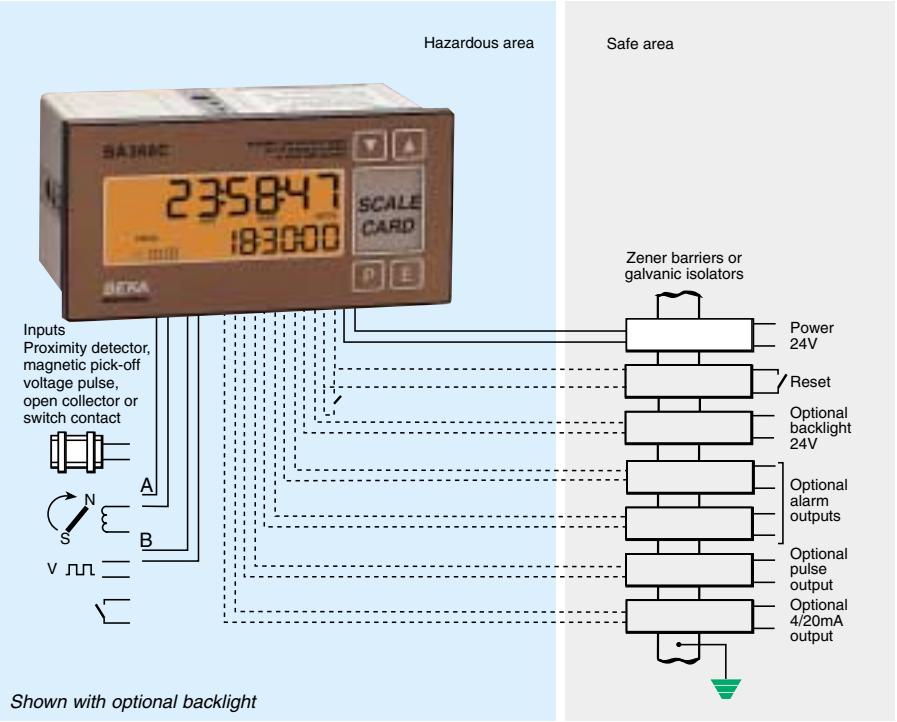
BA368C

Counter, timer, tachometer, clock

Intrinsically safe for use in all hazardous areas

- ***Separate 8 digit and 16 digit displays***
- ***Two inputs***
- ***Intrinsically safe ATEX certification***
- ***144 x 72 DIN enclosure with IP65 front panel***
- ***Optional:***
  Display backlight
  Alarms
  Pulse and 4/20mA outputs
- ***3 year guarantee***



Shown with optional backlight

The BA368C is an intrinsically safe multi-function instrument which may be programmed to perform a host of counting and timing functions. Easy to use menus allow the instrument to be configured as a counter, timer, tachometer or as a clock. Both of the inputs will operate from 2-wire proximity detectors, switch contacts, magnetic pick-offs, open collector or voltage pulses. Optional alarm/control outputs further extend the many applications.

Counting may be from one or both inputs. The pulses at each input can be added to, or subtracted from each other, and the result may be scaled to provide a display in engineering units. Alternatively, pulses on one input can increment or decrement the total count depending upon the state of the other input. From two inputs electrically 90˚ out of phase (quadrature), the BA368C can display the direction of movement and position of a shaft or a cable. The total display may be reset to zero via the instrument controls or by a remote contact closure.

As a timer the BA368C may be started and stopped by one or both inputs or from the instrument push-buttons. Elapsed or remaining time may be displayed in hours, minutes and seconds, or in just hours and minutes. When fitted with optional control outputs the instrument can control any process which is required to operate for a fixed time.

Rotational speed may be measured using the tachometer function which will display revolutions per second, minute or per hour. The instrument contains a run-time counter which can show the total operating time of the monitored machinery on the second display. When fitted with optional alarms, over and under speed warnings can be generated.

Configuration as a digital clock enables time to be displayed in twelve or twenty four hour format within a hazardous area. The instrument may operate as a stand-alone clock, or may be synchronised via the reset terminals with an external reference. Two optional control outputs enable hazardous or safe area loads to be turned on and off at pre-set times twice in each twelve or twenty four hour period.

Control and programming of the BA368C is performed via four front panel tactile push-buttons which 'click' when operated. All the programme functions are contained in easy to understand menus which may be protected by a user definable security code. To simplify calibration the scaling factors employ floating decimal points.

The front panel is a robust, easy to clean Noryl moulding sealed with a non-reflective, scratch resistant polyester membrane. A captive neoprene gasket provides an IP65 seal between the enclosure and the panel.

ATEX intrinsic safety certification allows installation in all hazardous areas. The two inputs may be connected to a wide range of certified sensors, and all the outputs are separate, galvanically isolated intrinsically safe circuits.

Backlighting is available as an option to improve readability when the BA368C is installed in a poorly illuminated area. High efficiency amber LEDs provide an even glow to enhance display contrast.

Optional alarms/control outputs provide two galvanically isolated solid state outputs each of which is a separate intrinsically safe circuit and complies with the requirements for *simple apparatus*. Almost any certified intrinsically safe load such as a solenoid valve or sounder may be controlled by these outputs.

Pulse and 4/20mA outputs may be provided as an option to operate remote equipment. Each output is galvanically isolated and certified as a separate intrinsically safe circuit.

Free of charge programming and calibration to customers requirements is performed prior to despatch, although the BA368C can easily be reconfigured on-site without the need for any test equipment or programming aids.

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SPECIFICATION

Power supply

Voltage	The BA368C must be powered via a Zener barrier or galvanic isolator.10V min between terminals 1 and 2
Current	12mA max., plus proximity detector currents when used.

Inputs A and B

Switch contact	
Closed	Less than 100Ω
Open	Greater than 1kΩ
Proximity detector	2-wire NAMUR
Magnetic pick-off	40mV peak to peak typical
Voltage pulse	
Low	Less than 1V
High	Greater than 3V; 30V max
Open collector	
Closed	Less than 2kΩ
Open	Greater than 10kΩ
Frequency	
switch contact	100Hz max
other inputs	5kHz max. Reduced to 2kHz for quadrature input

Display

Type	Liquid crystal
Primary	8 digits 14mm high;
Decimal point	1 of 7 positions or absent; colons for h:m:s
Secondary	6 digits 9.5mm high
Decimal point	1 of 5 positions or absent; colons for h:m:s

Remote reset — Contact closure with resistance less than 1kΩ

Programmable functions

Counter	A; A+B or A-B; A direction controlled by B A and B Quadrature (90˚ out of phase)
Total scale factor	Adjustable between 0.001 & 99999999
Grand total	10^{16} max count
Rate scale factor	Adjustable between 0.001 & 99999999
Timer	Elapsed time displayed in hh:mm:ss or hh:mm
Direction	Up or down
Tachometer	Revolutions displayed per sec, per min or per hour.
Rate scale factor	Adjustable between 0.001 & 99999999
Clock	Set time displayed in 24 or 12 hour format.
External synchronisation	Once per 12 or 24 hours

Intrinsic safety

Europe ATEX	
Standard	EN50020:1994
Code	Group II, Category 1G EEx ia IIC T5
Certificate number	ITS01ATEX2004
Location	Zone 0, 1 or 2

Environmental

Operating temperature	-20 to 60°C (Certified for use at -40°C)
Enclosure	Front IP65; rear IP20
EMC	In accordance with EU Directive 89/336/EEC.
Immunity	Less than 1% error at 10V/m
Emissions	Undetectable above background noise. Class B equipment

Mechanical

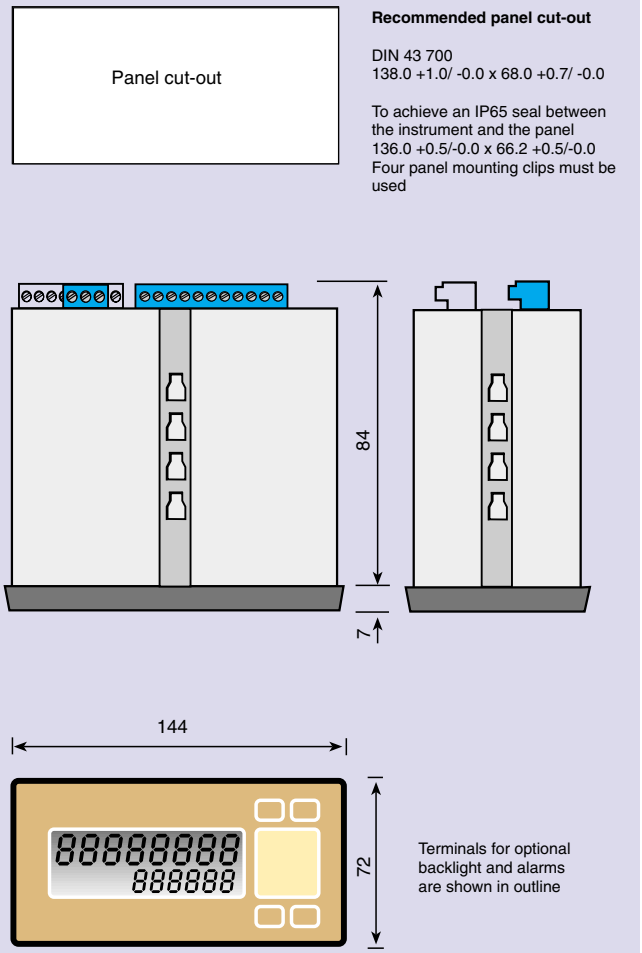
Terminals	Screw clamp for 0.5 to 1.5mm² cables.
Weight	0.6kg

Accessories

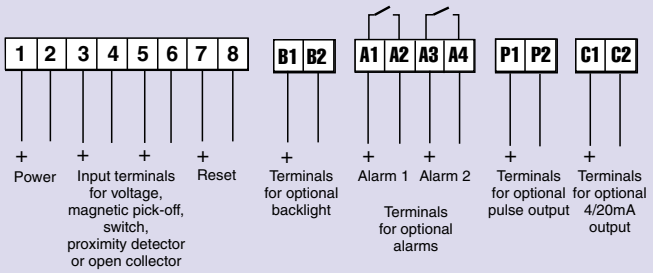
Alarms/control outputs	Two independent outputs.
Outputs	Isolated solid state switch
On	Less than 5Ω +0.6V
Off	Greater than 180kΩ
	Certified as *simple apparatus*
Display backlighting	LED backlight powered from 28V 300Ω Zener barrier or galvanic isolator.
Re-transmitted pulse	Pulse sink certified as *simple apparatus.*
4/20mA output	Galvanically isolated current sink
Voltage drop	5V max
Typeset scale card	Blank scale card fitted to each instrument, can be supplied typeset with units of measurement. *
Tag number	Thermally printed number or applicational information on rear of instrument. *
Front cover	BA398 provides additional mechanical protection: front panel switches can not be operated. *

** See accessory datasheet for details*

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	please specify
Model number	BA368C
Configuration	Counter; timer; tachometer or clock.
Inputs	Proximity detector; switch contact; magnetic pick-off, open collector or voltage pulse.
Calibration information	Settings required #

Accessories	**please specify**
Display backlight	Backlight
Alarms/control outputs	Alarms
Re-transmitted pulse output	Pulse output
4/20mA output	4/20mA output
Scale card	Legend required
Tag number	Legend required

 # If calibration information is not supplied, instrument will be conditioned as a counter; input A + input B; for open collector inputs; rate & total scale factors of 1.