

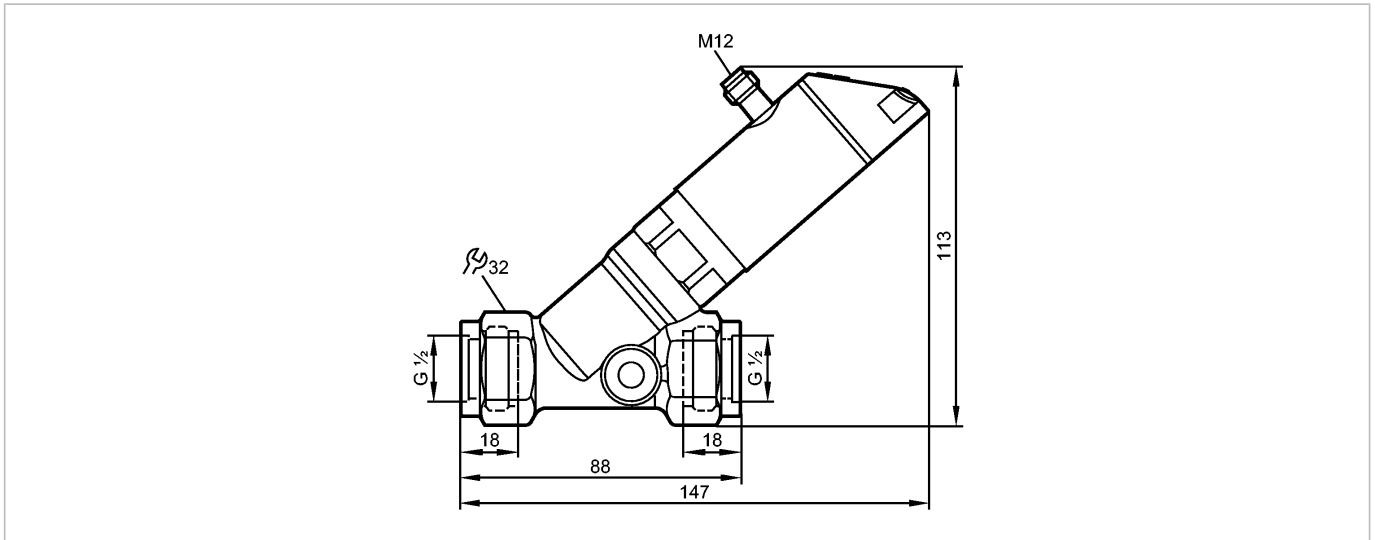


SBG233

SBG12IF0FRKG



Flow sensors



Product characteristics

Mechatronic flow meter

with non-return valve

Process connection: G 1/2

With display (360° rotatable); IO-Link; temperature measurement

Application

Application	Liquids (water, glycol solutions, coolants, oil (oil 1 with viscosity 10 mm ² /s at 40 °C; oil 2 with viscosity 46 mm ² /s at 40 °C))	
Pressure rating	[bar]	40
Medium temperature	[°C]	-10...100

Electrical data

Electrical design	DC	
Operating voltage	[V]	18...30 DC; to DIN EN 50178, SELV, PELV
Current consumption	[mA]	< 50
Protection class	III	
Reverse polarity protection	yes	

Outputs

Output function	OUT1: NO / NC programmable or frequency or IO-Link OUT2: NO / NC programmable or analogue	
Current rating	[mA]	2 x 150; 2 x 200 (...60 °C); 2 x 250 (...40 °C)
Voltage drop	[V]	< 2
Short-circuit protection	yes	
Overload protection	yes	
Analog output	4...20 mA	
Max. load	[Ω]	500
Frequency range [Hz]	0...10000	

Measuring / setting range

Flow monitoring		
Measuring range	0.5...25 [l/min]	0.03...1.5 [m ³ /h]
Display range	0...30 [l/min]	0...1.8 [m ³ /h]
Resolution	0.1 [l/min]	0.01 [m ³ /h]
Set point, SP	0.2...25 [l/min]	0.01...1.5 [m ³ /h]



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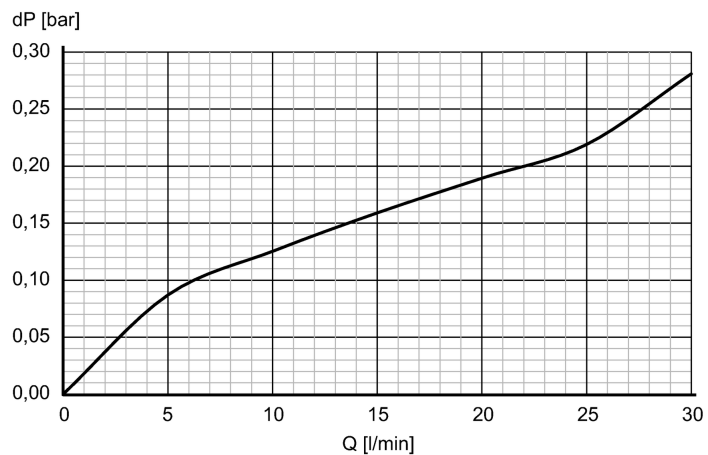
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Reset point, rP	0...24.8 [l/min]	0...1.49 [m³/h]
Frequency end point, FEP	1.7...25 [l/min]	0.1...1.5 [m³/h]
in steps of	0.1 [l/min]	0.01 [m³/h]
Frequency at the end point, FrP [Hz]	10...10000	
in steps of	10 Hz	
Measuring dynamics	1:50	
Temperature monitoring		
Measuring range [°C]	-10...100	
Display range [°C]	-32...122	
Resolution [°C]	1	
Set point, SP [°C]	-9...100	
Reset point, rP [°C]	-10...99	
Frequency start point, FSP [°C]	-10...78	
Frequency end point, FEP [°C]	12...100	
in steps of [°C]	1	
Frequency at the end point, FrP [Hz]	10...10000	

Accuracy / deviations

Flow monitoring	
Accuracy [% of the final value]	$\pm (4 \% MW + 1 \% MEW)$; Q > 0.5 l/min, medium and ambient temperature +22 °C \pm 4 K
Repeatability	$\pm 1 \% MEW$

Pressure loss (dP) / flow rate (Q)



Temperature monitoring	
Accuracy [K]	3 K (25°C; Q > 1 l/min)
Temperature drift	0.029 °C / K

Reaction times

Power-on delay time [s]	< 3
Flow monitoring	
Response time [s]	0.01
Damping for the switching output (dAP) [s]	0...5
Damping for the analog output (dAA) [s]	0...5
in steps of	0.1 s
Temperature monitoring	
Response time [s]	T09 = 120 (Q > 1 l/min)



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Software / programming

Programming options	Hysteresis/window; NO/NC; switching logic; current / frequency output; fluid selection, damping switching/analogue output, display can be rotated/switched off; standard unit of measurement/colour process value
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Interfaces

IO-Link Device	
Transfer type	COM2 (38.4 kBaud)
IO-Link revision	1.1
SDCI standard	IEC 61131-9 CDV
IO-Link Device ID	561 d / 0231 h
Profiles	Smart Sensor: Process Data Variable; Device Identification
SIO mode	yes
Required master port class	A
Process data analogue	2
Process data binary	2
Min. process cycle time [ms]	5

Environment

Ambient temperature [°C]	0...60, at max. 80 °C medium temperature (0...40 °C at max. 100 °C medium temperature)
Storage temperature [°C]	-15...80
Protection	IP 65 / IP 67

Tests / approvals

Pressure equipment directive	sound engineering practice
EMC	DIN EN 61000-6-2 DIN EN 61000-6-3
Shock resistance	DIN EN 60068-2-27 20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6 5 g (10...2000 Hz)
MTTF [Years]	145
UL approval number	I005

Mechanical data

Process connection	G ½
Materials (wetted parts)	stainless steel 316 / 1.4401; stainless steel 316L / 1.4404; brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM
Housing materials	stainless steel 316L / 1.4404; PBT+PC-GF 30; PBT-GF 20; PC; brass chemically nickel-plated
Weight [kg]	0.732
Switching cycles min.	10 million

Displays / operating elements

Display	Display unit 3 x LED green Switching status 2 x LED yellow 4-digit alphanumeric display / alternating indication Measured values of red and green Programming 4-digit alphanumeric display
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Electrical connection

Connection	M12 connector; gold-plated contacts
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Wiring



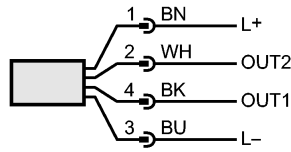
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Flow sensors

Core colors
 BK black
 BN brown
 BU blue
 WH white



OUT1:

- switching output flow rate monitoring
- switching output temperature monitoring
- frequency output flow rate monitoring
- frequency output temperature monitoring
- IO-Link

OUT2:

- switching output flow rate monitoring
- switching output temperature monitoring
- analogue output flow rate
- analogue output temperature

Colours to DIN EN 60947-5-2

Remarks

Remarks	Use of 200 micron filtration is recommended. All data refer to water (20 °C). MW = measured value MEW = final value of the measuring range
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Pack quantity	[piece]	1
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