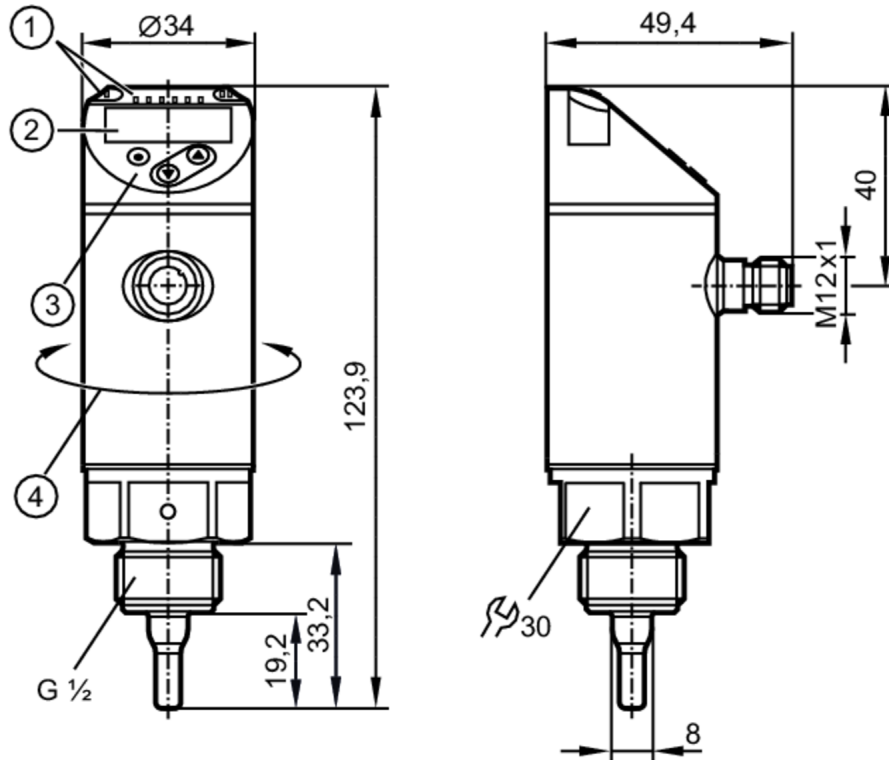


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Flow sensor

SAR12XDBFRKG/US-100



- 1 LEDs Display unit / Switching status
- 2 alphanumeric display 4-digit red/green
- 3 Programming buttons
- 4 upper part of the housing can be rotated 345°



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Process connection	threaded connection G 1/2 external thread

Application

System	gold-plated contacts
Media	water; glycol solutions; air; oils
Note on media	low-viscosity oils with viscosity: $\leq 40 \text{ mm}^2/\text{s}$ (40 °C) high-viscosity oils with viscosity: $> 40 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90
Pressure rating	100 bar 10 MPa
MAWP (for applications according to CRN) [bar]	85

Electrical data

Operating voltage [V]	18...30 DC
Current consumption [mA]	< 100
Protection class	III
Reverse polarity protection	yes

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Power-on delay time	[s]	10
Measuring principle		calorimetric
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)
Electrical design		PNP/NPN
Number of digital outputs		2
Output function		normally open / closed; (configurable)
Max. voltage drop switching output DC	[V]	2.5
Permanent current rating of switching output DC	[mA]	250
Number of analog outputs		1
Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	350
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Frequency of the output	[Hz]	0...1000
Measuring/setting range		
Probe length L	[mm]	19.2
Operating mode		relative; absolutely liquid; absolutely gaseous; (absolute: reference measurement recommended; Factory setting: relative)
Temperature monitoring		
Measuring range	[°C]	-20...90
Resolution	[°C]	0.2
Liquid media - absolute operating mode		
Setting range	[m/s]	0.04...3
Greatest sensitivity	[m/s]	0.04...3
Liquid media - relative operating mode		
Setting range	[m/s]	0.04...6
Greatest sensitivity	[m/s]	0.04...3
Gases - operating mode "absolute"		
Setting range	[m/s]	2...100
Greatest sensitivity	[m/s]	30...100
Gases - operating mode "relative"		
Setting range	[m/s]	2...200
Greatest sensitivity	[m/s]	30...100
Accuracy / deviations		
Temperature drift	[cm/s x 1/K]	0,003 m/s x 1/K (< 20 °C; > 70 °C)

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Max. temperature gradient of [K/min] medium	100								
Absolute operating mode									
Repeatability	0,05 m/s; (water; Flow velocity: 0,05...3 m/s)								
Relative operating mode									
Accuracy	± (7 % MW + 2 % MEW); (for relative mode in the range of maximum sensitivity under the following conditions:; water: 20...70 °C; inlet length: 1.5 m; DN25 (DIN 2448); mounting position according to instructions; Accuracy can differ for other media and mounting positions.)								
Repeatability	0,05 m/s; (water; Flow velocity: 0,05...3 m/s)								
Temperature monitoring									
Temperature drift	± 0,005 K/°C								
Accuracy [K]	± 0,3 / ± 1; (water; Flow velocity: 0,3...3 m/s / air; Flow velocity: > 10 m/s)								
Reaction times									
Response time [s]	0.5; (T09; water; glycol: 0,8 s; air: 7 s; oil: 1,8 s; each T09)								
Temperature monitoring									
Dynamic response T05 / T09 [s]	1,5 (T09); (water; Flow velocity: 0,3...3 m/s)								
Software / programming									
Parameter setting options	hysteresis / window; normally open / closed; switching logic; current/frequency output; medium selection; Damping; Teach function; 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								
Profiles	<table border="1"> <tr> <td>Smart Sensor - SSP 0</td> <td>Generic Profiled Sensor</td> </tr> <tr> <td>Function</td> <td>Device identification</td> </tr> <tr> <td>Function</td> <td>Process data variable</td> </tr> <tr> <td>Function</td> <td>Device diagnosis</td> </tr> </table>	Smart Sensor - SSP 0	Generic Profiled Sensor	Function	Device identification	Function	Process data variable	Function	Device diagnosis
Smart Sensor - SSP 0	Generic Profiled Sensor								
Function	Device identification								
Function	Process data variable								
Function	Device diagnosis								
SIO mode	yes								
Required master port class	A								
Process data analog	2								
Process data binary	2								
Min. process cycle time [ms]	3								
Supported DeviceIDs	<table border="1"> <thead> <tr> <th>Type of operation</th> <th>DeviceID</th> </tr> </thead> <tbody> <tr> <td>Factory setting / ModE = (REL)</td> <td>533</td> </tr> <tr> <td>ModE = (GAS)</td> <td>547</td> </tr> <tr> <td>ModE = (LIQU)</td> <td>540</td> </tr> </tbody> </table>	Type of operation	DeviceID	Factory setting / ModE = (REL)	533	ModE = (GAS)	547	ModE = (LIQU)	540
Type of operation	DeviceID								
Factory setting / ModE = (REL)	533								
ModE = (GAS)	547								
ModE = (LIQU)	540								
Operating conditions									
Ambient temperature [°C]	-40...80								
Storage temperature [°C]	-40...100								
Protection	IP 65; IP 67								
Tests / approvals									
EMC	DIN EN 60947-5-9								
Shock resistance	DIN EN 60068-2-27 50 g (11 ms)								

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Vibration resistance	DIN EN 60068-2-6	20 g (10...2000 Hz)
MTTF [years]		143
UL approval	UL approval number	I003
	File number UL	E174189

Mechanical data

Weight [g]	270
Housing	tubular
Dimensions [mm]	Ø 34 / L = 123.9
Material	stainless steel (1.4404 / 316L); stainless steel (1.4310 / 301); PBT-GF20; PBT-GF30
Materials (wetted parts)	stainless steel (1.4404 / 316L); Gasket: FKM
Process connection	threaded connection G 1/2 external thread
Probe diameter [mm]	5
Installation length EL [mm]	19.2

Displays / operating elements

Display	Display unit	6 x LED, green (% , m/s, l/min, m³/h, °C, 10³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit

Remarks

Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



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Connection



Colors to DIN EN 60947-5-2

OUT1:

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

OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Frequency output Volumetric flow quantity monitoring
- Frequency output Temperature monitoring
- Input External Teach

Core colors :

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