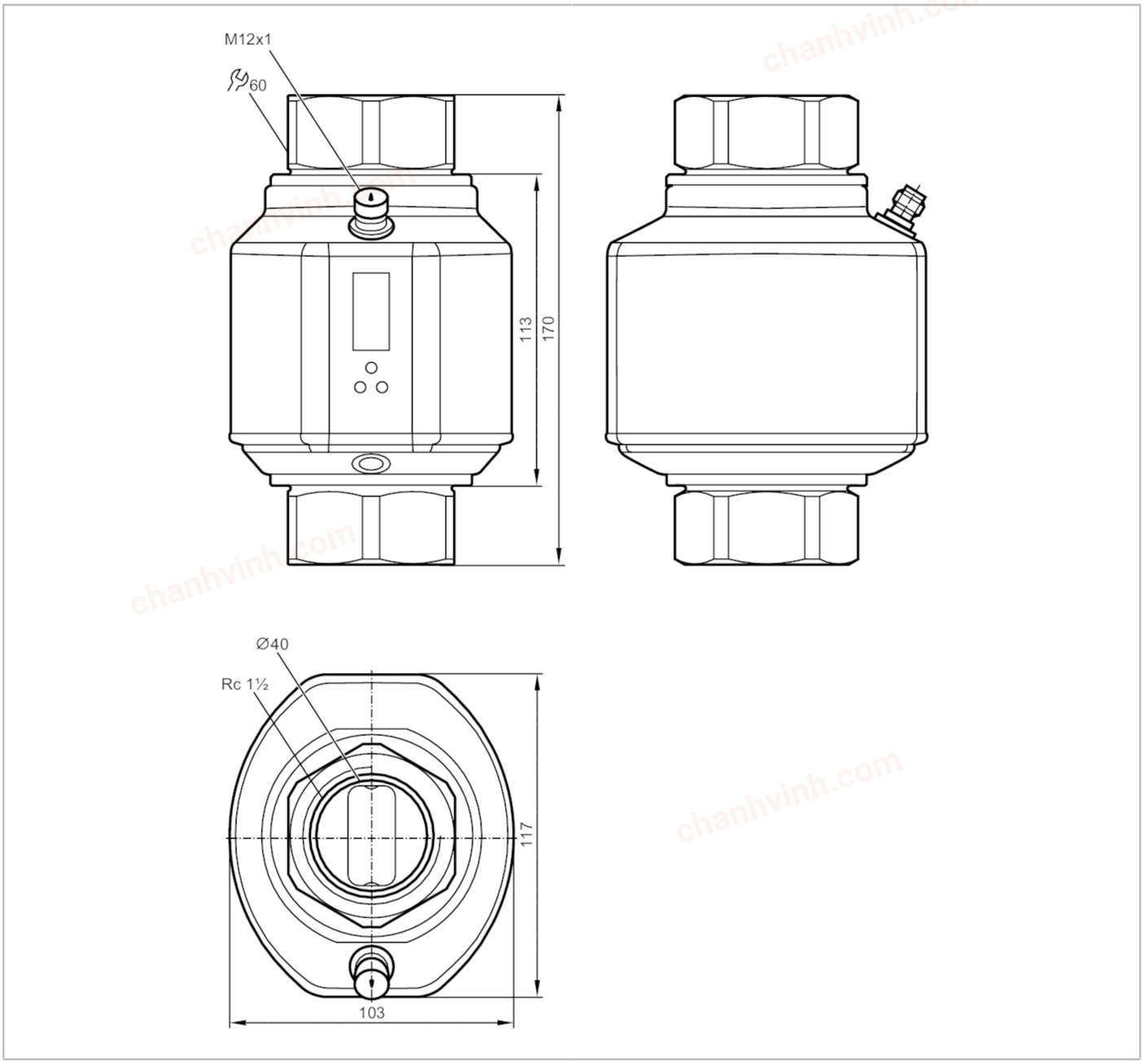
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SM9400

Magnetic-inductive flow meter

SMK32XGXFRKG/US-100



EC 1935/2004 IO-Link

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: ≥ 20 µS/cm	
	viscosity: < 70 mm²/s (40 °C)	

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Medium temperature	[°C]	-10...90	
Pressure rating		16 bar	1.6 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 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		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
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
Analogue start point	[°C]	-20...60
Analogue 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)
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 > 15 l/min)
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: Process Data Variable; Device Identification
SIO mode		yes
Required master port type		A
Process data analogue		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 no.	I008
Pressure Equipment Directive		Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data			
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	
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	
Remarks			
Remarks		MW = measured value	
		MEW = Final value of the measuring range	
Pack quantity		1 pcs.	

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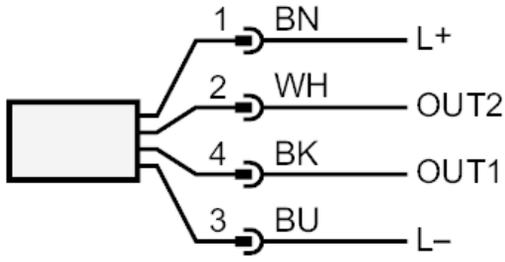
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Electrical connection

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



Connection



	colours to DIN EN 60947-5-2
- OUT1:	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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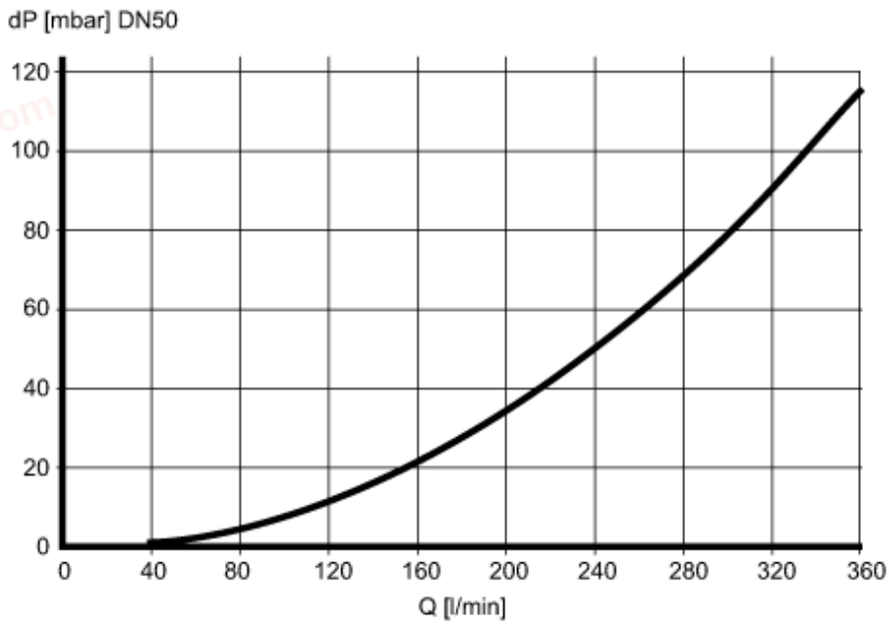
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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity