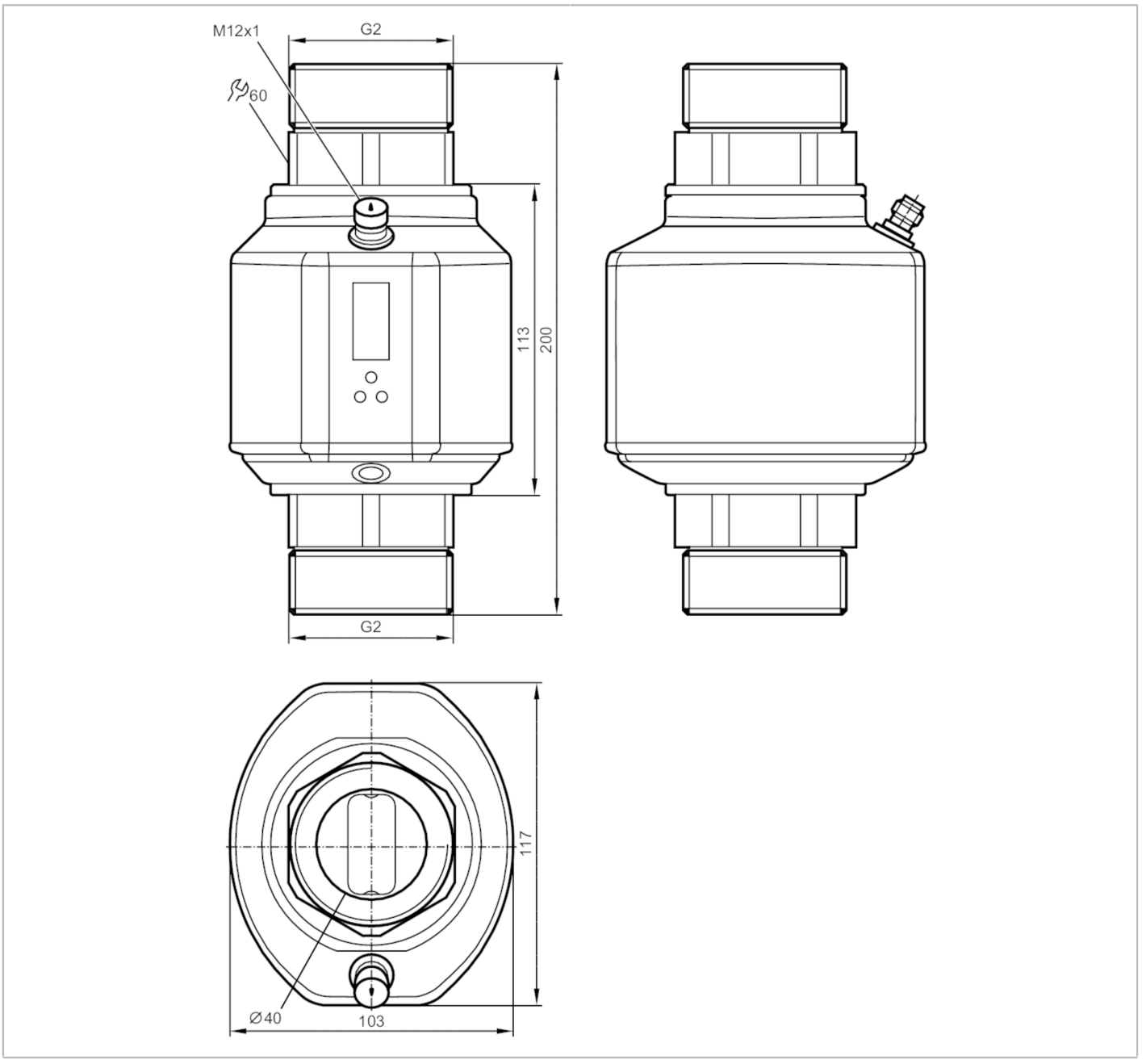
SM9001

Magnetic-inductive flow meter

SMR21XGXFRKG/US



CE CRN cULus LISTED EC 1935/2004 IO-Link UKCA

Product characteristics		
Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1	
Measuring range	80...4800 gph	1.3...80 gpm
Process connection	threaded connection G 2 external thread DN50 flat seal	

Application	
Special feature	Gold-plated contacts
Application	totaliser function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	conductive liquids; water; hydrous media

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Note on media		conductivity: ≥ 20 µS/cm	
		viscosity: < 70 mm²/s (40 °C)	
Medium temperature	[°F]	14...194	
Pressure rating		16 bar	1.6 MPa
MAWP (for applications according to CRN)	[bar]	16	
Electrical data			
Operating voltage	[V]	18...32 DC; (to SELV/PELV)	
Current consumption	[mA]	< 150	
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; 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	
Permanent current rating of switching output DC	[mA]	250; (per output)	
Number of analogue outputs		1	
Analogue current output	[mA]	4...20; (scalable)	
Max. load	[Ω]	500	
Analogue voltage output	[V]	0...10; (scalable)	
Min. load resistance	[Ω]	2000	
Pulse output		flow rate meter	
Short-circuit protection		yes	
Type of short-circuit protection		pulsed	
Overload protection		yes	
Frequency of the output	[Hz]	0.1...10000	
Measuring/setting range			
Measuring range		80...4800 gph	1.3...80 gpm
Display range		-5760...5760 gph	-96...96 gpm
Resolution		5 gph	0.1 gpm
Set point SP		105...4800 gph	1.7...80 gpm
Reset point rP		80...4775 gph	1.3...79.6 gpm
Analogue start point ASP		0...3840 gph	0...64 gpm
Analogue end point AEP		960...4800 gph	16...80 gpm

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Low flow cut-off LFC		< 240 gph	< 4 gpm
In steps of		5 gph	0.1 gpm
Measuring dynamics		1:60	
Volumetric flow quantity monitoring			
Pulse value		0.02...80 E06 gal	
In steps of		0.02 gal	
Pulse length	[s]	0,016...2	
Temperature monitoring			
Measuring range	[°F]	-4...176	
Display range	[°F]	-40...212	
Resolution	[°F]	0.5	
Set point SP	[°F]	-2...176	
Reset point rP	[°F]	-3...175	
Analogue start point	[°F]	-4...140	
Analogue end point	[°F]	32...176	
In steps of	[°F]	0.5	
Accuracy / deviations			
Flow monitoring			
Accuracy (in the measuring range)		± (0,8 % MW + 0,5 % MEW)	
Repeatability		± 0,2% MEW	
Temperature monitoring			
Temperature drift		± 0,0185 °F / K	
Accuracy	[K]	± 1 (77 °F; Q > 4 gpm)	
Response times			
Flow monitoring			
Response time	[s]	0.35; (dAP = 0)	
Delay time programmable dS, dr	[s]	0...50	
Damping process value dAP	[s]	0...5	
Temperature monitoring			
Dynamic response T05 / T09	[s]	T09 = 3 (Q > 4 gpm)	
Software / programming			
Parameter setting options		Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / normally closed; switching logic; current/voltage/frequency/ pulse output; start-up delay; display can be deactivated; Display unit; empty pipe detection	
Interfaces			
Communication interface		IO-Link	
Transmission type		COM2 (38,4 kBaud)	
IO-Link revision		1.1	
SDCI standard		IEC 61131-9 CDV	
Profiles		Smart Sensor: Process Data Variable; Device Identification	
SIO mode		yes	
Required master port type		A	

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Process data analogue		3	
Process data binary		2	
Min. process cycle time	[ms]	5	
Supported DeviceIDs		**Type of operation**	**DeviceID**
		default	392
Operating conditions			
Ambient temperature	[°F]	14...140	
Storage temperature	[°F]	-13...176	
Protection		IP 65; IP 67	
Tests / approvals			
EMC		DIN EN 60947-5-9	
Shock resistance		DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance		DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	85	
UL approval		UL Approval no.	I008
		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]	26	
Housing		rectangular	
Dimensions	[mm]	200 x 103 x 117	
Materials		stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)		stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PEEK; Centellen; FKM	
Process connection		threaded connection G 2 external thread DN50 flat seal	
Displays / operating elements			
Display		Display unit	6 x LED, green (gpm, gph, gal, °F, 10^3, 1000 x 10^3)
		switching status	2 x LED, yellow
		measured values	alphanumeric display, 4-digit
		programming	alphanumeric display, 4-digit
Accessories			
Items supplied		sealings: 2, Centellen	
		Label	
Remarks			
Remarks		MW = measured value	
		MEW = Final value of the measuring range	
Pack quantity		1 pcs.	

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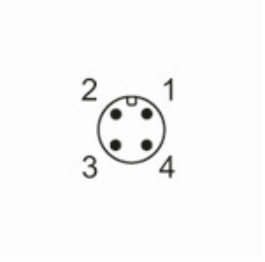
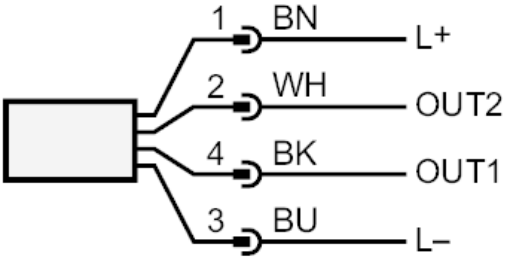
Electrical connection

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



Connection



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

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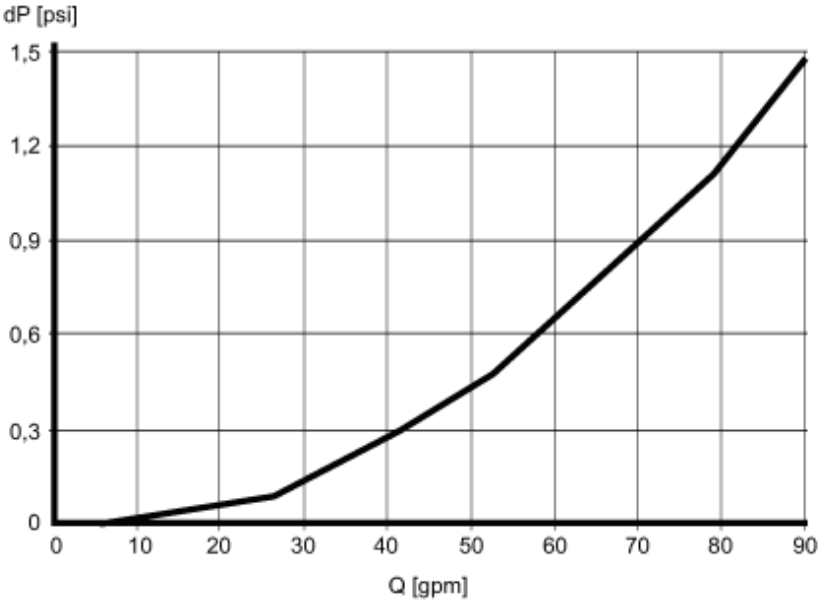
Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity