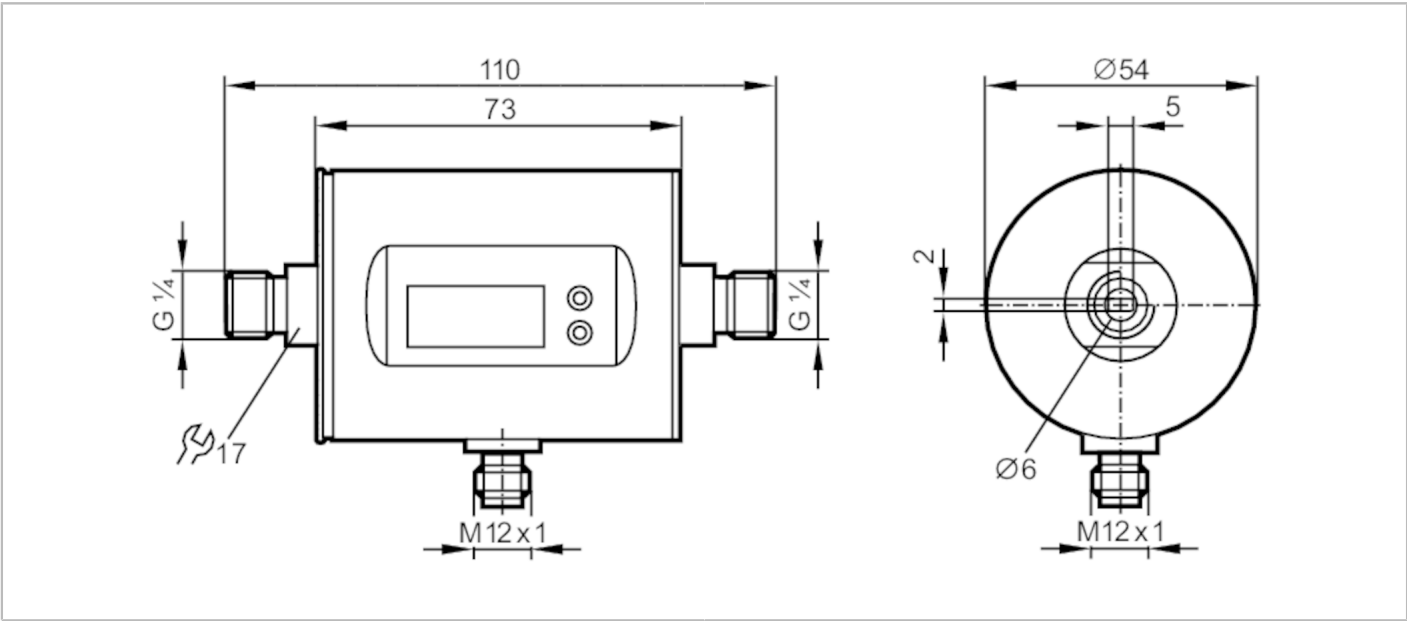


SM4000



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100



CRN



DNV
DNV.COM/AF



IO-Link

UK
CA

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...3000 ml/min	0.005...3 l/min
Process connection	threaded connection G 1/4 external thread DN6 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
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)	
Medium temperature [°C]	0...60	
Pressure rating	10 bar	1 MPa
MAWP (for applications according to CRN)	8.6 bar	0.86 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	< 80	
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
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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; 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]	200	
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	
Measuring/setting range		
Measuring range	5...3000 ml/min	0.005...3 l/min
Display range [ml/min]	-1999...3600	
Resolution [ml/min]	1	
Set point SP [ml/min]	20...3000	
Reset point rP [ml/min]	5...2984	
Analog start point ASP [ml/min]	0...2400	
Analog end point AEP [ml/min]	600...3000	
Low flow cut-off LFC [ml/min]	< 60	
Volumetric flow quantity monitoring		
Pulse value	1...3000 ml	
Pulse length [s]	0,008...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
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)	± (2 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

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Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 40 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/ voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	671
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	007MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,0003 m³/h
	Q (t)	-
	Q (max)	0,18 m³/h
Shock resistance	DIN IEC 68-2-27	20 g (11 ms)
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000 Hz)
MTTF	[years]	144

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

Weight	[g]	536.5
Inlet pipe length		3 x DN
Outlet pipe length		1 x DN
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection G 1/4 external thread DN6 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (ml/min, l/h, l, m³, °C, 10³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



Colors to DIN EN 60947-5-2

OUT1:

- Switching output Volumetric flow quantity monitoring
- Pulse output quantity meter
- signal output Preset counter
- IO-Link

OUT2:

- 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

SM4000

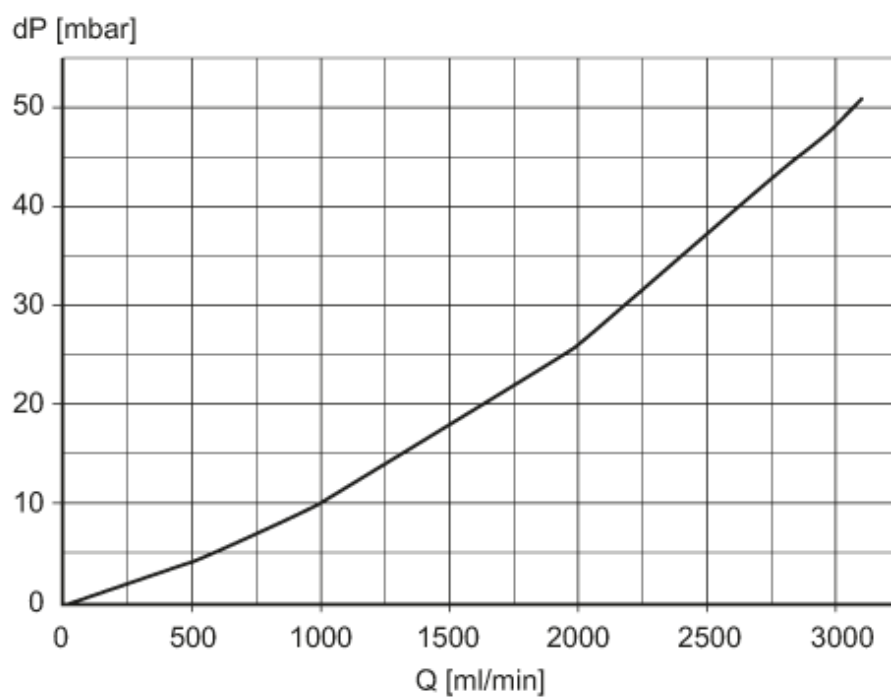
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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity