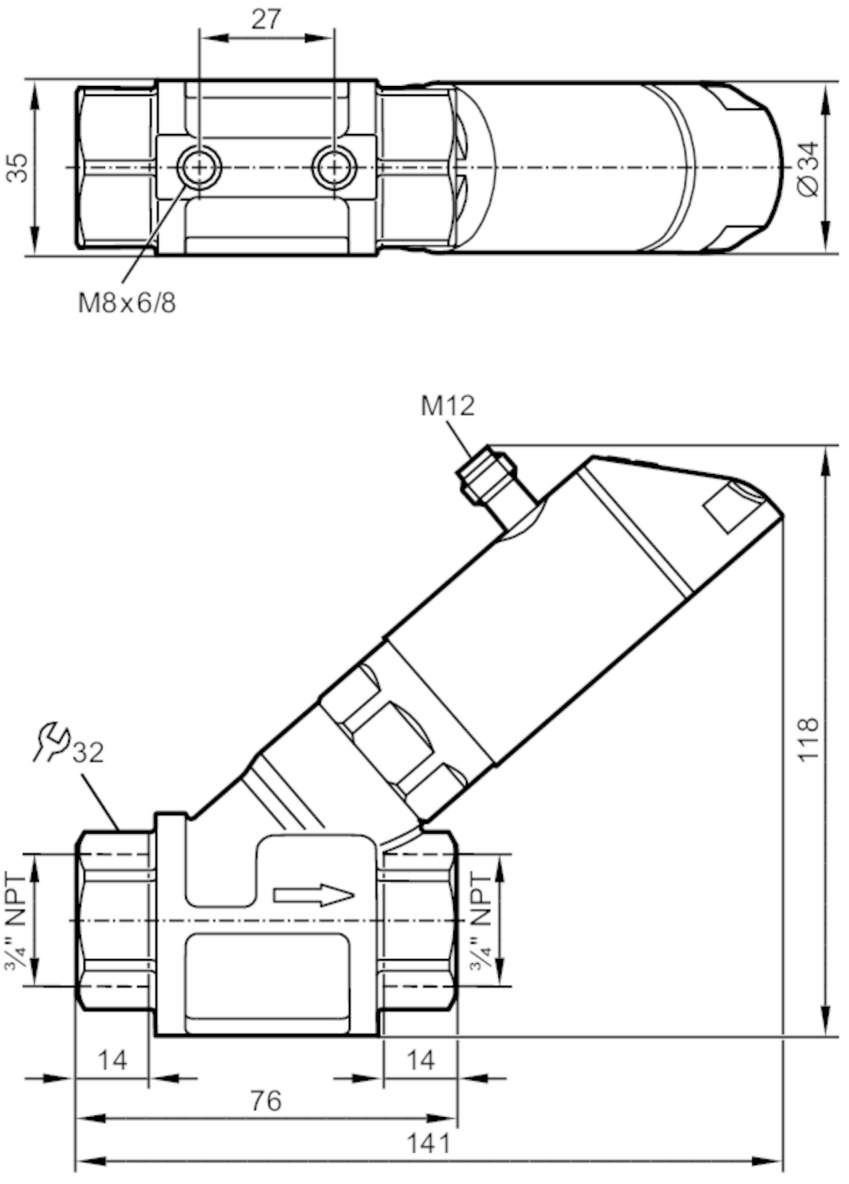
SBN232

Flow meter with fast response and display

SBN34IQ0FRKG

Please note the changed housing design!



Product characteristics		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...240 gph	0.1...4 gpm
Process connection	threaded connection 3/4" NPT Internal thread	

Application	
System	gold-plated contacts
Application	for industrial applications
Media	Liquids; water; glycol solutions; Coolants

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Note on media		oil 1 with viscosity: 10 mm²/s (104 °F) oil 2 with viscosity: 46 mm²/s (104 °F)	
Medium temperature	[°F]	14...212	
Pressure rating		40 bar	4 MPa
MAWP (for applications according to CRN)	[bar]	40	
Electrical data			
Operating voltage	[V]	18...30 DC; (to SELV/PELV)	
Current consumption	[mA]	< 50	
Protection class		III	
Reverse polarity protection		yes	
Power-on delay time	[s]	< 3	
Inputs / outputs			
Number of inputs and outputs		Number of digital outputs: 2; Number of analog outputs: 1	
Outputs			
Total number of outputs		2	
Output signal		switching signal; analog signal; frequency signal; IO-Link; (configurable)	
Number of digital outputs		2	
Output function		normally open / closed; (configurable)	
Max. voltage drop switching output DC	[V]	2	
Permanent current rating of switching output DC	[mA]	150; (per output 2 x 200 (...140 °F); 2 x 250 (...104 °F))	
Switching cycles (mechanical)		10 million	
Number of analog outputs		1	
Analog current output	[mA]	4...20	
Max. load	[Ω]	500	
Short-circuit protection		yes	
Overload protection		yes	
Frequency of the output	[Hz]	0...10000	
Measuring/setting range			
Measuring range		5...240 gph	0.1...4 gpm
Display range		0...288 gph	0...4.8 gpm
Resolution		1 gph	0.05 gpm
Set point SP		2...240 gph	0.05...4 gpm
Reset point rP		0...238 gph	0...3.95 gpm
Frequency end point, FEP		16...240 gph	0.25...4 gpm
In steps of		1 gph	0.05 gpm
Frequency at the end point FRP	[Hz]	10...10000	
Measuring dynamics		1:50	
Temperature monitoring			
Measuring range	[°F]	14...212	
Display range	[°F]	-26...252	
Resolution	[°F]	2	

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Set point SP	[°F]	16...212
Reset point rP	[°F]	14...210
In steps of	[°F]	2
Frequency start point, FSP	[°F]	14...172
Frequency end point, FEP	[°F]	54...212
Frequency at the end point FRP	[Hz]	10...10000

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (4 % MW + 1 % MEW); (Q > 0,3 l/min; medium and operating temperature: +71,6 °F ± 4K)
Repeatability		± 1 % MEW
Temperature monitoring		
Temperature drift		0,9802 °F / K
Accuracy	[K]	3 K (77 °F; Q > 1 l/min)

Reaction times

Flow monitoring		
Response time	[s]	0.01
Damping process value dAP	[s]	0...5
Damping for the analog output dAA	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 120 (Q > 1 l/min)

Software / programming

Parameter setting options		hysteresis / window; normally open / closed; switching logic; current output; medium selection; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color

Interfaces

Communication interface		IO-Link
Transmission type		COM2 (38,4 kBaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9 CDV
Profiles		Smart Sensor: Process Data Variable; Device Identification
SIO mode		yes
Required master port class		A
Process data analog		2
Process data binary		2
Min. process cycle time	[ms]	5

Supported DeviceIDs	**Type of operation**	**DeviceID**
	default	565

Operating conditions

Ambient temperature	[°F]	32...140
Note on ambient temperature		medium temperature < 176 °F
		medium temperature < 212 °F: 32...104 °F
Storage temperature	[°F]	5...176

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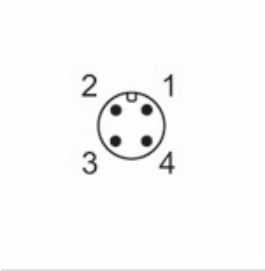
Protection		IP 65; IP 67	
Tests / approvals			
EMC		DIN EN 61000-6-2	
		DIN EN 61000-6-3	
Shock resistance		DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance		DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145	
UL approval		UL approval number	I005
Pressure equipment directive		sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data			
Weight	[g]	696	
Material		stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated	
Materials (wetted parts)		stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM	
Process connection		threaded connection 3/4" NPT Internal thread	
Displays / operating elements			
Display		Display unit	3 x LED, green
		Switching status	2 x LED, yellow
		Measured values	alphanumeric display, red/green 4-digit
		Programming	alphanumeric display, 4-digit
Remarks			
Remarks		Use of 200 micron filtration is recommended.	
		All data refer to water (68 °F).	
		MW = Measured value	
		MEW = Final value of the measuring range	
Notes		Please note the changed housing design!	
Pack quantity		1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



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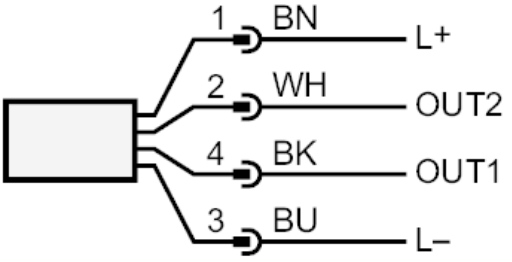
Connection



OUT1:
- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:
- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring

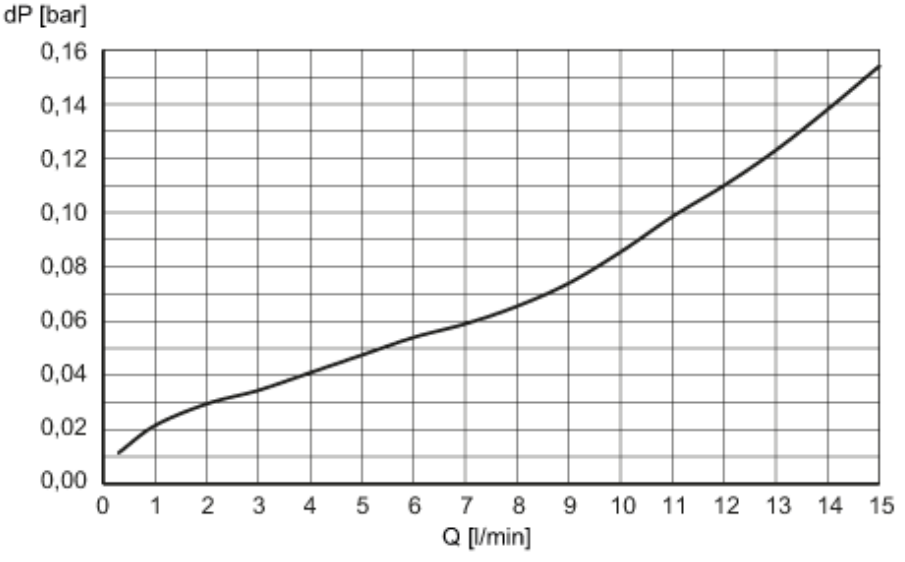
Colors to DIN EN 60947-5-2

Core colors :

BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity