

SM8020



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100



Product characteristics				
Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1			
Measuring range	0.2...150 l/min	0.012...9 m³/h	3.6...2376 gph	0.06...39.6 gpm
Process connection	G 1 DN25 flat seal			
Application				
Special feature	Gold-plated contacts			
Media	conductive liquids; water; hydrous media			
Note on media	conductivity: ≥ 20 µS/cm			
	viscosity: < 70 mm²/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 analogue outputs: 1		
Inputs				
Inputs		counter reset		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analogue signal; pulse signal; IO-Link; frequency signal; (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]	100		
Number of analogue outputs		1		
Analogue current output	[mA]	4...20; (scalable)		
Max. load	[Ω]	500		
Pulse output		flow rate meter		
Short-circuit protection		yes		
Type of short-circuit protection		pulsed		
Overload protection		yes		
Measuring/setting range				
Measuring range		0.2...150 l/min	0.012...9 m³/h	3.6...2376 gph
Display range		-180...180 l/min	-10.8...10.8 m³/h	-2853.6...2853.6 gph
Resolution		0.1 l/min	0.006 m³/h	0.6 gph
Set point SP		1...150 l/min	0.06...9 m³/h	16.2...2376 gph
Reset point rP		0.2...149.2 l/min	0.012...8.95 m³/h	3.6...1903 gph
Analogue start point ASP		0...120 l/min	0...7.2 m³/h	0...1903 gph
Analogue end point AEP		30...150 l/min	1.8...9 m³/h	475...2376 gph
Low flow cut-off LFC		0.2...7.5 l/min	0.012...0.45 m³/h	3...118.4 gph
Frequency end point, FEP		30.2...150 l/min	1.8...9 m³/h	480...2376 gph
Frequency at the end point FRP	[Hz]	1...10000		
Volumetric flow quantity monitoring				
Pulse length	[s]	0.002...2		
Pulse value		0.01...99990000 l		
Temperature monitoring				
Measuring range	[°C]	-20...90		



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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
Analogue start point	[°C]	-20...68
Analogue end point	[°C]	2...90
In steps of	[°C]	0.1

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	$\pm (0,8 \% \text{ MW} + 0,2 \% \text{ MEW})$
Repeatability	$\pm 0,2 \% \text{ MEW}$

Temperature monitoring

Accuracy	[K]	$\pm 2,5 (Q > 5 \% \text{ MEW})$
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Response 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; $(Q > 10 \% \text{ MEW}, T09)$
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Software / programming

Parameter setting options	hysteresis / window; normally open / normally 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 type	A	
Process data analogue	3	
Process data binary	2	
Min. process cycle time [ms]	6	
Supported DeviceIDs	Type of operation	DeviceID
	default	961

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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CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	9 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 no.	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]	782
Materials	stainless steel (316/1.4408); stainless steel (316L/1.4404); PC; PBT+PC-GF30
Materials (wetted parts)	stainless steel (316L/1.4404); PEEK; carbon fibre PEEK; FKM; Centellen
Process connection	G 1 DN25 flat seal

Displays / operating elements

Display	colour 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: gold-plated





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Connection



OUT1:	colours 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
OUT2:	signal output Preset counter
	IO-Link
	switching output volumetric flow quantity monitoring
	switching output Temperature monitoring
	analogue output flow
	analogue output temperature
BK =	input counter reset
	Core colours :
	black
	BN = brown
	BU = blue
	WH = white

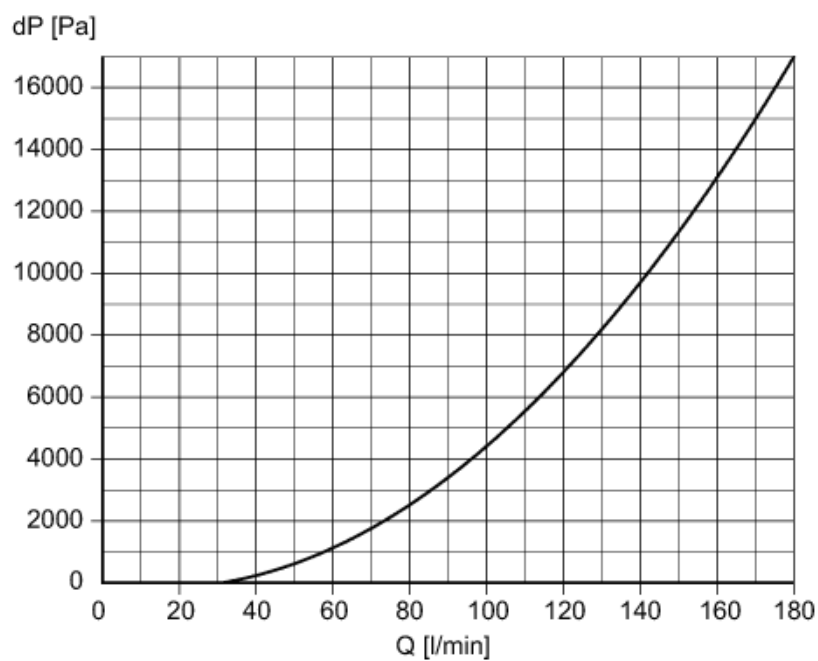
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Diagrams and graphs



Pressure loss / volumetric flow quantity