

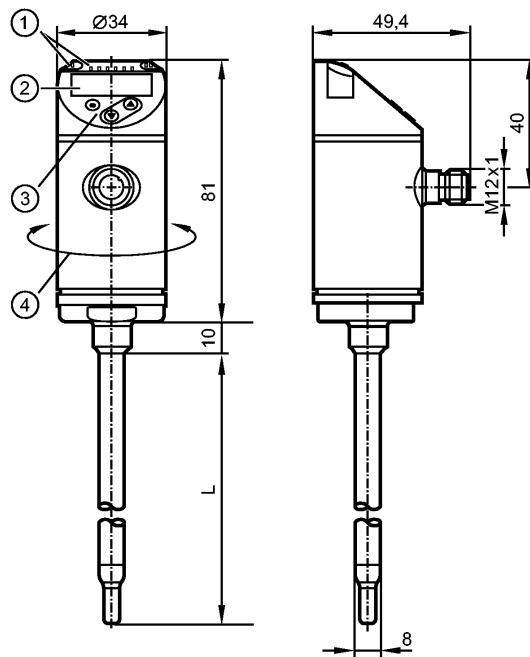


# SA4100

SAEXXXBFRKG/US-100



Flow sensors



L: 100 mm

- 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:  $\varnothing 8$  mm

Probe length L: 100 mm

Flow sensor suitable for progressive ring fittings

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 $\leq 40$ mm <sup>2</sup> /s at 40°C; high-viscosity oils with viscosity $> 40$ mm <sup>2</sup> /s at 40°C)
Pressure rating [bar]	50
Medium temperature [°C]	-20...100 *)

## 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



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Voltage drop [V]	< 2.5
Short-circuit protection	yes (non-latching)
Overload protection	yes
Analog output	4...20 mA
Max. load [ $\Omega$ ]	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 [ $^{\circ}\text{C}$ ]	-20...100
Resolution [ $^{\circ}\text{C}$ ]	0.2 [K]

## Accuracy / deviations

Flow monitoring	
Accuracy	$\pm (5 \% \text{ MW} + 2 \% \text{ MEW})$ (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]	$\pm 0.3^{**}$ $\pm 1^{***}$
Temperature drift	$\pm 0.005 \text{ K}/^{\circ}\text{C}$

## 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
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## 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

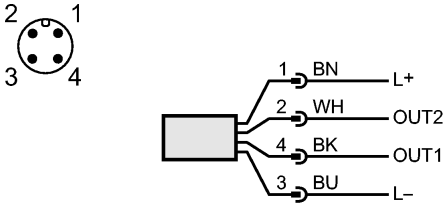


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Environment	
Ambient temperature	[°C] -40...80
Storage temperature	[°C] -40...100
Protection	IP 65 / IP 67
Tests / approvals	
EMC	DIN EN 61000-6-2 DIN EN 61000-6-3
Shock resistance	DIN EN 60068-2-27 50 g (11 ms)
Vibration resistance	DIN EN 60068-2-6 5 g (10...2000 Hz)
MTTF	[Years] 180
UL approval number	I003
Mechanical data	
Process connection	Ø 8 mm
Materials (wetted parts)	stainless steel (316L / 1.4404)
Probe length L	[mm] 100
Housing materials	stainless steel (316L / 1.4404); PBT-GF 20; PBT-GF 30
Weight	[kg] 0.256
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 4-digit alphanumeric display / alternating indication Measured values of red and green
Electrical connection	
Connection	M12 connector; gold-plated contacts
<b>Wiring</b>	 <p>Core colors</p> <p>BK black</p> <p>BN brown</p> <p>BU blue</p> <p>WH white</p> <p>Colours to DIN EN 60947-5-2</p> <p>OUT1: 3 selection options</p> <ul style="list-style-type: none"> <li>- switching output flow rate monitoring</li> <li>- frequency output flow rate monitoring</li> <li>- IO-Link</li> </ul> <p>OUT2: 7 selection options</p> <ul style="list-style-type: none"> <li>- switching output flow rate monitoring</li> <li>- switching output temperature monitoring</li> <li>- analogue output flow rate</li> <li>- analogue output temperature</li> <li>- frequency output flow rate monitoring</li> <li>- frequency output temperature monitoring</li> <li>- input "External Teach"</li> </ul>
Remarks	
Remarks	MW = measured value MEW = final value of the measuring range *) Für Medientemperaturen > 90°C: Abstand zwischen Rohrleitung und Sensorgehäuse ≥ 50 mm **) Value applies to water with 0.3...3 m/s flow velocity



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\*\*\*) 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:  
540 d / 00 02 1c h (LIQU)  
547 d / 00 02 23 h (GAS)

Pack quantity	[piece]	1
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