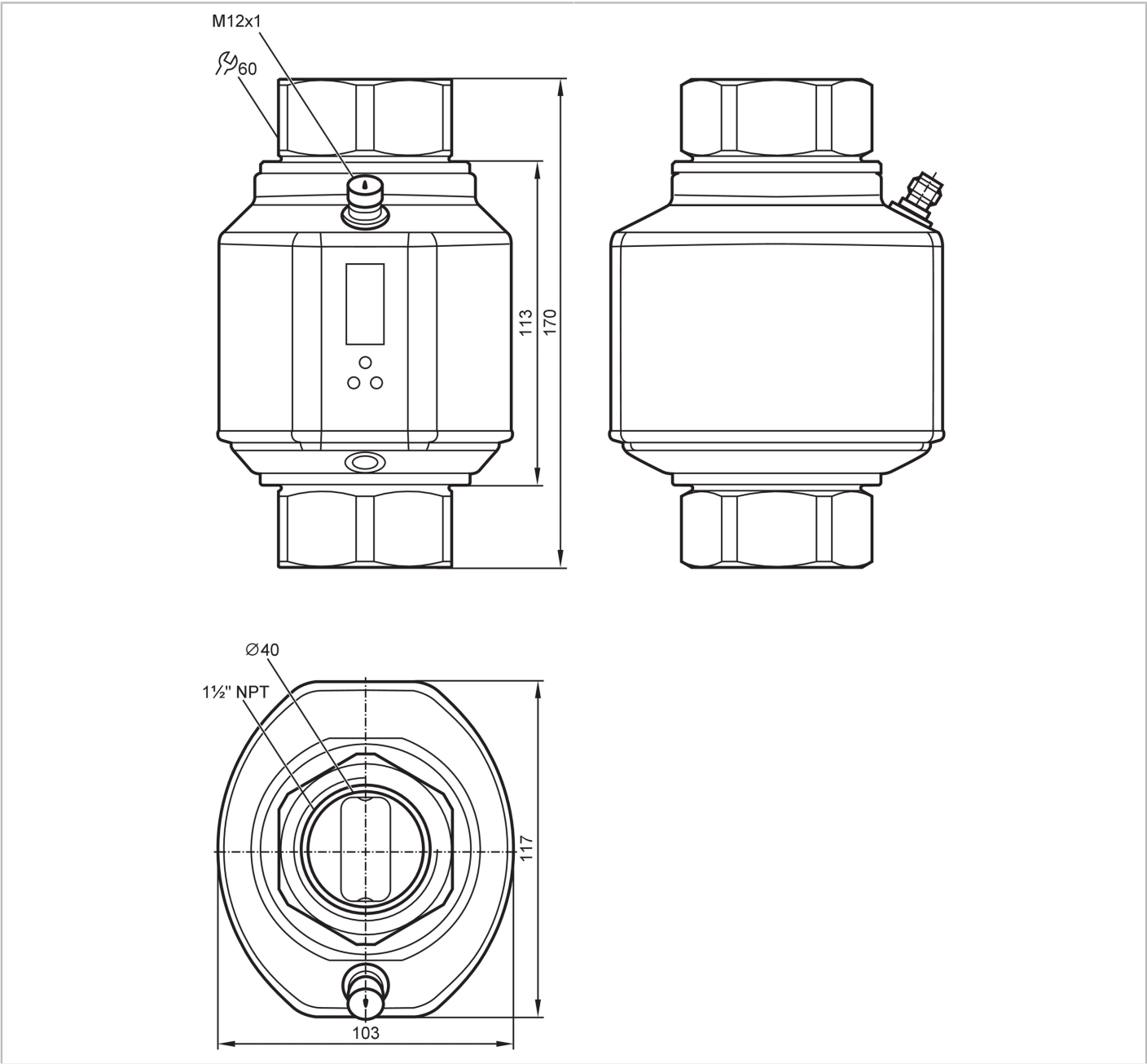


SM9601



Magnetic-inductive flow meter

SMN32XGXFRKG/US-100



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 1 1/2" NPT Internal thread DN40	
Application		
Special feature	gold-plated contacts	
Application	Totalizer function; empty pipe detection; for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: ≥ 20 µS/cm	
	viscosity: < 70 mm²/s (40 °C)	

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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
Low flow cut-off LFC	< 240 gph	< 4 gpm
In steps of	5 gph	0.1 gpm



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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
SIO mode	yes	
Required master port class	A	

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Magnetic-inductive flow meter

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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]	2776.5
Housing		rectangular
Inlet pipe length		3 x DN
Outlet pipe length		1 x DN
Dimensions	[mm]	170 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; FKM
Process connection		threaded connection 1 1/2" NPT Internal thread DN40

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	Label	

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

Electrical connection		
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Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



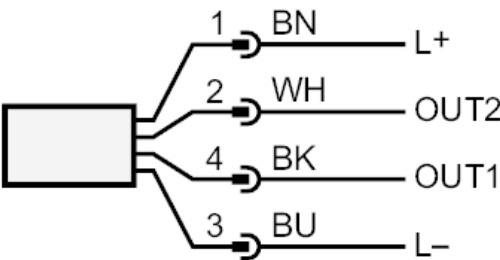
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Connection



- 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
- BK =

black
- BN =

brown
- BU =

blue
- WH =

white

SM9601

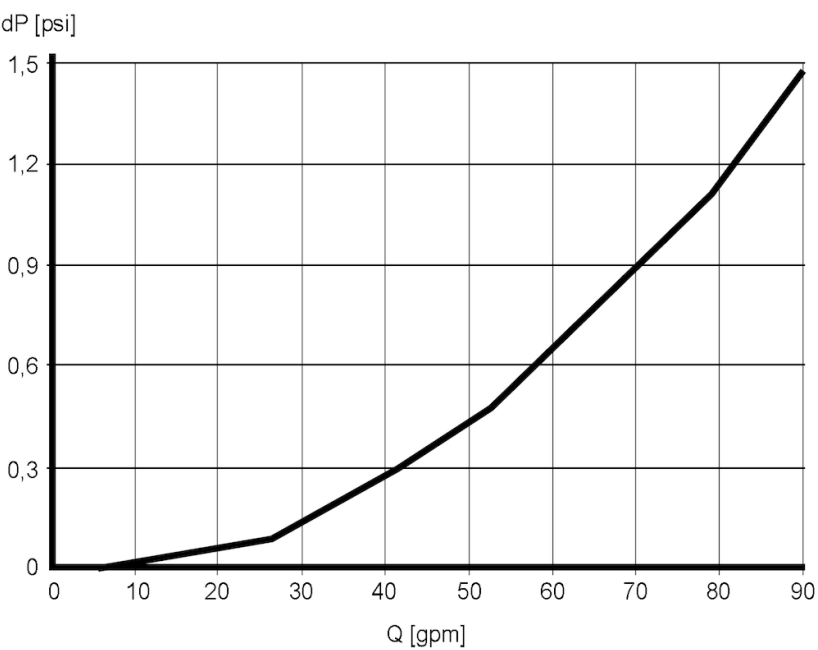


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Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity