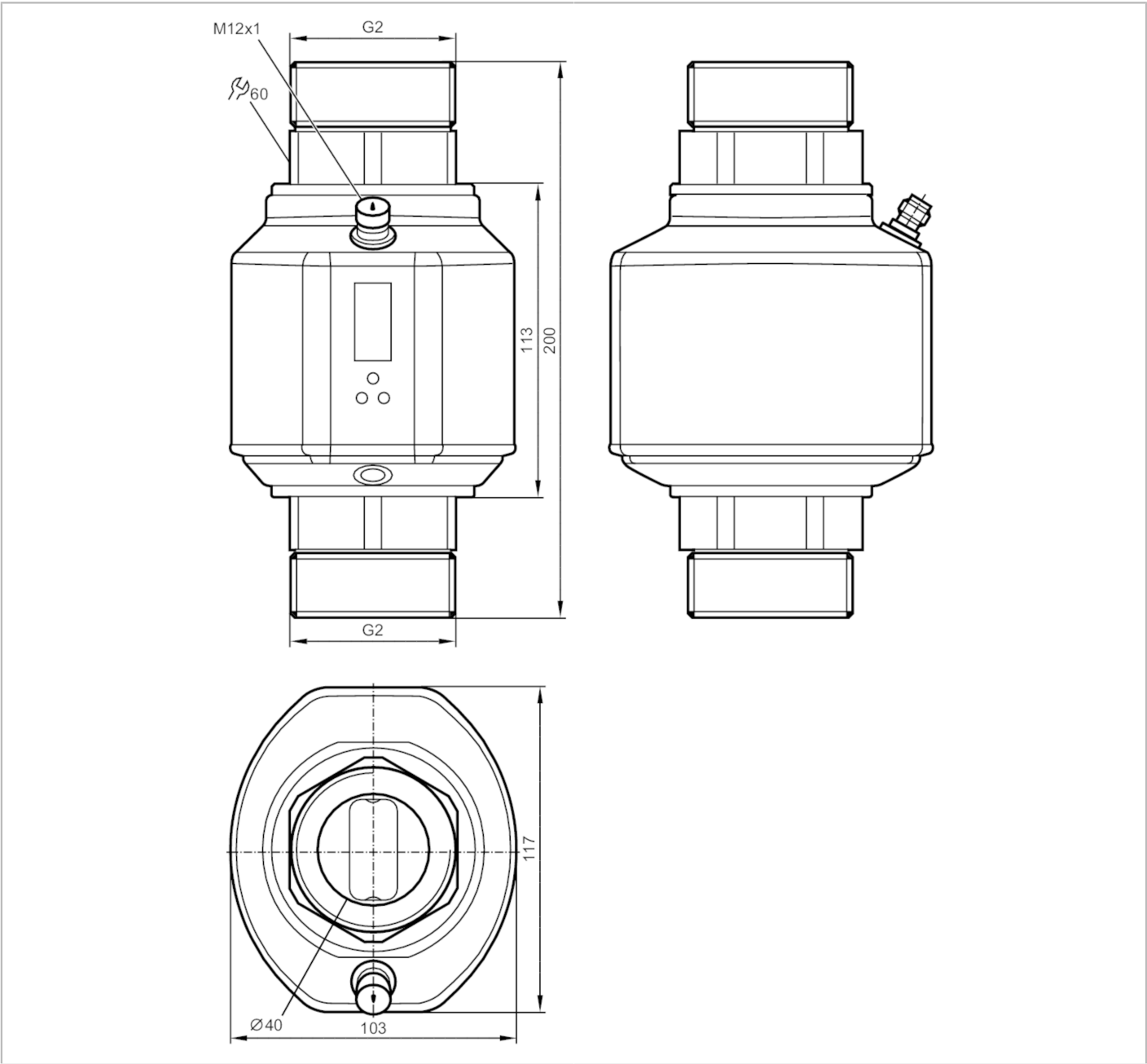


SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US



CE CRN cUL LISTED EC 1935/2004 FCM IO-Link UK CA

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: $\geq 20 \mu\text{S/cm}$	
	viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°F]	14...194	
Pressure rating	16 bar	1.6 MPa
MAWP for applications according to CRN	8.9 bar	0.89 MPa

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 - SSP 0	Generic Profiled Sensor	
	Function	Device identification	
	Function	Process data variable	

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SIO mode	yes				
Required master port type	A				
Process data analogue	3				
Process data binary	2				
Min. process cycle time [ms]	5				
Supported DeviceIDs	<table> <tr> <th>Type of operation</th><th>DeviceID</th></tr> <tr> <td>default</td><td>392</td></tr> </table>	Type of operation	DeviceID	default	392
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				
Vibration resistance	DIN EN 60068-2-6				
MTTF [years]	85				
UL approval	<table> <tr> <td>UL approval no.</td><td>I008</td></tr> <tr> <td>File number UL</td><td>E174189</td></tr> </table>	UL approval no.	I008	File number UL	E174189
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]	3092
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)	Pipe section: stainless steel (316L/1.4404); Process connection sealing: NBR reinforced fibre Flat seal; FKM; stainless steel (316Ti/1.4571); PEEK
Process connection	threaded connection G 2 external thread DN50 flat seal

Displays / operating elements									
Display	<table> <tr> <td>Display unit</td><td>6 x LED, green (gpm, gph, gal, °F, 10³, 1000 x 10³)</td></tr> <tr> <td>switching status</td><td>2 x LED, yellow</td></tr> <tr> <td>measured values</td><td>alphanumeric display, 4-digit</td></tr> <tr> <td>programming</td><td>alphanumeric display, 4-digit</td></tr> </table>	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
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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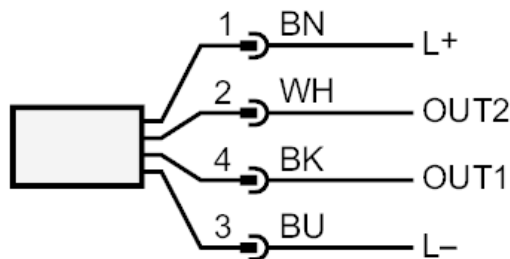
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Electrical connection

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



Connection



OUT1:	colours to DIN EN 60947-5-2 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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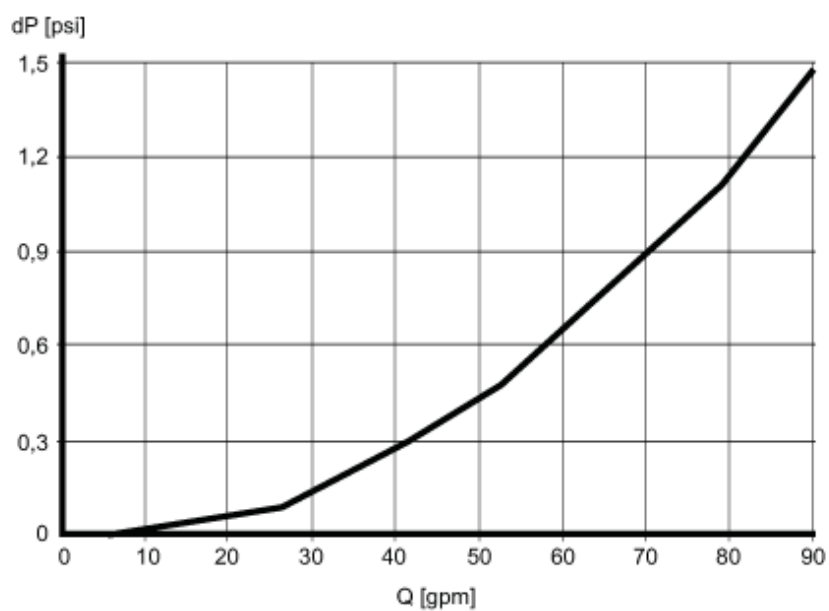
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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity