

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US



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

Product characteristics

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

Application

System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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 analog outputs: 1	

Inputs		
Inputs	counter reset	

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; frequency signal; IO-Link; (configurable)	
Electrical design	PNP/NPN	
Number of digital outputs	2	
Output function	normally open / closed; (configurable)	
Max. voltage drop switching output DC [V]	2	
Permanent current rating of switching output DC [mA]	250; (per output)	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
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
Analog start point ASP	0...3840 gph	0...64 gpm
Analog end point AEP	960...4800 gph	16...80 gpm

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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		
Analog start point [°F]	-4...140		
Analog 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)		
Reaction 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 / 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	

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode	yes	
Required master port class	A	
Process data analog	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 number	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
Inlet pipe length		3 x DN
Outlet pipe length		1 x DN
Dimensions [mm]		200 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; stainless steel (1.4571/316Ti); PEEK	
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.	

SM9001



Magnetic-inductive flow meter

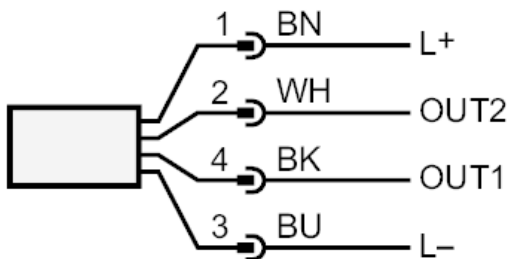
SMR21XGXFRKG/US

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM9001

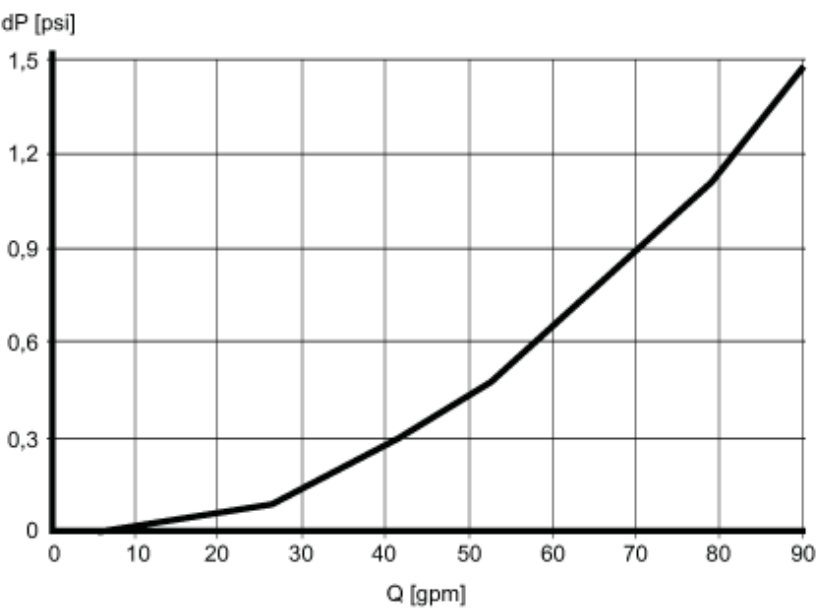


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity