SA5000
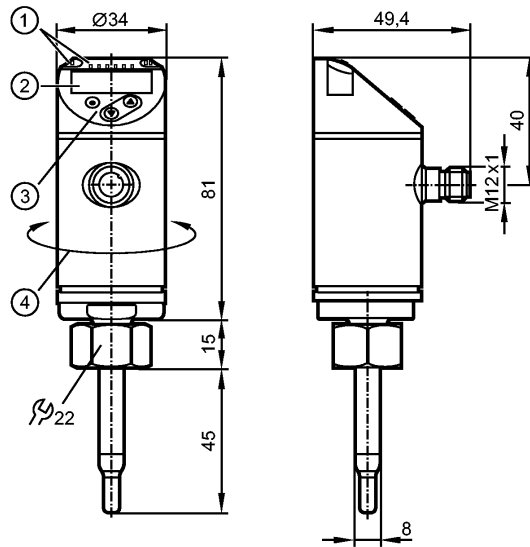
SAD10XDBFRKG/US-100

1: LEDs (display unit / switching status)
2: 4-digit alphanumeric display / alternating indication of red and green
3: Programming buttons
4: Upper part of the housing can be rotated by 345°

Product characteristics

Flow sensor	
M12 connector	
Process connection: internal thread M18 x 1.5 for adapter	
Probe length L: 45 mm	
Operating modes: relative, absolutely liquid, absolutely gaseous	
Setting range for relative mode: 0...6 m/s (liquids) and 0...200 m/s (gases)	

Application

Application		water, glycol solutions, air, oils (low-viscosity oils with viscosity ≤ 40 mm²/s at 40°C; high-viscosity oils with viscosity > 40 mm²/s at 40°C)
Pressure rating	[bar]	100
Medium temperature	[°C]	-20...90

Electrical data

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

Outputs

Output function		OUT1: normally open / normally closed programmable or frequency or IO-Link OUT2: normally open / normally closed programmable or frequency or analog (4...20 mA scaleable)
Current rating	[mA]	250
Voltage drop	[V]	< 2.5
Short-circuit protection		yes (non-latching)
Overload protection		yes
Analog output		4...20 mA

Max. load	[Ω]	350	
Frequency range [Hz]		0...1000	

Measuring / setting range			
Flow monitoring			
Measuring range		0.05...3 m/s (liquids)	2...100 m/s (gases)
–		Setting range for relative mode: 0...6 m/s (liquids) and 0...200 m/s (gases)	
Temperature monitoring			
Measuring range	[°C]	-20...90	
Resolution	[°C]	0.2 [K]	

Accuracy / deviations		
Flow monitoring		
Accuracy		± (5 % MW + 2 % MEW) (value applies to water with 0.04...3 m/s flow velocity at the sensor tip; 20°C...70°C; DN25 to DIN 2448 with 1.5 m inlet length)
Temperature drift		0.003 m/s x 1/K (< 20 °C; > 70 °C)
Repeatability		0.05 m/s; Value applies to water with 0.05...3 m/s flow velocity
Max. temperature gradient of medium	[K/min]	100
Temperature monitoring		
Accuracy	[K]	± 0.3 *) ± 1 **)
Temperature drift		± 0.005 K/°C

Reaction times		
Power-on delay time	[s]	10
Flow monitoring		
Response time	[s]	0.5 (T09) ***)
Temperature monitoring		
Response time	[s]	1.5 (T09) *)

Software / programming	
Programming options	Hysteresis/window; NO/NC; switching logic; current / frequency output; fluid selection, damping; teach function; display can be rotated/switched off; standard unit of measurement/colour process value

Interfaces	
IO-Link Device	
Transfer type	COM2 (38.4 kBaud)
IO-Link revision	1.1
SDCI standard	IEC 61131-9
IO-Link Device ID	533 d / 00 02 15 h ****)
Profiles	Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis
SIO mode	yes
Required master port class	A
Process data analogue	2
Process data binary	2
Min. process cycle time	[ms]	3

Environment		
Ambient temperature	[°C]	-40...80
Storage temperature	[°C]	-40...100

Protection	IP 65 / IP 67

Tests / approvals		
EMC	DIN EN 61000-6-2 DIN EN 61000-6-3	
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]	180	
UL approval number	I003	

| **Mechanical data**	
Process connection	internal thread M18 x 1.5 for adapter
Materials (wetted parts)	stainless steel (316L / 1.4404); sealing ring: FKM
Probe length L [mm]	45
Housing materials	stainless steel (316L / 1.4404); 301 / 1.4310 (V2A); PBT-GF 20; PBT-GF 30
Weight [kg]	0.275

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

Electrical connection	
Connection	M12 connector; gold-plated contacts

Wiring
Core colors
BK   black
BN   brown
BU   blue
WH   white
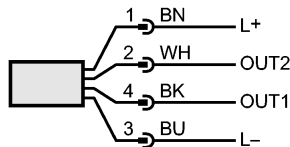
Colours to DIN EN 60947-5-2
OUT1: 3 selection options
- switching output flow rate monitoring
- frequency output flow rate monitoring
- IO-Link
OUT2: 7 selection options
- switching output flow rate monitoring
- switching output temperature monitoring
- analogue output flow rate
- analogue output temperature
- frequency output flow rate monitoring
- frequency output temperature monitoring
- input "External Teach"

Remarks	
Remarks	MW = measured value MEW = final value of the measuring range *) Value applies to water with 0.3...3 m/s flow velocity **) The value applies in case of air with > 10 m/s flow velocity ***) Value applies to water (other media: glycol 0.8 s; air: 7 s; oil: 1.8 s, T09 in each case) ****) The value applies if the relative mode in case of factory setting (REL) is selected, for other operating modes the following values apply:

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		540 d / 00 02 1ch (LIQU) 547 d / 00 02 23 h (GAS)
Pack quantity	[piece]	1