

SM2004



Magnetic-inductive flow meter

SMR21XGX50KG/US



Product characteristics				
Number of inputs and outputs	Number of analogue outputs: 2			
Measuring range	5...600 l/min	0.3...36 m³/h	80...9510 gph	1.3...158.5 gpm
Process connection	threaded connection G 2 external thread DN50 flat seal			
Application				
Special feature	Gold-plated contacts			
Application	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	-10...90 °C	14...194 °F	
Pressure rating	16 bar	232 psi	1.6 MPa
MAWP (for applications according to CRN) [bar]	16		

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 analogue outputs: 2
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Outputs

Total number of outputs	2
Output signal	analogue signal
Number of analogue outputs	2
Analogue current output [mA]	4...20; ($\leq 22 \text{ mA}$; scalable)
Max. load [Ω]	500

Measuring/setting range

Measuring range	5...600 l/min	0.3...36 m ³ /h	80...9510 gph	1.3...158.5 gpm
Display range	-720...720 l/min	-43.2...43.2 m ³ /h	-11410...11410 gph	-190.2...190.2 gpm
Resolution	0.5 l/min	0.02 m ³ /h	5 gph	0.1 gpm
Analogue start point ASP	0...480 l/min	0...28.8 m ³ /h	0...7610 gph	0...126.8 gpm
Analogue end point AEP	120...600 l/min	7.2...36 m ³ /h	1900...9510 gph	31.7...158.5 gpm
Low flow cut-off LFC	$< 15 \text{ l/min}$	$< 0.9 \text{ m}^3/\text{h}$	$< 240 \text{ gph}$	$< 4 \text{ gpm}$
In steps of	0.5 l/min	0.02 m ³ /h	5 gph	0.1 gpm
Measuring dynamics	1:120			

Temperature monitoring

Measuring range	-20...80 °C	-4...176 °F
Display range	-40...100 °C	-40...212 °F
Resolution	0.2 °C	0.5 °F
Analogue start point	-20...60 °C	-4...140 °F
Analogue end point	0...80 °C	32...176 °F
In steps of	0.2 °C	0.5 °F

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	$\pm (0,8 \% \text{ MW} + 0,5 \% \text{ MEW})$
Repeatability	$\pm 0,2\% \text{ MEW}$

Temperature monitoring

Temperature drift	$\pm 0,0333 \text{ }^\circ\text{C} / \text{K}; \pm 0,0599 \text{ }^\circ\text{F} / \text{K}$
Accuracy [K]	$\pm 1 (25 \text{ }^\circ\text{C}; Q > 15 \text{ l/min}) / \pm 1 (77 \text{ }^\circ\text{F}; Q > 4 \text{ gpm})$



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Response times		
Flow monitoring		
Response time	[s]	0.35; (dAP = 0)
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 3 (Q > 15 l/min) / T09 = 3 (Q > 4 gpm)
Software / programming		
Parameter setting options	display can be deactivated; Display unit; empty pipe detection	
Operating conditions		
Ambient temperature	-10...60 °C	14...140 °F
Storage temperature	-25...80 °C	-13...176 °F
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	004MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,3 m³/h
	Q (t)	-
	Q (max)	36 m³/h
	Medium temperature	-10...70 °C
	Medium temperature	14...158 °F
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
Pressure Equipment Directive	Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	3147
Housing	rectangular	
Dimensions	[mm]	200 x 103 x 117
Materials	stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PEEK; NBR reinforced fibre; FKM	
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, gpm, gph, °C, °F)
	function display	1 x LED, yellow (10³)
	measured values	alphanumeric display, 4-digit
	programming	alphanumeric display, 4-digit
Display unit	l/min; m³/h; gpm; gph; °C; °F	
Accessories		
Items supplied	sealings: 2, Centellen	
	Label	

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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



Connection



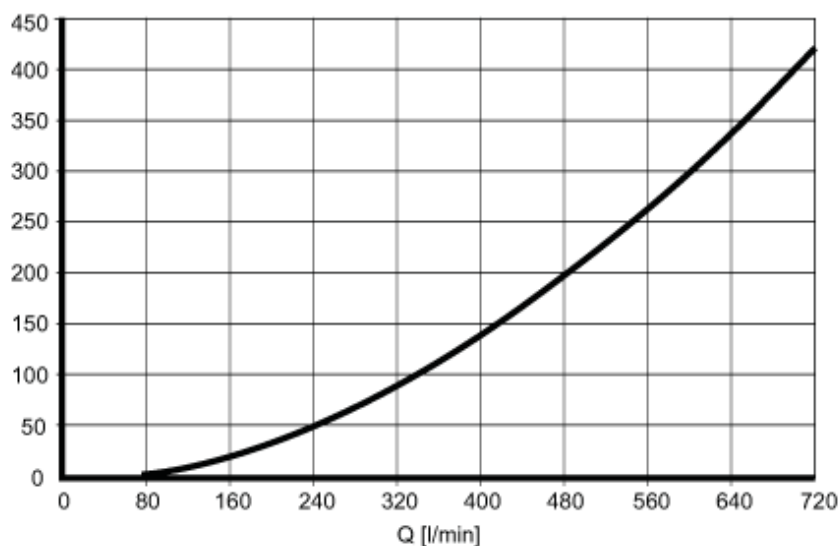
OUT1: colours to DIN EN 60947-5-2
analogue output Temperature monitoring
OUT2: analogue output volumetric flow quantity monitoring
Core colours :
BK = black
BN = brown
BU = blue
WH = white



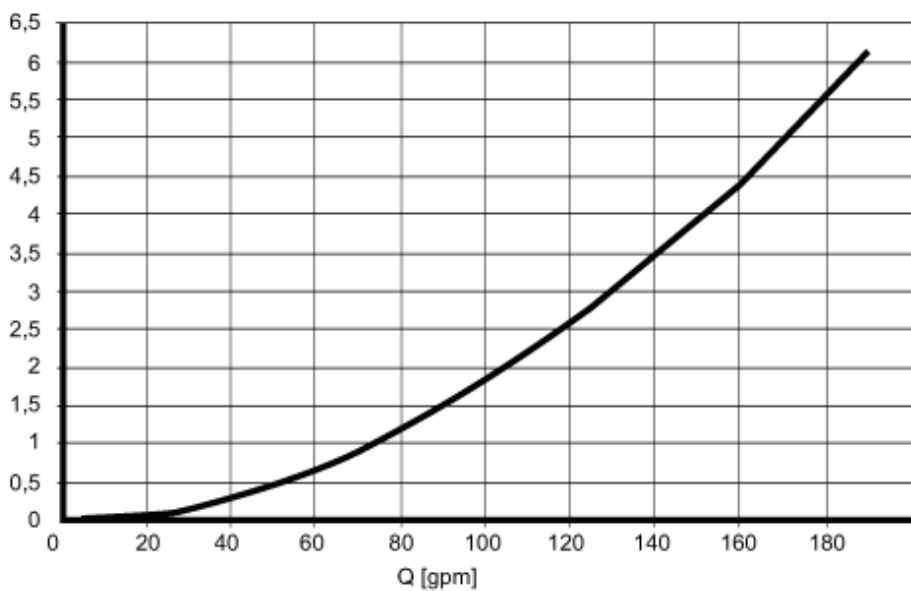
Diagrams and graphs

Pressure loss

dP [mbar] DN50



dP [psi]



dP Pressure loss

Q volumetric flow quantity