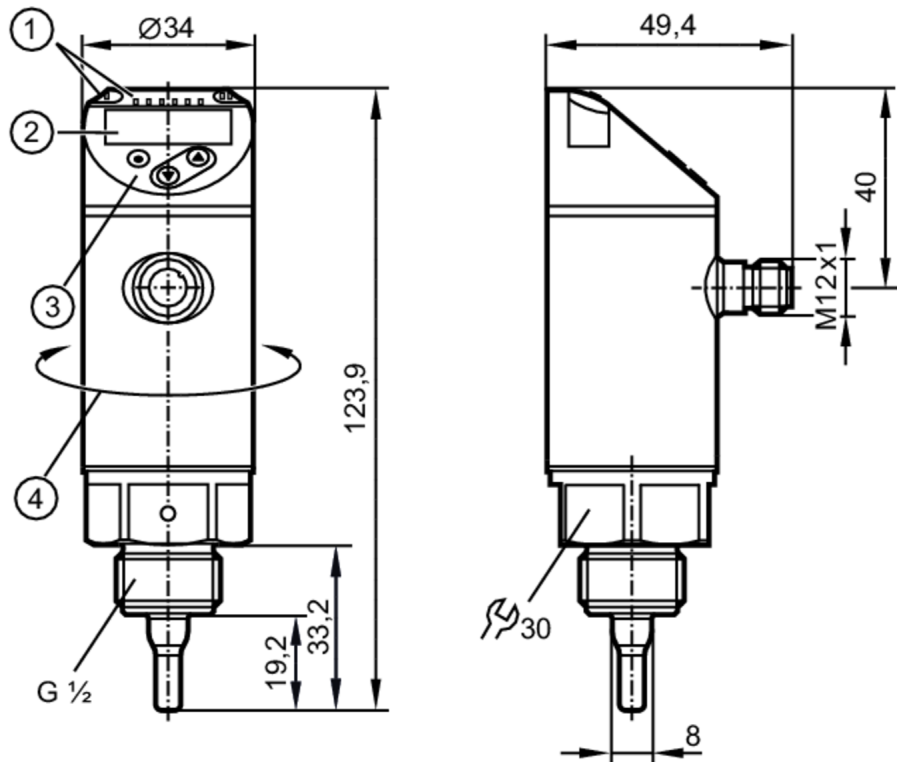


SA2000



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 analogue outputs: 1	
Process connection	threaded connection G 1/2 external thread	
Application		
Special feature	Gold-plated contacts	
Media	water; glycol solutions; air; oils	
Note on media	low-viscosity oils with viscosity: ≤ 40 mm²/s (40 °C)	
	high-viscosity oils with viscosity: > 40 mm²/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 analogue outputs: 1
Outputs		
Total number of outputs		2
Output signal		switching signal; analogue signal; frequency signal; IO-Link; (configurable)
Electrical design		PNP/NPN
Number of digital outputs		2
Output function		normally open / normally closed; (parameterisable)
Max. voltage drop switching output DC	[V]	2.5
Permanent current rating of switching output DC	[mA]	250
Number of analogue outputs		1
Analogue current output	[mA]	4...20; (scalable)
Max. load	[Ω]	350
Short-circuit protection		yes
Type of short-circuit protection		pulsed
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]	0...100
Greatest sensitivity	[m/s]	30...100
Gases - operating mode "relative"		
Setting range	[m/s]	0...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)
Temperature gradient	[K/min]	100



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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)	
Response 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 / normally closed; switching logic; current/frequency output; medium selection; Damping; Teach function; display can be rotated and switched off; standard unit of measurement; process value colour	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis	
SIO mode	yes	
Required master port type	A	
Process data analogue	2	
Process data binary	2	
Min. process cycle time [ms]	3	
Supported DeviceIDs	Type of operation	DeviceID
	Factory setting / ModE = (REL)	535
	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)
Vibration resistance	DIN EN 60068-2-6	20 g (10...2000 Hz)
MTTF [years]	143	
UL approval	UL Approval no.	I003
	File number UL	E174189

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Mechanical data		
Weight	[g]	270
Housing		cylindrical
Dimensions	[mm]	Ø 34 / L = 123.9
Materials		stainless steel (316L/1.4404); stainless steel (301/1.4310); PBT-GF20; PBT-GF30
Materials (wetted parts)		stainless steel (316L/1.4404); 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



colours 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
- analogue output volumetric flow quantity monitoring
- analogue output Temperature monitoring
- frequency output volumetric flow quantity monitoring
- frequency output Temperature monitoring
- input External Teach

Core colours :

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