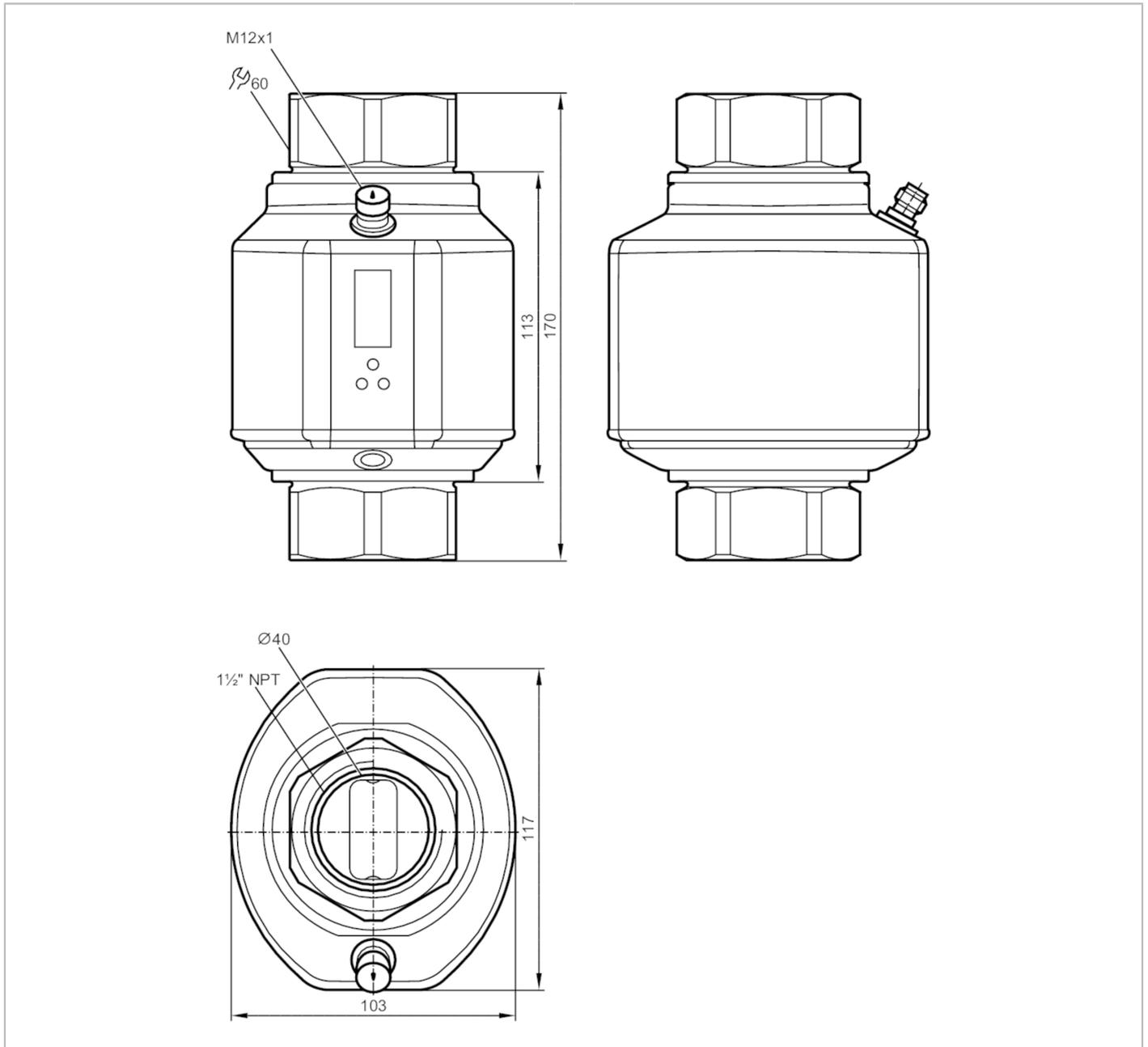


# SM9601



## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100



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 1 1/2" NPT internal thread DN40
Application	
Special feature	Gold-plated contacts
Application	totaliser function; empty pipe detection; for industrial applications
Media	conductive liquids; water; hydrous media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)

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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 analogue outputs: 1

Inputs	
Inputs	counter reset

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 gph	< 4 gpm
In steps of	5 gph	0.1 gpm
Measuring dynamics		1:60

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## Magnetic-inductive flow meter

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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)	$\pm (0,8 \% MW + 0,5 \% MEW)$
Repeatability	$\pm 0,2\% MEW$
Temperature monitoring	
Temperature drift	$\pm 0,0185 \text{ } ^\circ\text{F} / \text{K}$
Accuracy [K]	$\pm 1 (77 \text{ } ^\circ\text{F}; Q > 4 \text{ gpm})$
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 - SSP 0      Generic Profiled Sensor
Function	Device identification
Function	Process data variable
SIO mode	yes
Required master port type	A
Process data analogue	3

# SM9601



## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

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 no.	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]		2776.5
Housing		rectangular
Dimensions [mm]		170 x 103 x 117
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; FKM	
Process connection	threaded connection 1 1/2" NPT internal thread DN40	

<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		Label

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

<b>Electrical connection</b>		
Connector: 1 x M12; coding: A; Contacts: gold-plated		



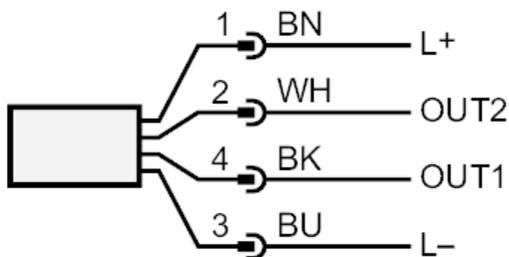
# SM9601



## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

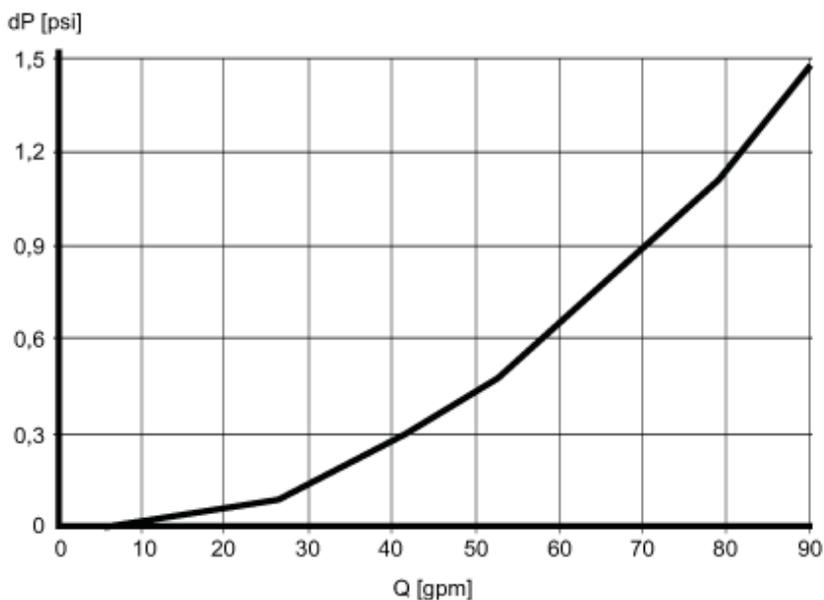
### Connection



- 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