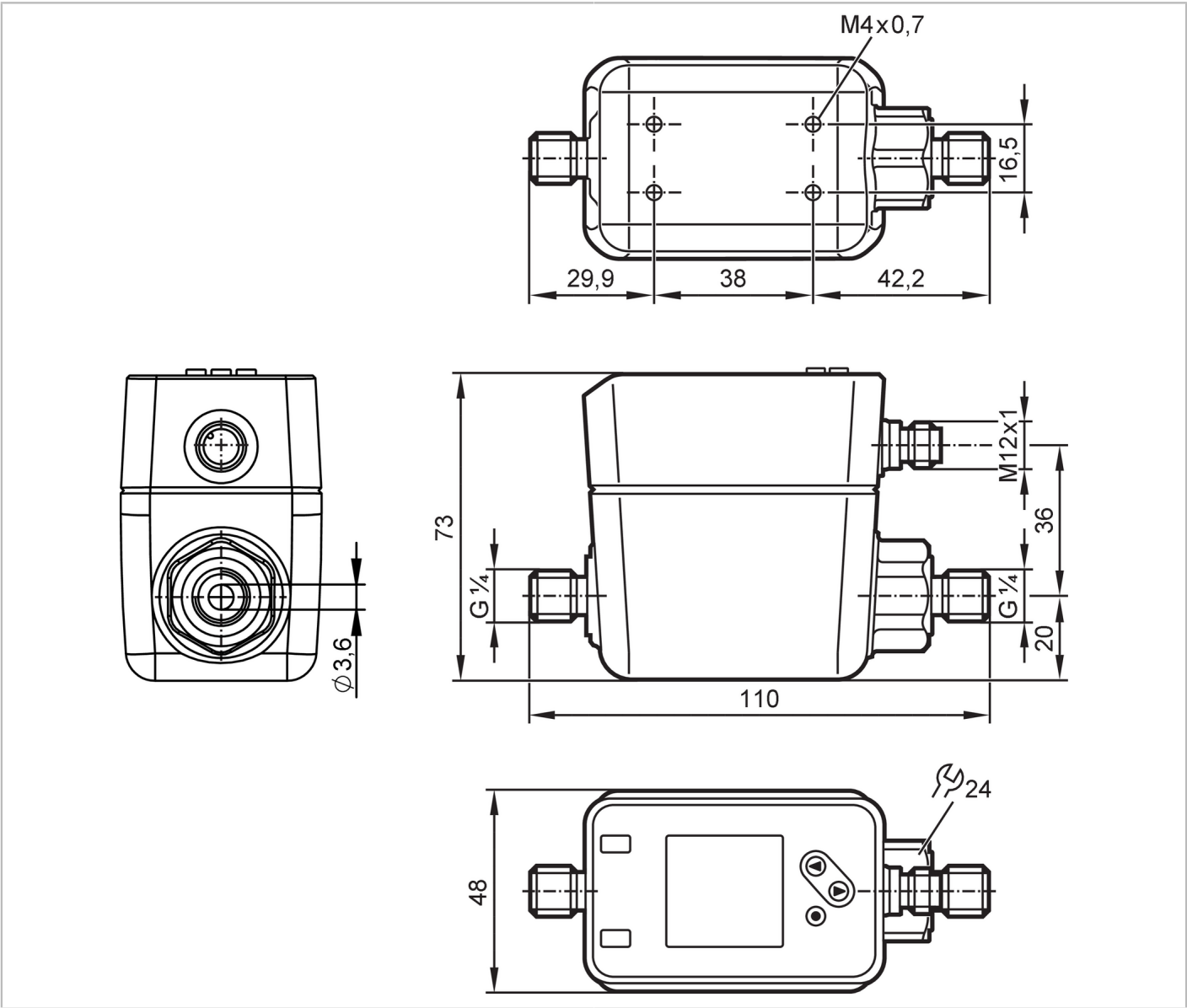


SM4020

Magnetic-inductive flow meter

SMR14XGXFRKG/US-100



IO-Link

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range [ml/min]	5...5000	
Process connection	threaded connection G 1/4 external thread DN6 flat seal	

Application

Special feature	gold-plated contacts	
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]	-20...90	
Pressure rating	16 bar	1.6 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)
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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; frequency signal; (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] 100
Number of analog outputs	1
Analog current output	[mA] 4...20; (scalable)
Max. load	[Ω] 500
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	[ml/min]	5...5000
Display range	[ml/min]	-6000...6000
Resolution	[ml/min]	1
Set point SP	[ml/min]	33...5000
Reset point rP	[ml/min]	7...4974
Analog start point ASP	[ml/min]	0...3993
Analog end point AEP	[ml/min]	1007...5000
Low flow cut-off LFC	[ml/min]	5...250
Frequency end point, FEP	[ml/min]	1005...5000
Frequency at the end point FRP	[Hz]	1...10000

Volumetric flow quantity monitoring

Pulse length	[s]	0.005...2
Pulse value		0.001...99990000 l

Temperature monitoring

Measuring range	[°C]	-20...90
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SM4020



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Display range	[°C]	-42...112
Resolution	[°C]	0.1
Set point SP	[°C]	-19.6...90
Reset point rP	[°C]	-20...89.6
Analog start point	[°C]	-20...68
Analog end point	[°C]	2...90
In steps of	[°C]	0.1

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		$\pm (0,8 \% MW + 0,2 \% MEW)$
Repeatability		$\pm 0,2 \% MEW$

Temperature monitoring		
Accuracy	[K]	$\pm 2,5 (Q > 1 \text{ l/min})$

Reaction times

Flow monitoring		
Start-up delay	[s]	0...50
Response time	[s]	$< 0.25; (dAP = 0, T09)$
Damping process value dAP	[s]	0...5

Temperature monitoring		
Response time	[s]	15; $(Q > 1 \text{ l/min}, T09)$

Software / programming

Parameter setting options	hysteresis / window; normally open / closed; switching logic; Frequency output; current/pulse output; Start-up delay; display can be deactivated; Display unit	
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Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	943

Operating conditions

Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

Tests / approvals

EMC	DIN EN 60947-5-9	
Shock resistance	DIN IEC 68-2-27	20 g (11 ms)

SM4020



Magnetic-inductive flow meter

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Vibration resistance	DIN IEC 68-2-6:	5 g (10...2000 Hz)
MTTF [years]		114
UL approval	UL approval number	I014
	File number UL	E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	712.8
Housing	rectangular
Dimensions [mm]	110 x 48 x 73
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; PEEK; carbon fiber PEEK
Process connection	threaded connection G 1/4 external thread DN6 flat seal

Displays / operating elements

Display	Color display 1,44", 128 x 128 pixels
	2 x LED, yellow

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: 4, gold-plated



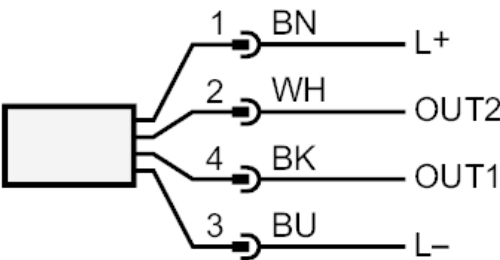
SM4020



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Connection



OUT1:	Colors to DIN EN 60947-5-2
	Switching output Volumetric flow quantity monitoring
	Switching output Temperature monitoring
	Pulse output quantity meter
	Frequency output volumetric flow monitoring
	Frequency output Temperature monitoring
	signal output Preset counter
OUT2:	IO-Link
	Switching output Volumetric flow quantity monitoring
	Switching output Temperature monitoring
	analog output flow
	analog output temperature
BK =	Input counter reset
	Core colors :
	black
	BN = brown
BU =	blue
	WH = white

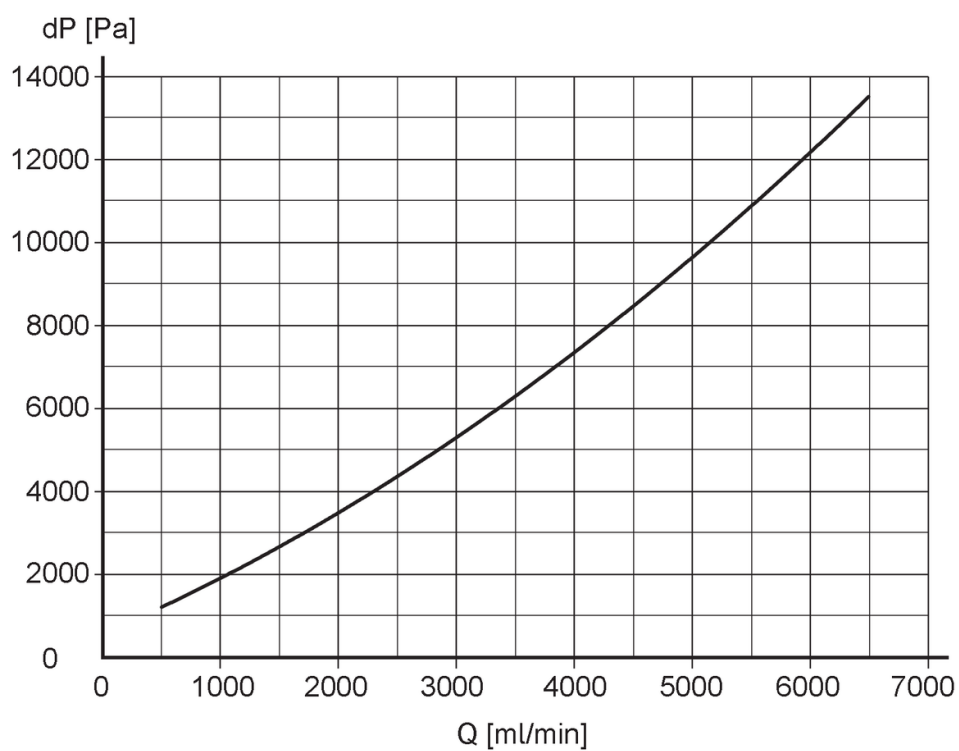
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Diagrams and graphs



Pressure loss / volumetric flow quantity