

Description

Compact single point flow monitor for use in zone 2 (gases) and zones 21, 22 (dust), MIN or MAX monitoring options, suitable for air, gases, water, aqueous liquids, oil.

Designed for use in

- ventilation systems with large pipe sizes (DN50 plus)
- cooling equipment with pipes with thick-walled insulation

If the flow rate falls below (MIN-function) or exceeds (MAX-function) the value adjusted by means of potentiometer, the signal output switches to 0 V-level and the yellow LED (Q) lights.



FS20-EX...

EC-type-examination certificate to EN 60079-0:2012, EN 60079-15:2010 and EN 60079-31:2014

- II 3G Ex nA IIC T4 Gc
- II 2D Ex tb IIIC T120°C Db

Ranges of application

	gases	dust
category 1	zone 0	zone 20
category 2	zone 1	zone 21 ✓
category 3	zone 2 ✓	zone 22 ✓

Features

- wear-resistant compact design, with stainless steel 1.4571 monitoring head and housing
- push-in type monitoring head
- switch point steplessly adjustable by means of potentiometer
- fault indication by yellow LED
- status indication by green LED
- media temperature range -10°C ... +100°C/+14°F ... +212°F
- 3-core PVC cable, 3 x 0.22 mm² (AWG 24) conductor resistance 90 Ω/km
- signal output with HighSide-MOSFET
- protected against short circuits and overloads

Ordering information

Flow Monitor (calorimetric)

FS20-EX compact flow monitor with variable push-in type monitoring head

Power supply

U1 DC 24 V (± 20%)

Flow switch point

MIN

MAX

Media

A air, gases

W water, aqueous liquids, oil

Fitting material

M1 stainless steel 1.4571

M2 Hastelloy C4 2.4610

Process connection

00 without flange, threaded installation bush as accessory

Length of shank

L30 300 mm/11.8 in. (standard)

L20 200 mm/7.87 in.

Cable length

Z02 2 m cable (standard)

Z05 5 m cable

Z10 10 m cable

Z20 20 m cable

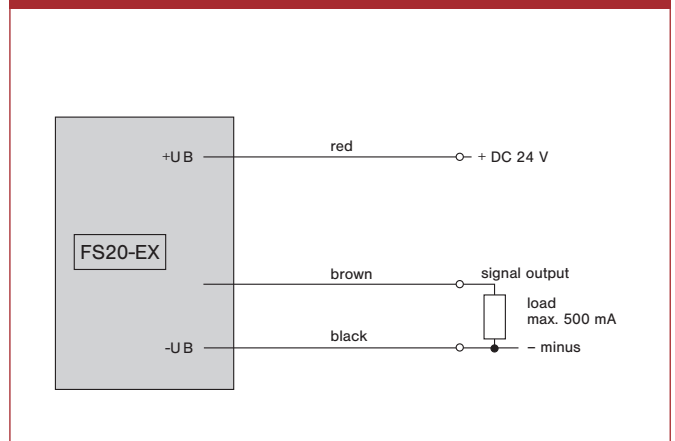
Certification

T5 approval to EC directive 94/9/EG (ATEX) *

FS20-EX - U1 MIN W M1 00 L30 Z02 T5 ordering example

*) please see also section 0.

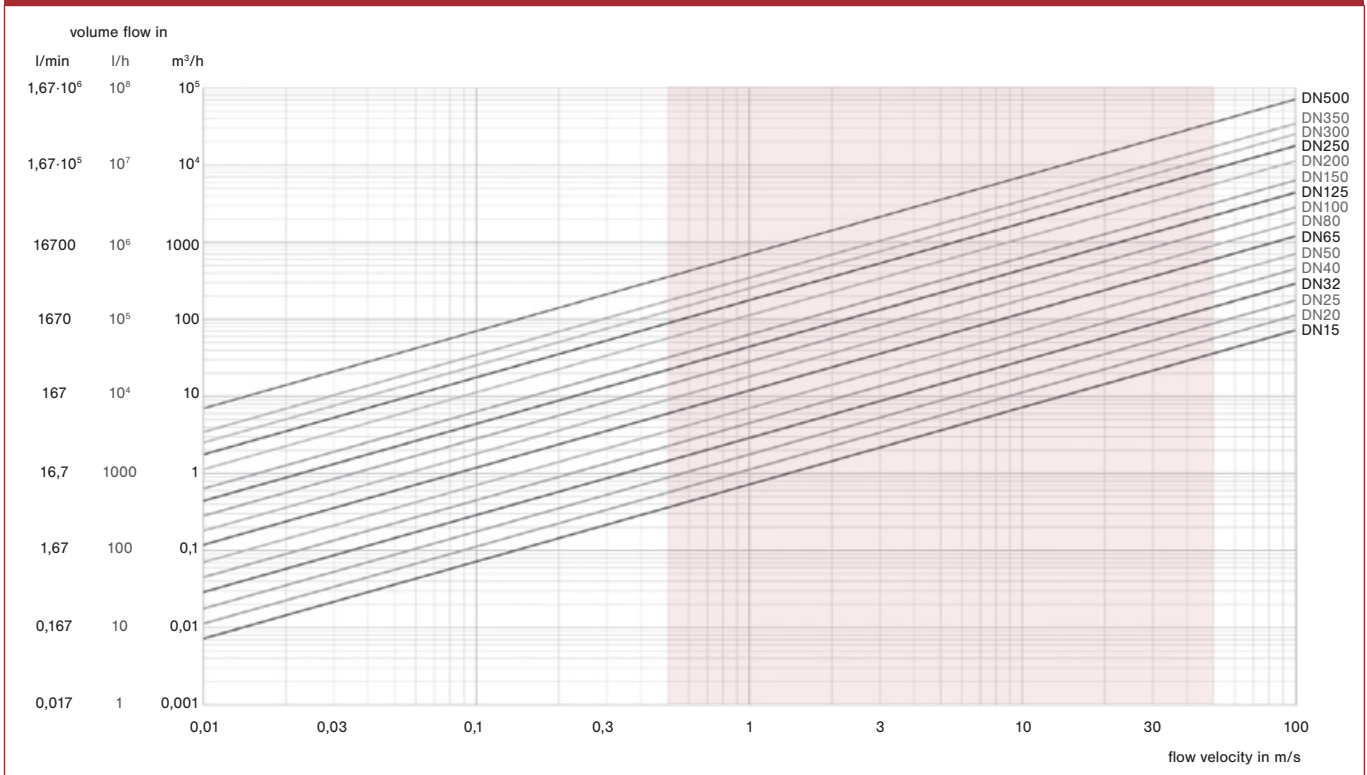
Connection diagram FS20-EX



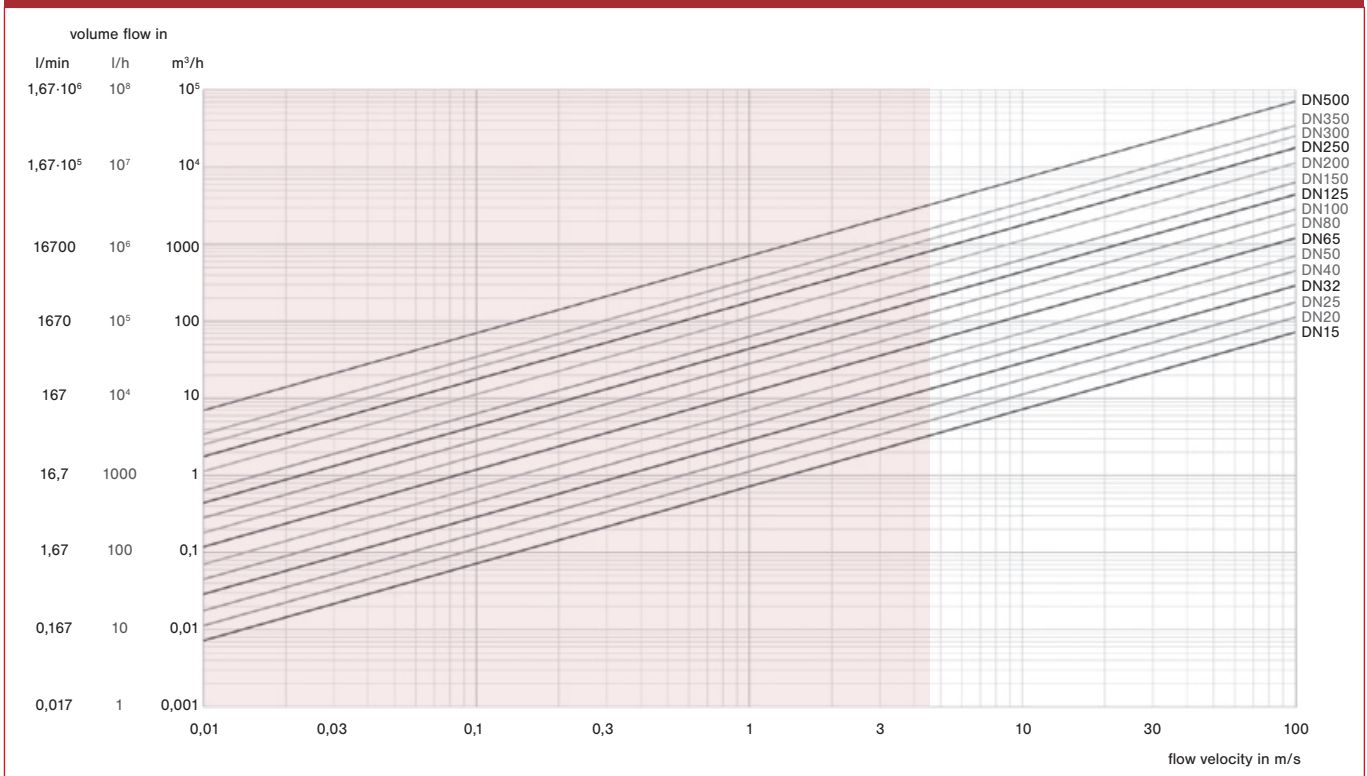
TECHNICAL DATA (ambient temperature $T_u = 25\text{ °C}/77\text{ °F}$, operating voltage $U_B = \text{DC } 24\text{ V}$)

General data		FS20-EX
Suitable for		air, gases, water, aqueous liquids, oil
Monitoring function	flow speed	switch point (min/max)
	fault indication	LED (yellow)
	signal output	Power MOSFET, high side switch, short circuit proof max. load 500 mA, inductive load max. 100 mA
Temperature range	liquid/gas	-10 ... +100 °C/+14 ... +212 °F
	ambience	-25 ... +65 °C/-13 ... +149 °F
Electrical data		
Operating voltage U_B		DC 24 V ($\pm 20\%$, at the device – please consider voltage drop)
Power consumption (without load)	gases	28 mA $\pm 5\%$
	liquids	57 mA $\pm 3\%$
Status indication		LED (green)
MTTF (SN 29500)		519 years
Flow monitoring		
Flow response level adjustment	air	0,5 ... 50 m/s / 1.64 ... 164 fps with atmospheric pressure (see diagram „adjustment range air“)
	water, oil	0,01 ... 4,5 m/s / 0.0328 ... 14.8 fps (see diagram „adjustment range water/oil“)
Repeatability ⁽¹⁾		$\leq \pm 3\%$ of the set value
Response delay	water	typ. 1 s ⁽²⁾
	air	typ. 2 s ⁽³⁾
	oil	typ. 1,5 s ⁽²⁾
Switch point drift because of temperature change of the medium		approx. $\pm 1.0\%$ of the set value/°C / 1.8 % of the set value/°F
Mechanical data		
Type of monitoring head		push-in
Diameter of shank		18 mm/0.709 in. without thread
Length of shank		300 mm/11.8 in. (standard) / 200 mm/7.87 in.
Length of sensor		14 mm/0.551 in.
Pressure resistance of sensor ⁽⁴⁾		100 bar/1450 psi
Pressure resistance when installed with threaded installation bush ⁽⁴⁾		25 bar/363 psi
Degree of protection		IP65
Materials	fitting	stainless steel 1.4571/Hastelloy C4 2.4610 (wetted)
	sensor	stainless steel 1.4571/Hastelloy C4 2.4610 (wetted)
	connection sensor/fitting	laser welded
	housing	stainless steel 1.4571
	cable	PVC
	cable gland	nickel plated brass, TPE
	cap	stainless steel 1.4571
o-ring	FKM (wetted, plug-in and push-in type)	
Weight		approx. 770 g/1.70 lb
⁽¹⁾ of the set value, at constant temperature and flow conditions, and stable thermal conductivity ⁽²⁾ delay with the switch point set to 1,8 m/s and the flow at 2 m/s, after a sudden complete stop ⁽³⁾ delay with the switch point set to 18 m/s and the flow at 20 m/s, after a sudden complete stop ⁽⁴⁾ admissible operating pressure DIN 2401, measured at max. temperature (= max. medium temperature)		

Adjustment range air (with atmospheric pressure)



Adjustment range water/oil



A

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12a

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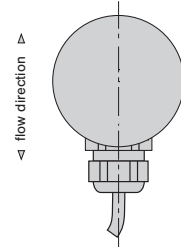
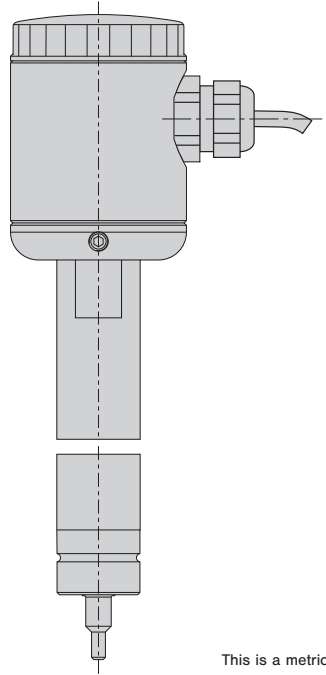
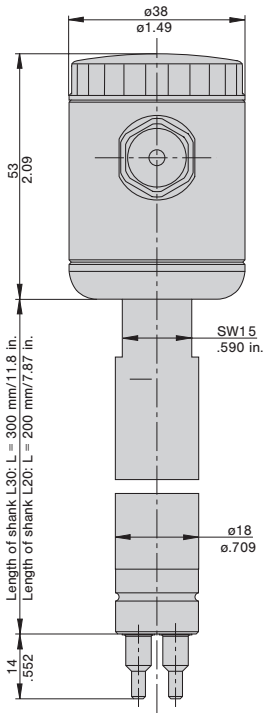
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B

Dimensions



This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

A

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12a

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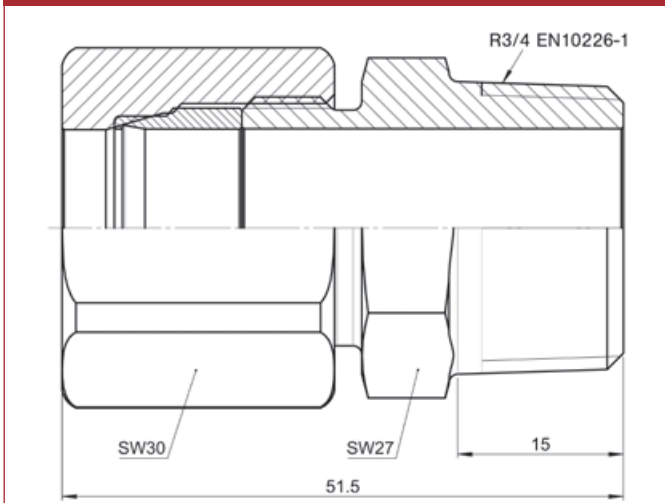
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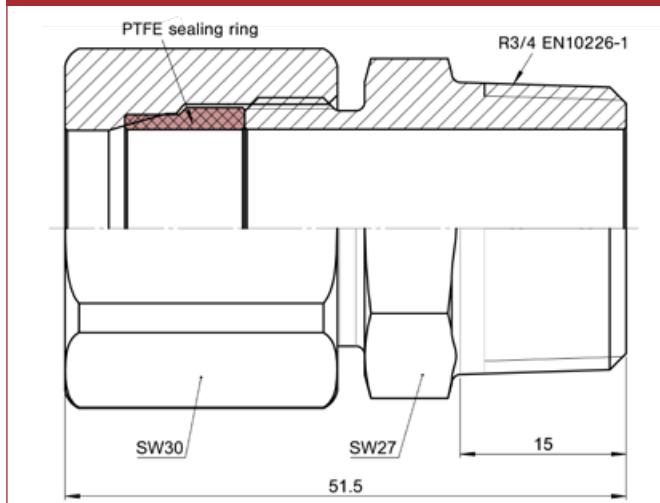
B

Threaded installation bush



Suitable up to 25 bar/363 psi abs. if used with push-in sensors.
Please observe assembly instructions and safety guidelines!
Metal sealing ring can't be disassembled after assembly.

PTFE sealing ring for threaded installation bush

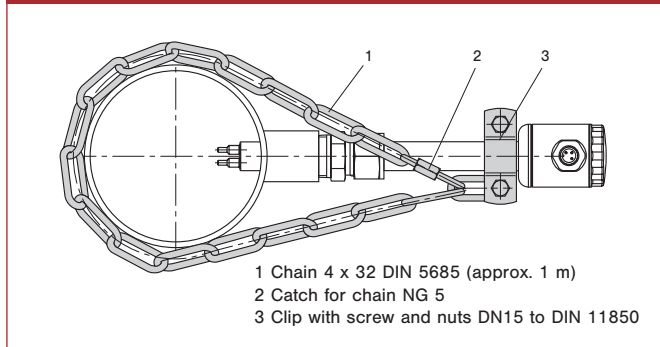


Suitable for threaded installation bush VK-04D8
Applicable up to 2 bar/29 psi abs. if used with push-in sensors and threaded installation bush VK.
Ordering no.: Y50005101

Ordering information – threaded installation bush

Type				
VK	threaded installation bush			
Process connection				
	04	thread R3/4"		
Bore				
	D8	18 mm		
Material				
	M1	stainless steel 1.4571		
	M3	Hastelloy C22 2.4602		
	M14	tantalum (coating 50±20 µm), base material 1.4571		
	M...	further materials upon request		
VK -	04	D8	M1	ordering example

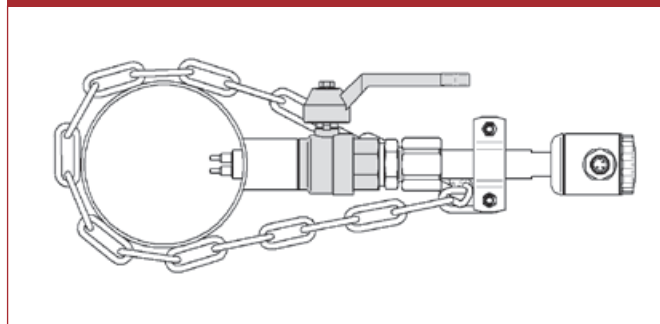
Locking set



- 1 Chain 4 x 32 DIN 5685 (approx. 1 m)
- 2 Catch for chain NG 5
- 3 Clip with screw and nuts DN15 to DIN 11850

Locking set for push-in sensors.
Ordering no.: 0Z122Z000204

Ball valve for installation under pressure



Material (body, ball): Brass nickel plated
Material (ball seal): PTFE
Length: 65 mm
Outside thread: G3/4", L = 13 mm
Inside thread: G3/4", L = 15 mm
Fluid temperature: -20...120 °C
Ambient temperature: 0...80 °C
Pressure: PN 25 bar (up to 80 °C)
Ordering number: BV-02M3-PI

Material (body, ball): Stainless steel 1.4408, 1.4401
Material (ball seal): PTFE
Length: 78 mm
Outside thread: R3/4", L = 17 mm
Inside thread: Rp3/4", L = 13 mm
Fluid temperature: -30...180 °C
Ambient temperature: 0...80 °C
Pressure: PN 64 bar (up to 80 °C)
Ordering number: BV-02M15-PI