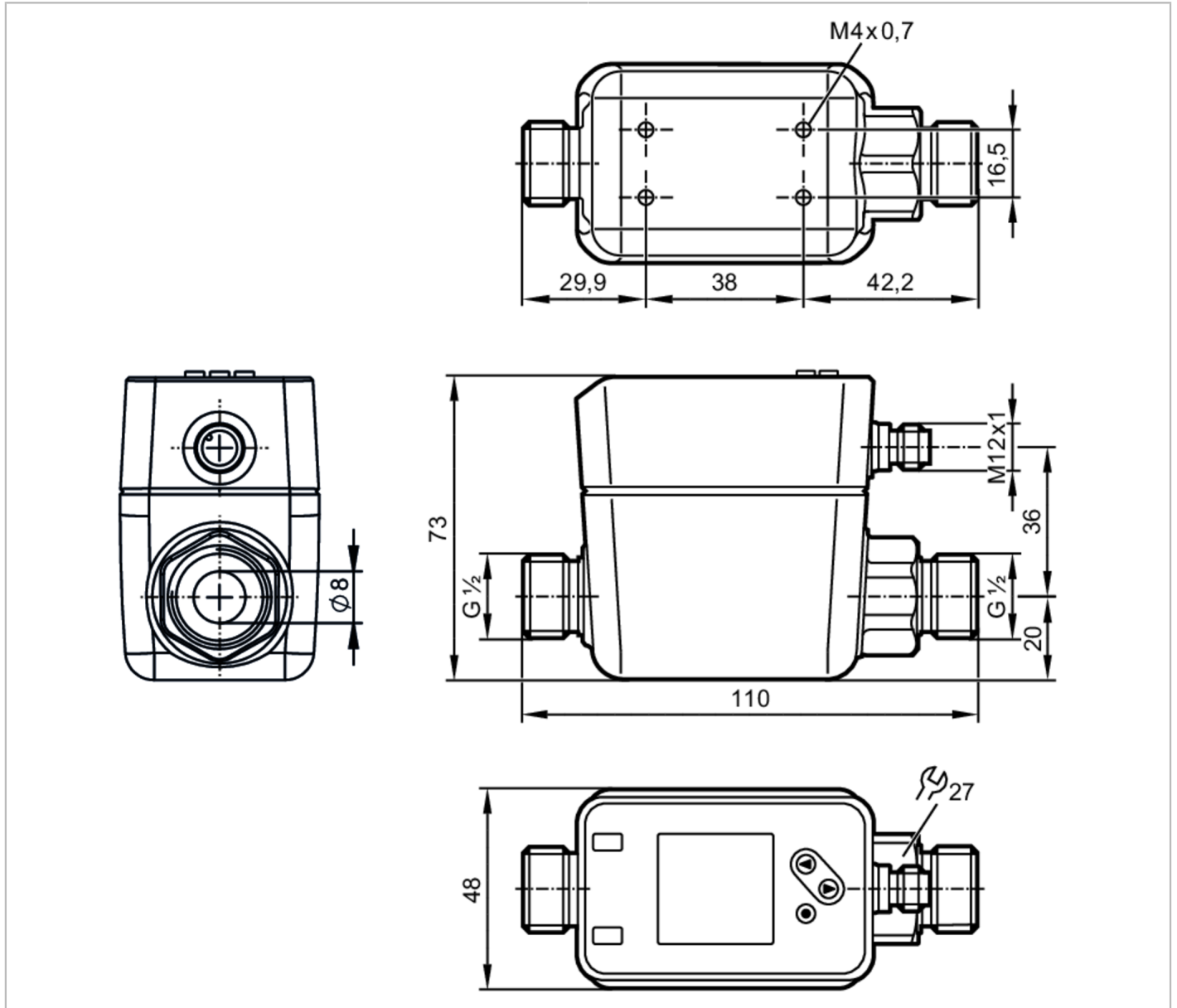


# SM6020



## Magnetic-inductive flow meter

SMR12XGXFRKG/US-100



### Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.05...35 l/min	0.003...2.1 m <sup>3</sup> /h	0.6...555 gph	0.01...9.25 gpm
Process connection	G 1/2 DN15 flat seal			

### Application

System	gold-plated contacts			
Media	Conductive liquids; water; water-based media			
Note on media	conductivity: ≥ 20 μS/cm			
	viscosity: < 70 mm <sup>2</sup> /s (40 °C)			
Medium temperature	[°C]	-20...90		
Pressure rating	[bar]	16		
Pressure rating	[MPa]	1.6		

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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			
Inputs / outputs					
Number of inputs and outputs		Number of digital outputs: 2; Number of analog outputs: 1			
Inputs					
Inputs		counter reset			
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		0.05...35 l/min	0.003...2.1 m³/h	0.6...555 gph	0.01...9.25 gpm
Display range		-42...42 l/min	-2.5...2.5 m³/h	-666...666 gph	-11.1...11.1 gpm
Resolution		0.02 l/min	0.002 m³/h	0.6 gph	0.01 gpm
Set point SP		0.25...35 l/min	0.015...2.1 m³/h	4.2...555 gph	0.07...9.25 gpm
Reset point rP		0...34.8 l/min	0...2.08 m³/h	1.2...552 gph	0.02...9.2 gpm
Analog start point ASP		0...28 l/min	0...1.7 m³/h	0...666 gph	0...7.4 gpm
Analog end point AEP		7...35 l/min	0.42...2.1 m³/h	111...555 gph	1.85...9.25 gpm
Low flow cut-off LFC		0.05...1.75 l/min	0.003...0.1 m³/h	0.6...27.6 gph	0.01...0.46 gpm
Frequency end point, FEP		7...35 l/min	0.42...2.1 m³/h	111.6...555 gph	1.86...9.25 gpm
Frequency at the end point FRP	[Hz]	1...10000			
Volumetric flow quantity monitoring					
Pulse length	[s]	0.001...2			
Pulse value		0.001...99990000 l			
Temperature monitoring					
Measuring range	[°C]	-20...90			

# SM6020



## Magnetic-inductive flow meter

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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]	$\pm 2,5 (Q > 5 \% MEW)$

### 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; $(Q > 10 \% MEW, T09)$

### 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	Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis	
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	6
Supported DeviceIDs	<b>Type of operation</b> default	<b>DeviceID</b> 949

### 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	
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# SM6020



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CPA approval	model number	005MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,003 m³/h
	Q (t)	-
	Q (max)	2,1 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]	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]	717.2
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; carbon fiber PEEK; FKM; Centellen	
Process connection	G 1/2 DN15 flat seal	

### Displays / operating elements

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



# SM6020



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### Connection



OUT1: 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  
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring  
Switching output Temperature monitoring  
analog output flow  
analog output temperature  
Input counter reset  
Colors to DIN EN 60947-5-2  
Core colors :

BK = black  
BN = brown  
BU = blue  
WH = white

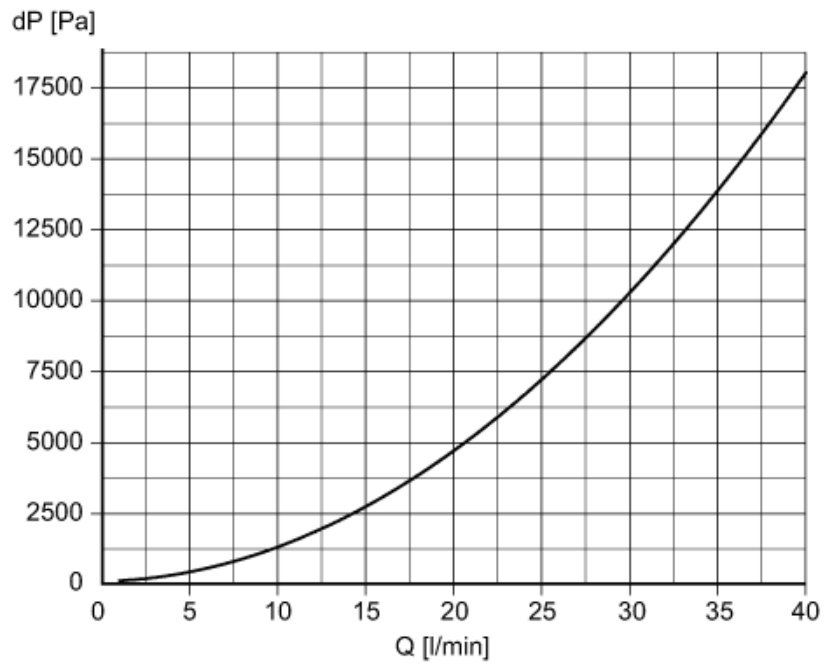
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### Diagrams and graphs



Pressure loss / volumetric flow quantity