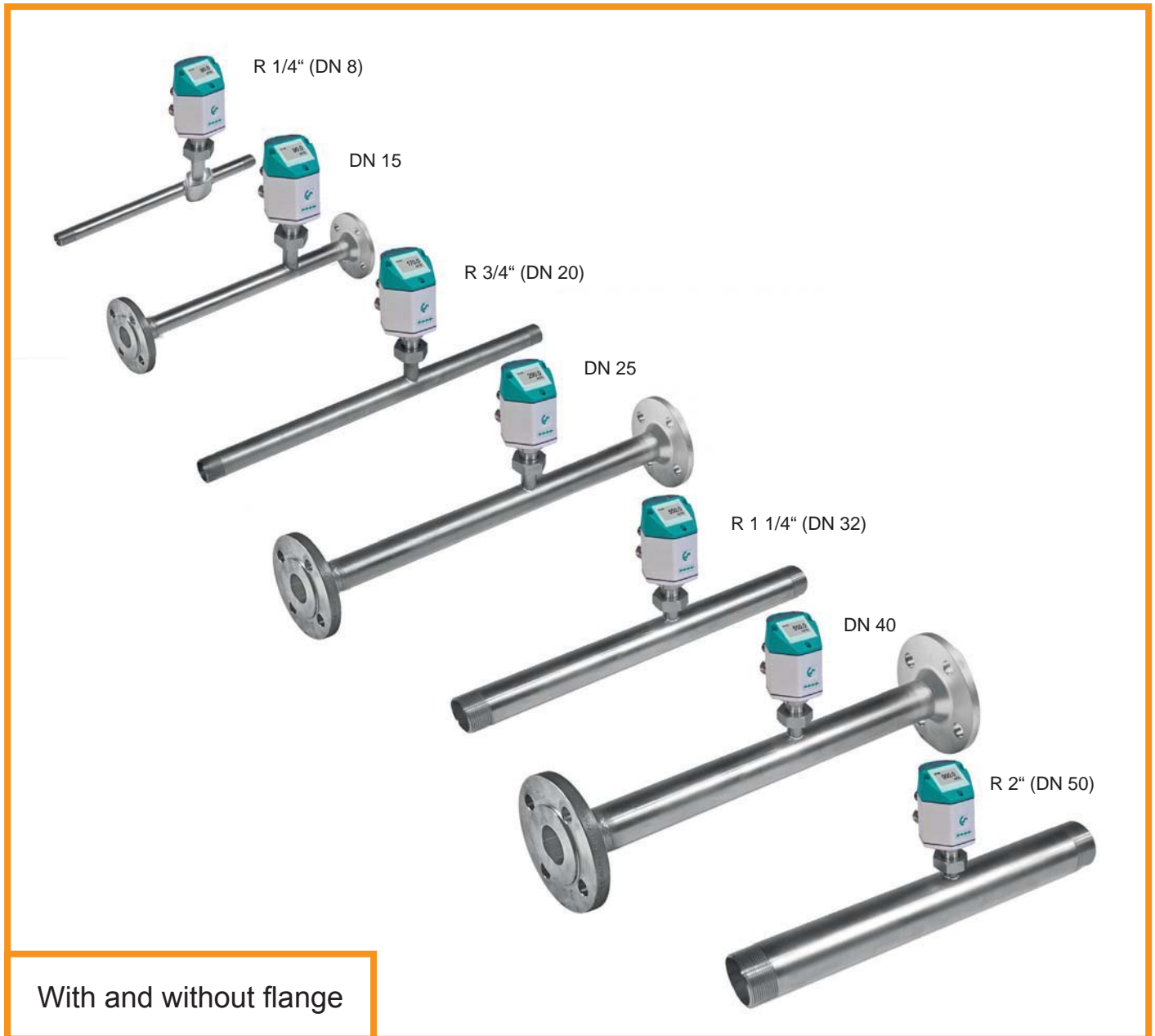




VA 420

The affordable flow meter for compressed air and gases



Intelligent solutions for accurate flow measurement for compressed air and gases

The new affordable flow meters VA 420 work according to the approved calorimetric measuring principle. In this process a heated sensor is cooled down by the gas circulating around it. The flow dependent cooling-down

is used as a measuring effect while the degree of cooling-down is directly depending on the passing air resp. gas mass. Therefore, an additional pressure and temperature compensation is not necessary.

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 affordable flow meter VA 420. VA 400 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.

The installation of the compressed air flow meter VA 420 can be done easily and quickly. A special advantage is the removable measuring device. The measuring device can be demounted quickly and easily for calibration or cleaning purposes without removing the complete measuring section.



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



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 420** enables the removal and cleaning of the „measuring device“ with e.g. soap water without any dismantling 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 meters which have been on the market up to now generally cannot be cleaned and will be exchanged if they are soiled. In case

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.

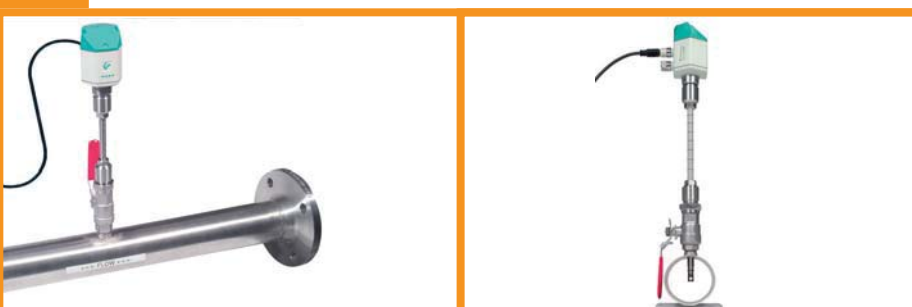
Pulse output (galvanically separated) for the total consumption.

3 Mobile use



By means of quick couplings the flow meter 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

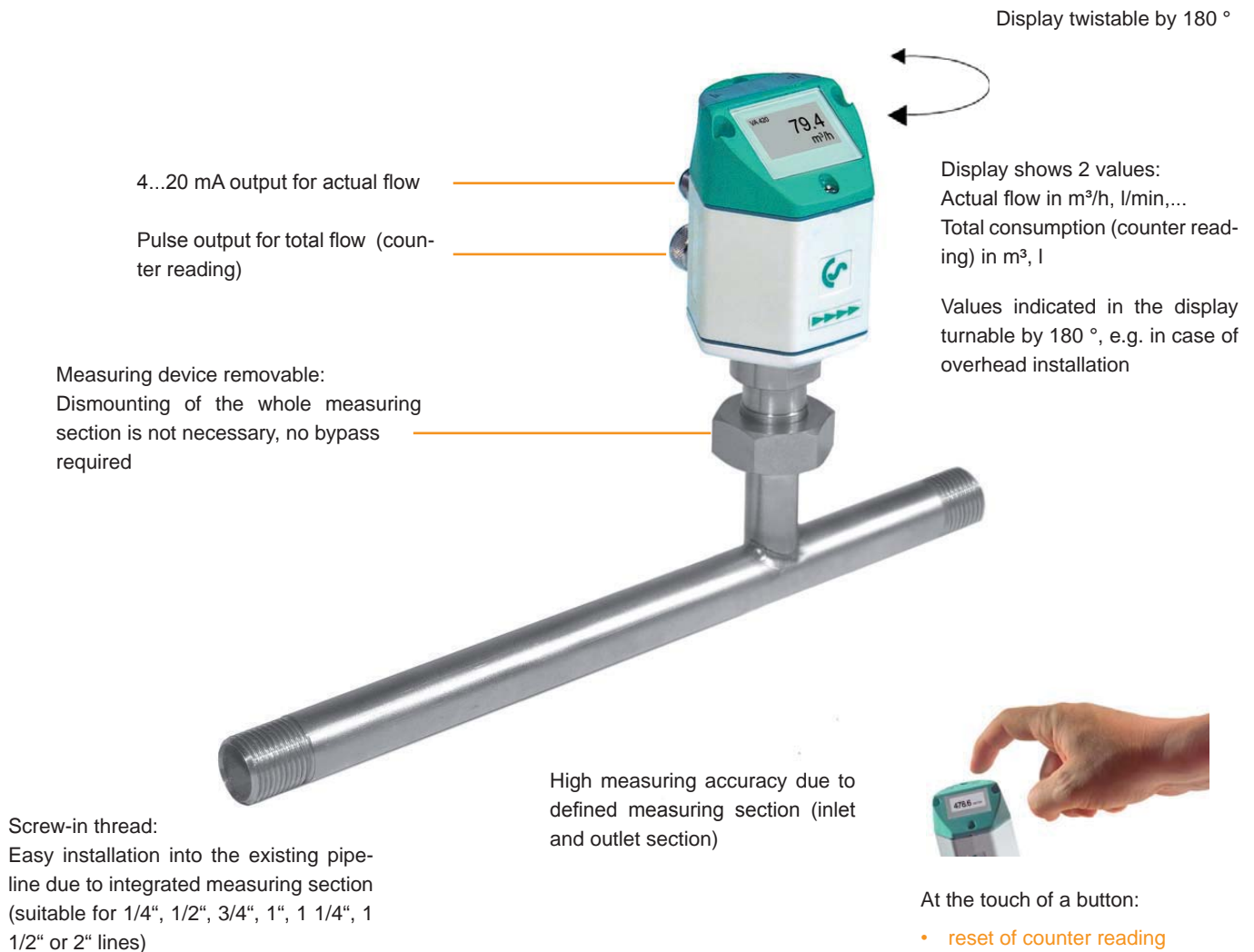
4 Solution for large pipe diameters



The approved flow sensor **VA 400** 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 420 - The advantages at a glance

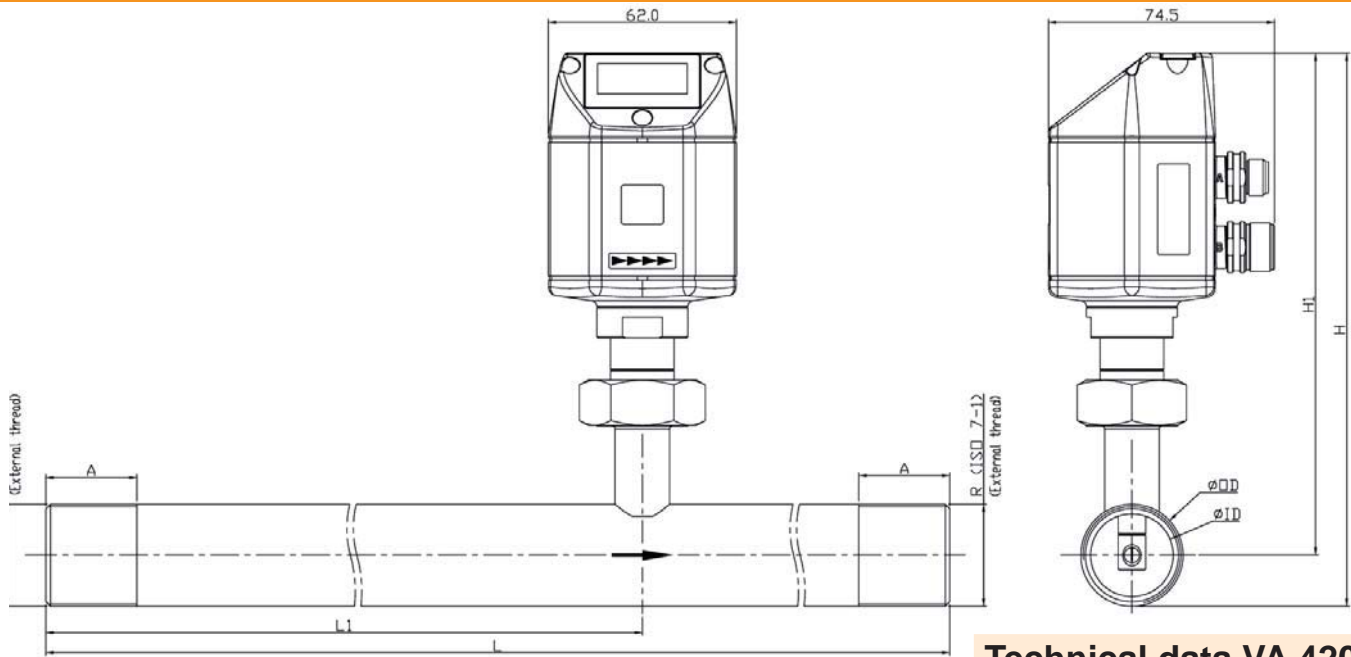


Application-technological features of the flow meters VA 420:

- Easy and affordable installation
- Units freely selectable via keypad 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
- Gas types adjustable via software (nitrogen, oxygen, CO₂, nitrous oxide, argon)

Application range of VA 420:

- 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 420 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	0.8	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	480 m³/h	475	275	186.9	165.7	25
R 1 1/2"	48.3	41.9	1.0	550 m³/h	475*	275	186.9	165.7	25
R 2"	60.3	53.1	2.0	900 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

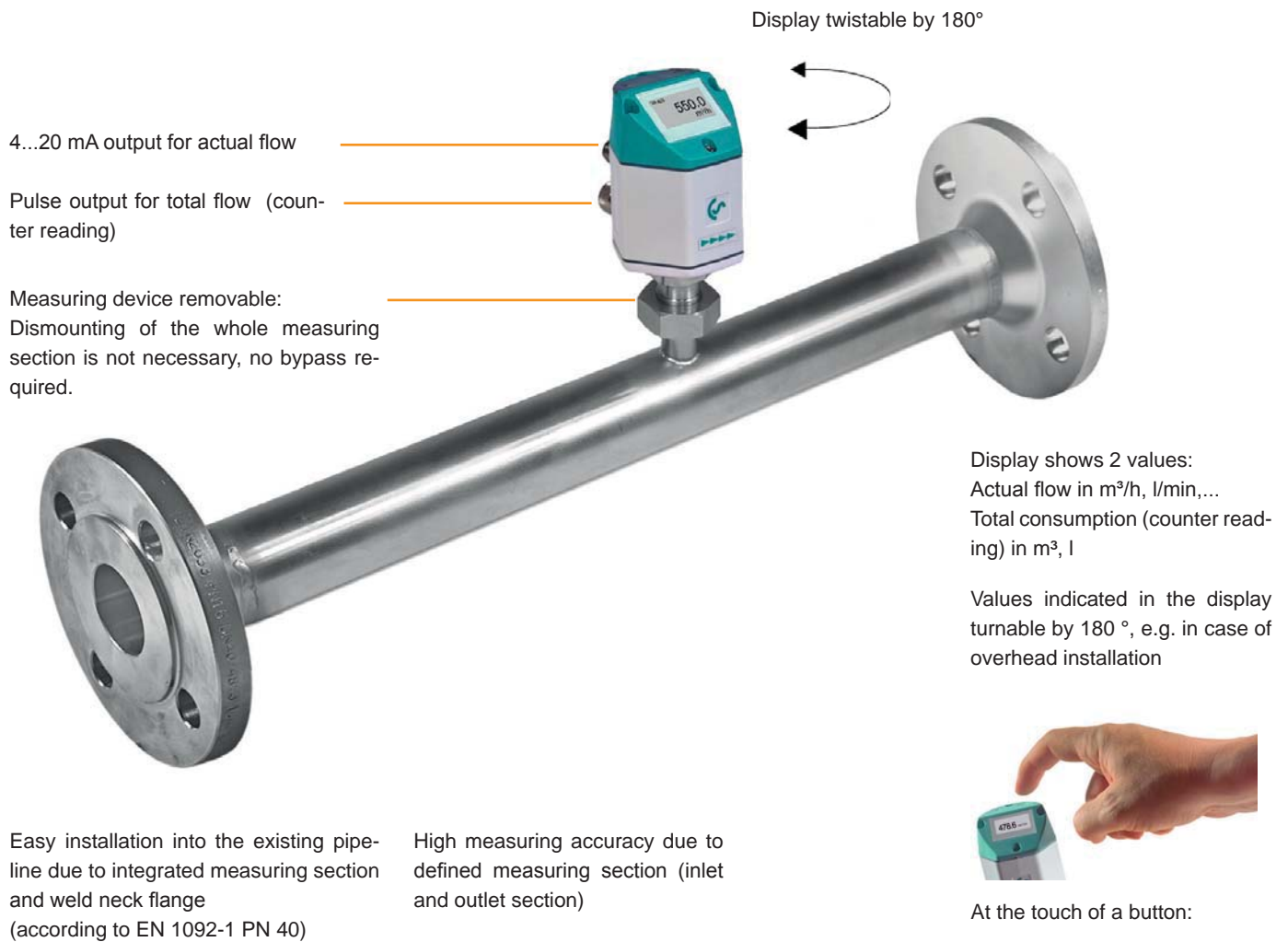
Description	Order No. Stainless steel 1.4404	Order No. Stainless steel 1.4301
VA 420 flow meter with integrated 1/4" measuring section	0695 1420	0695 0420
VA 420 flow meter with integrated 1/2" measuring section	0695 1421	0695 0421
VA 420 flow meter with integrated 3/4" measuring section	0695 1422	0695 0422
VA 420 flow meter with integrated 1" measuring section	0695 1423	0695 0423
VA 420 flow meter with integrated 1 1/4" measuring section	0695 1426	0695 0426
VA 420 flow meter with integrated 1 1/2" measuring section	0695 1424	0695 0424
VA 420 flow meter with integrated 2" measuring section	0695 1425	0695 0425
Option High-pressure version PN 40		Z695 0411
Special measuring range VA 420 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 VA 420 (Material: Aluminium)		0190 0001
Closing cap for meas. section VA 420 (Material: Stainless steel 1.4404)		0190 0002
CS Service Software for FA/VA 400 sensors incl. PC connection set, USB interface and interface adapter to the sensor		0554 2005
Mains unit in wall housing 100-240 V, 10 VA, 50-60 Hz/24 VDC, 0.35 A		0554 0108
Mains unit 100-240 VAC / 24 VDC, 0.35 A for VA/FA 400 Series, 2 m cable		0554 0107
5 point precision calibration with ISO certificate		3200 0001

Technical data VA 420

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
Adjustable via keypad:	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min
Meas. principle:	calorimetric measurement
Sensor:	2 x silicium chip
Meas. medium:	air, gases
Gas types adjustable via software:	air, nitrogen, argon, nitrous oxide, CO ₂ , oxygen
Meas. range:	see table at the left
Accuracy:	± 1.5% of m.v., ± 0.05% of f.s. On request: Special calibration via 5 point ISO calibration certificate
Operating temp.:	-30...80 °C
Operating press.:	up to 16 bar Optional up to PN 40
Analogue output:	4...20 mA for m³/h resp. l/min
Pulse output:	1 pulse per m³ resp. per liter galvanically separated
PC connection:	SDI interface
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



VA 420 - The advantages at a glance



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 twistable by 180°

Display shows 2 values:
Actual flow in m³/h, l/min,...
Total consumption (counter reading) in m³, l

Values indicated in the display turnable by 180 °, 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)

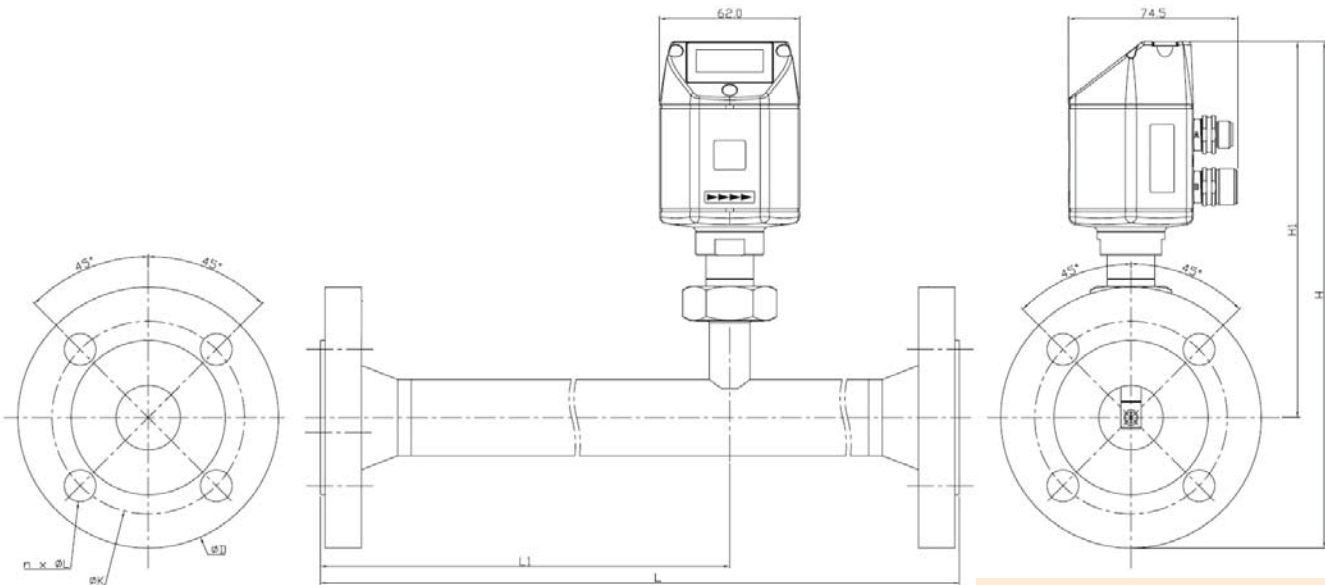
- At the touch of a button:
- reset of counter reading
 - selection of units

Application-technological features of the flow meters VA 420:

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- Units freely selectable via keypad 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, Resettable 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
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- Gas types adjustable via software (nitrogen, oxygen, CO₂, nitrous oxide, argon)

Application range of VA 420:

- 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



Technical data VA 420

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

Adjustable via keypad: m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min

Meas. principle: calorimetric measurement

Sensor: 2 x silicium chip

Meas. medium: air, gases

Gas types adjustable via software: air, nitrogen, argon, nitrous oxide, CO₂, oxygen

Meas. range: see table at the left

Accuracy: ± 1.5% of m.v., ± 0.05% of f.s. On request: Special calibration via 5 point ISO calibration certificate

Operating temp.: -30...80 °C

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

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

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

PC connection: SDI interface

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

Flow measuring ranges VA 420 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 m ³ /h	300	210	213.2	165.7	95	65	4 x 14
DN 20	26.9	21.7	0.3	170 m ³ /h	475	275	218.2	165.7	105	75	4 x 14
DN 25	33.7	27.3	0.5	290 m ³ /h	475	275	223.2	165.7	115	85	4 x 14
DN 32	42.4	36.0	0.7	480 m ³ /h	475	275	235.7	165.7	140	100	4 x 18
DN 40	48.3	41.9	1.0	550 m ³ /h	475*	275	240.7	165.7	150	110	4 x 18
DN 50	60.3	53.1	2.0	900 m ³ /h	475*	275	248.2	165.7	165	125	4 x 18

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

Description	Order No.
VA 420 flow meter with integrated DN 15 measuring section with weld neck flange	0695 2421
VA 420 flow meter with integrated DN 20 measuring section with weld neck flange	0695 2422
VA 420 flow meter with integrated DN 25 measuring section with weld neck flange	0695 2423
VA 420 flow meter with integrated DN 32 measuring section with weld neck flange	0695 2426
VA 420 flow meter with integrated DN 40 measuring section with weld neck flange	0695 2424
VA 420 flow meter with integrated DN 50 measuring section with weld neck flange	0695 2425
Option High-pressure version PN 40	Z695 0411
Special measuring range VA 420 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
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Closing cap for meas. section VA 420 (Material: Stainless steel 1.4404)	0190 0002
CS Service Software for FA/VA 400 sensors incl. PC connection set, USB interface and interface adapter to the sensor	0554 2005
Mains unit in wall housing 100-240 V, 10 VA, 50-60 Hz/24 VDC, 0.35 A	0554 0108
Mains unit 100-240 VAC / 24 VDC, 0.35 A for VA/FA 400 Series, 2 m cable	0554 0107
5 point precision calibration with ISO certificate	3200 0001