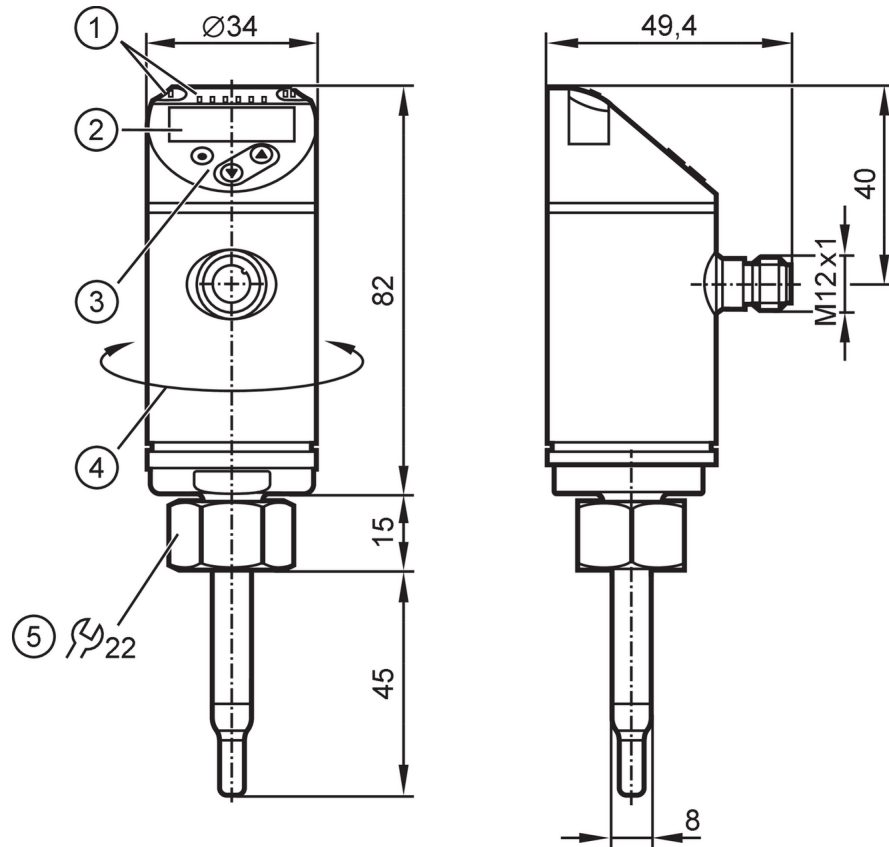


SA5010



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 analogue outputs: 1
Process connection	threaded connection M18 x 1,5 internal thread

Application

Special feature	Gold-plated contacts
Media	water; glycol solutions; air; oils
Note on media	low-viscosity oils with viscosity: $\leq 40 \text{ mm}^2/\text{s}$ (104 °F) high-viscosity oils with viscosity: $> 40 \text{ mm}^2/\text{s}$ (104 °F)
Medium temperature [°F]	-4...194
Pressure rating	100 bar 1450 psi 10 MPa

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

SA5010



Flow sensor

SAD10XDBFRKG/US-100

Inputs / outputs	
Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1
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]	45
Operating mode	relative; absolutely liquid; absolutely gaseous; (absolute: reference measurement recommended; Factory setting: relative)
Temperature monitoring	
Measuring range [$^{\circ}$ F]	-4...194
Resolution [$^{\circ}$ F]	0.5
Liquid media - absolute operating mode	
Setting range [ft/s]	0.15...9.85
Greatest sensitivity [ft/s]	0.15...9.85
Liquid media - relative operating mode	
Setting range [ft/s]	0.15...19.5
Greatest sensitivity [ft/s]	0.15...9.85
Gases - operating mode "absolute"	
Setting range [ft/s]	6...328
Greatest sensitivity [ft/s]	6...328
Gases - operating mode "relative"	
Setting range [ft/s]	6...656
Greatest sensitivity [ft/s]	6...328
Accuracy / deviations	
Temperature drift [cm/s x 1/K]	0,01 fps x 1/K (< 68 $^{\circ}$ F; > 158 $^{\circ}$ F)
Temperature gradient [K/min]	100
Absolute operating mode	
Repeatability	0,05 m/s; (water; flow velocity: 0,05...3 m/s)

SA5010



Flow sensor

SAD10XDBFRKG/US-100

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: 68...158 °F; inlet length: 5 ft; 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	$\pm 0,003 \text{ K/}^\circ\text{F}$								
Accuracy [K]	$\pm 0,3 / \pm 1$; (water; flow velocity: 1...9,85 fps / air; flow velocity: > 32,8 fps)								
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: 1...9,85 fps)								
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	<table border="1"> <tr> <td>Smart Sensor - SSP 0</td> <td>Generic Profiled Sensor</td> </tr> <tr> <td>Function</td> <td>Device identification</td> </tr> <tr> <td>Function</td> <td>Process data variable</td> </tr> <tr> <td>Function</td> <td>Device diagnosis</td> </tr> </table>	Smart Sensor - SSP 0	Generic Profiled Sensor	Function	Device identification	Function	Process data variable	Function	Device diagnosis
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>537</td> </tr> <tr> <td>ModE = (GAS)</td> <td>551</td> </tr> <tr> <td>ModE = (LIQU)</td> <td>544</td> </tr> </tbody> </table>	Type of operation	DeviceID	Factory setting / ModE = (REL)	537	ModE = (GAS)	551	ModE = (LIQU)	544
Type of operation	DeviceID								
Factory setting / ModE = (REL)	537								
ModE = (GAS)	551								
ModE = (LIQU)	544								
Operating conditions									
Ambient temperature [°F]	-40...176								
Storage temperature [°F]	-40...212								
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	<table border="1"> <tr> <td>UL approval no.</td> <td>I003</td> </tr> <tr> <td>File number UL</td> <td>E174189</td> </tr> </table>	UL approval no.	I003	File number UL	E174189				
UL approval no.	I003								
File number UL	E174189								

SA5010



Flow sensor

SAD10XDBFRKG/US-100

Mechanical data	
Weight [g]	259
Housing	cylindrical
Dimensions [mm]	Ø 34 / L = 142
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 M18 x 1,5 internal thread
Probe diameter [mm]	8
Installation length EL [mm]	45

Displays / operating elements		
Display	Display unit	6 x LED, green (% , fps, gpm, cfm, °F, 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: 4, gold-plated



SA5010



Flow sensor

SAD10XDBFRKG/US-100

Connection



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

colours to DIN EN
60947-5-2 :

Core colours :

BK = black
BN = brown
BU = blue
WH = white