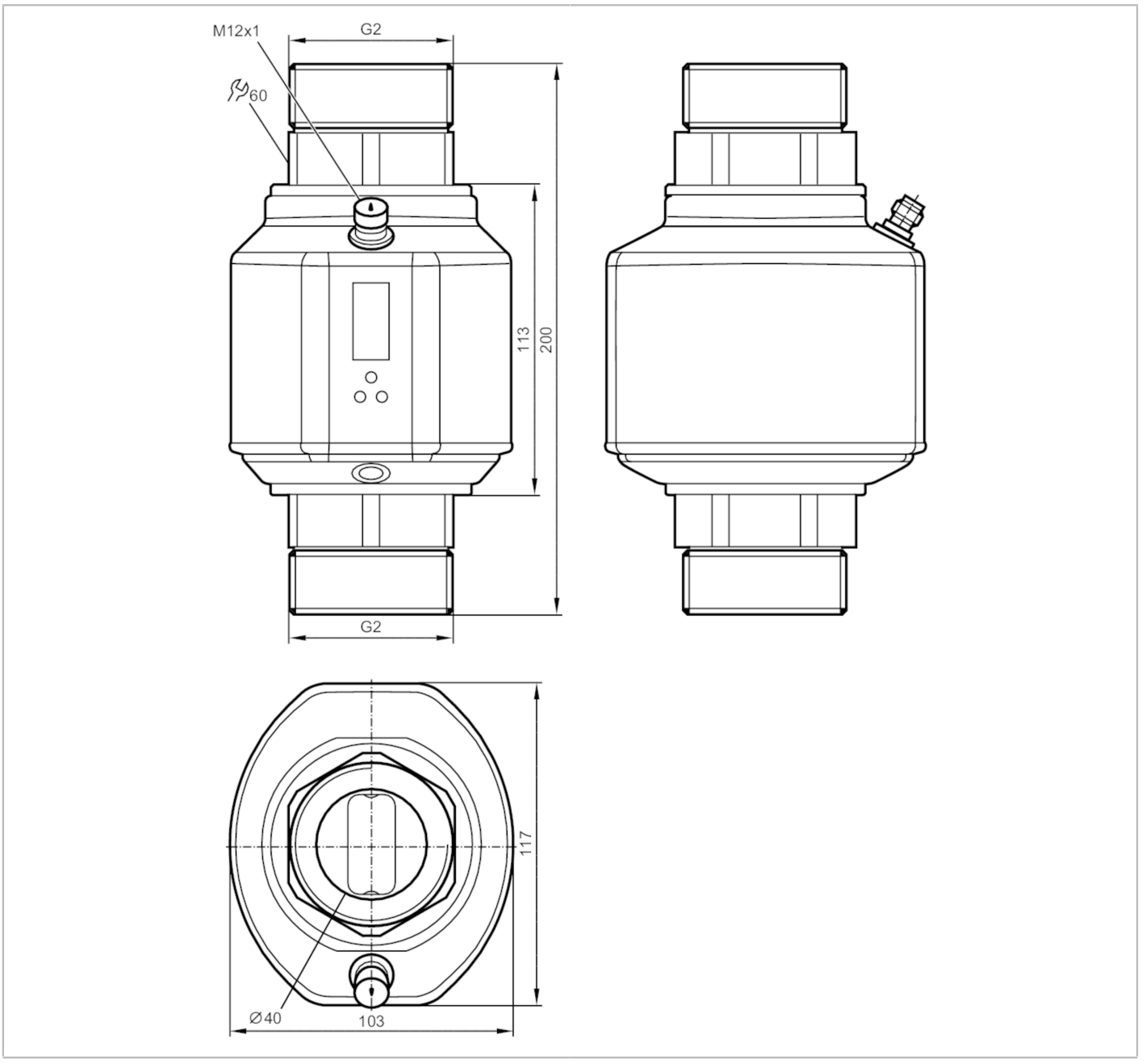
SM2001

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...9600 gph	1.3...160 gpm
Process connection	threaded connection G 2 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	[bar]	16
Pressure rating	[psi]	232
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
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...9600 gph	1.3...160 gpm
Display range	-11520...11520 gph	-190...190 gpm
Resolution	5 gph	0.1 gpm
Set point SP	130...9600 gph	2.1...160 gpm
Reset point rP	80...9550 gph	1.3...159.2 gpm
Analogue start point ASP	0...7680 gph	0...128 gpm
Analogue end point AEP	1920...9600 gph	32...160 gpm

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Low flow cut-off LFC		< 240 gph	< 4 gpm
In steps of		5 gph	0.1 gpm
Measuring dynamics		1:120	
Volumetric flow quantity monitoring			
Pulse value		0.02...160 E06 gal	
In steps of		0.02 gal	
Pulse length	[s]	0,008...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	390

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]	3069.2	
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 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.

Electrical connection

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

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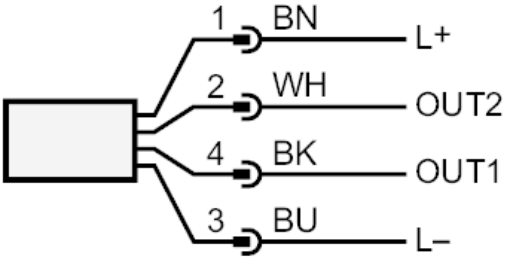
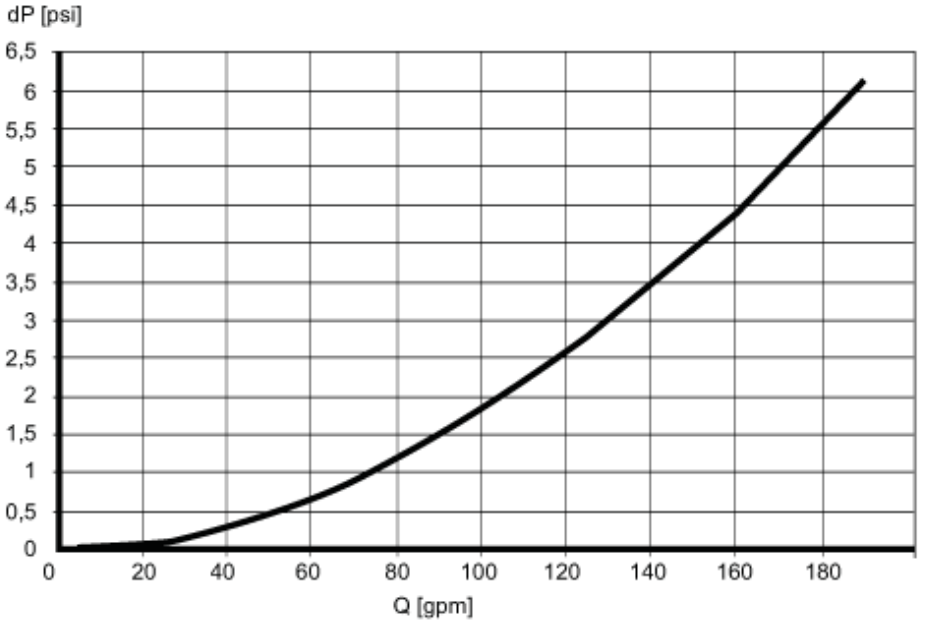
Connection



	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

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity