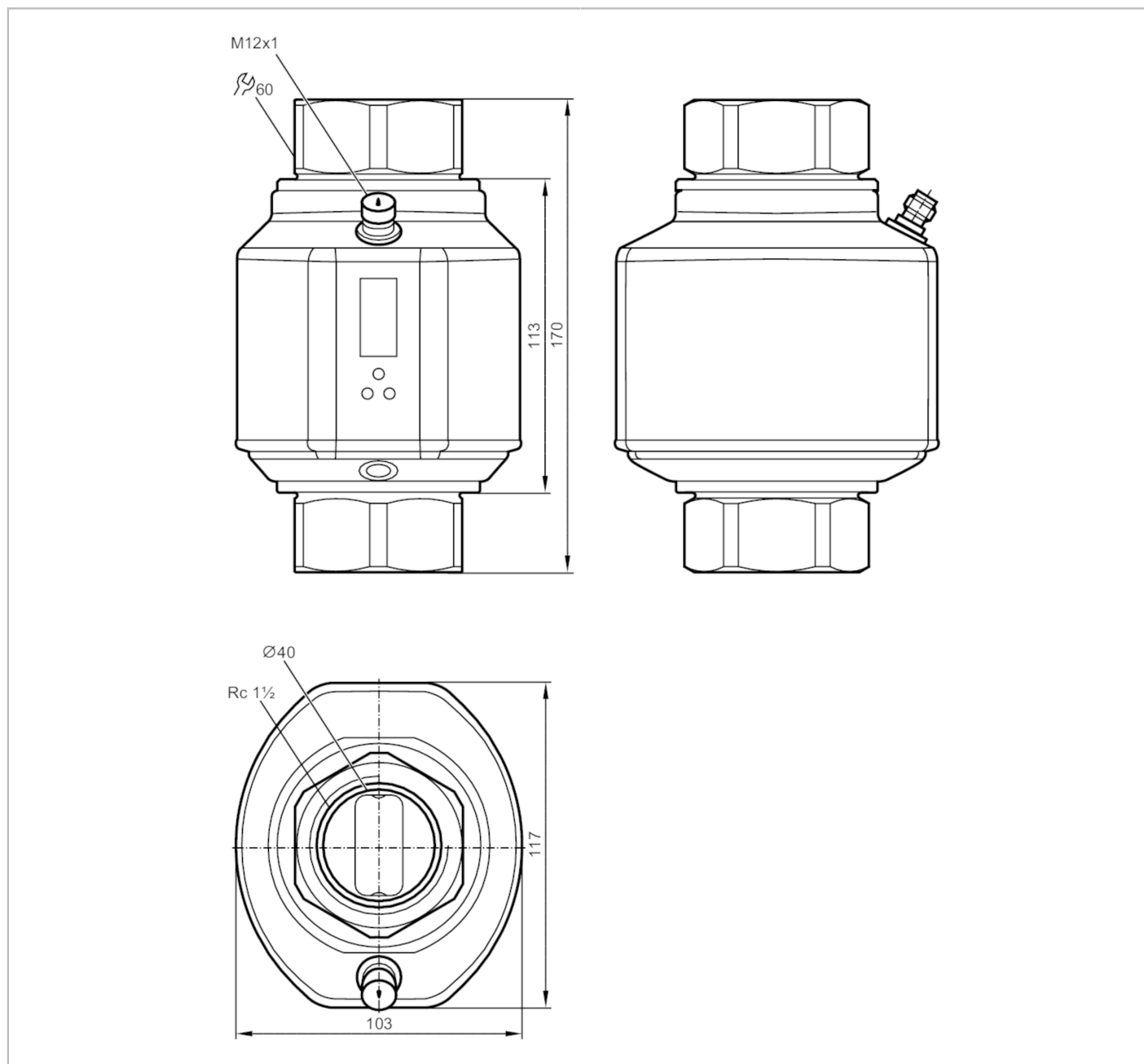


SM9400



Magnetic-inductive flow meter

SMK32XGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog 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

System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based 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

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	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
Analog start point ASP	0...240 l/min	0...14.4 m³/h
Analog 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
Measuring dynamics		1:60

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Volumetric flow quantity monitoring	
Pulse value	0.0001...300 x 10 ³ m ³
In steps of	0.0001 m ³
Pulse length [s]	0,016...2
Temperature monitoring	
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
Analog start point [°C]	-20...60
Analog end point [°C]	0...80
In steps of [°C]	0.2
Accuracy / deviations	
Flow monitoring	
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)
Repeatability	± 0,2% MEW
Temperature monitoring	
Temperature drift	± 0,0333 °C / K
Accuracy [K]	± 1 (25 °C; Q > 15 l/min)
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 > 15 l/min)
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: Process Data Variable; Device Identification
SIO mode	yes
Required master port class	A
Process data analog	3
Process data binary	2
Min. process cycle time [ms]	5

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Supported DeviceIDs	Type of operation	DeviceID
	default	391

Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 65; IP 67

Tests / approvals

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 number	I008
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight	[g]	2750
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 Rc 1 1/2 Internal thread DN40	

Displays / operating elements

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

Accessories

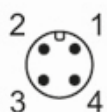
Items supplied	Label
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Remarks

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

Electrical connection

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



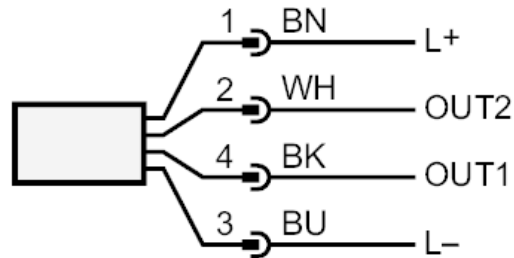
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Connection



- 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
- OUT2:
- IO-Link
 - 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

SM9400

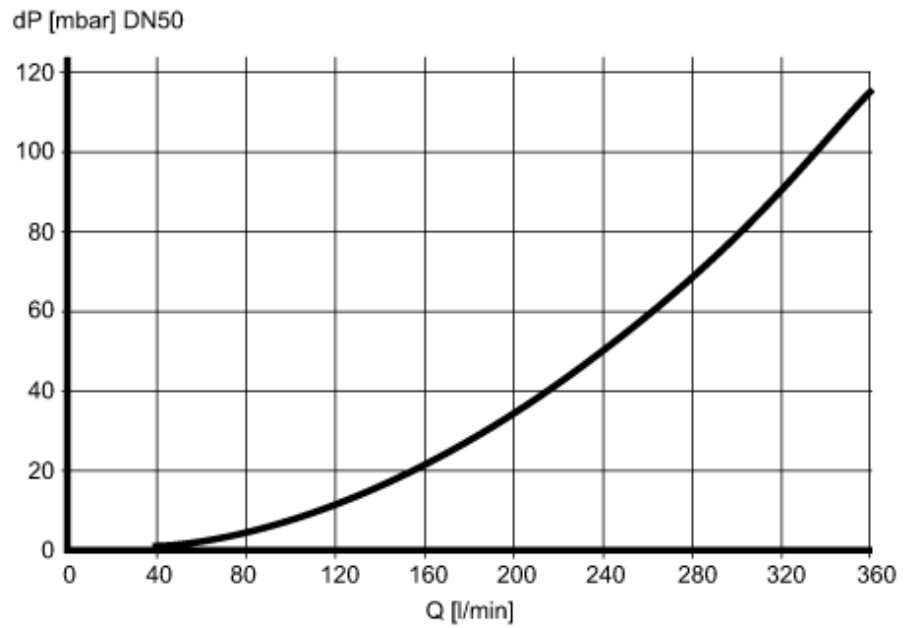


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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity