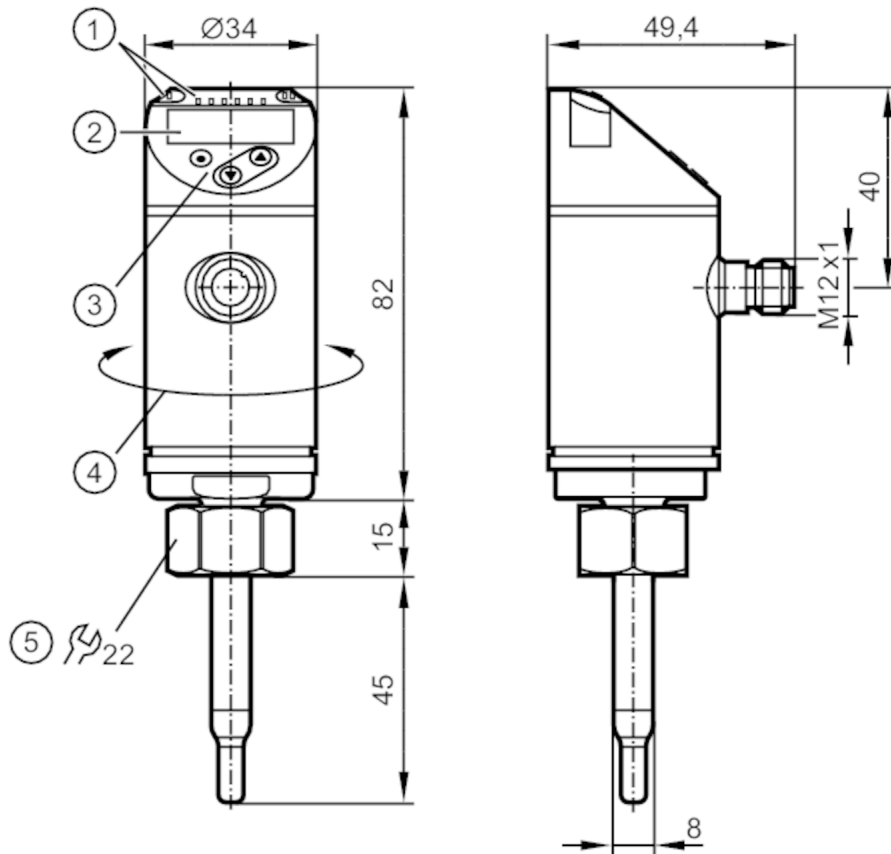


SA5000



Flow sensor

SAD10XDBFRKG/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 M18 x 1,5 Internal 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 [bar]	100
Pressure rating [MPa]	10
MAWP (for applications according to CRN) [bar]	100

Electrical data

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

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

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)
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]	45
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 x 1/K (< 20 $^{\circ}\text{C}$; > 70 $^{\circ}\text{C}$)
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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	Smart Sensor: Process Data Variable; Device Identification, 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)								
Vibration resistance	DIN EN 60068-2-6	20 g (10...2000 Hz)								
MTTF [years]	132									

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UL approval	UL approval number	I003
	File number UL	E174189

Mechanical data

Weight	[g]	257
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 M18 x 1,5 Internal thread	

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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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