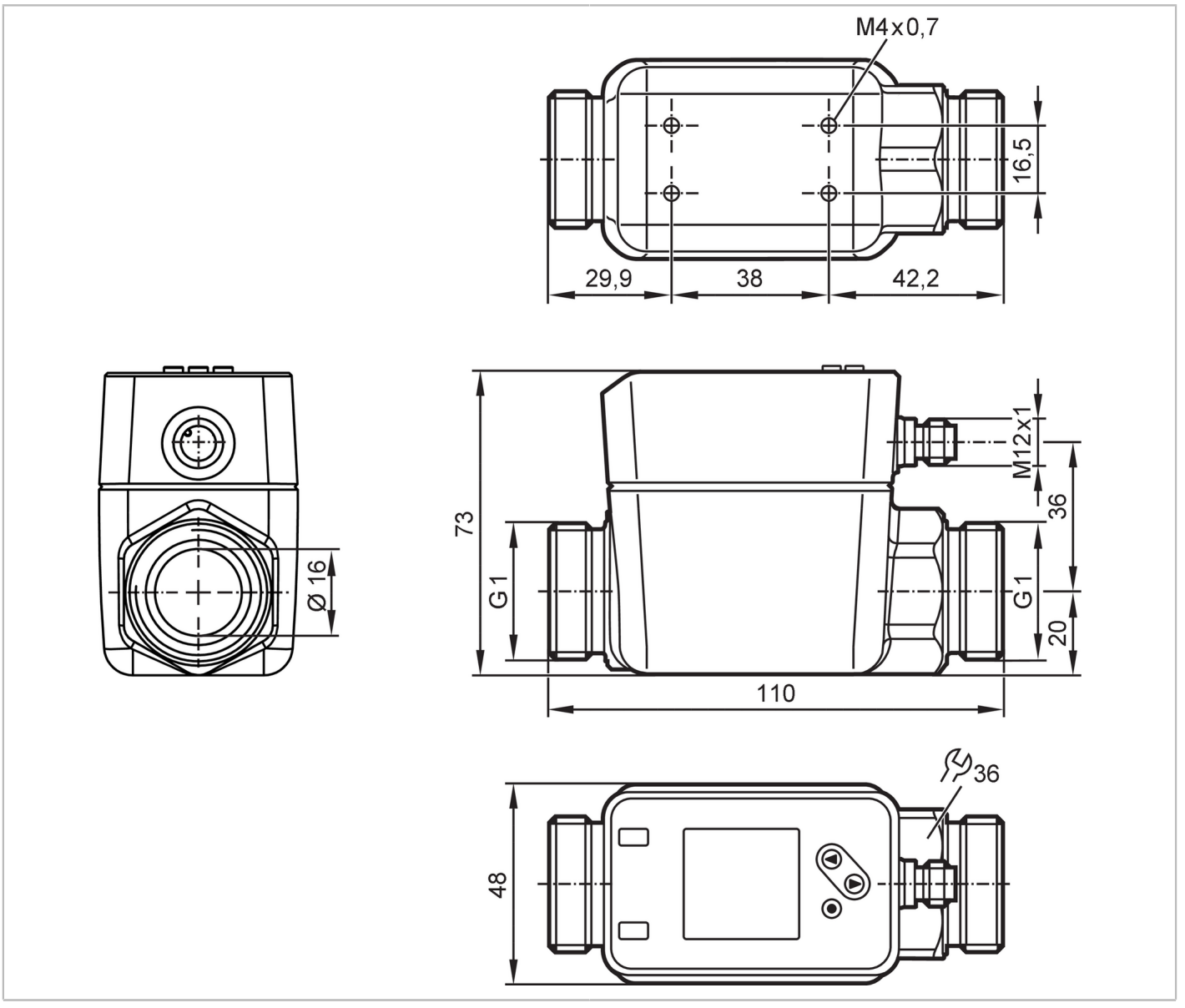
SM8020

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	threaded connection G 1 external thread 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	16 bar	1.6 MPa		
Electrical data				
Operating voltage [V]	18...30 DC; (to SELV/PELV)			

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Current consumption	[mA]	< 80
Min. insulation resistance	[MΩ]	100; (500 V DC)
Protection class		III
Reverse polarity protection		yes
Power-on delay time	[s]	5
Measuring principle		magnetic-inductive

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
Display range	[°C]	-42...112

SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

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		Common - I&D	Identification and Diagnosis
		Function	Measurement data, standard resolution
SIO mode		yes	
Required master port type		A	
Process data analogue		3	
Process data binary		2	
Min. process cycle time	[ms]	8	
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
Housing		rectangular
Dimensions	[mm]	110 x 48 x 73
Materials		stainless steel (316/1.4408); stainless steel (316L/1.4404); PC; PBT+PC-GF30
Materials (wetted parts)		Pipe section: stainless steel (316L/1.4404); Process connection sealing: NBR reinforced fibre Flat seal; FKM; PEEK; carbon fibre PEEK
Process connection		threaded connection G 1 external thread 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: 4, gold-plated

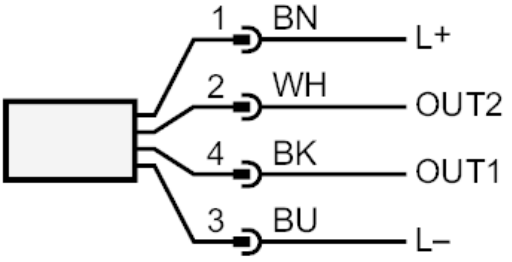


SM8020

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Connection



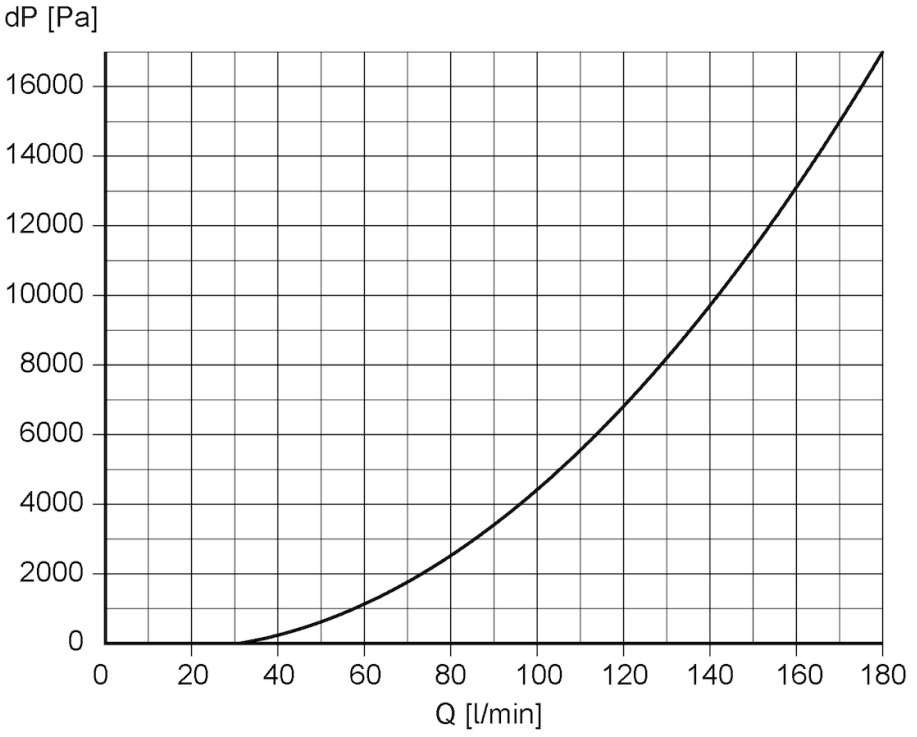
	colours to DIN EN 60947-5-2
OUT1:	switching output volumetric flow quantity monitoring
	switching output Temperature monitoring
	Pulse output quantity meter
	frequency output volumetric flow monitoring
	frequency output Temperature monitoring
	signal output Preset counter
	IO-Link
OUT2:	switching output 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