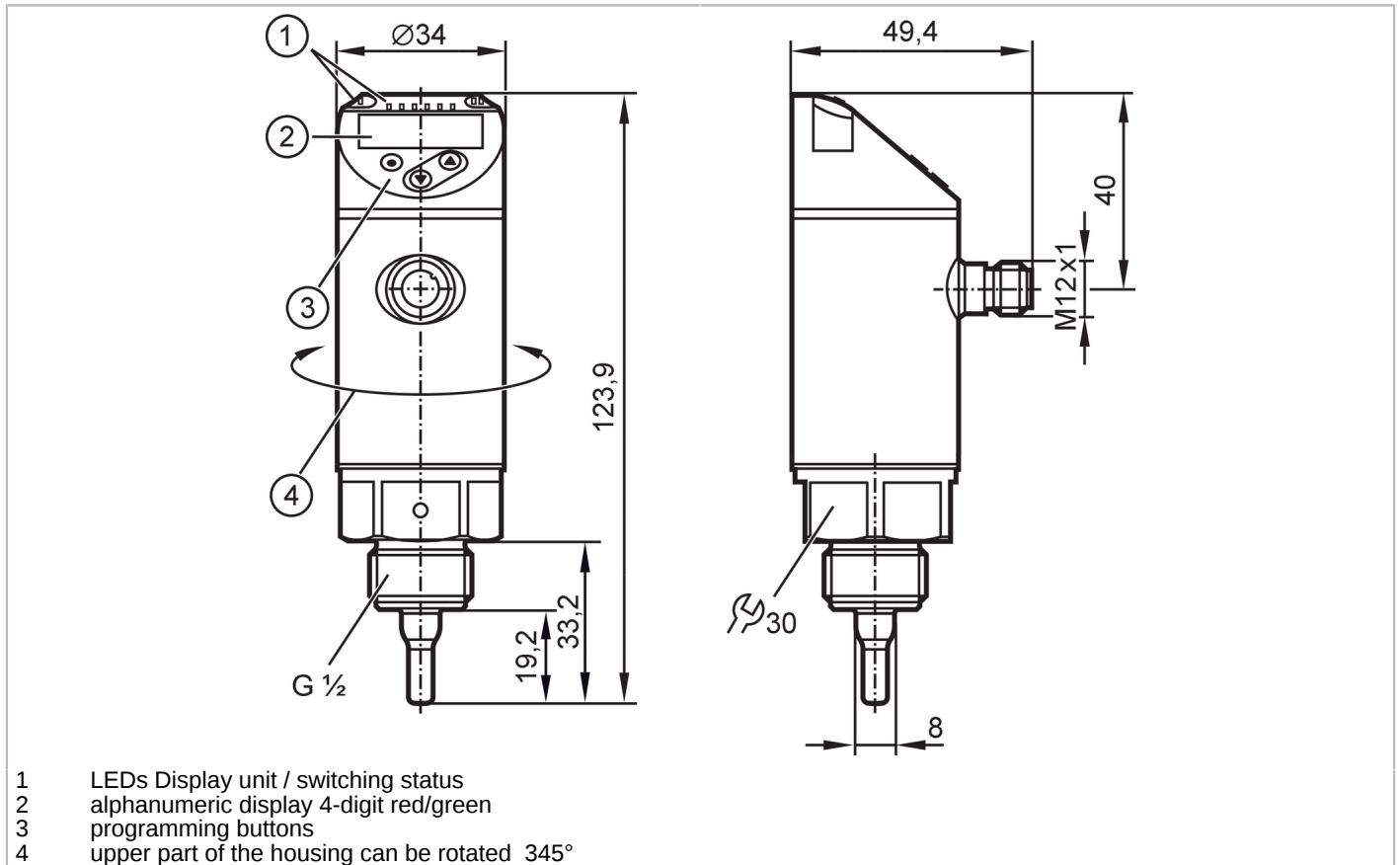


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Flow sensor

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 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: $\leq 40 \text{ mm}^2/\text{s}$ (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
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



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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 [$^{\circ}\text{C}$]	-20...90
Resolution [$^{\circ}\text{C}$]	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 $^{\circ}\text{C}$; > 70 $^{\circ}\text{C}$)
Temperature gradient [K/min]	100
Absolute operating mode	
Repeatability	0,05 m/s; (water; flow velocity: 0,05...3 m/s)

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Relative operating mode									
Accuracy	$\pm (7 \% \text{ MW} + 2 \% \text{ MEW})$; (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	$\pm 0,005 \text{ K/}^\circ\text{C}$								
Accuracy [K]	$\pm 0,3 / \pm 1$; (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 - SSP 0 Generic Profiled Sensor Function Device identification Function Process data variable Function 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	<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)								
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, m ³ /h, °C, 10 ³)
	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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Flow sensor

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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