

SM2130



Magnetic-inductive flow meter

SMR21XGXFRKG/US



ACS CRN 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 external thread 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	16 bar	1.6 MPa
MAWP for applications according to CRN	8.9 bar	0.89 MPa

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	
Measuring principle	magnetic-inductive	

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; 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



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Low flow cut-off LFC	< 15 l/min	< 0.9 m³/h		
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 - SSP 0	Generic Profiled Sensor		
	Function	Device identification		
	Function	Process data variable		

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SIO mode	yes				
Required master port type	A				
Process data analogue	3				
Process data binary	2				
Min. process cycle time [ms]	5				
Supported DeviceIDs	<table> <tr> <th>Type of operation</th><th>DeviceID</th></tr> <tr> <td>default</td><td>1322</td></tr> </table>	Type of operation	DeviceID	default	1322
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 [years]		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
Housing		rectangular
Dimensions [mm]		200 x 103 x 117
Materials	stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PC; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	Pipe section: stainless steel (316L/1.4404); Process connection sealing: NBR reinforced fibre Flat seal; stainless steel (316Ti/1.4571); PEEK; EPDM	
Process connection	threaded connection G 2 external thread 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

Accessories		
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



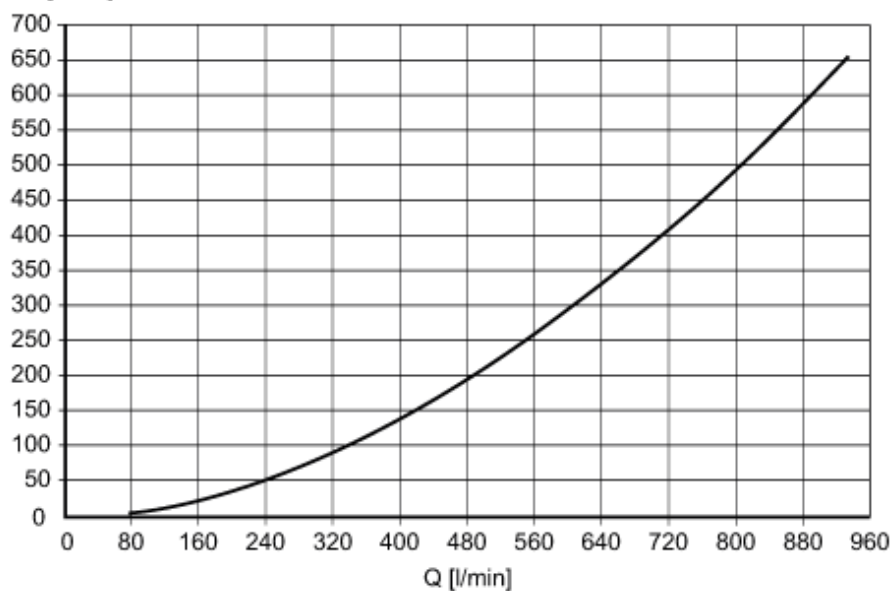
OUT1:	colours to DIN EN 60947-5-2 switching output empty pipe detection switching output volumetric flow quantity monitoring frequency output volumetric flow quantity monitoring Pulse output quantity meter signal output Preset counter IO-Link
OUT2:	switching output empty pipe detection switching output 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

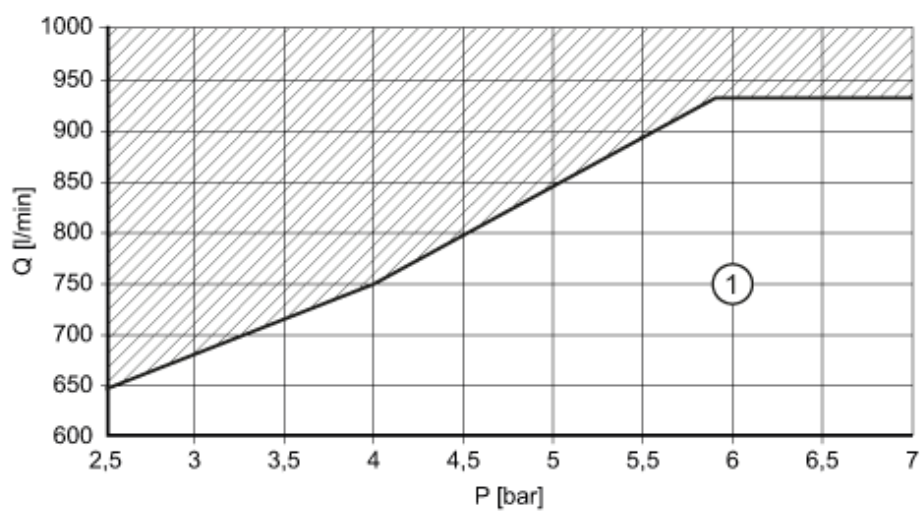
dP [mbar] DN50



dP Pressure loss

Q volumetric flow quantity

Cavitation



1 cavitation-free working area see operating instructions