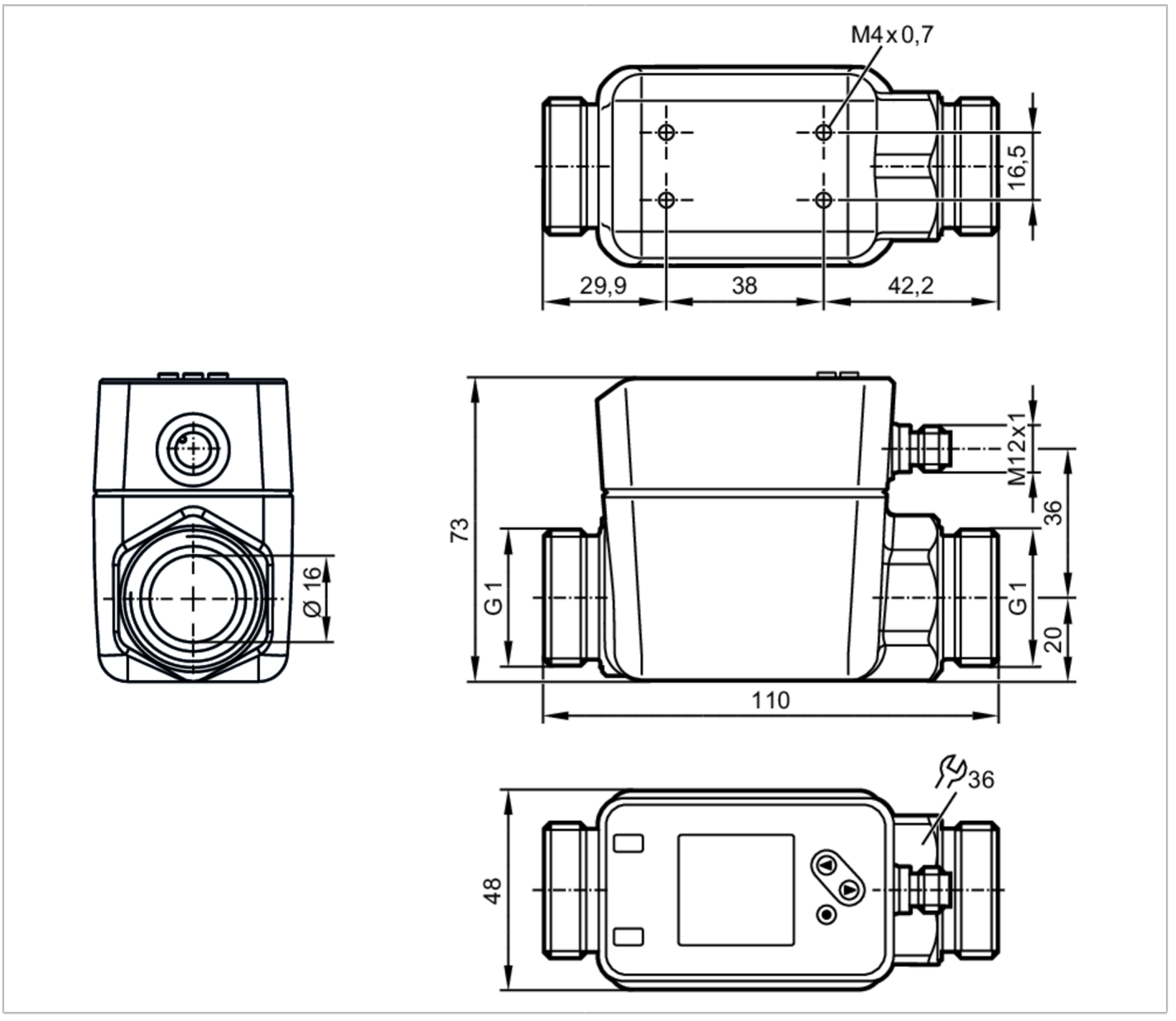
SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100



Product characteristics					
Number of inputs and outputs		Number of digital outputs: 2; Number of analogue outputs: 1			
Measuring range		0.2...150 l/min	0.012...9 m³/h	3.6...2376 gph	0.06...39.6 gpm
Process connection		G 1 DN25 flat seal			
Application					
Special feature		Gold-plated contacts			
Media		conductive liquids; water; hydrous media			
Note on media		conductivity: ≥ 20 µS/cm			
		viscosity: < 70 mm²/s (40 °C)			
Medium temperature	[°C]	-20...90			
Pressure rating	[bar]	16			
Pressure rating	[MPa]	1.6			

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Electrical data					
Operating voltage	[V]	18...30 DC; (to SELV/PELV)			
Current consumption	[mA]	< 80			
Protection class		III			
Reverse polarity protection		yes			
Power-on delay time	[s]	5			
Inputs / outputs					
Number of inputs and outputs		Number of digital outputs: 2; Number of analogue outputs: 1			
Inputs					
Inputs		counter reset			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analogue signal; pulse signal; IO-Link; frequency signal; (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			
Permanent current rating of switching output DC	[mA]	100			
Number of analogue outputs		1			
Analogue current output	[mA]	4...20; (scalable)			
Max. load	[Ω]	500			
Pulse output		flow rate meter			
Short-circuit protection		yes			
Type of short-circuit protection		pulsed			
Overload protection		yes			
Measuring/setting range					
Measuring range		0.2...150 l/min	0.012...9 m³/h	3.6...2376 gph	0.06...39.6 gpm
Display range		-180...180 l/min	-10.8...10.8 m³/h	-2853.6...2853.6 gph	-47.56...47.56 gpm
Resolution		0.1 l/min	0.006 m³/h	0.6 gph	0.01 gpm
Set point SP		1...150 l/min	0.06...9 m³/h	16.2...2376 gph	0.27...39.6 gpm
Reset point rP		0.2...149.2 l/min	0.012...8.95 m³/h	3.6...1903 gph	0.06...39.42 gpm
Analogue start point ASP		0...120 l/min	0...7.2 m³/h	0...1903 gph	0...31.71 gpm
Analogue end point AEP		30...150 l/min	1.8...9 m³/h	475...2376 gph	7.92...39.6 gpm
Low flow cut-off LFC		0.2...7.5 l/min	0.012...0.45 m³/h	3...118.4 gph	0.05...1.98 gpm
Frequency end point, FEP		30.2...150 l/min	1.8...9 m³/h	480...2376 gph	8...39.6 gpm
Frequency at the end point FRP	[Hz]	1...10000			
Volumetric flow quantity monitoring					
Pulse length	[s]	0.002...2			
Pulse value		0.01...99990000 l			
Temperature monitoring					
Measuring range	[°C]	-20...90			

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Display range	[°C]	-42...112
Resolution	[°C]	0.1
Set point SP	[°C]	-19.6...90
Reset point rP	[°C]	-20...89.6
Analogue start point	[°C]	-20...68
Analogue end point	[°C]	2...90
In steps of	[°C]	0.1

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 % MEW)

Response times

Flow monitoring		
Start-up delay	[s]	0...50
Response time	[s]	< 0.25; (dAP = 0, T09)
Damping process value dAP	[s]	0...5
Temperature monitoring		
Response time	[s]	15; (Q > 10 % MEW, T09)

Software / programming

Parameter setting options	hysteresis / window; normally open / normally closed; switching logic; frequency output; current/pulse output; start-up delay; display can be deactivated; Display unit

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 type		A
Process data analogue		3
Process data binary		2
Min. process cycle time	[ms]	6

Supported DeviceIDs	**Type of operation**	**DeviceID**
	default	961

Operating conditions

Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection		IP 65; IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

CPA approval		model number	006MI
		accuracy class	-
		maximum allowable error	± 1,0 % FS
		Q (min)	0,01 m³/h
		Q (t)	-
		Q (max)	9 m³/h
Shock resistance		DIN IEC 68-2-27	20 g (11 ms)
Vibration resistance		DIN IEC 68-2-6:	5 g (10...2000 Hz)
MTTF	[years]	114	
UL approval		UL Approval no.	I014
		File number UL	E174189
Pressure Equipment Directive		Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight	[g]	782	
Materials		stainless steel (316/1.4408); stainless steel (316L/1.4404); PC; PBT+PC-GF30	
Materials (wetted parts)		stainless steel (316L/1.4404); PEEK; carbon fibre PEEK; FKM; Centellen	
Process connection		G 1 DN25 flat seal	

Displays / operating elements

Display			colour display 1,44", 128 x 128 pixels
			2 x LED, yellow

Remarks

Remarks	MW = measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

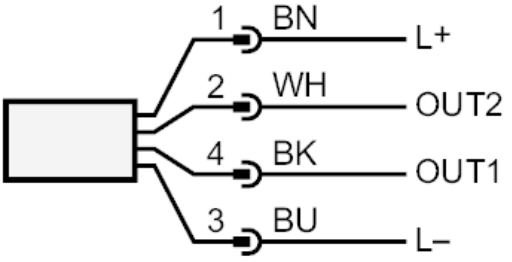
Connector: 1 x M12; coding: A; Contacts: gold-plated

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Connection



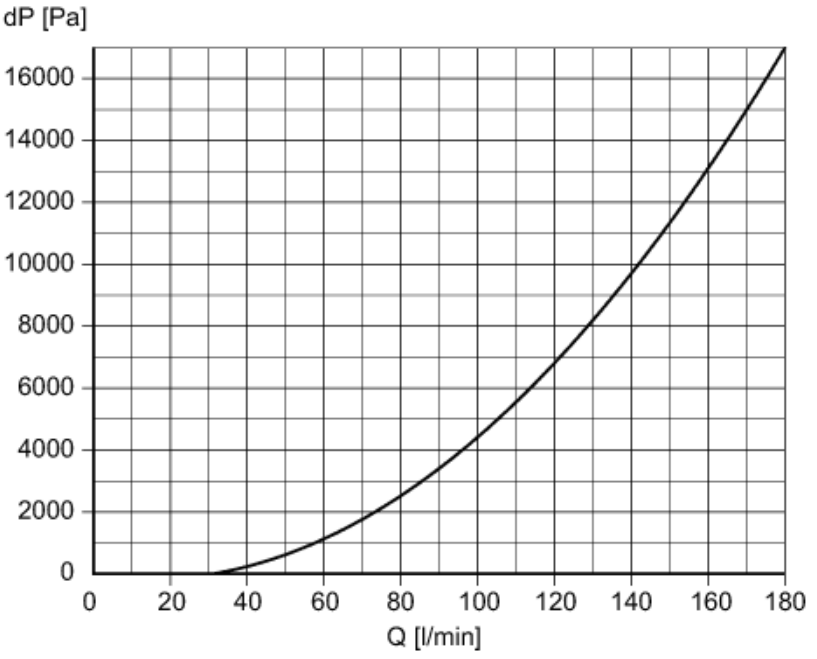
	colours to DIN EN 60947-5-2
OUT1:	switching output volumetric flow quantity monitoring
	switching output Temperature monitoring
	Pulse output quantity meter
	frequency output volumetric flow monitoring
	frequency output Temperature monitoring
	signal output Preset counter
	IO-Link
OUT2:	switching output volumetric flow quantity monitoring
	switching output Temperature monitoring
	analogue output flow
	analogue output temperature
	input counter reset
	Core colours :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Diagrams and graphs



Pressure loss / volumetric flow quantity