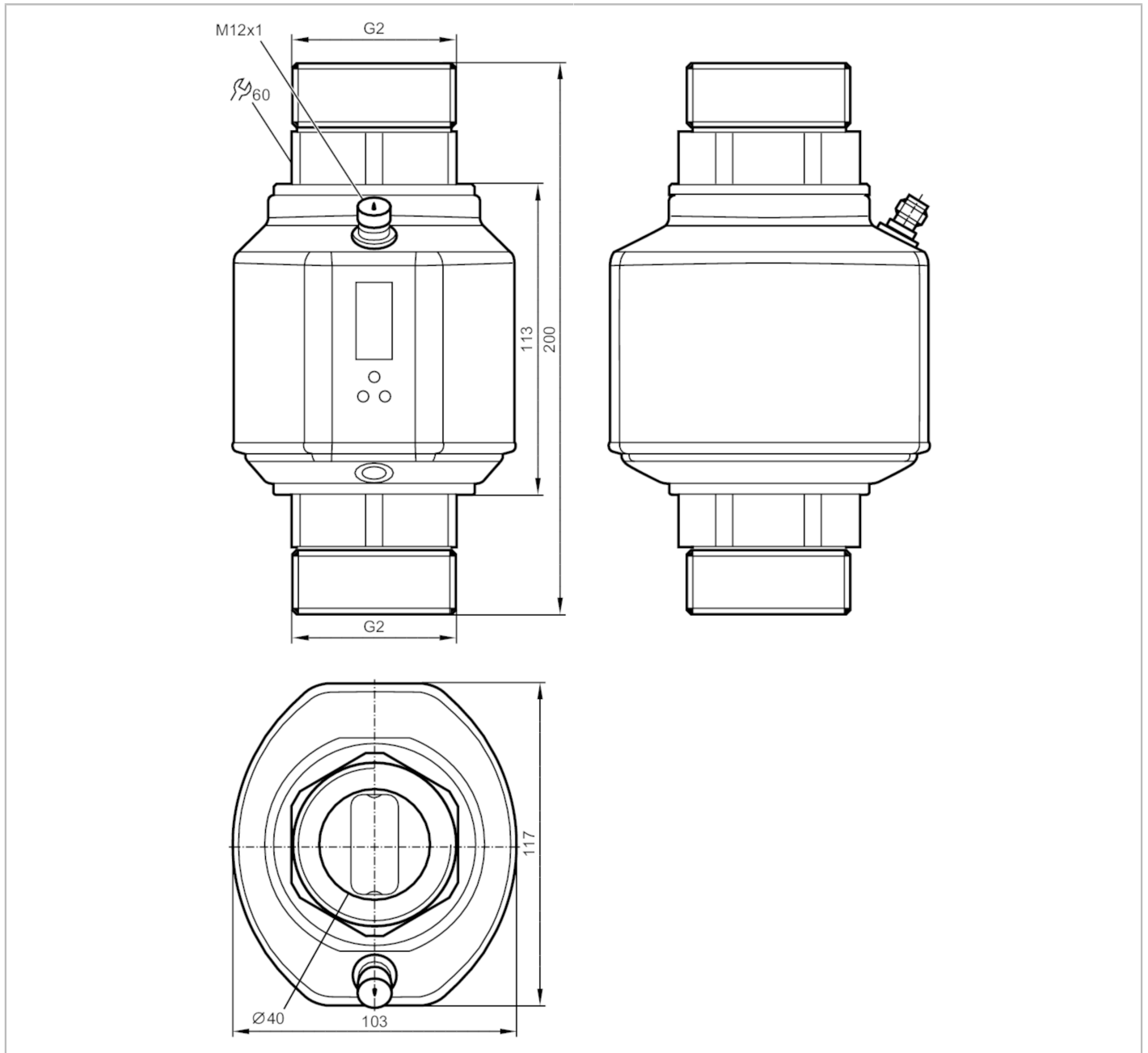


# SM9001



## Magnetic-inductive flow meter

SMR21XGXFRKG/US



### 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

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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...176	
Pressure rating	16 bar	1.6 MPa
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 analog outputs: 1	
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### Inputs

Inputs	counter reset	
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### 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
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	
<b>Volumetric flow quantity monitoring</b>		
Pulse value	0.02...80 E06 gal	
In steps of	0.02 gal	
Pulse length [s]	0,016...2	
<b>Temperature monitoring</b>		
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	
<b>Accuracy / deviations</b>		
<b>Flow monitoring</b>		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	
<b>Temperature monitoring</b>		
Temperature drift	± 0,0185 °F / K	
Accuracy [K]	± 1 (77 °F; Q > 4 gpm)	
<b>Reaction times</b>		
<b>Flow monitoring</b>		
Response time [s]	0.35; (dAP = 0)	
Delay time programmable dS, dr [s]	0...50	
Damping process value dAP [s]	0...5	
<b>Temperature monitoring</b>		
Dynamic response T05 / T09 [s]	T09 = 3 (Q > 4 gpm)	
<b>Software / programming</b>		
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	
<b>Interfaces</b>		
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 class	A	
Process data analog	3	

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Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	<b>Type of operation</b>	<b>DeviceID</b>
	default	392

<b>Operating conditions</b>		
Ambient temperature [°F]		14...140
Storage temperature [°F]		-13...176
Protection		IP 65; IP 67

<b>Tests / approvals</b>		
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	

<b>Mechanical data</b>		
Weight [g]		26
Housing		rectangular
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)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; Centellen; FKM	
Process connection	threaded connection G 2 external thread DN50 flat seal	

<b>Displays / operating elements</b>		
Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 <sup>3</sup> , 1000 x 10 <sup>3</sup> )
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

<b>Accessories</b>		
Items supplied	sealings: 2, Centellen	
	Label	

<b>Remarks</b>		
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

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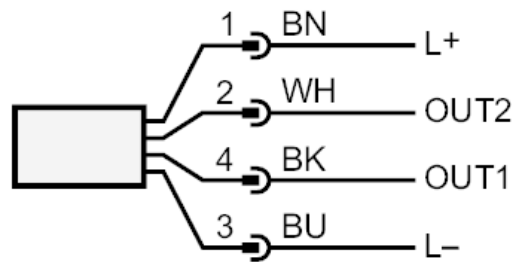
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### Electrical connection

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



### Connection



OUT1:	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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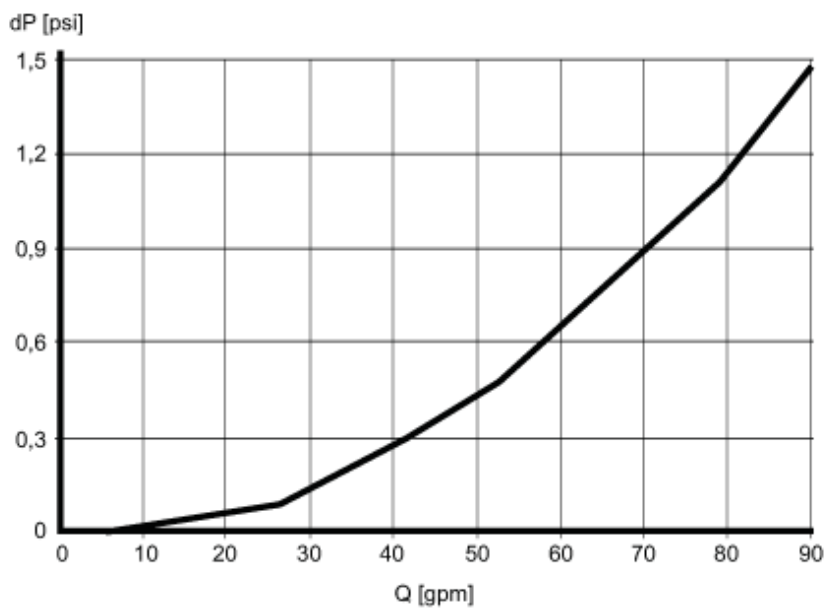


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### Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity