

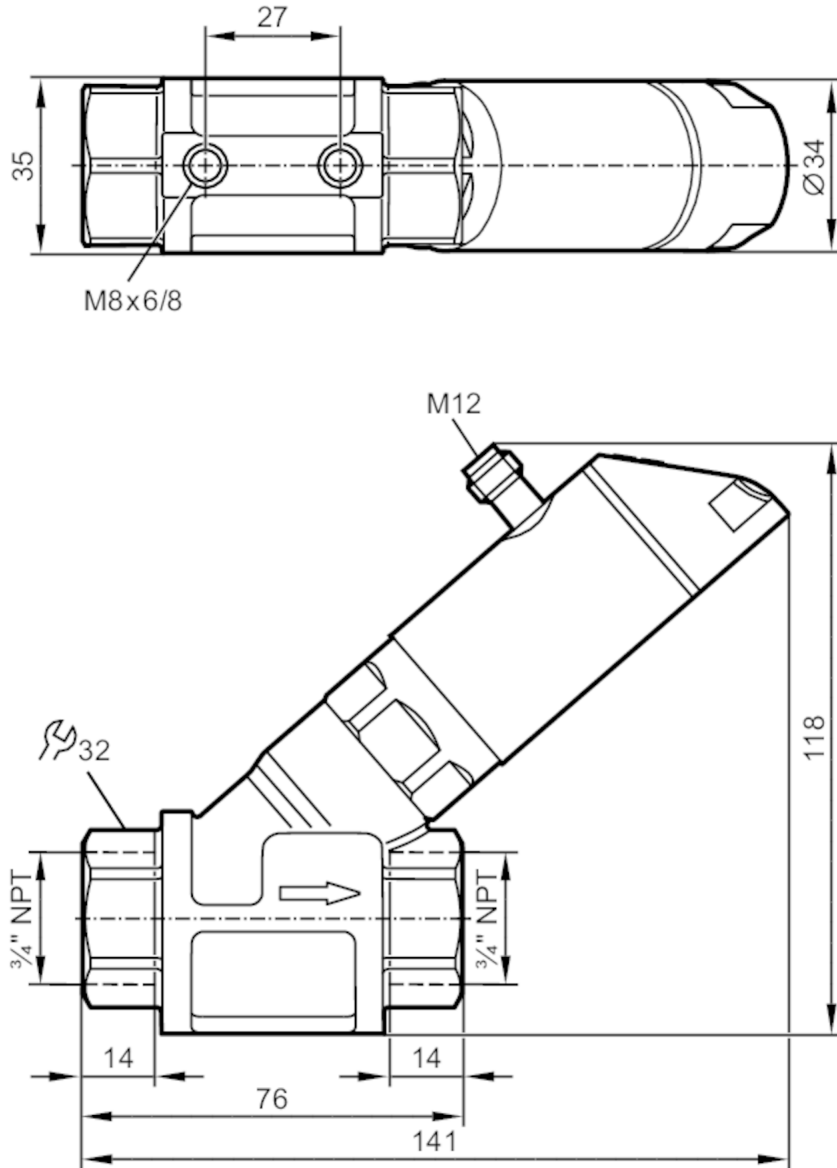
# SBN233



## 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	7...360 gph	0.1...6 gpm
Process connection	threaded connection 3/4" NPT	

### 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 mm <sup>2</sup> /s (104 °F)	
	oil 2 with viscosity: 46 mm <sup>2</sup> /s (104 °F)	
Medium temperature [°F]	14...212	
Pressure rating [bar]	40	
Pressure rating [MPa]	4	
MAWP (for applications according to CRN) [bar]	40	
<b>Electrical data</b>		
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	
<b>Inputs / outputs</b>		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
<b>Outputs</b>		
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	
<b>Measuring/setting range</b>		
Measuring range	7...360 gph	0.1...6 gpm
Display range	0...432 gph	0...7.2 gpm
Resolution	1 gph	0.05 gpm
Set point SP	2...360 gph	0.05...6 gpm
Reset point rP	0...358 gph	0...5.95 gpm
Frequency end point, FEP	24...360 gph	0.4...6 gpm
In steps of	1 gph	0.05 gpm
Frequency at the end point FRP [Hz]	10...10000	
Measuring dynamics	1:50	
<b>Temperature monitoring</b>		
Measuring range [°F]	14...212	
Display range [°F]	-26...252	



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Resolution	[°F]	2
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)		$\pm (4 \% MW + 1 \% MEW)$ ; (Q > 0,5 l/min; medium and operating temperature: +71,6 °F $\pm$ 4K)
Repeatability		$\pm 1 \% MEW$
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
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### 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	<table border="1"> <thead> <tr> <th>Type of operation</th> <th>DeviceID</th> </tr> </thead> <tbody> <tr> <td>default</td> <td>566</td> </tr> </tbody> </table>	Type of operation	DeviceID	default	566
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default	566				

### Operating conditions

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

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Storage temperature	[°F]	5...176
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]	691.5
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	

### 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

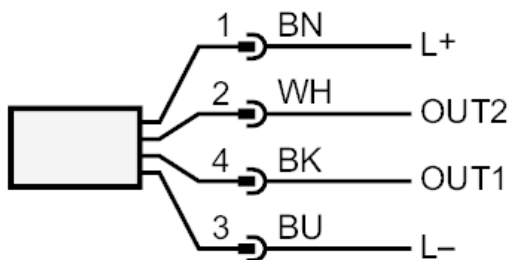




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### Connection



#### OUT1:

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

#### OUT2:

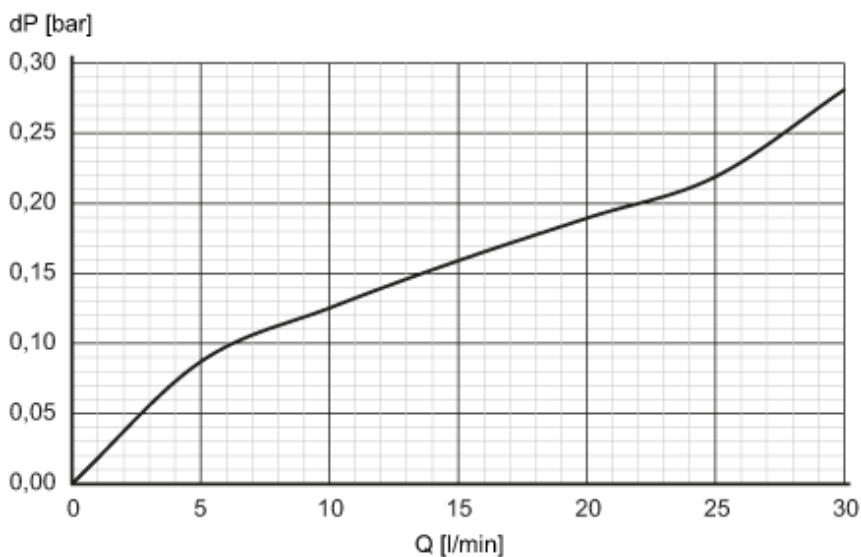
- Switching output Volumetric flow quantity monitoring
  - Switching output Temperature monitoring
  - analog output Volumetric flow quantity monitoring
  - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

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

### Diagrams and graphs

#### Pressure loss



dP Pressure loss

Q volumetric flow quantity