

SM2001



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...9600 gph	1.3...160 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

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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	232 psi	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...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
Analog start point ASP	0...7680 gph	0...128 gpm
Analog 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	
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

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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	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 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]		3069.2
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.	

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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

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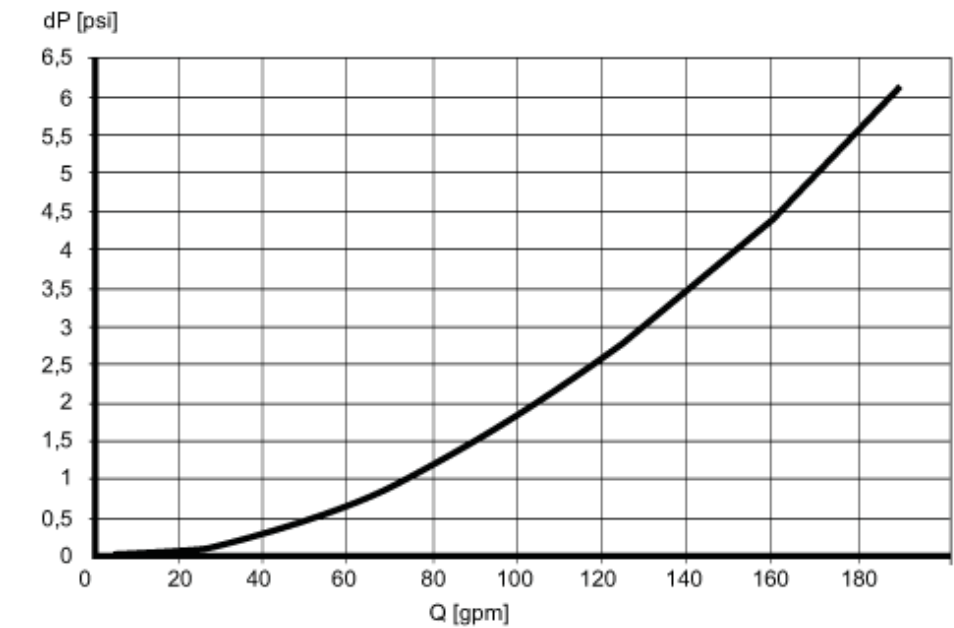


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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity