VA 500 - Flow meter for compressed air and gases

Special features:

- Including temperature measurement
- RS 485 interface, Modbus-RTU as standard
- Integrated display for m³/h and m³
- Applicable from 1/2" to DN 1000
- Easy installation under pressure
- 4...20 mA analogue output for m³/h or m³/min
- Pulse output for m³ or M-Bus (optional)
- Inner diameter adjustable by means of keys
- Flow meter can be reset
- Adjustable by means of keypad on the display: Reference conditions, °C and mbar, 4...20 mA scaling, pulse weight

Inner diameter adjustable via keypad

Option:
Bi-directional measurement. Blue or green arrows in the display indicate the direction of flow. A meter reading is available for each flow direction.

DESCRIPTION	ORDER NO.
VA 500 flow sensor in basic version: Standard (92.7 m/s), probe length 220 mm, without display	0695 5001
Bi-directional measurement - includes 2 x 4…20 mA analogueue outputs and 2x pulse outputs. These do not apply to Ethernet (PoE) and M-Bus	Z695 6000
Options for VA 500:	
Display	Z695 5000
Max version (185 m/s)	Z695 5003
High-speed version (224 m/s)	Z695 5002
Low-speed version (50 m/s)	Z695 5008
1% accuracy of m.v. ± 0.3 % of f.s.	Z695 5005
Ethernet interface for VA 500/520 and FA 500	Z695 5006
Ethernet interface PoE for VA 500/520 and FA 500	Z695 5007
M-Bus board for VA 500/520 and FA 500	Z695 5004
Probe length 120 mm	ZSL 0120
Probe length 160 mm	ZSL 0160
Probe length 300 mm	ZSL 0300
Probe length 400 mm	ZSL 0400
Probe length 500 mm	ZSL 0500
Probe length 600 mm	ZSL 0600
G 1/2″ NPT male thread	Z695 5015
High-pressure protection recommended for installation from 10 to 50 bar (for VA 400/500)	0530 1105
ISO calibration certificate (5 calibration points) for VA sensors	3200 0001
Gas type:___ (specify gas type when placing order)	Z695 5009
Gas mixture:___ (specify gas mixture when placing order)	Z695 5010
Real gas adjustment	3200 0015
Special cleaning oil and grease free (e.g. for oxygen applications)	0699 4005
LABS and silicone-free version including cleaning oil and grease-free	0699 4007
Additional calibration curve stored in the sensor (can be selected via display)	Z695 5011
Certificate of origin	Z695 5012

For further accessories refer to pages 88 to 92

TECHNICAL DATA VA 500	
Parameters:	m³/h, l/min (1000 mbar, 20 °C) in case of compressed air or Nm³/h, Nl/min (1013 mbar, 0 °C) in case of gases
Units adjustable via keys at display:	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
Adjustable via keypad:	Diameter for volume flow calculation, counter resettable
Sensor:	Thermal mass flow sensor
Measured medium:	Air, gases
Gas types are adjustable over CS service software or CS data logger:	Air, nitrogen, argon, helium, CO2, oxygen, vacuum
Measuring range:	See table page 77
Accuracy: (m.v.: of meas. value) (f.s.: of full scale)	± 1.5% of m.v. ± 0.3 % of f.s. on request: ± 1% of m.v. ± 0.3% of f.s.
Operating temperature:	-30...110 °C sensor tube -20...+70 °C housing
Operating pressure:	-1…50 bar (for pressure > 10 bar - order additional high-pressure protection)
Digital output:	RS 485 interface, (Modbus-RTU), optional: Ethernet interface PoE, M-Bus
Analogue output:	4…20 mA for m³/h or l/min
Pulse output:	1 pulse per m³ or per litre electrically isolated. Pulse weight can be set on the display. Alternatively, the pulse output can be used as an alarm
Supply:	18…36 VDC, 5 W
Burden:	< 500 Ω
Housing:	Polycarbonate (IP 65)
Sensor tube:	Stainless steel, 1.4301 Installation length 220 mm, Ø 10 mm
Mounting thread:	G 1/2″, G 1/2″ NPT male thread
Ø housing:	65 mm
Mounting position:	any

Simple installation and removal under pressure

1) Even under pressure, the flow probe VA 500 is mounted by means of a standard 1/2" ball valve.

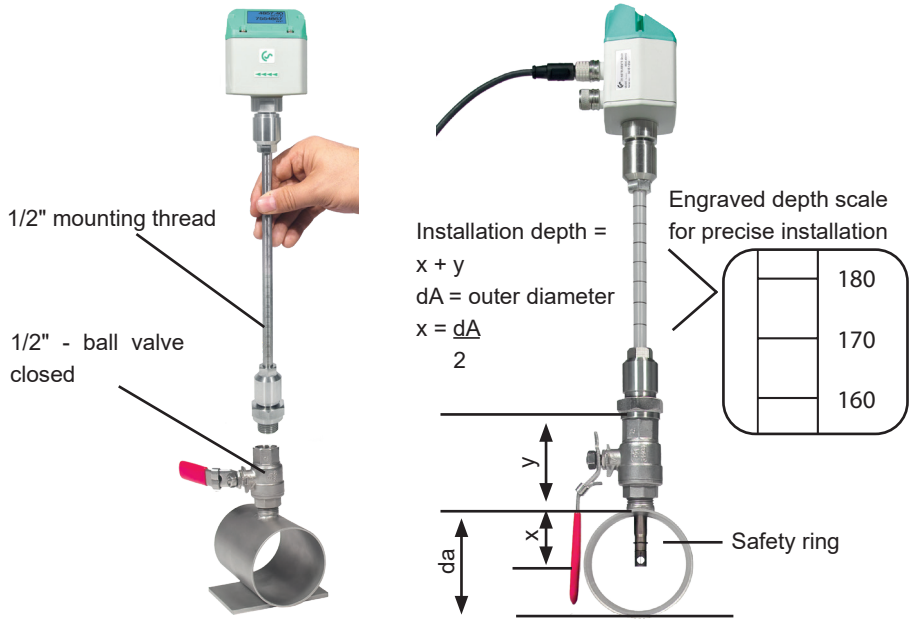
During mounting and dismounting the safety ring avoids an uncontrolled ejection of the probe which may be caused by the operating pressure.

For the mounting into different pipe diameters, VA 500 is available in the following probe lengths: 120, 160, 220, 300, 400 mm.

The flow probes are therefore suitable for being mounted into existing pipes with diameters of 1/2" to DN 300 upwards.

The exact positioning of the sensor in the middle of the pipe is granted by means of the engraved depth scale.

The maximum mounting depth corresponds to the respective probe length. (Probe length 220 mm = 220 mm maximum mounting depth).



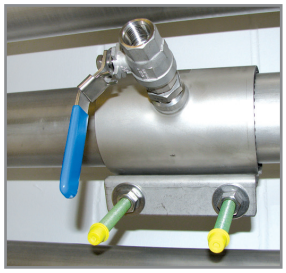
2) If there is no suitable measuring site with 1/2" ball valve, there are two easy ways to set up a measuring site:

A Weld on a 1/2" screw neck and screw on a 1/2" ball valve

B Mount spot drilling collar incl. ball valve (see accessories).

By means of the drilling jig, it is possible to drill under pressure through the 1/2" ball valve into the existing pipe. The drilling chips are collected in a filter. Then install the probe as described under 1).

A Screw neck



B Spot drilling collars

Drill under pressure with the CS drilling jig

3) Due to the large measuring range of the probe even extreme requirements to the consumption measurement (high volume flow in small pipe diameters) can be met.

The measuring range is depending on the pipe diameter - see table on the right hand side.

Flow measuring ranges VA 500 for compressed air (ISO 1217: 1000 mbar, 20 °C)
Measuring ranges for other types of gas see pages 96 to 99

Inside diameter of pipe			**VA 500 Standard** (92.7 m/s)		**VA 500 Max.** (185.0 m/s)		**VA 500 High-Speed** (224.0 m/s)	
Inch	mm		Measuring range full scale		Measuring range full scale		Measuring range full scale	
			m³/h	(cfm)	m³/h	(cfm)	m³/h	(cfm)
1/2″	16.1	DN 15	759 l/min	26	1516 l/min	53	1836 l/min	64
3/4″	21.7	DN 20	89 m³/h	52	177 m³/h	104	215 m³/h	126
1″	27.3	DN 25	148 m³/h	86	294 m³/h	173	356 m³/h	210
1 1/4″	36.0	DN 32	266 m³/h	156	531 m³/h	312	643 m³/h	378
1 1/2″	41.9	DN 40	366 m³/h	215	732 m³/h	430	886 m³/h	521
2″	53.1	DN 50	600 m³/h	353	1197 m³/h	704	1450 m³/h	853
2 1/2″	68.9	DN 65	1028 m³/h	604	2051 m³/h	1207	2484 m³/h	1461
3″	80.9	DN 80	1424 m³/h	838	2842 m³/h	1672	3441 m³/h	2025
4″	110.0	DN 100	2644 m³/h	1556	5278 m³/h	3106	6391 m³/h	3761
5″	133.7	DN 125	3912 m³/h	2302	7808 m³/h	4594	9453 m³/h	5563
6″	159.3	DN 150	5560 m³/h	3272	11096 m³/h	6530	13436 m³/h	7907
8″	200.0	DN 200	8785 m³/h	5170	17533 m³/h	10318	21229 m³/h	12493
10″	250.0	DN 250	13744 m³/h	8088	27428 m³/h	16141	33211 m³/h	19544
12″	300.0	DN 300	19814 m³/h	11661	39544 m³/h	23271	47880 m³/h	28177