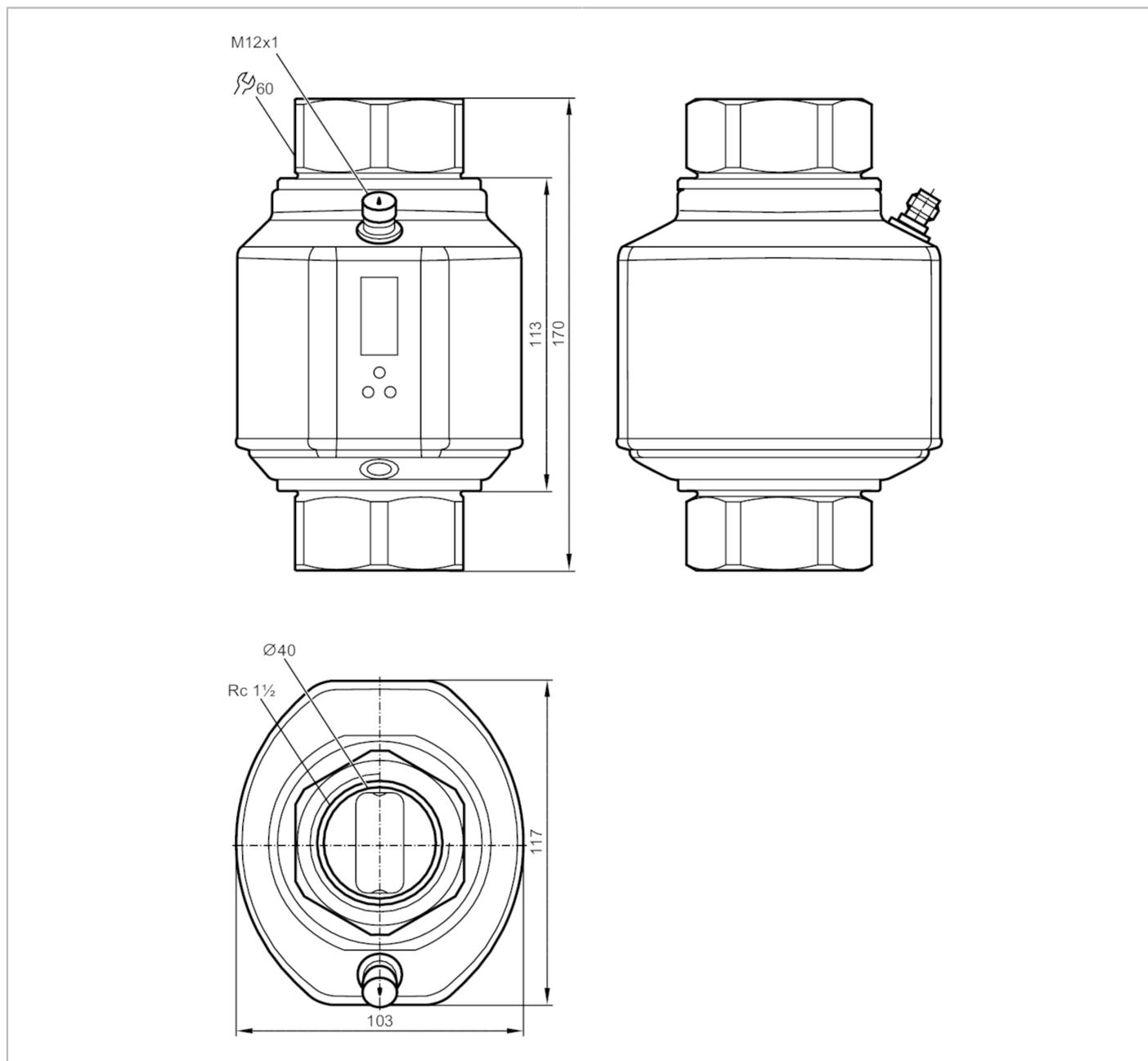


# SM9400



## Magnetic-inductive flow meter

SMK32XGXFRKG/US-100



### Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1	
Measuring range	5...300 l/min	0.3...18 m³/h
Process connection	threaded connection Rc 1 1/2 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	[°C]	-10...90
Pressure rating	[bar]	16
Pressure rating	[MPa]	1.6

### 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 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	5...300 l/min	0.3...18 m³/h
Display range	-360...360 l/min	-21.6...21.6 m³/h
Resolution	0.5 l/min	0.02 m³/h
Set point SP	6.5...300 l/min	0.4...18 m³/h
Reset point rP	5...298.5 l/min	0.3...17.9 m³/h
Analogue start point ASP	0...240 l/min	0...14.4 m³/h
Analogue end point AEP	60...300 l/min	3.6...18 m³/h
Low flow cut-off LFC	< 15 l/min	< 0.9 m³/h
In steps of	0.5 l/min	0.02 m³/h

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Measuring dynamics	1:60
<b>Volumetric flow quantity monitoring</b>	
Pulse value	0.0001...300 x 10 <sup>3</sup> m <sup>3</sup>
In steps of	0.0001 m <sup>3</sup>
Pulse length [s]	0,016...2
<b>Temperature monitoring</b>	
Measuring range [°C]	-20...80
Display range [°C]	-40...100
Resolution [°C]	0.2
Set point SP [°C]	-19.2...80
Reset point rP [°C]	-19.6...79.6
Analogue start point [°C]	-20...60
Analogue end point [°C]	0...80
In steps of [°C]	0.2
<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	± 0,0333 °C / K
Accuracy [K]	± 1 (25 °C; Q > 15 l/min)
<b>Response 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 > 15 l/min)
<b>Software / programming</b>	
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
<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 type	A
Process data analogue	3
Process data binary	2

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Min. process cycle time	[ms]	5
Supported DeviceIDs	<b>Type of operation</b>	<b>DeviceID</b>
	default	391
<b>Operating conditions</b>		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 65; IP 67
<b>Tests / approvals</b>		
EMC	DIN EN 60947-5-9	
CPA approval	model number	003MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,3 m³/h
	Q (t)	-
	Q (max)	18 m³/h
	Medium temperature	-10...70°C
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
Pressure Equipment Directive		Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request
<b>Mechanical data</b>		
Weight	[g]	2750
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 Rc 1 1/2 internal thread DN40
<b>Displays / operating elements</b>		
Display	Display unit	6 x LED, green (l/min, m³/h, l, m³, 10³, °C)
	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.

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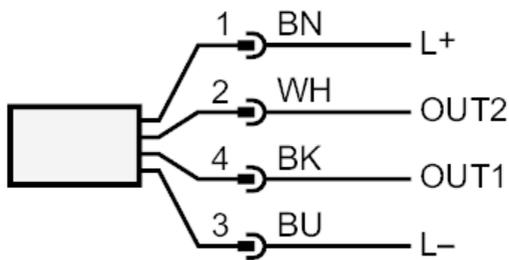
SMK32XGXFRKG/US-100

### Electrical connection

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



### 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

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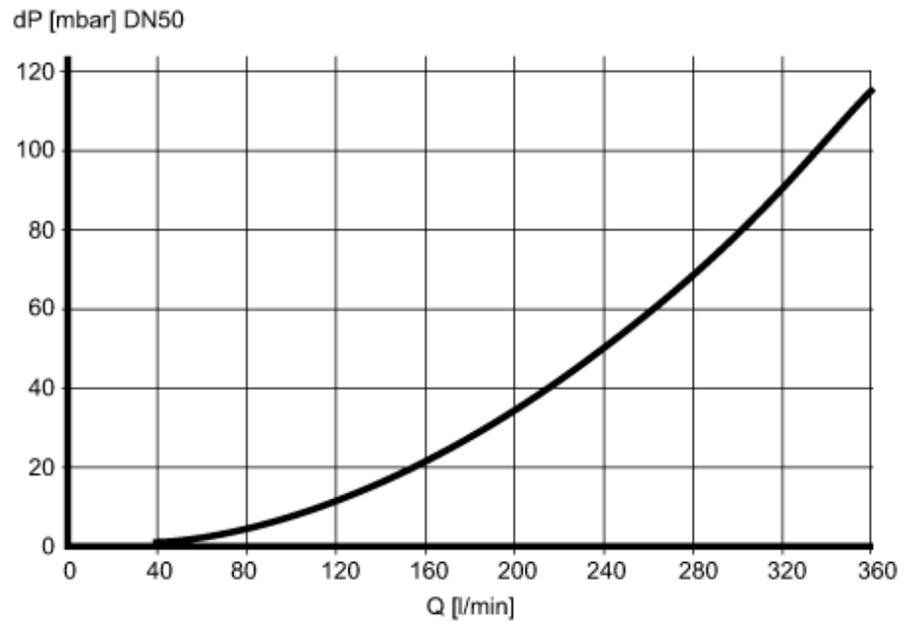


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### Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity