

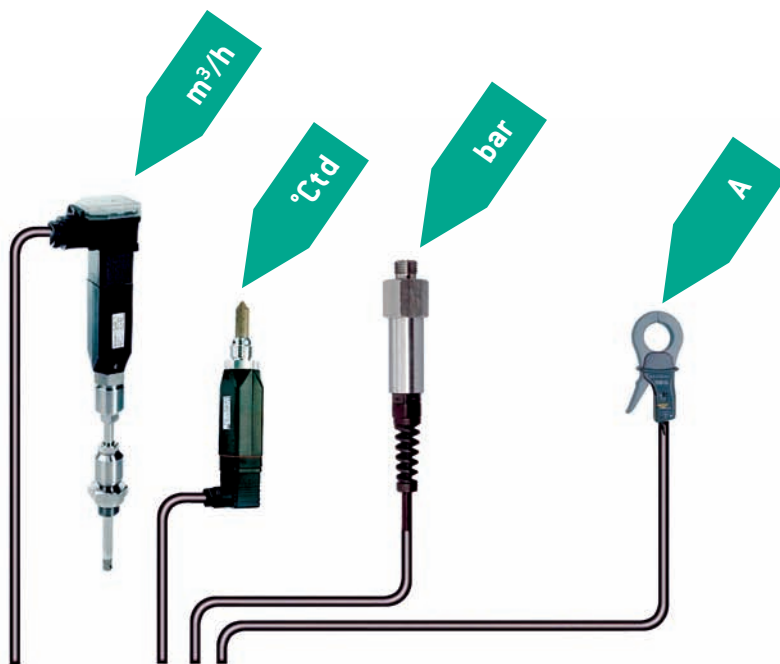
Multifunction Measuring Instrument **DS 300** for Compressed Air and Gases

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SPECIAL FEATURES

- Graphic evaluation of actual consumption, leakage, pressure, dew point, current consumption
- Cost calculation of leakage and compressed air consumption
- User-specific analysis: Which plant uses how much compressed air?

Consumption 

Dew point 

Pressure 

Current 

Temperature 

Leakage 

USB



Stationary flow and consumption measurement VA 300 with multifunction meter **DS 300**

All-in-one measuring station
ready for plug-in, consisting of

- Measuring section
- Multifunction meter DS 300
- Consumption probe VA 300



Stationary consumption measurement, available with and without measuring section

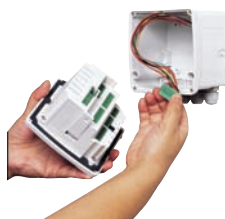
The right housing for each application:



- For panel mounting
(96 x 96mm)



- For wall mounting



- Easy wall mounting

SPECIAL FEATURES

- All-in-one solution, easy installation
- 2 displays: Actual flow and total air consumption
- Easy installation and removal of the sensor under pressure
- Highest accuracy due to 5 point calibration
- Output 4 to 20 mA for m³/h, pulse output for m³
- Easy to handle:
 - Inner diameter freely adjustable in DS 300
 - 2 alarm values freely adjustable
 - Optical display in case of alarm
 - Consumption counter resettable

TECHNICAL DATA DS 300

Technical data consumption probe
please see page 6

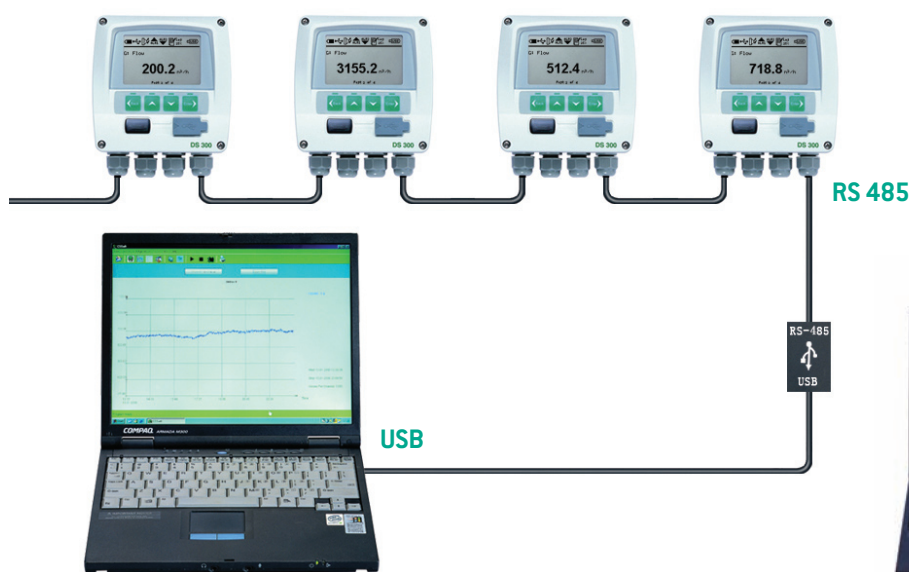
Dimensions:	92 x 92 x 55 mm, IP 65 (panel mounting)
Inputs:	2 digital inputs for VA 300 resp. FA 300
Interface:	USB, CS data collector
Keypad:	4 keys
Power supply:	90-260 VAC, 50-60 Hz
Accuracy:	See sensor data page 6
Alarm outputs:	2 relays, 230 VAC, 3 A
Analogue output:	2 x 4 ... 20 mA
Application temp.:	0 ... 50 °C
Transport temp.:	-20 ... 70 °C

OPTIONS

Wall housing:	118 x 115 x 93 mm, IP 65
Data logger:	500,000 measuring values start-/stopzeit, measuring rate freely adjustable
RS 485:	up to 256 x DS 300 , connectable, evaluation at PC via CS Soft in graphic and table form
2 additional input plug-in cards:	4-20mA, 0-10V, Pt100, TC

Data recording and evaluation at the PC

– up to 256 flow stations



SPECIAL FEATURES:

- Up to 256 flow stations connectable via RS 485
- Up to 500,000 measuring data are stored in each single instrument DS 300
- Online readout of the data of each measuring site at the PC (current flow in m³/h, total air consumption in m³)
- Readout of the data via CS USB data collector, up to 64 x DS 300 (128 MB)
- Reprogramming of DS 300 via CS USB data collector



- USB interface and CS data collector

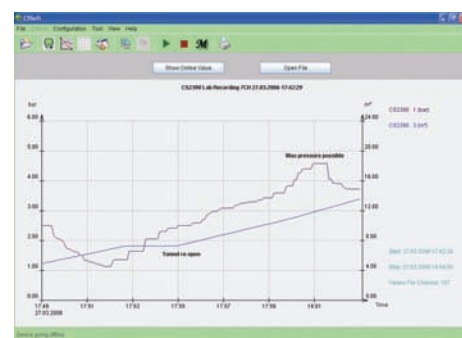
COMPLETE FLOW STATION WITHOUT DATA LOGGER AND RS 485 WITH MEASURING SECTION

(PLEASE SEE PICTURE PAGE 2)

			ORDER NO.
DN 6	up to 85	l/min	0601 0060
DN 15	up to 750	l/min	0601 0061
DN 20	up to 85	m ³ /h	0601 0062
DN 25	up to 140	m ³ /h	0601 0063
DN 32	up to 260	m ³ /h	0601 0064
DN 40	up to 360	m ³ /h	0601 0065
DN 50	up to 600	m ³ /h	0601 0066
DN 65	up to 1,100	m ³ /h	0601 0067
DN 80	up to 1,600	m ³ /h	0601 0068
DN 100	up to 2,700	m ³ /h	0601 0069
DN 125	up to 4,000	m ³ /h	0601 0070
DN 150	up to 5,800	m ³ /h	0601 0071
DN 200	up to 8,800	m ³ /h	0601 0072

ACCESSORIES

	ORDER NO.
Option DS 300 with data logger for 500,000 measured values	0500 3100
Option DS 300 with RS 485 and data logger for 500,000	0500 3200
CS data collector for reading out up to 64 x DS 300 and for reprogramming	0554 7000
Basic software for easy configuration of the flow station	0599 2000
CS Soft Professional, data evaluation in graphic and table form with USB cable	0554 7010
CS Soft Professional RS 485, data evaluation in graphic and table form with RS 485/ USB	0554 7020
5 point precision calibration with ISO certificate	3200 0001

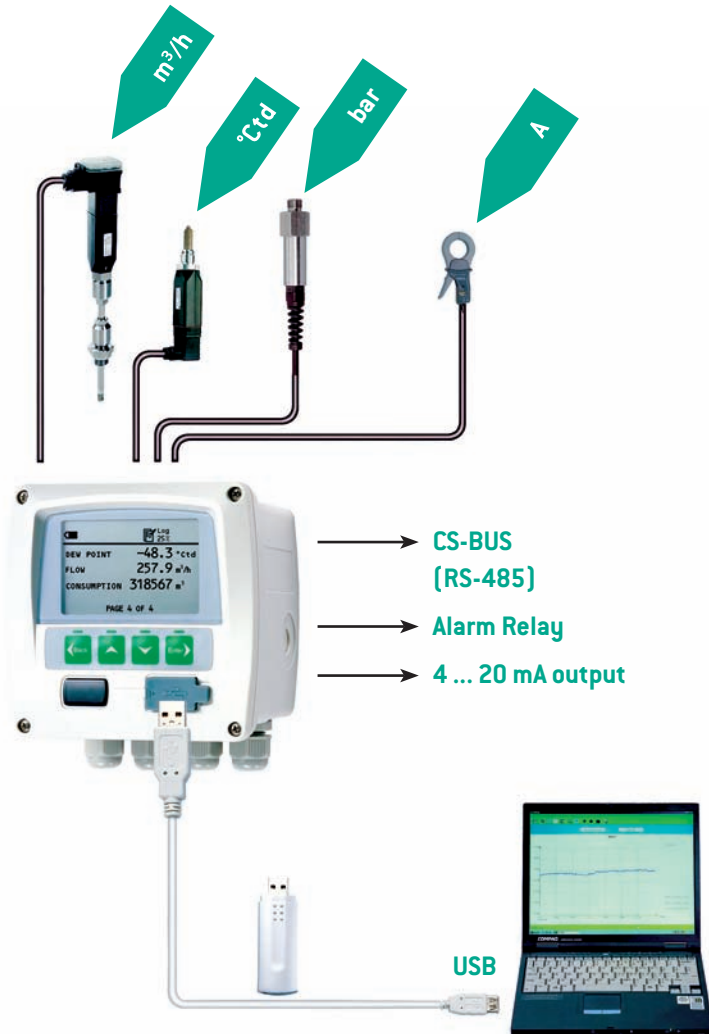


- CS-Soft for evaluation in graphic and table form

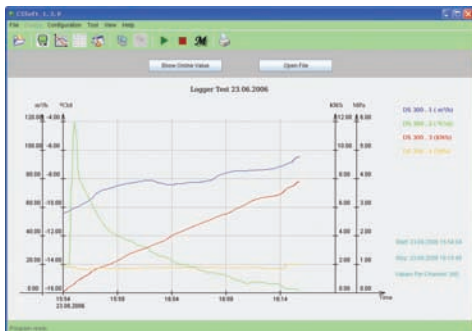
Please take order details and further accessories from the price list

Compressed air analysis with DS 300

The multi function display **DS 300** gives the user a survey on the whole compressed air net



Graphic **evaluation** of all relevant data



All relevant measuring data for an economic operation of the compressed air line at a glance:

- Actual air consumption in m³/h or m³/min
- Total air consumption in m³
- Pressure dew point in °Ctd
- Line pressure in bar
- Current consumption in A
- Temperature in °C

The data transfer to the PC is effected:

- by means of the CS data collector (manually)
- via USB interface for short distance PC to display DS 300
- via RS 485 interface for long distances

The CS data collector (USB) is able to:

- read out up to 64 x DS 300 at the PC
- evaluate data in the CS Soft Professional
- reprogram DS 300

TECHNICAL DATA

Consumption probe:
please see page 6

Multifunction display DS 300:
please see page 2

CLAMP-ON AMMETER:

Measuring range: 0 to 500 A
Accuracy: ± 0.5 %

DEW POINT PROBE FA 300-2:

Measuring range: -80 to 20 °Ctd
Accuracy: ± 2 °Ctd at -40 °Ctd

PRESSURE PROBE:

Measuring range: 0 to 16 bar
Accuracy: ± 0.5 %

CS Soft Professional with leakage calculation

Compressed air analysis with leakage calculation
Meas. period 31.12.2006 until 31.01.2007, meas. rate 1 second

COMPRESSED AIR CONSUMPTION

Total consumption:	Average consumption:	Maximum consumption:
1,309,013 m ³	1,805 m ³ /h	2,400 m ³ /h

LEAKAGE

Leakage in total:	Average leakage:	Leakage rate:
299,000 m ³	415 m ³ /h	23 %

ENERGY DATA

Total energy consumption:	Energy costs:	Energy costs per m ³ :
129,000 KWh	129,000 KWh x 0.11 € = 14,190 €	14,190 € / 1,309,013 m ³ = 0.011 €/m ³

FURTHER MEASURING DATA

Maximum pressure:	Minimum pressure:	Average value:
7 bar	5.8 bar	6 bar
Maximum dew point:	Minimum dew point:	
-11°Ctd	-50 °Ctd	

Leakage costs: 299,000 m³ x 0.011 € = 3,289 € for 1 month

DESCRIPTION:

Completely wired plug-in flow station consisting of:

DS 300 (with data logger for 500,000 measured values), current air consumption in m³/h, total consumption in m³
including 2 additional plug-in cards (4 - 20mA, 0-10V, Pt100, TC) Consumption probe VA 300-80 standard version, meas. sections from DN 6 to DN 200

COMPLETE FLOW STATION

WITH MEASURING SECTION:			ORDER NO.
DN 6	up to 85	l/min	0601 0160
DN 15	up to 750	l/min	0601 0161
DN 20	up to 85	m ³ /h	0601 0162
DN 25	up to 140	m ³ /h	0601 0163
DN 32	up to 260	m ³ /h	0601 0164
DN 40	up to 360	m ³ /h	0601 0165
DN 50	up to 600	m ³ /h	0601 0166
DN 65	up to 1,100	m ³ /h	0601 0167
DN 80	up to 1,600	m ³ /h	0601 0168
DN 100	up to 2,700	m ³ /h	0601 0169
DN 125	up to 4,000	m ³ /h	0601 0170
DN 150	up to 5,800	m ³ /h	0601 0171
DN 200	up to 8,800	m ³ /h	0601 0172

ACCESSORIES

ACCESSORIES	ORDER NO.
Option DS 300 with RS 485 and data logger for 500,000 measuring values, incl. 2 additional plug-in cards	0500 3220
CS data collector for reading out and programming up to 64 x DS 300	0554 7000
Basic software for easy configuration of DS 300	0599 2000
CS Soft Professional, data evaluation in graphic and table form with USB cable	0554 7010
CS Soft Professional RS 485, data evaluation in graphic and table form with cable RS 485/USB	0554 7020
CS compressed air analysis software for leakage and cost calculation	0599 2010
Clamp-on ammeter 0 to 500A	0554 0500
FA 300-Z1, pressure dew point probe from -80 to +20 °Ctd	0699 3024
Pressure probe from 0 to 16 bar	0694 1886
5 point precision calibration with ISO certificate	3200 0001

The data collected in DS 300 can be evaluated by means of the newly developed **CS Soft Professional with leakage calculation** which was especially developed for the compressed air branch.

1. How is leakage determined?

The easiest way is the leakage determination on production-free days, e. g. weekends, holidays, at the end of a shift. During this time the compressor carries compressed air which is required to keep a constant pressure. According to statistics even if production is effected day and night there is at least one short period of time during which all load is switched off, e. g. maintenance times.

This period of time is determined automatically by the CS Soft Professional.

2. What has to be done by the user?

The user has to enter the following parameters:

- Current costs per kWh
- Meas. rate, duration of measurement

3. Which evaluations does the user get?

Apart from the graphic evaluation with curve progressions of all measured data the customer will get information on:

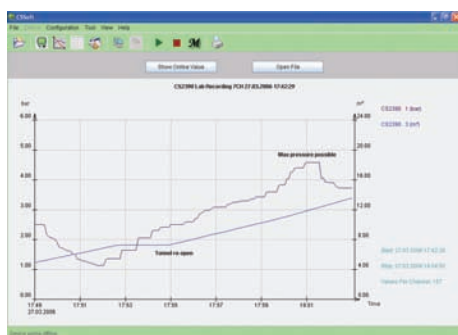
- the total air consumption in m³
- the leakage in total in m³ and % of the total air consumption
- the current consumption in kWh
- costs per m³ of produced compressed air in €
- costs of the leakage in €
- pressure progression
- pressure dew point progression

Please take order details and further accessories from the price list

Multifunction Measuring Instrument DS 300 for Compressed Air and Gases

SPECIAL FEATURES

- Internal data memory
- Inner diameter adjustable in hand-held instrument
- Easy installation and removal of the sensor under pressure via 1/2" ball valve
- 4 hours power independent measurements



DESCRIPTION

Mobile set for consumption measurement (max. version) consisting of:

CS 2390-5 mobile hand-held instr.	0600 1010
3 measuring channels	0560 2395
Rechargeable battery pack for long-term measuring approx. 4 hours	0515 1002
Mains adapter 12 V DC 230 V AC	2390 2290
Portable consumption probe VA 300-121 for CS 2390-5, max. version with 2 m cable to CS 2390-5, including certificate	3300 0121
CS Soft Software for display in graphic or table form	3200 1101
PC connection cable V24 RS 232	2390 1909
USB RS 232 adapter	3200 1013
Professional transport case	0554 6000

Further accessories, not included in the set:

5 point precision calibration with ISO certificate	3200 0001
Mobile pressure dew point probe [-80 to +50 °Ctd] incl. meas. chamber, 2 m cable to CS 2390-5	0699 3003

Please take order details and further accessories from the price list



TECHNICAL DATA

MOBILE CONSUMPTION PROBE VA 300:

Measured variables:	m/s, m³/h bzw. m³/min, l/min
Inner diameter freely adjustable in CS 2390-5	
Data memory:	6.000 measured values
Principle of meas.:	calorimetric measurement
Measuring medium:	Air, gas
Measuring range:	0 ... 26.400 m³/h (see table below)
Accuracy without measuring section:	± 4% m.v., ± 3% m.v. with 5 point ISO precision certificate
Application temp.:	-30 up to 110°C probe tube -30 up to 80 °C housing
Operating pressure:	up to 50 bar
Probe tube:	stainless steel, 1.4301 total length standard 220 mm, Ø 9 mm
Screw thread:	G1/2"
Power supply:	hand-held instrum. 12 VDC

STATIONARY CONSUMPTION PROBE VA 300-80:

Additionally to the above mentioned data:

Variables freely selectable in DS 300:
m³/s, m³/h, m³/min, l/min l/sec, ft/min, cfm

Diameter freely adjustable in DS 300

Accuracy with measuring section:
± 3% m.v., ± 2% m.v. with 5 point ISO precision certificate

Power supply: 12-30 VDC

FLOW MEAS. RANGES MOBILE + STATIONARY

		Standard		Max	Unit
Inch	mm	VA 300-80	VA 300-120	VA 300-121	
1/4"	6,0	0.8 ... 85	1.0 ... 120		l/min
1/2"	16,1	2.5 ... 750	3.5 ... 1,100		l/min
3/4"	21,7	0.3 ... 90	0.4 ... 120		m³/h
1"	27,3	0.5 ... 150	0.6 ... 200		m³/h
1 1/4"	36,0	0.9 ... 280	1.2 ... 350		m³/h
1 1/2"	41,8	1.2 ... 370	1.5 ... 500		m³/h
2"	53,1	2 ... 600	2.5 ... 800		m³/h
2 1/2"	68,9	3.5 ... 1,100	5 ... 1,500		m³/h
3"	84,9	5 ... 1,600	7 ... 2,200		m³/h
4"	110,3	9 ... 2,700	12 ... 3,600		m³/h
5"	133,7	13 ... 4,000	18 ... 5,300		m³/h
6"	162,3	18 ... 5,800	25 ... 8,000		m³/h
8"	200	26 ... 8,800	33 ... 11,700		m³/h
10"	250	40 ... 13,700	52 ... 18,900		m³/h
12"	300	60 ... 19,800	80 ... 26,400		m³/h

according to DIN 1945, ISO1217 related to 20°C, 1000 mbar

LD 300 Ultrasonic Leak Detector

By means of LD 300 leakages in an ultrasonic range can be detected without any problems even if they have a diameter from approx. 0.1 mm. The telescopic extension is perfect to find leakages in pipelines up to a height of 6 m.

Ultrasonic detector with laser



SPECIAL FEATURES:

- Precise locating by means of laser
- Focus tube avoids influence by ambient noise
- Noise isolated headset



APPLICATIONS

Determination of leakages at:

- Compressed air lines, gas, vapour and vacuum plants
- Refrigerating plants
- Door seals



COST SAVING

In loud production and machine halls leakages can only be heard if they have a diameter of 1 mm and more. 1 hole with diameter 1 mm = 270 EUR/year
LD 300 will be amortized after 4 leakages.

TECHNICAL DATA

Working frequency:	40 kHz \pm 2 kHz
Connections:	1) 4-pole connection for headset and battery charger 2) 3.5 mm stereo socket for sensor and cable connection
Laser:	Wave length: 655 up to 660nm Output power: 0.4 up to 0.5 mW
Energy supply:	Internal NiMH battery
Operating duration:	approx. 6 hours without laser approx. 4 hours with laser
Charging time:	approx. 1.5 hours
Application temp.:	0 °C up to +40 °C
Storage temperature:	-10 °C up to +50 °C
Telescope:	3 x 120 cm

DESCRIPTION

LD 300 Ultrasonic detector set consisting of:

LD 300 Ultrasonic detector	0560 0102
Ultrasonic sensor	0605 0001
Noise isolated headset	0554 0102
Focus tube with focus tip	0530 0101
Cable to detach sound probe from instrument	0553 0101
Battery charger	0554 0001
Transport case	0554 0101

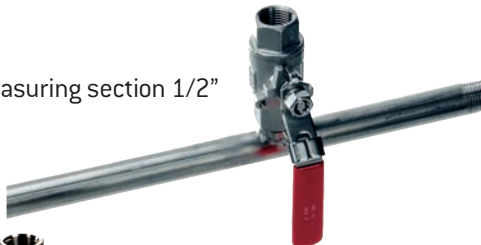
Accessory - not included in the set:

Ultrasonic tone generator	0554 0103
Telescope extension 3 x 120 cm	0530 0102

Useful accessories, measuring sections

1. Measuring sections for precise measurements, from **DN 80** with **DIN flange connection**

- Measuring section 1/2"



- Measuring section 1/4"

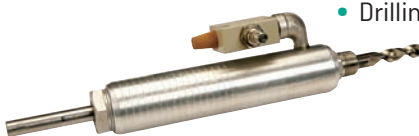


OD TUBE	EXTERNAL THREAD	TUBE	TOTAL LENGHT	ORDER NO.
20.0 mm	G1/4"	20.0 x 7.0 mm	180 mm	4000 0006
21.3 mm	G1/2"	21.3 x 2.6 mm	500 mm	4000 0015
26.9 mm	G3/4"	26.9 x 2.6 mm	600 mm	4000 0020
33.7 mm	G1"	33.7 x 3.2 mm	750 mm	4000 0025
42.4 mm	G1 1/4"	42.4 x 3,2 mm	900 mm	4000 0032
48.3 mm	G1 1/2"	48.3 x 3.2 mm	1000 mm	4000 0040
60.3 mm	G2"	60.3 x 3.6 mm	1250 mm	4000 0050
76.1 mm	G2 1/2"	76.1 x 3.6 mm	1500 mm	4000 0065
Flange DIN 2633				
88.9 mm	DN 80/88.9	88.9 x 2.0 mm	1850 mm	4000 0080
114.3 mm	DN 100/114,3	114.3 x 2.0 mm	2104 mm	4000 0100
139.7 mm	DN 125/139,7	139.7 x 3.0 mm	2860 mm	4000 0125
168.3 mm	DN 150/168.3	168.3 x 3.0 mm	3110 mm	4000 0150

2. What if no **1/2"** ball valve is existing at the measuring site?

By means of a special drilling device a measuring site with 1/2" ball valve can be easily set up within a few minutes at any place in the compressed air system.

- Drilling device



- High-pressure protection



- Spot drilling collar



DESCRIPTION	ORDER NO.
Drilling jig including drill	0530 1108
High-pressure protection recommended for measurements from 10 bar up to 50 bar	0530 1105
Spot drilling collar outer tube diameter 58-65 mm, including ball valve	0500 0453
Spot drilling collar outer tube diameter 67-74 mm, including ball valve	0500 0454
Spot drilling collars for other diameters	on request



- Drilling under pressure