SA6010
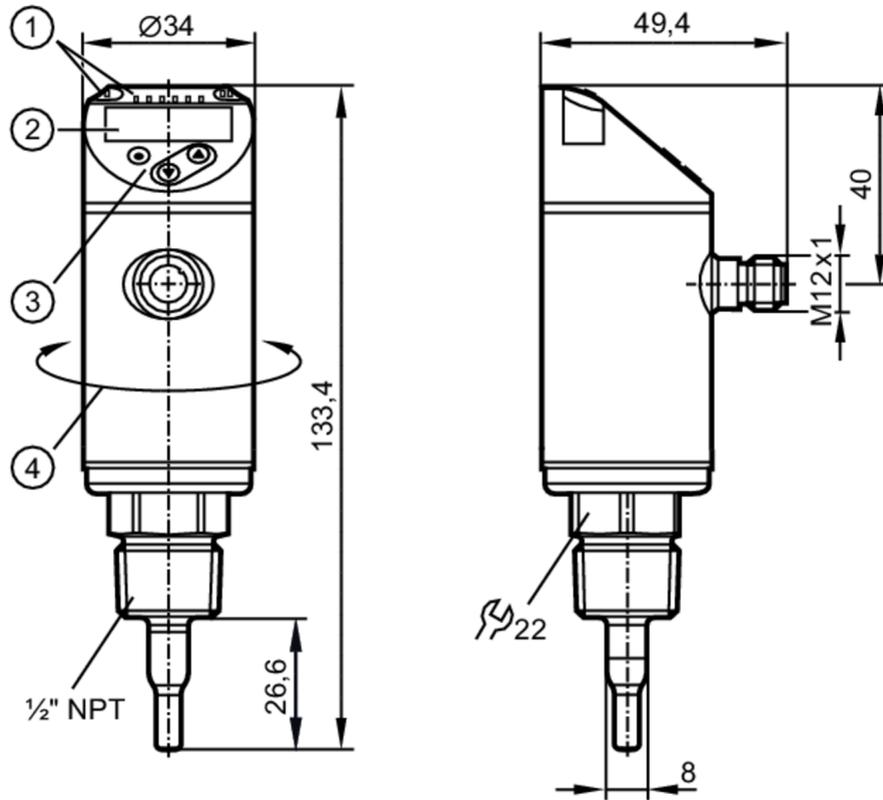
Flow sensor

SAN12XDBFRKG/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°

CE CRN cULus LISTED IO-Link UKCA

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1
Process connection	threaded connection 1/2" NPT external thread

Application

Special feature	Gold-plated contacts		
Media	water; glycol solutions; air; oils		
Note on media	low-viscosity oils with viscosity: ≤ 40 mm²/s (104 °F)		
	high-viscosity oils with viscosity: > 40 mm²/s (104 °F)		
Medium temperature [°F]	-4...194		
Pressure rating	100 bar	1450 psi	10 MPa
MAWP for applications [bar] according to CRN	100		

Electrical data

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

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Power-on delay time	[s]	10
Measuring principle		calorimetric

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]	26.6
Operating mode		relative; absolutely liquid; absolutely gaseous; (absolute: reference measurement recommended; Factory setting: relative)

Temperature monitoring

Measuring range	[°F]	-4...194
Resolution	[°F]	0.5

Liquid media - absolute operating mode

Setting range	[ft/s]	0...9.85
Greatest sensitivity	[ft/s]	0.15...9.85

Liquid media - relative operating mode

Setting range	[ft/s]	0...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 °F; > 158 °F)
Temperature gradient	[K/min]	100

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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: 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		± 0,003 K/°F
Accuracy	[K]	± 0,3 / ± 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	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	**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)

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MTTF	[years]	143	
UL approval		UL approval no.	I003
		File number UL	E174189

Mechanical data			
Weight	[g]	251.5	
Housing		cylindrical	
Dimensions	[mm]	Ø 34 / L = 133.4	
Materials		stainless steel (316L/1.4404); stainless steel (301/1.4310); PBT-GF20; PBT-GF30	
Materials (wetted parts)		stainless steel (316L/1.4404)	
Process connection		threaded connection 1/2" NPT external thread	
Probe diameter	[mm]	5	
Installation length EL	[mm]	26.6	

Displays / operating elements			
Display		Display unit	6 x LED, green (%, fps, gpm, cfm, °F, 10³)
		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

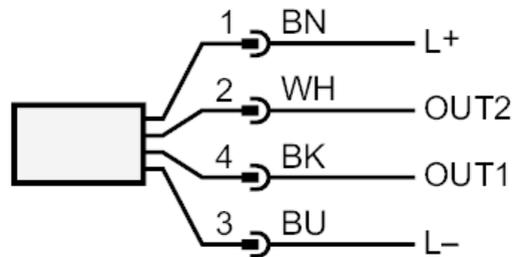Connector: 1 x M12; coding: A; Contacts: gold-plated

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Connection

```
1  BN ──── L+
2  WH ──── OUT2
4  BK ──── OUT1
3  BU ──── L−
```

	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