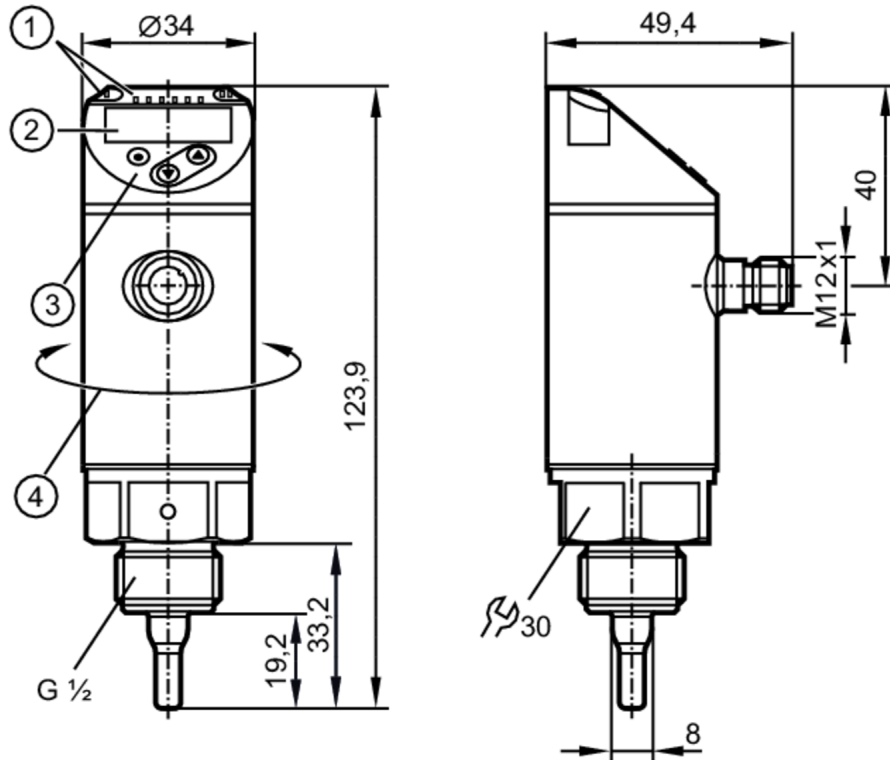


# SA2000



## 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

### 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 [bar]	100
Pressure rating [MPa]	10
MAWP (for applications according to CRN) [bar]	85

### Electrical data

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

# SA2000



## Flow sensor

SAR12XDBFRKG/US-100

Reverse polarity protection	yes
Power-on delay time [s]	10

### 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 [ $\Omega$ ]	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]	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 [ $\text{cm/s} \times 1/\text{K}$ ]	0,003 m/s $\times$ 1/K ( $< 20^{\circ}\text{C}$ ; $> 70^{\circ}\text{C}$ )
Temperature gradient [K/min]	100

# SA2000



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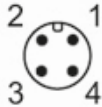
<b>Absolute operating mode</b>		
Repeatability	0,05 m/s; (water; flow velocity: 0,05...3 m/s)	
<b>Relative operating mode</b>		
Accuracy	± (7 % MW + 2 % MEW); (for relative mode in the range of maximum sensitivity under the following conditions:; water: 20...70 °C; inlet length: 1.5 m; DN25 (DIN 2448); 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)	
<b>Temperature monitoring</b>		
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)	
<b>Response times</b>		
Response time [s]	0.5; (T09; water; glycol: 0,8 s; air: 7 s; oil: 1,8 s; each T09)	
<b>Temperature monitoring</b>		
Dynamic response T05 / T09 [s]	1,5 (T09); (water; flow velocity: 0,3...3 m/s)	
<b>Software / programming</b>		
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	
<b>Interfaces</b>		
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	<b>Type of operation</b>	<b>DeviceID</b>
	Factory setting / ModE = (REL)	535
	ModE = (GAS)	547
	ModE = (LIQU)	540
<b>Operating conditions</b>		
Ambient temperature [°C]	-40...80	
Storage temperature [°C]	-40...100	
Protection	IP 65; IP 67	
<b>Tests / approvals</b>		
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

# SA2000



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SAR12XDBFRKG/US-100

Mechanical data		
Weight	[g]	270
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	
Displays / operating elements		
Display	Display unit	6 x LED, green (% , m/s, l/min, m <sup>3</sup> /h, °C, 10 <sup>3</sup> )
	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		
		

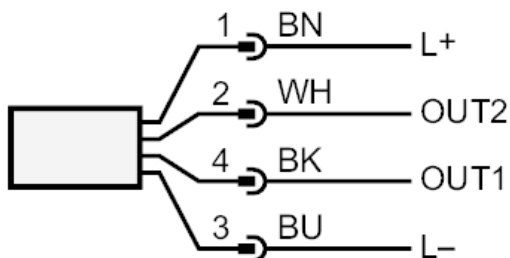
# SA2000



## Flow sensor

SAR12XDBFRKG/US-100

### 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