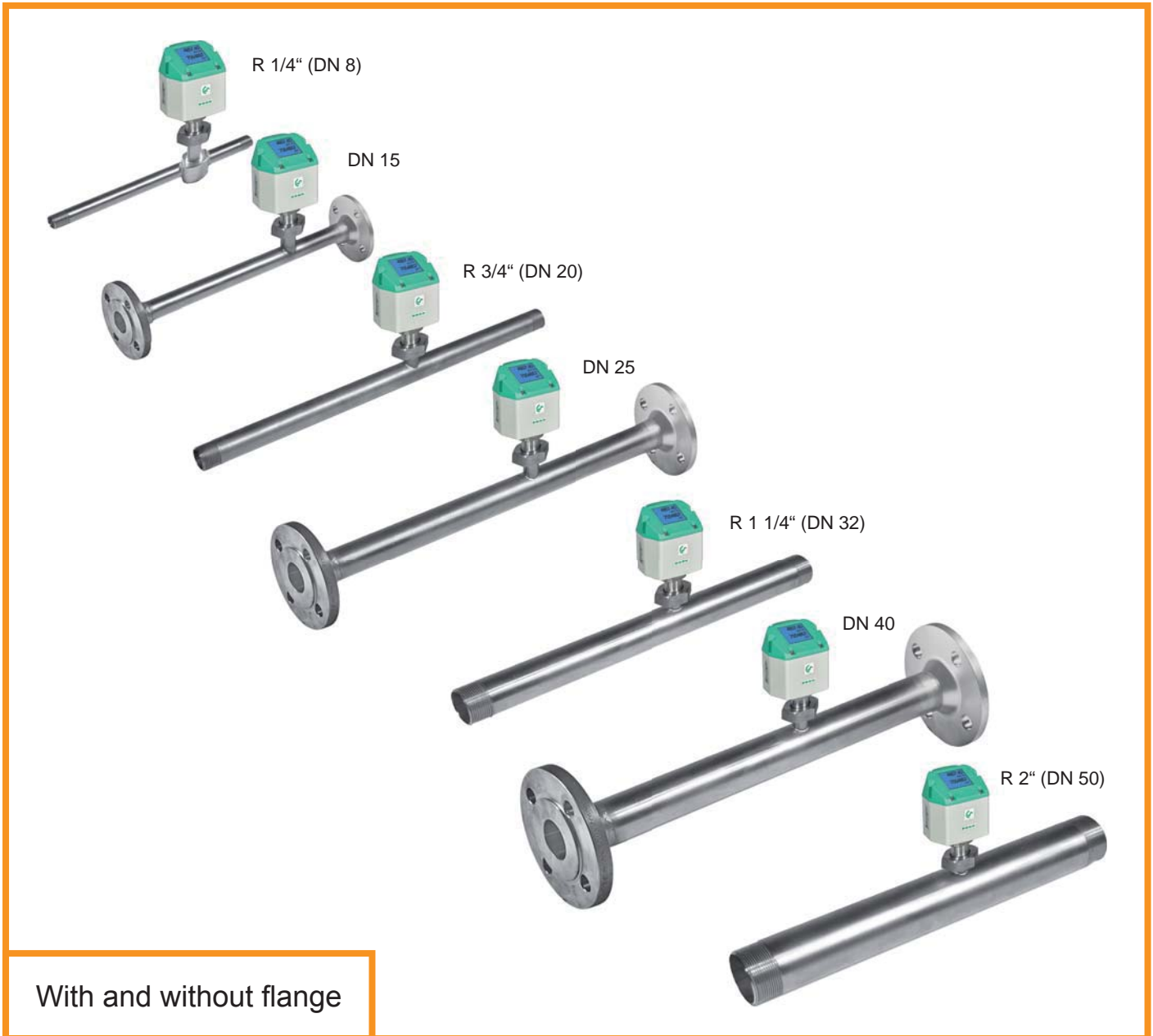




VA 520

The affordable flow meter for compressed air and gases



Intelligent solutions for accurate flow measurement for compressed air and gases

The new affordable flow sensors VA 520 work according to the approved calorimetric measuring principle. An additional pressure and temperature compensation is not necessary. Contrary to the previously used

bridge circuit the newly developed evaluation electronics records all measured values digitally. This enables very precise and fast measurements. Due to the new evaluation electronics all VA 520 have an integrated Modbus output as a standard. So all parameters can be transferred via Modbus. Due to its compact design it is possible to monitor all compressed air systems from the compressor to the smallest compressed air tool (1/4" to 2 inch) with the new affordable flow sensor VA 520.

VA 500 flow sensors are available for larger pipe diameters from DN 50 to DN 300. Apart from compressed air also other gases like e.g. nitrogen, oxygen and CO₂ can be measured.



Removal of the measuring device without complete dismounting of the measuring section



In the case of compressed air meters with integrated measuring section the „measuring device“ cannot be removed. For this reason an expensive bypass line is necessary. The design of **VA 520** enables the removal and cleaning of the „measuring device“ with e.g. soap water without any dismounting of the measuring section. A closing cap grants a continuous use of the line for the duration of the cleaning. A bypass line is not necessary. The alignment pin grants an accurate installation of the measuring device.

In most cases the compressed air is not free from oil, condensate, dirt and particles. In the course of time this leads to a soiling of the flow meters which may cause errors in mea-

surement or even a total breakdown. The flow sensors which have been on the market up to now generally cannot be cleaned and will be exchanged if they are soiled. In

2 Stationary use



For stationary use there are the following outputs available for the data transfer to a building management system or PLC:

4...20 mA for actual flow.

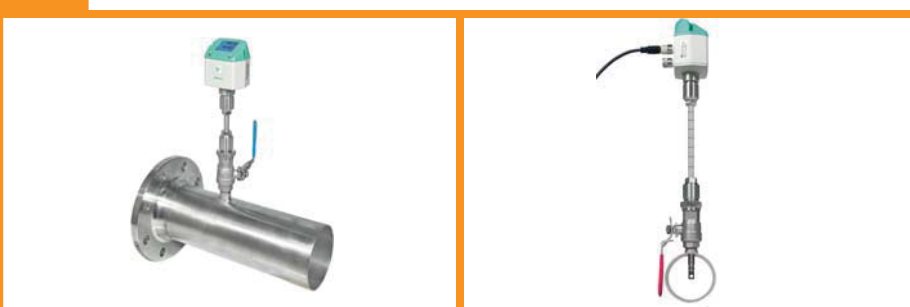
Pulse output (galvanically separated) for the total consumption.

3 Mobile use



By means of quick couplings the flow sensor can be integrated quickly into the feed hose of a machine. During the shutdown of the machine it is possible to determine the leak rate, the actual flow can be obtained when the machine is running. The power supply is effected via the power socket by means of the mains unit. For data recording over a longer period of time we recommend to use the compressed air analyzer DS 400 mobile.

4 Solution for large pipe diameters



The approved flow sensor VA 500 is available for pipe diameters of 2" to DN 300. Its constructively sophisticated design enables the installation into pipes with nominal diameters up to DN 300 even under pressure. The installation is effected by means of standard 1/2" ball valve.



VA 520 - The advantages at a glance

NEW: Modbus-RTU output

4...20 mA output for actual flow

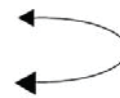
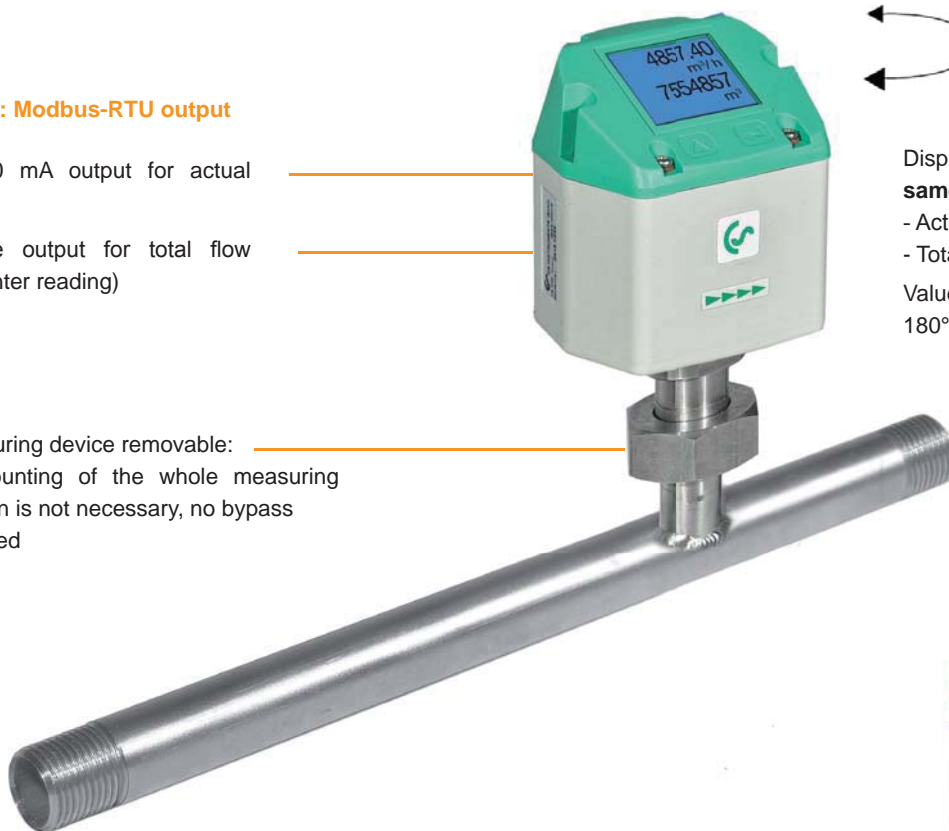
Pulse output for total flow (counter reading)

Measuring device removable: Dismounting of the whole measuring section is not necessary, no bypass required

Screw-in thread:

Easy installation into the existing pipe-line due to integrated measuring section (suitable for 1/4", 1/2", 3/4", 1", 1 1/4", 1 1/2" or 2" lines)

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



Display twistable by 180°C e.g. in case of reverse flow direction

Display shows 2 values at the same time:

- Actual flow in m³/h, l/min,...
- Total consumption (counter reading) in m³, l

Values indicated in the display turnable by 180°C, e.g. in case of overhead installation



At the touch of a button:

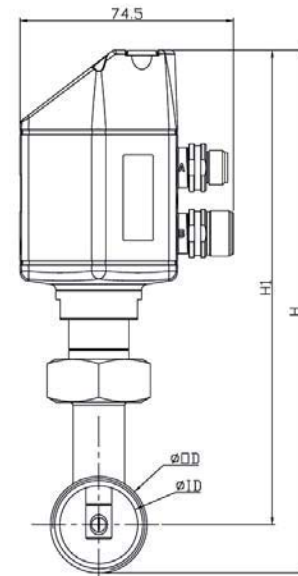
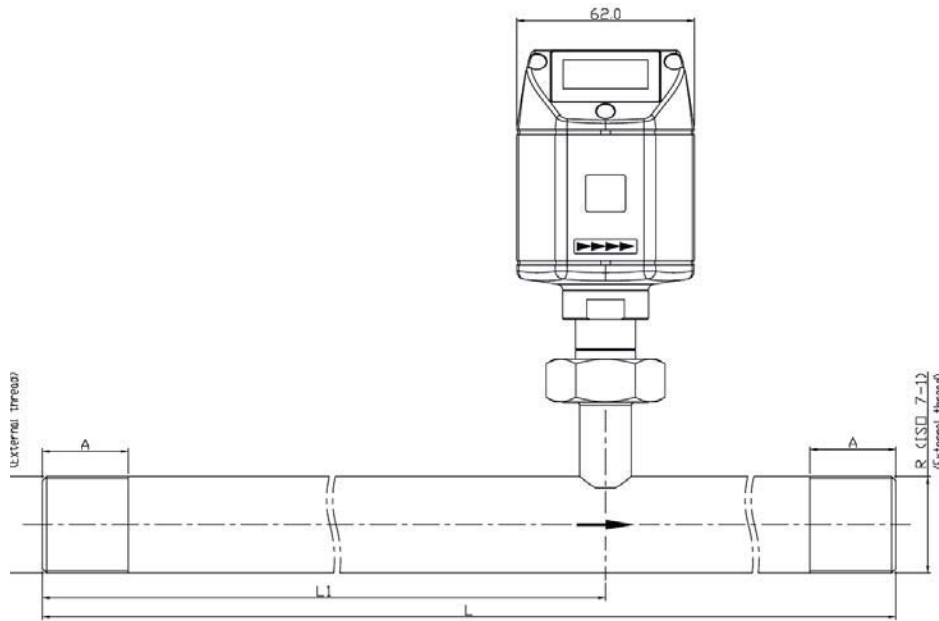
- Reset of counter reading
- selection of units
- selection of gas type
- zero-point adjustment, leak flow volume suppression

Application-technological features of the flow sensors VA 520:

- The integrated Modbus interface enables the connection to superordinated control systems like energy management systems, building management systems, SPS, SCADA,
- Easy and affordable installation
- Units freely selectable via keys at the display m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1.999.999.999 m³. Resetable to „zero“ via keypad
- Analogue output 4...20 mA, pulse output (galvanically separated)
- High measuring accuracy also 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 diagnosis functions can be read out at the display or by remote access via Modbus-RTU like e. g. exceeding Max./Min value °C, calibration cycle, error codes, serial number. All parameters can be read out and changed via Modbus

Application range of VA 520:

- Compressed air balancing, compressed air consumption measurement
- Leakage air/leak rate determination
- Mobile compressed air measurement in front of single machines / plants
- Flow measurement of process gases like e.g. nitrogen, CO2, oxygen, argon, nitrous oxide
- Flow measurement at nitrogen generators



Flow measuring ranges VA 520 for compressed air (ISO 1217:1000 mbar, 20 °C)

Connection thread	Outer pipe dia. mm	Inner pipe dia. mm	Measuring range from to	L mm	L1 mm	H mm	H1 mm	A mm
R 1/4"	13.7	8.9	0.1 90 l/min	194	137	174.7	165.7	15
R 1/2"	21.3	16.1	0.2 90 m³/h	300	210	176.4	165.7	20
R 3/4"	26.9	21.7	0.3 170 m³/h	475	275	179.2	165.7	20
R 1"	33.7	27.3	0.5 290 m³/h	475	275	182.6	165.7	25
R 1 1/4"	42.4	36.0	0.7 530 m³/h	475	275	186.9	165.7	25
R 1 1/2"	48.3	41.9	1.0 730 m³/h	475*	275	186.9	165.7	25
R 2"	60.3	53.1	2.0 1195 m³/h	475*	275	195.9	165.7	30

*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 10 x inner diameter) on site!

**Technical data
VA 520**

Parameters: m³/h, l/min (1000 mbar, 20°C) in case of compressed air resp. Nm³/h, NI/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

Meas. principle: calorimetric measurement

Sensor: Thermal mass flow sensor

Meas. medium: air, gases

Gas types adjustable via keys at display: air, nitrogen, argon, nitrous oxide, CO2, oxygen

Meas. range: see table at the left

Accuracy: ± 1.5 % of m.v. ± 0.3 % of f.s. accuracy class L1* (m.v.: of meas. value) (f.s.: of full scale)

Operating temp.: -30...80 °C

Operating pressure: up to 16 bar optional up to PN 40

Digital output: RS 485 interface, Modbus-RTU

Analogue output: 4...20 mA for m³/h resp. l/min

Pulse output: 1 pulse per m³ resp. per liter galvanically separated

Power supply: 24 VDC smoothed ± 15 %

Burden: < 500 Ω

Housing: polycarbonate

Meas. section: stainless steel, 1.4301 or 1.4404

Mounting thread meas. section: R 1/4", R 1/2", R 3/4", R 1", R 1 1/4", R 1 1/2", R 2" external thread.

Description	Order No. Stainless steel 1.4404	Order No. Stainless steel 1.4301
VA 520 flow sensor with integrated 1/4" measuring section	0695 1520	0695 0520
VA 520 flow sensor with integrated 1/2" measuring section	0695 1521	0695 0521
VA 520 flow sensor with integrated 3/4" measuring section	0695 1522	0695 0522
VA 520 flow sensor with integrated 1" measuring section	0695 1523	0695 0523
VA 520 flow sensor with integrated 1 1/4" measuring section	0695 1526	0695 0526
VA 520 flow sensor with integrated 1 1/2" measuring section	0695 1524	0695 0524
VA 520 flow sensor with integrated 2" measuring section	0695 1525	0695 0525
Option High-pressure version PN 40		Z695 0411
Option 1 % Accuracy of m.v. ± 0,3 % of f.s.		Z695 5005
Special measuring range VA 520 according to customer's requirements		Z695 4006
Connection cables:		
Connection cable 5 m (power supply, analogue output)		0553 0104
Connection cable 10 m (power supply, analogue output)		0553 0105
Pulse cable for flow sensors with M12 plug, length 5 m		0553 0106
Pulse cable for flow sensors with M12 plug, length 10 m		0553 0107
Further accessories:		
Closing cap for meas. section (Material: Aluminium)		0190 0001
Closing cap for meas. section (Material: Stainless steel 1.4404)		0190 0002
CS Service Software for FA/VA sensors incl. PC connection set, USB interface and interface adapter to the sensor		0554 2007
Mains unit in wall housing 100-240 V, 10 VA, 50-60 Hz/24 VDC, 0.35 A		0554 0108
AC adapter plug 100-240 V AC/ 24 V for VA/FA 500/520		0554 0109
5 point precision calibration with ISO certificate		3200 0001



VA 520 - The advantages at a glance

NEW: Modbus-RTU output

4...20 mA output for actual flow

Pulse output for total flow (counter reading)

Measuring device removable: Dismounting of the whole measuring section is not necessary, no bypass required

Display shows 2 values at the same time:
- Actual flow in m³/h, l/min,...
- Total consumption (counter reading) in m³, l
Values indicated in the display turnable by 180°C, e.g. in case of overhead installation

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)

At the touch of a button:

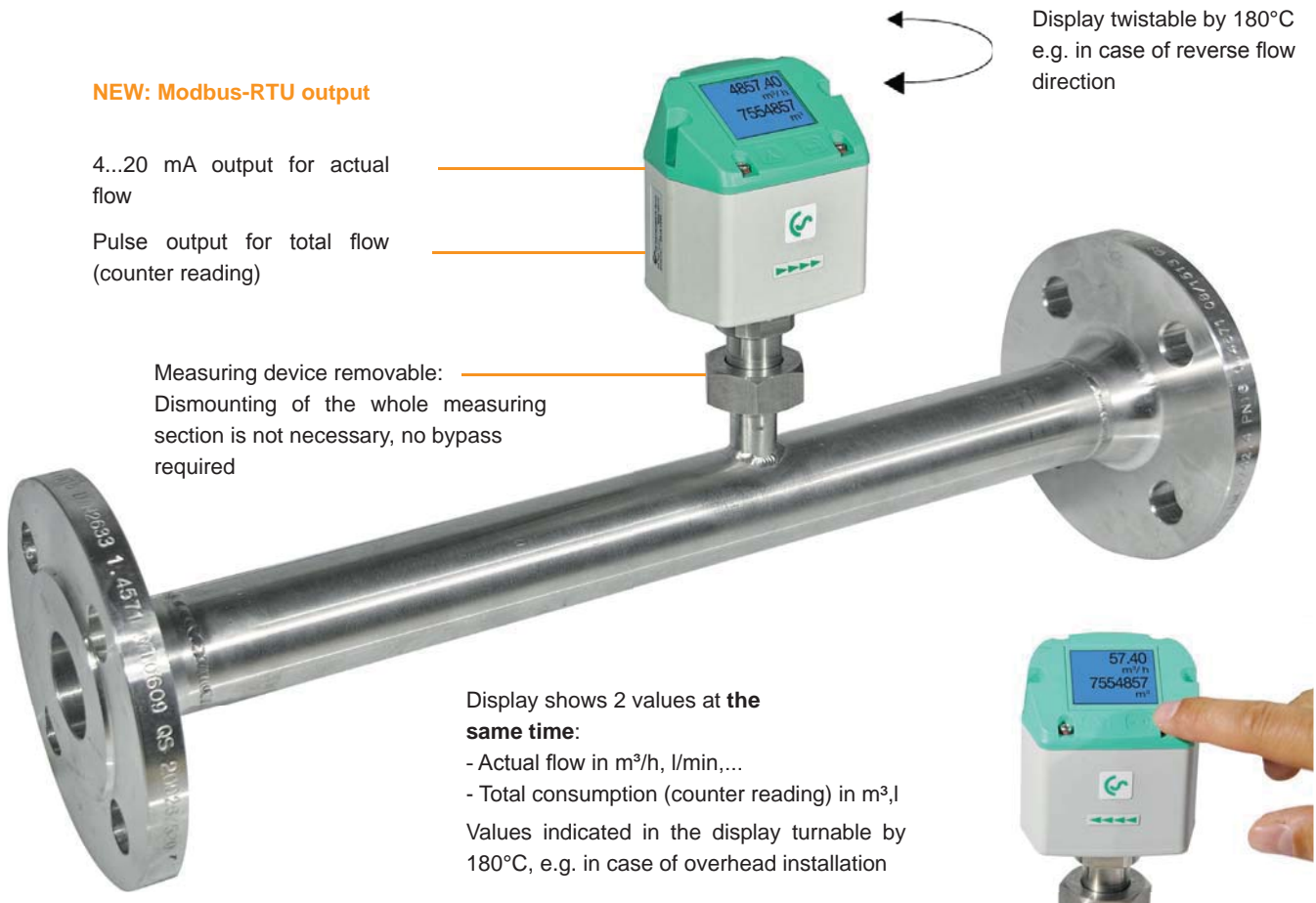
- reset of counter reading
- selection of units
- selection of gas type
- zero-point adjustment, leak flow volume suppression

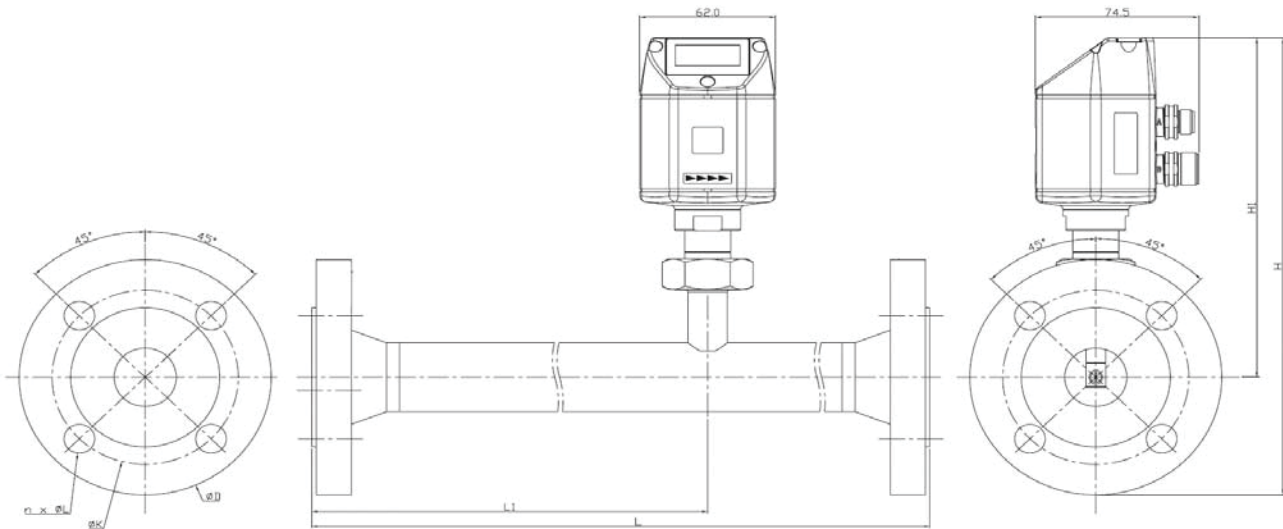
Application-technological features of the flow sensors VA 520:

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- Units freely selectable via keys at the display m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1.999.999.999 m³. Resetable to „zero“ via keypad
- Analogue output 4...20 mA, pulse output (galvanically separated)
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- Comprehensive diagnosis functions can be read out at the display or by remote access via Modbus-RTU like e. g. exceeding Max./Min valuee °C, calibration cycle, error codes, serial number. All parameters can be read out and changed via Modbus

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- Compressed air balancing, compressed air consumption measurement
- Leakage air/leak rate determination
- Flow measurement of process gases like e.g. nitrogen, CO₂, oxygen, argon, nitrous oxide
- Flow measurement at nitrogen generators





Flow measuring ranges VA 520 for compressed air (ISO 1217:1000 mbar, 20 °C)					Flange DIN EN 1092-1					
Measuring section	Outer pipe dia. mm	Inner pipe dia. mm	Measuring range from to	L mm	L1 mm	H mm	H1 mm	ØD	ØK	n x ØL
DN 15	21.3	16.1	0.2 90 m³/h	300	210	213.2	165.7	95	65	4 x 14
DN 20	26.9	21.7	0.3 170 m³/h	475	275	218.2	165.7	105	75	4 x 14
DN 25	33.7	27.3	0.5 290 m³/h	475	275	223.2	165.7	115	85	4 x 14
DN 32	42.4	36.0	0.7 530 m³/h	475	275	235.7	165.7	140	100	4 x 18
DN 40	48.3	41.9	1.0 730 m³/h	475*	275	240.7	165.7	150	110	4 x 18
DN 50	60.3	53.1	2.0 1195 m³/h	475*	275	248.2	165.7	165	125	4 x 18

*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 10 x inner diameter) on site

Technical data VA 520

Parameters: m³/h, l/min (1000 mbar, 20°C) in case of compressed air resp. Nm³/h, NI/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

Meas. principle: calorimetric measurement

Sensor: Thermal mass flow sensor

Meas. medium: air, gases

Gas types adjustable via keys at display: air, nitrogen, argon, nitrous oxide, CO2, oxygen

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Accuracy: ± 1.5 % of m.v. ± 0.3 % of f.s.

accuracy class

L1*

(m.v.: of meas. value)

(f.s.: of full scale)

Operating temp.: -30...80 °C

Operating press.: up to 16 bar
Optional up to PN 40

Digital output: RS 485 interface, Modbus-RTU

Analogue output: 4...20 mA for m³/h resp. l/min

Pulse output: 1 pulse per m³ resp. per liter galvanically separated

Power supply: 24 VDC smoothed ± 15 %

Burden: < 500 Ω

Housing: polycarbonate

Meas. section: stainless steel 1.4301 or 1.4404

Flanges: Weld neck flange according to DIN EN 1092-1, Groove-faced and tongue-faced on request

Description	Order No.
VA 520 flow sensor with integrated DN 15 measuring section with weld neck flange	0695 2521
VA 520 flow sensor with integrated DN 20 measuring section with weld neck flange	0695 2522
VA 520 flow sensor with integrated DN 25 measuring section with weld neck flange	0695 2523
VA 520 flow sensor with integrated DN 32 measuring section with weld neck flange	0695 2526
VA 520 flow sensor with integrated DN 40 measuring section with weld neck flange	0695 2524
VA 520 flow sensor with integrated DN 50 measuring section with weld neck flange	0695 2525
Option High-pressure version PN 40	Z695 0411
Option 1 % Accuracy of m.v. ± 0,3 % of f.s.	Z695 5005
Special measuring range VA 520 according to customer's requirements	Z695 4006
Connection cables:	
Connection cable 5 m (power supply, analogue output)	0553 0104
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Mains unit in wall housing 100-240 V, 10 VA, 50-60 Hz/24 VDC, 0.35 A	0554 0108
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