



Application-technological features of the consumption counters S 420:

- Easy and affordable installation
- Units freely selectable via keypad m³/h, m³/min, l/min, l/s, g/min, kg/s, cfm
- Compressed air counter up to 1,999,999,999 m³
- Analogue output 4...20 mA, pulse output (galvanically separated)
- High measuring accuracy also in the lower measuring range (ideal for leakage measurement)
- Negligible small loss of pressure
- Thermal mass flow principle, no additional pressure and temperature measurement necessary
- Gas types adjustable via software (N₂, O₂, CO₂, N₂O, Ar)

Volumetric flow ranges S 420

Connection thread	DN	Inner pipe diam. mm	Measuring range from to
1/4"	DN8	8.8	0.5...90.1 l/min
1/2"	DN15	16.1	0.5...90 m ³ /h
* 3/4"	DN20	21.7	0.9...170 m ³ /h
* 1"	DN25	27.3	1.5...290 m ³ /h
* 1 1/4"	DN32	36	2.4...480 m ³ /h
* 1 1/2"	DN40	41.9	2.8...552.76 m ³ /h
* 2"	DN50	53.1	4.5...900 m ³ /h
* 2 1/2"	DN65	68.9	5.1...1026.5 m ³ /h
* 3"	DN80	80.9	7.1...1424.4 m ³ /h

Stated flow values are at standard conditions of Ps=0.1MPa and Ts=20°C with medium air.

* Attention:

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

Application range of S 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. N₂, CO₂, O₂, Ar, N₂O
- Flow measurement at nitrogen generators



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

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

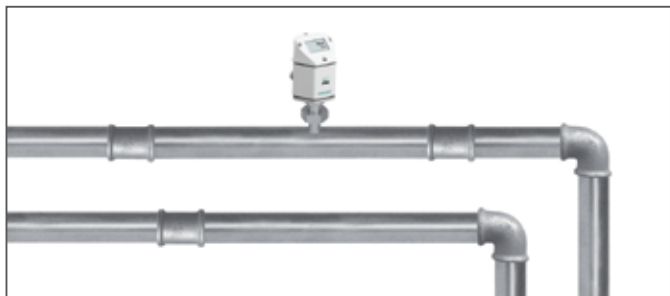


S 420 can be removed from the compressed air or gas line easily for calibration or exchange purposes. The opening can be closed with the optional closing cap (see order information). This is a special advantage as most flow meters on the market require an expensive bypass line in such a case.

The re-installation of the measurement device is simple as the sensor unit fits into the pipe section only in one position.

New: The design of S 420 enables the removal of the "measuring device" without any dismounting of the measuring section.

Stationary use



For stationary use there are following outputs available for data transfer to a building management system or PLC:
4...20 mA for actual consumption.
Pulse output (galvanically separated) for the total consumption.

Mobile use



By means of quick couplings S 420 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 consumption can be obtained when the machine is running. For data recording over a longer period of time we recommend to use compressed air analyzer S 551.

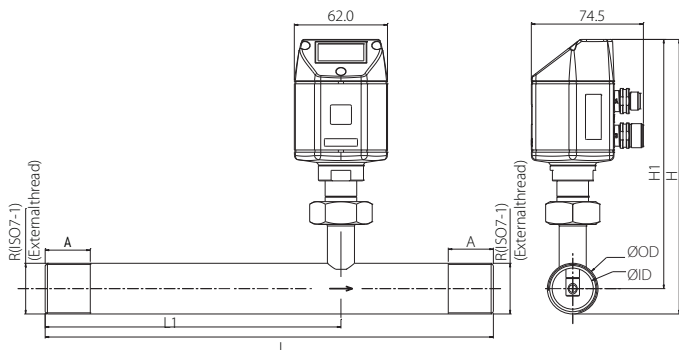
For the power supply a mains adaptor is available (see order information).

Solution for large pipe diameters

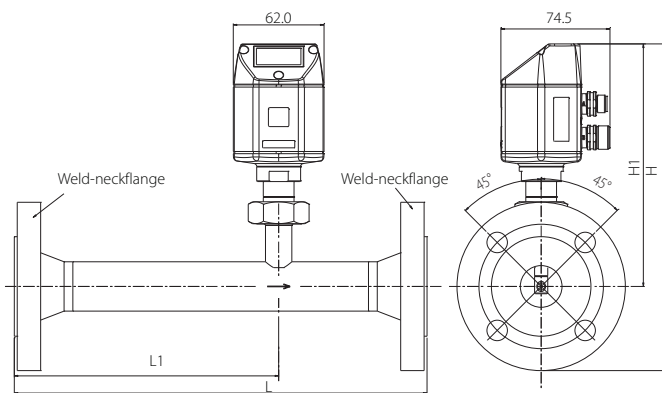


For pipe diameters of DN 50 to DN 300 the insertion type flow meter S 400 is available. This sensor can be inserted into the compressed air or gas pipe through a standard 1/2" ball valve. This allows installations and removal of sensors under pressure without shutting down the air or gas system.

Dimensional drawings



Pipe nominal size inch/(DN)	ØODxthickness/(ID) pipediameter (mm)	L total length (mm)	L1 inlet length (mm)	H total height (mm)	H1 from pipe center to casing top (mm)	R External Thread	A Thread Length (mm)
1/4" (DN8)	Ø13.7 x 2.6/(Ø8.5)	194	137	176.0	165.7	R1/4"	15
1/2" (DN15)	Ø21.3 x 2.6/(Ø16.1)	300	210	176.4	165.7	R1/2"	20
3/4" (DN20)	Ø26.9 x 2.6/(Ø21.7)	475	275	179.2	165.7	R3/4"	20
1" (DN25)	Ø33.7 x 3.2/(Ø27.3)	475	275	182.6	165.7	R1"	25
1¼" (DN32)	Ø42.4 x 3.2/(Ø36.0)	475	275	186.9	165.7	R1¼"	25
1½" (DN40)	Ø48.3 x 3.2/(Ø41.9)	475	275	189.9	165.7	R1½"	25
2" (DN50)	Ø60.3 x 3.6/(Ø53.1)	475	275	195.9	165.7	R2"	30



Pipe nominal size inch/(DN)	Outer diameter x thickness/(inner dia) (mm)	L total length (mm)	L1 inlet length (mm)	H total height (mm)	H1 from pipe center to casing top (mm)
1/2" (DN15)	Ø21.3 x 2.6/(Ø16.1)	300	210	213.2	165.7
3/4" (DN20)	Ø26.9 x 2.6/(Ø21.7)	475	275	218.2	165.7
1" (DN25)	Ø33.7 x 3.2/(Ø27.3)	475	275	223.2	165.7
1¼" (DN32)	Ø42.4 x 3.2/(Ø36.0)	475	275	235.7	165.7
1½" (DN40)	Ø48.3 x 3.2/(Ø41.9)	475	275	240.7	165.7
2" (DN50)	Ø60.3 x 3.6/(Ø53.1)	475	275	248.2	165.7
2½" (DN65)	Ø76.1 x 3.6/(Ø68.9)	475	275	266.1	173.6
3" (DN80)	Ø88.9 x 4.0/(Ø80.9)	475	275	280.0	180.0

Technical data S 420

Measured unit: m³/h, m³/min, l/min, cfm, m/s, kg/min, kg/h, kg/s
 (Reference standard can be programmed)
 Default values:
 * Air: Ps=1000 hPa, Ts=20°C
 all other gases: Ps=1013 hPa, Ts=0°C

Accuracy: ± (2% of measured value + 0.3% full scale)
 Temperature drift: 0.05 % / K
 Pressure drift: 0.5 % / MPa
 Stated accuracy at: Ambient/process temperature 23 °C ± 3°C
 Ambient/process humidity < 90 %, no condensation
 Process pressure at 0.6 MPa

Process connection: R thread(ISO 7-1), Flange EN 1092-1, ANSI / B16.5, JIS B2220

Principle of measurement: Thermal mass flow

Sensor: Glass coated resistive sensor

Measuring medium: Air, N₂, O₂, Ar, N₂O, CO₂

Operating temperature: -30 °C to +50 °C
 -10 °C to +50 °C with local display

Operating pressure: up to 1.6 MPa
 up to 4.0 MPa (Optional)

Analogue output: Signal: 4 to 20 mA
 Scaling: 0 to maximum volume flow
 Accuracy: 0.06 mA

Pulse output: 1 pulse per consumption unit, insulated switch output, max. 30 VDC, 20 mA

Power supply: 12-30 VDC, 100 mA

Display: 128 x 64 pixel, with backlight

Material: Measuring section: Stainless steel 1.4404 (SUS 316L)

* Ps: Standard pressure Ts: Standard temperature

Order form

S 420	Line size	Process connection	Gas medium	Display	Description
0695 4200					S 420, inline type flow sensor
0695 4201					S 420, inline flow sensor, 4 MPa version
	Z				DN8
	A				DN15 <i>Standard</i>
	B				DN20
	C				DN25
	D				DN32
	E				DN40
	F				DN50
	G				DN65
	H				DN80
		A			R thread (ISO 7-1) <i>Standard</i>
		B			EN-1092-1, PN40
		C			Flange ANSI 16.5
		D			Flange JIS B2220
A1007			A		Medium Air <i>Standard</i>
A1008			B		Medium CO ₂
A1009			C		Medium O ₂ (oil & grease free cleansed)
A1010			D		Medium N ₂
A1011			E		Medium N ₂ O
A1012			F		Medium Ar
A1013			G		Medium Natural gas (exact gas mix required)
A1015			H		Others (please specify the gas or gas mix)
A1016			I		Medium He (Real gas calibration)
A1017			J		Medium Propane C ₃ H ₈
				A	Without display <i>Standard</i>
A1022				B	With display

for a complete order code the pipe diameter has to be defined (DN8 ... DN80)

Order No.	Description
0553 0104	Sensor cable 5 m, with M12 connector, open wires
0553 0105	Sensor cable 10 m, with M12 connector, open wires
0554 2005	Service kit for sensor configuration including software
0554 0007	Power supply wall mountable, input: 85...264 VAC, output: 24 VDC, 15W, without cable
0554 0107	Mains unit 100-240 VAC/24 VDC, 0.5 A for S 400/S 201 Series, 2 m cable
3200 0001	Re-Calibration of flow sensor with certificate
3200 0005	Oil & grease free cleaned option for flow sensors (for Oxygen it is already included in A1009)
3200 0020	Real gas calibration in selected gas to ensure best accuracy
0553 0122	Sensor cable, 5 pole, AWG24, 5.0 mm outer diameter, black (per meter)