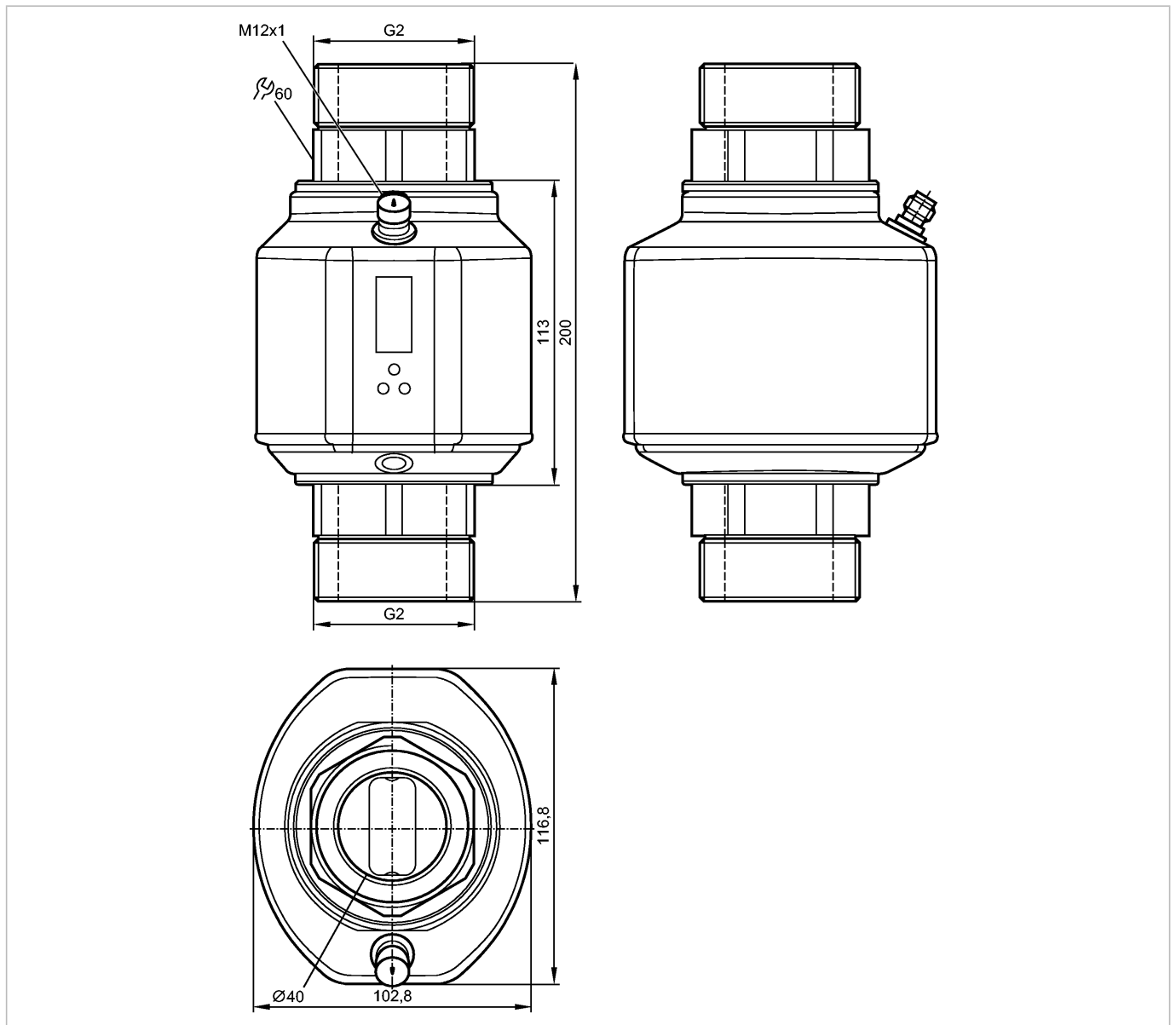


SM2000

SMR21XGXFRKG/US

Flow sensors



Made in Germany



Product characteristics

Magnetic-inductive flow meter

Connector

Process connection: G2 flat seal

connection to pipe by means of an adapter

Function programmable

Totaliser function

Empty pipe detection

2 outputs

OUT1 = flow monitoring (binary), flow rate meter (pulse), preset meter (binary)

OUT2 = flow monitoring or temperature monitoring (analogue or binary)

Input for counter reset

4-digit alphanumeric display

Measuring range

5...600 l/min

-20...80°C

SM2000

SMR21XGXFRKG/US

Flow sensors

Application		
Application	Conductive liquids (conductivity: $\geq 20 \mu\text{S/cm}$ / viscosity: $< 70 \text{ mm}^2/\text{s}$ at $40 \text{ }^\circ\text{C}$)	
Medium temperature [°C]	-10...70	
Electrical data		
Electrical design	DC PNP/NPN	
Operating voltage [V]	18...32 DC ¹⁾	
Current consumption [mA]	< 150	
Insulation resistance [M Ω]	> 100 (500 V DC)	
Protection class	III	
Reverse polarity protection	yes	
Outputs		
Output function	OUT1: normally open / normally closed programmable or pulse or frequency or empty pipe detection or IO-Link OUT2: normally open / normally closed programmable or analogue (4...20 mA; 0...10 V, scalable) or empty pipe detection	
Current rating [mA]	2 x 250	
Voltage drop [V]	< 2	
Short-circuit protection	pulsed	
Overload protection	yes	
Analogue output	4...20 mA; 0...10 V	
Max. load [Ω]	500 (4...20 mA)	
Min. load [Ω]	2000 (0...10 V)	
Pulse output	flow rate meter	
Frequency range [Hz]	0.1...10000	
Measuring / setting range		
Empty pipe detection	normally closed / open	
Flow monitoring		
Measuring range	5...600 l/min	0.3...36 m ³ /h
Display range	-720...720 l/min	-43.2...43.2 m ³ /h
Resolution	0.5 l/min	0.02 m ³ /h
Set point, SP	8...600 l/min	0.5...36 m ³ /h
Reset point, rP	5...597 l/min	0.3...35.8 m ³ /h
Analogue start point, ASP	0...480 l/min	0...28.8 m ³ /h
Analogue end point, AEP	120...600 l/min	7.2...36 m ³ /h
Flow end point, FEP	20...600 l/min; 1.2...36 m ³ /h	
Low flow cut-off, LFC	5...15 l/min	0.3...0.9 m ³ /h
in steps of	0.5 l/min	0.02 m ³ /h
Frequency end point, FrEP	0.01...10 kHz	
in steps of	10 Hz	
Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Measuring range [l...m ³]	0.0...9999 x 10 ³	
Display range [l...m ³]	0.0...9999 x 10 ³	
Set point, SP [l...m ³]	0.0...9999 x 10 ³	
Pulse value	0.1 l...600 x 10 ³ m ³	

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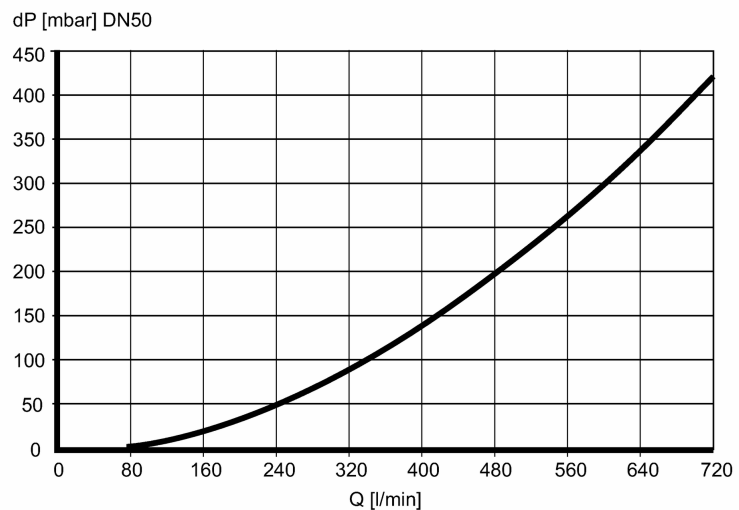
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Flow sensors

in steps of		0.1 l
Pulse length	[s]	0.008...2
Temperature monitoring		
Measuring range	[°C]	-20...80
Display range	[°C]	-40...100
Resolution	[°C]	0.2
Set point, SP	[°C]	-19.2...80.0
Reset point, rP	[°C]	-19.6...79.6
Analogue start point, ASP	[°C]	-20...60
Analogue end point, AEP	[°C]	0...80
in steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring		
Accuracy		$\pm (0.8\% MW + 0.5\% MEW)^2$
Repeatability		$\pm 0.2\% MEW$
Pressure loss (dP) / flow rate (Q)		



Temperature monitoring		
Accuracy	[K]	± 1 (bei 25 °C, Q > 15 l/min)
Temperature drift		± 0.0333 °C / K

Reaction times

Power-on delay time	[s]	5
Flow monitoring		
Start-up delay	[s]	0...50
Response time	[s]	< 0.35 (dAP = 0)
Damping, dAP	[s]	0...5
Temperature monitoring		
Response time	[s]	T09 = 3 (Q > 15 l/min)

Software / programming

Programming options	Hysteresis / window; NO / NC; output logic; current / voltage / frequency / pulse output; start-up delay; display can be deactivated; display unit; empty pipe detection
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Interfaces

IO-Link Device	
Transfer type	COM2 (38.4 kBaud)
IO-Link revision	1.1

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Flow sensors

SDCI standard	IEC 61131-9 CDV
IO-Link Device ID	357 d / 00 01 65 h
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

Environment	
Pressure rating [bar]	16
Ambient temperature [°C]	-10...60
Storage temperature [°C]	-25...80
Protection	IP 65 / IP 67

Tests / approvals	
EC pressure equipment directive 97/23/EC	Article 3, paragraph (3) - sound engineering practice
EMC	DIN EN 61000-4-2 ESD: 4 kV CD / 8 kV AD DIN EN 61000-4-3 HF radiated: 10 V/m DIN EN 61000-4-4 Burst: 2 kV DIN EN 61000-4-5 Surge: 1 kV DIN EN 61000-4-6 HF conducted: 10 V
Shock resistance	DIN EN 60068-2-27: 20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6: 5 g (10...2000 Hz)

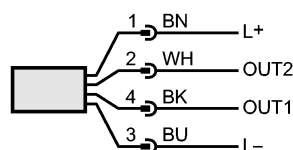
Mechanical data	
Process connection	G2 flat seal
Materials (wetted parts)	stainless steel 316L / 1.4404; stainless steel 316Ti / 1.4571; PEEK (polyether ether ketone); Hastelloy C-4 (2.4610); Centellen; FKM
Housing materials	stainless steel 316L / 1.4404; stainless steel 316Ti / 1.4571; PC (polycarbonate); FKM; PBT-GF 20; elastolan
Weight [kg]	3.071

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 4-digit alphanumeric display Programming 4-digit alphanumeric display

Electrical connection	
Connection	M12 connector; Gold-plated contacts

Wiring

Core colours
 BK black
 BN brown
 BU blue
 WH white



Colours to DIN IEC 60757

 OUT1: 6 options:
 switching output empty pipe detection



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Flow sensors

switching output flow rate monitoring
 frequency output flow rate monitoring
 pulse output quantity meter
 signal output preset counter
 IO-Link
 OUT2: 6 options:
 switching output empty pipe detection
 switching output flow rate monitoring
 switching output temperature monitoring
 analogue output flow rate
 analogue output temperature
 Input for counter reset

Accessories

Accessories (included)	2 x packing washer (Centellen); Label
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Remarks

Remarks	<p>1) to DIN EN 50178, SELV, PELV 2) $Q > 15\text{ l/min}$, medium and ambient temperature $+22\text{ °C} \pm 4\text{ K}$ MW = measured value MEW = final value of the measuring range</p>
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Pack quantity	[piece]	1
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