

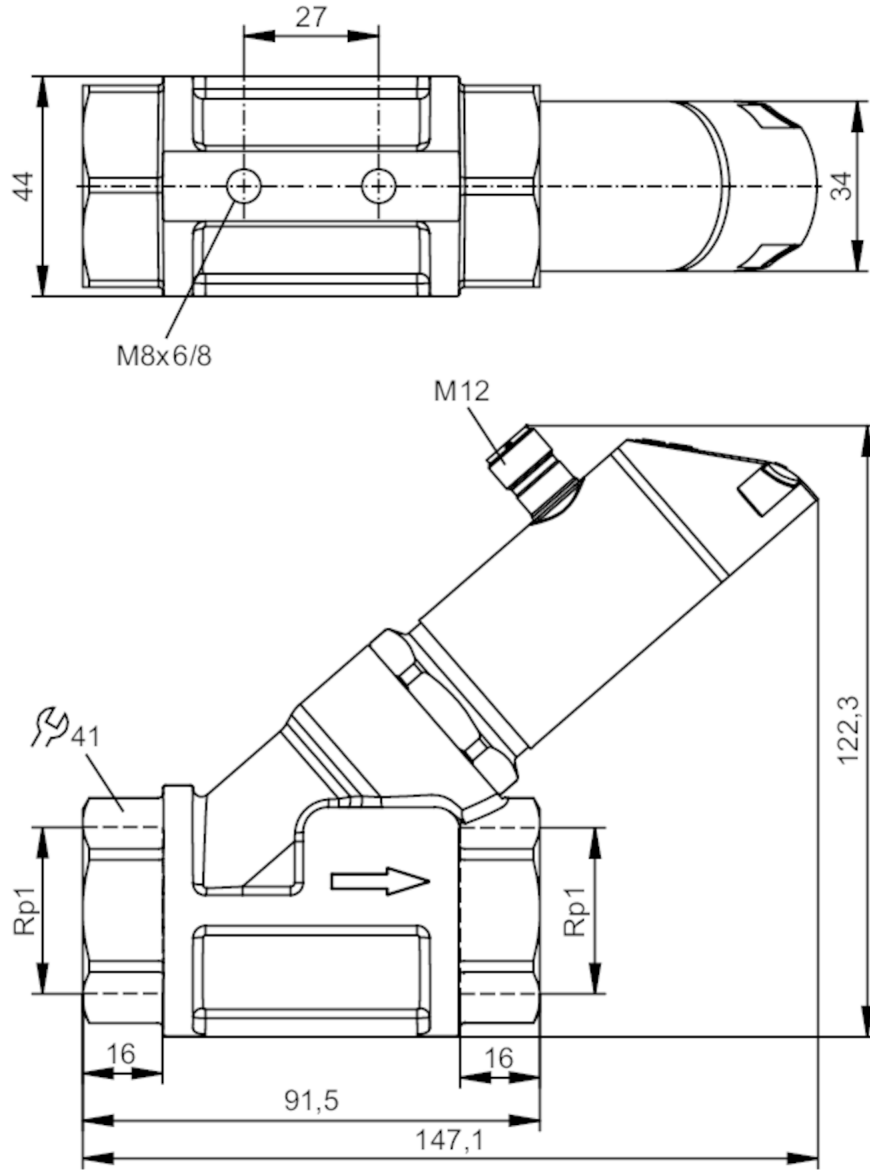
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Flow meter with fast response and display

SBY11IF0FRKG

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	2...100 l/min	0.12...6 m ³ /h
Process connection	threaded connection Rp 1 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 ² /s (40 °C) oil 2 with viscosity: 46 mm ² /s (40 °C)	
Medium temperature	[°C]	-10...100

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Pressure rating	[bar]	25
Pressure rating	[MPa]	2.5
MAWP (for applications according to CRN)	[bar]	25

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	2...100 l/min	0.12...6 m³/h
Display range	0...120 l/min	0...7.2 m³/h
Resolution	0.5 l/min	0.05 m³/h
Set point SP	1...100 l/min	0.05...6 m³/h
Reset point rP	0...99 l/min	0...5.95 m³/h
Frequency end point, FEP	6.5...100 l/min	0.4...6 m³/h
In steps of	0.5 l/min	0.05 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

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In steps of	[°C]	1
Frequency start point, FSP	[°C]	-10...78
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 > 2 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	Type of operation	DeviceID
	default	563

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	

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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	I006
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]	1286	
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 1 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	
Notes	MEW = Final value of the measuring range	
	Please note the changed housing design!	
Pack quantity	1 pcs.	

Electrical connection

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



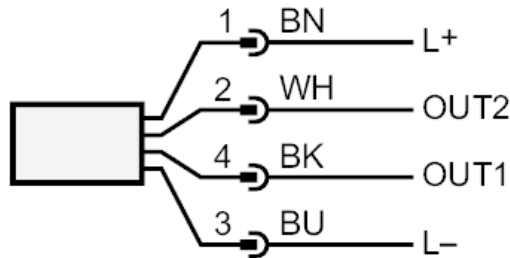
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Connection



OUT1:

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

OUT2:

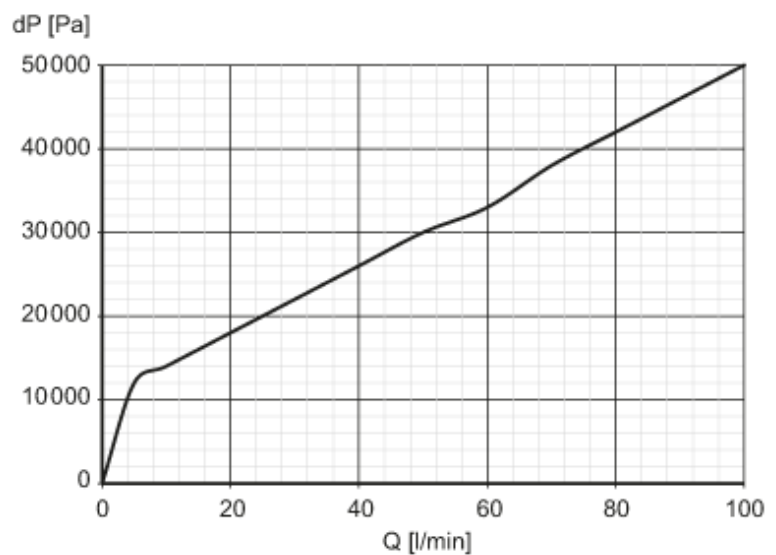
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - analog output Volumetric flow quantity monitoring
 - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

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

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity