

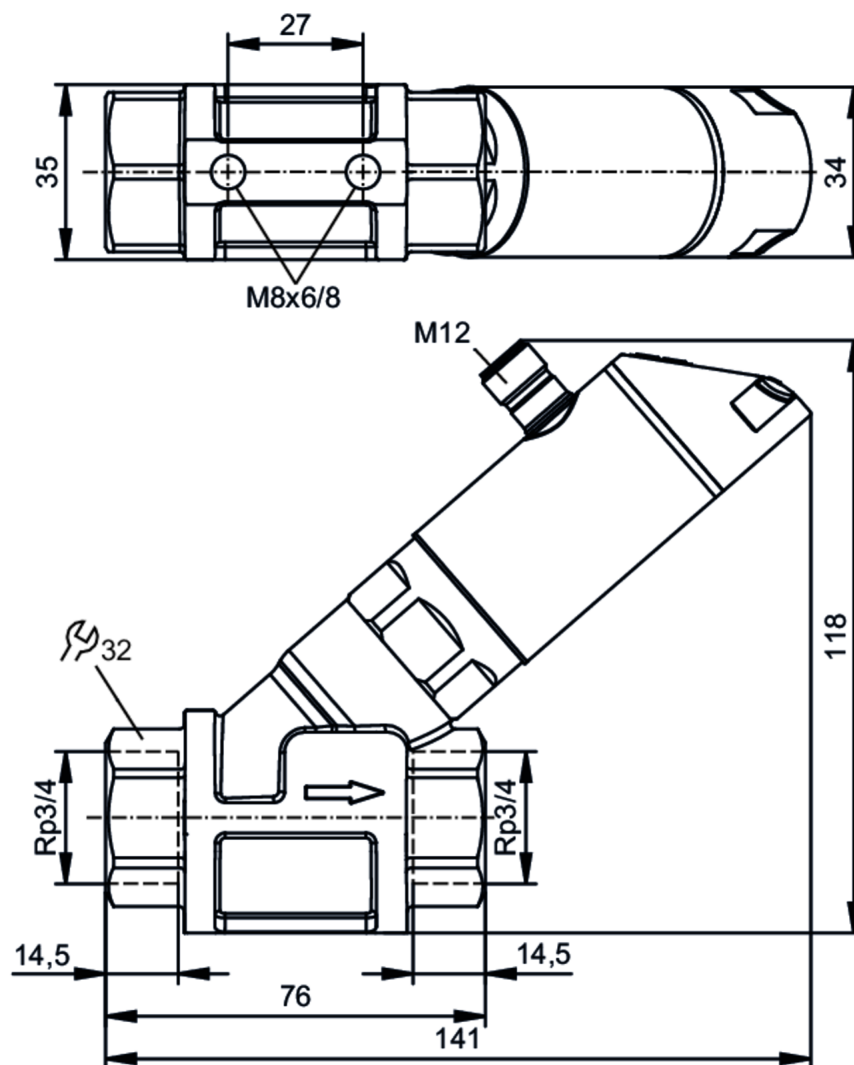
SBY233



Flow meter with fast response and display

SBY34IF0FRKG

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	0.5...25 l/min	0.03...1.5 m³/h
Process connection	threaded connection Rp 3/4 Internal thread	

Application

System	gold-plated contacts	
Application	for industrial applications	
Media	Liquids; water; glycol solutions; Coolants	
Note on media	oil 1 with viscosity: 10 mm²/s (40 °C)	
	oil 2 with viscosity: 46 mm²/s (40 °C)	
Medium temperature [°C]	-10...100	
Pressure rating	40 bar	4 MPa



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MAWP (for applications according to CRN)	[bar]	40
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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 (...60 °C); 2 x 250 (...40 °C))
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	0.5...25 l/min	0.03...1.5 m³/h
Display range	0...30 l/min	0...1.8 m³/h
Resolution	0.1 l/min	0.01 m³/h
Set point SP	0.2...25 l/min	0.01...1.5 m³/h
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		10...10000
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
In steps of	[°C]	1
Frequency start point, FSP	[°C]	-10...78



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Frequency end point, FEP	[°C]	12...100
Frequency at the end point FRP	[Hz]	10...10000
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		$\pm (4 \% MW + 1 \% MEW)$; ($Q > 0,5 \text{ l/min}$; medium and operating temperature: $+22 \text{ °C} \pm 4\text{K}$)
Repeatability		$\pm 1 \% MEW$
Temperature monitoring		
Temperature drift		$0,029 \text{ °C} / \text{K}$
Accuracy	[K]	3 K (25°C ; $Q > 1 \text{ l/min}$)
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 ($Q > 1 \text{ l/min}$)
Software / programming		
Parameter setting options		hysteresis / window; normally open / closed; switching logic; current/frequency 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	561
Operating conditions		
Ambient temperature	[°C]	0...60
Note on ambient temperature		medium temperature $< 80 \text{ °C}$ medium temperature $< 100 \text{ °C}$: 0...40 °C
Storage temperature	[°C]	-15...80
Protection		IP 65; IP 67
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	

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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]	734.1	
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 Rp 3/4 Internal thread	

Displays / operating elements

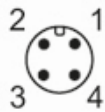
Display	Display unit	3 x LED, green
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

Remarks	Use of 200 micron filtration is recommended.	
	All data refer to water (20 °C).	
	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:

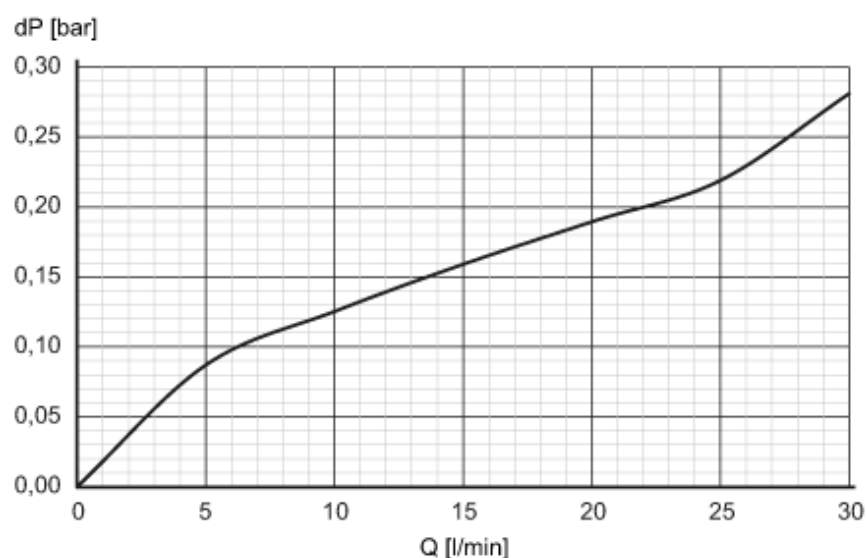
- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

OUT2:

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

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity