

# VA 520 - Inline flow meter

NEW: Modbus-RTU output

4...20 mA output for present flow

Pulse output for total flow (counter reading), galvanically isolated or M-Bus (optionally)

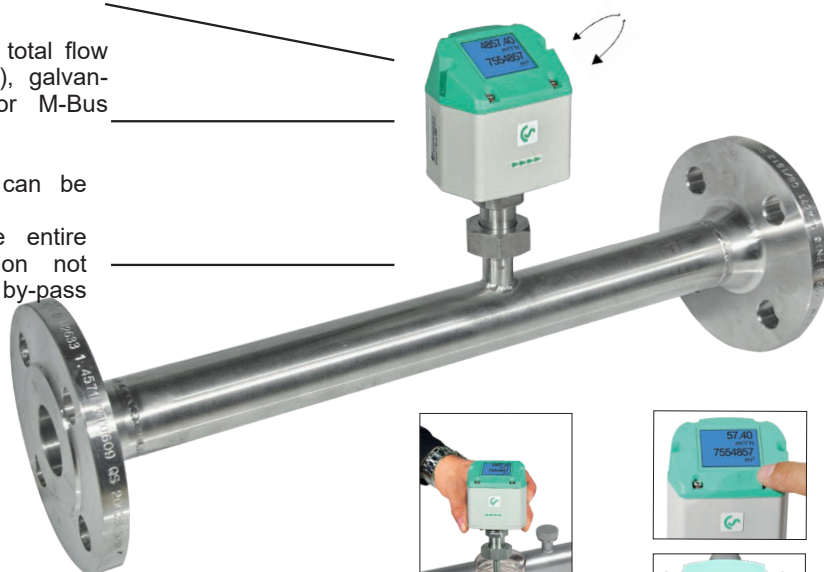
Measuring unit can be unscrewed: Removal of the entire measuring section not necessary, no by-pass necessary

Display head rotatable by 180° e.g. in case of reverse flow direction

**Display shows 2 values at the same time:**

- Present flow in m<sup>3</sup>/h, l/min,...
- Total consumption (counter reading) in m<sup>3</sup>, l
- Temperature measurement

Readout values in the display can be rotated by 180°, e.g. for overhead installation



The sensor can be removed and cleaned



**With a key stroke:**

- Reset counter reading
- Select units
- Zero-point adjustment, leak flow volume suppression



**Option:**

Bi-directional measurement. Blue or green arrows in the display indicate the direction of flow.



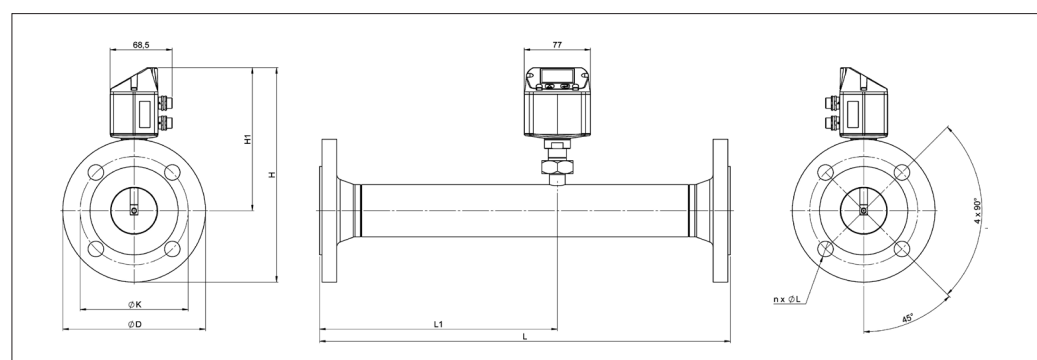
A meter reading is available for each flow direction.

Easy installation into the existing pipeline due to integrated measuring section and weld neck flange (according to EN 1092-1 PN 40)

High measuring accuracy due to defined measuring section (inlet and outlet section)

## Application-technological features of the flow meters VA 520:

- Digital interfaces such as Modbus-RTU, Ethernet (PoE) and M-Bus enable connection to higher-level systems such as energy management systems, building management systems, PLC,...
- Easy and affordable installation
- Units freely selectable via keys on the display m<sup>3</sup>/h, m<sup>3</sup>/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1,999,999,999 m<sup>3</sup> can be reset to "zero" via keypad
- Analog output 4...20 mA, pulse output (electrically isolated)
- High measuring accuracy even in the lower measuring range (ideal for leakage measurement)
- Negligibly small loss of pressure
- Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
- Comprehensive diagnostic functions can be read out on the display or remote access via Modbus-RTU such as exceeding max./min values °C, calibration cycle, error codes, serial number. All parameters can be read out and changed via Modbus



Flow measuring ranges VA 520 (Max version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20°C) Measuring ranges for other types of gas see pages 96 to 99									Flange DIN EN 1092-1		
Measuring section	Outer pipe mm	Inner pipe mm	Measuring range full scales		L mm	L1 mm	H mm	H1 mm	ØD mm	ØK mm	n x ØL
			m³/h	(cfm)							
DN 15	21.3	16.1	90	50	300	210	213.2	165.7	95	65	4 x 14
DN 20	26.9	21.7	175	100	475	275	218.2	165.7	105	75	4 x 14
DN 25	33.7	27.3	290	170	475	275	223.2	165.7	115	85	4 x 14
DN 32	42.4	36.0	530	310	475	275	235.7	165.7	140	100	4 x 18
DN 40	48.3	41.9	730	430	475*	275	240.7	165.7	150	110	4 x 18
DN 50	60.3	53.1	1195	700	475*	275	248.2	165.7	165	125	4 x 18
DN 65	76.1	68.9	2050	1205	475*	275	268.2	175.7	185	145	8 x 18
DN 80	88.9	80.9	2840	1670	475*	275	275.7	175.7	200	160	8 x 18

\*Attention: Shortened inlet section. Please observe the recommended minimum inlet section (length = 15 x inner diameter) on site.

DESCRIPTION	ORDER NO.
VA 520 flow meter with integrated DN 15 measuring section with flange	0695 2521
VA 520 flow meter with integrated DN 20 measuring section with flange	0695 2522
VA 520 flow meter with integrated DN 25 measuring section with flange	0695 2523
VA 520 flow meter with integrated DN 32 measuring section with flange	0695 2526
VA 520 flow meter with integrated DN 40 measuring section with flange	0695 2524
VA 520 flow meter with integrated DN 50 measuring section with flange	0695 2525
VA 520 flow meter with integrated DN 65 measuring section with flange	0695 2527
VA 520 flow meter with integrated DN 80 measuring section with flange	0695 2528
Bi-directional measurement - includes 2 x 4...20 mA analogue outputs and 2x pulse outputs. These do not apply to Ethernet (PoE) and M-Bus	Z695 6000
High-pressure version PN 40	Z695 0411
ANSI flange 150 lbs (instead of DIN flanges)	Z695 5013
ANSI flange 300 lbs (instead of DIN flanges)	Z695 5014
<b>Measuring ranges:</b>	
Low-Speed (50 m/s)	Z695 0520
Standard (92.7 m/s)	Z695 0521
High-Speed (224 m/s)	Z695 0522
<b>Options:</b>	
Special measuring range for VA 520 on customer request	Z695 4006
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
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

TECHNICAL DATA VA 520	
<b>Parameters:</b>	m³/h, l/min (1000 mbar, 20 °C) in case of compressed air or Nm³/h, NI/min (1013 mbar, 0 °C) in case of gases
<b>Units adjustable via keys at display:</b>	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
<b>Sensor:</b>	Thermal mass flow sensor
<b>Measured medium:</b>	Air, gases
<b>Gas types are adjustable over CS service software or CS data logger:</b>	Air, nitrogen, argon, CO2, oxygen
<b>Measuring range:</b>	See table above
<b>Accuracy: (o. M. V. = of measured value) (o. F. S. = of full scale)</b>	± 1.5% of m.v. ± 0.3% of f.s. on request: ± 1% of m.v. ± 0.3% of f.s.
<b>Operating temperature:</b>	-30...80 °C
<b>Operating pressure:</b>	-1 to 16 bar optionally up to PN 40
<b>Digital output:</b>	RS 485 interface, (Modbus-RTU), optional: Ethernet interface PoE, M-Bus
<b>Analogue output:</b>	4...20 mA for m³/h or l/min
<b>Pulse output:</b>	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 relay
<b>Supply:</b>	18...36 VDC, 5 W
<b>Burden:</b>	< 500 Ω
<b>Housing:</b>	Polycarbonate (IP 65)
<b>Measuring section:</b>	Stainless steel, 1.4301 or 1.4571
<b>Process connection:</b>	Flange (in acc. with DIN EN 1092-1 or ANSI 150 lbs or ANSI 300 lbs)
<b>Mounting position:</b>	any

For further accessories refer to pages 88 to 92

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Measuring unit can be unscrewed: Removal of the entire measuring section not necessary, no by-pass necessary

Easy installation into the existing pipe due to integrated measuring section (1/4" to 2")

High measuring accuracy due to defined measuring section (inlet and outlet section)

Display head rotatable by 180 ° e.g. in case of reverse flow direction

**Display shows 2 values at the same time:**

- Present flow in m<sup>3</sup>/h, l/min,...
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- Temperature measurement

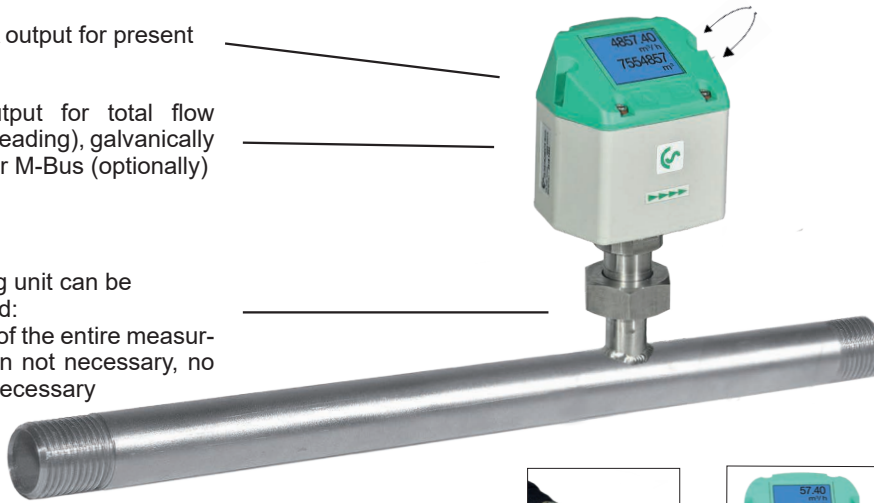
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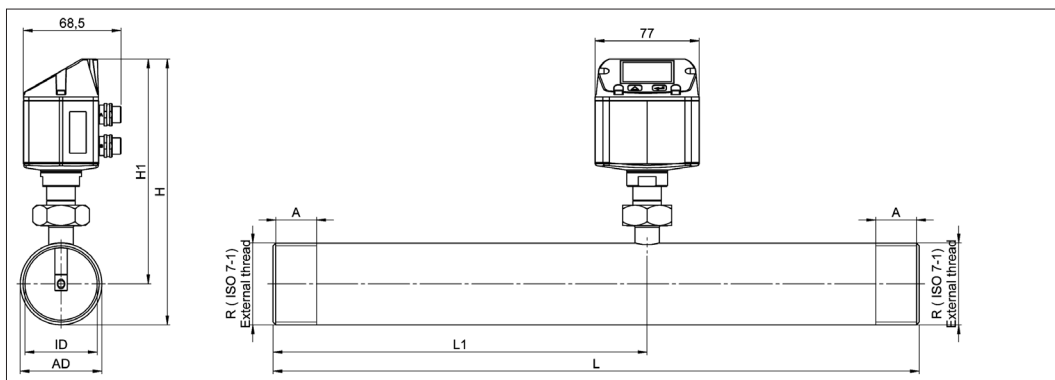


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- Units freely selectable via keys on the display m<sup>3</sup>/h, m<sup>3</sup>/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1,999,999,999 m<sup>3</sup> can be reset to "zero" via keypad
- Analog output 4...20 mA, pulse output (electrically isolated)
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Flow measuring ranges VA 520 (max version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20 °C) Measuring range for other gases see pages 96 to 99									
Connection thread	Outer pipe mm	Inner pipe mm	Measuring range full scales		L mm	L1 mm	H mm	H1 mm	A mm
			m <sup>3</sup> /h	cfm					
R 1/4"	13.7	8.9	105 l/min	3.6	194	137	174.7	165.7	15
R 1/2"	21.3	16.1	90	50	300	210	176.4	165.7	20
R 3/4"	26.9	21.7	175	100	475	275	179.2	165.7	20
R 1"	33.7	27.3	290	170	475	275	182.6	165.7	25
R 1 1/4"	42.4	36.0	530	310	475	275	186.9	165.7	25
R 1 1/2"	48.3	41.9	730	430	475*	275	186.9	165.7	25
R 2"	60.3	53.1	1195	700	475*	275	195.9	165.7	30

\*Attention: Shortened inlet section. Please observe the recommended minimum inlet section (length = 15 x inner diameter) on site!

DESCRIPTION	ORDER NO. Stainless steel 1.4571	ORDER NO. Stainless steel 1.4301
VA 520 flow meter with 1/4" measuring section	0695 1520	0695 0520
VA 520 flow meter with 1/2" measuring section	0695 1521	0695 0521
VA 520 flow meter with 3/4" measuring section	0695 1522	0695 0522
VA 520 flow meter with 1" measuring section	0695 1523	0695 0523
VA 520 flow meter with 1 1/4" measuring section	0695 1526	0695 0526
VA 520 flow meter with 1 1/2" measuring section	0695 1524	0695 0524
VA 520 flow meter with 2" measuring section	0695 1525	0695 0525
Bi-directional measurement - includes 2x4...20 mA analogue outputs and 2x pulse outputs. These do not apply to Ethernet (PoE) and M-Bus		Z695 6000
High-pressure version PN 40		Z695 0411
NPT thread (instead of R thread) - can only be ordered for stainless steel 1.4571	Z695 5015	
<b>Measuring ranges:</b>		
Low-Speed (50 m/s)		Z695 0520
Standard (92.7 m/s)		Z695 0521
High-Speed (224 m/s)		Z695 0522
<b>Options:</b>		
Special measuring range for VA 520 on customer request		Z695 4006
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
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

TECHNICAL DATA VA 520	
<b>Parameters:</b>	m <sup>3</sup> /h, l/min (1000 mbar, 20 °C) in case of compressed air or Nm <sup>3</sup> /h, NI/min (1013 mbar, 0 °C) in case of gases
<b>Units adjustable via keys at display:</b>	m <sup>3</sup> /h, m <sup>3</sup> /min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
<b>Sensor:</b>	Thermal mass flow sensor
<b>Measured medium:</b>	Air, gases
<b>Gas types are adjustable over CS service software or CS data logger:</b>	Air, nitrogen, argon, CO <sub>2</sub> , oxygen
<b>Measuring range:</b>	See table above
<b>Accuracy: (o. M. V. = of measured value) (o. F. S. = of full scale)</b>	± 1.5% of m.v. ± 0.3 % of f.s. on request: ± 1% of m.v. ± 0.3% of f.s.
<b>Operating temperature:</b>	-30...80 °C
<b>Operating pressure:</b>	-1 to 16 bar optionally up to PN 40
<b>Digital output:</b>	RS 485 interface, (Modbus-RTU), optional: Ethernet interface PoE), M-Bus
<b>Analogue output:</b>	4...20 mA for m <sup>3</sup> /h or l/min
<b>Pulse output:</b>	1 pulse per m <sup>3</sup> or per litre electrically isolated. Pulse weight can be set on the display. Alternatively, the pulse output can be used as an alarm relay
<b>Supply:</b>	18...36 VDC, 5 W
<b>Burden:</b>	< 500 Ω
<b>Housing:</b>	Polycarbonate (IP 65)
<b>Measuring section:</b>	Stainless steel, 1.4301 or 1.4571
<b>Connection thread of measuring sections</b>	R 1/4" to R 2" (BSP British Standard Piping) or 1/2" to 2" NPT thread
<b>Mounting position:</b>	any

For further accessories refer to pages 88 to 92