

SM2130



Magnetic-inductive flow meter

SMR21XGXFRKG/US



ACS CRN US IO-Link KTW/W270 Reg31

Product characteristics		
Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1	
Measuring range	5...900 l/min	0.3...54 m³/h
Process connection	threaded connection G 2 DN50 flat seal	
Application		
Special feature	Gold-plated contacts	
Application	totaliser function; empty pipe detection; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	conductive liquids; water; hydrous media	



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Note on media		conductivity: $\geq 20 \mu\text{S/cm}$
		viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature	[°C]	-10...90
Pressure rating	[bar]	16
MAWP (for applications according to CRN)	[bar]	16.5

Electrical data

Operating voltage	[V]	18...32 DC; (to SELV/PELV)
Current consumption	[mA]	< 150
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
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Inputs

Inputs	counter reset
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Outputs

Total number of outputs	2
Output signal	switching signal; analogue signal; pulse signal; frequency signal; IO-Link; (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] 250; (per output)
Number of analogue outputs	1
Analogue current output	[mA] 4...20; (scalable)
Max. load	[Ω] 500
Analogue 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	pulsed
Overload protection	yes
Frequency of the output	[Hz] 0.1...10000

Measuring/setting range

Measuring range	5...900 l/min	0.3...54 m³/h
Display range	-920...920 l/min	-55.2...55.2 m³/h
Resolution	1 l/min	0.05 m³/h
Set point SP	10...900 l/min	0.55...54 m³/h
Reset point rP	5...896 l/min	0.3...53.75 m³/h
Analogue start point ASP	0...720 l/min	0...43.2 m³/h
Analogue end point AEP	180...900 l/min	10.8...54 m³/h
Low flow cut-off LFC	$< 15 \text{ l/min}$	$< 0.9 \text{ m}^3/\text{h}$



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In steps of	1 l/min	0.05 m³/h
Measuring dynamics		1:180
Volumetric flow quantity monitoring		
Pulse value		0.1 l...600 x 10³ m³
In steps of		0.1 l
Pulse length [s]		0,003...2
Temperature monitoring		
Measuring range [°C]		-20...80
Display range [°C]		-40...100
Resolution [°C]		0.2
Set point SP [°C]		-19.2...80
Reset point rP [°C]		-19.6...79.6
Analogue start point [°C]		-20...60
Analogue end point [°C]		0...80
In steps of [°C]		0.2
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,5 % MEW); (Q > 15 l/min; medium and operating temperature: 22 °C ± 4 K)
Repeatability		± 0,2% MEW
Temperature monitoring		
Temperature drift		± 0,0333 °C / K
Accuracy [K]		± 1 (bei 25 °C, Q > 15 l/min)
Response times		
Flow monitoring		
Response time [s]		0.35; (dAP = 0)
Delay time programmable dS, dr [s]		0...50
Damping process value dAP [s]		0...5
Temperature monitoring		
Dynamic response T05 / T09 [s]		T09 = 3 (Q > 15 l/min)
Software / programming		
Parameter setting options		Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / normally closed; switching logic; current/voltage/frequency/pulse output; start-up delay; display can be deactivated; Display unit; empty pipe detection
Interfaces		
Communication interface		IO-Link
Transmission type		COM2 (38,4 kBaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9 CDV
Profiles		Smart Sensor: Process Data Variable; Device Identification
SIO mode		yes
Required master port type		A
Process data analogue		3

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Process data binary	2	
Min. process cycle time [ms]	5	
Supported DeviceIDs	Type of operation	DeviceID
	default	1322
Operating conditions		
Ambient temperature [°C]	-10...60	
Storage temperature [°C]	-25...80	
Protection	IP 65; IP 67	
Tests / approvals		
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)
MTTF [ANN]	85	
UL approval	UL Approval no.	I008
	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]	3109.9	
Materials	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PC; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; Centellen; EPDM	
Process connection	threaded connection G 2 DN50 flat seal	
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	alphanumeric display, 4-digit
	programming	alphanumeric display, 4-digit
Аксессуары		
Items supplied	sealings: 2, Centellen	
	Label	
Remarks		
Remarks	MW = measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

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Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



Connection



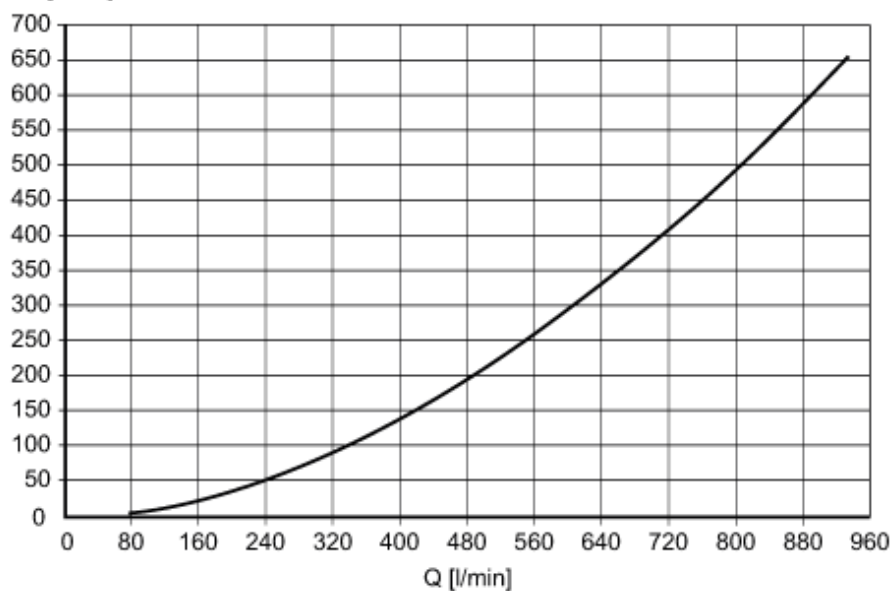
OUT1:	colours to DIN EN 60947-5-2 switching output empty pipe detection switching output volumetric flow quantity monitoring frequency output volumetric flow quantity monitoring Pulse output quantity meter signal output Preset counter IO-Link
OUT2:	switching output empty pipe detection switching output volumetric flow quantity monitoring switching output Temperature monitoring analogue output volumetric flow quantity monitoring analogue output Temperature monitoring input counter reset Core colours :
BK =	black
BN =	brown
BU =	blue
WH =	white



Diagrams and graphs

Pressure loss

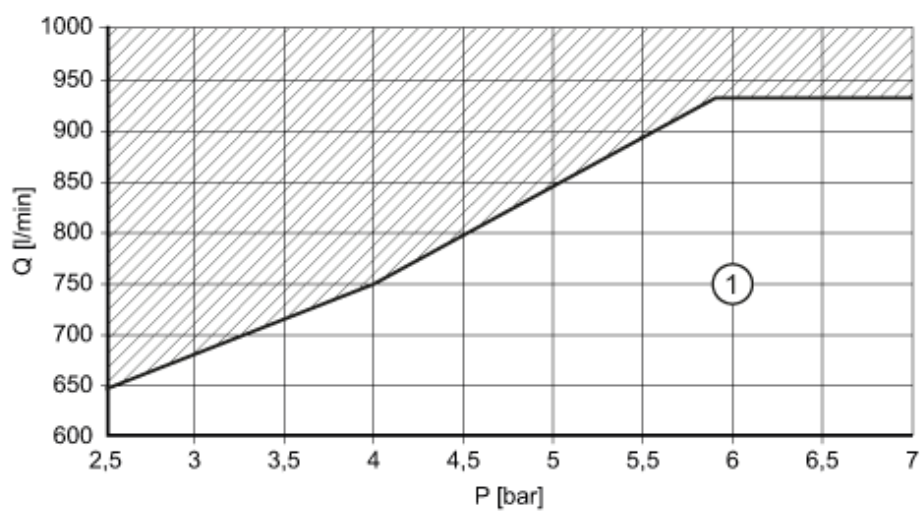
dP [mbar] DN50



dP Pressure loss

Q volumetric flow quantity

Cavitation



1 cavitation-free working area see operating instructions