

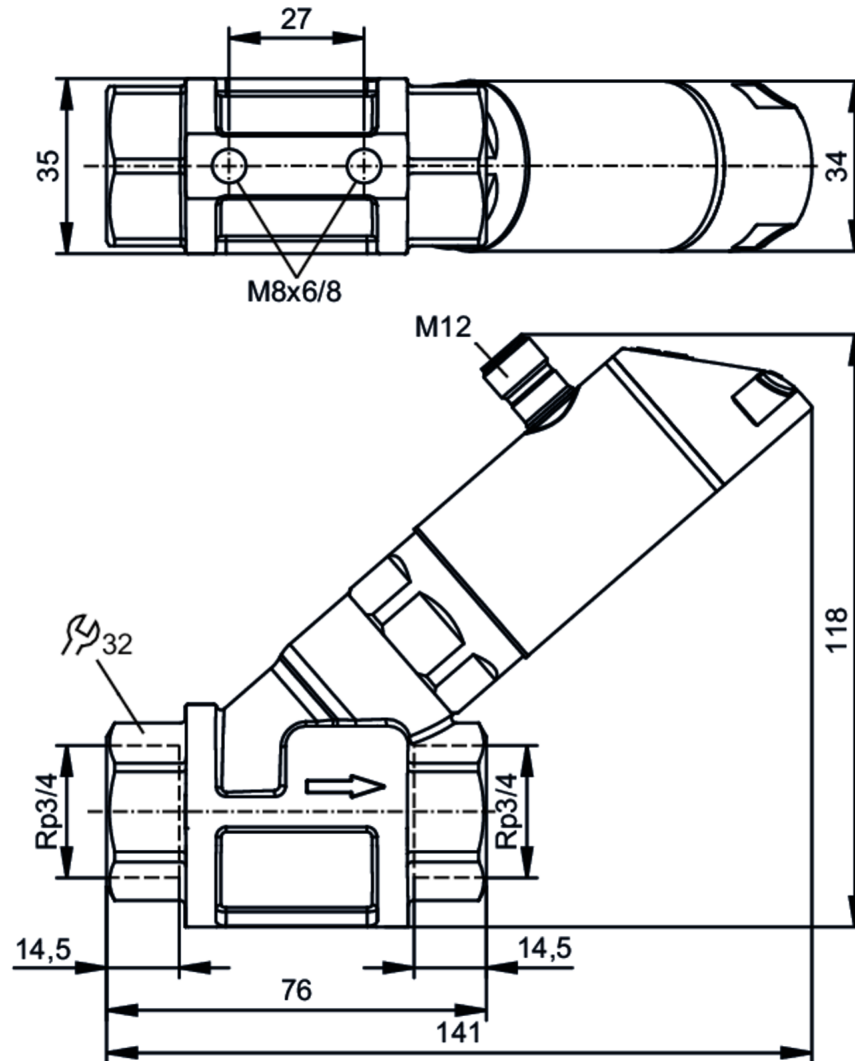
# SBY232



## 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	0.3...15 l/min	0.018...0.9 m <sup>3</sup> /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 mm <sup>2</sup> /s (40 °C) oil 2 with viscosity: 46 mm <sup>2</sup> /s (40 °C)	
Medium temperature	[°C]	-10...100
Pressure rating	[bar]	40
Pressure rating	[MPa]	4



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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
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### 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	0.3...15 l/min	0.018...0.9 m³/h
Display range	0...18 l/min	0...1.08 m³/h
Resolution	0.05 l/min	0.005 m³/h
Set point SP	0.1...15 l/min	0.005...0.9 m³/h
Reset point rP	0...14.9 l/min	0...0.895 m³/h
Frequency end point, FEP	1...15 l/min	0.06...0.9 m³/h
In steps of	0.05 l/min	0.005 m³/h
Frequency at the end point FRP	[Hz]	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)	± (4 % MW + 1 % MEW); (Q > 0,3 l/min; medium and operating temperature: +22 °C ± 4K)	
Repeatability	± 1 % MEW	

#### Temperature monitoring

Temperature drift	0,029 °C / K	
Accuracy	[K]	3 K (25°C; 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)
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### 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	
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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	<b>Type of operation</b>	<b>DeviceID</b>
	default	560

### Operating conditions

Ambient temperature	[°C]	0...60
Note on ambient temperature	medium temperature < 80 °C medium temperature < 100 °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]	685.5
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 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



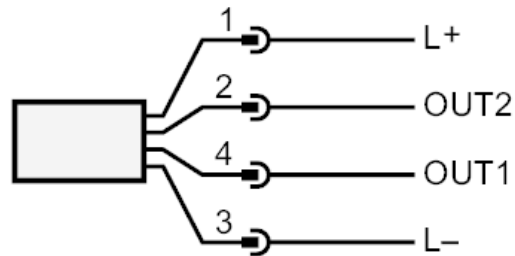
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### Connection



#### OUT1:

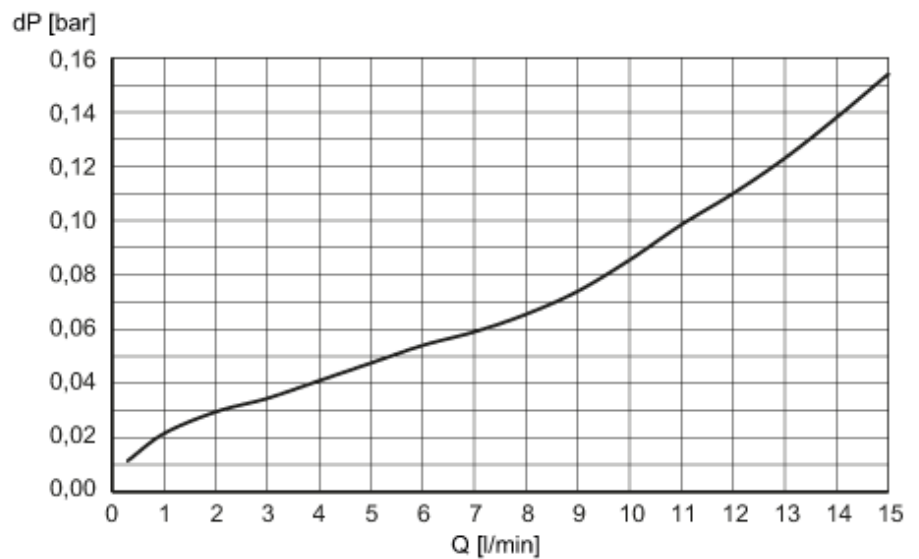
- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- IO-Link

#### 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