

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US



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 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	[bar]	16
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
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Inputs

Inputs	counter reset
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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
Low flow cut-off LFC	$< 240 \text{ gph}$	$< 4 \text{ gpm}$



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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	
Process data analogue	3	

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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
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
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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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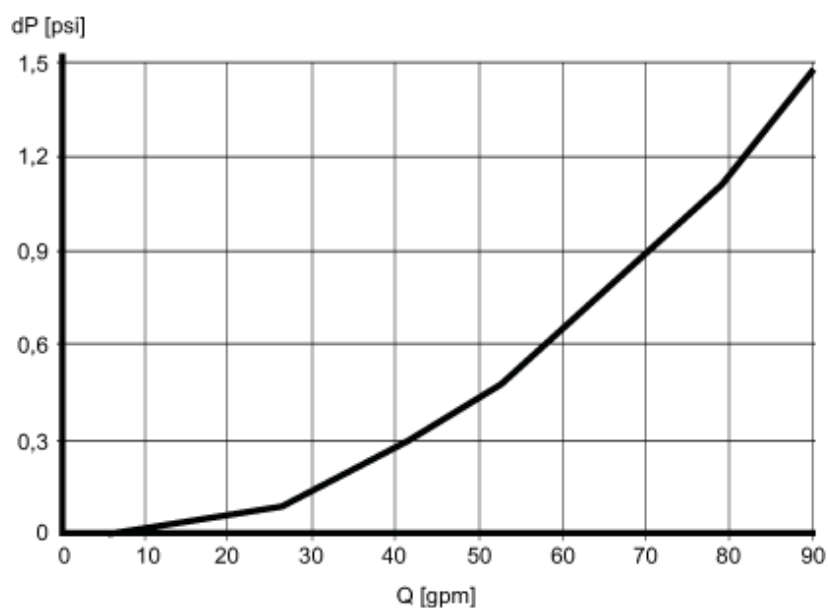
Connection



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

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity