



VA 500 - Flow meter for compressed air and gases



Special advantages:

- · Incl. temperature measurement
- RS 485 interface, Modbus-RTU as a standard
- Integrated display for m³/h and m³
- Usable from 1/2" to DN 1000
- Easy installation under pressure
- 4...20 mA analog output for m³/h resp. m³/min
- Pulse output for m³ or M-Bus (optional)
- Inner diameter adjustable via keypad
- Total counter resettable
- Adjustable via keys at the display: Reference conditions, °C and mbar, 4...20 mA scaling, pulse weight







TECHNICAL DATA VA 500

Inner diameter adjustable via keypad

Option:

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

| Reference conditions | | TECHNICAL DATA VA 300 | | |
|--|-----------------------------|---|---|--|
| 420 mA scaling, pu | Parameters: | m³/h, l/min (1000 mbar, 20 °C) in case of compressed air resp. Nm³/h, Nl/min (1013 mbar, 0 °C) ir case of gases | | |
| DESCRIPTION VA 500 flow sensor in basic version: | ORDER-NO . 0695 5001 | 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 | |
| Standard (92.7 m/s), probe length 220 mm, without display | | Adjustable via keypad: | Diameter for volume flow calculation, counter resettable | |
| Bi-directional measurement - includes 2 x 4 20 mA analog outputs and 2x pulse outputs. These are not available for | Z695 6000 | Sensor: | Thermal mass flow sensor | |
| Ethernet (PoE) and M-Bus interface | | Measuring medium | Air, gases | |
| 0.41 6.344.500 | Gas types are | Gas types are adjustable | Air, nitrogen, argon, helium, CO2, | |
| Options for VA 500: | over CS service software | | oxygen, vacuum | |
| Display May varion (195 m/a) | Z695 5000 Z695 5003 | or CS data logger: | Contable name 75 | |
| Max version (185 m/s) High Speed version (224 m/s) | Z695 5003 Z695 5002 | Measure range: | See table page 75 | |
| Low speed version (50 m/s) | Z695 5002 Z695 5008 | Accuracy: (m.v.: of meas. value) | ± 1.5 % of m.v. ± 0.3 % of f.s. on request | |
| 1 % Accuracy of m.v. ± 0,3 % of f.s. | Z695 5005 | (f.s.: of full scale) | ± 1.0 % of m.v. ± 0.3 % of f.s. | |
| Ethernet-Interface for VA500/520 and FA500 | Z695 5006 | Operating temperature: | -30110 °C probe tube -3080 °C housing | |
| Ethernet-Interface PoE for VA500/520 and FA500 | Z695 5007 | Operating pressure: | -150 bar | |
| M-Bus board for VA500/520 and FA500 | Z695 5004 | Digital output: | RS 485 interface (Modbus-RTU), | |
| Probe length 120 mm | ZSL 0120 | | Optional: | |
| Probe length 160 mm | ZSL 0160 | | Ethernet-Interface PoE), M-Bus | |
| Probe length 300 mm | ZSL 0300 | Analog output: | 420 mA for m³/h e. g. l/min; | |
| Probe length 400 mm | ZSL 0400 | Pulse output: | 1 Pulse per m³ or per liter galvanically isolated. Pulse value can be | |
| Probe length 500 mm | ZSL 0500 | | set on the display. Alternatively, the | |
| Probe length 600 mm | ZSL 0600 | | pulse output can be used as an alarm relay | |
| ISO calibration certificate (5 calibration points) for VA sensors | 3200 0001 | Supply: | 1836 VDC, 5 W | |
| Gas type: (specify type of gas when ordering) | Z695 5009 | Burden: | < 500 Ω | |
| Gas mixture: (specify gas mixture when ordering) | Z695 5010 | Housing: | Polycarbonate (IP 65) | |
| Real gas calibration | 3200 0015 | Probe tube: | Stainless steel, 1.4301 | |
| Special cleaning oil and grease-free (e. g. oxygen application) | 0699 4005 | | Mounting length 220 mm, Ø 10 mm | |
| Silicone-free version incl. cleaning | 0699 4007 | Mounting thread: | G 1/2" | |
| free of oil and grease | | Ø Casing: | 65 mm | |
| Additional calibration curve stored in the sensor (selectable via display) | Z695 5011 | Mounting position: | any | |

Z695 5012

Certificate of origin



Easy installation and removal under pressure

1) Even under pressure, the flow sensor VA 500 is mounted by means of a standard 1/2" ball valve. During mounting and dismounting the circlip 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.

So the flow sensors are being mounted into existing pipelines with inner diameters of 1/2" 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 with the resprective probe length. Example: VA 500 with probe length 220 mm has a maximum mounting depth of 220 mm.

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

Drill holes can be drilled through the 1/2" ball valve into the existing tubing with the help of the drilling device, the drill chips are collected in a filter, then the probe is installed as described under 1).



1/2" Mounting thread

1/2" - Ball valve

closed





Mounting depth =

dA = Outer diameter

x + y

x = dA

2

B Spot drilling collar



Engraved depth scale

for accurate installation

Safety ring

180

170

160

Drill under pressure with the CS Drill

3) Due to the large measuring range of the probe even extreme requirements to the flow 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.

| Measuring ranges Flow VA 500 for compressed air (ISO 1217: 1000 mbar, 20°C) Measuring ranges for other types of gas see pages 90 to 93 | | | | | | | | | | | |
|--|-------|-----------------------------------|-----------------|--------------------------------|-----------------|----------------------------------|-----------------|-------|--|--|--|
| Inner 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 | n mm | | Measuring range | | Measuring range | | Measuring range | | | | |
| | | | 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 | | | |