute or hour.	
Rate display filter	Adjustable digital filter	TER
Environmental		
Operating temp	-40 to +70°C display -20 to +70°C -40 to +85°C	
Humidity Vibration	To 95% at 40°C non condensing Report available	
Enclosure Material Protection EMC	Noryl SE1GFN3 Front IP66, rear IP20 Complex with EMC Directive 2014/30/EU	
LMO	Complete with Line Directive 2014/00/20	
Mechanical Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable, removable 0.15kg	
Accessories Backlight	Green LED internally powered	
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of purchase. #	
Tag legend	Specified tag number or application printed onto rear of instrument. #	
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #	HO
One of the following three output All have isolated outputs.	accessories may be factory fitted to each counter.	Model r Input
Pulse output Source & output	Isolated open collector Counter input: synchronous pulse output,	Total so
	5kHz max. or Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000 Pulse width definable as: 0,1, 0,5, 1, 2,5, 5, 10, 25, 50, 100, 250 or 500ms.	Rate sc Rate tin
Ron Roff I max	51Ω + 3V max 1MΩ min 10mA	<b>Access</b> Display Scale c
4/20mA output Source Voltage	Isolated current sink Rate or total 5 to 30V	Tag Rear co
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.	One of Puls or 4/20

Isolated single pole, voltage free solid state

switch.  $5\Omega + 0.7V \text{ max}$ 

 $IM\Omega$  min

30V dc

200mA

## **DIMENSIONS (mm)**



## TERMINAL CONNECTIONS



## HOW TO ORDER

Please specify BA567E number Туре XXXXX * cale factor XXXXX * ale factor nebase Seconds, minutes or hours* sories Please specify if required backlight . Backlight ard Legend required No charge if ordered with counter Legend required BA495 over and sealing kit following three output options: Pulse output se output 4/20mA output 20mA output or Dual alarms Alarms

* Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

# See accessory datasheet for details

Outputs

Ron

Roff V max

I max

SPECIFICATION



The BA567E-SS is a one input general purpose counter housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is suitable for use in hostile and marine environments, or where the front of the instrument is likely to be impacted. The counter is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card shows the units of measurement.

**Main application** of the BA567E-SS is to count the number of pulses received from a process area sensor such as a 2-wire proximity detector and simultaneously display the rate and total number in engineering units within the process area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

**Display backlighting** which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area. **One of the following three isolated outputs** may be fitted to a BA567E-SS counter. All are factory fitted options.

**Optional open collector pulse output** will synchronously retransmit the counter input pulse, or a pulse when the least significant digit of the total display is incremented.

**Optional 4/20mA current sink** output may be configured to produce an analogue output proportional to any part of the total or rate display,

**Optional dual alarms** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state, voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA567E-SS display show the status of both alarm outputs.

**For less hostile environments** the BA567E is identical to the BA567E-SS except that it is housed in a Noryl enclosure also providing IP66 front of panel protection.

The BA568E is a two input counter with a larger display in a 144 x 72mm DIN enclosure. Both inputs can be displayed separately and, depending upon the configuration, their sum or difference can also be shown.

For applications in flammable atmospheres the BA367E-SS, which is identical to the BA567E-SS, has international intrinsic safety certification. The BA367NE has Ex nA and Ex tc approval allowing use in Zone 2 or 22 without Zener barriers or galvanic isolators.

## BA567E-SS

# Rugged one input counter

## **General purpose**

- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Simple on-site scale card installation.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

www.beka.co.uk/ba567e-ss



SPECIFICATION		DIM
Power supply Voltage Current	10 to 30V dc 16mA max plus 22.5mA for optional backlight	Г
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	$\begin{array}{llllllllllllllllllllllllllllllllllll$	
Frequency Switch contact Other inputs All inputs	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min	
<b>Display</b> Type Zero blanking	Liquid crystal Blanked apart from 0 in front of decimal point	
Total <i>‡</i> Decimal point Rate <i>‡</i> Decimal point	8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high 1 of 4 positions or absent	
‡ Rate & Total can be shown	on either 6 or 8 digit display	
Grand total Remote reset	Maximum count 10 ¹⁶ Contact closure with resistance less than 10kΩ	
Configurable functions Total scale factor Rate scale factor Rate timebase	Adjustable between 0.0001 and 99999 Adjustable between 0.0001 and 99999 Rate may be displayed per second, minute or hour.	
Hate display litter		TED
Environmental Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC	-40 to +70°C display -20 to +70°C -40 to +85°C To 95% at 40°C non condensing Report available BS 3146-2:1977 ANC4B (316) Front IP66, rear IP20 Complies with 2014/30/EU	
<b>Mechanical</b> Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable, removable 0.85kg	
Accessories Backlight	Green LED internally powered	
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of purchase. #	
Tag legend	Specified tag number or application laser etched onto rear of instrument. #	НОУ
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #	
One of the following three output All have isolated outputs.	accessories may be factory fitted to each counter.	Input
Pulse output Source & output	Isolated open collector Counter input: synchronous pulse output, 5kHz max.	Total scal Rate scal
Ron Roff I max	or Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000 Pulse width definable as: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms. $51\Omega + 3V max$ 1M $\Omega$ min 10mA	Rate time Accessor Display b Scale car
4/20mA output Source	Isolated current sink Rate or total	Tag Rear cove
Voltage Dual alarms	5 to 30V Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.	One of fo Pulse or 4/20m or Dual a Rear cove
Outputs Ron	Isolated single pole, voltage free solid state switch $5\Omega$ + 0.7V max	

## **DIMENSIONS** (mm)



## **TERMINAL CONNECTIONS**



## HOW TO ORDER

	Model number Input	Please specify BA567E-SS Type *
	Total scale factor	XXXXX *
	Rate scale factor	XXXXX *
: s:	Rate timebase	Seconds, minutes or hours*
s.	Accessories Display backlight Scale card Tag Rear cover and sealing kit	Please specify if required Backlight Legend required <i>No charge if ordered with counter</i> Legend required BA495
у	One of following three output optio Pulse output or 4/20mA output or Dual alarms Rear cover and sealing kit	ns: Pulse output 4/20mA output Alarms BA495

* Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.

# See accessory datasheet for details

 $IM\Omega$  min

30V dc

200mA

Roff

V max

I max



**The BA568E** is a two input general purpose counter which can display the sum or difference between the two pulse inputs, or the count direction of Input A may be controlled by input b. The output from a quadrature sensor can also be decoded to calculate and display position. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

Any application requiring the sum or difference of pulse outputs from two sensors, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume pumped in engineering units, can be performed by the BA568E. The counter's quadrature input also enables the position of a shaft or cable to be displayed together with its speed and direction of movement.

The large display has high contrast and a very wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the counter and the instrument panel allow the BA568E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

The isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

**Display backlighting**, which is internally powered from the counter, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the counter is installed in a poorly illuminated area.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display.

**Optional dual alarms** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as total or rate alarms with normally open or closed outputs. Annunciators on the BA568E display show the status of both alarm outputs.

If panel space is limited the BA567E is a one input counter housed in a 96 x 48mm enclosure which has similar single input features as the BA568E. Alternatively for applications in severe environments, or where the front of the instrument may be impacted, the BA567E-SS is housed in a rugged 316 stainless steel enclosure.

For applications in flammable atmospheres the BA368E, which is identical to the BA568E, has international intrinsic safety certification. For Zone 2 or 22 applications the rugged stainless steel BA367NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolator.

# **BA568E**

# Two input counter

## **General purpose**

- Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate rate and total displays.
- Can display position from quadrature sensor output.
- 144 x 72mm DIN enclosure with IP66 front protection.
- Simple on-site scale card installation.
- Isolated pulse output
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba568e



## **DIMENSIONS** (mm)



~ See accessory datasheet for details



### **TERMINAL CONNECTIONS**



Please specify BA568E Type ' Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase). XXXXX * XXXXX * Seconds, minutes or hours* Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50 100, 250 or 500ms. Please specify if required Backlight 4/20mA output Alarms Legend required No charge if ordered with counter Legend required * counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector inputs, Input A + Input b with total and rate scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured

206

on-site

## Tachometers Speed and hours run indication





A tachometer for every application which can display speed and run-time on separate displays.Operates with most transducers.

- > Large high contrast displays with wide viewing angle
- General purpose and certified hazardous area models International Ex ia intrinsic safety Ex nA non sparking Dust certification.
- > Field mounting models have IP66 GRP enclosure

Compact 'G' models 'E' models with separate terminal compartment Pipe and panel mounting accessories

## > Panel mounting models

Choice of sizes all with IP66 front panels Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. Rear IP66 sealing kit

## > Isolated pulse output Synchronous with input for retransmission

## > -40 to +70°C operating temperature range

## > Accessories

Dual isolated alarms Isolated 4/20mA output Backlight Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.* Laser engraved stainless steel legend plates



Scale card with printed customer specified legend.



Slide-in scale card can be supplied printed with customer specified information for no extra charge.



Easy scale card installation without the need to remove indicator from the panel.



#### Tachometers available

			Display	y digits			Certif	ication			
Model No.	Mounting	Input			Europe ATEX		International		US Car	USA & Canada	
			No. x height	No. x height	Gas	Dust	Gas	Dust	Gas	Dust	
Ex ia intrinsio	ally safe - for use in Z	'ones 0, 1 & 2 an	d 20, 21 & 22 wh	ere certified							
BA314G	Field compact	Pulse	8 x 18mm	6 x 12mm	×	×	<ul> <li>✓</li> </ul>	×	<b>v</b>	¥	
BA314E	Field - separate tml. compartment	Pulse	8 x 18mm	6 x 12mm	~	-	~	-	~	~	
BA317E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm	v	-	×	-	×	¥	
BA317E-SS*	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	~	~	4	~	~	~	
BA318E	Panel 144 x 72	Pulse	8 x 18mm	6 x 12mm	<ul> <li>✓</li> </ul>	-	<ul> <li>✓</li> </ul>	-	<ul> <li>✓</li> </ul>	v	
* Certification al	lows installation in an Ex	e, Ex p or Ex t pa	nel enclosure witho	out invalidating end	closure c	ertification					
Ex nA & Ex to	- for use in Zones 2 a	nd 22 without Z	ener barriers or g	galvanic isolator	s						
BA314NG	Field compact	Pulse	8 x 18mm	6 x 12mm	~	V	~	v	×	v	
BA317NE	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	~	~	~	•	4	•	
General Purp	ose - for use in safe ai	reas									
BA514G	Field compact	Pulse	8 x 18mm	6 x 12mm							
BA517E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm							
BA517E-SS	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm							
BA518E	Panel 144 x 72	Pulse	8 x 18mm	6 x 12mm							



# **Speed measurement** for every **application** - delivered ready for **installation**

sales@beka.co.uk

www.beka.co.uk



**The BA314E** is a third generation intrinsically safe field mounting tachometer housed in a robust IP66 GRP enclosure. The BA314E supersedes the BA364D. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. International intrinsic safety certification permits worldwide installation.

The main application of the BA314E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance, the BA314E tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International intrinsic safety certification allows the BA314E tachometer to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the tachometer's input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing and allows the instrument to be easily read at night or when installed in a poorly illuminated area. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument electronics.

The isolated open collector pulse output which complies with the requirements for *simple apparatus*, synchronously retransmits the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

The isolated 4/20mA output which also complies with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the speed display.

**Dual alarms** can switch hazardous area loads such as a sounder or a solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms, with normally open or closed outputs. Annunciators on the tachometer display show the status of both alarm outputs.

The display escutcheon can be marked to show the BA314E tachometer's units of measurement and tag information. New instruments are supplied with a printed escutcheon showing customer specified marking, if this information is not supplied when the instrument is ordered, a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

When space is limited the compact BA314G is a smaller version of the BA314E, it has the same functions, but it does not have a separate terminal compartment.

**For installation in Zone 2 or 22** without the need for Zener barriers or galvanic isolators, the BA314NG is similar to the BA314E but has Ex nA and Ex tc certification.

**Panel mounting tachometers** with similar specifications are available in a variety of sizes and material for use in hazardous and safe areas.

## BA314E One input tachometer

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Intrinsically safe
- IP66 GRP enclosure with separate terminal compartment.
- Isolated dual alarms, pulse and 4/20mA outputs.
- 🔷 3 year guarantee

www.beka.co.uk/ba314e







#### Power supply Voltage

Current

Input
Switch contact
Proximity detector (NAMUR)
Open collector
Magnetic pick-off
Voltage pulse (low)
Voltage pulse (high)

Frequency Switch contact Other inputs . All inputs

#### Display

Туре Zero blanking

Speed Decimal point

Run-time

Grand total run-time

#### Remote reset

Configurable functions Speed scale factor

Speed timebase

#### Pulse output Frequency

Divisible by Pulse width Ron Roff I max

#### 4/20mA output

Voltage drop

#### Dual alarms

Outputs Ron Roff

## Intrinsic safety

Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No

ETL & cETL Code

Nonincendive USA & Canada ETL & cETL Code

ETL Control No.

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

10 to 28V from a 32mA	a Zener barrier or galvanic isolator
Lower	Upper switching thresholds
100Ω	1kΩ
1.2mA	2.1mA
2kΩ	10kΩ
0	+40mV
1V	3V 28V max
3V	10V 28V max

150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min

Liquid crystal Blanked apart from 0 in front of decimal point

8 digits 18mm high 1 of 7 positions or absent

6 digits 12mm high, 99999.9 hours max

5 x 10⁶ hours max

10mA

Contact closure with resistance less than  $10 k \Omega$ 

Adjustable between 0.0001 and 99999 pulses / revolution. Speed may be displayed per second, minute or hour

Isolated open collector 5kHz max, synchronous with input pulse, or divisable with defined pulse width. 1, 10, 100, 1000 or 10000 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms 51 $\Omega$  + 3V max  $1M\Omega$  min

Isolated current sink, configurable to represent any part of the speed display. 5 to 28V

Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.

Isolated single pole, voltage free solid state switch  $5\Omega + 0.7V \text{ max}$ IM $\Omega$  min

Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C ITS16ATEX28408X

Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C IECEx ITS 16.0004X

Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIC T80°C Da Ex ia IIC T5 Ga Lasa I C T5 Ga Canada  $-40^{\circ}C \le Ta \le 70^{\circ}C$ 

Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G Class III Div 2 -40°C  $\leq$  Ta  $\leq$  70°C 4008610

-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available GRP IP66

Screw clamp for 0.5 to 1.5mm² 1.7kg

Complies with 2014/30/EU

## DIMENSIONS (mm



## **TERMINAL CONNECTIONS**



#### Please specify Model number BA314E Input Type Speed scale factor XXXXX * Speed timebase Seconds, minutes or hours* Accessories Please specify if required Scale card marking Units Leaend required Tag Legend required No charge if ordered with tachometer Stainless legend plate Legend required

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes with direct pulse retransmission. Can easily be reconfigured on-site.

BA392D or BA393

Pipe mounting kit



**The BA314G** is a third generation intrinsically safe field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or open collector sensor. International intrinsic safety certification permits worldwide installation.

**The main application** of the BA314G is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA314G tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International intrinsic safety certification allows the BA314G tachometer to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the tachometer input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display may be disabled.

**Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the tachometer's units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output synchronously retransmits the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the speed display.

**Optional dual alarms** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA314G display show the status of both alarm outputs.

Other field mounting tachometers include the BA314E which has the same functions as the BA314G, but incorporates a separate terminal compartment and supersedes the BA364D.

**For installation in Zone 2 or 22** the BA314NG, which has the same functions as the BA314G, has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

**Panel mounting tachometers** with similar specifications are available in a variety of sizes and material for use in hazardous and safe areas.

## BA314G One input tachometer

Intrinsically safe for use in all gas & dust hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Intrinsically safe
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba314g









Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

> Frequency Switch contact Other inputs All inputs

#### Display Type

Zero blanking

Decimal point

Run-time

Grand total run-time

#### Remote reset

Speed

Pulse output Frequency

> Divisible by Pulse width Ron Roff I max

Configurable functions

Speed scale factor

Speed timebase

#### Intrinsic safety Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No

ETL & cETL Code

Nonincendive USA & Canada ETL a Code

ETL Control No.

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals

Weight Accessories Backlight

4/20mA output

Voltage drop

Duai alarms

Outputs Ron Roff

Scale card

	Lower	Upper	switchin	ig thresholds		_	
	1.2mA	2.1mA				୍ଥି	
	2κΩ 0	10kΩ +40mV	/			Ť	
	1V 3V	3V 2	28V max				
	30	100 2	LOV IIIAX			20	
	150Hz typical De 100kHz max an 0.01Hz min	pends u d debou	pon puls nce settii	e width ng.		-	
	Liquid crystal Blanked apart from	n 0 in fro	nt of dec	imal point			
	8 digits 18mm high 1 of 7 positions or	n absent					
	6 digits 12mm high	n, 99999	.9 hours	max		Î	
	5 x 10 ⁶ hours max	¢					
	Contact closure wi	th resist	ance less	s than 10kΩ		6	
	Isolated open colle 5kHz max, synchro or divisible with se 1, 10, 100, 1000 o	ector onous wi lectable r 10000	ith input pulse with	pulse, dth.		_	
	0.1, 0.5, 1, 2.5, 5, $51\Omega + 3V max$	10, 25, 5	50, 100, 2	250 or 500ms.			
	1MΩ min 10mA					TER	RI
	Adjustable betwee	n 0.0001	l and 999	999			
	pulses / revolution Speed may be dis	played p	er secon	d, minute or hour			
	Group II Category -40 $\leq$ Ta $\leq$ 70°C	1G Ex ia	a IIC T5 (	Ga			Ρ
	Group II Category $-40 < Ta < 60^{\circ}C$	1D Ex ia	a IIIC T80	0°C Da		Add li	ink t
	ITS16ATEX28408	X					р
	Ex ia IIC T5 Ga						
	Ex ia IIIC T80°C D	a					
	-40 ≤ 1a ≤ 60°C IECEx ITS 16.0004	4X					
	Class   Div 1 Gp	A, B, C,	D T5	USA &			
	Class II Div 1 Gp Class I Zone 0 A	E, F, G Ex ia IIC	Class III 5 T5 Ga	Canada		Lege	end
	Zone 20 AEx ia III Ex ia IIC T5 Ga	IC T80°	C Da				
	Ex ia IIIC T80°C -40°C $\leq$ Ta $\leq$ 70°	Da C				Pipe	mc
L	cett	-				Pane	el m
_ 、	Class I Div 2 Gp Class II Div 2 Gp	A, B, C, F, G	D T5			T and	,,,,,,
	Class III Div 2 -40°C $\leq$ Ta $\leq$ 70° 4009610	С			#	See a	CCE
	4000010					HO	W
	-40 to +70°C displa	ay -20 to	o +70°C				
	to 95% at 40°C no Report available	n conde	nsing		M	odel n put	uml
	GRP IP66				S S	peed s peed ti	cal
	Complies with 201	4/30/EU			A D	<b>ccess</b> isplay l	orie bac
	Screw clamp for 0. 1.1kg	.5 to 1.5	mm²		4/	20mA	out
	Groon   ED interne	lly power	arod		D	ual ala	rms
	Isolated current sir	ny powe			S	cale ca	ard
	una un un un un on on					- inite	-

10 to 28V from a Zener barrier or galvanic isolator

16mA max plus 16mA for optional backlight.

5 to 28V

Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.

Isolated single pole, voltage free solid state switch  $5\Omega$  + 0.7V max IM\Omega min

Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

## **DIMENSIONS (mm)**



## TERMINAL CONNECTIONS



ounting kits BA394G 316 stainless steel not sea

BA394G 316 stainless steel not sealing # BA494G GRP sealing #

# See accessory datasheet for details

## **HOW TO ORDER**

Model number Input	Please specify BA314G Type *
Speed scale factor Speed timebase	XXXXX * Seconds, minutes or hours*
Accessories Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking Units Tag	Legend required Legend required No charge if ordered with tachometer
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes with direct pulse retransmission. Can easily be reconfigured on-site.



The BA314NG is a third generation field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or open collector sensor. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation costs.

The main application of the BA314NG is to measure and display rotational speed within a Zone 2 or 22 hazardous area. To assist with routine maintenance the BA314NG tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International Ex nA and Ex tc certification allows the BA314NG tachometer to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The display has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display may be disabled.

**Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the tachometer to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket

and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the tachometer's units of measurement and tag information slides into an internal slot allowing on-site removal and marking. New instruments are fitted with a printed scale card showing customer specified information, if this information is not supplied a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output can synchronously retransmit the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the speed display.

**Optional dual alarms** can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA314NG display show the status of both alarm outputs.

**Other field mounting tachometers** include the intrinsically safe BA314E and BA314G, and the general purpose BA514G, all of which have the same functions as the BA314NG.

**Panel mounting tachometers** with similar specifications are available in a variety of sizes and material for hazardous and general purpose applications.

## BA314NG Ex nA one input tachometer

*Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators* 

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Ex nA & Ex tc certified
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 🔶 3 year guarantee

## www.beka.co.uk/ba314ng









#### Power supply Voltage

Current

#### Input

Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Frequency Switch contact Other inputs . All inputs

#### Display

Туре Zero blanking

Speed Decimal point

Run-time

Grand total run-time

#### Remote reset

Pulse output Frequency

> Divisible by Pulse width Ron Roff Ui I max

Configurable functions

Speed scale factor Speed timebase

#### Certification

Europe ATEX Code

Cert. No.

International IECEx Code

Cert. No

ETL & cETL Code

ETL Control No.

#### Environmental

Operating temp Certification temp Storage temp Humidity Vibration Enclosure Material Ingress FMC

Mechanical Terminals Weight

Accessories Backlight

> 4/20mA output Voltage drop

Dual alarms

Outputs Ron Roff Ui li

Scale card

0 to 30V dc 6mA max plus	16mA for o	pptional backlight
Lower	Upper	switching thresholds
100Ω	1kΩ	
1.2mA	2.1mA	
2kΩ	10kΩ	
0	(40m)	

150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min

зv

30V max

10V 30V max

Liquid crystal Blanked apart from 0 in front of decimal point

8 digits 18mm high 1 of 7 positions or absent

6 digits 12mm high, 99999.9 hours max

5 x 10⁶ hours max

1V

зv

Contact closure with resistance less than 10k  $\Omega$ 

#### Isolated open collector

5kHz max, synchronous with input pulse, or divisible with selectable pulse width. 1, 10, 100, 1000 or 10000 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms  $51\Omega + 3V \text{ max}$ 1MΩ min 30Vdc 10mA

Adjustable between 0.0001 and 99999pulses/revolution Speed may be displayed per second, minute or hour

Note: Ex ic codes refer to instrument push button contacts which are nonincendive.

Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc  $-40 < Ta < 60^{\circ}C$ ITS16ATEX28409X

Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc  $-40 \le Ta \le 60^{\circ}C$ IECEX ITS 16.0005X

Class I Zone 2 AEx nA ic IIC T5 Gc USA Zone 22 AEx ic tc IIIC T80°C Dc Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Canada Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C 4008610

-40 to +70°C display -20 to +70°C

to 95% at 40°C non condensing

Complies with 2014/30/EU

Screw clamp for 0.5 to 1.5mm²

Green LED internally powered

Two alarms each of which may be independently

Isolated current sink

with a NO or NC output.

Blank card fitted to all instruments.

charge at time of purchase. #

Can be supplied printed with specified units of

measurement and tag information for no additional

5Ω + 0.7V max

IMΩ min

30V dc 200mA

-40 to +60°C

-40 to +85°C

GRP

IP66

1.1kg

5 to 30V

Report available

DIMENSIONS (mm)



## TERMINAL CONNECTIONS



Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

# See accessory datasheet for details

### HOW TO ORDER

Model number Input

Pi

Speed scale factor Speed timebase

Accessories Display backlight

4/20mA output

Dual alarms

Scale card marking Units Tag

Panel mounting kit

Stainless legend plate configured as a speed or run-time, high or low alarm Pipe mounting kit Isolated single pole, voltage free solid state switch

Please specify BA314NG Type *

XXXXX * Seconds, minutes or hours*

Please specify if required Backlight

4/20mA output

Alarms

Legend required Legend required No charge if ordered with tachometer Legend required

BA393G BA394G

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.


**The BA317E** is a third generation intrinsically safe tachometer that has similar functions as the BA318E, but is housed in a smaller 96 x 48mm DIN enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA317E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA317E tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the tachometer and the instrument panel allows the BA317E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification permits the BA317E tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. **Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA317E tachometer. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarms** which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317E display show the status of both alarm outputs.

**Rugged versions and a larger display** are available in other models within the range. The BA317E-SS is identical to the BA317E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e or Ex p panel enclosure without invalidating the enclosure's certification. The BA317NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA318E offers similar features in a 144 x 72mm enclosure.

# **BA317E**

# One input tachometer

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Intrinsically safe
- 96 x 48mm DIN enclosure with IP66 front protection.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

# www.beka.co.uk/ba317e









#### Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR)

Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high) Frequency

Switch contact Other inputs All inputs

#### Display

Туре Zero blanking Speed Decimal point Run-time

Grand total run-time

#### Remote reset

#### **Configurable functions**

Speed scale factor Speed timebase

Intrinsic safety

Europe ATEX Code

Cert. No.

International IECEx Code

ETL & cETL

Cert. No

Code

100kHz max and debounce setting. 0.01Hz min

Lower

100Ω

2kΩ

0

1V

зv

1.2mA

Liquid crystal Blanked apart from 0 in front of decimal point 8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high, 99999.9 hours max

5 x 10⁶ hours max

Contact closure with resistance less than  $10k\Omega$ 

10 to 28V from a Zener barrier or galvanic isolator

Upper switching thresholds

28V max 10V 28V max

16mA max plus 22.5mA for optional backlight

1kΩ

2.1mA

 $10k\Omega$ 

3V

+40mV

150Hz typical | Depends upon pulse width

Adjustable between 0.0001 and 99999 input pulses / revolution. Speed may be displayed per second, minute or hour.

Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C ITS16ATEX28408X

Ex ia IIC T5 Ga  $-40^{\circ}C \le Ta \le 70^{\circ}C$ IECEx ITS 16.0004X

Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada)  $-40^{\circ}C \le Ta \le 70^{\circ}C$ 

#### Nonincendive USA & Canada ETL & cETL Class I Div 2 Gp A, B, C, D T5 Code

Class II Div 2 Gp F, G. Class III Div 2  $-40^{\circ}C \le Ta \le 70^{\circ}C$ 4008610

-40 to +70°C display -20 to +70°C

to 95% at 40°C non condensing

Noryl SE1GFN3. Front IP66, rear IP20

Screw clamp for 0.5 to 1.5mm² cable.

removable terminal blocks.

Green LED internally powered

tachometer purchase. ~

Blank card fitted to all instruments.

Can be supplied typeset with specified units of

Specified tag number or application printed

measurement for no additional charge at time of

Complies with EMC Directive 2014/30/EU

-40 to +85°C

0.15kg

Report available

#### Environmental Operating temp

ETL Control No.

Storage temp Humidity Vibration Enclosure EMC

Mechanical

Terminals Weight

Accessories

Backlight Scale card

Tag legend

onto rear of instrument. One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for simple apparatus.

Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
l max	10mA
4/20mA output	Isolated current sink

4/20m/ Voltage drop

rent sink. 5 to 28V

# **DIMENSIONS** (mm)



# **TERMINAL CONNECTIONS**



Speed scale factor Speed timebase

Accessories Display backlight Scale card

Seconds, minutes or hours' Please specify if required

Backlight Legend required No charge if ordered with tachometer. Leaend required

Direct retransmission or scaled*

One of following three output options:

Pulse output 4/20mA output . Dual alarms

4/20mA output Alarms

XXXXX *

Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.

Tag

or

or



The BA317E-SS is an intrinsically safe tachometer housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA317E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the panel enclosures certification. The intrinsically safe tachometer may also be installed in any uncertified panel enclosure located in Zone 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA317E-SS is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA317E-SS tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 front panel protection** with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA317E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification permits the BA317E-SS tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. **Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA317E-SS tachometer. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarms** which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317E-SS display show the status of both alarm outputs.

**Zone 2 certification and a larger display** are available in other models within the range including the BA317E which is functionally identical to the BA317E-SS in a Noryl enclosure.

The BA317NE has the same features as the BA317E-SS, but is Ex nA and Ex tc certified allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA318E offers similar features in a Noryl 144 x 72mm enclosure.

# BA317E-SS

# Rugged one input tachometer

Intrinsically safe gas & dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Intrinsically safe
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output
- 3 year guarantee

## www.beka.co.uk/ba317e-ss









Power supply Voltage Current	10 to 28V from Zener barrier or galvanic isolator 16mA max plus 22.5mA for optional backlight				
Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower         Upper switching thresholds           100Ω         1kΩ           1.2mA         2.1mA           2kΩ         10kΩ           0         +40mV           1V         3V         28V max           3V         10V         28V max				
Frequency Switch contact Other inputs All inputs	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min				
Display Type Zero blanking Speed Decimal point Run-time	Liquid crystal Blanked apart from 8 digits 9mm high 1 of 7 positions or a 6 digits 6mm high,	0 in front of decimal point absent 99999.9 hours max			
Grand total run-time	5 x 10 ⁶ hours max				
Remote reset	Contact closure wit	h resistance less than $10k\Omega$			
Configurable functions Speed scale factor Speed timebase	Adjustable between 0.0001 and 99999 input pulses / revolution. Speed may be displayed per second.minute or hour.				
Intrinsic safety Europe ATEX Code Cert. No.	Group II Category ⁻ Group II Category ⁻ -40°C ≤ Ta ≤ +60° ITS16ATEX28408X	1G Exia IIC T5 Ga 1D Exia IIIC T80°C Da °C <i>‡</i>			
International IECEx Code Cert. No.	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C <i>‡</i> IECEx ITS 16.0004X				
ETL & cETL Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) $-40°C \leq Ta \leq 60°C \ddagger$				

#### Nonincendive USA & Canada ETL & cETL Code

Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2  $\text{-40}^\circ\text{C} \leq \text{Ta} \leq 70^\circ\text{C}$ 4008610

+70°C when not relying upon the certified impact and ingress protection provided by the front of the BA317E-SS enclosure to maintain the certification of the panel enclosure in which the BA317E-SS is mounted.

#### Environmental

ETL Control No.

Operating temp Storage temp Humidity Vibration Enclosure	-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available
Ingress Material EMC	Front IP66, rear IP20 BS 3146-2:1977 ANC4B (316) Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.
weight	0.00kg
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. ~
Tag legend	Specified tag number or application laser etched onto rear of instrument. ~

One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output Isolated open collector Frequency Divisible by 5kHz max, synchronous with input pulse or divisible 1, 10, 100, 1000 or 10000 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms  $51\Omega + 3V$  max Pulse width Ron Roff 1MΩ min I max 10mA 4/20mA output Isolated current sink. Voltage drop 5 to 28V

### **DIMENSIONS (mm**



### **TERMINAL CONNECTIONS**



See accessory datasheet for details

#### HOW TO ORDER

Model number Input

Speed scale factor Speed timebase

Accessories Display backlight Scale card

Tag

Please specify if required Backlight Legend required

Seconds, minutes or hours*

Please specify

BA317E-SS

Type XXXXX *

No charge if ordered with tachometer. Legend required

One of following three output options:

Pulse output 4/20mA output or or Dual alarms

Direct retransmission or scaled* 4/20mA output Alarms

Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.



The BA317NE has a rugged stainless steel enclosure with Ex nA and Ex tc certification allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22, without the need for Zener barriers or galvanic isolators. The tachometer is easy to use and can be configured on-site to operate with a wide variety of speed sensors. A slide-in scale card simplifies identification.

**Main application** of the BA317NE is to measure and display rotational speed within a Zone 2 or 22 hazardous area. To assist with routine maintenance the BA317NE tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 front panel protection** with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA317NE to be installed in areas that will be washed down.

International Ex nA certification permits the BA317NE tachometer to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and tachometer may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly the BA317NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations. **Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA317NE tachometer. All are isolated and have defined output parameters.

**Optional isolated pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarms** which can switch suitably protected hazardous area loads such as an Ex e sounder or solenoid valve, or safe area loads. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA317E-SS has the same features as the BA317NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA317E offers similar features in a Noryl enclosure and the BA318E has similar features in a 144 x 72mm Noryl enclosure with a larger display.

# **BA317NE**

# Rugged Ex nA & Ex tc one input tachometer

*Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.* 

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Ex nA & Ex tc certified
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.

Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

## www.beka.co.uk/ba317ne









#### Power supply Voltage

Current

Input Switch contact Proximity detector (N Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

> Frequency Switch contact Other inputs All inputs

#### Display

Туре Zero blanking Speed Decimal point Run-time

Grand total run-time

#### Remote reset

#### Configurable functions Speed scale factor

Speed timebase

#### Certification

Europe ATEX Code

Cert. No.

#### International IECEx Code

Cert. No.

#### ETL & cETL Code

ETL Control No.

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Ingress Material EMC

#### Mechanical Terminals

Weight

Accessories Backlight

Scale card

Puls

Tag legend

	16mA max plus 22.5mA for option	nal backlight
AMUR)	Lower         Upper         switching           100Ω         1kΩ           1.2mA         2.1mA           2kΩ         10kΩ           0         +40mV           1V         3V         30V max           3V         10V         30V max	ng thresholds
	150Hz typical Depends upon p 100kHz max and debounce so 0.01Hz min	ulse width etting.
	Liquid crystal Blanked apart from 0 in front of d 8 digits 9mm high 1 of 7 positions or absent 6 digits 6mm high 99999.9 hours max	ecimal point
	5 x 10 ⁶ hours max	
	Contact closure with resistance le	ess than $10k\Omega$
	Adjustable between 0.0001 and 99999 input pulses / revolution. Speed may be displayed per seco minute or hour.	ond,
	Note: Ex ic in codes refers to i button contacts which ar	nstrument push e nonincendive
		IC T5 Gc IC T80°C Dc
	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc $-40°C \le Ta \le +60°C$ IECEX ITS 16.0005X	
	Class I. Zone 2. AFx nA ic IIC. T	5 Gc (USA)

10 to 201/ do

Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA) Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada) Ex ic tc IIIC T80°C Dc (Canada)  $-40^{\circ}C \le Ta \le 60^{\circ}C$ 4008610

-40 to +60°C display -20 to +60°C -40 to +85°C to 95% at 40°C non condensing Report available

Front IP66, rear IP20 BS 3146-2:1977 ANC4B (316) Complies with 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks. 0.85kg

Green LED internally powered

Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. ~

Specified tag number or application laser etched onto rear of instrument. ~

One of the following three output accessories may be factory fitted to each tachometer.

ulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
20mA output	Isolated current sink

4/20mA ou Voltage drop

current sink 5 to 30V

# DIMENSIONS (mm



### TERMINAL CONNECTIONS



One of following three output options: Pulse output Direct retransmission or scaled* 4/20mA output 4/20mA output or Dual alarms Alarms

Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.

or



The BA318E is a third generation intrinsically safe tachometer that is compatible with the earlier BA368C, but has a much larger display and an isolated synchronous pulse output. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA318E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The large display has high contrast and a very wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. An optional backlight is available. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display may be disabled.

**Open collector pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the tachometer and the instrument panel allows the BA318E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification permits the BA318E tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for simple apparatus reducing system design and All input safety documentation. parameters are the same or greater than those for the preceding BA368C, thus allowing the BA318E to safely replace the earlier model.

**Display backlighting**, which is internally powered from the tachometer, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the tachometer is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the speed display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

**Optional dual alarms** which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator, are available as a factory fitted option. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA318E display show the status of both alarm outputs.

When panel space is limited the BA317E provides similar features in a smaller 94 x 48mm enclosure.

# **BA318E**

# One input tachometer

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Intrinsically safe
- 144 x 72mm DIN enclosure with IP66 front protection.
- Isolated pulse output
  - Optional: Backlight Dual alarms 4/20mA output

3 year guarantee

# www.beka.co.uk/ba318e









#### Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

> Frequency Switch contact Other inputs All inputs

#### Display

Type Zero blanking Speed Decimal point Run-time

Grand total run-time

#### Remote reset

Pulse output Frequency

> Divisible by Pulse width Ron Roff I max

Configurable functions Rate scale factor

Speed timebase

#### Intrinsic safety Europe ATEX

Code Cert. No.

Cert. NO.

International IECEx Code

Cert. No

ETL & cETL Code

Nonincendive USA & Canada ETL & cETL Code Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp A, B, C, D T5

ETL Control No.

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure EMC

Mechanical Terminals

Weight

Accessories Backlight

4/20mA output

Voltage drop

Alarms

Outputs

Ron Roff

16mA max plus 16mA for optional backlight Upper switching thresholds Lower 100Ω 1kΩ 1.2mA 2.1mA 2kΩ  $10k\Omega$ +40mV 0 1V 28V max 3V 10V 28V max зv 150Hz typical 1 Depends upon pulse width 00 100kHz max and debounce setting. 0.01Hz min Liquid crystal Blanked apart from 0 in front of decimal point 8 digits 18mm high 1 of 7 positions or absent 6 digits 12mm high, 99999.9 hours 5 x 106 hours Contact closure with resistance less than  $10 \text{k}\Omega$ Isolated open collector 5kHz max, synchronous with input pulse or divisible 1, 10, 100, 1000 or 10000 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms

10 to 28V from a Zener barrier or galvanic isolator

10mA Adjustable between 0.0001 and 99999 pulses / revolution

Speed may be displayed per second, minute or hour.

Group II Category 1G Ex ia IIC T5 Ga -40°C  $\leq$  Ta  $\leq$  70°C ITS16ATEX28408X

Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C IECEx ITS 16.0004X

51Ω + 3V max

1MΩ min

Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada)  $-40^{\circ}C \leq Ta \leq 70^{\circ}C$ 

IL & CEIL Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C 4008610

-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available Noryl SE1GFN3. Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.

Green LED internally powered

0.35ka

Isolated current sink, certified as a separate intrinsically safe circuit complying with requirements for *simple apparatus*.

5 to 28V Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.

Isolated, single pole, voltage free solid state

circuit complying with requirements for

simple apparatus.

5Ω + 0.7V max

 $IM\Omega$  min

switch certified as a separate intrinsically safe

# **DIMENSIONS (mm)**



Accessories Display backlight 4/20mA output Dual alarms Scale card

Tag

Please specify if required Backlight 4/20mA output Alarms Legend required *No charge if ordered with tachometer*. Legend required

Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.



The BA514G is a third generation, general purpose field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor.

**Main application** of the BA514G is to measure and display rotational speed within a process area. To assist with routine maintenance the BA514G tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The large display has high contrast with a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display can be disabled.

**Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the tachometer to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the tachometer's units of measurement and tag information slides into an internal slot allowing easy on-site removal and marking. New instruments are fitted with a printed scale card showing customer specified information, if this information is not supplied a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available which can be supplied engraved with customer specified information.

The isolated open collector pulse output can synchronously retransmit the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

A 4/20mA isolated current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the speed display.

**Optional dual alarms** can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA514G display show the status of both alarm outputs.

**Panel mounting tachometers** with a variety of display and enclosure sizes are also available, see BA517E, BA517E-SS and BA518E. Certified field and panel mounting models are also available for hazardous area applications

# BA514G one input tachometer *General purpose*

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output
- 3 year guarantee

www.beka.co.uk/ba514g



## Power supply

Voltage

Current

#### Input

Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Frequency Switch contact Other inputs All inputs

#### Display

Type Zero blanking

Speed Decimal point

Run-time

Grand total run-time

Remote reset

#### Pulse output Frequency

Divisible by Pulse width

Ron Roff Vmax I max

#### Configurable functions Speed scale factor

Speed timebase

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

#### Accessories Backlight

4/20mA output Voltage drop

Dual alarms

Outputs

#### Ron Roff Vmax Imax

Scale card

Legend plate

	10 to 30V dc 16mA max plus 16mA for optional backlight
۲)	$\begin{array}{llllllllllllllllllllllllllllllllllll$
	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min
	Liquid crystal Blanked apart from 0 in front of decimal point
	8 digits 18mm high 1 of 7 positions or absent
	6 digits 12mm high, 99999.9 hours max.
	5 x 10 ⁶ hours max
	Contact closure with resistance less than $10 \mbox{k} \Omega$
	Isolated open collector 5kHz max, synchronous with input pulse, or divisible with selectable pulse width. 1, 10, 100, 1000 or 10000 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms. $51\Omega + 3V$ max $1M\Omega$ min 30V dc 10mA
	Adjustable between 0.0001 and 99999 pulses / revolution. Speed may be displayed per second, minute or hour.
	-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available
	GRP IP66 Complies with 2014/30/EU
	Screw clamp for 0.5 to 1.5mm ² 1.1kg
	Green LED internally powered
	Isolated current sink 5 to 30V

Two alarms, each of which may be independently configured as a speed

or run-time, high or low alarm with a

Isolated single pole, voltage free solid

Blank card fitted to all instruments.

Can be supplied printed with specified units

of measurement and tag information for no additional charge at time of purchase. #

Stainless steel plate laser engraved with tag

number or application information attached to

rear of the instrument, visible from the front. #

NO or NC output.

state switch.

 $IM\Omega$  min

30V dc

200mA

 $5\Omega + 0.7V \text{ max}$ 

## **DIMENSIONS (mm)**



# **TERMINAL CONNECTIONS**



Pipe mounting kit

BA393G 316 stainless steel #

Panel mounting kits

BA394G 316 stainless steel not sealing #

mounting kits BA

BA494G GRP sealing #

Please specify

Seconds, minutes or hours* Please specify if required

BA514G

Backlight

Alarms

4/20mA output

Legend required

Legend required

No charge if ordered with tachometer

Type * XXXXX *

# See accessory datasheet for details

# HOW TO ORDER

Model number Input

Speed scale factor Speed timebase

Accessories Display backlight

4/20mA output

Dual alarms

Scale card marking Units

Tag

 Stainless legend plate
 Legend required

 Pipe mounting kit
 BA393G

Panel mounting kit BA394G or BA494G

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



**The BA517E** is a third generation general purpose tachometer that has similar functions as the BA518E, but is housed in a smaller 96 x 48mm DIN enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

**Main application** of the BA517E is to measure and display rotational speed within a process area. To assist with routine maintenance the BA517E tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the tachometer and the instrument panel allow the BA517E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal

blocks enabling panel wiring to be completed before the instrument is installed.

**One of the following three optional outputs** may be factory fitted to the BA517E tachometer. All are isolated.

**Optional open collector pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**Optional 4/20mA current sink** may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarms** which can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA517E display show the status of both alarm outputs.

A larger display and rugged version are available in other models within the range. The BA518E has the same functions as the BA517E with a larger display in a 144 x 72mm enclosure. For application in marine and hostile environments the rugged BA517E-SS, which has the same functions as the BA517E, is housed in a rugged stainless steel enclosure with a 10mm thick window.

For applications in flammable atmospheres the BA317E, which is identical to the BA517E, has international intrinsic safety certification. For lower risk installations in Zone 2 and Zone 22, the rugged BA317NE has Ex nA and Ex tc approval allowing use without Zener barriers or galvanic isolators.

# **BA517E**

# One input tachometer

# **General purpose**

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- 96 x 48mm DIN enclosure with IP66 front protection.
- Simple on-site scale card installation.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

www.beka.co.uk/ba517e



# DIMENSIONS (mm)

SPECIFICATION Power supply			
Voltage	10 to 30V dc		
Current	16mA max plus 22.5mA for optional backlight		Recommended panel cut-out
Input Switch contact	Lower Upper switching thresholds $100Ω$ $1kΩ$	Panel cut-out	To achieve an IP66 seal between the instrument and the panel
Proximity detector (NAMUR)	1.2mA 2.1mA		90 +0.57 -0.0 X 45.5 +0.57 -0.0
Open collector	2kΩ 10kΩ		DIN 43 700 92 0 ±0 8 / ±0 0 × 45 ±0 6 / ±0 0
Voltage pulse (low)	0 +40mV 1V 3V 30V max		92.0 +0.07 +0.0 X 43 +0.07 +0.0
Voltage pulse (high)	3V 10V 30V max		
Fraguaday		000000	
Switch contact	150Hz typical 1 Depends upon pulse width		
Other inputs	100kHz max and debounce setting.		
All inputs	0.01Hz min		65
Display			
Туре	Liquid crystal		
Zero blanking	Blanked apart from 0 in front of decimal point		
Speed	8 digits 9mm high		
Decimal point	1 of 7 positions or absent		22
Run-time	6 digits 6mm high	96	
	99999.910015 max		
Grand total run-time	5 x 10 ⁶ hours max	BEKA	BA517E
Remote reset	Contact closure with resistance less than 10k0		Scale Terminals for output
	Contact closure with resistance less than TUKI	DISPLAY	card options not shown
Configurable functions			
Speed scale factor	Adjustable between 0.0001 and 99999 input		
Speed timebase	Speed may be displayed per second,		<u> </u>
	minute or hour.		
Environmental			
Operating temp	-40 to +70°C display -20 to +70°C	TERMINAL CON	NECTIONS
Storage temp	-40 to +85°C		
Humidity Vibration	To 95% at 40°C non condensing Report available		
Enclosure			
Material	Noryl SE1GFN3		
FMC	Front 1Pob, rear 1P20 Complies with FMC Directive 2014/30/FU	+ +	
Lino		Alarm 1 Alarm 2	· · · · · · · · · · · · · · · · · · ·
Mechanical		Terminals for	Terminals for Terminals
Weight	0.15kg	optional dual alarms	optional pulse for optional
			output 4/20mA output
Accessories			
Backlight	Green LED Internally powered		
Scale card	Blank card fitted to all instruments.	+	
	Can be supplied printed with specified units of	Power	Reset Add link   Pulse
	tachometer purchase. #	supply	to energise input
			pulse
Tag legend	Specified tag number or application printed onto		input
	rear of instrument. #		
BA495 rear cover	Provides impact and IP66 protection for rear of		
and sealing kit	instrument. #	HOW TO ORDE	K
One of the following three output	accessories may be factory fitted to each tachom-		Place energify
eter, all have isolated outputs.		Model number	BA517E
Dulas output	loolated anon collector	Input	Type *
Frequency	5kHz max, synchronous with input pulse	Speed scale factor	YYYYY *
	or	Speed timebase	Seconds, minutes or hours*
Divisible by	1, 10, 100, 1000 or 10000		
Ron	$51\Omega + 3V \max$	Accessories	Please specify if required
Roff	1MΩ min	Scale card	Legend required
l max	10mA		No charge if ordered with tachometer
4/20mA output	Isolated current sink	Tag	Legend required
Voltage drop	5 to 30V	One of following three output or	ptions:
Alarma	Two closes cook of which many he independently	Pulse output	Direct retransmission or scaled*
Alarms	configured as a speed or run-time, high or low	or 4/20mA output	4/20mA output
	alarm with a NO or NC output.	Rear cover and sealing kit	Alarms BA495

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.

# See accessory datasheet for details

Outputs

Ron Roff Vmax

Imax

Isolated single pole, voltage free solid state

switch.  $5\Omega + 0.7V \text{ max}$ IM $\Omega$  min

30V dc

200mA



The BA517E-SS is a rugged third generation general purpose tachometer housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is suitable for use in hostile and marine environments or where the front of the instrument is likely to be impacted. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

**Main application** of the BA517E-SS is to measure and display rotational speed within a hostile process area. To assist with routine maintenance the BA517E-SS tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 front panel protection** with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA517E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

**Display backlighting** which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**One of the following three optional outputs** may be factory fitted to the BA517E-SS tachometer. All are isolated and factory fitted options

**Optional open collector pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**Optional 4/20mA current sink** may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarms** which can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA517E-SS display show the status of both alarm outputs.

**For less hostile environments** the BA517E is identical to the BA517E-SS except that it is housed in a Noryl enclosure also providing IP66 front of panel protection.

For applications in flammable atmospheres the BA317E-SS, which is identical to the BA517E-SS, has international intrinsic safety certification. For lower risk installations in Zone 2 and Zone 22, the rugged BA317NE has Ex nA and Ex tc approval allowing use without Zener barriers or galvanic isolators.

# BA517E-SS

# Rugged one input tachometer

# **General purpose**

- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- Simple on-site scale card installation.
  - Optional: Backlight dual alarms or 4/20mA output or pulse output

3 year guarantee

www.beka.co.uk/ba517e-ss



10 to 30V dc

Lower

100Ω

1.2mA

2kΩ

0

1V

зv

150Hz typical

100kHz max

Liquid crystal

8 digits 9mm high

6 digits 6mm high

999999.9hours max 5 x 10⁶ hours max

minute or hour.

Report available

0.85kg

Front IP66, rear IP20

Complies with 2014/30/EU

1 of 7 positions or absent

Adjustable between 0.0001 and 99999 input pulses / revolution.

Speed may be displayed per second,

-40 to +70°C display -20 to +70°C

-40 to +85°C To 95% at 40°C non condensing

BS 3146-2:1977 ANC4B (316)

Green LED internally powered

tachometer purchase. #

Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of

Screw clamp for 0.5 to 1.5mm² cable, removable

0.01Hz min

16mA max plus 22.5mA for optional backlight

1kΩ

2.1mA

 $10k\Omega$ 

ЗV

10V

+40mV

Blanked apart from 0 in front of decimal point

Contact closure with resistance less than  $10 \text{k}\Omega$ 

Upper switching thresholds

30V max

30V max

Depends upon pulse width

and debounce setting

### SPECIFICATION

Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

> Frequency Switch contact Other inputs All inputs

#### Display

Type Zero blanking

Speed Decimal point Run-time

Grand total run-time

#### Remote reset

Configurable functions Speed scale factor

Speed timebase

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Protection EMC

#### Mechanical Terminals Weight

# Accessories

Backlight

Scale card

#### Tag legend

Specified tag number or application printed onto rear of instrument. # Provides impact and IP66 protection for BA495 rear cover and sealing kit rear of instrument. #

One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs.

Fuise output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
l max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Alarms Outputs	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch.
Alarms Outputs Ron	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch. $5\Omega + 0.7V$ max
Alarms Outputs Ron Roff	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch. $5\Omega + 0.7V$ max IM $\Omega$ min
Alarms Outputs Ron Roff V max	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch. $5\Omega + 0.7V \max$ IM $\Omega$ min 30V dc
Alarms Outputs Ron Roff V max I max	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output. Isolated single pole, voltage free solid state switch. $5\Omega + 0.7V$ max IM $\Omega$ min 30V dc 200mA

**DIMENSIONS** (mm)



# **TERMINAL CONNECTIONS**



Please specify

BA517E-SS

Type

XXXXX *

Backlight

# **HOW TO ORDER**

Model number Input

Speed scale factor Speed timebase

Accessories Display backlight Scale card

Tag Rear cover and sealing kit Legend required No charge if ordered with tachometer Legend required BA495

Seconds, minutes or hours'

Please specify if required

One of following three output options: Pulse output or 4/20mA output or Dual alarms

Direct retransmission or scaled' 4/20mA output Alarms

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.

# See accessory datasheet for details



**The BA518E** is a third generation general purpose tachometer that has similar functions as the BA517E, with a larger display housed in a 144 x 72mm DIN enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site without removing the tachometer from the panel or opening the instrument enclosure.

**Main application** of the BA518E is to measure and display rotational speed within a process area. To assist with routine maintenance the BA518E tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the tachometer and the instrument panel allow the BA518E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

**Display backlighting** which is internally powered from the tachometer is

available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

A factory fitted optional 4/20mA current sink may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarm outputs** which can switch loads such as a sounder or solenoid valve are available as a factory fitted option. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA518E display show the status of both alarm outputs.

If panel space is limited the BA517E has similar functions but is housed in a smaller  $96 \times 48$ mm enclosure. Alternatively, for installation in marine or severe environments, or where the front of the instrument may be impacted, the BA517E-SS is housed in a rugged 316 stainless steel enclosure.

For applications in flammable atmospheres the BA318E, which is identical to the BA518E, has international intrinsic safety certification. For Zone 2 or 22 applications the rugged stainless steel BA317NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

# **BA518E**

# One input tachometer

# **General purpose**

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate speed and run-time displays.
- 144 x 72mm DIN enclosure with IP66 front protection.
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms 4/20mA output

3 year guarantee

www.beka.co.uk/ba518e



# Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

> Frequency Switch contact Other inputs All inputs

#### Display

Туре Zero blanking

Speed Decimal point Run-time

Grand total run-time

Remote reset

#### Pulse output

Source & output

Ron Roff l max

#### **Configurable functions** Speed scale factor

Speed timebase

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Protection EMC

Mechanical Terminals Weight

#### Accessories Backlight

Scale card

#### Tag legend

4/20mA output Voltage drop

#### Alarms

Roff

N	
	10 to 30V dc 16mA max plus 16mA for optional backlight
)	LowerUpperswitching thresholds $100\Omega$ $1k\Omega$ $1.2mA$ $2.1mA$ $2k\Omega$ $10k\Omega$ $0$ $+40mV$ $1V$ $3V$ $3V$ $10V$ max $3V$ $10V$ 30V max
	150Hz typical Depends upon pulse width 100kHz max and debounce setting. 0.01Hz min
	Liquid crystal Blanked apart from 0 in front of decimal point
	8 digits 18mm high 1 of 7 positions or absent 6 digits 12mm high 99999.9hours max
	5 x 10 ⁶ hours max
	Contact closure with resistance less than $10 \text{k}\Omega$
	Isolated open collector
	Synchronous pulse output, 5kHz max. divisible by: 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10 25, 50, 100, 250 or 500ms. $51\Omega + 3V$ max $1M\Omega$ min 10mA
	Adjustable between 0.0001 and 99999 input pulses / revolution. Speed may be displayed per second, minute or hour.
	-40 to +70°C display -20 to +70°C -40 to +85°C To 95% at 40°C non condensing Report available
	Noryl SE1GFN3 Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU
	Screw clamp for 0.5 to 1.5mm ² cable, removable 0.35kg

Green LED internally powered

Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of tachometer purchase. Specified tag number or application printed onto rear of instrument. Isolated current sink. 5 to 30V

Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output. Outputs Isolated single pole, voltage free solid state switch. 5Ω + 0.7V max Ron  $IM\Omega$  min V max 30V dc I max 200mA

# DIMENSIONS (mm)





Please specify

Seconds, minutes or hours*

Please specify if required

No charge if ordered with tachometer

BA518E

XXXXX *

Backlight

Legend required

Legend required

4/20mA output

# **HOW TO ORDER**

Model number Input Type

Speed scale factor Speed timebase

Accessories Display backlight Scale card

Tag

4/20mA output

Dual alarms

Alarms

* Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.

~ See accessory datasheet for details

# Timers or clocks



One and two input instruments that can be configured as a Timer or as a Clock. As a Timer they can measure and display elapsed time between events, or control events via optional control outputs. As a Clock local time is displayed and optional control outputs can be configured to turn on and off twice in each 24 hour period.

### > Large high contrast displays with wide viewing angle

### General purpose and certified hazardous area models International Ex ia intrinsic safety Ex nA non sparking Dust certification

> Field mounting models have IP66 GRP enclosure

Compact 'G' models 'E' models with separate terminal compartment Pipe and panel mounting accessories

## > Panel mounting models

Choice of sizes all with IP66 front panels Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. Rear IP66 sealing kit

## > -40 to +70°C operating temperature range

### > Accessories

Dual isolated control outputs Backlight Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.* Laser engraved stainless steel legend plates

# Intrinsically safe Ex nA General purpose

**IECEx** 





Slide-in scale card can be supplied printed with customer specified information for no extra charge.



Easy scale card installation without the need to remove indicator from the panel.



BA394G panel mounting kit



#### Timer/Clocks available

			Display	v digits			Certification				
Model No.	Mounting	Input			Eui Al	Europe	International IFCFx		US Car	USA & Canada	
			No. x height	No. x height	Gas	Dust	Gas	Dust	Gas	Dust	
					0.00	Buot	040	2401	Guo	2401	
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified											
BA374G	Field compact	2 x Sensors	8 x 18mm	6 x 12mm	~	×	~	¥	×	¥	
BA374E	Field - separate tml. compartment	2 x Sensors	8 x 18mm	6 x 12mm	4	-	~	_	~	~	
BA377E	Panel 96 x 48	Sensor	8 x 9mm	6 x 6mm	v .	-	~	-	~	v	
BA377E-SS*	Panel Rugged 105 x 60	Sensor	8 x 9mm	6 x 6mm	•	~	~	~	~	~	
BA378E	Panel 144 x 72	2 x Sensors	8 x 18mm	6 x 12mm	v	-	~	-	v	v	
* Certification al	lows installation in an Ex	e, Ex p or Ex t pa	nel enclosure with	out invalidating enc	losure ce	ertification					
Ex nA & Ex to	- for use in Zones 2 a	nd 22 without Z	ener barriers or g	galvanic isolators	s						
BA374NG	Field compact	2 x Sensors	8 x 18mm	6 x 12mm	<b>v</b>	¥	~	¥	~	¥	
BA377NE	Panel Rugged 105 x 60	Sensor	8 x 9mm	6 x 6mm	~	~	~	•	~	•	
General Purn	ose - for use in safe a	- 									
	Field commont		0	6 · · · 10 · · · ·							
BA5/4G	Field compact	2 x Sensors	8 x 18mm	6 X 12mm							
BA577E	Panel 96 x 48	Sensor	8 x 9mm	6 x 6mm							
BA577E-SS	Panel Rugged 105 x 60	Sensor	8 x 9mm	6 x 6mm							
BA578E	Panel 144 x 72	2 x Sensors	8 x 18mm	6 x 12mm							



A **Timer/clock** for every **application** - delivered ready for **installation** 

www.beka.co.uk



The BA374E is a two input, field mounting, intrinsically safe instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA374E is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor. International intrinsic safety certification permits worldwide installation.

**Configuration** may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration.

International intrinsic safety certification allows the BA374E timer or clock to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Applications as a Timer include displaying the time interval between two events detected by one or two hazardous area sensors. External events can also be controlled using the isolated open collector status and the dual isolated control outputs. The Timer is able to perform common industrial timing application, such as those associated with dosing or sampling requiring an intrinsically safe solenoid valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock the BA374E can display local time in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. The control outputs may be configured to switch loads on and off at pre-set times twice during each twenty four hour period.

The large display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing enabling the timer or clock to be read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument's electronics.

The display escutcheon which shows the timer or clocks units of measurement and tag information can be changed on-site. New instruments are fitted with a printed escutcheon showing customer specified marking. If this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

**The compact BA374G** has the same functions and large display as the BA374E without a separate terminal compartment.

# BA374E two input timer or clock

Intrinsically safe for use in all gas hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays with backlight
- Intrinsically safe
- IP66 GRP enclosure with separate terminal compartment
- Isolated dual controls, and status outputs.
- 3 year guarantee
  - www.beka.co.uk/ba374e







10 to 28V from a		
32mA		
Lower	Upper switching thresholds	
100Ω	1kΩ	
1.2mA	2.1mA	<b>†</b>
2kΩ	10kΩ	Ø
0	+40mV	
1V	3V 28V max	TAG NUM
3V	10V 28V max	DIS
		DIG
		BEKA
Green LED intern	ally powered	12
18mm high		
12mm high		
nn:mm:ss;nn:mn	n ; mm:ss or s	🕀 LEGEN
Contact closure w	ith resistance less than 10kΩ	
		0
99h 59m and 59s	or equivalent in any display format	
	or equivalent in any display format	
99h 59m and 59s	or equivalent in any display format	
5 x 10 ⁶ h maximur	n	
5 A 15 H HIGAIIIIUI		
Loop days 0.15		
Less than ±0.43s	error per day over operating	
	- 	
Isolated, voltage f	ree open collector, certified as a	5
separate intrinsica	any sate circuit complying with the	
Figurements for a	simple apparatus.	
1MQ min		
10mA		
Two outputs each	of which may be independently	
connigured as a N		TEDMALA
Isolated single po	le, voltage free solid state switch	TERMINA
$5\Omega + 0.7V \text{ max}$		
IMΩ min		
Group II Category	1G Ex ia IIC T5 Ga	/
-40 ≤ Ta ≤ 70°C		1 2
ITS16ATEX28408	3X	L· ] *
		Power
Ex ia IIC 15 Ga		supply
$-40 \le 1a \le 70^{\circ}C$		
IECEX 113 10.000	44	
Class I Div 1 Gp	A, B, C, D T5 USA &	
Class II Div 1 Gp	E, F, G Class III 🕽 Canada	nn l
Class I Zone 0 A	Ex ia IIC T5 Ga USA	E S1
Zone 20 AEx ia I	IIC T80°C Da	
Ex ia IIC T5 Ga	J Canada	Torminala S1 9
-40°∪ ≤ 1a ≤ 70°	U	internally linked
& cETL		ioining cable screen
Class I Div 2 Gp	A, B, C & D T5	Joining cable screer
Class II DIV 2 Gp	г, ц.	
-40 < To < 70°C		
4008610		
-40 to +70°C disn	lav -20 to +70°C	
-40 to +85°C		HOW TO
	on condensing	
to 95% at 40°C no		
to 95% at 40°C no Report available	Shi condensing	
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to 95% at 40°C n Report available GRP	on concensing	Model number
to 95% at 40°C n Report available GRP IP66		Model number Function
to 95% at 40°C n Report available GRP IP66 Complies with 20	14/30/EU	Model number Function Input
to 95% at 40°C n Report available GRP IP66 Complies with 20	14/30/EU	Model number Function Input Accessories
to 95% at 40°C n Report available GRP IP66 Complies with 20° Screw clamp for 0	14/30/EU 0.5 to 1.5mm ²	Model number Function Input Accessories Escutcheon marking
to 95% at 40°C n Report available GRP IP66 Complies with 20° Screw clamp for 0 1.7kg	14/30/EU 0.5 to 1.5mm²	Model number Function Input Accessories Escutcheon marking Units Tao
to 95% at 40°C n Report available GRP IP66 Complies with 20 Screw clamp for 0 1.7kg	14/30/EU 0.5 to 1.5mm²	Model number Function Input Accessories Escutcheon marking Units Tag
to 95% at 40°C n Report available GRP IP66 Complies with 20° Screw clamp for 0 1.7kg Blank card fitted t	14/30/EU 0.5 to 1.5mm ² o all instruments.	Model number Function Input Accessories Escutcheon marking Units Tag
to 95% at 40°C n Report available GRP IP66 Complies with 20 Screw clamp for 0 1.7kg Blank card fitted t Can be supplied f	14/30/EU ).5 to 1.5mm ² o all instruments. rrinted with specified units of	Model number Function Input Accessories Escutcheon marking Units Tag Stainless legend plate
to 95% at 40°C n Report available GRP IP66 Complies with 20° Screw clamp for 0 1.7kg Blank card fitted t Can be supplied p measurement and	14/30/EU 9.5 to 1.5mm ² o all instruments. printed with specified units of 1 tag information for no additional	Model number Function Input Accessories Escutcheon marking Units Tag Stainless legend plate
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to 95% at 40°C ni Report available GRP IP66 Complies with 20° Screw clamp for 0 1.7kg Blank card fitted t Can be supplied p measurement and charge at time of	14/30/EU 0.5 to 1.5mm ² o all instruments. printed with specified units of t ag information for no additional purchase. #	Model number Function Input Accessories Escutcheon marking Units Tag Stainless legend plate Pipe mounting kit * BA374E can be sure
to 95% at 40°C ni Report available GRP IP66 Complies with 20° Screw clamp for 0 1.7kg Blank card fitted t Can be supplied p measurement and charge at time of 316 stainless stee	14/30/EU 0.5 to 1.5mm ² o all instruments. printed with specified units of d tag information for no additional purchase. #	Model number Function Input Accessories Escutcheon marking Units Tag Stainless legend plate Pipe mounting kit * BA374E can be sup manual, which can be
to 95% at 40°C n Report available GRP IP66 Complies with 20 Screw clamp for 0 1.7kg Blank card fitted t Can be supplied p measurement and charge at time of 316 stainless stee instrument, laser	14/30/EU 0.5 to 1.5mm ² o all instruments. printed with specified units of i tag information for no additional purchase. # al plate secured to the front of the engraved with tag number or ation. #	Model number Function Input Accessories Escutcheon marking Units Tag Stainless legend plate Pipe mounting kit * BA374E can be sup manual, which can be information is not supp
to 95% at 40°C n Report available GRP IP66 Complies with 20 Screw clamp for 0 1.7kg Blank card fitted t Can be supplied p measurement and charge at time of 316 stainless stee instrument, laser i application inform	14/30/EU 1.5 to 1.5mm ² o all instruments. printed with specified units of d tag information for no additional purchase. # el plate secured to the front of the engraved with tag number or ation. #	Model number Function Input Accessories Escutcheon marking Units Tag Stainless legend plate Pipe mounting kit * BA374E can be sup manual, which can be information is not supp connection to open co
	10 to 28V from a 32mA Lower 1000 1.2mA 2kΩ 0 1V 3V Green LED intern 18mm high 12mm high	10 to 28V from a Zener barrier or galvanic isolator 32mA         Lower       Upper switching thresholds         10 to 28V from A Zener barrier or galvanic isolator 32mA         Lower       Upper switching thresholds         12mA       2.1mA         2k0       10k0         0       +40mV         1V       3V         3V       10V 28V max         Green LED internally powered         18mm high         12mm high         hhmmiss ; hhmm ; mm:ss or s         Contact closure with resistance less than 10k0         99h 59m and 59s or equivalent in any display format         99h 59m and 59s or equivalent in any display format         99h 59m and 59s or equivalent in any display format         99h 59m and 59s or equivalent in any display format         99h 59m and 59s or equivalent in any display format         91 59m and 59s or equivalent in any display format         92 59m         Less than ±0.43s error per day over operating         thmaximum         Loss dated, voltage free open collector, certified as a         separate intrinsically safe circuit complying with the         requirements for simple apparatus.         510 + 3V max         MM min         OnmA         Group II Category 1G Ex i

**DIMENSIONS (mm)** 



# **NAL CONNECTIONS**



# **FO ORDER**

BA374E Timer or Clock

Please specify if required Legend required

Legend required No charge if ordered with timer or clock.

Please specify for each input

Legend required

BA393

be supplied configured as required for no additional charge, see instruction can be downloaded from <u>www.beka.co.uk/ba374e</u> for details. If configuration on supplied, instrument will be configured as a Timer with inputs configured for open collector sensors. Can easily be reconfigured on-site.

# See accessory datasheet for details



The BA374G is a two input, field mounting, intrinsically safe instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA374G is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Configuration** may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA374G can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two hazardous area sensors. The Timer can control an external event using the isolated open collector status output. If more than one circuit is to be switched, additional isolated dual control outputs are available as a factory fitted option. The Timer is able to perform common industrial timing application, such as those associated with dosing or sampling requiring an intrinsically safe solenoid valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

**As a Clock** the BA374G can display local time in various twelve or twenty four hour formats and the display may be

synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on and off at pre-set times twice during each twenty four hour period.

**The display** has high contrast and a wide viewing angle, enabling the instrument to be read in most most lighting conditions over a wide temperature range.

**Display backlighting** which is internally powered from the timer or clock is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International intrinsic safety certification allows the BA374G timer or clock to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Optional control outputs** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA374G display show the status of both control outputs.

**Other field mounting timer or clocks** include the BA374E which has the same functions as the BA374G, but incorporates a separate terminal compartment.

# BA374G two input timer or clock

Intrinsically safe for use in all gas & dust hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Intrinsically safe
- IP66 GRP enclosure
- Isolated status output
- Simple on-site scale card installation.
  - Optional: Backlight Dual alarms
- 3 year guarantee
  - www.beka.co.uk/ba374g







# Power supply Voltage

Current

out
Switch contact
Proximity detector (NAMUR)
Open collector
Magnetic pick-off
Voltage pulse (low)
Voltage pulse (high)

#### Display Type Prima

Form

Roff

 $\mathsf{IM}\Omega$  min

Inp

Туре	
Primary	
Secondary	
Format	

Liquid crystal 18mm high 12mm high hh:mm:ss; hh:mm; mm:ss or s

10 to 28V from a Zener barrier or galvanic isolator

Upper switching thresholds

16mA max plus 16mA for optional backlight

1kΩ 2.1mA

10kΩ

+40mV 3V 28V max 10V 28V max

Remote Timer reset or Clock Sync Contact closure with resistance less than  $10k\Omega$ 

Lower

100Ω

1.2mA 2kΩ

0

1V

зv

Timer Maximum duration	99h 59m and 59s or equivalent in any display format	
		6
Maximum delay between cycles	99h 59m and 59s or equivalent in any display format	
Grand total run-time	5 x 10 ⁶ h maximum	_ <b>_</b> _
Clock		_
Accuracy	Less than ±0.43s error per day over operating temperature range.	TERN
Status output Ron Roff I max	Isolated, voltage free open collector, certified as a separate intrinsically safe circuit complying with the requirements for simple apparatus. $51\Omega + 3V max$ $1M\Omega min$ 10mA	
Intrinsic safety		Add link
Europe ATEX Code	Group II Category 1G Ex ia IIC T5 Ga	
	$-40 \le Ta \le 70^{\circ}C$	
	Group II Category 1D Ex Ia IIIC 180°C Da -40 $\leq$ Ta $\leq$ 60°C	الحال
Cert. No.	ITS16ATEX28408X	Add link
International IECEx		
Code	Ex la IIC 15 Ga -40 $\leq$ Ta $\leq$ 70°C	
	Ex ia IIIC T80°C Da	Saala aa
Cert. No	-40 ≤ 12 ≤ 60°C IECEx ITS 16.0004X	Scale ca
ETL & cETL		
Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class II I Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	Legend p
	Exia IIC T5 Ga Exia IIIC T80°C Da	Pine mo
	$-40^{\circ}C \le Ta \le 70^{\circ}C$	Denel m
Nonincendive USA & Canada ETL	& cETL	Panermo
Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G.	# See a
	Class III Div 2 -40 ≤ Ta ≤ 70°C	
ETL Control No.	4008610	HOW
Environmental		
Operating temp	-40 to +70°C display -20 to +70°C	Function
Storage temp	-40 to +85°C	Input
Vibration	Report available	Accessories
Enclosure	CPP	Display back
Ingress	IP66	Control outp
EMC	Complies with 2014/30/EU	Units Tag
Mechanical Terminals	Screw clamp for 0.5 to 1.5mm ²	Otain! !
Weight	1.1kg	Stainless leg
		Pipe mountir
Accessories Backlight	Green LED internally powered	Panel mount
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.	
Outputs Ron	Isolated single pole, voltage free solid state switch $5\Omega$ + 0.7V max	* BA374G c manual, white information

### **DIMENSIONS** (mm)



# **IINAL CONNECTIONS**



### **TO ORDER**

er

dight uts narking

end plate ng kit ting kit

Please specify for each input BA374G Timer or Clock Type

Please specify if required Backlight Control outputs

Legend required Legend required No charge if ordered with instrument.

Legend required

BA393G

BA394G or BA494G

* BA374G can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from <u>www.beka.co.uk/ba374g</u> for details. If configuration information is not supplied, instrument will be configured as a Timer with open collector inputs. Can easily be reconfigured on-site.



The BA374NG is a two input, field mounting instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA374NG is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces the installation cost.

**Configuration** may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA374NG can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two sensors in Zone 2 or 22. The Timer can also control an external event using the isolated open collector status output. If more than one circuit is to be controlled, dual isolated control outputs are available as a factory fitted option. The Timer is able to perform many common industrial timing application, such as those associated with dosing or sampling requiring a valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

When configured as a Clock the BA374NG can display local time in various twelve or twenty four hour formats, and may be synchronised to a pre-set time via the external reset input. The isolated open collector status output can be configured to switch on and off twice at pre-set times during each twenty four hour period and may be used for repetitive timing functions. If more than one circuit is to be controlled, optional factory fitted isolated dual control outputs are available. Each output may be independantly configured to switch on and off twice at pre-set times during each twenty four hour period.

**The display** has high contrast and a wide viewing angle, enabling the instrument to be read in most lighting conditions over a wide temperature range.

**Display backlighting** which is internally powered from the timer or clock, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

**International Ex nA and Ex tc certification** allows the BA374NG timer or clock to be installed in Zones 2 and 22 gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

**Other timers or clocks** in the range include the panel mounting BA377NE and an extensive range of field and panel mounting intrinsically safe and general purpose models.

# **BA374NG** Ex nA two input timer or clock

Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate primary and secondary displays.
- Ex nA & Ex tc certified
- IP66 GRP enclosure
- Isolated status output
- Simple on-site scale card installation.
  - Optional: Backlight Dual outputs
- **3** year guarantee

www.beka.co.uk/ba374ng







10 to 30V

Lowe

100Ω

1.2mA

2kΩ

0

1V

3V

Liquid crystal

51Ω + 3V max

5 x 10⁶h maximum

temperature range.

1MΩ min

30V dc 10mA

18mm high 12mm high

16mA max plus 16mA for optional backlight

1kΩ

2.1mA

10kΩ

зv

hh:mm:ss : hh:mm : mm:ss or s

Isolated, open collector

+40mV

Contact closure with resistance less than  $10 \text{k}\Omega$ 

99h 59m and 59s or equivalent in any display format.

99h 59m and 59s or equivalent in any display format

Note: Ex ic codes refer to instrument push button

1 USA

Canada

Less than ±0.43s error per day over operating

contacts which are nonincendive.

Upper switching thresholds

30V max 10V 30V max

#### Power supply Voltage

Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off Voltage pulse (low)

#### Display

Туре Primarv Secondary Format

#### Timer reset or Clock sync

Voltage pulse (high)

Status output Ron Roff Ui I max

Timer Maximum duration

Maximum delay between cycles

Grand total run-time

Clock

Accuracy

Certification

Europe ATEX Code

Cert. No

International IECEx Code

Cert. No

ETL & cETL Code

ETL Control No.

#### Environmental

Operating temp Certification temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

Mechanical Terminals Weight

Accessories Backlight

Control outputs

Outputs Ron Roff

Ui I max

Legend plate

Pipe mounting kit

Panel mounting kits

Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40  $\leq$  Ta  $\leq$  60°C ITS16ATEX48409X Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc  $-40 \le Ta \le 60°C$ IECEx ITS 16.0005X Class | Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C 4008610 -40 to +70°C display -20 to +70°C -40 to +60°C -40 to +85°C to 95% at 40°C non condensing Report available GRP IP66 Complies with 2014/30/EU Screw clamp for 0.5 to 1.5mm² 1.1kg Green LED internally powered Two outputs each of which may be independently configured as a NO or NC output. Isolated single pole, voltage free solid state switch 5Ω + 0.7V max IMΩ min 30V dc 10mA Scale card Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

> 316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. # BA393G 316 stainless steel #

BA394G 316 stainless steel not sealing #

### **DIMENSIONS (mm)**



# **TERMINAL CONNECTIONS**



## **HOW TO ORDER**

Model number Function Input

Accessories Display backlight Control outputs Scale card marking Units Tag

Stainless legend plate Pipe mounting kit

Panel mounting kit

Timer or Clock Type Please specify if required

Please specify for each input

Backlight Control outputs Legend required

Legend required No charge if ordered with instrument

Legend required

BA374NG

BA393G

BA394G

* BA374NG can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from <u>www.beka.co.uk/ba374ng</u> for details. If configuration information is not supplied, instrument will be configured as a Timer with open collector inputs. Can easily be reconfigured on-site.

# See accessory datasheet for details



The BA377E is an intrinsically safe instrument with one input that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via two optional control outputs. When configured as a Clock the instrument can display time in a The BA377E is variety of formats. controlled by a single input which may be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor. International intrinsic safety certification permits worldwide installation and a slide-in scale card simplifies identification.

**Configuration** may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA377E can be supplied configured to customer's requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by a hazardous area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period. **The display** has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the instrument and the instrument panel, allow the BA377E to be installed in areas that will be washed down.

**International intrinsic safety certification** permits the BA377E to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**Optional control outputs** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377E display show the status of both control outputs.

**Rugged versions and a two input instrument** are available in other models within the range. The intrinsically safe BA377E-SS is identical to the BA377E except that it is housed in an impact resistant rugged stainless steel enclosure. The BA377NE has Ex nA and Ex tc certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required the BA378E is a two input intrinsically safe Timer or Clock housed in a 144 x 72mm plastic DIN enclosure.

# **BA377E**

# One input timer or clock

Intrinsically safe for use in all gas hazardous areas

Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.

- Separate displays
- Intrinsically safe
- 96 x 48mm DIN enclosure with IP66 front protection.
  - Optional: Backlight Dual control outputs

3 year guarantee

# www.beka.co.uk/ba377e







#### Power supply

Vol	tage
-----	------

#### Current

Input

Switch contact Proximity detector Open collector Magnetic pick-off Voltage pulse (low Voltage pulse (hig

#### Display

Type Primarv Secondary Format

#### **Remote Timer** reset & Clock sync.

#### Timer

Maximum duration

Maximum delay

between cycles.

Grand total runtim

Clock

Timekeeping accu

#### Intrinsic safety

Europe ATEX Code

Cert. No.

International IECE Code

Cert. No

ETL & cETL Code

Nonincendive USA Code

ETL Control No

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure EMC

Mechanical Terminals

Weight

#### Accessories Backlight

Control outputs

Outputs

Ron Roff

	10 to 28V from a Zener barrier or galvanic isolator. 16mA max plus 22.5mA for optional backlight
(NAML /) h)	Lower         Upper         switching thresholds           100Ω         1kΩ           IR)         1.2mA         2.1mA           2kΩ         10kΩ           0         +40mV           1V         3V         28V max           3V         10V         28V max
	Liquid crystal 9mm high 6mm high hh:mm:ss ; hh:mm ; mm:ss or s Contact closure with resistance less than 10kΩ.
1	99h 59m and 59s or equivalent in any display format.
e	display format. $5 \times 10^6$ hours maximum
racy	Less than $\pm 0.43$ s error per day over operating temperature range.
	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C ITS16ATEX28408X
x	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C IECEx ITS 16.0004X
	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) $-40^{\circ}C \le Ta \le 70^{\circ}C$
& Canad	da ETL & cETL Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 $-40^{\circ}C \le Ta \le 70^{\circ}C$ 4008610
	-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available Noryl SE1GFN3. Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU
	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks. 0.15kg
	Green LED internally powered
	Two outputs each of which may be independently configured as a NO or NC output

Isolated single pole, voltage free

solid state switch.

 $5\Omega + 0.7V \text{ max}$ 

 $IM\Omega$  min

# **DIMENSIONS** (mm)



Model number Function Input

Accessories Display backlight Control outputs Scale card

Tag Rear cover and sealing kit Type * Please specify if required Backlight

Please specify

Timer or Clock

BA377E

Control outputs Legend required No charge if ordered with instrument. Legend required BA495

BA377E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba377e for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.



**The BA377E-SS** is an intrinsically safe instrument with one input housed in a rugged stainless steel enclosure that may be configured as a Timer or as a Clock. The intrinsic safety certification and the rugged enclosure allow the BA377E-SS to be safely installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification.

**Configuration** may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA377E-SS can be supplied configured to customers requirements including a customer defined printed slide-in scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by a hazardous area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance repetitively opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

**The display** has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

**IP66 front panel protection** with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA377E-SS to be installed in areas that will be washed down.

International intrinsic safety certification permits the BA377E-SS to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**Optional control outputs** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377E-SS display show the status of both control outputs.

Zone 2 certification and a larger display are available in other models within the range, including the intrinsically safe BA377E which is identical to the BA377E-SS but is housed in a Noryl enclosure.

The BA377NE is also identical to the BA377E-SS but has Ex nA and Ex tc certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required the intrinsically safe BA378E is a two input timer or clock in a 144 x 72mm DIN enclosure.

# BA377E-SS

# Rugged one input timer or clock

Intrinsically safe gas & dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Intrinsically safe
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- Optional: Backlight Dual control outputs
- 3 year guarantee

# www.beka.co.uk/ba377e-ss









#### Power supply

Voltage

#### Current

Input Switch contact Proximity detector (NAMUR) Open collector Magnetic pick-off

Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

Display Type Primary Secondary Format

# Remote Timer reset & Clock sync.

#### Timer Maximum duration

Maximum delay between cycles.

Grand total run-time

#### Clock

Timekeeping accuracy

#### Intrinsic safety Europe ATEX Code

Cert. No.

#### International IECEx Code

Cert. No.

#### ETL & cETL Code

 1.2mA
 2.1mA

 2kΩ
 10kΩ

 0
 +40mV

 1V
 3V
 28V max

 3V
 10V
 28V max

 Liquid crystal
 9mm high

 6mm high
 hh:mm; mm:ss or s

10 to 28V from a Zener barrier or galvanic

1kΩ

Upper switching thresholds

16mA max plus 22.5mA for optional

isolator.

backlight.

Lower

100Ω

Contact closure with resistance less than  $10k\Omega$ .

99h 59m and 59s or equivalent in any display format.

99h 59m and 59s or equivalent in any display format.

5 x 10⁶ hours maximum

Less than  $\pm 0.43$ s error per day over operating temperature range.

Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da -40°C  $\leq$  Ta  $\leq$  +60°C  $\ddagger$ ITS16ATEX28408X

Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C  $\leq$  Ta  $\leq$  +60°C  $\ddagger$ IECEx ITS 16.0004X

Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C  $\leq$  Ta  $\leq$  60°C  $\ddagger$ 

#### Nonincendive USA & Canada ETL & cETL

# +70°C when not relying upon the certified impact and ingress protection provided by the front of the BA377E-SS enclosure to maintain the certification of the panel enclosure in which the BA377E-SS is mounted.

-40 to +85°C

0.85ka

output.

switch.  $5\Omega + 0.7V \text{ max}$ 

 $\mathsf{IM}\Omega$  min

Report available Front IP66, rear IP20

-40 to +70°C display -20 to +70°C

to 95% at 40°C non condensing

BS 3146-2:1977 ANC4B (316)

Screw clamp for 0.5 to 1.5mm² cable,

Complies with 2014/30/EU

removable terminal blocks.

Green LED internally powered

Two outputs each of which may be independently configured as a NO or NC

Isolated single pole, voltage free solid state

#### Environmental

Operating temp			
Storage temp			
Humidity			
Vibration			
Enclosure			
Ingress			
Material			
EMC			
Mechanical			

Terminals

# Weight

#### Accessories Backlight

Control outputs

Outputs

Ron Roff





# **TERMINAL CONNECTIONS**



Display backlight Control outputs Scale card Tag

Rear cover and sealing kit

Please specify if required Backlight Control outputs Legend required No charge if ordered with instrument. Legend required BA495

BA377E-SS can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba377E-ss for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.



**The BA377NE** timer or clock has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22 without the need for Zener barriers or galvanic isolators. The instrument is easy to use and can be configured on-site to operate with sensors having a wide variety of outputs. A slide-in scale card simplifies identification.

**Configuration** may be performed on-site via the front panel push buttons using simple well documented menus. The Timer employs a state and event structure to simplify configuration. If required the BA377NE can be supplied configured to customer's requirements including a customer defined printed slide-in scalecard for no additional charge.

**Applications as a Timer** include simply displaying the time interval between two events detected by a hazardous area sensor, such as a 2-wire proximity detector, connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads *on* or *off* at pre-set times twice during each twenty four hour period. The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range. **IP66 front panel protection** with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA377NE to be installed in areas that will be washed down.

International Ex nA certification permits the BA377NE timer or clock to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and instrument may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly, the BA377NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**Optional dual control outputs** can switch hazardous or safe area loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377NE display show the status of both control outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA377E-SS has the same features as the BA377NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA377E offers similar features in a Noryl enclosure and the BA378E is an intrinsically safe two input timer or clock in a 144 x 72mm Noryl enclosure with a larger display.

# **BA377NE**

# Rugged Ex nA & Ex tc one input timer or clock

*Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.* 

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Ex nA & Ex tc certified
- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
  - Optional: Backlight Dual control outputs
- 3 year guarantee

# www.beka.co.uk/ba377ne







Power supply Voltage

Current

## **DIMENSIONS** (mm



BA377NE can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba377ne for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.

4

Input		Lo	wer		r	switching	three
Switch contact	、	10	012	1K1/2			
Proximity detector (INAMUR	)	1.2	2mA	2.1mA	1		
Open collector		2K	Ω	10KΩ			
Magnetic pick-off		0		+40m	V		
Voltage pulse (low)		10	,	30	30	JV max	
voltage pulse (nign)		30		100	30	JV max	
Display							
Type	Ligu	id d	crystal				
Primary	9mn	n hi	igĥ				
Secondary	6mn	n hi	igh				
Format	hh:n	nm	ss;hh:	:mm ;	n	nm:ss or	S
Remote Timer	Con	tac	t closure	e with re	esi	istance	
reset a block syne.	1000	unc					
Timer							
Maximum duration	99h	59	m and 5	9s or e	qu	ivalent in	any
	disp	lay	format.				
Maximum delay	99h	59	m and 5	9s or e	qu	ivalent in	any
between cycles.	disp	lay	format.				
	_						
Grand total	5 x	106	hours n	naximui	m		
run-time.							
<b>.</b>							
Clock				-			
I imekeeping accuracy	Less	s th	an ±0.4:	3s error	ſр	er day ov	ver
	ope	ratil	ng tempe	erature	ra	inge.	
Contification	Net		<b>F</b> in in			faun 1a (m.	
Certification	NOU	e:	EX IC IN	codes	rei	iers to ins	strum
			pusn bu	tton co	nta	acts whic	n are
Europa ATEX			nonince	naive.			
	<b>C r c</b>		II Cotor		-		
Code	Gro	up	II Catego	ory 3G		X NA IC II	
	Gro	up I	II Catego	bry 3D	E)		180
Cost No	-40°		≤ Ia ≤ - TEV404	+60°C			
Cert. No.	115	104	1EX484	09X			
International JECEx							
	Evr	:		Ga			
Code							
					C		
Cort No	-40		≤ 1a ≤ - ITS 16 0	+00 C			
Cen. No.	IEC		113 10.0	0057			
	Clas		Zono 2	∧ Ev n	. ^		
Code	Zon	ວງ 200			л. т		
		e 2			, 1 20		(03
					111	aua)	
					ja v	) Conodo)	
					(C	Janaua)	
ETI Control No	400	0 1 261	≥ 1a ≥ 0 ∩	50 0			
ETE Control No.	400	001	0				
Environmental							
Operating temp	-40	to 4	⊧e0∘C di	solay -2	20	to ±60°C	
Storage temp	-40	to J	-85°C	spiay -2	20	10 +00 C	,
Humidity	to 9	5%	-00 0 at 40°C	non co	n	densina	
Vibration	Ren	ort	available		/	actioning	
Enclosure	riop	011	avanabn	0			
Ingress	Fror	nt IF	P66 real	r IP20			
Material	BS :	314	6-2:197	7 ANC4	1B	(316)	
FMC	Con	nnli	es with 2	2014/30	)/F	=[]	
						-	
Mechanical							
Terminals	Scre	ew (	clamp fo	r 0.5 to	) 1	.5mm ² ca	able.
	rem	ova	ble term	inal blo	bcł	KS.	,
Weight	0.85	ōkg					
		-					
Accessories	_						
Backlight	Gre	en	LED inte	ernally p	)01	wered	
Control outputs	Two	o ou	itputs ea	ch of w	/hi	ich mav b	e

10 to 30V dc

backlight.

16mA max plus 22.5mA for optional

independently configured as a NO or NC

Isolated single pole, voltage free solid state

output.

switch.

 $\mathsf{IM}\Omega$  min

 $5\Omega + 0.7V \text{ max}$ 

Outputs

Ron Roff



The BA378E is a two input intrinsically safe instrument that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA378E is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor. International intrinsic safety certification permits worldwide installation, and a slide-in scale card simplifies identification.

**Configuration** may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a *state* and *event* structure to simplify configuration. The BA378E can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by one or two hazardous area sensors such as 2-wire proximity detectors. The Timer can control an external event using the isolated open collector status output if only a single output is required. If it is required to switch more than one circuit, additional dual isolated control outputs are available as a factory fitted option. The Timer is able to perform common industrial timing application such as those associated with dosing or sampling where an intrinsically safe solenoid valve is required to be opened for a defined time. The Timer includes a powerful cycle function which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads *on* or *off* at pre-set times twice during each twenty four hour period.

**The display** has high contrast and a wide viewing angle, enabling the instrument to be read in most lighting conditions over a wide temperature range.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the instrument and the instrument panel allows the BA378E to be installed in areas that will be washed down.

**International intrinsic safety certification** permits the BA378E to be installed worldwide. When configured to operate with a sensors having a voltage or magnetic pick-up output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**Optional control outputs** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA378E display show the status of both control outputs.

When panel space is limited the intrinsically safe BA377E single input Timer or Clock provide similar features in a smaller 94 x 48mm enclosure. The BA377E-SS is identical to the BA377E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. The BA377NE has Ex nA and Ex tc certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

# **BA378E**

# Two input timer or clock

# Intrinsically safe for use in all gas hazardous areas

- Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate displays
- Intrinsically safe
- 144 x 72mm DIN enclosure with IP66 front protection.
- Isolated status output
  - Optional: Backlight Dual controls outputs
- 3 year guarantee

# www.beka.co.uk/ba378e







SPECIFICATION			DIMENSIO	NS (mm)	
Power supply	101 001/1	<b>-</b> , . , .			
Voltage	10 to 28V from isolator.	a Zener barrier or galvanic			Recommended panel cut-out
Current	22mA max plus backlight.	16mA for the optional	Par	nel cut-out	To achieve an IP66 seal between the instrument and the panel $136.0 + 0.5/-0.0 \times 66.2 + 0.5/-0.0$
Input A & b	Lower	Upper switching thresholds			Four panel mounting clips must be used
Switch contact Proximity detector (NAMUR)	100Ω 1.2mA	1κΩ 2 1mA			DIN 43 700
Open collector	2kΩ	10kΩ	L		138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0
Magnetic pick-off	0	+40mV			
Voltage pulse (low) Voltage pulse (high)	1 V 3 V	3V 28V max 10V 28V max	00 000000	<u></u>	
· ·····g· p····· (···g··)					
Display					بم ب
Туре	Liquid crystal			L L	
Primary	18mm high				
Format	hh:mm:ss ; hh	:mm; mm:ss or s			
Remote Timer	Contact closure	with resistance			7.5
reset & Clock sync.	less than $10k\Omega$ .	with resistance	<b> </b> ←−−−−	144	
Timor			BEKA 6	BA378E	T
Status output	Isolated, voltage	e free, open collector,			
	certified as a se	parate intrinsically safe	DISE	DIAY Scale	N Terminals for output
	complying with	the requirements for		our our of the second sec	options not snown
Ron	$51\Omega + 3V \text{ max}$	15.			
Roff	$1M\Omega$ min				<u>↓</u>
l max	10mA				
Maximum duration	99h 59m and 59	es or equivalent in any	TERMINAL	CONNECTIO	NIC
	display lonnal.				
Maximum delay	99h 59m and 59	es or equivalent in any	/	/	
between cycles.	display lonnat.		<u>[</u> ]	Terminals f	r
Grand total run-time	5x10 ⁶ hours ma	ximum	A1 A2	A3 A4 optional cor	itrol outputs
Clock			Control	Control	
Timekeeping accuracy	Less than ±0.43 operating temper	Bs error per day over Prature range.	output 1	output 2	
Intrincia cofety					
Europe ATEX				RS1 RS2   3  4  5  6	7 8 9 10 P1 P2
Code	Group II Catego	ory 1G Ex ia IIC T5 Ga	Power	Reset Add link Senso	r Add link Sensor Status
Out No	$-40^{\circ}C \le Ta \le 7$	20°C	supply	to energise input	to energise input b output
Cert. NO.	11310ATEA204	007		sensor A	Sensor
International IECEx	Ex in IIC TE Go			Input A	input D
Code	$-40^{\circ}C \le Ta \le 7$	′0°C	Outputs	Isolated sin	gle pole, voltage free solid stat
Cert. No	IECEx ITS 16.0	004X	·	switch.	
ETL & cETI			Ron Boff	5Ω + 0.7V n IMΩ min	าลx
Code	Class   Div 1 Gp	A, B, C, D T5 (USA & Canada)	TION .	10122 11111	
	Class II Div 1 Gp	E, F, G. Class III Div 1	Scale card	Blank card	itted to all instruments.
	Class I Zone 0	A) AEx ia IIC T5 Ga (USA)		units of mea	asurement for no additional
	Ex ia IIC T5 Ga	(Canada)		charge at ti	me of purchase. ~
	$-40^{\circ}C \le 1a \le 7$	10°C	Tag legend	Specified ta	a number or application
Nonincendive USA & Canada	ETL & cETL			printed onto	rear of instrument. ~
Code	Class   Div 2 C	àp A, B, C, D T5 Gri F, G , Class III, Div 2	Soo accossory	datashaat far datails	
	$-40^{\circ}C \le Ta \le 7$	'0°C	~ See accessory	ualasheet for details	
ETL Control No.	4008610		HOW TO O	BDFB	
Environmental					
Operating temp	-40 to +70°C dis	splay -20 to +70°C		Please spe	cify
Storage temp Humidity	-40 to +85°C to 95% at 40°C	non condensing	Model number	BA378E	
Vibration	Report available	e e e e e e e e e e e e e e e e e e e	Input	Type for ea	ch input *
Enclosure	Noryl SE1GFN3	3. Front IP66, rear IP20			
EMC	Complies with E	INC Directive 2014/30/EU	Accessories Display backlight	Please spe Backlight	city it required
Mechanical			Control outputs	Control out	outs
Terminals	Screw clamp for	r 0.5 to 1.5mm ² cable,	Scale card	Legend req	uired
Weight	removable term 0.35kg	inal blocks.	Тад	No charge	if ordered with instrument. uired
A second s	5.00Ng		Iug	Legena leg	anou
Accessories Backlight	Green LED inte	rnally powered	* BA378E can be s	supplied configured as r	equired for no additional
			charge, see instru	uction manual, which ca	n be downloaded from
Control outputs	i wo outputs each independently c	cn of which may be onfigured as a NO or NC	<u>www.beka.co.uk/</u> supplied, instrum	<u>pa378e</u> for details. If co ent will be configured a	ontiguration information is not s a Timer with an open collecto

output.

input. Can easily be reconfigured on-site.



The BA574G is a two input, general purpose field mounting instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA574G is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor.

**Configuration** may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA574G can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two sensors. The Timer can also control an external event using the isolated open collector status output. If more than one circuit is to be controlled, dual isolated control outputs are available as a factory fitted option. The Timer is able to perform many common industrial timing applications, such as those associated with dosing or sampling requiring a valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

When configured as a Clock the BA574G can display local time in various twelve or twenty four hour formats, and may be synchronised to a pre-set time via the external reset input. The isolated open collector status output can be configured to switch on and off twice at pre-set times during each twenty four hour period and may be used for repetitive timing functions. If more than one circuit is to be controlled, optional factory fitted isolated dual control outputs are available. Each output may be independently configured to switch on and off twice at pre-set times during each twenty four hour period.

The display has high contrast and a wide viewing angle, enabling the instrument to be read in most most lighting conditions over a wide temperature range.

**Display backlighting** which is internally powered from the timer or clock, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

**Panel mounting timers or clocks** with a variety of display and enclosure sizes are also available, see BA577E, BA577E-SS and BA578E. For applications in hazardous areas certified field and panel mounting timers or clocks are also available.

# BA574G two input timer or clock General purpose

- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Separate primary and secondary displays.
- IP66 GRP enclosure
- Isolated pulse output
- Simple on-site scale card installation.
  - Optional: Backlight Dual control outputs
- 3 year guarantee

www.beka.co.uk/ba574g



Power supply Voltage

Current

Switch contact

Open collector

Magnetic pick-off

Voltage pulse (low)

Voltage pulse (high)

Proximity detector (NAMUR)

Input

Display

Type

Primary

Format

Secondary

# **DIMENSIONS** (mm)



# **HOW TO ORDER**

Model number Function Input

Accessories **Display backlight** Control outputs Scale card marking Units Tag

Backlight Control outputs Legend required

Please specify if required

Please specify for each input

BA574G

Type

Timer or Clock

Legend required No charge if ordered with instrument

Stainless legend plate Legend required BA393G Pipe mounting kit Panel mounting kit

BA394G or BA494G

* BA574G can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ ba574g for details. If configuration information is not supplied, instrument will be configured as a Timer with open collector inputs. Can easily be reconfigured on-site.

# Timer reset or Clock sync

Status output Ron Roff Vmax I max

#### Timer

99h 59m and 59s or equivalent in any Maximum duration display format.

Maximum delay between 99h 59m and 59s or equivalent in any display format. cycles.

10 to 30V dc

Lower

1kΩ

 $10k\Omega$ 

ЗV

10V

100Ω

1.2mA

2kΩ

0

1V

ЗV

Liquid crystal

18mm high

12mm high

 $51\Omega + 3V \max$ 

 $1M\Omega$  min 30V dc

10mA

5 x 10⁶h maximum

-40 to +85°C

GRP

IP66

Report available

#### Clock

Accuracy

Grand total run-time

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress FMC

#### Mechanical

Terminals Weight

### Accessories

1.1kg Green LED internally powered Backlight Control outputs Two outputs each of which may be independently configured as a NO or NC output. Outputs Isolated single pole, voltage free solid state switch.  $5\Omega + 0.7V \text{ max}$ Ron Roff  $IM\Omega$  min 30V dc Vmax 200mA Imax Blank card fitted to all instruments. Scale card Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. # Legend plate 316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. # BA393G 316 stainless steel # Pipe mounting kit BA394G 316 stainless steel not sealing # Panel mounting kits BA494G GRP sealing #

# See accessory datasheet for details

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**₽** 

- Power

supply

Reset

Status

output



**The BA577E** is a general purpose instrument with one input that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via two optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA577E is controlled by a single input which may be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor.

**Configuration** may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA577E can be supplied configured to customers requirements including a customer defined printed slide-in scale card for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by a process area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions such as repetitively opening a solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period. The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the instrument and the instrument panel, allows the BA577E to be installed in areas that will be washed down.

**Optional control outputs** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA577E display show the status of both control outputs.

If a larger display is required the BA578E is a two input Timer or Clock housed in a Noryl 144 x 72mm DIN enclosure. For installations in marine or hostile environments the BA577E-SS is functionally identical to the BA577E but is housed in an impact resistant rugged stainless steel enclosure with a 10mm thick toughened glass window.

For applications in flammable atmospheres the BA377E, which is identical to the BA577E, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA377NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

# **BA577E**

# One input timer or clock

# **General purpose**

- May be configured as a Timer or as a Clock.
- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Two separate displays
- 96 x 48mm DIN enclosure with IP66 front protection.
- Simple on-site scale card installation.
  - Optional: Backlight Dual control outputs
- 3 year guarantee

www.beka.co.uk/ba577e



Power supply Voltage

# **DIMENSIONS (mm)**

Current	16mA max plus 22.5mA for optional backlight.	
Input Switch contact Proximity detector (NA Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	Lower         Upper         switching threshold           100Ω         1kΩ           MUR)         1.2mA         2.1mA           2kΩ         10kΩ           0         +40mV           1V         3V         30V max           3V         10V         30V max	ds Panel cut-out
<b>Display</b> Type Primary Secondary Format	Liquid crystal 9mm high 6mm high hh:mm:ss ;hh:mm ;mm:ss or s	
Remote Timer reset & Clock sync.	Contact closure with resistance less than $10 k \Omega$	96
Timer Maximum duration	99h 59m and 59s or equivalent in any display format.	
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.	
Grand total run-time	5 x 10 ⁶ hours maximum	
Clock Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.	TERMINAL COM
Environmental Operating temp Storage temp Humidity Vibration Enclosure Material Protection EMC	-40 to +70°C display -20 to +70°C -40 to +85°C to 95% at 40°C non condensing Report available Noryl SE1GFN3 Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU	Op A1 A2 + Control output 1 J 1 2
Mechanical Terminals	Screw clamp for 0.5 to 1.5mm ²	+ Power supply
Weight	0.15kg	
Accessories Backlight	Green LED internally powered	HOW TO ORDE
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.	Model number Function Input
Outputs	Isolated single pole, voltage free solid state switch.	
Ron	$5\Omega + 0.7V \text{ max}$	A
Roff V max	IMΩ min 30V de	Accessories Display backlight
l max	200mA	Control outputs Scale card
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of time for no additional charge at time of purchase. #	Tag Rear cover and sealing kit
Tag legend	Specified tag number or application printed onto rear of instrument. #	* BA577E can be supplied charge, see instruction ma www.beka.co.uk/ba577e fr
BA495 rear cover	Provides impact and IP66 protection for	supplied, instrument will be
and sealing kit	rear of instrument. #	collector input. Can easily

10 to 30V dc



# **FERMINAL CONNECTIONS**



Please specify

Timer or Clock

BA577E

Type *

# **IOW TO ORDER**

Please specify if required

Backlight Control outputs Legend required No charge if ordered with instrument Legend required BA495

BA577E can be supplied configured as required for no additional harge, see instruction manual, which can be downloaded from ww.beka.co.uk/ba577e for details. If configuration information is not upplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.

# See accessory datasheet for details


The BA577E-SS is a rugged general purpose instrument that may be configured as a Timer or as a Clock. Housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window, it has IP66 front of panel protection and is suitable for use in hostile and marine environments, or where the front of the instrument is likely to be impacted.

As a Timer the BA577E-SS can measure and display the elapsed time between external events, or control external events via two optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA577E-SS is controlled by a single input which may be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor.

**Configuration** may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA577E-SS can be supplied configured to customers requirements including a customer defined printed slide-in scalecard for no additional charge.

**Applications as a Timer** include displaying the time interval between two events detected by a process area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions such as repetitively opening a solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional dual control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

**The display** has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 front panel protection** with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA577E-SS to be installed in areas that will be washed down.

**Optional control outputs** can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured with normally open or closed outputs. Annunciators on the BA577E-SS display show the status of both control outputs.

**For less hostile applications** the BA577E is functionally identical to the BA577E-SS but is housed in a Noryl enclosure also providing IP66 front of panel protection. If a larger display is required, the BA578E offers similar features with two inputs in a 144 x 72mm Noryl enclosure.

For applications in flammable atmospheres the BA377E-SS, which is functionally identical to the BA577E-SS, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA377NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

## BA577E-SS

## Rugged one input timer or clock

## **General purpose**

- 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- May be configured as a Timer or as a Clock.
- Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Two Separate displays
- Simple on-site scale card installation.
- Optional: Backlight Dual control outputs
- 3 year guarantee

www.beka.co.uk/ba577e-ss



Power supply

Voltage Current

## DIMENSIONS (mm)

		0				
Input Switch contact Proximity detector (NAMU Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)	R)	Lower 100Ω 1.2mA 2kΩ 0 1V 3V	<b>Uppe</b> 1kΩ 2.1m 10kΩ +40n 3V 10V	er switching thresholds A nV 30V max 30V max		
<b>Display</b> Type Primary Secondary Format	Liq 9m 6m hh:	Liquid crystal 9mm high 6mm high hh:mm:ss ; hh:mm ; mm:ss or s				
Remote Timer reset & Clock sync.	Coi tha	ntact closur n 10kΩ	e with	resistance less		
Timer Maximum duration	99ŀ disj	n 59m and 5 olay format.	59s or	equivalent in any		
Maximum delay between cycles.	99ŀ disj	n 59m and 5 play format.	59s or	equivalent in any		
Grand total run-time	5 x	10 ⁶ hours ı	maxim	um		
Clock Timekeeping	Les ove	es than ±0.4 er operating	3s err tempe	or per day accuracy erature range.		
Environmental						
Environmental	40	ta		00 to 3000		
Operating temp	-40	to +70°C d	ispiay	$-20$ to $+70^{\circ}$ C		
Storage temp	-40	to +85°C				
Humidity	То	95% at 40°	C non	condensing		
Vibration	Rei	oort availab	le			
Enclosure						
Matavial	<b>D</b> O	04.40.0.407		040 (040)		
Material	82	3146-2:197	7 AN	C4B (316)		
Protection	Fro	nt IP66, rea	ar IP20	)		
EMC	Co	mplies with	2014/	30/EU		
Mechanical						
Terminals	Scr	ew clamp fo	or 0.5	to 1.5mm² cable		
renninais	rom	ovable	0.5	to 1.5mm cable,		
Weight	0.8	).85kg				
Accessories						
Backlight	Gre	en LED inte	ernally	powered		
Control outputs	Two indo	o outputs ea ependently put.	ach of config	which may be ured as a NO or NC		
Outputs	lso	lated single	nole	voltage free solid		
Calpaio	sta	te switch	P010,			
Pop	510					
	SИ	+ 0.7 v max				
Roff	IM	2 min				
V max	30\	/ dc				
l max	200	)mA				
Scale card	Bla Cai uni tim	nk card fitte n be supplie ts of time fo e of purchas	ed to a ed prin er no a se. #	Il instruments. ted with specified dditional charge at		
Tag legend	Spe ont	ecified tag n o rear of ins	umbe strume	r or application printed nt. #		
BA495 rear cover	Pro	vides impo	ct and	IP66 protection for		
and sealing kit	ree	r of instrum	ent #			
and obtaining hit	100	. Ji induulli	эн. т			

10 to 30V dc

backlight.

16mA max plus 22.5mA for optional



#### **TERMINAL CONNECTIONS**



### **HOW TO ORDER**

Model number Function Input

Accessories Display backlight Control outputs Scale card

Rear cover and sealing kit

Tag

Please specify BA577E-SS Timer or Clock Type *

Please specify if required Backlight Control outputs Legend required *No charge if ordered with instrument* Legend required BA495

* BA577E-SS can be supplied configured as required for no additional

charge, see instruction manual, which can be downloaded from <u>www.beka.co.uk/ba577e-ss</u> for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.

# See accessory datasheet for details



**The BA578E** is a two input general purpose instrument that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA578E is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor.

**Configuration** may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA578E can be supplied configured to customers requirements including a customer defined printed scale card for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two sensors such as 2-wire proximity detectors. The Timer can control an external event using the isolated open collector status output if only a single output is required. If it is required to switch more than one circuit, additional dual isolated control outputs are available as a factory fitted option. The Timer is able to perform common industrial timing application such as those associated with dosing or sampling where a solenoid valve is required to be regularly opened for a defined time. The Timer includes a powerful cycle function which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

**The display** has high contrast and a wide viewing angle, enabling the instrument to be read in most lighting conditions over a wide temperature range.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the instrument and the instrument panel allows the BA578E to be installed in areas that will be washed down.

**Optional control outputs** can switch process area loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured with normally open or closed outputs. Annunciators on the BA578E display show the status of both control outputs.

When panel space is limited the BA577E single input Timer or Clock provides similar features in a smaller 96 x 48mm DIN enclosure. For installations in marine or hostile environments the BA577E-SS is functionally identical to the BA577E but has a rugged stainless steel enclosure with a 10mm thick window.

For applications in flammable atmospheres the BA378E, which is functionally identical to the BA578E, has international intrinsic safety certification. The one input BA377E also has intrinsic safety certification and the rugged BA377NE has Ex nA and Ex tc allowing installation in Zones 2 or 22 without Zener barriers or galvanic isolators.

# **BA578E**

# Two input timer or clock

## **General purpose**

- May be configured as a Timer or as a Clock.
- Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- Two Separate displays
- 144 x 72mm DIN enclosure with IP66 front protection.
- Isolated status output
  - Optional: Backlight Dual controls outputs
- 🔷 3 year guarantee

www.beka.co.uk/ba578e



#### Power supply Voltage

Current

10 to 30V dc 22mA max plus 16mA for the optional backlight.

Lower

100Ω

Input A & b Switch contact Proximity detector (NAMUR)

Open collector Magnetic pick-off Voltage pulse (low) Voltage pulse (high)

#### Display

Туре Primary Secondary Format

#### Remote Timer reset & Clock sync.

#### Timer

Status output Ron Roff I max

Maximum duration

Maximum delay between cycles.

Grand total run-time

#### Clock

Timekeeping accuracy.

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Material Ingress EMC

#### Mechanical

Terminals

Weight

#### Accessories Backlight

Ron Roff I max

Control outputs

Outputs

V max

Scale card

Tag legend

printed onto rear of instrument.

~ See accessory datasheet for details

1.2mA 2.1mA 2kΩ  $10k\Omega$ +40mV 0 30V max 1V 3V 30V max ЗV 10V

1kΩ

Upper switching thresholds

Liquid crystal 18mm high 12mm high hh:mm:ss; hh:mm; mm:ss or s

Contact closure with resistance less than 10kΩ

Isolated, voltage free, open collector 51Ω + 3V max  $1M\Omega$  min 10mA

99h 59m and 59s or equivalent in any display format.

99h 59m and 59s or equivalent in any display format.

5 x 10⁶ hours maximum

Less than ±0.43s error per day over full operating temperature range

-40 to +70°C display -20 to +70°C -40 to +85°C To 95% at 40°C non condensing Report available

Noryl SE1GFN3 Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable, removable. 0.35kg

Green LED internally powered

Two outputs each of which may be independently configured as a NO or NC output.

Isolated single pole, voltage free solid state switch.  $5\Omega + 0.7V \text{ max}$  $IM\Omega$  min 30V dc 200mA

Blank card fitted to all instruments.

Can be supplied printed with specified units of time for no additional charge at time of purchase.

Specified tag number or application

### **DIMENSIONS** (mm)



### **TERMINAL CONNECTIONS**



#### **HOW TO ORDER**

Model number Function Input

Accessories Display backlight Control outputs Scale card

Please specify BA578E Timer or Clock Type for each input *

Please specify if required Backlight Control outputs Legend required No charge if ordered with instrument Legend required

* BA578E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ ba578e for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.

Тад

03

## **Flow Batch Controllers**



Very easy to use, stand alone batch controllers for dispensing and sampling. Graphical display that can be configured to suit applications including up to 9 named batch setpoints.

- > Graphical display with backlight
- General purpose and certified hazardous area models ATEX and North American Ex ia intrinsic safety gas and dust certification.
- > Field mounting models have IP66 impact resistant GRP enclosure

Separate terminal compartment Pipe mounting accessories.

Panel mounting models IP66 front panel

#### > Input Pulse or 4/20mA

#### > Three isolated outputs Output 1:

control output

#### Outputs 2 & 3 configurable:

control outputs flow alarm reset alarm reset status batch state scaled pulse output

#### > Single or two-stage control with overrun compensation

Provision for external push buttons Push button control may be transferred to external switches.

#### > -20 to +60°C operating temperature range

#### > Accessories

Three additional configurable isolated outputs. Laser engraved stainless steel legend plates.

## Intrinsically safe General purpose





SETPOINT	□100
200.0	
BATCHED	_
0.0	02
START	
READY	

RUNNING	
SETPOINT	□100
354.75	
BATCHED	
65.32	0%
STOP	







An indicator for every application delivered ready for installation

Flow Batch Controllers available								
			Certification					
Model No.	Mounting	Europe ATEX		Intern IE0	International IECEx		USA & Canada	
		Gas Dust		Gas	Gas Dust		Dust	
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22								
BA454D	Field	✓	<b>v</b>	-	-	<b>v</b>	×	
BA458C	Panel	~	_	-	_	~	_	
General Purpose	General Purpose - for use in safe areas							
BA654D	Field							
BA658C	Panel							

A Flow Batch Controller for every application..... delivered ready for installation



sales@beka.co.uk



The BA454D is an intrinsically safe, second generation batch controller based on the successful BA350B. This field mounting controller is ideal for accurately dispensing liquids, solids or components in a hazardous area and despite its sophisticated control functions, it is easy to use and configure. Carefully designed display screens annotated in English, French, or German, lead the user intuitively through the available options. The BA454D accepts a pulse or 4/20mA analogue input and incorporates a square root extractor and sixteen point lineariser allowing use with almost any flowmeter or sensor. Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

Single or two-stage control can be performed by the BA454D with a third output available to control an additional valve or pump. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays.

The backlit display is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of total product dispensed is maintained as a grand total together with a history of the last ten batches.

**Up to nine setpoints** may be pre-entered and selected by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters.

The three isolated outputs are individually configured as control or status outputs. If more are required, a factory fitted option provides three additional identical isolated outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls. **Counting may be inhibited** during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA454D batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

ATEX certification permits the BA454D to be installed in gas and dust hazardous areas. The magnetic pick-off, voltage pulse and 4/20mA inputs comply with the requirements for simple apparatus, allowing direct connection to most certified flowmeters. Switch contacts and a wide range of certified proximity detectors may also be directly connected to the BA454D. All three control outputs are galvanically isolated and certified as separate intrinsically safe circuits with output parameters complying with the requirements for simple apparatus. This allows most certified hazardous area loads such as valves, lamps, and sounders to be controlled, or the output may be transferred to the safe area via a wide range of Zener barriers or galvanic isolators.

For use in the USA and Canada the BA454D has FM and cFM intrinsic safety and nonincendive approval.

**Controller configuration** may be performed via the front panel push buttons or optional external switches. To prevent accidental or unauthorised adjustment, access to the configuration menus is restricted by an external security link and an optional user definable four digit security code.

The GRP enclosure has stainless steel fittings, neoprene gaskets and an armoured glass window. The robust construction provides IP66 protection which has been independently assessed by ITS – report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the electronic assembly. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing.

## BA454D Flow batch controller

Intrinsically safe for use in gas and dust hazardous areas

- Easy to use
- Intrinsically safe ATEX gas or ATEX gas & dust or FM, cFM & ATEX gas
- High contrast display with backlight.
- Pulse or 4/20mA current source input.
- 3 or 6 outputs
- 9 selectable batch setpoints.
- IP66 field mounting GRP enclosure with separate terminal compartment.
- 3 year guarantee

#### www.beka.co.uk/ba454d





#### **SPECIFICATION** Power supply Voltage Must be powered via a Zener barrier or galvanic isolator, 11V min required between terminals 1 and 2. 33 mA typical when powered from 24V via 28V Current 300Ω Zener barrier **Pulse inputs** Linear or via 16 point lineariser Switch contact Less than $100\Omega$ Closed Open Greater than $1k\Omega$ 2-wire NAMUR Proximity detector Magnetic pick-off 40mV peak to peak min Voltage pulse (low) Less than 1V Low Greater than 3V; 30V max. High Voltage pulse (high) Less than 3V I ow High Greater than 10V; 30V max. Open collector Closed Less than $2k\Omega$ Open Greater than $10k\Omega$ Frequency Switch contact 100Hz maximum All other pulse I/P 5kHz maximum 4/20mA input From current source Function Linear or root extracting 0.6V at 20mA Voltage drop Accuracy at 20°C Linear 0.3 % of span Root extracting $\pm 16~\mu A$ at input $\pm 0.3~\%$ of span Frequency 2Hz maximum Temperature effect Less than 0.025%/°C Inhibit Linking terminals 18 & 20 prevents input signal being counted. Display 86.5 mm x 45 mm LCD Size Backlight Green 6 selectable operator screens showing combinations of: Batch controller status Quantity dispensed Batch setpoint Rate of dispensing Status of control outputs Outputs Three galvanically isolated solid state dc switches. On Less than $5\Omega + 0.7V$ Off Greater than $1M\Omega$ IS parameters Ui=28V; li=200mA; Pi=0.85W Switching time 0.2s max Control 1 Closes when start button is operated and opens when dispensed quantity equals the batch setpoint. Outputs 2 & 3 may be configured Control 2 or Control 3 (parameters for each are as: separately adjustable) Closes a pre-set time after Control 1 closes and open a pre-set dispensed quantity before the dispensed quantity equals the batch setpoint. Flow alarm Closes when the rate of dispensing falls below a pre-set value. Also causes batch controller to pause. Reset status Closes when controller is reset and opens when batch is started.

Batch status

Opens when batch is started and closes when batch is complete.

Pulse output

Scaled number of pulses proportional to quantity dispensed. Frequency 4 Hz max.

#### Front panel push buttons

(Control may be transferred to external switches with or without disabling the front panel push buttons.)

Start	Energises Control 1
Stop	During a batch de-energises Control 1, 2 & 3 causing the batch to pause.
Reset	Resets the batch display to zero or to the batch setpoint if the controller is counting down.
Menu	Provides access to four functions if they are enabled: Select pre-entered batch setpoint Adjust batch setpoint View size of last 10 batches Configuration menu
Security Operator menu	May be protected by an optional four digit code.
Configuration menus	Protected by external link or switch, plus optional four digit code.
Intrinsic safety Europe ATEX Code or Cert. No. System Location	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C) Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66 ITS03ATEX21378 Ex03E21380 & Ex03E21381 Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22
USA FM Standard Code	3610 Entity CL I, II, III; Div 1 GP A, B, C, D, E, F & G T4; Ta = 60°C
Standard Code	3611 Nonincendive CL I, II, III; Div 2 GP A, B, C, D, E, F & G T4; Ta = 60°C
File	3033262
Canada cFM File	3033262C
Environmental Operating temp Humidity Enclosure EMC Immunity Emissions	-20 to 60°C (ATEX gas certification -40 to 60°C) Storage temp -40 to 85°C To 95% @ 40°C IP66 In accordance with EU Directive 2004/108/EC No error for 10V/m field strength between 150kHz and 1GHz. Complies with the requirements for Class B equipment.
<b>Mechanical</b> Terminals Weight	See page 147 for enclosure & terminal details. Screw clamp for 0.5 to 1.5mm ² cable. See page 119. 1.6 kg
Accessories	-
Additional outputs	I hree programmable outputs having the same specification as outputs 2 & 3.
Stainless legend plate	Stanness steel plate secured to front of instrument etched with tagging or applicational information
Pipe mounting kit	BA392D or BA393

#### **HOW TO ORDER**

		Pleas
Model number		BA45
Certification		ATEX
	or	ATEX
	or	FM, c
Accessories		Pleas
Accessories Outputs 4, 5 &	6	<b>Pleas</b> Additi
Accessories Outputs 4, 5 & Stainless legend	6 1 plate	Pleas Additi Leger
Accessories Outputs 4, 5 & 0 Stainless legend Pipe mounting l	6 I plate kit	Pleas Additi Leger BA39

Please specify BA454D ATEX gas ATEX gas & dust FM, cFM & ATEX gas Please specify if required Additional 3 outputs Legend required BA392D or BA393

## **DIMENSIONS (mm)**





Three cable entries ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug. FM certification 22.25 Ø plain holes

## **TERMINAL CONNECTIONS**



### **TERMINAL DESCRIPTIONS**

Case		For earthing	the enclosure		
1 2	+	Power suppl	У		
_ 11	+	Proximity de	tector, switch	] Input	
12	-	contact or op	pen collector	A	indui used
13	+	High voltage		1	one / be
14	+	Low voltage		Input	ylnc may
15		mV (Magnet	ic pick-off)	В	0
16	-	Common for	input B		
17	+	4/20mA		]	
18		Common for	links	] Externa	ls
19		Configure se	curity link	Links	
20		Inhibit input	link	]	
S1		Start		1	
S2		Stop			
S3		Reset		External	
S4		Menu		Switches	S
S5		Do not use			
S6		Do not use			
S7		Common for	switches	]	
Case		For earthing	the enclosure		
A1 A2	+ _	Control 1			
A3	+	Output 0	1		
A4	-	Output 2	Outputs 2 a	nd 3 may e	each be
۸.5			configured t	o have one	e of six
A5 46	+	Output 3			
A7	+	Output 4	]		
A8	-		If fitted optic		A 5 and
A9	+	Output 5	6 may each	he configu	red to
A10	-	Calput C	have one of	six functio	ns.
A11	+	0.14.1.0			
A12	_	Output 6	]		



The BA458C is an intrinsically safe secondgeneration flow batch controller that supersedes the successful BA350BP and BA350BC. This controller is ideal for accurately dispensing liquids, solids or components in a hazardous area and despite its sophisticated control functions, it is very easy to configure and use. Carefully designed display screens, annotated in English, French, or German, lead the user intuitively through the available options. The BA458C accepts a pulse or 4/20mA analogue input and incorporates a square root extractor and sixteen point lineariser allowing use with almost any flowmeter or sensor. Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

Single or two-stage control can be performed by the BA458C with a third output available to control an additional valve or pump. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays.

The backlit display is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of total product dispensed is maintained as a grand total together with a history of the last ten batches.

**Up to nine setpoints** may be pre-entered and selected by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters.

The three isolated outputs are individually configured as control or status outputs. If more are required, a factory fitted option provides three additional identical isolated outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

**Counting may be inhibited** during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

**Selectable automatic restart** causes the BA458C batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

ATEX certification permits the BA458C to be installed in all hazardous gas areas. The magnetic pick-off, voltage pulse and 4/20mA inputs comply with the requirements for simple apparatus, allowing direct connection to most certified flowmeters. Switch contacts and a wide range of certified proximity detectors may also be directly connected to the BA458C. All three control outputs are galvanically isolated and certified as separate intrinsically safe circuits with output parameters complying with the requirements for simple apparatus. This allows most certified hazardous area loads such as valves, lamps, and sounders to be controlled, or the output may be transferred to the safe area via a wide range of Zener barriers or galvanic isolators.

For use in the USA and Canada the BA458C has FM and cFM intrinsic safety and nonincendive approval.

**Controller configuration** may be performed via the front panel push buttons or optional external switches. To prevent accidental or unauthorised adjustment, access to the configuration menus is restricted by an external security link and an optional user definable four digit security code.

**For field mounting applications** the BA454D provides the same batching facilities but is housed in a robust IP66 GRP enclosure suitable for external mounting. A complementary range of non-certified models for use in safe areas is also available.



Easy to use

- Intrinsically safe ATEX, FM & cFM certification.
- High contrast display with backlight.
- Pulse or 4/20mA current source input.
- 3 or 6 outputs
- 9 selectable batch setpoints.
- IP66 front panel
- 3 year guarantee

www.beka.co.uk/ba458c





Power supply Voltage	Must be powered via a Zener barrier or	(Control may be tran disabling the front pane	sferred to external switches with or without el push buttons.)
	galvanic isolator, 11V min required between terminals 1 and 2.	Start	Energises Control 1
Current	33 mA typical when powered from 24V via 28V 300 $\Omega$ Zener barrier	Stop	During a batch de-energises Control 1, 2 & 3
Pulse inputs	Linear or via 16 point lineariser	_	causing the batch to pause.
Switch contact Closed Open	Less than $100\Omega$ Greater than $1k\Omega$	Reset	Resets the batch display to zero or to the batch setpoint if the controller is counting down.
Proximity detector	2-wire NAMUR	Menu	Provides access to four functions if they are
Magnetic pick-off	40mV peak to peak min		enabled: Select pre-entered batch setpoint
Voltage pulse (low) Low High	Less than 1V Greater than 3V; 30V max.		Adjust batch setpoint View size of last 10 batches Configuration menu
Voltage pulse (high) Low High	Less than 3V Greater than 10V; 30V max.	Security Operator menu	May be protected by an optional four digit code.
Open collector Closed Open	Less than $2k\Omega$ Greater than $10k\Omega$	Configuration menus	Protected by external link or switch, plus optional four digit code.
Fraguanay		Intrinsic safety	
Switch contact	100Hz maximum	Europe ATEX Code	Group II Category 1G Ex ia IIC T5 Ga
All other pulse I/P	5kHz maximum	Cert No	(Tamb = -40°C to 60°C) ITS03ATEX21379X
4/20mA input Function	From current source Linear or root extracting		Special condition only apply for installations
Voltage drop Accuracy at 20°C	0.6V at 20mA	Location	Zone 0, 1 or 2
Linear Boot extracting	0.3% of span	USA FM	
Frequency Temperature effect	2Hz maximum Less than 0.025%/°C	Standard Code	3610 Entity CL I; Div 1; GP A, B, C D T4; Ta = 60°C
Inhibit	Linking terminals 18 & 20 prevents input signal being counted.	Standard Code	3611 Nonincendive CL I; Div 2
Display Size	86.5 mm x 45 mm LCD		GPA, B, C & D T4; Ta = 60°C
Backlight 6 selectable operator	Green	File	3033262
screens showing combinations of:	Batch controller status	Canada cFM	
	Quantity dispensed Batch setpoint	File	3033262C
	Rate of dispensing Status of control outputs	Environmental Operating temp	-20 to 60°C (certified for use at -40°C)
Outputs	Three galvanically isolated solid state dc switches.	Storage temp Humidity	-40 to 85°C To 95% @ 40°C
On Off	Less than $5\Omega + 0.7V$ Greater than 1MO	Enclosure EMC	Complies with EMC Directive 2014/30/EU
IS parameters Switching time	Ui=28V; Ii=200mA; Pi=0.85W 0.2s max	Immunity Emissions	No error for 10V/m field strength between 150kHz and 1GHz. Complies with the requirements for Class B
Control 1	Closes when start button is operated and		equipment.
	batch setpoint.	Mechanical	See page 148 for enclosure & terminal
Outputs 2 & 3 may	Control 2 or Control 2 (parameters for each	Terminals	Removable with screw clamp for 0.5 to 1.5mm ² cable.
be configured as.	are separately adjustable) Closes a pre-set time after Control 1	Weight	0.7 kg
	closes and open a pre-set dispensed quantity before the dispensed quantity equals the batch setpoint.	Accessories Additional outputs	Three programmable outputs having the same specification as outputs 2 & 3.
	Closes when the rate of dispensing falls below a pre-set value. Also causes batch controller to pause.	Tag number	Thermally printed strip on rear of instrument.
	Reset status Closes when controller is reset and opens	HOW TO ORD	DER
	when batch is started. Batch status		Please specify
	Opens when batch is started and closes when batch is complete.	Model number	BA458C
	Pulse output Scaled number of pulses proportional to quantity dispensed. Frequency 4 Hz max.	Accessories Outputs 4, 5 & 6 Tag strip	Please specify if required Additional 3 outputs Legend

Front panel push buttons



### **TERMINAL CONNECTIONS**



#### **TERMINAL DESCRIPTIONS** Case For earthing the enclosure 1 + Power supply 2 _ Proximity detector, switch + Input 11 only one input may be used contact or open collector 12 Α _ 13 High voltage + Low voltage 14 Input + 15 mV (Magnetic pick-off) В 16 Common for input B 17 4/20mA + Common for links 18 Externals Configure security link 19 Links Inhibit input link 20 S1 Start S2 Stop S3 Reset External S4 Menu Switches S5 Do not use S6 Do not use S7 Common for switches For earthing the enclosure Case A1 Control 1 A2 A3 + Output 2 Outputs 2 and 3 may each be A4 configured to have one of six A5 functions + Output 3 A6

If fitted optional outputs 4, 5 and 6 may each be configured to have one of six functions.

Α7

A8

A9

A10

A11

A12

+

+

_

+

_

Output 4

Output 5

Output 6



The BA654D is a second-generation, field mounting, general-purpose flow batch controller based on the successful BA550. This controller is ideal for accurately dispensing liquids, solids or components and despite its sophisticated control functions, it remains very easy to use and configure.

The backlit display is readable in all lighting conditions and the user screen may be selected so that the operator is only presented with essential process information. Displayed variables include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of the total product dispensed is maintained as a grand total, together with a history of the last ten batches.

**Up to nine setpoints** may be pre-entered for selection by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters. The controller can also be configured so that the operator can adjust an existing setpoint or enter a new value.

**Single or two-stage control** can be performed by the BA654D with a third output available to control an additional valve or pump, or even to provide three-stage control. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays.

**Pulse and analogue 4/20mA signals** are accepted by the batch controller. All inputs are galvanically isolated allowing earthed or floating signals to be connected. Pulse inputs may be from switch contacts, a 2-wire proximity detector or a wide range of voltage sources. An easily adjustable sixteen-point lineariser will accurately correct almost any flowmeter non-linearity. The BA654D also incorporates a root-extractor so 4/20mA analogue inputs may be linear, or have a square law relationship with flow.

Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units. The three relay contact outputs may be individually configured as control or status outputs. If more are required, a factory fitted option provides three additional galvanically isolated solid state outputs.

**Front panel push buttons** allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

**Counting may be inhibited** during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

**Selectable automatic restart** causes the BA654D batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

**Controller configuration** is performed via the front panel push buttons or optional external switches. Carefully designed configuration menus lead the installer intuitively through the available functions. Configuration menus and user screens may be displayed in English, French or German.

A security link and an optional user definable four digit security code prevent accidental or unauthorised access to the configuration menus.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings and provides IP66 protection. A separate terminal compartment allows the instrument to be installed and terminated without exposing the instrument electronics. To further simplify installation and subsequent inspection, the terminal cable entries and the clamping screws are both forward facing.

For panel mounting applications the BA658C provides the same batching facilities as the BA654D but is housed in a 144 x 72mm DIN enclosure. A complementary range of intrinsically safe models is also available.



3 year guarantee

compartment.

www.beka.co.uk/ba654d



SPECIFICATIO	ON		Flow alarm Closes when the rate of dispensing falls
Power supply			below a pre-entered value. Also causes
Voltage Current	20 to 36V dc. 95mA max		batch controller to pause. Reset status
Pulse Inputs Switch contact	Linear or via 16 point lineariser		opens when batch is started. Batch status
Closed Open	Less than $100\Omega$ Greater than $1k\Omega$		Opens when batch is started and closes when batch is complete. <i>Pulse output</i>
Proximity detector	2-wire NAMUR		Scaled output proportional to total volume dispensed.
Magnetic pick-off	40mV peak to peak min		Frequency 4 Hz max.
Voltage pulse (low) Low	Less than 1V	Front panel push bu Start	t <b>tons</b> Energises Control 1
High	Greater than 3V; 30V max.	Stop	During a batch de-energises Control 1, 2 & 3 causing the batch to pause
Voltage pulse (high)	Less than 3V		a o badoing the baton to padde.
High	Greater than 10V; 30V max.	Reset	Resets the batch display to zero or to the batch setpoint if the controller is counting down
Open collector	Less than $2k\Omega$		
Open	Greater than $10k\Omega$	Menu	Provides access to four functions if they are enabled: Select pre-entered batch setpoint
Switch contact	100Hz maximum		
All other pulse I/P	5kHz maximum		Adjust batch setpoint View size of last 10 batches
4/20mA input	From current source		Computation menu
Voltage drop	0.6V at 20mA	Security	
Accuracy at 20°C	0.3 % of span	Operator menu	May be protected by an optional four digit code.
Root extracting	±16 μA at input ±0.3 % of span	<b>• • •</b> •	
Temperature effect Frequency	Less than 0.025%/°C 2Hz maximum	Configuration menus	sProtected by external link or switch, plus optional four digit code.
Inhibit	l inking terminals 18 & 20 prevents input	Environmental	
minon	signal being counted.	Operating temp Storage temp	-20 to 60°C -40 to 85°C
Display		Fuctosure	10 95% @ 40°C Front IP66
Size Backlight	86.5 mm x 45 mm LCD Green	EMC	In accordance with EU
6 selectable operato	or	Immunity	Directive 2004/108/EC No error for 10V/m field strength between
combinations of:	Digital & bargraph display of quantity	Emissions	150kHz and 1GHz. Complies with the requirements for Class B
	Batch setpoint		equipment.
	Status of control outputs Batch controller status	Mechanical	See page 147 for enclosure & terminal details.
		Terminals	Screw clamp for 0.5 to 1.5 mm ² cable.
Outputs	Three single pole relay contacts.	Weight	1.6 kg
Rating	250V; 5A; 1.25kVA ac	Accessories	
	Reactive loads must be suppressed.	Additional outputs	Three configurable galvanically isolated, single pole solid state dc switch outputs.
Switching time	0.2s max	Stainless legend	Stainless steel plate secured to front
Control 1	Closes when start button is operated and opens when batched quantity equals the batch setpoint.	plate Pipe mounting kit	applicational information. BA392D or BA393
Outputs 2 & 3		HOW TO ORD	DER
may be configured			Please specify
as:	Control 2 or Control 3 (parameters for each are individually adjustable) Closes a programmable time after	Model number	BA654D
	Control 1 closes and open a	Accessories	Please specify if required
	programmable dispensed quantity	Outputs 4, 5 & 6	Additional 3 solid state dc outputs
	the batch setpoint.	Pipe mounting kit	BA392D or BA393

### **DIMENSIONS (mm)**



## **TERMINAL CONNECTIONS**



## **TERMINAL DESCRIPTIONS**

Case		For earthing	the enclosure		
1	+	Power suppl	у		
11	+	Proximity de	tector, switch	] Input	
12	-	contact or or	pen collector	A	input used
13	+	High voltage	•	1	y be
14	+	Low voltage		Input	lnc ma
15		mV (Magnet	ic pick-off)	В	
16 17	+	4/20mA	Input B		
18		Common for	links	Extornal	
19		Configure se	curity link	Linke	5
20		Inhibit input	link		
S1		Start		]	
S2		Stop			
S3		Reset		External	
S4		Menu		Switches	6
S5		Do not use			
56		Do not use			
57		Common for	switches	]	
Case		For earthing	the enclosure		
A1 A2	+ _	Control 1			
A3	+	Output 2	1		
A4	-	Output 2	Outputs 2 a	and 3 may e	ach be
A5	+	Output 0	functions	to have one	UI SIX
A6	-	Output 3			
A7	+	Output 4	1		
A8	-	Output 4			
A9	+	Outrout F	If fitted opti	onal outputs	s 4, 5 and
A10	-	Output 5	have one o	f six function	rea to ns.
A11	+	Output 6			- •
A12	_	Output 6	]		

4



**The BA658C** is a second-generation, general-purpose flow batch controller that supersedes the successful BA550P and BA550C. This controller is ideal for accurately dispensing liquids, solids or components and despite its sophisticated control functions, it remains very easy to use and configure.

The backlit display is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of the total product dispensed is maintained as a grand total, together with a history of the last ten batches.

**Up to nine setpoints** may be pre-entered for selection by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters. The controller can also be configured so that the operator can adjust an existing setpoint or enter a new value.

Single or two-stage control can be performed by the BA658C with a third output available to control an additional valve or pump, or even to provide three-stage control. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays

**Pulse and analogue 4/20mA signals** are accepted by the batch controller. All inputs are galvanically isolated from the controller power supply and outputs so that earthed signals may be connected. Pulse inputs may be from switch contacts, a 2-wire proximity detector or a wide range of voltage sources. An easily adjustable sixteen point straight line lineariser will accurately correct almost any flowmeter non-linearity. The BA658C also incorporates a root-extractor so 4/20mA analogue inputs may be linear, or have a square law relationship with the rate of flow.

Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

The three relay contact outputs may be individually configured as control or status outputs. If more are required, a factory fitted option provides three additional galvanically isolated solid state outputs.

**Front panel push buttons** allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

**Counting may be inhibited** during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA658C batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

**Controller configuration** is performed via the front panel push buttons or optional external switches. Carefully designed configuration menus lead the installer intuitively through the available functions. Configuration menus and user screens may be displayed in English, French or German.

A security link and an optional user definable four digit security code prevent accidental or unauthorised access to the configuration menus.

For field mounting applications the BA654D provides the same batching facilities as the BA658C but is housed in a robust IP66 GRP enclosure suitable for external mounting. A complementary range of field and panel mounting intrinsically safe models is also available for use in potentially flammable atmospheres.



- Easy to use
- High contrast display with backlight
- Pulse or 4/20mA current source input
- 3 or 6 outputs
- 9 selectable batch setpoints
- IP66 front panel
- 3 year guarantee



SPECIFICATIO	DN		Flow alarm
Power supply Voltage Current	20 to 36V dc. 95mA max		Closes when the rate of dispensing falls below a pre-entered value. Also causes batch controller to pause.
Pulse Inputs Switch contact	Linear or via 16 point lineariser		Reset status Closes when controller is reset and opens when batch is started.
Closed Open	Less than $100\Omega$ Greater than $1k\Omega$		Batch status Opens when batch is started and closes when batch is complete.
Proximity detector	2-wire NAMUR		Pulse output Scaled output proportional to total
Magnetic pick-off	40mV peak to peak min		volume dispensed. Frequency 4 Hz max.
Voltage pulse (low)	Lass than 1)/	Front panel push bu	ittons
High	Greater than 3V; 30V max.	Start	Energises Control 1
Voltage pulse (high) Low	Less than 3V	Stop	During a batch de-energises Control 1, 2 & 3 causing the batch to pause.
High	Greater than 10V; 30V max.	Reset	Resets the batch display to zero or to the batch setpoint if the controller is counting
Closed Open	Less than $2k\Omega$ Greater than $10k\Omega$		down.
opon		Menu	Provides access to four functions if they
Frequency Switch contact	100Hz maximum		are enabled: Select pre-entered batch setpoint Adjust batch setpoint
4/20mA input	From current source		View size of last 10 batches Configuration menu
Function	Linear or root extracting		
Voltage drop Accuracy at 20°C	0.6V at 20mA	Security Operator menus	May be protected by an optional four digit
Linear Boot oxtracting	0.3 % of span +16 $\mu$ A at input +0.3 % of span		code.
Temperature effect Frequency	Less than 0.025%/°C 2Hz maximum	Configuration menus	sProtected by external link or switch, plus optional four digit code.
Inhibit	l inking terminals 18 & 20 prevents input	Environmental	
	signal being counted.	Operating temp Storage temp	-20 to +60°C -40 to 85°C
Display		Enclosure	Front IP66 rear IP20
Size Backlight 6 selectable operato	Green Green	EMC	Complies with EMC Directive 2014/30/EU.
screens showing combinations of:	Digital & bargraph display of quantity	Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
	dispensed. Batch setpoint	Emissions	equipment.
	Status of control outputs Batch controller status	Mechanical	See page 148 for enclosure & terminal details
Outputs	Three single pole relay contacts.	Terminals	Removable with screw clamp for 0.5 to 1.5 mm ² cable.
Rating	250V; 5A; 1.25kVA ac 30V; 5A; 150W dc	Weight Accessories	0.7 kg
Switching time	0.2s max	Additional outputs	Three configurable galvanically isolated, single pole solid state dc switch outputs.
Control 1	Closes when start button is operated and	To a succession of	Rating: 30V; 100mA dc
	opens when batched quantity equals the batch setpoint.	lag number	instrument.
Outputs 2 & 3 may be configured		HOW TO ORD	DER
as:	Control 2 or Control 3 (parameters for each are individually adjustable)	Model number	Please specify BA658C
	Closes a programmable time after Control 1 closes and open a program- mable dispensed quantity before the dispensed quantity equals the batch setpoint.	Accessories Outputs 4, 5 & 6 Tag Strip	<b>Please specify if required</b> Additional 3 solid state dc outputs Legend



### **TERMINAL CONNECTIONS**



#### **TERMINAL DESCRIPTIONS** Case For earthing the enclosure 1 + Power supply 2 _ Proximity detector, switch 11 + Input only one input may be used contact or open collector 12 Α _ 13 High voltage + Low voltage 14 Input + 15 mV (Magnetic pick-off) В 16 Common for input B 17 4/20mA + Common for links 18 Externals Configure security link 19 Links Inhibit input link 20 S1 Start S2 Stop S3 Reset External S4 Menu Switches S5 Do not use S6 Do not use S7 Common for switches For earthing the enclosure Case A1 Control 1 A2 A3 + Output 2 Outputs 2 and 3 may each be A4 configured to have one of six A5 functions + Output 3 A6 Α7 + Output 4 A8 If fitted optional outputs 4, 5 and A9 + Output 5 6 may each be configured to A10 _ have one of six functions. A11 + Output 6 A12 _

## **Set Point Station [Generator]**



For manually adjusting a 4/20mA process variable or controller set point from within a hazardous or safe area using the instrument's push buttons. These loop powered instruments incorporate a display to show the operator the 4/20mA current in engineering units.

- General purpose and certified hazardous area models International Ex ia intrinsic safety certification.
- Rugged stainless steel Ex ia models May be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
- > IP66 front panels
- BA490 Quadrature rotary encoder Alternative to using the set point station's push buttons, current can be controlled by an external rotary encoder such as the BA490.

#### > -40 to +70°C operating temperature range

#### > Accessories

Display backlight may be loop or separately powered Scale card - *can be supplied printed with units of measurement and tag information for no additional charge* Rear IP66 sealing kit

## Intrinsically safe General purpose

**IEĈE**X







Quadrature Rotary Encoder - optional



Rear IP66 sealing kit



Set Point Stations [Generators] available									
		Disular			Certifie	cation			
Model No.	Mounting	digits	Eur AT	Europe ATEX		Europe International ATEX IECEx		USA & Canada	
		No. x height	Gas	Dust	Gas	Dust	Gas	Dust	
Ex ia intrins	ically safe - for a	use in Zones	0,1&	2 and 2	20, 21 &	22 whe	ere cert	ified	
BA427E	Panel 96 x 48	5 x 11mm bargraph	~	~	~	~	~	-	
BA427E-SS	Panel Rugged 105 x 60	5 x 11mm bargraph	~	~	~	~	-	-	
General Pu	rpose - for use	in safe area	s						
BA627E	Panel 96 x 48	5 x 11mm bargraph							
BA627E-SS	Panel Rugged 105 x 60	5 x 11mm bargraph							

## A Set Point Station for every application.....

delivered ready for installation



sales@beka.co.uk

www.beka.co.uk



**The BA427E** is an intrinsically safe panel mounting set point station that enables the current flowing in a 4/20mA loop to be manually adjusted via the front panel push buttons from within the hazardous area. It is a second generation instrument that is mechanically and electrically compatible with the earlier BA405C, but has more display digits plus additional functions.

**Main application** of the BA427E is the adjustment of a 4/20mA plant parameter from within a hazardous area. For example, used as the remote set point generator for a speed controller the BA427E enables speed adjustments from within the hazardous process area. The BA427E may also be used to position an actuator or valve with a 4/20mA input. The BA427E incorporates a five digit display plus a bargraph that may be calibrated to show the engineering units represented by the 4/20mA current, allowing an operator to easily set the process variable to the required value.

International intrinsic safety certification permits the BA427E to be installed throughout the world. All input safety parameters are the same or greater than those for the preceding BA405C, thus allowing the BA427E to safely replace the earlier model.

**Five pre-set output** values may be rapidly selected using the instrument's front panel push buttons for applications where the same output values are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that operators can only adjust the plant variable within safe limits.

The bold 11mm high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA427E set point station display to be read easily in most lighting conditions over a wide temperature range. The five digits, with four decimal points and a negative sign, may be configured to display any variable represented by the 4/20mA output current between -99999 and 99999.

**Engineering units** represented by the 4/20mA output current are shown on the scale card viewed through a window on the right hand side of the display. If the units are specified when the BA427E is ordered a printed scale card will be fitted. If units are not specified, a blank card will be supplied which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

**Display backlighting** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring. Two backlights may be separately powered from one intrinsically safe interface.

**IP66 front panel protection** and a neoprene gasket to seal the joint between the set point station and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the set point station has a removable terminal block allowing panel wiring to be completed before the BA427E is installed.

A BA490 panel mounting external rotary encoder may be directly connected to the BA427E set point station to provide analogue control of the output current. The encoder complies with the requirements for *Simple Aparatus* and can be installed in the same hazardous area as the set point station.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

# **BA427E**

## 4/20mA manual set point station [set point generator]

Intrinsically safe for use in all gas and dust hazardous areas

- Loop powered
- Intrinsically safe ATEX, IECEx ETL & CETL.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & BA490 external rotary encoder.
- IP66 front
- Easy on-site scale card installation.
- 96 x 48mm DIN enclosure.
- 3 year guarantee

#### www.beka.co.uk/ba427e









#### **DIMENSIONS** (mm)



276



**The BA427E-SS** set point station enables the current flowing in a 4/20mA loop to be manually adjusted from within a hazardous area via the front panel push buttons. Intrinsic safety certification and a rugged stainless steel housing allows the BA427E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the enclosures certification. It is also suitable for intrinsically safe applications in uncertified panels, in marine environments or where the front of the instrument is likely to be impacted.

**Main application** of the BA427E-SS is the manual adjustment of a 4/20mA plant parameter such as a controller set point from within a hazardous area. To simplify adjustment, the display may be calibrated to show the output current in engineering units. The front of the set point station has IP66 ingress and impact protection which has been certified to allow installation in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the enclosure certification.

ATEX and IECEx intrinsic safety certification permits the BA427E-SS to be installed throughout the world. Both certificates clearly specify where the set point station may be installed and a detailed explanation is contained in the instruction manual.

A large digital display and 31 segment bargraph may be calibrated to show the engineering units represented by the 4/20mA current, allowing an operator to easily set the process variable to the required value.

**Up to five pre-set output values** may be rapidly selected using the instrument's front panel push buttons for applications where the same output currents are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that operators can only adjust the plant variable within safe limits.

Units of measurement represented by the 4/20mA output current may be shown on the slide-in scale card which is viewed through the window on the right hand side of the display. If the units are specified when the BA427E-SS is ordered a printed scale card will be fitted. If units are not specified, a blank card will be fitted which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

**Display backlighting** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring are required. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring. Two backlights may be separately powered from one intrinsically safe interface.

An external quadrature encoder may be directly connected to the BA427E-SS set point station to provide analogue control of the output current. Most three wire devices, such as the BEKA BA490 panel mounting rotary encoder may be located up to 1m from the BA427E-SS.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

# BA427E-SS

## Rugged 4/20mA manual set point station [set point generator]

Intrinsically safe suitable for use in a Ex e, Ex n, Ex p or Ex t panel enclosure and in harsh environments

- Loop powered
- Front of instrument maintains Ex e, Ex p, Ex n and Ex t panel enclosure certification.
- Rugged IP66 stainless steel enclosure.
- Intrinsically safe ATEX & IECEx.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight and BA490 external rotary encoder.
- 🔷 3 year guarantee

#### www.beka.co.uk/ba427e-ss



#### **DIMENSIONS (mm)**





**The BA627E** is a panel mounting set point station that enables the current flowing in a 4/20mA loop to be manually adjusted via the front panel push buttons from within the process area. It is a second generation instrument that is mechanically and electrically compatible with the earlier BA505C, but has more display digits plus additional functions.

**Main application** of the BA627E is the adjustment of a 4/20mA plant parameter from within a process area. For example, as the remote set point generator for a speed controller or for positioning an actuator or valve with a 4/20mA input. The BA627E incorporates a five digit display plus a bargraph that may be calibrated to show the engineering units represented by the 4/20mA current, allowing an operator to easily set the process variable to the required value.

**Five pre-set output** values may be rapidly selected using the instrument's front panel push buttons for applications where the same output values are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that an operator can only adjust the plant variable within safe limits.

**The bold 11mm** high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA627E set point station display to be read easily in most lighting conditions over a wide temperature range. The five digits, with four decimal points and a negative sign, may be configured to display any variable represent by the 4/20mA output current between -99999 and 99999.

**Engineering units** represented by the 4/20mA output current are shown on the scale card viewed through a window on the right hand side of the display. If the

units are specified when the BA627E is ordered a printed scale card will be fitted. If units are not specified, a blank card will be supplied which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

**Display backlighting** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop the minimum operating voltage of the BA627E is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

**IP66 front panel protection** and a neoprene gasket to seal the joint between the set point station and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the set point station has a removable terminal block allowing panel wiring to be completed before the BA627E is installed.

A BA490 panel mounting rotary encoder may be directly connected to the BA627E set point station to provide analogue control of the output current. Although the BEKA BA490 has been designed for this application, almost any quadrature encoder with a contact output may be used.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

For applications in hazardous areas the BA427E, which has similar features as the BA627E, has ATEX and IECEx certification allowing installation in most gas and dust hazardous area.

# **BA627E**

4/20mA manual set point station [set point generator]

## **General purpose**

### Loop powered

- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & BA490 external rotary encoder.
- IP66 front
- Easy on-site scale card installation.
- 96 x 48mm DIN enclosure.
- 3 year guarantee

#### www.beka.co.uk/ba627e



## DIMENSIONS (mm)

SPECIFICATION		
Output Current Resistance	3.0 to 22.0mA Greater than 1MΩ	
Power supply Voltage	6.1 to 30V 10 to 30V when optional backlight is loop powered.	Panel cut-out
Accuracy Control resolution	1 least significant digit of the display, or 0.3μA whichever is greater	<u>0000</u> 000 000
Temperature effect	Less than 2µA/°C	
<b>Display</b> Type	Liquid crystal, non-multiplexed 5 digit 11mm high with 31	
Zero	Adjustable between 0 & ±99999 with 4mA output.	
Span	Adjustable between 0 & $\pm$ 99999 with 20mA output.	96
Decimal point Zero blanking	1 of 4 positions or absent Blanked apart from 0 in front	BEKA Set point Station BA627E
Direction	Display may increase or decrease with increasing 4/20mA output.	
Push buttons 'E' and ▼ or ▲	(Function in operating mode) Scrolls output current down or up. Pressing <i>'E'</i> prevents output current being accidentally adjusted if ▼ or ▲ buttons or optional rotary encoder are inadvertently operated. This function can be disabled in the configuration	TERMINAL CONNEC        121314      5 6
•	menu. Shows display calibration with 4mA	+ - Separately   powered A B
▲ '₽'	output. Shows display calibration with 20mA output. Displays output current in mA, as a % of span or provides access to pre-set outputs.	Terminals for Termina optional backlight optional e rotary er
Environmental Operating temp Storage temp Humidity Vibration	-40 to 70°C -40 to 85°C to 95% at 40°C noncondensing	BA490 Rotary encoder Panel encode contro See se
Enclosure	Front IP66, rear IP20 Complies with EMC Directive 2014/30/EU	BA495 rear cover Provid and sealing kit for rea
Mechanical Terminals	Screw clamp for 0.5 to 1.5mm ²	# See accessory datasheet for o
Weight	cable, removable. 0.2kg	HOW TO ORDER
Accessories Backlight	Green, may be loop or	Model number BA627 Display at:
Loop powered	Set point station + backlight supply 10 to 30V.	20.000mA XXXX
Separately powered.	9 to 30V at 22mA	Accessories Pleas Display backlight Backli Scale card Legen
Printed scale card	Blank card fitted to each Set Point Station can be supplied typeset with specified engineering units.	Tag      Legen        External rotary encoder      BA490        Rear cover and sealing kit      BA490
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.	* Will be set to display 0.00 at 4m/ output if calibration information is r easily be changed on-site.

## ና 65 7.5 Terminals for optional backlight 48

are shown in outline

Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel 90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700 92.0 +0.8 / -0.0 x 45 +0.6 / -0.0

### **CTIONS**

	12 13 14 + - Separately powered Loop powered Common Terminals for optional backlight	5 6 7 A B Common	1 2 3 4 + 4/20mA Terminals 2 & 4 are internally linked for joining return 4/20mA wire
	BA490 Rotary encoder	Panel mounting IP encoder which pro control of the BA62 See separate data	65 sealed rotary vides analogue 27E output current. sheet.
	BA495 rear cover and sealing kit	Provides impact a for rear of instrum	and IP66 protection ient. #
#	See accessory datash	heet for details	
		-	

27E

ease specify A627E

(XX ] Include position of decimal(XX ] point & sign if negative *

ease specify if required acklight gend required gend required 490 495

4mA output and 100.00 at 20mA is not supplied. Calibration can easily be changed on-site.



The BA627E-SS set point station enables the current flowing in a 4/20mA loop to be manually adjusted from within a process area via the front panel push buttons. Housed in a rugged stainless steel enclosure with a toughened glass window the BA627E-SS is ideal for installations in harsh industrial and marine environments and where the front of the instrument is likely to be impacted.

**Main application** of the BA627E-SS is the manual adjustment of a 4/20mA plant parameter such as a controller set point from within a process area. For example, as the remote set point generator for a speed controller or for positioning a 4/20mA actuator or valve. The BA627E-SS incorporates a five digit display plus a bargraph that may be calibrated to show the engineering units represented by the 4/20mA output current, enabling an operator to easily set the process variable to the required value.

**Up to five pre-set output values** may be rapidly selected using the instrument's front panel push buttons for applications where the same output values are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that operators can only adjust the plant variable within safe limits.

**The bold 11mm** high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA627E-SS set point station display to be read easily in most lighting conditions over a wide temperature range. The five digits, with four decimal points and a negative sign may be configured to display any variable represented by the 4/20mA output current between -99999 and 99999.

**Engineering units** represented by the 4/20mA output current may be shown on the slide-in scale card which is viewed through the window on the right hand side of the display. If the units are specified when the BA627E-SS is ordered a printed scale card will be fitted. If units are not specified, a blank card will be fitted which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

**Display backlighting** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop the minimum operating voltage of the BA627E-SS is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

An external quadrature encoder may be directly connected to the BA627E-SS set point station to provide analogue control of the output current. Most three wire devices, such as the BEKA BA490 panel mounting rotary encoder may be located up to 1m from the BA627E-SS.

**Reliability is ensured** by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

For applications in hazardous areas the BA427E-SS, which has similar features as the BA627E-SS, has IECEx and ATEX certification allowing installation in most gas and dust hazardous areas. It may also be installed in Ex e, Ex n, Ex p and Ex t panel enclosures without invalidating the enclosure certification.

# BA627E-SS

Rugged 4/20mA manual set point station [set point generator]

General purpose for use in harsh and marine environments

- Loop powered
- Rugged IP66 stainless steel enclosure.
- 5 digit 11mm high display & 31 segment bargraph.
- Optional backlight & BA490 external rotary encoder.
- Easy on-site scale card installation.

3 year guarantee

www.beka.co.uk/ba627e-ss



### **DIMENSIONS (mm)**

Output Current	3.0 to 22.0mA	
Resistance	Greater than $1M\Omega$	
Power supply Voltage	6.1 to 30V 10 to 30V when optional backlight is loop powered.	
Accuracy Control resolution	1 least significant digit of the display, or 0.3μA whichever is greater.	
Temperature effect	Less than 2µA/°C	
<b>Display</b> Type Zero Span Decimal point	Liquid crystal, non-multiplexed 5 digit 11mm high with 31 segment bargraph. Adjustable between 0 & ±99999 with 4mA output. Adjustable between 0 & ±99999 with 20mA output. 1 of 4 positions or absent	
Zero blanking Direction	Blanked apart from 0 in front of decimal point. Display may increase or decrease with increasing 4/20mA output.	
Push buttons € and ♥ or ▲	(Function in operating mode) Scrolls output current down or up Two handed activation prevents output current being accidentally adjusted if	Ì
	Shows display calibration with 4mA output.	
	Shows display calibration with 20mA output.	
P	Displays output current in mA, as a % of span or provides access to pre-set outputs.	
Environmental Operating temp Storage temp Humidity Vibration Enclosure Ingress protection Material EMC	-40 to +70°C -40 to +85°C to 95% at 40°C noncondensing Report available Front IP66, rear IP20 Stainless steel BS 3146-2:1977 ANC4B (316). Complies with 2004/108/EC	#
<b>Mechanical</b> Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable, removable. 0.85kg	N
Accessories Backlight Loop powered Separately powered	Green, may be loop or separately powered. Set point station + backlight supply 10 to 30V. 9 to 30V at 22mA	
Printed scale card	Blank card fitted to each Set Point Station, can be supplied typeset with specified engineering units.	E F
Tag legend	Specified tag number or application laser etched onto rear of the instrument.	e



#### 5 6 7 12 13 14 2 3 4 1 Separately в À . Common Loop powered Terminals for 4/20mA Common optional external . rotary encoder Terminals for optional backlight Terminals 2 & 4 are internally linked for joining return E 4/20mA wire M4 earth stud BA490 panel mounting rotary quadrature External encoder encoder which may be located up to 1m away from the BA627E-SS. See separate datasheet. Provides impact and IP66 protection for BA495 rear cover and sealing kit rear of instrument. # See accessory datasheet for details **OW TO ORDER** Please specify BA627E-SS lodel number Display at: 4.000mA XXXXX ] Include position of decimal 20.000mA XXXXX point & sign if negative * ccessories Please specify if required Backlight Display backlight Scale card Legend required - No Charge if ordered with Set Point Station. Legend required ag xternal rotary encoder BA490 Rear cover and sealing kit BA495

* Will be set to display 0.00 at 4mA output and 100.00 at 20mA output if calibration information is not supplied. Calibration can easily be changed on-site.



The BA490 encoder is a robust panel mounting rotary control knob with a quadrature switch contact output, suitable for installation in hazardous or safe process areas. It is designed for easy adjustment by a gloved hand and may be directly connected to almost any instrument that accepts a three-wire quadrature input to provide a simple way of making adjustments from within the process area.

The encoder contains two single pole switches that open and close 90 degrees out of phase with each other as the control knob is rotated. This enables both the position and direction of rotation to be determined. If switch 'A' leads switch 'B', the knob is rotating in a clockwise direction, if 'B' leads 'A', the knob is rotating in a counterclockwise direction.

A common application for the BA490 encoder is to provide rotary manual control of a BEKA BA427E or BA627E 4/20mA output Set Point Station. Normally the output current of these generators is controlled by the front panel ▼ and ▲ push buttons, but direct connection of the BA490 rotary encoder enables an operator to make adjustments via the conventional rotary control knob.



**Compliance with** *Simple Apparatus* requirements specified in Clause 5.7 of the international intrinsic safety standard IEC 60079-11 allows the BA490 encoder to be installed in Zones 1, 2, 21 and 22 and to be directly connected to intrinsically safe apparatus located in the same hazardous area.

**IP65 sealing** of the control knob and the joint between the encoder and the panel prevents ingress when installed in a panel that will be hosed, washed or splashed. When environmental protection behind the panel is also required the BA599 rear sealing assembly accessory provides IP65 protection allowing the encoder to be fitted in a panel with an open back.



BA490 Rotary encoder

Robust control knob with quadrature output

## **General purpose**

- Quadrature switch contact output.
- Robust construction
- Simple Apparatus allows installation in a hazardous area.
- IP65 front of panel protection.
- 22.5mm hole mounting.
- 3 year guarantee

www.beka.co.uk/ba490



DIMENCIONO	( <b>\</b>
DIMENSIONS	

-		
Contacts Rating	5V; 0.5mA	
Current	10mA max (resistive load)	Singl ho
Output Phase	Switch 'A' leads switch 'B' by 90° for clockwise rotation of the control knob.	
Resolution	12 pulses per 360° rotation of the control knob.	
Insulation Voltage to conductive panel.	500V ac for 1 minute	
Intrinsic safety Code	Complies with the requirements for <i>Simple Apparatus</i> specified in Clause 5.7 of IEC 60079-11.	
Location	Zone 1, 2, 21 or 22	
Environmental		TER
Operating temp	-10 to 70°C	
Storage temp	-40 to 85°C	
Humidity	to 95% at 40°C noncondensing	
Enclosure	Front IP65, rear IP20, see accessories for optional BA599 IP65 rear sealing assembly.	
EMC	Complies with 2004/108/EC Electromagnetically benign.	
Mechanical		HOV
Terminals	Screw clamp for 0.14 to 1mm ² stranded cable.	Model
Weight	50g	<b>Acces</b> Rear s
Accessories BA599	Rear sealing assembly provides IP65 protection for the rear of the encoder. Supplied with gland for 7 to 12mm diameter cable.	



## MINAL CONNECTIONS



## V TO ORDER

minals	Screw clamp for 0.14 to 1mm ² stranded cable.	Model number	Please specify BA490
ight	50g	Accessories Rear sealing assembl	Please specify if required y BA599
<b>ssories</b> 599	Rear sealing assembly provides IP65 protection for the rear of the encoder. Supplied with gland for 7 to 12mm diameter		

## Indicating Temperature Transmitters



Field and panel mounting loop powered HART enabled temperature transmitters which incorporate a large easy to read temperature display. In addition to conventional Ex ia intrinsic safety certification, the field mounting BA474D also has associated apparatus certification. When installed in a safe area this permits it to be connected to a primary element in the hazardous area without the need for a Zener barrier or galvanic isolator. Similarly, when installed in Zone 2 the BA474ND may be connected to a primary element in Zone 0, 1 or 2, again without a Zener barrier or galvanic isolator.

- > Large high contrast temperature display
- General purpose and certified hazardous area models International Ex ia intrinsic safety and Ex nA non sparking certification
- Field mounting models
  Separate terminal compartment.
  Innovative certification eliminates need for barrier or isolator
- > Panel mounting models IP66 front panels
- > HART communication Sensor diagnostics
- > -20 to +60°C operating temperature range

#### > Accessories

Dual isolated alarms

Backlight loop powered

Scale card - can be supplied printed with units of measurement and tag information for no additional charge

Laser engraved stainless steel legend plates

Pipe mounting kits

Intrinsically safe Ex nA Flameproof General purpose







Ex IEC FM APPROVED COMMUNICATION PROTOCOL
-------------------------------------------

Models available								
	Iodel No. Mounting	Certification						
Model No.		Europe ATEX		International IECEx		USA & Canada		
		Gas	Dust	Gas I	Dust	Gas I	Dust	
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified								
BA474D	Field	~	<b>v</b>	×	~	~	~	
BA478C	Panel 144 x 72	~	-	~	-	×	-	
Ex nA - intrinsically safe input								
BA474ND	Field	~	~	<b>v</b>	~	-	-	
General Purpose - for use in safe areas								
BA674D	Field							
BA678C	Panel 144 x 72							

An Indicating Temperature Transmitter for every application. . . . delivered ready for installation



```
s@beka.co
```

www.beka.co.uk


The new BA474D is a second generation, intrinsically safe, loop powered indicating temperature transmitter which replaces the BA374C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Incorporating new facilities such as HART[®] digital communication, associated apparatus certification and a robust GRP enclosure with a separate terminal compartment, the BA474D remains electrically compatible with the earlier model.

The main application of the BA474D is to display temperature in a hazardous process area and to transmit a linearised 4/20mA current to the safe area. Associated apparatus certification also allows the BA474D to be installed in a safe area with the sensor in Zone 0, 1, 2, 20, 21 or 22 without the need for a Zener barrier or galvanic isolator greatly reducing the loop cost. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend

**Calibration and configuration**, including input type, may be performed via HART[®] communication or push buttons located behind a sealed cover. For applications requiring frequent adjustment the transmitter can be supplied with external push buttons. The BA474D also accepts voltage and resistance inputs so that pressure, weight or position tranducer outputs may be displayed in engineering units and transmitted as a 4/20mA current.

HART[®] digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter.

**Sensor diagnostics** are continuously performed by the BA474D transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART[®] communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

International intrinsic safety certification allows the BA474D to be installed worldwide in most hazardous areas and to be used with most flammables gases and combustible dusts. Associates apparatus certification also permits a hazardous area RTD/ THC to be connected to a safe area BA474D transmitter without the need for Zener barriers or galvanic isolators.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

**Dual Alarms** are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

**Tag number and application** can be marked onto the display escutcheon prior to despatch or after installation. Alternatively the instrument can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

### **BA474D** Indicating temperature transmitter

Intrinsically safe for use in gas & dust hazardous areas

#### AND

Associated apparatus for safe area mounting with RTD/THC in hazardous area without a Zener barrier or galvanic isolator

- Large display
- 4/20mA loop powered
- HART[®] communication
- Intrinsically safe ATEX gas
   or ATEX gas & dust
   or FM, cFM & ATEX gas
- Certified galvanic isolation.
- RTD, THC, voltage or resistance input.
- IP66 GRP enclosure with separate terminal compartment.
- Optional:

Loop powered backlight External push buttons Dual alarms

3 year guarantee

#### www.beka.co.uk/ba474d



Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

#### Supply voltage Without backlight With backlight

Output

Operating range Resistance

#### Display

Туре

Reading rate Resolution RTD & THC input Voltage & resistance input

#### Input

Resistance thermometer Pt100 or Pt1000 Connection Excitation current

#### Resistance

Min span Thermocouple Туре B E J K N R

S

```
Voltage
  Minimum span
```

HART[®] communication

Diagnostics

#### Performance

Accuracy RTD input THC input ±10µV Effect of temperature on display Voltage Zero drift <1µV/°C Span drift <30ppm/°C Effect of temperature on 4/20mA output Zero drift Span drift Series mode ac rejection Common mode ac rejection

#### Intrinsic safety Europe ATEX Code

II 1G, Ga Ex ia IIC T5 for gas II (1)G, (Ga) [Ex ia] IIC Ta = -40 to 70°C II 1D. Ex iaD 20 T80°C IP66 for dust II (1) D, [Ex iaD] Ta = -20 to 60°C ITS09ATEX26155

#### USA FM

Standard Code

Certificate No.

Associated apparatus

or

File

Standard

Code

Intrinsically safe input

File

Canada cFM File

#### International IECEx Code for gas

for dust or

Certificate No.

#### Environmental

Operating temp Storage temp Humidity Enclosure EMC

9 to 28V 15.5 to 28V

3.8 to 20.5mA  $5M\Omega$  min

Liquid crystal 20mm high -99999 to 99999 31 segment bargraph 2 per second

Selectable 0.1° or 1° Fully selectable

-200 to 850°C 3 or 4 wires, or differential 175µA

Adjustable between 0 & 5kΩ 10Ω

Ran	ae °C	0	
200	to	1820	
-200	to	1000	
-210	to	1200	
-200	to	1372	
-200	to	1300	
-50	to	1768	
-50	to	1768	
-200t	0	400	

Adjustable between ±1.9V

HART Registered, compliant with HART protocol standard revision 7. Generally as NAMUR NE 107. Output via HART[®] and under or over range output

BTD

+0.1°C

current

<1µV/°C+0.02°C/°C <20ppm/°C <80ppm/°C <30ppm/°C <20ppm/ °C <50ppm/ °C <0.1% error for 150mV rms 50 or 60Hz. <0.1% error for 250V 50 or 60Hz.

THC

### (associated apparatus) (associated apparatus)

3610 Entity CL I, II, III; Div 1; GP A, B, C, D, E, F & G T4 @ 70°C Input may be directly connected to sensor in: CL I, II, III; Div 1; GP A, B, C, D, E, F & G 3035396 3611 Nonincendive CL I; Div 2; GP A, B, C, D, E, F & G T4 @ 70°C Input may be directly connected to sensor in: CL I, II, III; Div 1; GP A, B, C, D, E, F & G

3035396

3035396C

Ga Ex ia IIC T5 [Ex ia Ga] IIC (associated apparatus) Ta = -40 to 70°C Ex ia IIIC T80°C Da IP66 [Ex ia Da]IIIC (associated apparatus)  $T_{a} = -20 \text{ to } 60^{\circ}\text{C}$ IECExITS 09.0005 Option see How to Order

-40 to 70°C -40 to 85°C To 95% IP66 (see ITS report C871V0383) In accordance with EU Directive 2004/108/EC.

#### **DIMENSIONS** (mm



#### **TERMINAL CONNECTIONS**



Mechanical Terminals Weight

Accessories Loop powered backlight Dual alarm Ron Roff External push buttons Scale legend

Stainless legend plate

Membrane keypad~ Units marked onto display escutcheon. Note: For RTD & THC inputs, °C or °F is shown on the instrument display.

< 80 + 1.2V

> 180k

1.6kg

Etched with tag number on front of instrument. ~ BA392D or BA393.

Screw clamp for 0.5 to 1.5mm² cable

Operating voltage increased to 15.5V min Isolated, solid state single pole

~ See accessorv datasheet for details

#### HOW TO ORDER

#### Model number

Pipe mounting kit

Certification

Input CJ compensation Display units Display at which output is: 4mA 20mAXXXXX Display at which bargraph: StartsXXXXX Finishes

Fault indication

Accessories Backlight Dual alarm External push buttons Scale legend Stainless legend plate Pipe mounting kit

Please specify BA474D

ATEX & IECEx gas ATEX & IECEx gas & dust FM, cFM & ATEX gas

RTD; THC & type; V or R* On or Off. [THC input only]* °C or °F [RTD/THC only]*

XXXXX

or

or

XXXXX

Off; under range or over range

Please specify if required Backlight Alarms External push buttons Legend Legend BA392D or BA393

If calibration is not requested, BA474D will be set for 3 wire Pt100 RTD input with 4/20mA output and bargraph corresponding to a display of 0.0 to 100.0°C, with no fault indication.



The new BA474ND is a second generation Type n loop powered indicating temperature transmitter which provides an accurate local digital temperature display plus a 4/20mA output. Incorporating a galvanically isolated intrinsically safe input that permits direct connection to measuring elements in any gas or dust hazardous Zone, this new instrument will cost effectively satisfy many hazardous area temperature measuring and display applications. HART[®] digital communication and a robust GRP enclosure with a separate terminal compartment further extend the many applications.

The main application of the BA474ND is to display temperature in a Zone 2 hazardous process area and to transmit a linearised 4/20mA current to the safe area. For installations where the operator and instrumentation are located in Zone 2 or 22, but the measuring element is in Zone 0, 20, 1 or 21, the BA474ND certified isolation allows direct connection to the sensor without the need for barriers or isolators, thus significantly simplifying installation and reducing cost. Easy on-site conditioning enables the transmitter to operate with three or four wire resistance thermometers or with most common types of thermocouple. Differential measurements can also be made. Voltage and resistance inputs from pressure, weight or position transducers may be displayed in engineering units and transmitted as a 4/20mA current and HART[®] digital signal.

**Calibration and conditioning** may be performed via HART[®] communication or from the four internal push buttons that are located behind a sealed front cover. For applications requiring frequent adjustments, the instrument can be supplied with optional external membrane push buttons. All instrument functions and calibration, including the type of input, are configurable on-site which reduces the instrument inventory.

HART[®] digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the measuring element and the transmitter. HART[®] communication also enables the BA474ND to be configured and calibrated from a portable HART[®] communicator or from the system host. If HART[®] digital communication is not required, the BA474ND will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA474ND transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART[®] communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

**Ex nA and tD certification** permits the BA474ND transmitter to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The transmitter has certified internal galvanic isolation and an intrinsically safe Ex ia sensor input allowing direct connection to resistance thermometers and thermocouples installed in Zones 0, 1, 2. 20, 21 & 22.

The liquid crystal display has large digits plus a 31 segment bargraph which are designed to provide maximum contrast and a wide viewing angle. An optional loop powered backlight provides green background illumination making the display readable at night and in poor lighting conditions. The backlight does not require additional field wiring or a power supply, but the minimum operating voltage of the transmitter is increased.

**Dual Alarms** are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Tag number and application can be marked onto the display escutcheon prior to despatch or after installation. Alternatively, for customers who prefer an etched stainless steel label, the transmitter can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

### **BA474ND** Indicating temperature transmitter

*Type nA certified for installation in Zone 2 & 22 hazardous areas* 

Intrinsically safe input allows sensor to be installed in any gas or dust hazardous area

- Large display
- 4/20mA loop powered
- HART[®] communication
- ATEX & IECEx certification

Transmitter: Ex nA

Sensor input: Ex ia & Ex iaD

- RTD, THC, voltage or resistance input.
- IP66 GRP enclosure with separate terminal compartment.
  - Optional: Loop powered backlight External push buttons Dual alarms
- 3 year guarantee

#### www.beka.co.uk/ba474nd



pply voltage	
Without backlight	
With backlight	

Output

Su

Operating range Resistance

#### Display Туре

#### Reading rate

#### Input

Resistance thermometer Pt100 or Pt1000 Connection Excitation current

#### Resistance Min span

Thermocouple

Туре В Е

J Κ Ν R S

```
Voltage
```

```
Min span
```

HART[®] communication

Diagnostics

#### Performance Accuracy

Eff

RTD input THC input

Effect of temperature o	n display		
	Voltage	THC	RTD
Zero drift	<1µV/°C	<1µV/°C + 0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C
Effect of temperature o	n 4/20mA output		

II 3 GD, Ex nA nL [ia] IIC T5

II (1) G [ia] IIC T5

ITS09ATEX46157

Ex nA nL [ia] IIC T5

Ta = -20 to 60°C

IECEx ITS 09.0007

[ia] IIC T5

-20 to 60°C

-40 to 85°C

To 95%

1.6kg

[iaD]

Ex tD [iaD] A22 IP66 T80°C

IP66 (see ITS report C871V0383)

Screw clamp for 0.5 to 1.5mm² cable

In accordance with EU Directive 2004/108/EC

II (1) D [iaD]

<20ppm/°C <50ppm/°C Span drift Series mode ac rejection <0.1% error for 150mV rms 50 or 60Hz

Common mode ac rejection <0.1% error for 250V rms 50 or 60Hz

Certification

Zero drift

#### Europe ATEX

. Transmitter Code

> Ex tD [iaD] A22 IP66 T80°C Ta = -20 to 60°C

Sensor input Code

#### Certificate No.

International IECEx Transmitter Code

> Sensor input Code

#### Certificate No

Environmental

Operating temp Storage temp Humidity Enclosure EMC

Mechanical Terminals Weight

9 to 30V 15.5 to 30V 3.8 to 20.5mA  $5M\Omega$  min Liquid crystal 20mm high -99999 to 99999 31 segment bargraph 2 per second -200 to 850°C 3 or 4 wires, or differential 175µA Adjustable between 0 & 5kΩ 10Ω

> Range °C 200

-200

-210

-200 to 1372

-200 to 1300

-50 to 1768

-50

2mV

to

1820

1000 to

1200 to

1768 to -200 to 400

Adjustable between ±1.9V

Generally as NAMUR NE107

standard revision 7.

output current

±0.1°C

±10µV

HART Registered, compliant with HART protocol

Output via HART® and under or over range

#### DIMENSIONS (mm)



ERMINAL CONNECTIONS



Transmitter operating voltage increased to 15.5V min Isolated, solid state single pole

Membrane keypad ~

Units of measurement marked onto display

Etched with tag number on front of instrument. ~

Note: For RTD & THC inputs, °C or °F is shown on the instrument display.

 $< 8\Omega + 1.2V$ 

escutcheon.

> 180k

Dual alarm Ron Roff

External push buttons Scale legend

Accessories

Loop powered backlight

Stainless legend

Pipe mounting kit

~ See accessory datasheet for details

#### **OW TO ORDER**

Model number

Input CJ compensation Display units Display at which output is: 4mA 20mA Display at which bargraph:

Starts Finishes

Fault indication

Accessories Backlight Dual alarm External push buttons Scale legend Stainless legend plate Pipe mounting kit Application Guide AG310 Installation of [extra low voltage dc] Ex nA instrumentation

Please specify BA474ND

BA392D or BA393.~

RTD; THC & type; V or R* On or Off [THC input only]' °C or °F* [For RTD or THC input]

XXXXX XXXXX

XXXXX XXXXX

Off; under range or over range

Please specify if required Backlight Alarms External push buttons Legend Legend BA392D or BA393 AG310

If calibration information is not supplied, the BA474ND will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output and bargraph corresponding to a display of 0.0 to 100.0°C with no fault indication.



The new BA478C is a second generation panel mounting intrinsically safe loop powered indicating temperature transmitter which replaces the BA378C. It provides an accurate local digital temperature display, plus a 4/20mA output that may be scaled to represent any temperature range. Although incorporating new facilities such as HART[®] digital communication, diagnostics and a robust enclosure with an IP66 front, the BA478C remains electrically and mechanically compatible with the earlier model.

The main application of the BA478C is to display temperature in a hazardous process area and to transmit a linearised 4/20mA current to the safe area. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and conditioning may be performed via HART[®] communication or the front panel push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential measurements can also be made. The BA478C accepts voltage and resistance inputs allowing pressure, weight or position tranducer outputs to be displayed in engineering units and transmitted as a 4/20mA current and HART[®] signal.

**HART**[®] digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter. Sensor diagnostics are continuously performed by the BA478C transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART[®] communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

International intrinsic safety certification allows the BA478C and the associated sensor to be installed in most gas hazardous areas. The transmitter may be powered from a certified Zener barrier, or from a certified galvanic isolator that must be a 'smart' device if HART[®] communication is used.

The front panel is a robust Noryl moulding containing an armoured glass window which provides IP66 protection. A neoprene gasket seals the joint between the BA478C and the mounting panel allowing the transmitter to be installed in areas that will be cleaned with a hose.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

**Dual Alarms** are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

**Degrees Centigrade or Fahrenheit** may be shown on the instruments display when thermocouple or resistance thermometer inputs are selected. Other units of measurement and tag or applicational information can be economically marked onto the display escutcheon prior to despatch or after installation on-site.

### **BA478C** Indicating temperature transmitter

Intrinsically safe for use in all gas hazardous areas

- Large display with bargraph.
- 4/20mA loop powered
- HART[®] communication & sensor diagnostics.
- Intrinsically safe ATEX, FM, cFM & IECEX.
- RTD, THC, voltage or resistance input.
- Optional: Loop powered backlight Dual alarms
- 144 x 72mm DIN enclosure with IP66 front.
- 3 year guarantee

#### www.beka.co.uk/ba478c



### Supply voltage Without backlight

With backlight

#### Output

Operating range Resistance

input.

#### Display Туре

Reading rate Resolution RTD & THC input Voltage & Resistance

#### Input

Resistance thermometer Pt100 or Pt1000 Connection Excitation current Resistance Min span

Thermocouple

Type

В

Е

J

Κ

Ν

R

s

т

Voltage

Diagnostics

Performance Accuracy RTD input

THC input

Zero drift

Span drift

Zero drift

Span drift

Intrinsic safety

-200 to 850°C 3 or 4 wires, or differential 175µA Adjustable between 0 & 5kΩ 10Ω Range °C 200 1820 to -200 to 1000 -210 to 1200 -200 1372 to -200 to 1300 -50 1768 to -50 1768 to -200 400 to Adjustable between ±1.9V Minimum span 2mV HART[®] communication HART Registered, compliant with HART protocol standard revision 7. Generally as NAMUR NE107. Output via  ${\rm HART}^{\ensuremath{\mathbb{R}}}$  and under or over range output current. ±0.1°C ±10µV Effect of temperature on display Voltage THC  $<1\mu V/^{\circ}C \ <1\mu V/^{\circ}C+0.02^{\circ}C/^{\circ}C \ <20ppm/^{\circ}C$ <30ppm/°C <30ppm/°C Effect of temperature on 4/20mA output <20ppm/°C <50ppm/°C Series mode ac rejection <0.1% error for 150mV rms 50 or 60Hz Common mode ac rejection <0.1% error for 250V rms 50 or 60Hz

9 to 28V

3.8 to 20.5mA

2 per second

Fully selectable

31 segment bargraph

Selectable 0.1° or 1°

Liquid crystal 20mm high -99999 to 99999

 $5M\Omega$  min

15.5 to 28V

Europe ATEX Code

Certificate No.

USA FM Standard Code

> File Standard

Code

File

Canada cFM File International IECEx Code

Certificate No.

Environmental

Operating temp Storage temp Humidity Enclosure Front Rear EMC

Mechanical Terminals Weight

#### II 1 G, Ex ia IIC T5 Ga Ta = -40 to 70°C ITS09ATEX26156X

3610 Entity CL I, II, III; Div 1; GP A, B, C & D T4 @ 70°C 3035396 3611 Nonincendive CL I; Div 2; GP A, B, C & D T4 @ 70°C 3035396

#### 3035396C

x ia IIC T5 Ga Ta = -40 to 70°C IECEx ITS 09.0006X

-40 to 70°C -40 to 85°C To 95% non condensing

IP66 **IP20** Complies with EMC Directive 2014/30/EU

Screw clamp for 0.5 to 1.5mm² cable 0.7kg

#### **DIMENSIONS** (mm)



#### X Do not use

#### Accessories

**BTD** 

<80ppm/°C

Loop powered backlight

```
Dual alarm
     Ron
     Roff
Scale legend
```

Operating voltage increased to 15.5V min.

Isolated, solid state single pole  $< 5\Omega + 0.6V$ > 180k Units of measurement or application marked onto display escutcheon. ~ Note: For RTD & THC inputs, °C or °F is shown on the instrument display.

Thermally printed legend on rear of instrument

Tag strip

~ See accessory datasheet for details

#### HOW TO ORDER

Model number

Input CJ compensation Display units Display at which output is: 4mA 20mA Display at which bargraph: Starts Finishes Fault indication

Accessories Display backlight Dual alarms Escutcheon marking

Tag strip

Please specify BA478C

RTD; THC & type; V or R* On or Off [THC input only]* °C or °F* [RTD or THC inputs]

XXXXX XXXXX

XXXXX XXXXX

Off; under range or over range

Please specify if required Backlight Alarms Legend Note: For RTD & THC inputs, °C or °F may be shown on the instrument display. Legend

* If calibration information is not supplied, instrument will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output and bargraph corresponding to a display of 0.0 to 100.0°C, with no fault indication.



The new BA674D is a second generation, loop powered indicating temperature transmitter which replaces the BA574C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Incorporating new facilities such as HART[®] digital communication and a robust GRP enclosure with a separate terminal compartment, the BA674D remains electrically compatible with the earlier model.

**The main application** of the BA674D is to display temperature in a process area and to transmit a linearised 4/20mA current to other instruments. The digital display may be in °C or °F with the units of measurement shown on the display. A separately configurable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and conditioning may be performed via  ${\sf HART}^{\textcircled{R}}$  communication or four push buttons protected from damage and tampering behind a sealed cover. For applications requiring frequent adjustment the transmitter can be supplied with external push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential and average measurements can also be made. The BA674D also accepts voltage and resistance inputs so that pressure, weight or position transducer outputs may be displayed in engineering units and transmitted as a 4/20mA current.

Input galvanic isolation eliminates errors caused by common mode voltages up to 250V, allowing accurate measurement from earthed thermocouples in electrically noisy environments. Isolation also allows the transmitter to accurately display the output from earthed bridges.

HART[®] digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter.

HART[®] communication also enables the BA674D to be configured and calibrated from a portable calibrator or from the system host. If HART[®] digital communication is not required, the BA674D will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

**Sensor diagnostics** are continuously performed by the BA674D transmitter generally as recommended by NAMUR standard NE 107 and the results transmitted via the HART[®] communication link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

**Dual Alarms** are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Tag number and application can be marked onto the display escutcheon prior to despatch or after installation. Alternatively, for customers who prefer an etched stainless steel label, the transmitter can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure. When the transmitter is conditioned for a resistance thermometer or thermocouple input, degrees Centigrade or degrees Fahrenheit can be shown on the liquid crystal display.

If explosive atmospheres are present either the intrinsically safe BA474D or the Type nL BA474ND should be used. Both have the same features as the BA674D but have been certified for use in gas and dust hazardous areas.

### **BA674D** Indicating temperature transmitter

### **General purpose**

- Large display with bargraph.
- 4/20mA loop powered
- HART[®] communication & sensor diagnostics.
- RTD, THC, voltage or resistance input.
- Galvanically isolated sensor input.
- IP66 GRP enclosure with separate terminal compartment.
- Optional:

Loop powered backlight External push buttons Dual alarm.

3 year guarantee

www.beka.co.uk/ba674d



Supply voltage Without backlight With backlight	9 to 28V 15.5 to 28V
Output Operating range Resistance	3.8 to 20.5mA 5MΩ min
<b>Display</b> Type	Liquid crystal 20mm high -99999 to 99999
Reading rate Resolution RTD & THC input Voltage & resistance input	31 segment bargraph 2 per second Selectable 0.1° or 1° Fully selectable
Input Galvanic isolation	500)/
Resistance thermometer Pt100 or Pt1000 Connection Excitation current	-200 to 850°C 3 or 4 wires, or differential
Resistance Min span	Adjustable between 0 & 5kΩ 10Ω
Thermocouple Type E J K N R S T	Range °C         200       to       1820         -200       to       1000         -210       to       1200         -200       to       1372         -200       to       1300         -50       to       1768         -50       to       1768         -200       to       400
Voltage Minimum span	Adjustable between ±1.9V 2mV
HART [®] communication	HART Registered, compliant with HART protocol standard revision 7.
Diagnostics	Generally as NAMUR NE 107. Output via HART [®] and under or over range output current.
Performance Accuracy RTD input THC input	±0.1°C ±10μV
Effect of temperature on disp	blay
Zero drift Span drift	Voltage THC RTD <1µV/°C <1µV/°C+0.02°C/°C <20ppm/°C <30ppm/°C <30ppm/°C <80ppm/°C
Effect of temperature on 4/20 Zero drift Span drift	0mA output <20ppm/ °C <50ppm/ °C
Series mode ac rejection	<0.1% error for 150mV rms 50 or 60Hz.
Common mode ac rejection	<0.1% error for 250V 50 or 60Hz.
Environmental Operating temp Storage temp Humidity Enclosure EMC	-40 to 70°C -40 to 85°C To 95% IP66 (see ITS report C871V0383) In accordance with EU Directive 2004/108/EC
Mechanical Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable.
Annonica	5
Loop powered backlight	Green background illumination, increases operating voltage
Dual alarm Ron Roff Rating External push buttons Scale legend	Isolated, solid state single pole $< 8\Omega + 1.2V$ >180k 30V dc; 100mA Membrane keypad ~ Units marked onto display escutcheon~

#### **DIMENSIONS (mm)**



#### **TERMINAL CONNECTIONS**



Stainless legend plate.

Pipe mounting kit

Model number

Starts Finishes

4mA 20mA

Fault indication

Accessories Display backlight Dual alarms

Scale legend Stainless legend plate

External push buttons

CJ compensation Display units

Display at which bargraph:

Display at which output is:

Input

Etched with tag number on front of instrument. ~ BA392D or BA393. ~

~ See accessory datasheet for details

#### HOW TO ORDER

Please specify BA674D

 $\begin{array}{l} \text{RTD, THC \& type; V or } \mathsf{R}^{\star} \\ \text{On or Off} \quad [\text{THC input only}]^{\star} \\ ^{\circ}\text{C or } ^{\circ}\text{F}^{\star} \; [\text{RTD or THC inputs}] \end{array}$ 

XXXXX XXXXX

XXXXX XXXXX Off; underrange or overrange

Please specify if required Backlight Alarms External push buttons Legend Legend

Pipe mounting kit

BA392D or BA393

If calibration information is not supplied, instrument will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output corresponding to a display of 0.0 to 100.0°C.

Note: For RTD & THC inputs, °C or °F

is shown on the instrument display.



The new BA678C is a second generation panel mounting, loop powered indicating temperature transmitter which replaces the BA578C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Although incorporating new facilities such as HART[®] digital communication, diagnostics and a robust enclosure with a IP66 front panel, the BA678C remains electrically compatible with the earlier model.

**The main application** of the BA678C is to display temperature in a process area and to transmit a linearised 4/20mA current to other instruments. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

**Calibration and conditioning** may be performed via HART[®] communication or the front panel push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential and average measurements can also be made. The BA678C accepts voltage and resistance inputs allowing pressure, weight or position tranducer outputs to be displayed in engineering units and transmitted as a 4/20mA current and HART[®] digital signal.

**Input galvanic isolation** eliminates errors caused by common mode voltages up to 250V, allowing accurate measurement from earthed thermocouples in electrically noisy environments. Isolation also allows the transmitter to accurately display the output from earthed bridges.

HART[®] digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the primary element and the transmitter. HART[®] communication also enables the BA678C to be configured and

calibrated from a portable calibrator or from the system host. If HART[®] digital communication is not required, the BA678C will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA678C transmitter generally as recommended by NAMUR standard NE 107 and the results transmitted via the HART[®] communication link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

The front panel is a robust Noryl moulding containing an armoured glass window that provides IP66 protection. A neoprene gasket seals the joint between the BA678C and the mounting panel allowing the transmitter to be installed in areas that will be cleaned with a hose.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

**Dual Alarms** are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

**Degrees Centigrade or Fahrenheit** may be shown on the instruments display when thermocouple or resistance thermometer inputs are selected. Other units of measurement and tag or applicational information can be economically marked onto the display escutcheon prior to despatch or after installation on-site.

**If explosive atmospheres are present** the intrinsically safe BA478C should be used, this has the same features as the BA678C but has been certified for use in gas hazardous areas.

### **BA678C** Indicating temperature transmitter

### General purpose

- Large display with bargraph.
- 4/20mA loop powered
- HART[®] communication & sensor diagnostics.
- RTD, THC, voltage or resistance input.
- Galvanically isolated sensor input.
- 144 x 72mm DIN enclosure with IP66 front.
- Optional:

Loop powered backlight Dual alarm

3 year guarantee

www.beka.co.uk/ba678c



### **DIMENSIONS (mm)**

Supply voltage Without backlight With backlight	9 to 28V 15.5 to 28V		Recommended panel cut-out
Output Operating range Resistance	3.8 to 20.5mA 5MΩ min	Panel cut-o	To achieve an IP66 seal between the instrument and the panel 136.0 + 0.5/-0.0 x 66.2 + 0.5/-0.0 Four panel mounting clips must be used
<b>Display</b> Type	Liquid crystal 20mm high -99999 to 99999		DIN 43 700 138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0
Reading rate Resolution RTD & THC input Voltage & resistance inpu	31 segment bargraph 2 per second Selectable 0.1° or 1° t Fully selectable		
Input Galvanic isolation	500V		
Resistance thermometer Pt100 or Pt1000 Connection Excitation current	-200 to 850°C 3 or 4 wires, or differential 175μΑ		
Resistance Min span	Adjustable between 0 & 5k $\Omega$ 10 $\Omega$		A678C
Thermocouple Type B E J K N	Range °C         200       to       1820         -200       to       1000         -210       to       1200         -200       to       1372         -200       to       1300	- 16	SCALE C C
R S	-50 to 1768 -50 to 1768	<b>TERMINAL CON</b>	INECTIONS
l Voltage	-200 to 400 Adjustable between ±1.9V	Contr	1 - 1
Minimum span HART [®] communication	2mV HART Registered, compliant with HART protocol standard revision 7.	Case 5 6 ₩ Alarm	9 10 11 - +
Diagnostics	Generally as NAMUR NE 107. Output via HART® and under or over range output current.	+ 4/20mA	Is for optional alarms
Performance Accuracy RTD input	±0.1°C		X Do not use
THC input Effect of temperature on dis	±10µV splav	Scale legend	Units marked onto display escutcheon. ~ Note: For RTD & THC inputs, °C or °F
Zero drift Span drift	Voltage         THC         RTD           <1μV/°C	Tag strip	Thermally printed legend on rear of instrument. ~
Effect of temperature on 4/2	20mA output		~ See accessory datasheet for details
Zero drift Span drift	<20ppm/ °C <50ppm/ °C	HOW TO ORDER	R
Series mode ac rejection	<0.1% error for 150mV rms 50 or 60Hz.	Model number	Please specify BA678C
Common mode ac rejection	<0.1% error for 250V 50 or 60Hz.	Input	RTD, THC & type; V or R*
Environmental Operating temp Storage temp Humidity Enclosure	-40 to 70°C -40 to 85°C To 95%	CJ compensation Display units Display at which output is: 4mA	On or Off [THC input only]* °C or °F* [RTD or THC inputs]
Front Rear EMC	IP66 IP20 Complies with EMC Directive 2014/30/EU	Display at which bargraph: Starts Finishes	
Mechanical		rault indication	On; under range or over range
Terminals Weight	Screw clamp for 0.5 to 1.5mm ² cable. 0.7kg	Accessories Display backlight	Please specify if required Backlight
Accessories		Dual alarms Escutcheon marking	Alarms Legend
Loop powered backlight	Green background illumination, increases operating voltage to 15.5V min.		Note: For RTD & THC inputs °C or °F may be shown on the instrument display.
Dual alarm	Isolated, solid state single pole	Tag strip	Legend
Ron Boff	< 5Ω + 0.6V	* If calibration information is no	ot supplied, instrument will be conditioned for 3
Rating	30V dc; 100mA	wire Pt100 RTD input with a 4 0.0 to 100.0°C.	to 20mA output corresponding to a display of

# Universal process panel meters with MULTICOLOUR displays



New, high quality universal process panel meters featuring multicoloured, negative liquid crystal five digit and bargraph displays which are visible in all lighting conditions from bright sunlight to total darkness. The display colour is fully adjustable and can be linked to the meter's optional alarms, providing operators with a very conspicuous status warning. Display colours and brighness can easily be adjusted on-site to match other instrumentation on the panel.

> High quality

UK designed and manufactured

- Large high contrast multicolour 5 digit display with bargraph Fully adjustable display colour, visible in all lighting conditions Negative liquid crystal technology
- Input may be configured on-site 4-20mA or 0-50mA 0-100mV, 0-1V or 0-10V Pt100 2-wire or 3-wire RTD
- Power supply separate versons for: 10 to 36V dc 90 to 264V ac 47-63Hz
- > IP66 front of panel protection with toughened glass window
- > A90-SS has stainless steel enclosure and 10mm thick toughened glass window

For harsh and marine environments

> -40 to +55°C operating temperature range

#### > Accessories

Isolated Modbus RTU Dual isolated alarms with changeover contacts, alarms can be linked to display colour. Isolated 4/20mA output Isolated 24V transmitter power supply IP66 rear sealing kit Scale cards - can be supplied printed with units of measurement and tag information for no additional charge.

#### **General purpose**





General Purpo	ose - for use in safe areas
Model No.	Separate versions for 10-36V dc or 90 to 264V ac supplies
A90	Universal process meter
A90-SS	Rugged universal process meter in stainless steel enclosure

sales@beka.co.uk

### www.beka.co.uk



The A90 is a universal input panel meter that can display current or voltage process signals in engineering units and temperature directly from a resistance thermometer. The display, which can be configured to be any colour with adjustable brightness, has a high contrast allowing the meter to be read in all lighting conditions from bright sunlight to total darkness.

This second generation instrument has been designed and built using the same high quality techniques developed for our industry standard hazardous area products. The A90 is a tough instrument supported by a three year guarantee.

The main application of the A90 is to display a process variable or temperature in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the meter to be calibrated to display any linear variable represented by the input voltage or current. Maximum and minimum display values can be shown and a root extractor enables flow measurements to be displayed in linear engineering units. For weighing applications the A90 incorporates a tare function, including a front panel tare annunciator.

A two or three wire resistance thermometer may be directly connected to an A90 which can display temperature in a variety of units including °C and °F. The differential output from two resistance thermometers can also be displayed.

**The A90 meter is configured** via four front panel push buttons using a simple intuitive menu structure. An optional security code prevents accidental adjustment. Display calibration may be performed using the meter's internal references or external standards.

The colourful 11mm five digit display and 31 segment bargraph employ a novel technique that allows the display digits to be in any colour on a black background. When fitted with alarms the display colour can be linked to the alarm status. For example, a green display could indicate normal operation, the display changing to red when a high alarm occurs and to blue for a low alarm. The display intensity is fully adjustable preventing dazzle and preserving operators night vision.

**IP66 front panel protection** and a neoprene gasket to seal the joint between the panel meter and the instrument panel, make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the A90 meter has removable terminal blocks allowing panel wiring to be completed before the A90 meter is installed.

**Units of measurement** are shown on the slide-in scale card which can be changed on-site without removing the meter from the instrument panel. Meters can be supplied with a printed customer specified scale card for no additional charge.

**Optional alarms** provide two channels, each with a change over relay output which may be independently configured as a high or low alarm. The alarm set points may be adjusted from within the configuration menu, or from the meter display mode via a separate optional security code. In addition to changing the display colour when an alarm is activated, display annunciators show the status of both alarms.

An isolated 4/20mA output is available as a factory fitted option. The output comprises a 4/20mA current sink and a 24V isolated power supply. The output may be wired as a current sink or as a current source and may be configured to represent any part of the meter display. When used as a current sink, the isolated 24V supply may be used to power a remote transmitter.

An isolated Modbus RTU interface is available as a factory fitted option enabling a modbus master to monitor the variable measured by the A90 and the instrument's status. The A90 panel meter can also be configured via the modbus interface.

**Other models** in this range include the A90-SS which has the same specification but is housed in an impact resistant IP66 stainless steel panel mounting enclosure.

### Advisor A90 Universal process panel meter with multicolour display

- Multicolour display visible in all lighting conditions.
- 5 digit 11mm and 31 segment bargraph display.
- dc and mains powered models.
- Current, voltage or RTD input.
- Optional:

Alarms Isolated 4/20mA output Transmitter power supply Modbus RTU

- Easy on-site scale card installation.
- Max and min display
- 96 x 48mm DIN enclosure with IP66 front.
- 3 year guarantee

www.beka.co.uk/a90



#### DIMENSIONS (mm)



ac model

Display Type

> Span Zero Decimal point Polarity Zero blanking Direction

Reading rate Overrange

#### Input

Current Voltage RTD

#### **Push buttons**

P

E

Accuracy at 20°C Linearity

> Root extracting (current input only). Temperature effect on: Zero Span

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure EMC LVD Isolation

#### Mechanical

Terminals Power & alarms Others Weight

#### Accessories Alarms

Output Contact rating

4/20mA output including 24V transmitter supply.

Isolated Modbus RTU

Scale card

Tag legend

BA495 rear cover and sealing kit

# See accessory datasheet for details

10 to 36V dc 90 to 264V ac 47 - 63Hz

Negative liquid crystal with multicolour backlight. 5 digits 11mm high and 31 segment bargraph. Adjustable between 0 and ±99999 Adjustable between 0 and ±99999 1 of 4 fixed positions, absent or automatic Automatic minus sign Blanked apart from 0 in front of decimal point Display may increase or decrease with increasing input. 4 per second

99999 or -99999 with all decimal points and bargraph flashing.

(Selectable on-site) 4 - 20mA or 0 - 50mA 0 - 100mV: 0 - 1V or 0 - 10V Pt100 2-wire, 3-wire or differential, includes configurable fault detection.

(Function in display mode) Shows minimum diplay - other functions configurable. Shows maximum diplay - other functions configurable.

Displays analogue input or a % of span Tare function - when enabled

Current & voltage  $\pm 0.02\%$  of span  $\pm 1$  digit 2 wire & 3 wire RTD ±0.05% of span ±1 digit Differential RTD ±0.1% of span ±1 digit

±16µA at input ±1 digit

Less than 50ppm of span/°C Less than 100ppm of span/°C

-40 to +55°C -40 to +85°C to 95% at 40°C non condensing Report available Front IP66, rear IP20 Complies with 2014/30/EU Complies with 2014/35/EU ac supply 3kV rms dc supply 1.5kV Alarm contact 4kV rms All other ciruits 500V rms

Removable with screw clamp 0.5 to 2.5mm² cable 0.5 to 1.5mm² cable 0.25kg

Two alarm output relays each of which may be independently configured as a high or low, latching or non-latching alarms. Single pole change over contact 250V 5A ac, 30V 5A dc

Isolated 4/20mA current sink. Can be wired in series with 24V supply to produce current source. When current source is not required, 24V supply may be used to power remote transmitter. RS485 Baud rate 9.6, 19.2, 38.4, 57.6, 115.2kbaud Blank card fitted to each meter can be supplied printed with specified units of measurement for no

additional charge. Specified tag number or application printed onto rear of the meter.

Provides impact and IP66 protection for rear of instrument. #



#### **TERMINAL CONNECTIONS**



### HOW TO ORDER

Model number Supply Display mode Input Display at: Zero Span Colour

Accessories Dual alarms 4/20mA output including 24V transmitter supply. Modbus RTU Scale card Tag Rear cover and sealing kit

#### Please specify A90 panel meter 24V dc or 115/230V ac

Linear or root extracting * Required input range

XXXXX ] Include position of decimal point & sign if negative. * Required colour

Please specify if required Alarms

4/20mA output with Tx supply Modbus Legend required Legend required BA495

* Will be set to display in green 0.00 at 4mA and 100.00 at 20mA with linear input if calibration information is not supplied. Can easily be reconfigured on-site.



The A90-SS is a rugged universal input panel meter that can display current or voltage process signals in engineering units and temperature directly from a resistance thermometer. The display, which can be configured to be any colour with adjustable brightness, has a high contrast allowing the meter to be read in all lighting conditions from bright sunlight to total darkness. This A90-SS has been designed and built using the same high quality techniques developed for our industry standard hazardous area products. It is a tough instrument supported by a three year guarantee.

The stainless steel cast enclosure provides IP66 front of panel ingress protection and a captive silicone gasket seals the joint between the A90-SS and the panel in which it is mounted. The impact and ingress protection provided by the stainless steel enclosure together with the 10mm thick glass window have been independently tested.

The main application of the A90-SS is to display a process variable or temperature within a industrial process area. The rugged stainless steel enclosure and robust construction allow the meter to be installed in panel enclosures located in industrial and marine environments, or where the front of the instrument is likely to be impacted. The zero and span of the display are independantly adjustable allowing the A90-SS to be calibrated to show any linear variable represented by the input current or voltage. Maximum and minimum display values can be stored and a root extractor enables flow measurements to be displayed in linear engineering units. For weighing applications the A90-SS incorporates a tare function, including a front panel tare annuciator.

A two or three wire resistance thermometer may be directly connected to an A90-SS which can display temperature in a variety of units including °C and °F. The differential output from two resistance thermometers can also be displayed.

The A90-SS meter is configured via four front panel push buttons using a simple intuitive menu structure. An optional security code prevents accidental adjustment. Display calibration may be performed using the meter's internal references or external standards.

The colourful 11mm five digit display and 31 segment bargraph employ a novel technique that allows the display digits to be in any colour on a black background. When fitted with alarms the display colour can be linked to the alarm status. For example, a green display could indicate normal operation, the display changing to red when a high alarm occurs and to blue for a low alarm. The display intensity is fully adjustable preventing dazzle and preserving operators night vision.

**Units of measurement** are shown on the slide-in scale card which can be changed on-site without removing the meter from the instrument panel. Meters can be supplied with a printed customer specified scale card for no additional charge.

**Optional alarms** provide two channels, each with a change over relay output which may be independently configured as a high or low alarm. The alarm set points may be adjusted from within the configuration menu, or from the meter display mode via a separate optional security code. In addition to changing the display colour when an alarm is activated, display annunciators show the status of both alarms.

An isolated 4/20mA output is available as a factory fitted option. The output comprises a 4/20mA current sink and a 24V isolated power supply. The output may be wired as a current sink or as a current source and may be configured to represent any part of the meter display. When used as a current sink, the isolated 24V supply may be used to power a remote transmitter.

An isolated Modbus RTU interface is available as a factory fitted option enabling a modbus master to monitor the variable measured by the A90-SS and the instrument's status. The A90-SS panel meter can also be configured via the modbus interface.

**Other models** in this range include the A90 which has the same electrical specification but is housed in an IP66 Noryl enclosure.

### Advisor A90-SS Rugged universal process panel meter with multicolour display

- Multicolour display visible in all lighting conditions.
- Rugged IP66 stainless steel enclosure.
- 5 digit 11mm and 31 segment bargraph display.
- dc and mains powered models.
- Current, voltage or RTD input.
- Optional:

Alarms Isolated 4/20mA output Transmitter power supply Modbus RTU

- Easy on-site scale card installation.
- Max and min display
- 3 year guarantee

#### www.beka.co.uk/a90-ss



#### DIMENSIONS (mm)



#### **TERMINAL CONNECTIONS**



BA495 rear cover and sealing kit Provides impact and IP66 protection for rear of instrument. #

# See accessory datasheet for details

#### HOW TO ORDER

Model number Supply Display mode Input Display at: Zero Span Colour

Accessories Dual alarms 4/20mA output including 24V transmitter supply. Modbus RTU Scale card Tag Rear cover and sealing kit Please specify A90-SS panel meter 24V dc or 115/230V ac Linear or root extracting * Required input range

XXXXX ] Include position of decimal XXXXX ] point & sign if negative. * Required colour*

Please specify if required Alarms

4/20mA output with Tx supply Modbus Legend required Legend required BA495

* Will be set to display in green 0.00 at 4mA and 100.00 at 20mA with linear input if calibration information is not supplied. Can easily be reconfigured on-site.

#### Supply Voltage dc model ac model

Display Type

> Span Zero Decimal point Polarity Zero blanking

Direction

Reading rate Overrange

#### Input

Current Voltage RTD

#### Push buttons

E

#### Accuracy at 20°C Linearity

Root extracting (current input only). Temperature effect on: Zero Span

#### Environmental

Operating temp Storage temp Humidity Vibration Enclosure Ingress protection Inpact protection Material EMC LVD Isolation

#### Mechanical

Terminals Power & alarms Others Weight

#### Accessories Alarms

Output Contact rating

4/20mA output including 24V transmitter supply.

Isolated Modbus RTU

Scale card

Tag legend

Adjustable between 0 and ±99999 1 of 4 fixed positions, absent or automatic Automatic minus sign Blanked apart from 0 in front of decimal point. Display may increase or decrease with increasing input. 4 per second 99999 or -99999 with all decimal points and bargraph flashing. (Selectable on-site) 4 - 20mA or 0 - 50mA 0 - 100mV; 0 - 1V or 0 - 10V Pt100 2-wire, 3-wire or differential, includes configurable fault detection. (Function in display mode) Shows minimum diplay - other functions configurable. Shows maximum diplay - other functions configurable. Displays analogue input or a % of span Tare function - when enabled Current & voltage ±0.02% of span ±1 digit 2 wire & 3 wire RTD ±0.05% of span ±1 digit Differential RTD ±0.1% of span ±1 digit ±16µA at input ±1 digit

10 to 36V dc

backlight.

bargraph.

90 to 264V ac 47 - 63Hz

Negative liquid crystal with multicolour

5 digits 11mm high and 31 segment

Adjustable between 0 and ±99999

Less than 50ppm of span/°C Less than 100ppm of span/°C

-40 to +55°C -40 to +85°C to 95% at 40°C non condensing Report available

Front IP66, rear IP20 Front 7J, window 4J Stainless steel BS3146-2:1977 ANC4B (316) Complies with 2014/30/EU Complies with 2014/35/EU ac supply 3kV rms dc supply 1.5kV Alarm contact 4kV rms All other ciruits 500V rms

Removable with screw clamp 0.5 to 2.5mm² cable 0.5 to 1.5mm² cable 0.9kg

Two alarm output relays each of which may be independently configured as a high or low, latching or non-latching alarms. Single pole change over contact 250V 5A ac, 30V 5A dc

Isolated 4/20mA current sink. Can be wired in series with 24V supply to produce current source. When current source is not required, 24V supply may be used to power remote transmitter.

RS485 Baud rate 9.6, 19.2, 38.4, 57.6, 115.2kbaud

Blank card fitted to each meter can be supplied printed with specified units of measurement for no additional charge.

Specified tag number or application printed onto rear of the meter.

# Sounders, Beacons and Panel Lamps



#### **SOUNDERS & BEACONS**

#### Ex ia

#### BR385 SOUNDER

- > 49 different sounds
- > 3 stage alarm
- > Up to 105dBA output
- > IP66 enclosure

#### **BA386 BEACON**

- Red, Amber, Green, Blue & White models
- > 2 double flashes per second
- > Alarm accept function silences sounder for pre-set time.
- Steady state BA386S version also available

#### Ex d

#### SOUNDER

- > 32 different sounds
- > 3 stage alarm
- > Up to 123dBA output
- > IP67 enclosure

#### BEACON

- > Red, Amber, Yellow, Green, Blue & White models
- > Up to 21 joule output
- > IP67 enclosure
- > Xenon flash or LED light source

#### PANEL LAMPS

- > Red, Amber, Green, Blue & White models
- > BA390 lamps have 20mA constant current consumption
- > BA390S lamps have specified performance at 4mA
- > BA590 for safe area applications
- > BA599 rear sealing kit includes cable gland



#### Intrinsically safe

#### Ex d

#### **General purpose**

IEC

**IEĈE**X







Models available				Models available			
		Certification				Certification	
Model No.	Europe ATEX	International IECEx	USA	Model No.	Europe ATEX	International IECEx	USA
	Gas Dust	Gas Dust	Gas Dust		Gas Dust	Gas Dust	Gas Dust
Ex ia intrinsically saf	e - for use in 2	Zones 0, 1 & 2		Ex ia intrinsically safe -	for use in Zo	nes 0, 1 and 20	, 21 & 22
BR385 Sounder	<b>v</b> -	<ul> <li>–</li> </ul>	<ul> <li>–</li> </ul>	BA390 20mA constant current	<ul> <li>✓</li> </ul>	~ ~	<ul> <li>–</li> </ul>
BA386 Beacon	<ul> <li>–</li> </ul>	<b>v</b> -	<ul> <li>-</li> </ul>	BA390S Low current specified performance at 4mA	~ ~	~ ~	<ul> <li>–</li> </ul>
Llazardava		Sofo grad		General Purpose - for u	se in safe are	as	
BR385 Sounder			а -	BA590 20mA constant	current		
BA386 Beacon	rm accept push buttor nder for pre-set time n continues to flash	Zener barrier galvanic isola	or tor 24V dc				

### sales@beka.co.uk



The BR385 is a third generation intrinsically safe field mounting sounder which supersedes the BA385-IIC and BA385-IIB. The new sounder, which produces a loud audible warning signal in a hazardous area has forty nine different first stage alarm sounds selectable by internal switches. Each first stage tone can be changed to a second or a third stage alarm sound by an external contact which may be in the safe or hazardous area. Selectable outputs include DIN. NFS, PFEER, Australian and Singaporean defined warning, alert and evacuation tones.

Main application of the BR385 sounder is the generation of unique audible warnings within a hazardous area. The sounder may be powered from a wide range of Zener barriers or galvanic isolators and may be controlled by any contact or dc supply in the safe area. The BR385 may also be switched in the hazardous area by an intrinsically safe relay, or any equipment with an intrinsically safe, simple apparatus switch output, such as a BEKA Intrinsically safe loop powered indicator or a serial text display.

The selected first stage tone can be changed to a different second or third stage tone by inter-connecting sounder terminals using a switch contact, which may be in the safe or hazardous area. This enables one sounder to announce up to three different conditions, for example, alarms warning, alarm and automatic shut-down. A crystal controlled oscillator accurately defines the frequency and repetition rate of each alarm signal. This ensures that when multiple BR385 sounders are activated at the same time the output tones from all the sounders remain synchronised.

ATEX, IECEx and FM intrinsic safety certification permits installation in all gas hazardous zones and all gas groups. Input safety parameters allow use with a wide range of Zener barriers and galvanic isolators, and zero output parameters simplify intrinsic safety system design.

A BA386 LED flashing beacon may be powered from the same Zener barrier or galvanic isolator as the sounder. This significantly reduces installation costs of a combined sounder and beacon system and includes an alarm accept function, while only marginally reducing the sound output, but may only be used for ATEX systems. See the BA386 datasheet for full information.

The robust ABS enclosure which is flame-retardant provides IP66 protection and is suitable for external mounting. Cable entry is via a single untapped hole which will accept a 20mm gland or conduit fitting. A 20mm knock-out is also provided in the rear of the enclosure.

The BR385 contains overvoltage protection to prevent damage during commissioning and to allow the sounder to be tested in a safe area without the need for a Zener barrier or galvanic isolator.

## **BR385**

### Audible Sounder

Intrinsically safe for use in all gas hazardous areas

- ATEX, IECEx & FM certification.
- 49 first stage,
   21 second stage &
   9 third stage
   alarm sounds.
- PFEER compliant
- Up to 105dB(A) output.
- Input overload protection.
- Volume control
- IP66 enclosure
- Can be powered from BA386 flashing beacon.
- 3 year guarantee

#### www.beka.co.uk/br385





#### Power supply

Voltage

Current

#### Second and third stage alarms Second stage

Third stage

#### Output

Sound level at 1m Volume control

#### Intrinsic safety **Europe ATEX**

Code

Cert. No. Installation

Location

#### USA FM Standard

Code

Temperature code File No.

#### International IECEx Code

Temperature code

galvanic isolator in circuit.
25mA typical when powered from 24Vdc via a 28V, 93mA Zener barrier.
Connect terminal S2 to '-' terminal*

16V min via 28V 93mA Zener barrier 8 to 28V between - and + terminals. Not damaged by direct connection to the supply without a Zener barrier or

* If diode return barrier is used voltage drop must be less than 0.9V.

Up to 105dB(A) Max 105, Min 96dB

Group II Category 1G Ex ia IIC T4 Ga Ta -40 to 60C Sira06ATEX2032X The BR385 may be powered from any ATEX certified Zener barrier or galvanic isolator whose output parameters do not exceed: 28Vdc 110

	00	_	20 v uc
	lo	=	93mA
	Po	=	0.66W
Zone 0,	1 or 2	2	

3610 Entity CLI, Div. 1, Gp A, B, C, and D CLI Zone 0 AEx ia IIC T4 at 60°C 3027157

Ex ia IIC T4 Ga -40°C ≤ Ta ≤ +60°C

IECEx SIR 17.0014X Tone Number Switch Second Third Settings 1 2 3 4 5 6 Stage Stage Alarm Tone 5 Tone 5 Tone 5 Tone 1 Continuous 340Hz Alternating 800/1000Hz @ 0.25s intervals Slow whoop 500/1200Hz @ 0.3Hz with 0.5s gap repeated Sweeping 500/1000Hz @ 1Hz Continuous 2400Hz Sweeping 2400/2900Hz @ 7Hz Sweeping 2400/2900Hz @ 7Hz Siren 500/1200/500Hz @ 0.3Hz Sawtooth 1200/500Hz @ 1Hz Alternating 2400/2900Hz @ 2Hz Intermittent 1000Hz @ 1Hz Alternating 800/1000Hz @ 0.875Hz Intermittent 200Hz @ 1Hz Intermittent 200Hz @ 1Hz Continuous 800Hz Continuous 340Hz 000000 Tone 2 Tone 2 Tone 3 100000 010000 Tone 17 Tone 2 Tone 4 Tone 6 Tone 5 Tone 20 Tone 5 Tone 3 Tone 5 Tone 6 Tone 7 Tone 8 Tone 9 Tone 10 Tone 11 Tone 12 Tone 13 Tone 14 Tone 5 Tone 5 Tone 5 Tone 2 Tone Tone 10 Tone 10 Tone 2 Tone 15 Tone 7 Tone 2 Tone 4 Tone 15 2 15 Tone 5 Tone 5 Tone 5 Tone 5 Intermittent 800Hz 0.255 ON, 1s OFF Continuous 800Hz Intermittent 660Hz 10.255 ON, 1s OFF Continuous 800Hz Intermittent 660Hz 150Ns ON, 150ms OFF Alternating 544Hz (100ms) / 440Hz (400ms) - *NFS 32-001* Intermittent 660Hz 1.8s ON, 1.8s OFF Sweep 1400Hz to1600Hz up 1s 1600Hz to 1400Hz down 0.5s Continuous 660Hz Alternating 554/440Hz @ 1Hz Intermittent 544Hz @ 0.875Hz Intermittent 504Hz @ 2Hz Sweeping 2400/2900Hz @ 50Hz Simulated bell Continuous 554Hz Continuous 54Hz Continuous 54Hz Continuous 440Hz Sweeping 800/1000Hz @ 7Hz Continuous 300Hz Tone 4 Tone 5 011100 Tone 15 Tone 16 Tone 17 Tone 2 Tone 5 Tone 18 Tone 2 Tone 5 Tone 27 000010 Tone 18 Tone 19  $\begin{array}{c} 1 & 0 & 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \end{array}$ Tone 2 Tone 2 Tone 5 Tone 5 Tone 20 Tone 21 Tone 2 Tone 2 Tone 5 Tone 22 Tone 2 Tone 22 Tone 23 Tone 24 Tone 25 Tone 25 Tone 26 Tone 27 Tone 28 Tone 29 Tone 2 Tone 29 Tone 29 Tone 2 Tone 2 Tone 26 Tone 2 0 0 10 Tone 7 Tone 5 Sweeping 800/1000Hz @ 7Hz Continuous 300Hz Sweeping 660/1200 @ 1Hz Two Tone Chime Intermittent 745Hz Alternating 1000/2000Hz @ 0.5s - Singapore 420Hz @ 0.625s - Australian Alert 500-1200Hz 3.75s / 0.25s - Australian Evacuate Continuous 1000Hz Continuous 2000Hz Intermittent 800Hz 0.25s ON 1s OFF Alternating 544Hz (100ms) / 440Hz (400ms) - NF5 32-001 Motor Siren - Slow rise to 1200Hz Motor Siren - Slow rise to 1200Hz Motor Siren - Slow rise to 2400Hz Intermittent 1000Hz 1s ON, 1s OFF Sawtooth 1200/500Hz @ 1Hz - D.I.N. (*PFEER P.T.A.P*) Intermittent 1000Hz 1s ON, 1s OFF Tone 29 Tone 30 Tone 31 Tone 32 Tone 33 Tone 34 Tone 35 Tone 36 Tone 37 Tone 5 Tone 45 Tone 45 10 110 110 Tone 2 Tone 2 Tone 26 Tone 26 Tone 26 Tone 2 Tone 38 Tone 38 Tone 35 Tone 9 0 . 10 00000 0 1 0 0 0 1 1 0 0 0 0 0 1 0 0 1 0 1 0 0 Tone 34 Tone 38 Tone 45 011001 111001 Tone 39 Tone 40 Tone 23 Tone 17 Tone 27 Tone 31 Tone 41 Tone 42 Tone 43 Tone 44 Tone 2 Tone 2 Tone 2 Tone 2 Tone 5 Tone 5 Tone 5 Tone 5 Tone 45 0 0 1 1 0 1 1 0 1 1 0 1 Tone 38 Tone 34 Tone 37 Tone 46 Tone 47 Intermittent 1000Hz 1s ON, 1s OFF Tone 47 011101 Tone 46 Tone 37 420Hz @ 0.625s - Australian Alert 500-1200Hz 3.75s / 0.25s - Australian Evacuate 1 1 1 1 0 1 0 0 0 0 1 1 Tone 49 Tone 26 Tone 48 Tone 49 Tone 5 Tone 37

#### DIMENSIONS (mm)



#### **TERMINAL CONNECTIONS**



#### Environmental Operating temp

Storage temp Humidity Enclosure EMC

Mechanical Terminals

Weight

#### Accessories

Tag number

#### HOW TO ORDER

Model number

-40 to 60°C -40 to 70°C To 95% @ 40°C IP66 In accordance with EU Directive 89/336/EEC

Screw clamp for 0.5 to 2.5 mm² cable. 0.75 kg

Thermally printed tag strip

Please specify **BR385** 

Accessories Tag number

10



The BA386 is an intrinsically safe field mounting beacon which produces a bright flashing warning signal in a hazardous area. This beacon is significantly less expensive than the traditional Xenon devices, although it has a similar light output, flashes more frequently and is available in five different colours.

The beacon may be used alone, or in conjunction with a BEKA intrinsically safe sounder. The high efficiency of the BA386 enables the beacon and the sounder to be powered from a common Zener barrier or galvanic isolator. In combined systems this eliminates one barrier or isolator and associated wiring, thus simplifying the installation and further reducing cost.

Alarm accept is another unique feature of the BA386 which in combined systems enables the sounder to be silenced for a pre-set time leaving the beacon flashing twice per second. The alarm is accepted by momentarily closing a pair of external contacts, such as a push-button which may be located in the hazardous or the safe area. The sounder silence time may be pre-set for between 1 and 30 minutes.

**Main application** of the BA386 beacon is to provide a visible warning in a noisy hazardous process area where a sounder is not easily identified. The beacon may be powered from a wide variety of Zener barriers or galvanic isolators and may be controlled by any contact or dc supply in the safe area. It may also be switched in the hazardous area by an intrinsically safe relay or any equipment with an intrinsically safe output such as the alarm output of a BEKA indicator or totaliser.

When the BA386 beacon is used in conjunction with a BEKA intrinsically safe sounder it forms a combined audio visual alarm with integral sounder silence facilities. It is ideal where an operator needs to be advised that an alarm condition has occurred, but wishes to silence the intrusive audible warning. If the alarm condition is not corrected during the silence period, the sounder will be re-activated when the pre-set silence time has expired.

**IECEx and ATEX certification** permits installation in Zones 0, 1 or 2. For applications in the USA, the BA386 also has FM intrinsic safety and nonincendive approval.

The flame retardant enclosure provides IP66 protection and is suitable for external mounting in sheltered locations. Cable entry is via 20mm untapped holes in the sides of the enclosure and there is a 'knock-out' in the rear for an additional entry.

When used with a BEKA BR385 sounder, the beacon may be mounted onto the base of the sounder to form a combined assembly, or may be mounted separately.

A complementary intrinsically safe steady state beacon with five different colour output options is also available. These BA386S beacons provide a continuous status indication when a flashing warning is not required.

### **BA386** LED flashing beacon

Intrinsically safe for use in all hazardous gas areas

- Intrinsically safe ATEX, IECEx & FM certification.
- Red, amber, green blue & white models.
- Two double flashes per second.
- Will power BEKA intrinsically safe sounder.
- IP66 enclosure
- Incorporates alarm accept function to silence sounder.
- 3 year guarantee

#### www.beka.co.uk/ba386



#### Power supply Voltage

Current

Alone With BR385 sounder

#### Output

Brightness Frequency Alone With BR385 sounder on silenced (alarm accepted)

Sounder output

#### Response On time

Off time

Repeat alarm

#### Intrinsic safety

Europe ATEX Code

Cert. No.

#### International IECEx Code

Cert. No.

#### Installation

Accept	input
5&6.	

I ocation

USA FM

Code

Temperature code File No

Temperature code File No

#### Environmental

Storage temp Humidity

#### Mechanical

#### Accessories

Combining kit

10 to 28V (across terminals 1 & 2) Not damaged by temporary connection to the supply without a Zener barrier or galvanic isolator in circuit. When powered from 24V supply via 28V 93mA Zener barrier.

25mA typical 40mA typical

Equivalent to 0.5 Joule xenon beacon

2Hz (2 double flashes per second)

1Hz (1 double flash per second) 2Hz (2 double flashes per second)

Reduced by typically 2dB when used with beacon.

First flash within 2 seconds of supply being connected Last flash less than 5 seconds after supply is

removed. To guarantee alarm accept status, supply should not be reconnected within 5 seconds of disconnection.

Group II Category 1G Ex ia op is IIC T4 Ga -40°C  $\leq$  Ta  $\leq$  60°C ITS02ATEX2006X

Ex ia op is IIC T4 Ga  $-40^{\circ}C \le Ta \le 60^{\circ}C$ IECEX ITS 17.0052X

May be powered from any certified Zener barrier or galvanic isolator whose output parameters do not exceed:

	Alone	With BR385
Uo	28Vdc	28Vdc
lo	110mA	93mA
Po	0.8W	0.66W

Zone 0. 1 or 2

terminals

Standard

Standard Code

Operating temp

Enclosure

Terminals

Weight

Tag strip

May be connected to any mechanically activated switch having IP20 protection which is capable of withstanding an ac test voltage of 500Vrms to earth for one minute.
Does not include use with BR385 sounder 3610 Entity CL.1, Div. 1, Gp. A, B, C and D CL 1, Zone 0, AEx ia IIC T4 T4 at 60°C 3014996
3611 Nonincendive. CL.1, Div. 2, Gp. A, B, C and D CL 1, Zone 2, IIC T4 T4 at 60°C 3014996

-20 to 60°C (certified for use at -40°C) -40 to 85°C To 95% @ 40°C IP66

Removable with screw clamp for 0.5 to 1.5mm² cable. 0.4kg

Thermally printed tag strip secured by screws.

Gasket and conduit fitting for mounting BA386 beacon onto bottom of BR385 sounder.

#### **DIMENSIONS (mm**



#### **TERMINAL CONNECTIONS**



#### **COMBINING KIT**



#### **HOW TO ORDER**

Colour Red Amber Green Blue White

#### Accessories

Tag strip Combining kit for joining beacon & BR385 sounder.

Please specify Model number BA386B BA386A BA386G BA386B BA386W

#### Please specify if required

Legend Combining kit

Supplied free of charge on request when sounder and beacon are purchased at the same time



The BA386S LED steady state beacon is an intrinsically safe field mounting beacon which produces a bright continuous output in a hazardous area. Models with five different colour outputs are available.

Main application of the BA386S beacon is to provide a visible indication in a noisy hazardous process area where a sounder is not easily identified. The continuous output is particularly useful for status indication. The beacon may be powered from a wide variety of Zener barriers or galvanic isolators and may be controlled by any contact or switchable dc supply in the safe area. The BA386S beacon may also be switched on and off in the hazardous area by an intrinsically safe relay or any equipment with an intrinsically safe output such as the alarm output of a BEKA indicator or totaliser.

Providing a small reduction in brilliance can be tolerated, two BA386S steady state beacons can be powered in parallel from one common Zener barrier or galvanic isolator. Each beacon can be independently controlled by a separate hazardous area switch, or from the safe area via a diode return barrier. **IECEx and ATEX certification** permits installation in Zones 0, 1 or 2. For applications in the USA, the BA386S also has FM intrinsic safety and nonincendive approval.

The flame retardant enclosure provides IP66 protection and is suitable for external mounting in sheltered locations. Cable entry is via 20mm untapped holes in the sides of the enclosure and there is a 'knock-out' in the rear for an additional entry.

**Reliability is ensured** by an ISO9001 approved quality control system supported by a three year guarantee. The BA386S is protected from input overloads and reverse connection and complies with the European EMC Directive.

A complementary intrinsically safe flashing beacon is also available. This has five different colour output options and can be used in conjunction with a BA385 sounder to form a combined audio & visual alarm system. See BA385 and BA386 datasheets.

### BA386S LED Steady state beacon

Intrinsically safe for use in all hazardous gas areas

- Intrinsically safe ATEX, IECEx & FM certification.
- Red, amber, green blue & white models.
- 2 beacons can be powered by 1 barrier or isolator.
- IP66 enclosure
- 3 year guarantee

www.beka.co.uk/ba386s



Power supply Voltage	10 to 28V (across terminals 1 & 2) Not damaged by temporary connection to the supply without a Zener barrier or galvanic isolator in circuit.
Current	When powered from 24V supply via 28V 93mA Zener barrier. 25mA typical
Output Brightness	Equivalent to 0.5 Joule xenon beacon
Intrinsic safety Europe ATEX Code Cert. No.	Group II Category 1G Ex ia op is IIC T4 Ga -40°C $\leq$ Ta $\leq$ 60°C ITS02ATEX2006X
International IECEx Code Cert. No.	Ex ia op is IIC T4 Ga -40°C $\leq$ Ta $\leq$ 60°C IECEx ITS 17.0052X
USA FM Standard Code Temperature code File No Standard Code	3610 Entity CL.1, Div. 1, Gp. A, B, C and D CL 1, Zone 0, AEx ia IIC T4 T4 at 60°C 3014996 3611 Nonincendive. CL.1, Div. 2, Gp. A, B, C and D CL 1, Zone 2, IIC T4
Temperature code File No	T4 at 60°C 3014996
Installation	May be powered from any certified Zener barrier or galvanic isolator whose output parameters do not exceed: Uo 28Vdc Io 110mA
Location	Po 0.8W Zone 0, 1 or 2

#### Environmental

Operating temp Storage temp Humidity Enclosure

#### Mechanical

Terminals

#### Weight

Accessories Tag strip

-40 to 85°C To 95% @ 40°C IP66

-20 to 60°C (certified for use at -40°C)

Removable with screw clamp for 0.5 to 1.5mm² cable. 0.4kg

Thermally printed tag strip secured by screws.

#### **DIMENSIONS (mm)**



#### **TERMINAL CONNECTIONS**



#### HOW TO ORDER

Colour Red Amber Green Blue White

Please specify Model number BA386SR BA386SA BA386SG BA386SB BA386SW

Accessories Tag strip

Please specify if required Legend

#### 310



**BA390 panel lamps** provide reliable cost effective visual status indication in all hazardous gas and dust areas. Each BA390 lamp produces a bright, uniform output with a typical life greater than ten years. All models contain a 20mA current regulator therefore they consume a constant current and hence have a constant brilliance independent of supply voltage. Protection against excess voltage and reverse connection is included in each lamp.

**IECEx and ATEX intrinsic safety** certification allows BA390 LED panel lamps to be installed in all gas and dust hazardous areas. Two lamps may be powered from a single IIC intrinsically safe galvanic isolator. FM gas approval allows BA390 lamps to be installed in the USA.

**Five well defined lamp colours** - red, amber, green, blue and white allow lamps to be selected to comply with the indicator light colours recommended by IEC 73. When not powered, the front of panel coloured diffuser enables the lamp colour to be easily identified.

**IP66 sealing** of the lamp front and the joint between the lamp and the panel allow the BA390 to be installed in areas that will be hosed, washed or splashed. When rear of panel environmental protection is also required, the optional BA599 rear sealing kit provides IP66

protection and includes a cable gland to seal and support the supply cable.

**Mounting** is via a single industry standard 22.5mm diameter hole. The lamp housing, fixing nut and terminals have a maximum diameter of 30mm which permits a very high packing density on the panel.

**To aid identification** from the rear of the panel, the model number and suffix which identifies the colour are marked on the lamp body close to the terminals

**Reliability is ensured** by an ISO9001 approved quality control system supported by a three year guarantee.

**For low current applications** complementary BA390S panel lamps, which have the same features and certifications as BA390 lamps, but without a current regulator, can be used with currents as low as 4mA. These lamps are ideal for use with low current sources such as fieldbus multiple output modules. See the BA390S datasheet for details.

**For safe area installations**, please refer to the BA590 datasheet which describes a range of non certified 24V dc powered panel lamps.

**Application Guide AG390** includes additional information about how to use both BA390 and BA390S lamps.



BA390 LED Panel Lamp

Intrinsically safe for use in all gas and dust hazardous areas

- Intrinsically safe IECEx, ATEX & FM certification.
- Red, amber, green, blue & white models.
- 20mA constant current & brilliance.
- IP66 front
- IIC isolator will power two lamps.

www.beka.co.uk/ba390

3 year guarantee



#### **DIMENSIONS (mm)**

Power supply Voltage Operating Reverse 60V ma Current	x	14 to 30V dc 18 to 22mA
Output Lamp colour Red Amber Green Blue White	Typical ill	uminance at 150mm 160 lux 230 lux 230 lux 530 lux 270 lux
Intrinsic Safety International IECE: Code gas dust *	¢	Ex ia IIC T4 Ga Ex ia IIIC T135°C Da -20°C ≤ Ta ≤ +60°C
Input safety para Ui Ii Pi gas Pi dust	*	30V 159mA 1.2W 0.683W
Certification num	ber	IECEx ITS 08.0030X
Europe ATEX Code gas dust *		Group II Category 1G Ex ia IIC T4 Ga Group II Category 1D Ex ia IIIC T135°C Da -20°C $\leq$ Ta $\leq$ +60°C
Input safety para Ui Ii Pi gas Pi dust	*	30V 159mA 1.2W 0.683W
Certificate number	ers	ITS13ATEX27822X
* Dust certificatio	n is an optio	n
USA FM only gas of Standard Code File	certification	3610 Entity intrinsic safety CL I: Div 1: GP A, B, C & D: T4 @ 60°C AEx ia IIC T4 Ta = 60°C 3022662
Standard Code		3611 Nonincendive CL I: Div 2: GP A, B, C & D:

CL I: Div 2: GP A, B, C & D: T4 @ 60°C 3022662

#### Environmental

File

Operating temperature Storage temperature Relative humidity Operating life Enclosure Front Rear

EMC

#### Mechanical

Terminals Diffuser material Body material Weight -20 to 60°C -40 to 85°C 5 to 95% non condensing 100,000 hours typical IP66 IP20 - see accessories for BA599 optional IP66 rear sealing kit. Complies with EMC Directive 2014/30/EU.

Screw clamp for 1.5mm² Polycarbonate Nylon 6 18g



Fixing centres for maximum packing density. Special tool may be required to tighten fixing nuts when minimum spacing is used.



#### **TERMINAL CONNECTIONS**



Accessories

Dust certifcation Rear sealing kit IECEx and ATEX dust certification BA599 provides IP66 protection for terminals and rear of the lamp. Supplied with gland for 7 to 12mm diameter cable.

#### HOW TO ORDER

Lamp colour Red Amber

Green

Blue

White

ı

Please specify BA390R BA390A BA390G BA390B BA390W

Accessories IECEx & ATEX certification

Rear sealing kit

Please specify if required Dust certification BA599



**BA390S low current panel lamps** provide reliable, cost effective visual status indication in all gas and dust hazardous areas. Each BA390S lamp produces a uniform output with just a few milliamps of input current and has a typical life greater than ten years.

**Optimised for use at low currents** BA390S lamps may be powered from almost any intrinsically safe supply. Their high efficiency results in a useful visible output with an input current of only a few milliamps. Lamps can therefore be powered from a current limited intrinsically safe supply, such as a digital output on a multiple output fieldbus module. Several lamps can also be powered, with suitable current limiting, from a Zener barrier or galvanic isolator.

**IECEx and ATEX intrinsic safety** certification permits BA390S LED panel lamps to be installed in all gas and dust hazardous areas. For use in the USA all models also have FM gas certification.

**Five well defined lamp colours** - red, amber, green, blue and white allow lamps to be selected to comply with the indicator light colours recommended by IEC 73. When not powered, the front of panel coloured diffuser enables the lamp colour to be easily identified. **IP66 sealing** of the lamp front and the joint between the lamp and the panel enclosure, enable BA390S lamps to be successfully installed in areas that will be hosed, washed or splashed. When rear of panel environmental protection is also required, the optional BA599 rear sealing kit provides IP66 protection and includes a cable gland to seal and support the supply cable.

**Mounting** is via a single industry standard 22.5mm diameter hole. The lamp housing, fixing nut and terminals have a maximum diameter of 30mm which permits a very high packing density on the panel.

**To aid identification** from the rear of the panel, the model number and suffix which identifies the colour are marked on the lamp body close to the terminals

**Reliability is ensured** by an ISO9001 approved quality control system supported by a three year guarantee.

**Complementary certified panel lamps** incorporating an internal 20mA current regulator that may be powered directly from a Zener barrier or galvanic isolator are also available, please see BA390 datasheet. For safe area applications, the uncertified BA590 lamps incorporate a 20mA regulator and have similar features as the BA390 lamps.



### **BA390S** Low Current LED Panel Lamp

Intrinsically safe for use in all gas and dust hazardous areas

- Intrinsically safe IECEx, ATEX & FM certification.
- Red, amber, green, blue & white models.
- Guaranteed operation at 4mA.
- Operates from any current limited intrinsically safe source
- IP66 front
- 3 year guarantee





#### Power supply

#### Current

Max

Voltage Operating Reverse

#### Output at 4mA

Lamp colour Red Amber Green Blue White

#### Intrinsic Safety

International IECEx Code gas dust *

> Input safety parameters Ui li

> > gas

Pi dust *

30V 159mA 1.2W 0.683W

Certification number

Pi

#### **Europe ATEX** Code

gas

dust '

#### Input safety parameters Ui li Pi gas Pi dust *

30V 159mA 1.2W 0.683W

Certificate number

* Dust certification is an option

#### USA FM only gas certification

Code

File

#### Environmental

Operating temperature Storage temperature Relative humidity Operating life Enclosure Front Rear

EMC

Terminals Body material Weight

4mA for specified performance. Current must be defined by an external resistor or current regulator. See Application Guide AG390. 22mA

8V typical, 8.7V max 60V max

Typical illuminance at 150mm 60 lux 45 lux 45 lux 80 lux 60 lux

> Ex ia IIC T4 Ga Ex ia IIIC T135°C Da  $-20^{\circ}C \le Ta \le +60^{\circ}C$

IECEx ITS 08.0030X

Group II Category 1G Ex ia IIC T4 Ga Group II Category 1D Ex ia IIIC T135°C Da  $-20^{\circ}C \le Ta \le +60^{\circ}C$ 

ITS13ATEX27822X

#### Standard

Code

File

Standard

Mechanical

Diffuser material

3610 Entity intrinsic safety CL I: Div 1: GP A, B, C & D: T4 @ 60°C AEx ia IIC T4 Ta = 60°C 3022662

3611 Nonincendive CL I: Div 2: GP A, B, C & D: T4 @ 60°C 3022662

-20 to 60°C -40 to 85°C 5 to 95% non condensing 100,000 hours typical **IP66** IP20 - see accessories for BA599 optional IP66 rear sealing kit. Complies with EMC Directive 2014/30/EU.

Screw clamp for 1.5mm² Polycarbonate Nylon 6 18g





Fixing centres for maximum packing density. Special tool may be required to tighten fixing nuts when minimum spacing is used.



#### **TERMINAL CONNECTIONS**



Rear sealing kit

IECEx and ATEX dust certification BA599 provides IP66 protection for terminals and rear of the lamp. Supplied with gland for 7 to 12mm diameter cable.

#### **HOW TO ORDER**

Lamp colour Red Amber Green Blue

White

Rear sealing kit

Accessories **IECEx & ATEX certification** 

BA390RS BA390AS BA390GS BA390BS BA390WS

Please specify

Please specify if required Dust certification BA599

9



Accessories

Dust certifcation



BA590 series panel lamps are solid state panel mounting indicators which offer a high reliability alternative to conventional panel lamps incorporating a filament bulb. Very low current consumption and a ten year life minimise maintenance costs by totally eliminating routine bulb replacement. Each BA590 contains a group of high efficiency light emitting diodes mounted behind a coloured diffuser to produce a bright, uniform output with a typical life greater than ten years. All BA590 models contain a 20mA current regulator which maintains constant brilliance over a wide range of supply voltages.

**Five well defined lamp colours** red, amber, green, blue and white allow lamps to be selected to comply with the indicator light colours recommended by IEC 73. When not powered, the front of panel coloured diffuser enables the lamp colour to be easily identified.

**IP66 sealing** of the lens and the joint between the lamp and the panel makes the BA590 ideal for

installations in areas that will be hosed, washed or splashed. When environmental protection behind the panel is also required, an optional rear sealing assembly is available.

**Mounting** is via a single industry standard 22.5mm diameter hole. The lamp housing, fixing nut and terminals have a maximum diameter of 30mm which permits a very high packing density on the panel.

**To aid identification** from the rear of the panel, the model number and suffix which identifies the colour are marked on the lamp body close to the terminals.

**Reliability is ensured** by an ISO9001 approved quality control system supported by a three year guarantee.

If flammable atmospheres are present the complementary BA390 or BA390S intrinsically safe panel lamps should be used. These have the same features as the BA590 but have been certified for installation in all gas and dust hazardous areas.





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### BA590 LED Panel Lamp

### **General purpose**

- Red, amber, green, blue & white models.
- Long life typically more than 10 years.
- Low cost
- IP66 front
- 22.5mm hole mounting
- 3 year guarantee
  - www.beka.co.uk/ba590

#### **Power supply**

Voltage Current Reverse voltage

#### Output

Lamp colour Red Amber Green Blue White

#### Environmental

Operating temperature Storage temperature

Humidity

Operating life

#### Enclosure

EMC

Immunity

Emissions

#### Mechanical

Terminals Lens material Lamp body Weight

#### **HOW TO ORDER**

Lamp colour

Red Amber Green Blue White Please specify BA590R BA590A BA590G BA590B BA590W

14 to 30V dc

18 to 22mA

Typical at 150mm

60V max

160 lux 230 lux

230 lux

530 lux

270 lux

-20 to 60°C

-40 to 60°C

Front IP66

2014/30/EU

for 10V/m .

Polycarbonate

Nylon 6

18g

optional

To 95% at 40°C non-condensing

Rear IP20 - see accessories for

In accordance with EU Directive

IP66 rear sealing assembly.

No degradation of brightness

Electromagnetically benign.

Screw clamp for 1.5mm².

Typically 100,000 hours

Accessories Rear sealing kit Please specify if required BA599

#### **DIMENSIONS (mm)**



Fixing centres for maximum packing density. Special tool may be required to tighten fixing nuts when minimum spacing is used.



#### **TERMINAL CONNECTIONS**





The BExS110D solid state electronic sounder produces a loud audible warning signal within a hazardous area. To avoid confusion between alarm signals, the sounder can be conditioned by internal switches to generate any one of thirty two unique alarm sounds. Maximum continuous output is 117dB(A) at 1m. **ATEX flameproof certification** allows all models to be installed in Zone 1 or 2, and to be used with gases in groups IIA, IIB and IIC.

Second and third stage alarms are available on all models. This enables the alarm sound to be changed from within

Tone number	Tone description	Switch settings 1 2 3 4 5	Second stage alarm	Third stage alarm
Tone 1	Continuous 1000Hz Toxic gas alarm	00000	Tone 31	Tone 11
Tone 2	Alternating 800/1000Hz at 0.25s intervals	10000	Tone 17	Tone 5
Tone 3	Slow whoop 500/1200Hz at 0.3Hz with 0.5s gap repeated	01000	Tone 2	Tone 5
Tone 4	Sweeping 500/1000Hz at 1Hz	11000	Tone 6	Tone 5
Tone 5	Continuous 2400Hz	00100	Tone 3	Tone 20
Tone 6	Sweeping 2400/2900Hz at 7Hz	10100	Tone 7	Tone 5
Tone 7	Sweeping 2400/2900Hz at 1Hz	01100	Tone 10	Tone 5
Tone 8	Siren 500/1200/500Hz at 0.3Hz	11100	Tone 2	Tone 5
Tone 9	Sawtooth 1200/500Hz at 1Hz	00010	Tone 15	Tone 2
Tone 10	Alternating 2400/2900Hz at 2Hz	10010	Tone 7	Tone 5
Tone 11	Intermittent 1000Hz at 0.5Hz General alarm	01010	Tone 31	Tone 1
Tone 12	Alternating 800/1000Hz at 0.875Hz	11010	Tone 4	Tone 5
Tone 13	Intermittent 2400Hz at 1Hz	00110	Tone 15	Tone 5
Tone 14	Intermittent 800Hz 0.25s on. 1s off	10110	Tone 4	Tone 5
Tone 15	Continuous 800Hz	01110	Tone 2	Tone 5
Tone 16	Intermittent 550Hz 150mS on, 150ms off	11110	Tone 18	Tone 5
Tone 17	Alternating 544Hz (100ms)/440Hz(400ms)	00001	Tone 2	Tone 20
Tone 18	Intermittent 660Hz 1.8s on, 1.8s off	10001	Tone 2	Tone 5
Tone 19	1400Hz to 1600Hz sweep up over 1s 1600Hz to 1400Hz sweep down over 0.5s	01001	Tone 2	Tone 5
Tone 20	Continuous 660Hz	11001	Tone 2	Tone 5
Tone 21	Alternating 554/440Hz at 1Hz	00101	Tone 2	Tone 5
Tone 22	Intermittent 544Hz at 0.875Hz	10101	Tone 2	Tone 5
Tone 23	800Hz pulsing at 2Hz	01101	Tone 6	Tone 5
Tone 24	Sweeping 800/1000Hz at 50Hz	11101	Tone 29	Tone 5
Tone 25	Sweeping 2400/2900Hz at 50Hz	00011	Tone 29	Tone 5
Tone 26	Simulated bell	10011	Tone 2	Tone 1
Tone 27	Continuous 554Hz	01011	Tone 26	Tone 5
Tone 28	Continuous 440Hz	11011	Tone 2	Tone 5
Tone 29	Sweeping 800/1000Hz at 7Hz	00111	Tone 7	Tone 5
Tone 30	420Hz repeating 0.626s on, 0.625s off Australian alert signal	10111	Tone 32	Tone 5
Tone 31	1200/400Hz at 1Hz Prepare to abandon platform	01111	Tone 11	Tone 1
Tone 32	Sweeping 500/1200Hz 3.75s on, 0.25s off 15Hz Australian evacuation signal	11111	Tone 26	Tone 1

Visit <u>www.beka.co.uk</u> to hear these tones

the safe or hazardous area, so that one sounder may be used to indicate three different alarm conditions.

Robust construction and IP66/67 protection allows BExS110D sounders to function reliably in severe environments. An adjustable wall mounting 'U' bracket is provided with every unit, and a stainless steel pipe mounting kit is available as an accessory.

An optional tie-on stainless steel tag plate may be engraved with any tag number or applicational information.

A loudspeaker version of this sounder for use with 100V public address systems is also available.

An optional SIL2 version available (24V dc only)

### BExS110D

# Flameproof sounder

Flameproof for use in gas & dust hazardous areas

- Up to 113dB(A) output.
- 32 different sounds
- IP66/67 protection
- PFEER compliant
  - Flameproof ATEX & IECEx gas & dust
- 12V dc, 24V dc, 48V dc, 115V ac and 230V ac models.
- Second & third stage outputs.
- Auto-synchronised sound output.

www.beka.co.uk/bexs110d





Power su	pply				
Model	12V dc	24V dc	48V dc	115V ac	230V
Current	± 25% 195mA	± 25% 265mA	± 25% 130mA	±10% 110mA	±10% 56mA
Output					
Continuo	usly rated				
sound le	vel at 1m		110 ± 3dE	3(A) @ 1m	
Volume	control		Max 110d (Tone 2)	B(A); min 72	2dB(A)
Second a	& third stag	ge alarms	Decomplian		
ac moa	eis		By applica	ation of position	live or
ac mod	els		By interco terminals.	nnection of	sounder
Certificati	ion				
Europe	ATEX				
Code			II 2 G Ex c	1   B  4  a -5	$0^{\circ}C$ to +
			II 2 D Ext	the IIIC T100	°C
			Db Ta -5	50°C to +55°	°C
			II 2 D Ex	tb IIIC T115	°C
			Db Ta -5	50°C to +70°	C.
Certific	ate numbe	r	KEMA 99	ATEX6312X	
Location					
Gas			Zone 1 or	2	
Dust			Zone 21 c	or 22	
End of li	ne monitor	ing	A resistor	or diode (do	c only) m
(24V mo	del only)		be fitted in	nside the en	closure
			monitoring	g line contin	uity. Res
			power rati	,3000 and a a	or of 50
			and a min	imum power	rating o
Internatio	nal IECEx				
Code			II 2 G Ex c	I IIB T4 Ta -5	50°C to +
			II 2 G Ex c	I IIC T4 Ta -5	50°C to +
			II 2 D Ex 1		°C
			II 2 D Fx 1	th IIIC T115	0 O
			Db Ta -5	50°C to +70°	Ċ.
Certificat	te number		IECEx KE	M 10.0003X	C
Environm	ental				
Operatin	g temp.		-50 to 70°	С	
Otovovo			See certif	icate for det	ails
Enclosur	iemp. e		-50 to 70° IP66/67	0	
EMC	~		In accorda	ance with El	J Directi
			2014/30/E	U	
Mechanic	al				
Enclosur	e material				
Body			Marine gr	ade LM6 alu	iminium,
			priospriate	an a powdel anod resiste	unce to h
			humidity a	and salt spra	iy.
Horn			High impa	t UL94, V0	& 5VA F

Terminals

Cable entry Weight

Accessories Tag plate

Pipe mounting kit

ac

+70°C +55°C

may for esistor านm 500Ω of 2W.

+70°C +55°C

tive

٦, d finish high FR ABS Screw clamp for 0.5 - 2.5mm² conductors. Two tapped M20 DC: 3.0 AC: 3.2kg

Tie-on engraved stainless steel plate - supplied loose. BA393 stainless steel heavy duty using 'V' bolt for 40-80mm outside diameter vertical or horizontal pipe.

#### **DIMENSIONS (mm)**





3 x 7mm dia. mounting holes

#### **HOW TO ORDER**

Certification & Model No. ATEX & IECEx gas & dust certification.	E
Voltage	
Tag plate	L

Pipe mounting kit

Please specify

BExS110D

12V dc; 24V dc; 48V dc; 115V ac or 230V ac.

Legend required

BA393



Power Supply Model Voltage Current	12V dc 10-14V dc 750mA	24V dc 20-28V dc 300mA	48V dc 42-54V dc 180mA	115V ac ±10% 140mA	230V ac ±10% 55mA	
Output Energy Colour Frequency	5 Joules Xenon flash thr 1Hz (Synchron	ough clear or c ised).	oloured lens.			
Certification Europe ATEX Code	II 2 G Ex d IIC II 2 G Ex d IIC II 2 D Ex tb IIIC II 2 D Ex tb IIIC II 2 D Ex tb IIIC II 2 D Ex tb IIIC	T5 Gb Ta -50°( T4 Gb Ta50° 790°C Db Ta. 7105°C Db Ta 7120°C Db Ta	C to +45° C to +70°C -50°C to +40°C a50°C to +55° a50°C to +70°	c c		
Certificate no.	KEMA 00ATEX	2006X				
Gas Dust	Zone 1 or 2 Zone 21 or 22					
End of line monitoring	A resistor or dia continuity. The rating of 0.5W,	ode (dc only) m resistor must h or 500Ω and a	ay be fitted insidave a minimum minimum powe	de the enclosur value of 3,3009 r rating of 2W.	e monitoring for line 2 and a minimum pow	/er
International IEC Code	Ex II 2 G Ex d IIC II 2 G Ex d IIC II 2 D Ex tb IIIC II 2 D Ex tb IIIC II 2 D Ex tb IIIC II 2 D Ex tb IIIC	T5 Gb Ta -50°( T4 Gb Ta50° 3 T90°C Db Ta. 3 T105°C Db Ta 3 T120°C Db Ta	C to +45° C to +70°C -50°C to +40°C a50°C to +55° a50°C to +70°			75
Certificate no.	IECEx KEM 10	.0002X				¥
Environmental Operating temp Storage Humidity Enclosure EMC	-50 to 70°C (S -50 to 70°C To 95% IP66/67 with tw In accordance	ee certificate) o M20 tapped o with EU Directiv	cable entries. ve 2014/30/EU			151
Mechanical					140 .	
Lens Glass guard & fittings Terminals	Marine grade L coated, providin Glass with exter Stainless steel Screw clamp for Two tapped MC	M6 phosphated ng good resista rnal user replac r 0.5 - 2.5mm ²	I and powder nce to high hum ceable UV stable cables	idity and salt sp polycarbonate	pray e coloured lens.	
Weight	DC: 2.45kg AC	: 2.75kg				
Accessories Pipe mounting kit.	BA393 stainles horizontal pipe.	s steel heavy d	uty using 'V' bol	t for 40 - 80mm	outside diameter vert	tical or
Tag plate	Tie-on engrave	d stainless stee	el plate, supplied	l loose.		
HOW TO	ORDER					
Voltage Lens colour	Please specify 12V dc, 24V dc Red; amber: ve	, 48V ac, 115V llow; green: blu	ac or 230V ac			

Optional SIL2 version available (24V dc only)

#### Lens colour SIL Accessories

Pipe mounting BA393 kit

# BExBG05D

### **Flashing beacon**

Flameproof for use in gas & dust hazardous areas

- Flameproof ATEX & IECEx gas and dust certification.
- 5 joule output
- Rugged IP67 enclosure.
- Stainless steel lens guard.
- Auto synchronised flash.

#### www.beka.co.uk/bexbg05d

The BExBG05D is a bright flashing xenon beacon for use in hazardous areas. Housed in a robust IP67 enclosure it is suitable for exterior mounting and is available with coloured lenses to aid alarm identification.

**Main application** of the BExBG05D is to provide a visual warning in noisy areas where a sounder may not be heard, or to supplement a sounder warning. The beacon produces a regular bright flash once every second and will attract attention in most ambient lighting conditions.

**ATEX and IECEx flameproof certification** allows the beacon to be installed in Zones 1, 2, 21 & 22 and to be used with most industrial gases.

**Higher output** 10 and 15 joule beacons are also available.







#### Power Supply 24V dc 230V ac Model 12V dc 48V dc 115V ac Voltage sounder ±25% ±25% ±16% 265mA ±25% ±12% ±10% ±10% 110mA ±10% ±10% 56mA ±16% 195mA beacon Current 130mA sounder 300mA beacon 750mA 180mA 140mA 55mA Output 110dB(A) nominal ±3dB at 1m 32 selectable sounds Sounder Three stage output 5 joule Xenon at 1Hz Choice of six lens colours: amber, blue, clear, green, red, yellow Beacon Certification Europe ATEX II 2 G Ex d IIB T5 Gb Ta. -50°C to +40°C II 2 G Ex d IIB T4 Gb Ta. -50°C to +70°C II 2 D Ex tb IIIC T110°C Db Ta. -50°C to +55°C II 2 D Ex tb IIIC T125°C Db Ta. -50°C to +70°C Code Certificate no. KEMA 01ATEX2223X Location Zone 1 or 2 Gas Dust Zone 21 or 22 A resistor or diode may be fitted inside the enclosure monitoring or line continuity. The resistor must have a minimum value of 3,300W and a minimum power rating of 0.5W, or End of line monitoring. a minimum value of 500W and a minimum power rating of 2W. (24V model only) International IECEx Code II 2 G Ex d IIB T5 Gb Ta. -50°C to +40°C II 2 G Ex d IIB T4 Gb Ta. -50°C to +70°C II 2 D Ex tb IIIC T110°C Db Ta. -50°C to +55°C II 2 D Ex tb IIIC T125°C Db Ta. -50°C to +70°C ICCEV KEM 10 0025X Environmental Operating temp. -50 to 70°C See certificate for details Storage temp. -50 to 70°C Enclosure IP66/67 In accordance with EU Directive 2014/30/EU Mechanical Body Marine grade LM6 aluminium, phosphated & powder coated finish providing good resistance to high humidity and salt spray. High impact UL94, V0 & 5VA FR ABS Horn Glass with external user replaceable UV stable polycarbonate coloured lens. Stainless steel Lens Lens guard & fittings. Screw clamp for 0.5 - 2.5mm² cables Two M20, one fitted with stopping plug DC:4.8kg AC: 5kg Terminals Cable entry Weight Accessories BA393 stainless steel heavy duty using 'V' bolt for 40 - 80mm outside diameter vertical Pipe mounting kit or horizontal pipe. ක්තිබ Tie-on engraved stainless steel plate, supplied Tag plate loose HOW TO ORDER Please specify Cert. & Model No. BExCS110-05D ATEX & IECEx Gas & dust certification Voltage 12Vdc, 24V dc, 48V dc, 115V ac or 230V ac Lens colour Red; amber; yellow; green; blue or clear

### **BExCS110-05D**

### Combined sounder and flashing beacon

Flameproof for use in gas & dust hazardous areas

- Flameproof ATEX & **IECEx** gas and dust certification.
- High output sounder 110dB(A) typical 5 joule Beacon.
- **IP66/67** protection
- 32 different sounds
- Second & third stage sounds.

#### www.beka.co.uk/bexcs110-05d

The BExCS110-05D is a flameproof combined sounder and flashing beacon for use in hazardous areas. Separate terminals for the sounder and beacon enable each to be controlled individually and a wide selection of lens colours plus 32 different sound outputs result in a versatile device which will satisfy most applicational requirements.

Three different sounds may be remotely selected so that one combined sounder and beacon can indicate three different alarm conditions. When maximum loudness is not required, the level may be reduced by an internal volume control.

The beacon produces a regular bright flash once every second and will attract attention in most lighting conditions





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#### Accessories

Tag plate Legend required Pipe mount kit BA393

368

## Accessories



Accessories are available for mounting and marking BEKA products. These include:

#### Pipe mounting kits for field instruments

Laser etched stainless steel scale & tag plates

#### Thermally printed scale cards and escutcheons

All BEKA instruments can be supplied with a thermally printed scale card or a laser etched scale plate to show the units of measurement. Although we can supply any legend, we suggest that for consistency the symbols and multipliers defined in ISO 1000-1992 are used. These are shown on the following page.

If requested, instruments can also be supplied marked with a tag number and applicational information.

### Recommended symbols for scale plates and cards:

SI UNITS		
Quantity	SI	Symbol
length	metre	m
mass	kilogram	kg
time	second	S
electric current	ampere	А
frequency	hertz	Hz
pressure, stress	pascal	Pa
energy, work, quantity of heat	joule	J
power	watt	W
electric potential	volt	V
electric resistance	ohm	Ω
electric conductance	siemens	S
flux of magnetic induction	weber	Wb
magnetic flux density	tesla	Т
Celsius temperature	degree	°C

#### Compound units

Compound units formed by multiplication or division of two or more units will be represented as shown in the following examples:

N.m m³/s

L/h

### NON SI UNITS

Quantity	Unit	Symbol
time	minute hour	min h
volume	litre	L
mass	tonne	t, te
pressure gauge atmospheric	bar	bar barg bara

#### **Common abbreviations**

Gallons	Gal
Inches water gauge	in.wg
Parts per million	ppm
Potential hydrogen	рН
Pounds per square inch	psi
Relative humidity	%RH

#### MULTIPLIERS

Factor	Prefix	Symbol
10 ⁹	giga	G
106	mega	М
10 ³	kilo	k
10 ²	hecto	h
10	deca	da
10 ⁻¹	deci	d
10 ⁻²	centi	с
10 ⁻³	milli	m
10 ⁻⁶	micro	μ
10 ⁻⁹	nano	n
10 ⁻¹²	pico	р

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### +44 1462 438301
**BEKA field mounting instruments** are housed in two styles of enclosure. Instruments with a 'D' or 'E' suffix e.g. BA484D or BA304E have a 212 x 141mm GRP enclosure incorporating a separate terminal compartment.

Field mounting instruments with a 'G' suffix have a compact 120 x 122mm GRP or Stainless Steel enclosure.

### 'D' AND 'E' INSTRUMENTS

#### MARKING

#### **Escutcheon Scale and Tag Marking**

All field mounting instruments with a 'D' or 'E' suffix apart from serial [data] text displays, fieldbus displays and batch controllers have an internal escutcheon around the display to accommodate scale and tag marking. If requested the instrument can be supplied with the escutcheon printed to show customer specified units of measurement, tag or application information.



# Escutcheon printed with customer specified information.

#### External stainless steel legend plate

For customers requiring traditional labelling, all 'D' and 'E' instruments can be supplied with a laser engraved stainless steel legend plate showing customer specified information fitted to the front of the captive terminal cover.

Each plate can accommodate: 1 row of 10 alphanumeric characters 10mm high.

- or 2 rows each of 15 alphanumeric characters 7mm high.
- or 3 rows each of 24 alphanumeric characters 5mm high.



Etched legend plate

#### **PIPE MOUNTING KITS**

**BA392D Standard duty** stainless steel bracket secured by two stainless steel worm drive hose clips which attach instrument to any 60 to 80mm outside diameter vertical or horizontal pipe. Usually suitable for clamping to a 2 inch internal diameter metal pipe.



#### BA392D pipe mounting kit

**BA393 Heavy duty** 316 stainless steel pipe mounting bracket using a single 'V' bolt which attaches instrument to any vertical or horizontal pipe with an outside diameter between 40 and 80mm. Will also support BEx series flameproof sounders and beacons.



BA393 pipe mounting kit

# Accessories

# For field mounting instruments

www.beka.co.uk/accessories



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## 'G'GRP&STAINLESSSTEELINSTRUMENTS

### MARKING

#### Slide-in scale card

All 'G' suffix field mounting instruments have a slide-in scale card which can accommodate scale and tag marking. If requested the instrument can be supplied with the scale card printed to show customer specified units of measurement, tag and application information for no additional charge.





#### External stainless steel legend plate

For customers requiring traditional labelling, 'G' instruments can be supplied with a laser engraved stainless steel legend plate showing customer specified information.

Each plate can accommodate: 1 row of 4 alphanumeric

- characters 15mm high.
- or 2 rows each of 8 alphanumeric characters 10mm high.
- or 3 rows each of 17 alphanumeric characters 6.3mm high.



Engraved legend plate

#### **PIPE MOUNTING KIT**

**BA393G** 316 stainless steel pipe mounting bracket attaches a GRP or Stainless Steel instrument to any vertical or horizontal pipe with an outside diameter between 40 and 73mm.



The **BA394G** 316 stainless steel panel mounting kit secures a 'G' field mounting GRP or Stainless Steel instrument into an aperture in an instrument panel. It maintains the ingress integrity of the 'G' instrument but does not seal the joint between the instrument and the panel, it is therefore suitable for use on an open panel. If a seal is required between the front and rear of the instrument panel, a BA494G or BA494G-SS panel mounting kit should be used.

PANEL MOUNTING KITS



BA394G panel mounting kit

BA393G pipe mounting kit

### PANEL MOUNTING KITS FOR 'G' INSTUMENTS WITH GRP ENCLOSURE

The **BA494G** panel mounting kit secures a 'G' field mounting GRP instrument in an instrument panel aperture. The kit maintains the instrument's IP66 integrity and provides an IP66 seal between the front and rear of the instrument panel. Sealing has been independently verified by a UKAS registered test house Parc. See <u>http://www.beka.co.uk/certificates</u> ingress protection.html for their test certificate.

The BA494G is manufactured from the same compression moulded carbon loaded material as the 'G' enclosure and has 316 stainless steel fittings and silicone gaskets. The BA494G has IECEx and ATEX certification confirming that it will not invalidate the intrinsic safety gas certification of any 'G' instrument that it is supporting. It is not certified for use in dust atmospheres or with 'NG' instruments.

Installation of the panel mounting kit and 'G' GRP instrument only requires access to one side of the panel at a time and may therefore be performed by a single technician. After installation access to the instrument terminals is available from both sides of the panel.



**INSTRUMENT PANEL THICKNESS: 2-5mm** 

Note: For panel thickness greater than 5mm the four hexagon headed M5 x 16mm screws should be replaced by longer screws.



### PANEL MOUNTING KITS FOR 'G' INSTUMENTS WITH STAINLESS STEEL ENCLOSURE

The **BA494G-SS** panel mounting kit secures a 'G' field mounting stainless steel instrument in an instrument panel aperture. The kit maintains the instrument's IP66 integrity and provides an IP66 seal between the front and rear of the instrument panel.

The kit consists of two silicone gaskets and pillars to secure the instrument assembly to the outside of the panel. The kit also contains screws to mount the instrument's back-box to the rear of the instrument panel.

The stainless steel enclosure has IECEx component certification confirming that it provides IP66 ingress protection after impact and thermal endurance testing.





BA494G panel mounting kit for Stainless Steel enclosure

BA494G panel mounting kit for GRP enclosure

# HOW TO ORDER

## 'D' and 'E' instruments

	Please specify
Scale Tag or application	Legend required Legend required
Stainless steel legend plate	Legend required
Pipe mounting kit	Model number BA392D or BA393.

#### 'G' instruments

	Please specify
Scale card marking Scale Tag or application	Legend required Legend required
Stainless steel legend plate	Legend required
Pipe mounting kit for a GRP or a stainless steel 'G' enclosure.	BA393G
Panel mounting kit for a GRP or a stainless steel 'G' enclosure. Front to rear of the instrument panel is not sealed.	BA394G
Panel mounting kit for a GRP 'G' enclosure. Front to rear of the instrument panel is sealed.	BA494G
Panel mounting kit for a stainless steel 'G' enclosure. Front to rear of the instrument panel is sealed.	BA494G-SS

### 'E' INSTRUMENTS AND ADVISORS

Includes instruments in 96 x 48 and 144 x 72mm plastic enclosures and 105 x 60mm rugged stainless steel enclosures.

#### Scale card

A slide-in scale card can be fitted without removing the instrument from the panel or opening the instrument enclosure. A customer specified scale card is a no cost accessory when an 'E' or Advisor instrument is ordered. A pack of 30 scale cards pre-printed with common legends is available for on-site configuration.



Scale card for 'E' suffix instruments is inserted from the rear of the instrument.

%	%RH	0°C	°F	Α
bar	barg	FT	FT-LBS	gal
in.wg	kg	kg/h	kPa	Litres
$\square$				
L/h	L/min	L/s	m³/h	mbar
L/h	L/min	L/s pH	m³/h	mbar

#### Pre-printed scale cards

#### Tag number

Customer specified tag number or application information can be thermally printed or laser etched onto the instrument rear panel adjacent to the terminals.



Tag number or application printed on rear panel of instrument.

All instruments can typically accommodate up to 2 rows of 18 characters

#### Rear cover and sealing kit

The BA495 rear cover and sealing kit provides impact and IP66 ingress protection for a single 96 x 48mm or a 105 x 60mm rugged instrument. The 316 stainless steel rear cover has two M20 cable entries, one fitted with a blanking plug. Note, cannot be used with Stainless steel support plate.

# Accessories

# For panel mounting instruments

www.beka.co.uk/accessories





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# RUGGED PANEL MOUNTING INSTRUMENTS

Incudes instruments in 105 x 60mm rugged stainless steel enclosures.

#### Stainless steel support plate

Rugged panel mounting instruments have a stainless steel enclosure. If mounted in a panel which is less than 1.0mm thick, or is non-metallic, a support plate should be slid over the body of the rugged instrument to ensure that the panel enclosure is not distorted when clamps are tightened. Note, cannot be used with BA495 rear cover and sealing kit.



Stainless steel support plate

# COMBINED ANALOGUE AND DIGITAL INDICATORS



Tag number or application printed on rear panel of instrument

Typically 2 rows of up to 18 characters can be accommodated.

## FIELDBUS INSTRUMENTS & INDICATING TEMPERATURE TRANSMITTERS

#### Scale card marking

Panel mounting Indicating Temperature Transmitters and Fieldbus indicators have an internal scale card around the display which can be supplied printed with customer specified application information.



Scale card can be printed with customer specified information

Includes BA326C and BA526C.

#### Scale card

The factory fitted internal scale card can be printed with a customer specified scale for the analogue bargraph and with the units of measurement for the digital display.



Combined indicator scale card

#### Tag number

Customer specified tag number or application information can be thermally printed onto the instrument rear panel adjacent to the terminals.

#### Tag number

Customer specified tag number or application information can be thermally printed or laser etched onto the instrument rear panel adjacent to the terminals.



Tag number printed on rear panel of instrument

Instruments can typically accommodate up to 2 rows of 18 characters.

# HOW TO ORDER

#### 'E' and Advisor instruments

	Please specify
Scale card	Legend required
Tag number etched on rear panel.	Legend required
For on-site configuration Pack of 30 common units of measurement.	Replacement scale card kit SCK.
Rear cover and sealing kit	BA495

### Combined analogue & digital instruments

	Please specify
Bargraph scale	Cardinal points
Units of measurement	Legend required
Tag number etched on rear panel.	Legend required

# Fieldbus instruments and indicating temperature transmitters

	Please specify
Scale card	Legend required
Тад	Legend required

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Serial Text Displays

Fieldbus Indicators & Displays

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