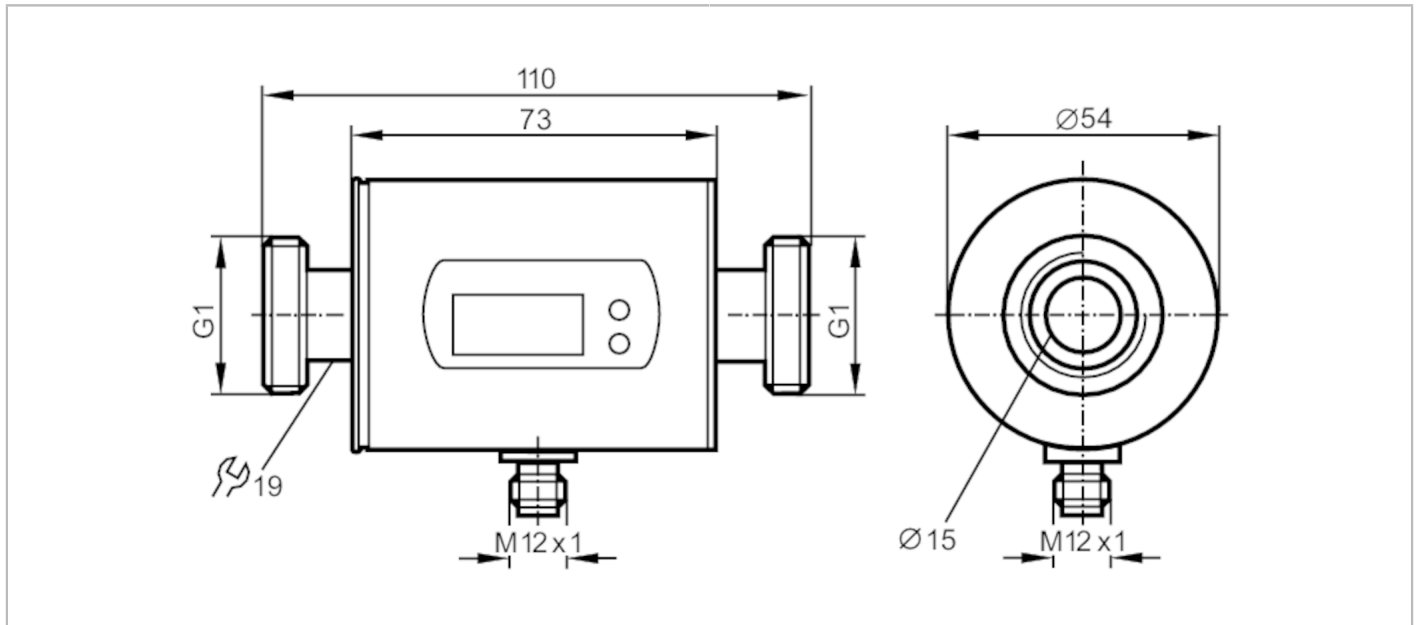


SM0504



Magnetic-inductive flow meter

SMR11GGX50KG/US100



Product characteristics	
Number of inputs and outputs	Number of analogue outputs: 2
Measuring range	6...1800 gph 0.1...30 gpm
Process connection	threaded connection G 1 external thread DN25 flat seal
Application	
Special feature	Gold-plated contacts
Application	for industrial applications
Installation	connection to pipe by means of an adapter
Media	conductive liquids; water; hydrous media
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°F]	14...158
Pressure rating	16 bar 232 psi 1.6 MPa
MAWP for applications according to CRN	10.4 bar 1.04 MPa
Electrical data	
Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
Min. insulation resistance [MΩ]	100; (500 V DC)
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
Outputs	
Total number of outputs	2

SM0504



Magnetic-inductive flow meter

SMR11GGX50KG/US100

Output signal	analogue signal	
Number of analogue outputs	2	
Analogue current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Overload protection	yes	

Measuring/setting range

Measuring range	6...1800 gph	0.1...30 gpm
Display range	-1902...1902 gph	-31.7...31.7 gpm
Resolution	2 gph	0.05 gpm
Analogue start point ASP	0...1268 gph	0...21.15 gpm
Analogue end point AEP	318...1800 gph	5.3...30 gpm
In steps of	2 gph	0.05 gpm

Temperature monitoring

Measuring range [$^{\circ}$ F]	-4...176	
Resolution [$^{\circ}$ F]	0.5	
Analogue start point [$^{\circ}$ F]	-4...140.5	
Analogue end point [$^{\circ}$ F]	31.5...176	
In steps of [$^{\circ}$ F]	0.5	

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

Accuracy [K]	$\pm 4,5 (Q > 0,26 \text{ gpm})$	
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Response times

Flow monitoring

Response time [s]	0.15; (dAP = 0)	
Damping process value dAP [s]	0...5	

Temperature monitoring

Dynamic response T05 / T09 [s]	T09 = 20 (Q > 0,26 gpm)	
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Operating conditions

Ambient temperature [$^{\circ}$ F]	14...140	
Storage temperature [$^{\circ}$ F]	-13...176	
Protection	IP 67	

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
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]	175	
Pressure Equipment Directive	Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	576	
Housing	cylindrical	

SM0504



Magnetic-inductive flow meter

SMR11GGX50KG/US100

Dimensions	[mm]	Ø 54 / L = 110
Materials		stainless steel (316L/1.4404); PBT-GF20; PC; EPDM/X
Materials (wetted parts)		stainless steel (316L/1.4404); Hastelloy; PEEK; FKM
Process connection		threaded connection G 1 external thread DN25 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, gpm, gph, °C, °F)
	measured values	alphanumeric display, 4-digit
	programming	alphanumeric display, 4-digit
Display unit		l/min; m ³ /h; gpm; gph; °C; °F

Remarks

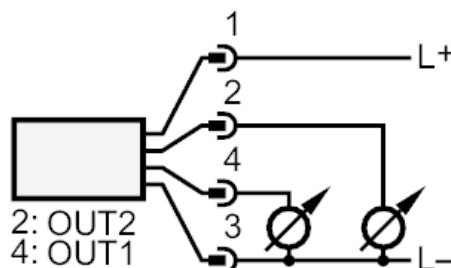
Remarks	MW = measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analogue output Temperature monitoring
OUT2: analogue output volumetric flow quantity monitoring

SM0504

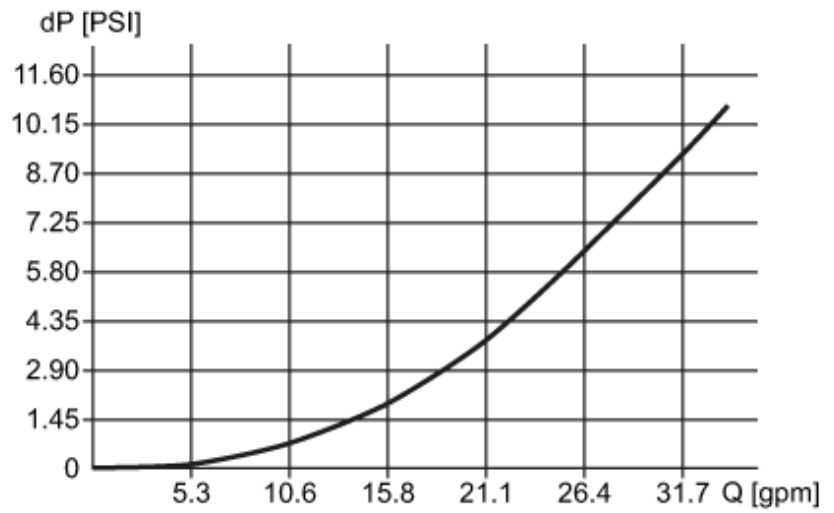


Magnetic-inductive flow meter

SMR11GGX50KG/US100

Diagrams and graphs

Pressure loss



dP Pressure loss

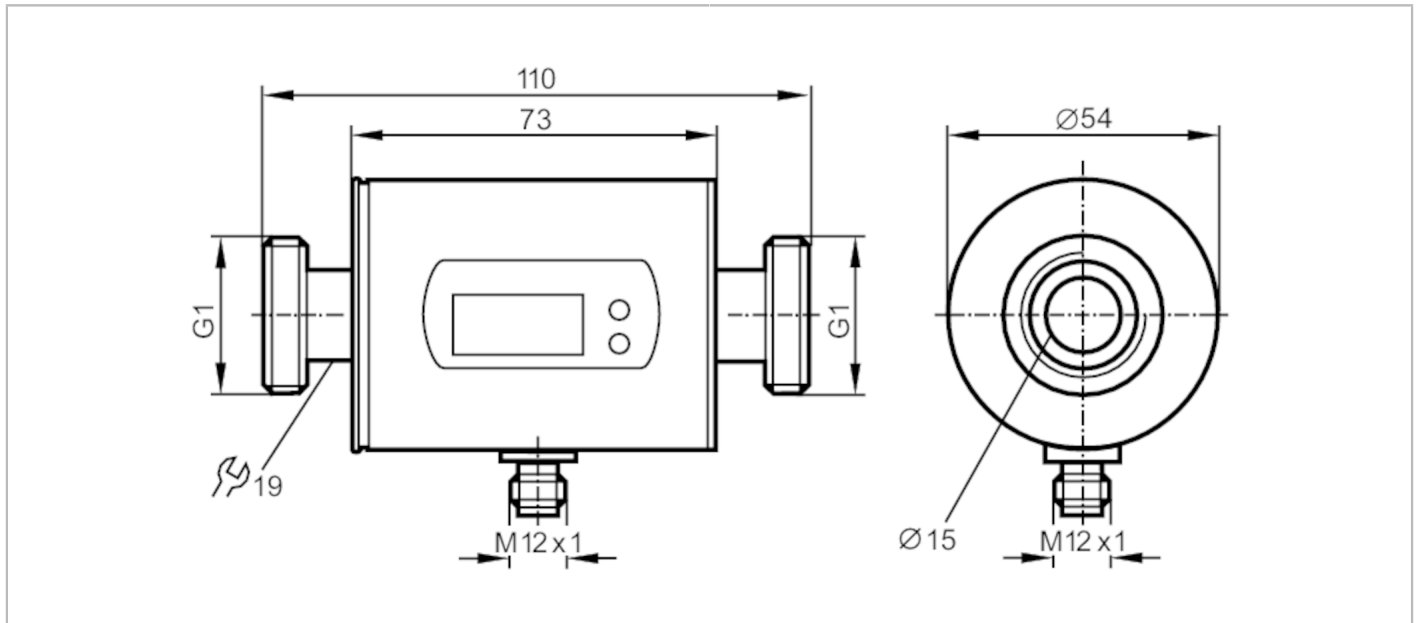
Q volumetric flow quantity

SM0505



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1	
Measuring range	0.2...100 l/min	0.01...6 m ³ /h
Process connection	threaded connection G 1 external thread DN25 flat seal	

Application

Special feature	Gold-plated contacts	
Application	empty pipe detection; totaliser function; for industrial applications	
Media	conductive liquids; water; hydrous media	
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP for applications according to CRN	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
Min. insulation resistance [MΩ]	100; (500 V DC)	
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	
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Inputs

Inputs	counter reset	
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SM0505



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analogue signal; pulse 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]	200	
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	
Measuring/setting range		
Measuring range	0.2...100 l/min	0.01...6 m³/h
Display range	-120...120 l/min	-7.2...7.2 m³/h
Resolution	0.1 l/min	0.005 m³/h
Set point SP	0.7...100 l/min	0.04...6 m³/h
Reset point rP	0.2...99.5 l/min	0.01...5.97 m³/h
Analogue start point ASP	0...80 l/min	0...4.8 m³/h
Analogue end point AEP	20...100 l/min	1.2...6 m³/h
In steps of	0.1 l/min	0.005 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.1 l...100 000 m³	
Pulse length [s]	0,025...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
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)	± (2 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

SM0505



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	$\pm 2,5$ ($Q > 5$ l/min)
Response times		
Flow monitoring		
Response time	[s]	0.15; (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 = 30 ($Q > 5$ 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/pulse output; start-up delay; display can be deactivated; Display unit; empty pipe detection	
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67
Tests / approvals		
EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	009MI
	accuracy class	-
	maximum allowable error	$\pm 2,5$ % FS
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	6 m ³ /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]	130
Pressure Equipment Directive	Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	576
Housing		cylindrical
Dimensions	[mm]	$\varnothing 54$ / L = 110
Materials	stainless steel (316L/1.4404); PBT-GF20; PC; EPDM/X	
Materials (wetted parts)	stainless steel (316L/1.4404); PEEK; EPDM/X	
Process connection	threaded connection G 1 external thread DN25 flat seal	
Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	switching status	2 x LED, yellow
	measured values	alphanumeric display, 4-digit
	programming	alphanumeric display, 4-digit
Remarks		
Remarks	MW = measured value MEW = Final value of the measuring range	

SM0505



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Pack quantity

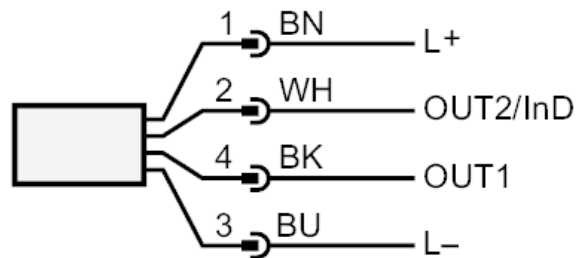
1 pcs.

Electrical connection

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



Connection



colours to DIN EN 60947-5-2

Core colours :

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

SM0505

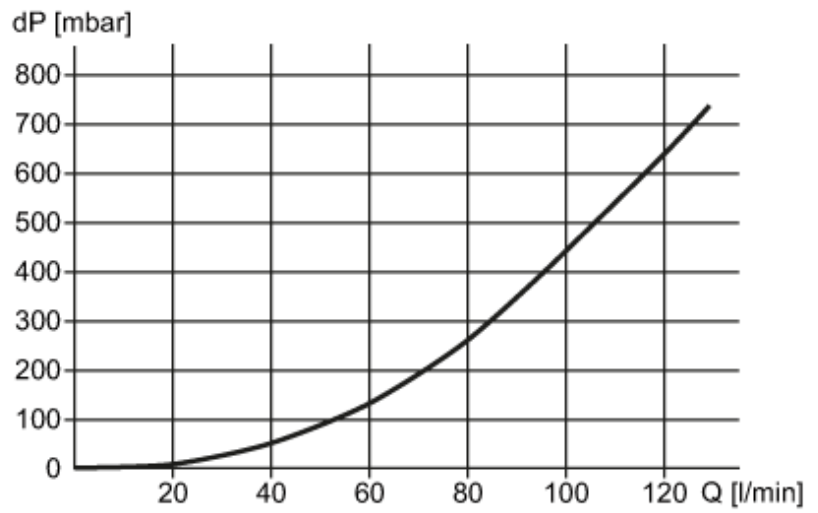


Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

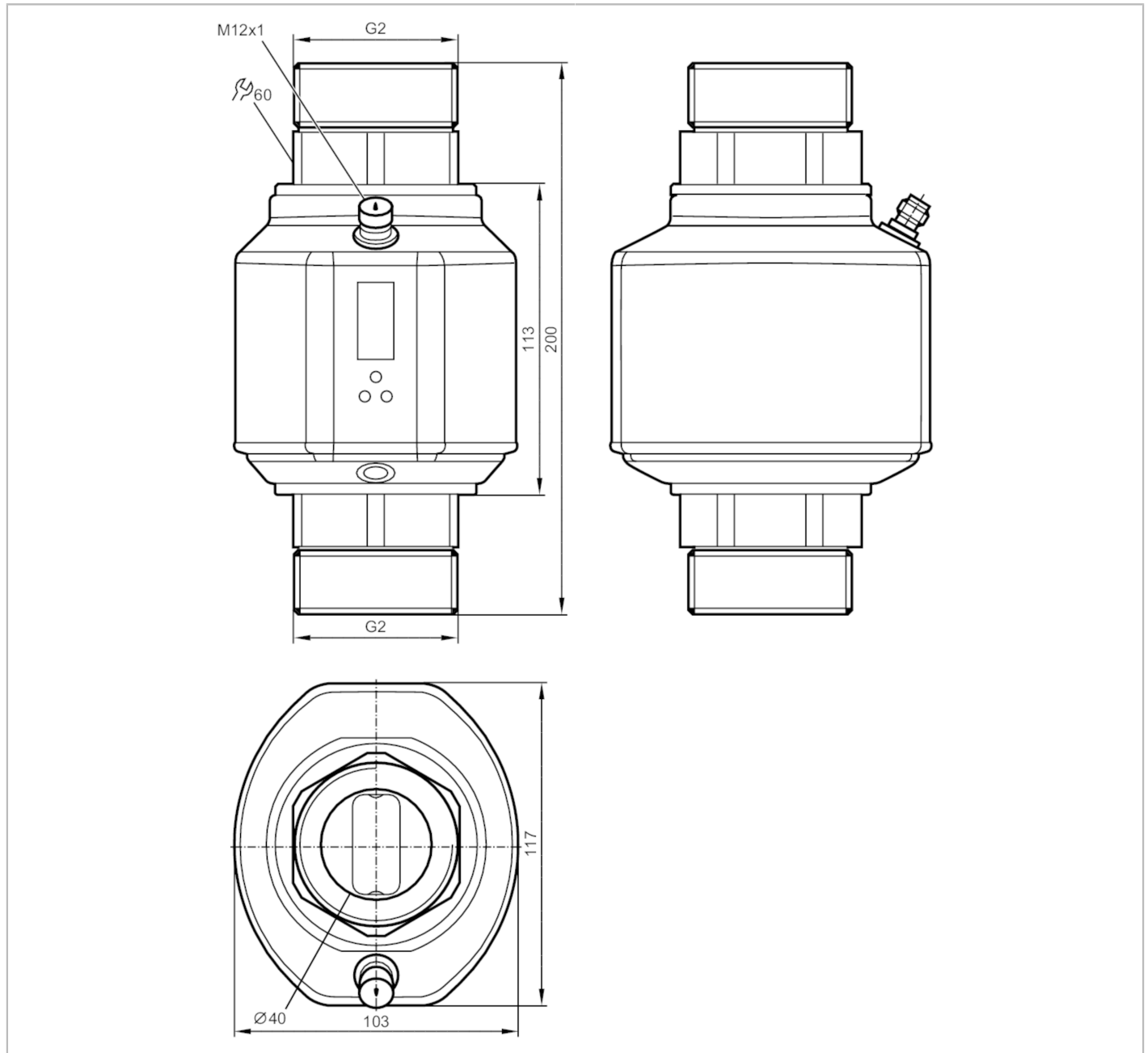
Q volumetric flow quantity

SM0510



Magnetic-inductive flow meter

SMR21XGXFRKG/US



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

SM0510



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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	
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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 m ³ /h
Display range	-920...920 l/min	-55.2...55.2 m ³ /h
Resolution	1 l/min	0.05 m ³ /h
Set point SP	10...900 l/min	0.55...54 m ³ /h
Reset point rP	5...896 l/min	0.3...53.75 m ³ /h
Analogue start point ASP	0...720 l/min	0...43.2 m ³ /h
Analogue end point AEP	180...900 l/min	10.8...54 m ³ /h

SM0510



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h
In steps of	1 l/min	0.05 m ³ /h
Measuring dynamics		1:180
Volumetric flow quantity monitoring		
Pulse value		0.1 l...600 x 10 ³ m ³
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)
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	
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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 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable

SM0510



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode		yes
Required master port type		A
Process data analogue		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	509

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
CPA approval	model number	004MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,3 m³/h
	Q (t)	-
	Q (max)	54 m³/h
	Medium temperature	-10...70 °C
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]		3212
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; FKM; stainless steel (316Ti/1.4571); PEEK	
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
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SM0510



Magnetic-inductive flow meter

SMR21XGXFRKG/US

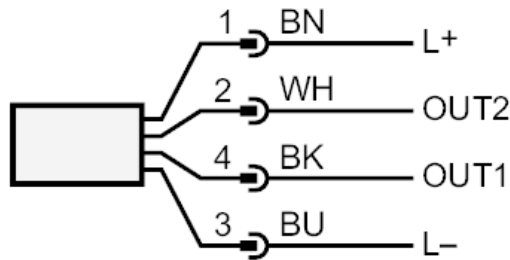
Remarks	
Remarks	MW = measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: colours to DIN EN 60947-5-2
 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

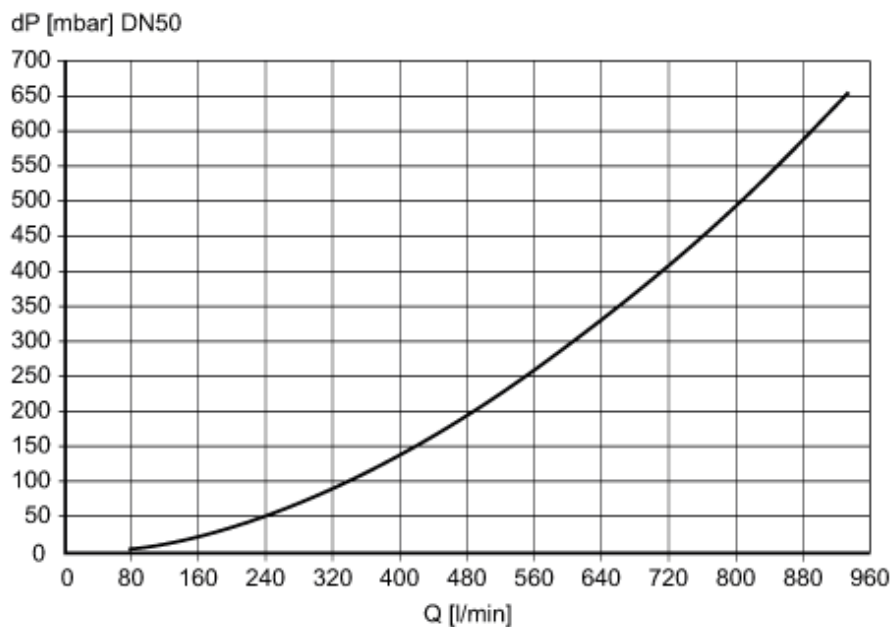


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

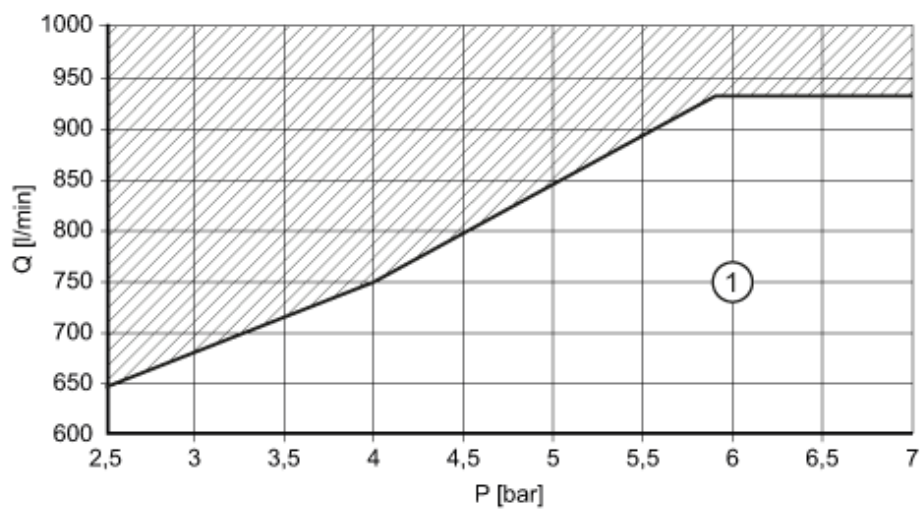
Pressure loss



dP Pressure loss

Q volumetric flow quantity

Cavitation



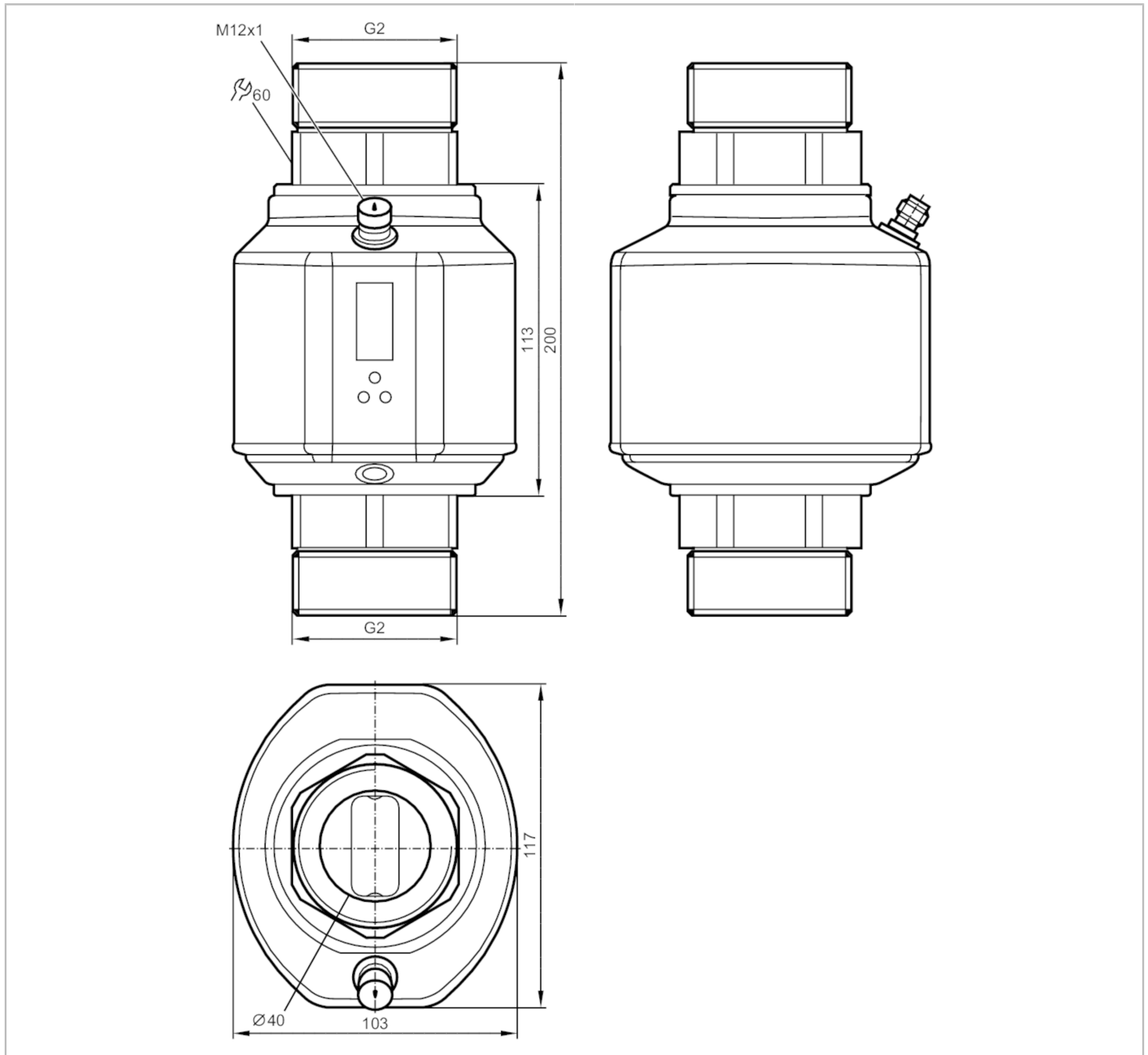
1 cavitation-free working area see operating instructions

SM2000



Magnetic-inductive flow meter

SMR21XGXFRKG/US



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1
Measuring range	5...600 l/min 0.3...36 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

SM2000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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	
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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...600 l/min	0.3...36 m ³ /h
Display range	-720...720 l/min	-43.2...43.2 m ³ /h
Resolution	0.5 l/min	0.02 m ³ /h
Set point SP	8...600 l/min	0.5...36 m ³ /h
Reset point rP	5...597 l/min	0.3...35.8 m ³ /h
Analogue start point ASP	0...480 l/min	0...28.8 m ³ /h
Analogue end point AEP	120...600 l/min	7.2...36 m ³ /h

SM2000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h
In steps of	0.5 l/min	0.02 m ³ /h
Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Pulse value	0.0001...600 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,008...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)	
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	
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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 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable

SM2000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode	yes	
Required master port type	A	
Process data analogue	3	
Process data binary	2	
Min. process cycle time [ms]	5	
Supported DeviceIDs	Type of operation default	DeviceID 389

Operating conditions

Ambient temperature [°C]	-10...60
Storage temperature [°C]	-25...80
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
CPA approval	model number accuracy class maximum allowable error Q (min) Q (t) Q (max) Medium temperature	004MI - ± 1,5 % FS 0,3 m³/h - 36 m³/h -10...70°C
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. File number UL	I008 E174189
Pressure Equipment Directive	Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	3208
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)	Pipe section: stainless steel (316L/1.4404); Process connection sealing: NBR reinforced fibre Flat seal; FKM; stainless steel (316Ti/1.4571); PEEK
Process connection	threaded connection G 2 external thread DN50 flat seal

Displays / operating elements

Display	Display unit switching status measured values programming	6 x LED, green (l/min, m³/h, l, m³, 10³, °C) 2 x LED, yellow alphanumeric display, 4-digit alphanumeric display, 4-digit
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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.

SM2000



Magnetic-inductive flow meter

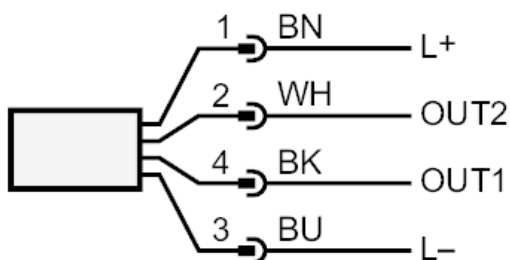
SMR21XGXFRKG/US

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

SM2000

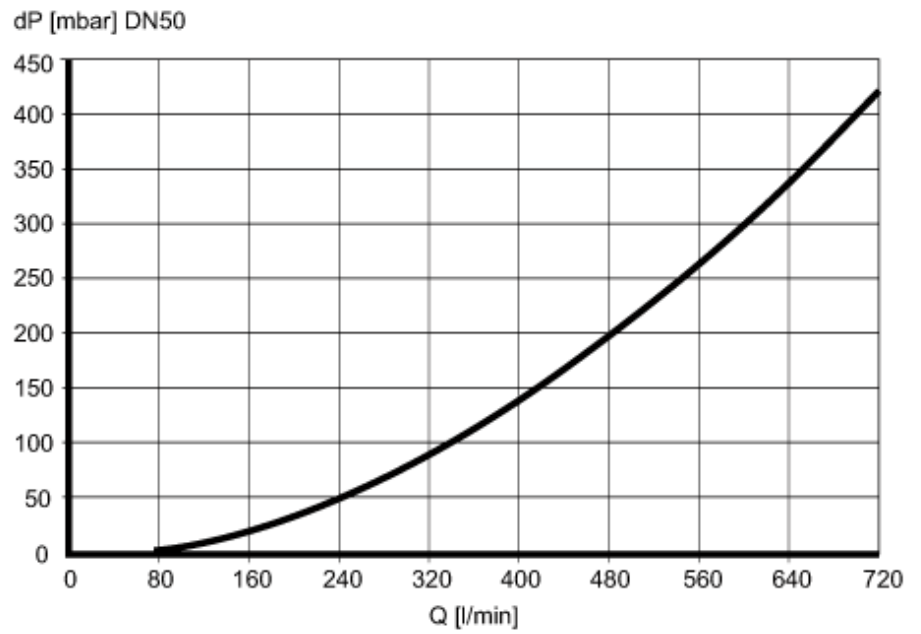


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

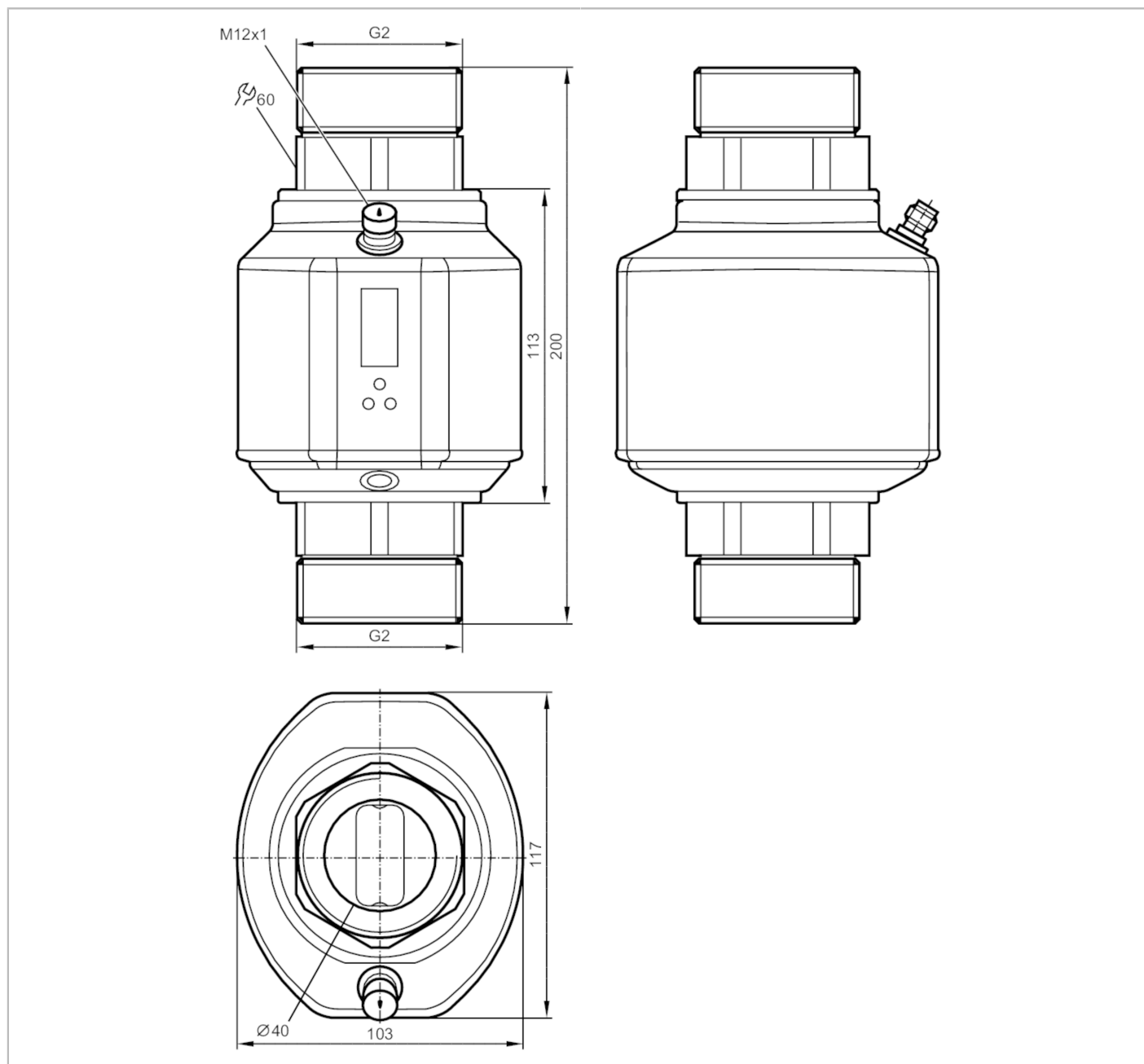
Q volumetric flow quantity

SM2001



Magnetic-inductive flow meter

SMR21XGXFRKG/US



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	80...9600 gph 1.3...160 gpm
Process connection	threaded connection G 2 external thread DN50 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM2001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Note on media	conductivity: $\geq 20 \mu\text{S/cm}$	
	viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°F]	14...194	
Pressure rating	16 bar	232 psi 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 analog outputs: 1
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Inputs

Inputs	counter reset
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Outputs

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

Measuring/setting range

Measuring range	80...9600 gph	1.3...160 gpm
Display range	-11520...11520 gph	-190...190 gpm
Resolution	5 gph	0.1 gpm
Set point SP	130...9600 gph	2.1...160 gpm
Reset point rP	80...9550 gph	1.3...159.2 gpm
Analog start point ASP	0...7680 gph	0...128 gpm
Analog end point AEP	1920...9600 gph	32...160 gpm

SM2001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 240 gph	< 4 gpm
In steps of	5 gph	0.1 gpm
Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Pulse value	0.02...160 E06 gal	
In steps of	0.02 gal	
Pulse length [s]	0,008...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Display range [°F]	-40...212	
Resolution [°F]	0.5	
Set point SP [°F]	-2...176	
Reset point rP [°F]	-3...175	
Analog start point [°F]	-4...140	
Analog end point [°F]	32...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0185 °F / K	
Accuracy [K]	± 1 (77 °F; Q > 4 gpm)	
Reaction 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 > 4 gpm)	
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / 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

SM2001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode		yes
Required master port class		A
Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	390

Operating conditions

Ambient temperature [°F]		14...140
Storage temperature [°F]		-13...176
Protection		IP 65; IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
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 number	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]		3069.2
Housing		rectangular
Dimensions [mm]		200 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; stainless steel (1.4571/316Ti); PEEK	
Process connection	threaded connection G 2 external thread DN50 flat seal	

Displays / operating elements

Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	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.

SM2001



Magnetic-inductive flow meter

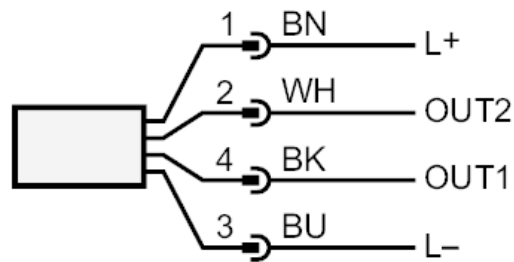
SMR21XGXFRKG/US

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM2001

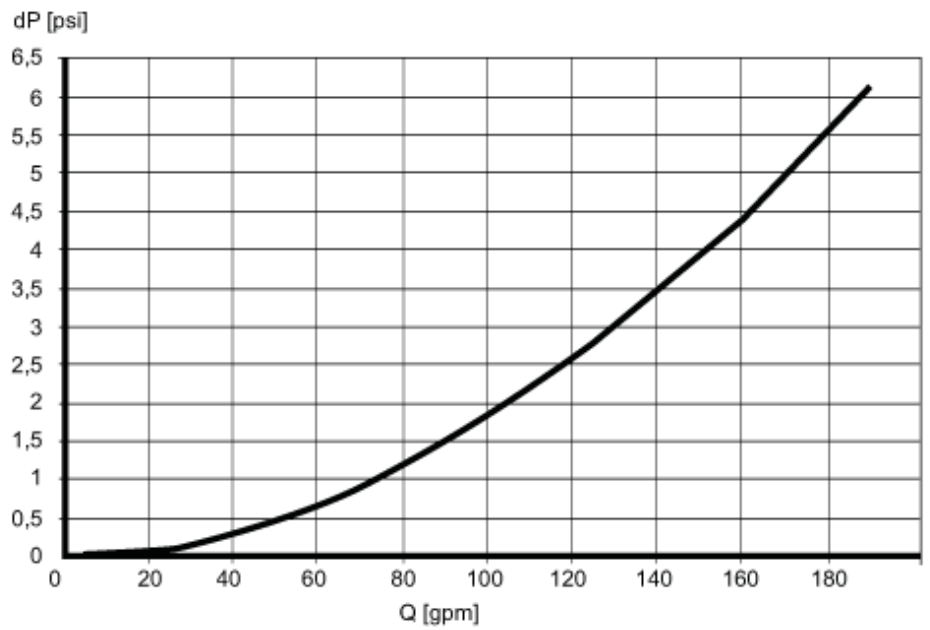


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

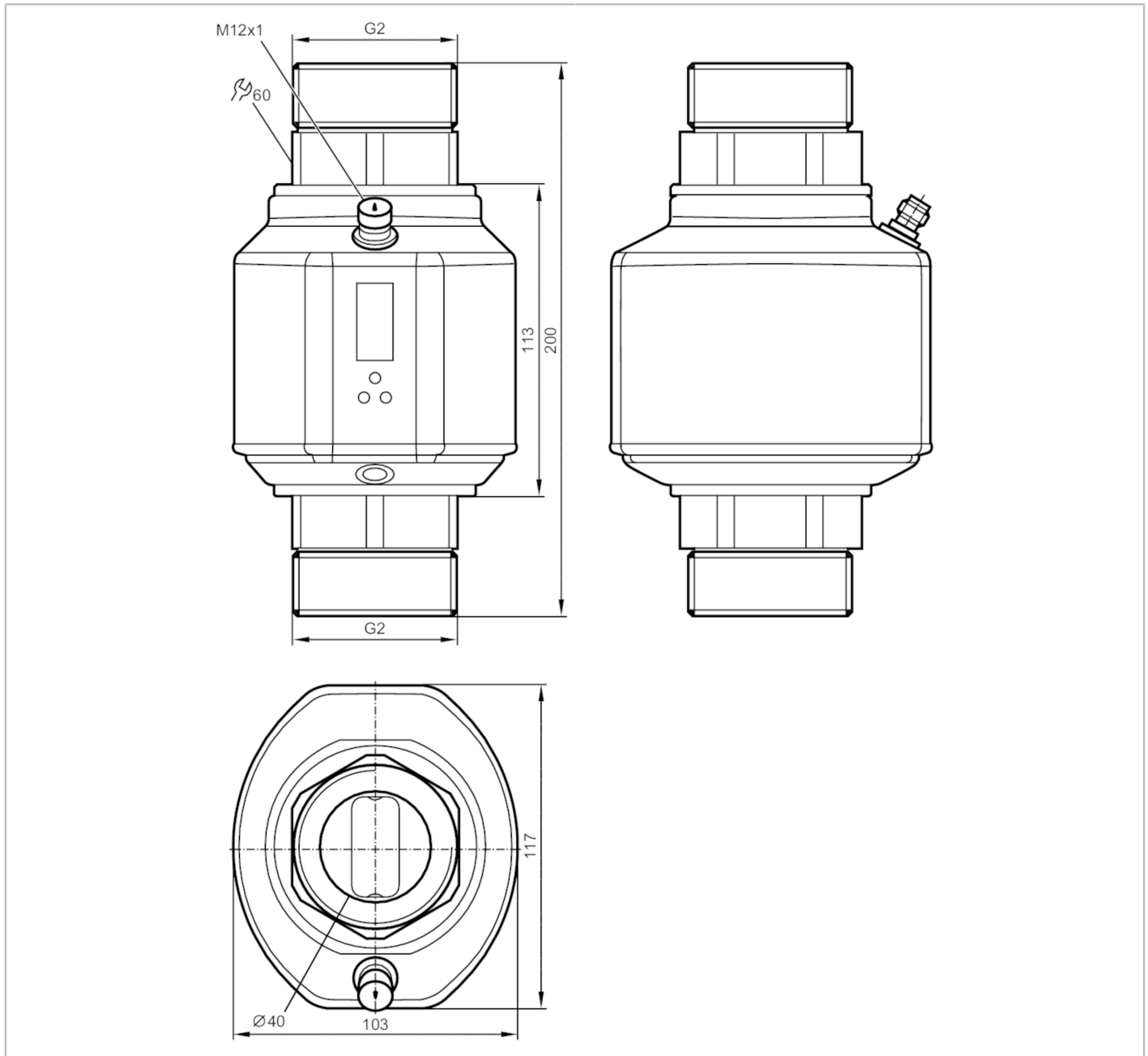
Q volumetric flow quantity

SM2004



Magnetic-inductive flow meter

SMR21XGX50KG/US



Product characteristics				
Number of inputs and outputs	Number of analog outputs: 2			
Measuring range	5...600 l/min	0.3...36 m ³ /h	80...9510 gph	1.3...158.5 gpm
Process connection	threaded connection G 2 external thread DN50 flat seal			
Application				
System	gold-plated contacts			
Application	empty pipe detection; for industrial applications			
Installation	connection to pipe by means of an adapter			
Media	Conductive liquids; water; water-based media			

SM2004



Magnetic-inductive flow meter

SMR21XGX50KG/US

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)	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 analog outputs: 2

Outputs	
Total number of outputs	2
Output signal	analog signal
Number of analog outputs	2
Analog 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
Analog start point ASP	0...480 l/min	0...28.8 m ³ /h	0...7610 gph	0...126.8 gpm
Analog 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
Analog start point	-20...60 °C	-4...140 °F
Analog 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]	$\pm 1 (25 \text{ }^\circ\text{C}; Q > 15 \text{ l/min}) / \pm 1 (77 \text{ }^\circ\text{F}; Q > 4 \text{ gpm})$

SM2004



Magnetic-inductive flow meter

SMR21XGX50KG/US

Reaction 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
Material		stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U
Materials (wetted parts)		Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; stainless steel (1.4571/316Ti); PEEK
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

SM2004



Magnetic-inductive flow meter

SMR21XGX50KG/US

Remarks

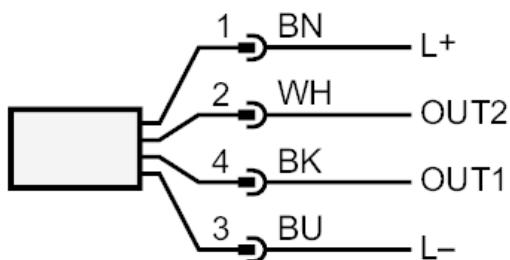
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
OUT2: analog output Volumetric flow quantity monitoring
Core colors :
BK = black
BN = brown
BU = blue
WH = white

SM2004



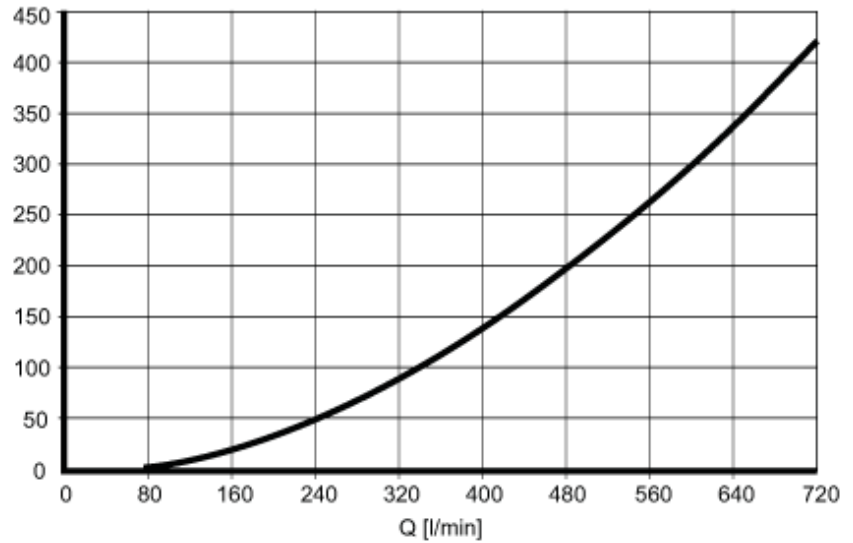
Magnetic-inductive flow meter

SMR21XGX50KG/US

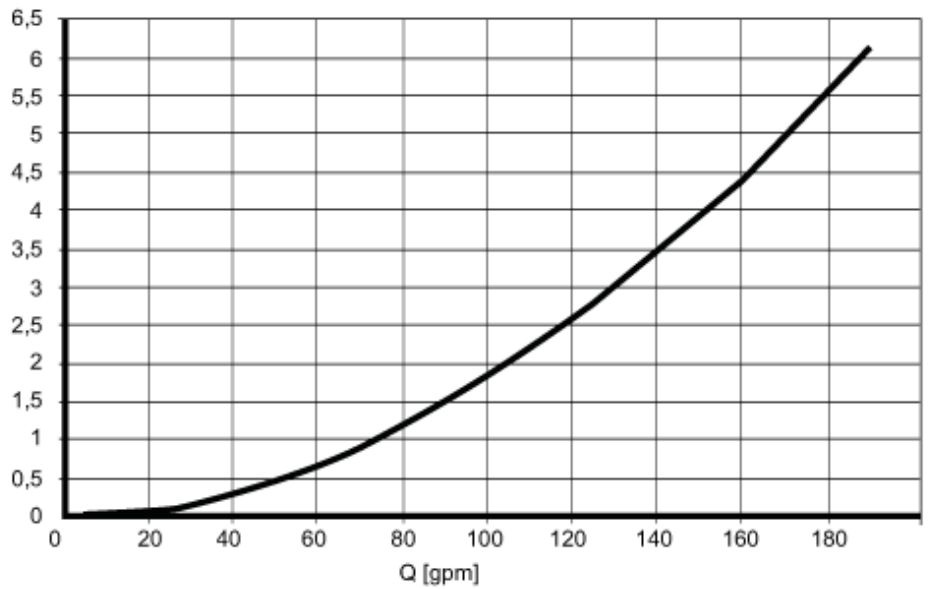
Diagrams and graphs

Pressure loss

dP [mbar] DN50



dP [psi]



dP Pressure loss

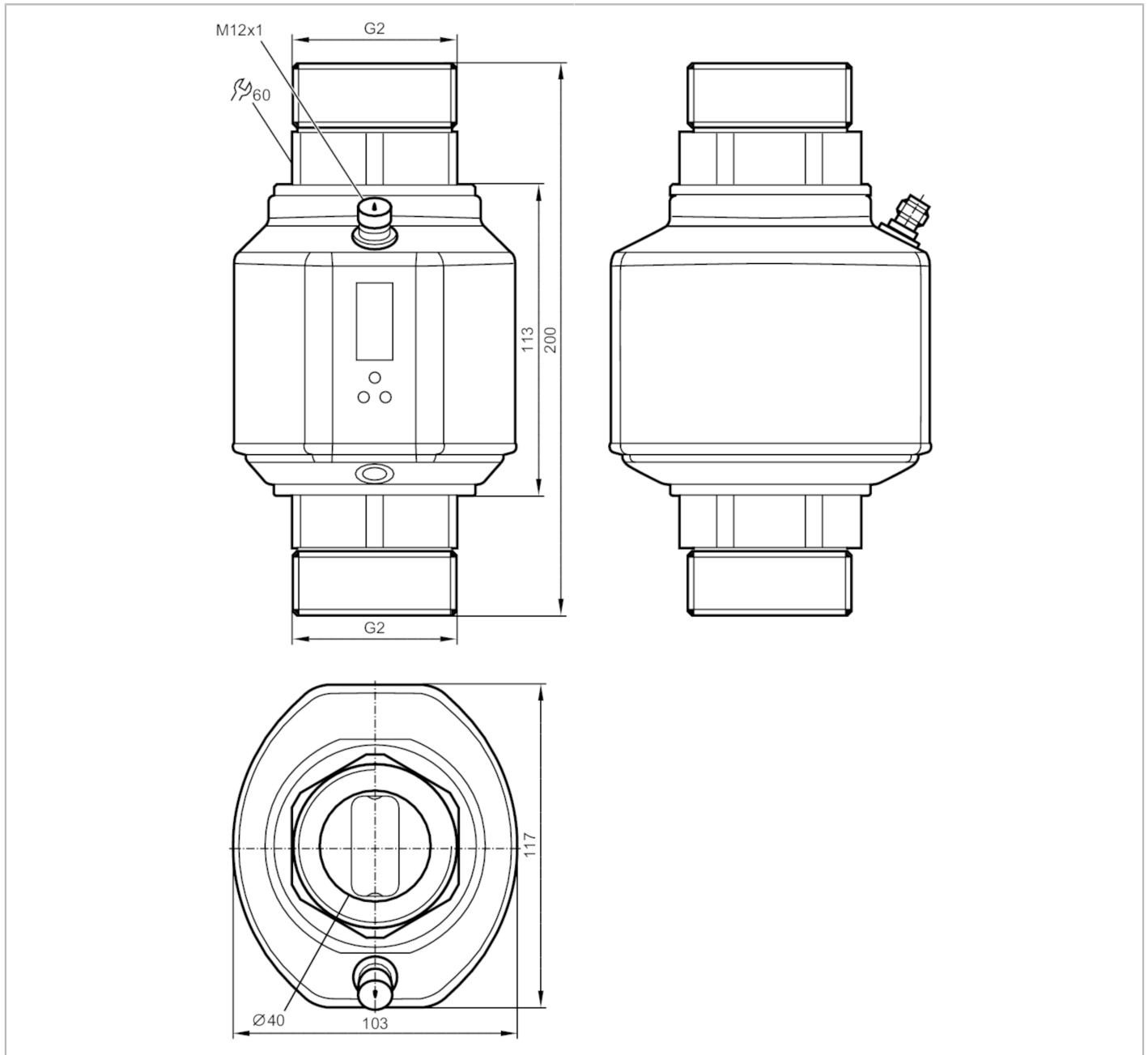
Q volumetric flow quantity

SM2100



Magnetic-inductive flow meter

SMR21XGXFRKG/US



ACS CE PA CRN cUL^{us} LISTED IO-Link KTW/W270 Reg31 UK CA

Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	5...600 l/min 0.3...36 m ³ /h
Process connection	threaded connection G 2 external thread DN50 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM2100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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 analog outputs: 1	
------------------------------	---	--

Inputs

Inputs	counter reset	
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Outputs

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

Measuring/setting range

Measuring range	5...600 l/min	0.3...36 m ³ /h
Display range	-720...720 l/min	-43.2...43.2 m ³ /h
Resolution	0.5 l/min	0.02 m ³ /h
Set point SP	8...600 l/min	0.5...36 m ³ /h
Reset point rP	5...597 l/min	0.3...35.8 m ³ /h
Analog start point ASP	0...480 l/min	0...28.8 m ³ /h
Analog end point AEP	120...600 l/min	7.2...36 m ³ /h

SM2100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h
In steps of	0.5 l/min	0.02 m ³ /h
Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Pulse value	0.0001...600 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,008...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	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0333 °C / K	
Accuracy [K]	± 1 (bei 25 °C, Q > 15 l/min)	
Reaction 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 / 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

SM2100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode		yes
Required master port class		A
Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	389

Operating conditions

Ambient temperature [°C]		-10...60
Storage temperature [°C]		-25...80
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
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 number	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]		3163
Housing		rectangular
Dimensions [mm]		200 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; stainless steel (1.4571/316Ti); 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

SM2100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Pack quantity

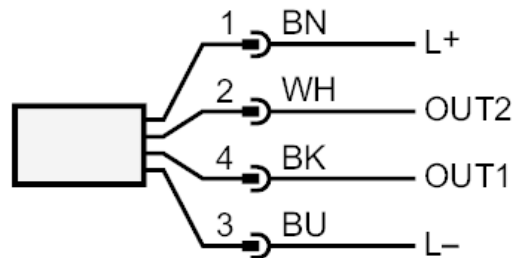
1 pcs.

Electrical connection

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



Connection



OUT1:

Colors 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
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :

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

SM2100

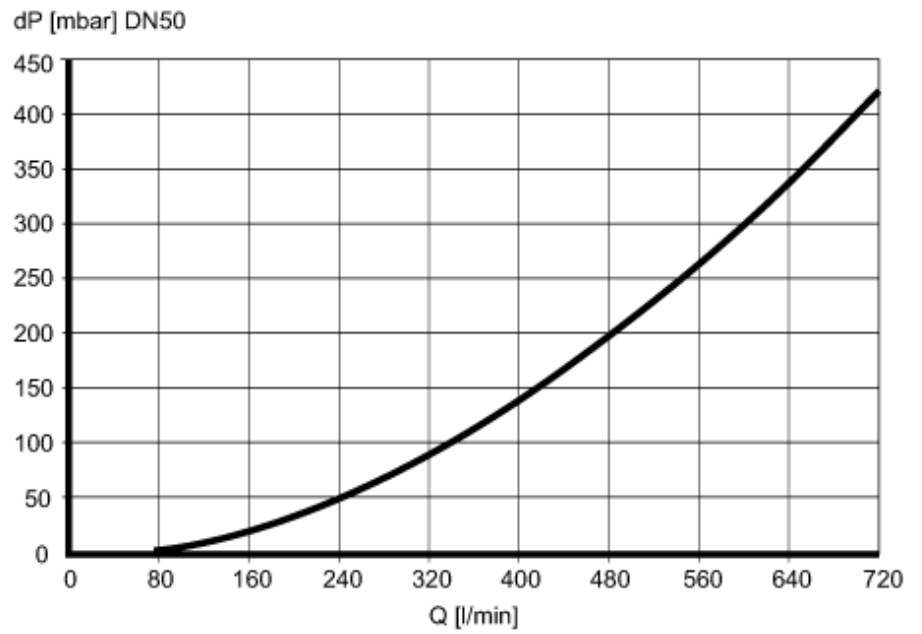


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

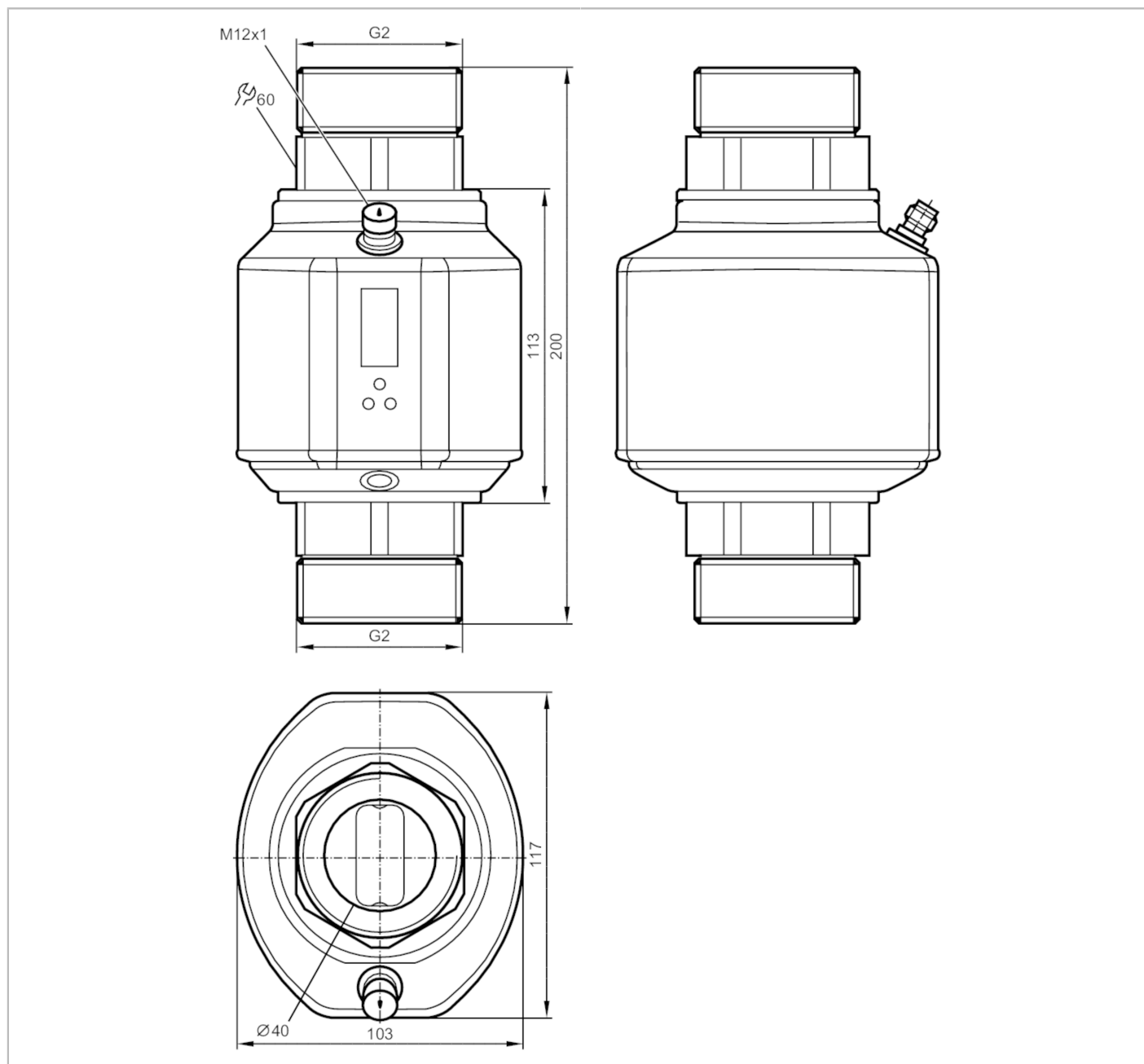
Q volumetric flow quantity

SM2130



Magnetic-inductive flow meter

SMR21XGXFRKG/US



ACS CE CRN cUL^{us} LISTED IO-Link KTW/W270 Reg31 UK CA

Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	5...900 l/min 0.3...54 m ³ /h
Process connection	threaded connection G 2 external thread DN50 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM2130



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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 analog outputs: 1
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Inputs

Inputs	counter reset
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Outputs

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

Measuring/setting range

Measuring range	5...900 l/min	0.3...54 m ³ /h
Display range	-920...920 l/min	-55.2...55.2 m ³ /h
Resolution	1 l/min	0.05 m ³ /h
Set point SP	10...900 l/min	0.55...54 m ³ /h
Reset point rP	5...896 l/min	0.3...53.75 m ³ /h
Analog start point ASP	0...720 l/min	0...43.2 m ³ /h
Analog end point AEP	180...900 l/min	10.8...54 m ³ /h

SM2130



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h
In steps of	1 l/min	0.05 m ³ /h
Measuring dynamics	1:180	
Volumetric flow quantity monitoring		
Pulse value	0.1 l...600 x 10 ³ m ³	
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	
Analog start point [°C]	-20...60	
Analog 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)	
Reaction 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 / 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

SM2130



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode		yes
Required master port class		A
Process data analog		3
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
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF [years]		85
UL approval	UL approval number	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
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PC; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; stainless steel (1.4571/316Ti); 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, m ³ /h, l, m ³ , 10 ³ , °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
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Remarks

Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

SM2130



Magnetic-inductive flow meter

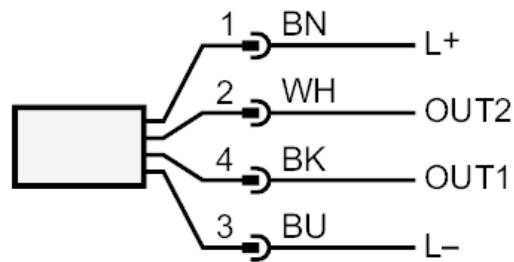
SMR21XGXFRKG/US

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM2130

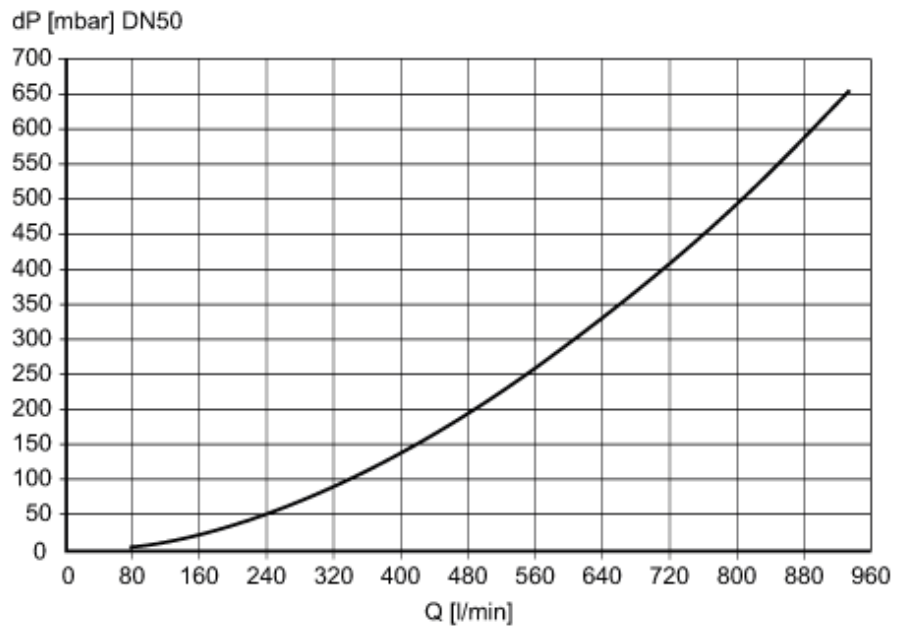


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

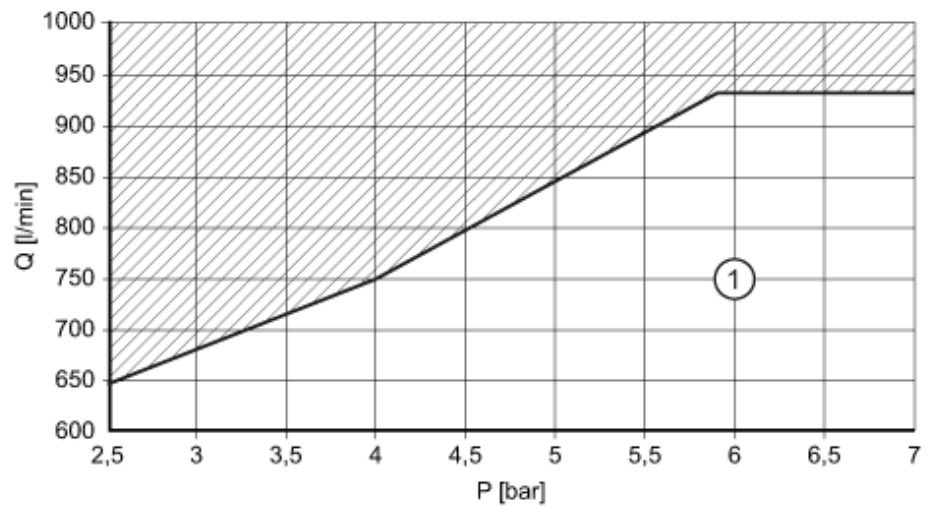
Pressure loss



dP Pressure loss

Q volumetric flow quantity

Cavitation



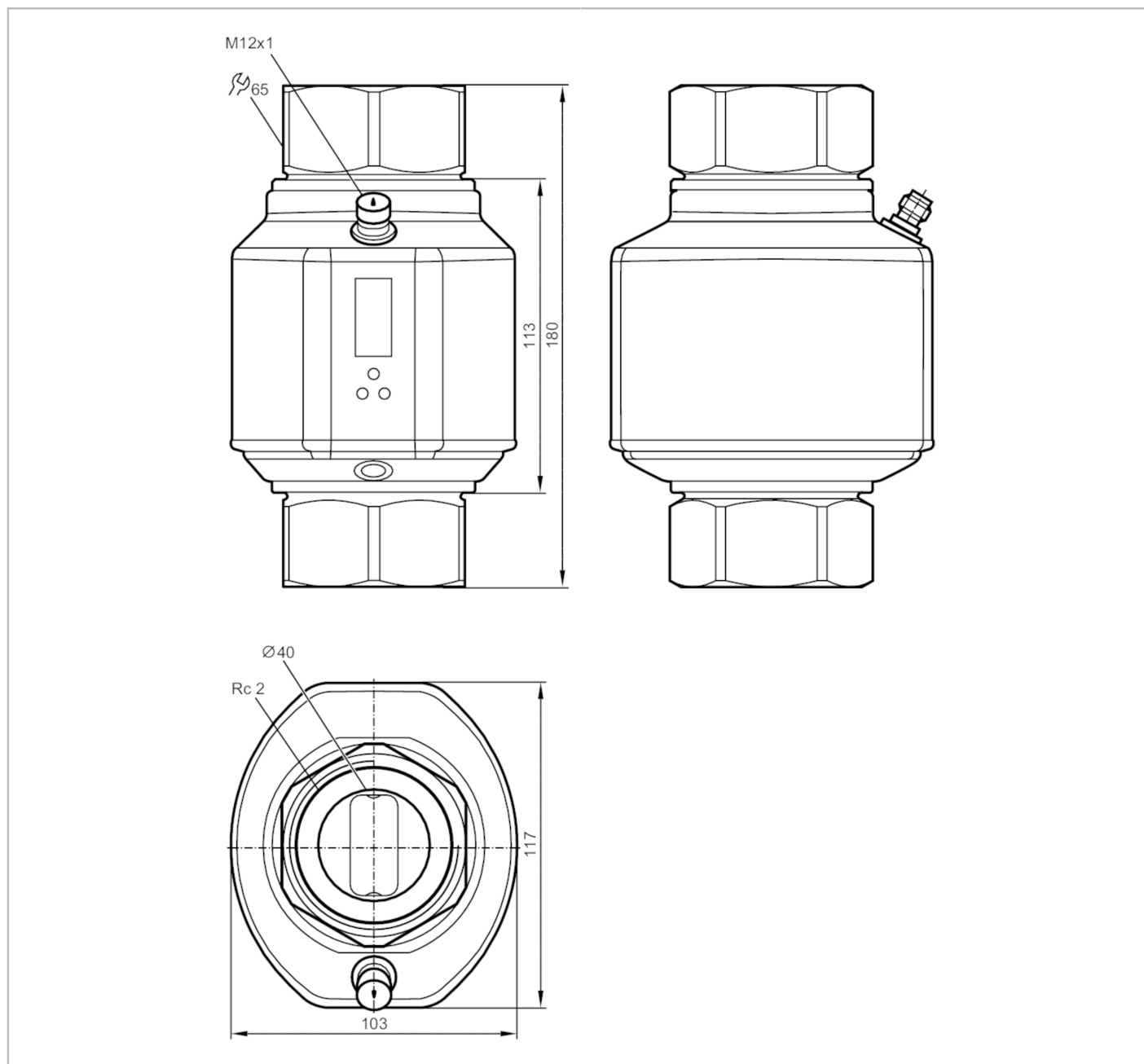
1 cavitation-free working area see operating instructions

SM2400



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...600 l/min	0.3...36 m³/h
Process connection	threaded connection Rc 2 Internal thread DN50	

Application

System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)

SM2400



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

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 analog outputs: 1

Inputs	
Inputs	counter reset

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

Measuring/setting range		
Measuring range	5...600 l/min	0.3...36 m³/h
Display range	-720...720 l/min	-43.2...43.2 m³/h
Resolution	0.5 l/min	0.02 m³/h
Set point SP	8...600 l/min	0.5...36 m³/h
Reset point rP	5...597 l/min	0.3...35.8 m³/h
Analog start point ASP	0...480 l/min	0...28.8 m³/h
Analog end point AEP	120...600 l/min	7.2...36 m³/h
Low flow cut-off LFC	< 15 l/min	< 0.9 m³/h
In steps of	0.5 l/min	0.02 m³/h

SM2400



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Pulse value	0.0001...600 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,008...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	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0333 °C / K	
Accuracy [K]	± 1 (bei 25 °C, Q > 15 l/min)	
Reaction 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 / 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
SIO mode	yes	
Required master port class	A	

SM2400



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	389

Operating conditions		
Ambient temperature [°C]		-10...60
Storage temperature [°C]		-25...80
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
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 number	I008
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]		2740
Housing		rectangular
Dimensions [mm]		180 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM	
Process connection	threaded connection Rc 2 Internal thread DN50	

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		Label

Remarks		
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

SM2400



Magnetic-inductive flow meter

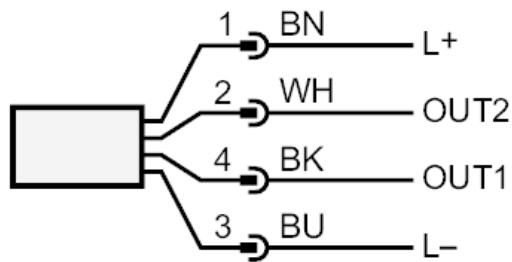
SMK21XGXFRKG/US-100

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM2400

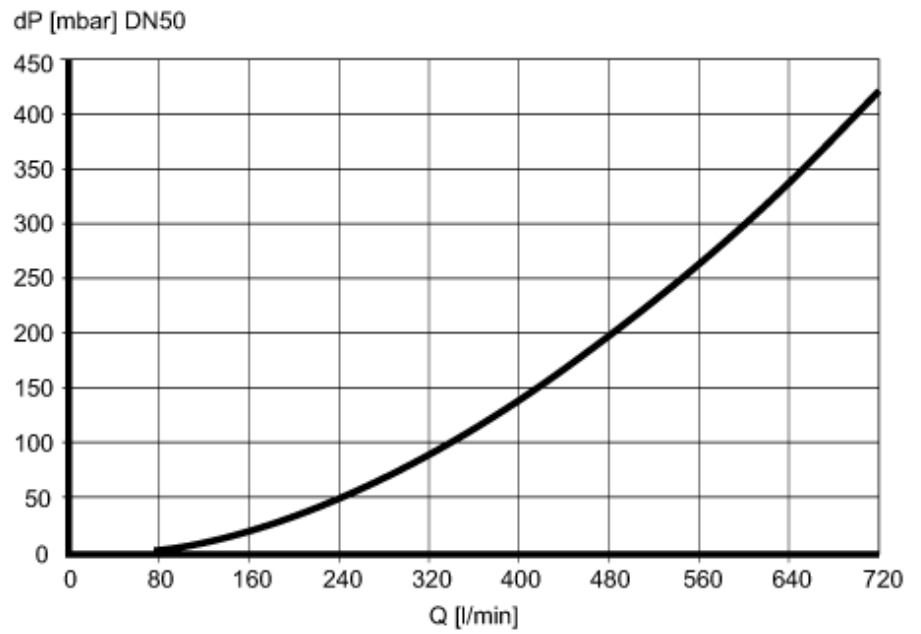


Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

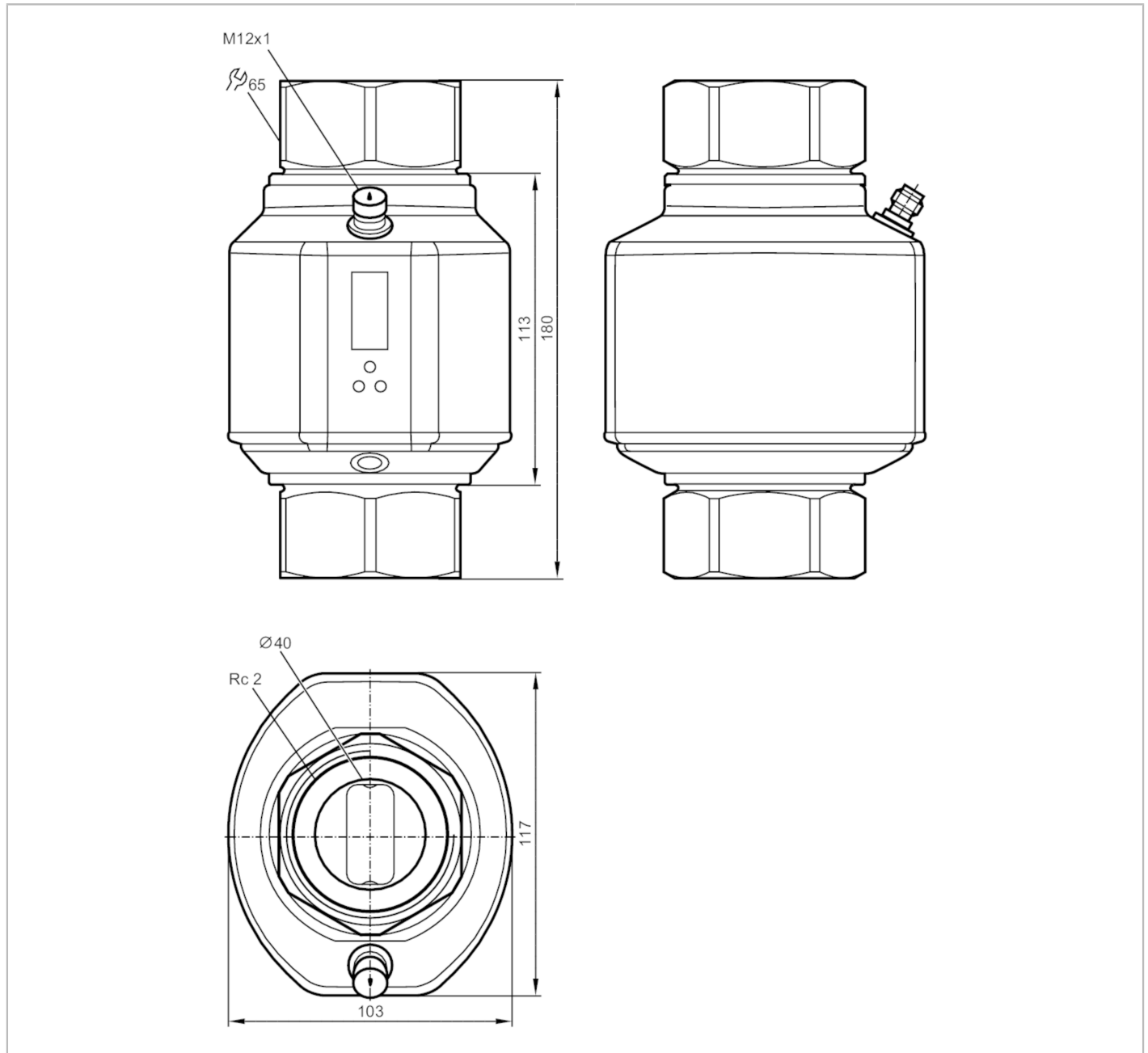
Q volumetric flow quantity

SM2500



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	5...600 l/min 0.3...36 m³/h
Process connection	threaded connection Rc 2 Internal thread DN50
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)

SM2500



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

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 analog outputs: 1

Inputs	
Inputs	counter reset

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

Measuring/setting range		
Measuring range	5...600 l/min	0.3...36 m³/h
Display range	-720...720 l/min	-43.2...43.2 m³/h
Resolution	0.5 l/min	0.02 m³/h
Set point SP	8...600 l/min	0.5...36 m³/h
Reset point rP	5...597 l/min	0.3...35.8 m³/h
Analog start point ASP	0...480 l/min	0...28.8 m³/h
Analog end point AEP	120...600 l/min	7.2...36 m³/h
Low flow cut-off LFC	< 15 l/min	< 0.9 m³/h
In steps of	0.5 l/min	0.02 m³/h

SM2500



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Pulse value	0.0001...600 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,008...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	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0333 °C / K	
Accuracy [K]	± 1 (bei 25 °C, Q > 15 l/min)	
Reaction 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 / 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
SIO mode	yes	
Required master port class	A	

SM2500



Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	389

Operating conditions

Ambient temperature [°C]		-10...60
Storage temperature [°C]		-25...80
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
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 number	I008
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]		2743.5
Housing		rectangular
Dimensions [mm]		180 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; EPDM	
Process connection	threaded connection Rc 2 Internal thread DN50	

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	Label
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Remarks

Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

SM2500



Magnetic-inductive flow meter

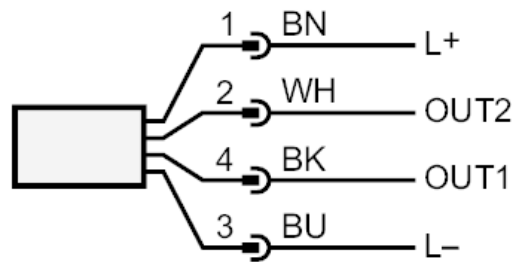
SMK21XGXFRKG/US-100

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM2500

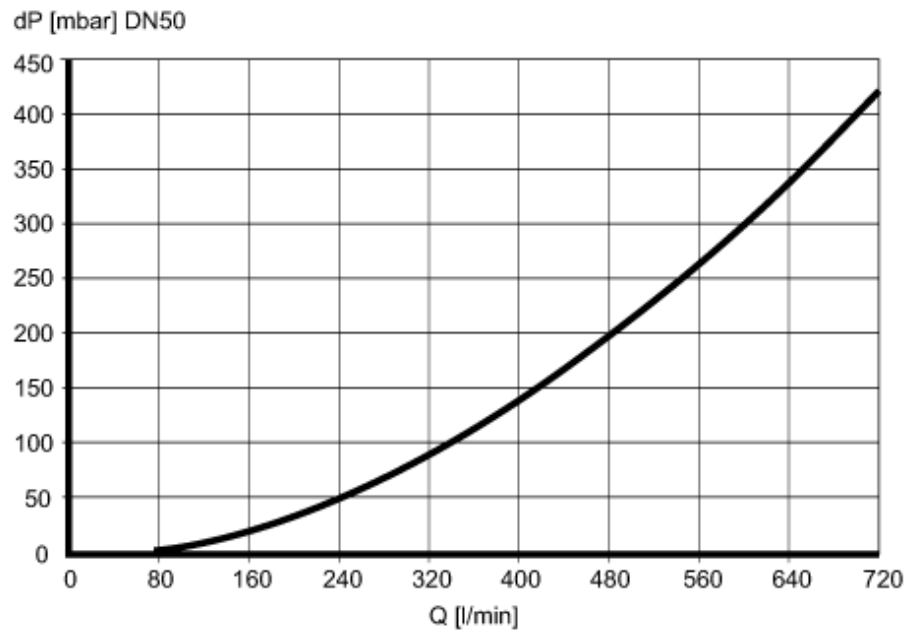


Magnetic-inductive flow meter

SMK21XGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

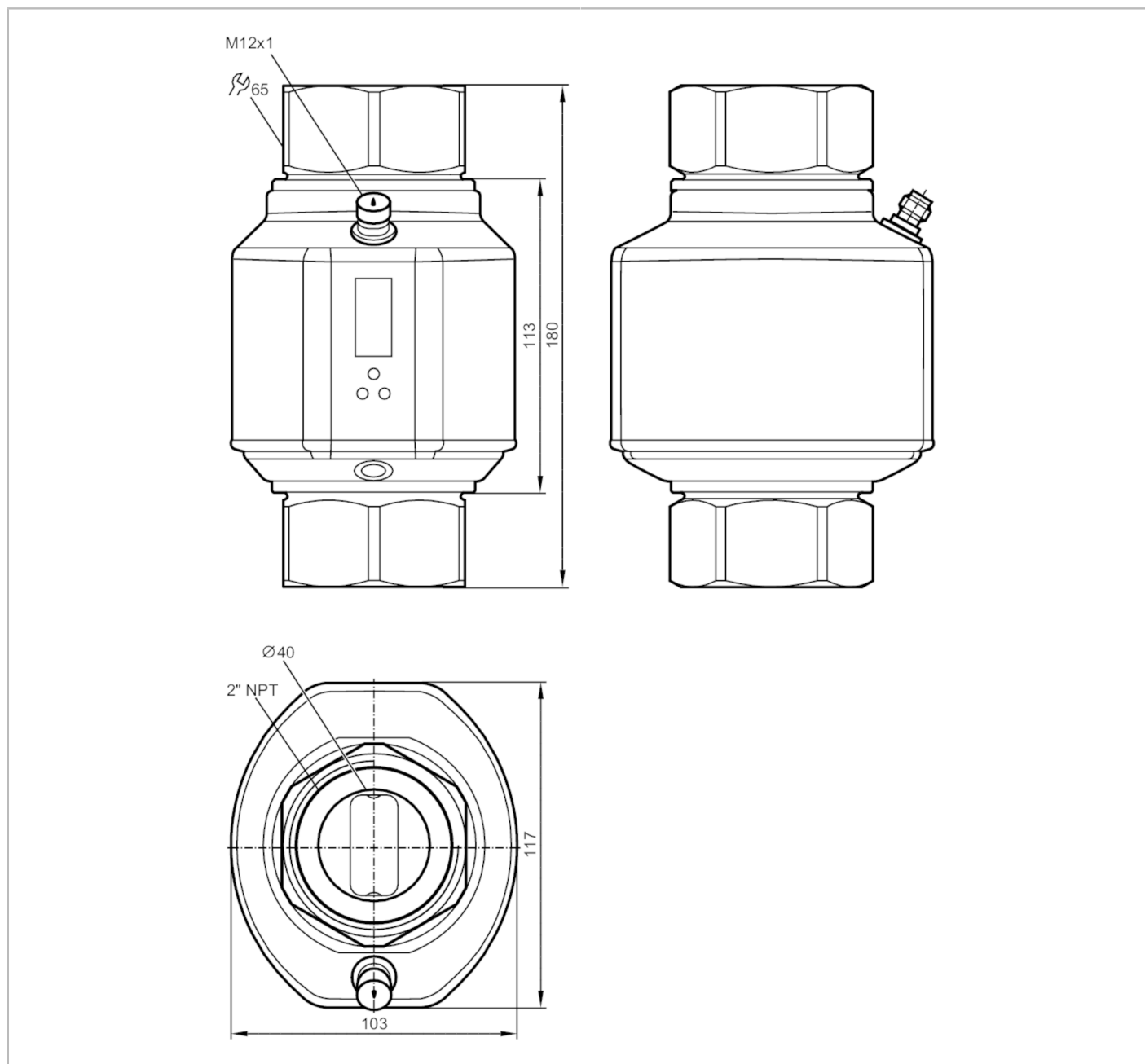
Q volumetric flow quantity

SM2601



Magnetic-inductive flow meter

SMN21XGXFRKG/US-100



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	80...9600 gph 1.3...160 gpm
Process connection	threaded connection 2" NPT Internal thread DN50
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)

SM2601



Magnetic-inductive flow meter

SMN21XGXFRKG/US-100

Medium temperature	[°F]	14...194		
Pressure rating		16 bar	232 psi	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 analog outputs: 1

Inputs	
Inputs	counter reset

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

Measuring/setting range		
Measuring range	80...9600 gph	1.3...160 gpm
Display range	-11520...11520 gph	-190...190 gpm
Resolution	5 gph	0.1 gpm
Set point SP	130...9600 gph	2.1...160 gpm
Reset point rP	80...9550 gph	1.3...159.2 gpm
Analog start point ASP	0...7680 gph	0...128 gpm
Analog end point AEP	1920...9600 gph	32...160 gpm
Low flow cut-off LFC	< 240 gph	< 4 gpm
In steps of	5 gph	0.1 gpm

SM2601



Magnetic-inductive flow meter

SMN21XGXFRKG/US-100

Measuring dynamics	1:120	
Volumetric flow quantity monitoring		
Pulse value	0.02...160 E06 gal	
In steps of	0.02 gal	
Pulse length [s]	0,008...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Display range [°F]	-40...212	
Resolution [°F]	0.5	
Set point SP [°F]	-2...176	
Reset point rP [°F]	-3...175	
Analog start point [°F]	-4...140	
Analog end point [°F]	32...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0185 °F / K	
Accuracy [K]	± 1 (77 °F; Q > 4 gpm)	
Reaction 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 > 4 gpm)	
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / 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
SIO mode	yes	
Required master port class	A	

SM2601



Magnetic-inductive flow meter

SMN21XGXFRKG/US-100

Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	390

Operating conditions		
Ambient temperature [°F]		14...140
Storage temperature [°F]		-13...176
Protection		IP 65; IP 67

Tests / approvals		
EMC	DIN EN 60947-5-9	
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 number	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]		2643
Housing		rectangular
Dimensions [mm]		180 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM	
Process connection	threaded connection 2" NPT Internal thread DN50	

Displays / operating elements		
Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Accessories		
Items supplied		Label

Remarks		
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity		1 pcs.

SM2601



Magnetic-inductive flow meter

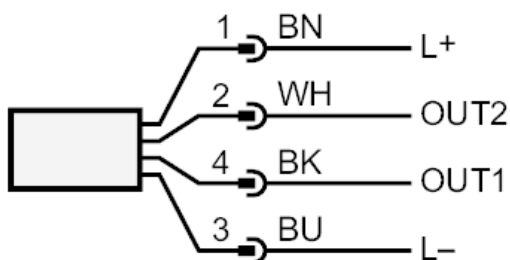
SMN21XGXFRKG/US-100

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM2601

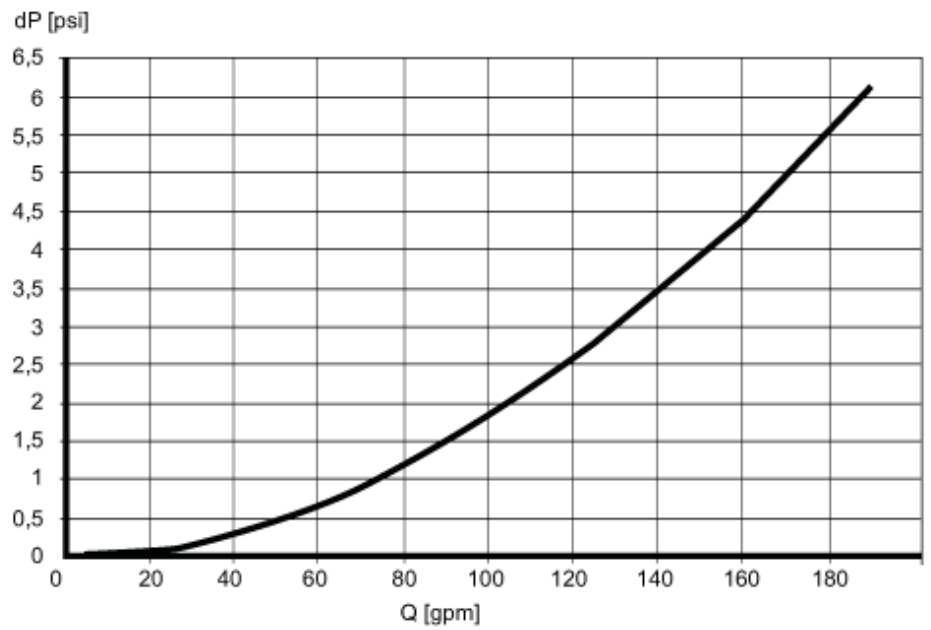


Magnetic-inductive flow meter

SMN21XGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

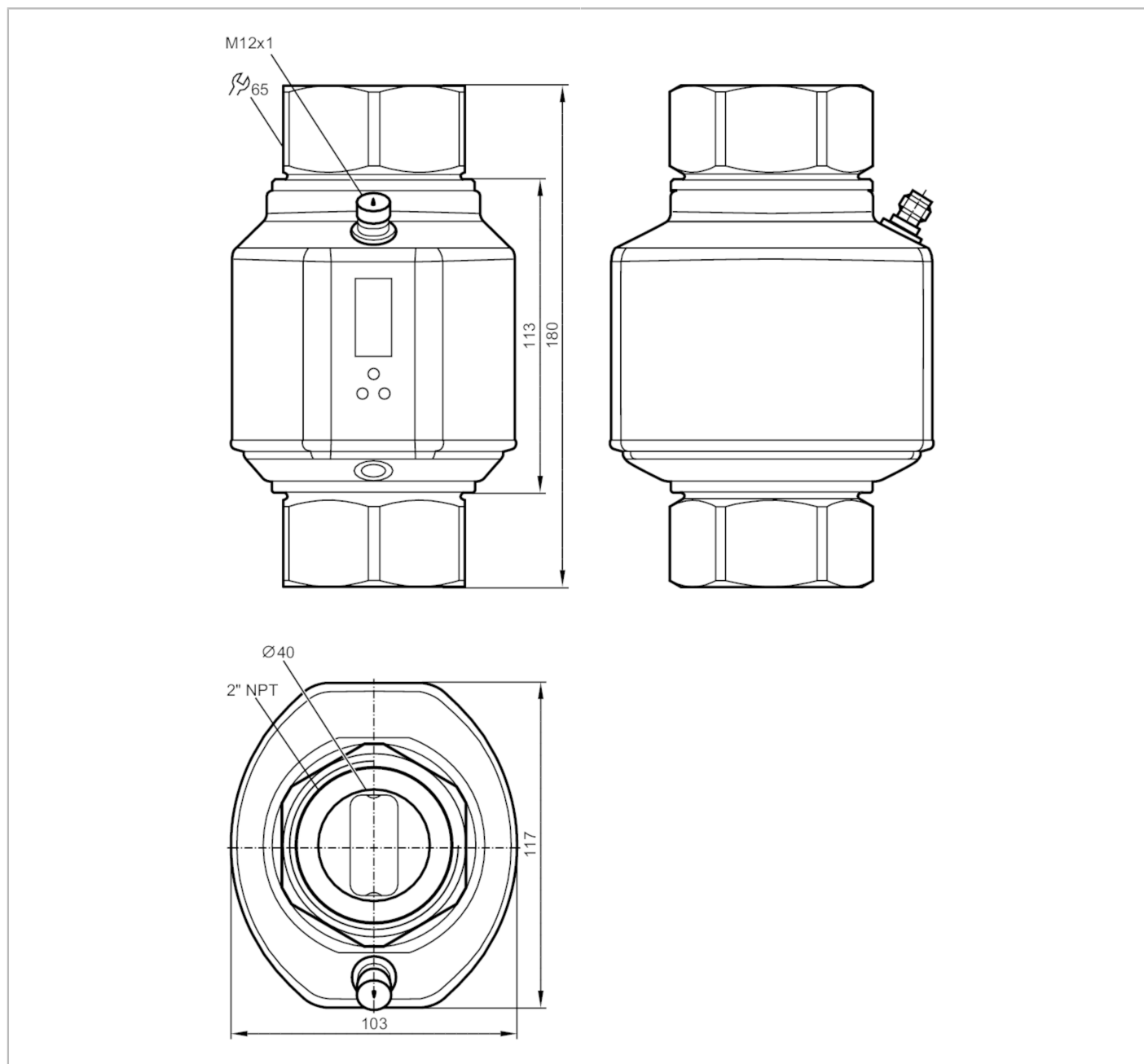
Q volumetric flow quantity

SM2604



Magnetic-inductive flow meter

SMN21XGX50KG/US-100



Product characteristics				
Number of inputs and outputs	Number of analog outputs: 2			
Measuring range	5...600 l/min	0.3...36 m ³ /h	80...9510 gph	1.3...158.5 gpm
Process connection	threaded connection 2" NPT Internal thread DN50			
Application				
System	gold-plated contacts			
Application	empty pipe detection; for industrial applications			
Media	Conductive liquids; water; water-based media			
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)			

SM2604



Magnetic-inductive flow meter

SMN21XGX50KG/US-100

Medium temperature	-10...90 °C		14...194 °F	
Pressure rating	16 bar	232 psi	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 analog outputs: 2

Outputs	
Total number of outputs	2
Output signal	analog signal
Number of analog outputs	2
Analog current output [mA]	4...20; (≤ 22 mA)
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
Analog start point ASP	0...480 l/min	0...28.8 m ³ /h	0...7610 gph	0...126.8 gpm
Analog 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 l/min	< 0.9 m ³ /h	< 240 gph	< 4 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
Analog start point	-20...60 °C	-4...140 °F
Analog 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)	$\pm (0,8 \% MW + 0,5 \% MEW)$
Repeatability	$\pm 0,2\% MEW$

Temperature monitoring	
Temperature drift	$\pm 0,0333$ °C / K; $\pm 0,0599$ °F / K
Accuracy [K]	± 1 (25 °C; Q > 15 l/min) / ± 1 (77 °F; Q > 4 gpm)

SM2604



Magnetic-inductive flow meter

SMN21XGX50KG/US-100

Reaction 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]	2728
Housing	rectangular	
Dimensions	[mm]	180 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM	
Process connection	threaded connection 2" NPT Internal thread DN50	
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	Label	
Remarks		
Remarks	MW = Measured value MEW = Final value of the measuring range	

SM2604



Magnetic-inductive flow meter

SMN21XGX50KG/US-100

Pack quantity

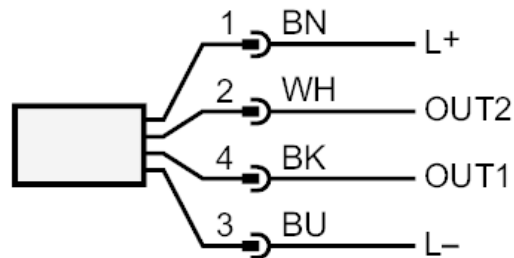
1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
OUT2: analog output Volumetric flow quantity monitoring
Core colors :
BK = black
BN = brown
BU = blue
WH = white

SM2604



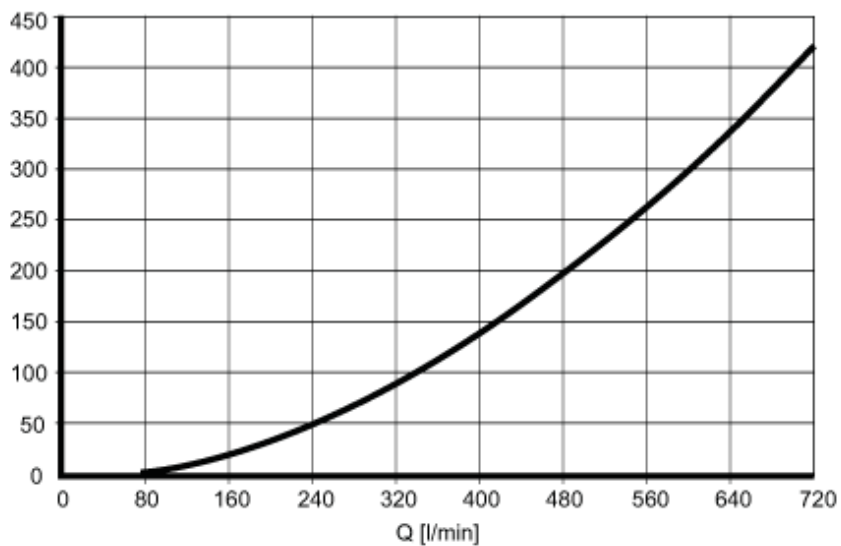
Magnetic-inductive flow meter

SMN21XGX50KG/US-100

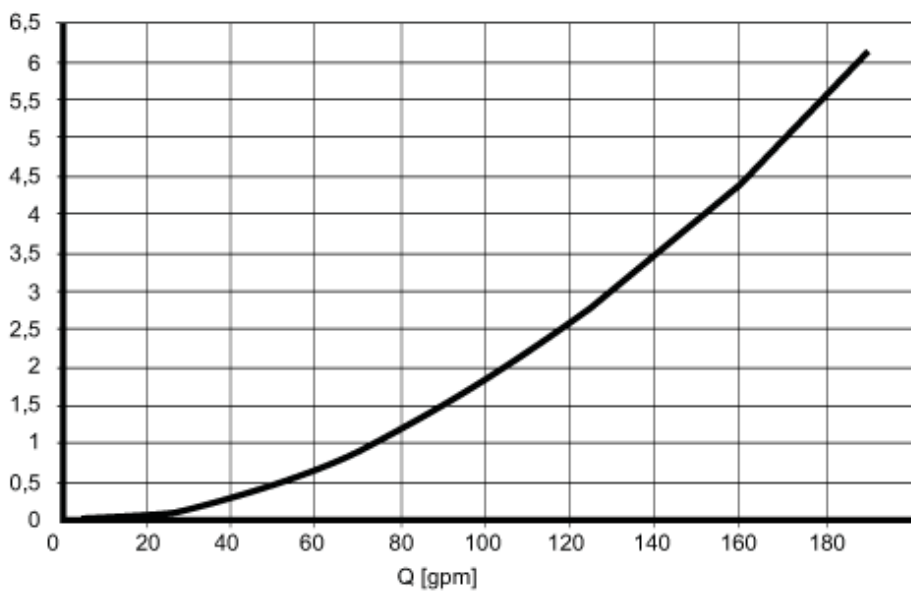
Diagrams and graphs

Pressure loss

dP [mbar] DN50



dP [psi]



dP Pressure loss

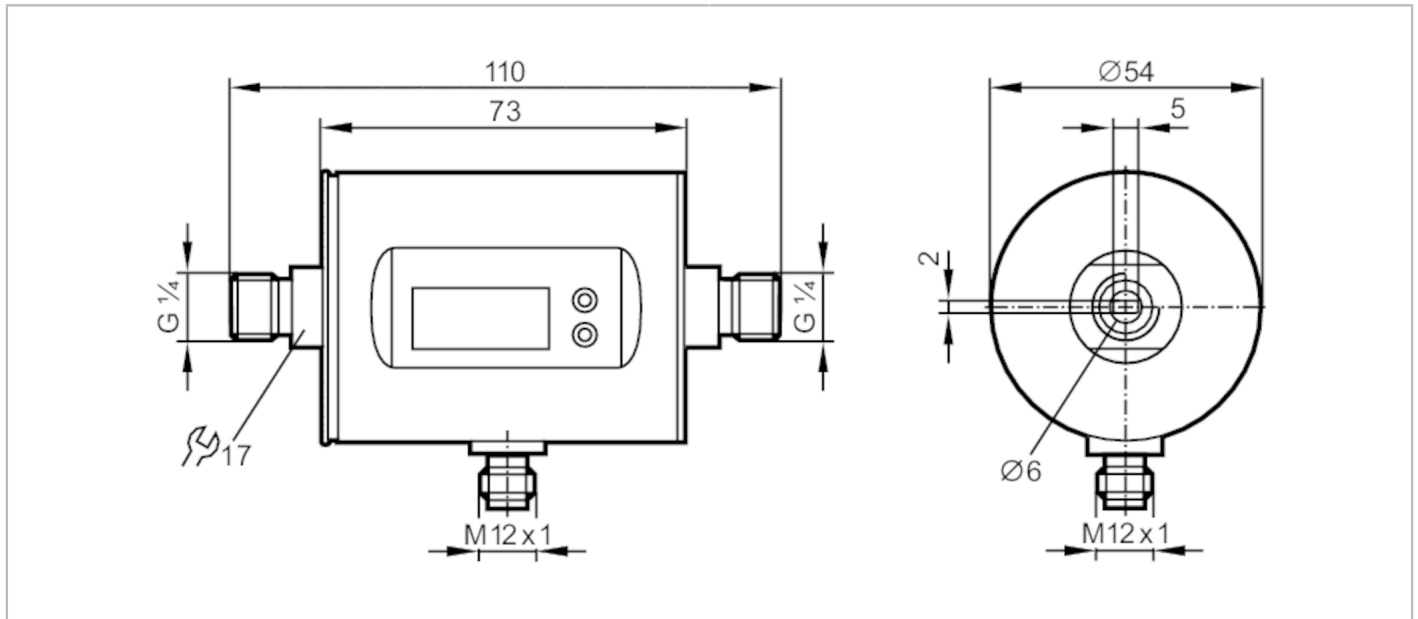
Q volumetric flow quantity

SM4000



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...3000 ml/min	0.005...3 l/min
Process connection	threaded connection G 1/4 external thread DN6 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	0...60	
Pressure rating	10 bar	1 MPa
MAWP (for applications according to CRN)	8.6 bar	0.86 MPa

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	
Measuring principle	magnetic-inductive	

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
------------------------------	---	--

Inputs

Inputs	counter reset	
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SM4000



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Outputs		
Total number of outputs		2
Output signal		switching signal; analog signal; pulse signal; IO-Link; (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]	200
Number of analog outputs		1
Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Analog 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		yes (non-latching)
Overload protection		yes
Measuring/setting range		
Measuring range		5...3000 ml/min 0.005...3 l/min
Display range	[ml/min]	-1999...3600
Resolution	[ml/min]	1
Set point SP	[ml/min]	20...3000
Reset point rP	[ml/min]	5...2984
Analog start point ASP	[ml/min]	0...2400
Analog end point AEP	[ml/min]	600...3000
Low flow cut-off LFC	[ml/min]	< 60
Volumetric flow quantity monitoring		
Pulse value		1...3000 ml
Pulse length	[s]	0,008...2
Temperature monitoring		
Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Set point SP	[°C]	-19.2...80
Reset point rP	[°C]	-19.6...79.6
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (2 % MW + 0,5 % MEW)
Repeatability		± 0,2% MEW

SM4000



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 40 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	671
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	007MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,0003 m³/h
	Q (t)	-
	Q (max)	0,18 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]	144

SM4000



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	536.5
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 1/4 external thread DN6 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (ml/min, l/h, l, m ³ , °C, 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



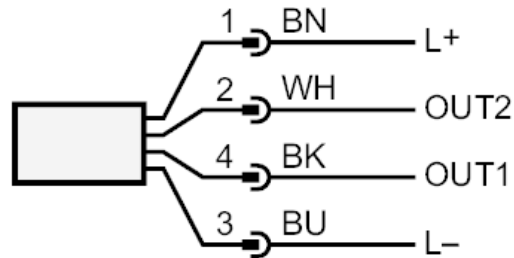
SM4000



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Connection



Colors to DIN EN 60947-5-2

OUT1:

- Switching output Volumetric flow quantity monitoring
- Pulse output quantity meter
- signal output Preset counter
- IO-Link

OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Input counter reset

Core colors :

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

SM4000

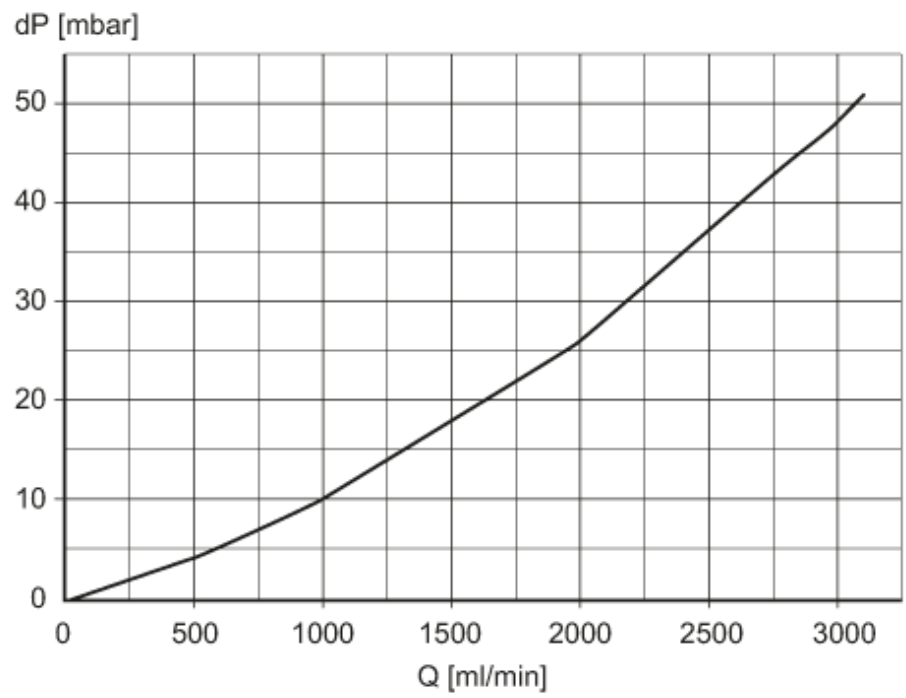
Magnetic-inductive flow meter

SMR14DXXFRKG/US-100



Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM4020

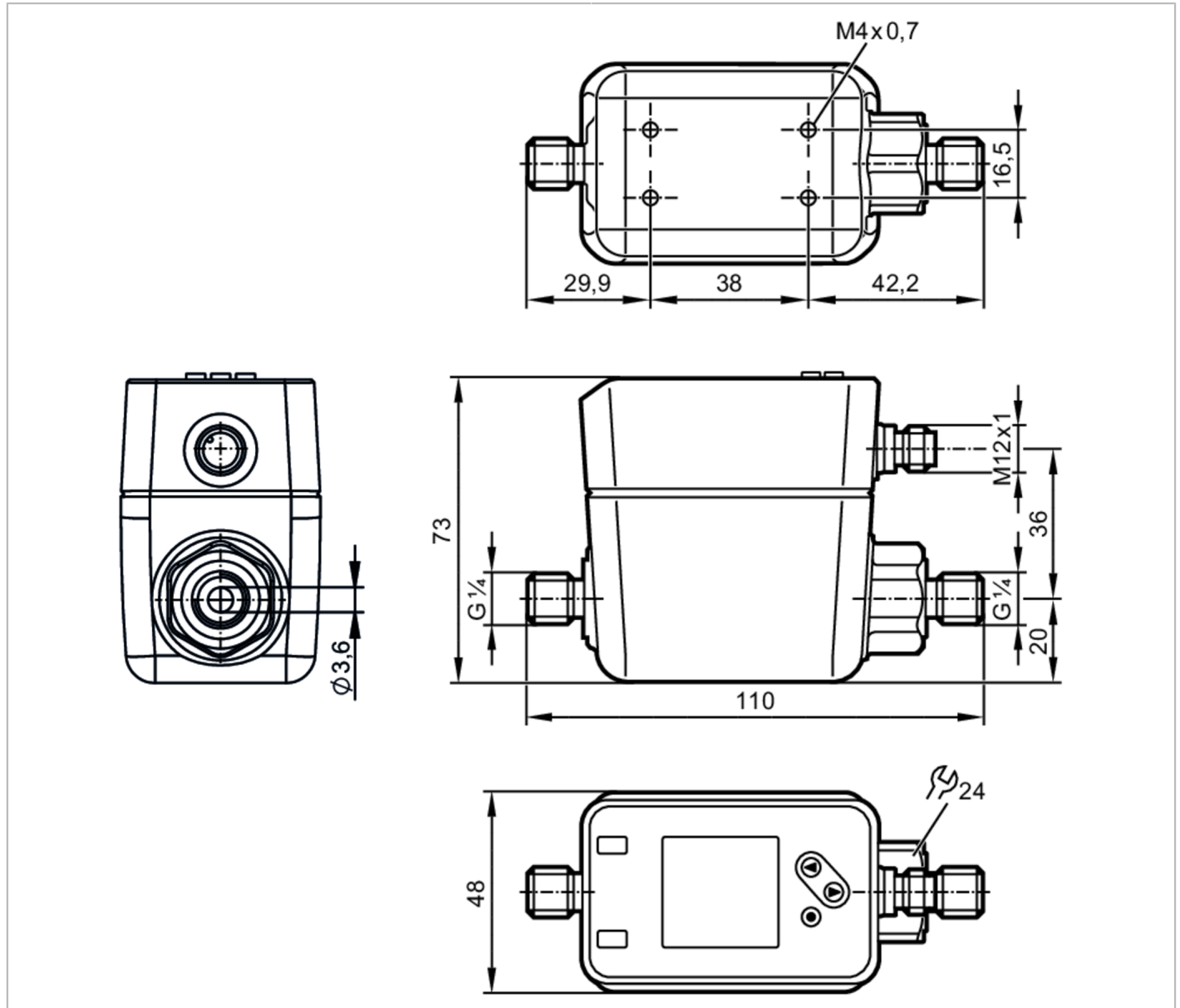


Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Alternative articles: SM4000

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range [ml/min]	5...5000
Process connection	threaded connection G 1/4 external thread DN6 flat seal

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM4020



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa
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	
Measuring principle	magnetic-inductive	
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 [ml/min]	5...5000	
Display range [ml/min]	-6000...6000	
Resolution [ml/min]	1	
Set point SP [ml/min]	33...5000	
Reset point rP [ml/min]	7...4974	
Analog start point ASP [ml/min]	0...3993	
Analog end point AEP [ml/min]	1007...5000	
Low flow cut-off LFC [ml/min]	5...250	
Frequency end point, FEP [ml/min]	1005...5000	
Frequency at the end point FRP [Hz]	1...10000	
Volumetric flow quantity monitoring		
Pulse length [s]	0.005...2	
Pulse value	0.001...99990000 l	

SM4020



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

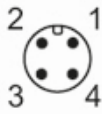
Temperature monitoring		
Measuring range	[°C]	-20...90
Display range	[°C]	-42...112
Resolution	[°C]	0.1
Set point SP	[°C]	-19.6...90
Reset point rP	[°C]	-20...89.6
Analog start point	[°C]	-20...68
Analog end point	[°C]	2...90
In steps of	[°C]	0.1
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)
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 > 1 l/min, 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	943
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM4020



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
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]		712.8
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; PEEK; carbon fiber PEEK	
Process connection	threaded connection G 1/4 external thread DN6 flat seal	
Displays / operating elements		
Display		Color 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		
		

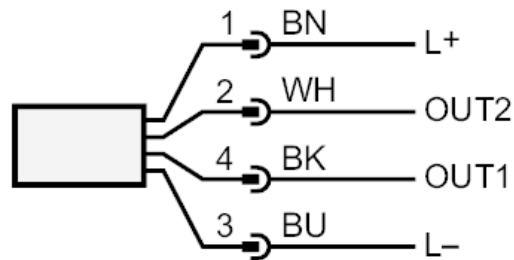
SM4020



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

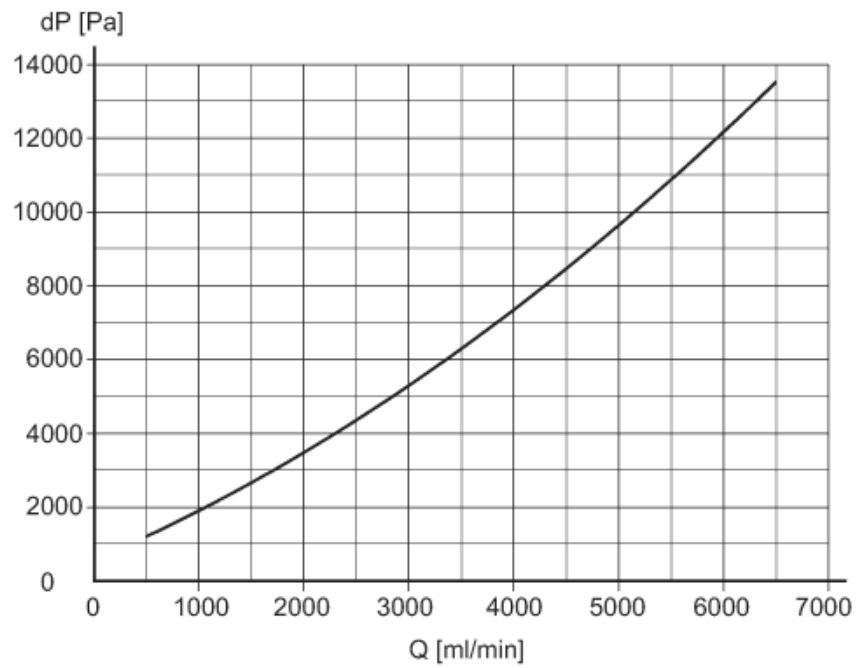
SM4020



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Diagrams and graphs



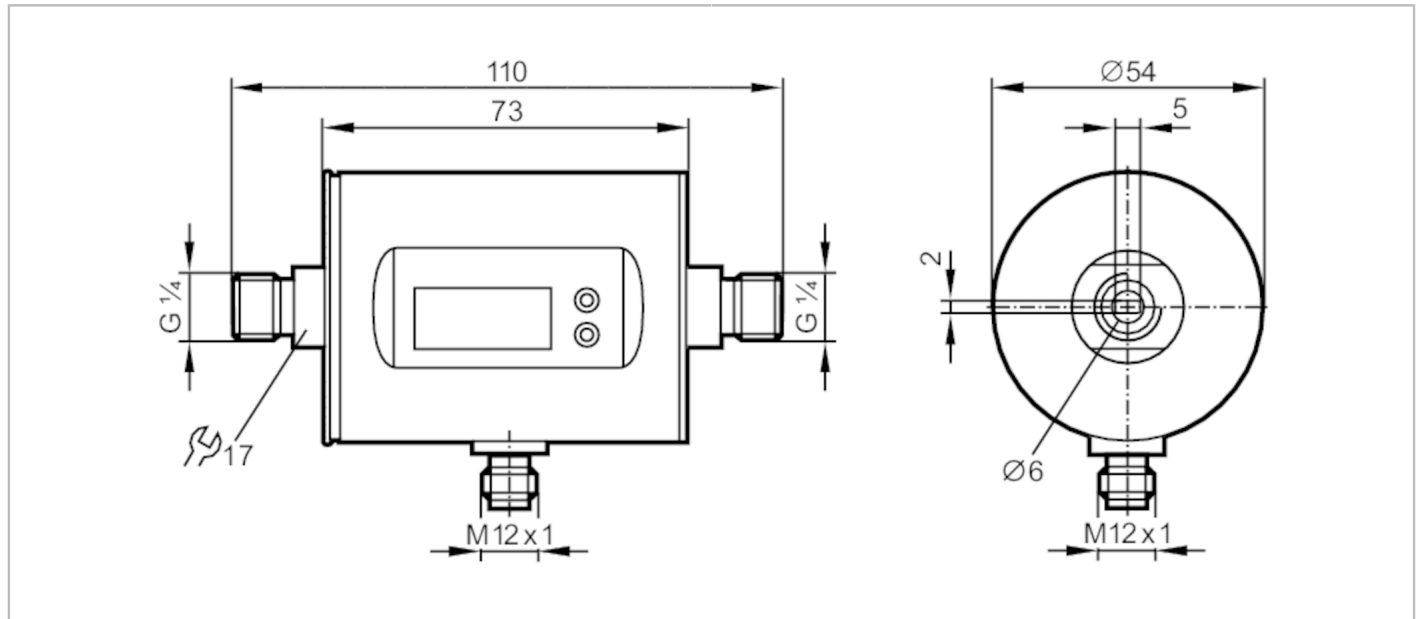
Pressure loss / volumetric flow quantity

SM4100



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...3000 ml/min	0.005...3 l/min
Process connection	threaded connection G 1/4 external thread DN6 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	0...60	
Pressure rating	10 bar	1 MPa
MAWP (for applications according to CRN)	8.6 bar	0.86 MPa

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	
Measuring principle	magnetic-inductive	

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
------------------------------	---	--

Inputs

Inputs	counter reset	
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SM4100



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Outputs	
Total number of outputs	2
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200
Number of analog outputs	1
Analog current output [mA]	4...20; (scalable)
Max. load [Ω]	500
Analog 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	yes (non-latching)
Overload protection	yes
Measuring/setting range	
Measuring range	5...3000 ml/min 0.005...3 l/min
Display range [ml/min]	-1999...3600
Resolution [ml/min]	1
Set point SP [ml/min]	20...3000
Reset point rP [ml/min]	5...2984
Analog start point ASP [ml/min]	0...2400
Analog end point AEP [ml/min]	600...3000
Low flow cut-off LFC [ml/min]	< 60
Volumetric flow quantity monitoring	
Pulse value	1...3000 ml
Pulse length [s]	0,008...2
Temperature monitoring	
Measuring range [°C]	-20...80
Resolution [°C]	0.2
Set point SP [°C]	-19.2...80
Reset point rP [°C]	-19.6...79.6
Analog start point [°C]	-20...60
Analog end point [°C]	0...80
In steps of [°C]	0.2
Accuracy / deviations	
Flow monitoring	
Accuracy (in the measuring range)	± (2 % MW + 0,5 % MEW)
Repeatability	± 0,2 % MEW

SM4100



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 40 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	671
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	007MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,0003 m³/h
	Q (t)	-
	Q (max)	0,18 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]	144

SM4100



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	537
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection	threaded connection G 1/4 external thread DN6 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (ml/min, l/h, l, m ³ , °C, 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



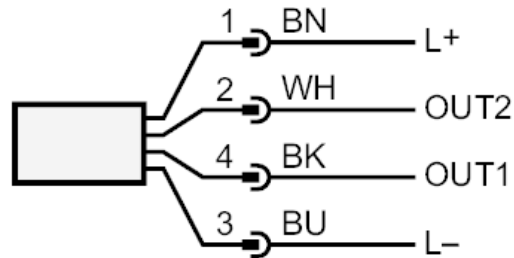
SM4100



Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

Connection



Colors to DIN EN 60947-5-2

OUT1:

- Switching output Volumetric flow quantity monitoring
- Pulse output quantity meter
- signal output Preset counter
- IO-Link

OUT2:

- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Input counter reset

Core colors :

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

SM4100

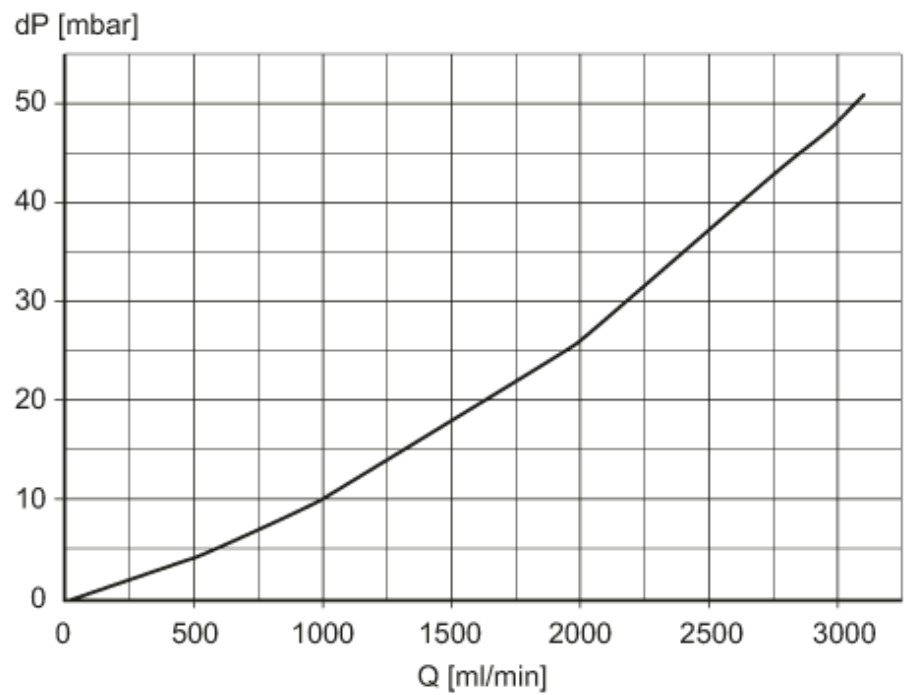
Magnetic-inductive flow meter

SMR14DXXFRKG/US-100



Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM4120

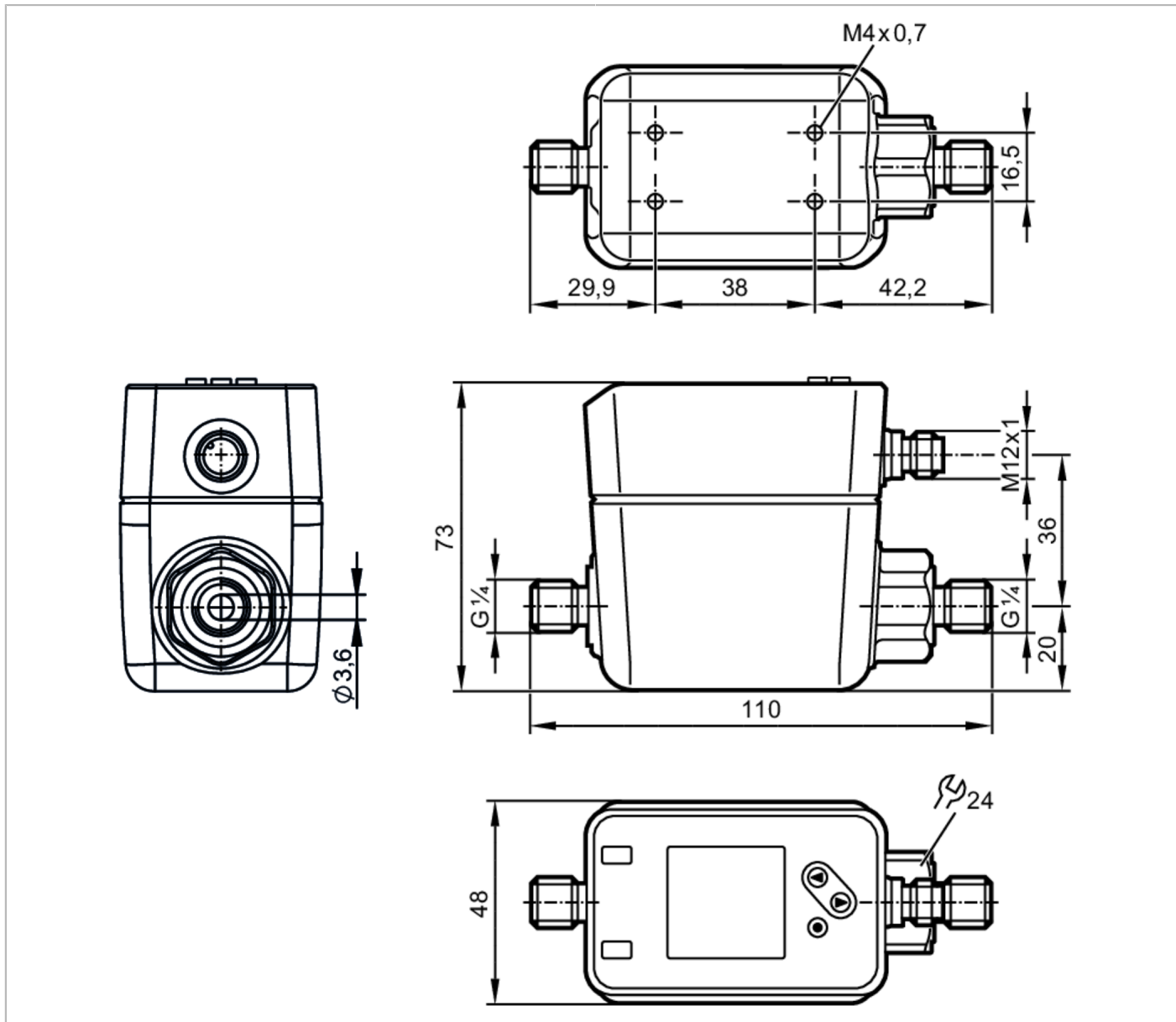


Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Alternative articles: SM4100

When selecting an alternative article and accessories please note that technical data may differ!



ACS    Reg31

Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range [ml/min]	5...5000
Process connection	threaded connection G 1/4 external thread DN6 flat seal
Application	
System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM4120



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa
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	
Measuring principle	magnetic-inductive	
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 [ml/min]	5...5000	
Display range [ml/min]	-6000...6000	
Resolution [ml/min]	1	
Set point SP [ml/min]	33...5000	
Reset point rP [ml/min]	7...4974	
Analog start point ASP [ml/min]	0...3993	
Analog end point AEP [ml/min]	1007...5000	
Low flow cut-off LFC [ml/min]	5...250	
Frequency end point, FEP [ml/min]	1005...5000	
Frequency at the end point FRP [Hz]	1...10000	
Volumetric flow quantity monitoring		
Pulse length [s]	0.005...2	
Pulse value	0.001...99990000 l	

SM4120



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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]	$\pm 2,5 (Q > 1 \text{ l/min})$

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; $(Q > 1 \text{ l/min}, T09)$

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	

Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	943

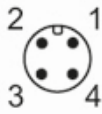
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection		IP 65; IP 67

SM4120



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	706.9	
Housing	rectangular	
Dimensions [mm]	110 x 48 x 73	
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; PEEK; EPDM; carbon fiber PEEK	
Process connection	threaded connection G 1/4 external thread DN6 flat seal	
Displays / operating elements		
Display	Color 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		
		

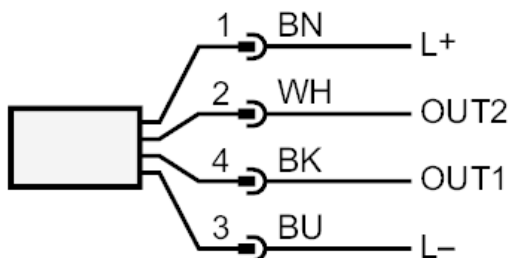
SM4120



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

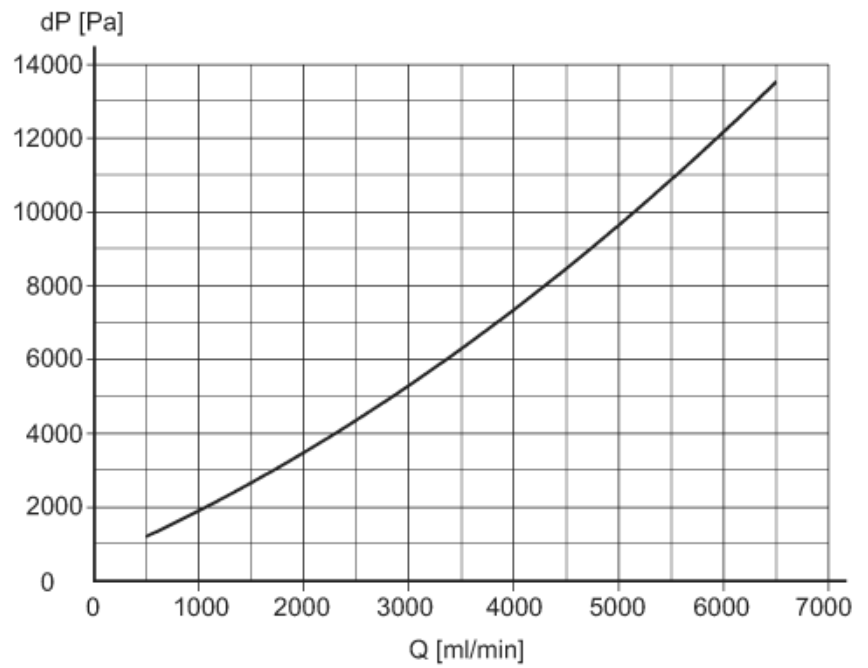
SM4120



Magnetic-inductive flow meter

SMR14XGXFRKG/US-100

Diagrams and graphs



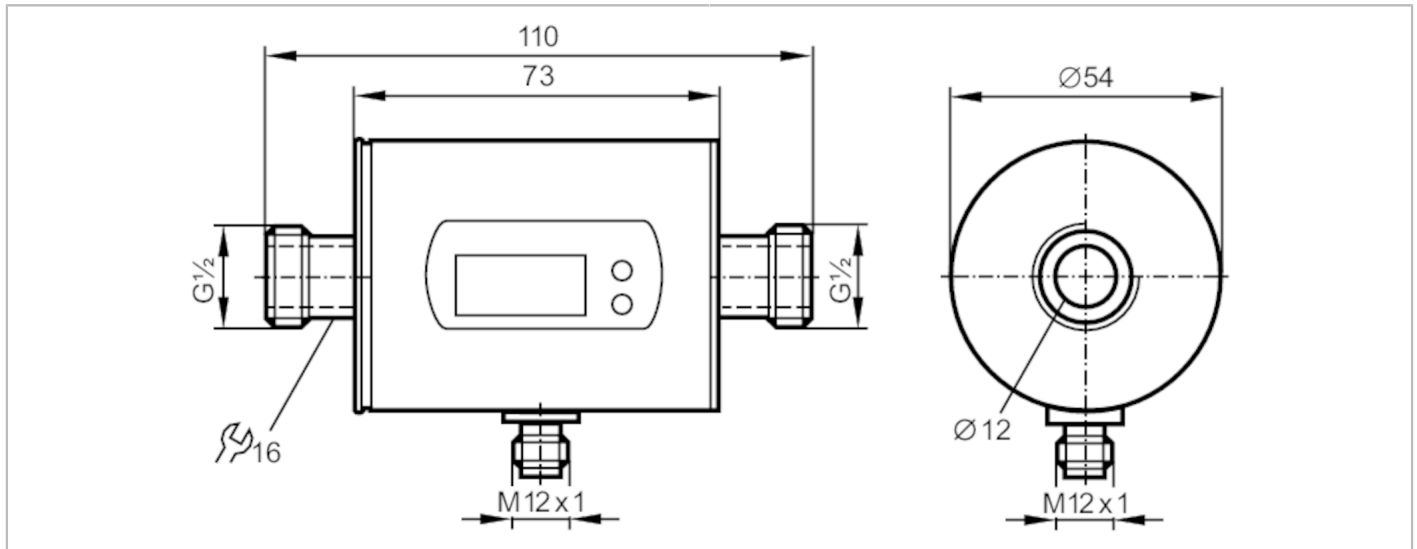
Pressure loss / volumetric flow quantity

SM6000



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.1...25 l/min	0.005...1.5 m ³ /h
Process connection	threaded connection G 1/2 external thread DN15 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	15.3 bar	1.53 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
Min. insulation resistance [MΩ]	100; (500 V DC)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM6000



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.1...25 l/min	0.005...1.5 m ³ /h
Display range	-30...30 l/min	-1.8...1.8 m ³ /h
Resolution	0.02 l/min	0.002 m ³ /h
Set point SP	0.25...25 l/min	0.015...1.5 m ³ /h
Reset point rP	0.1...24.9 l/min	0.005...1.495 m ³ /h
Analog start point ASP	0...20 l/min	0...1.2 m ³ /h
Analog end point AEP	5...25 l/min	0.3...1.5 m ³ /h
In steps of	0.02 l/min	0.002 m ³ /h
Volumetric flow quantity monitoring		
Pulse value	0.00001...30 000 m ³	
Pulse length [s]	0,01...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM6000



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	569
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 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]	162

SM6000



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	544
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 1/2 external thread DN15 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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

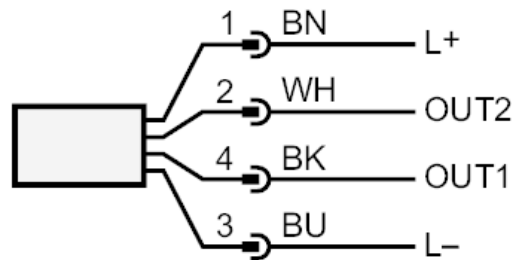




Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Connection



Colors to DIN EN 60947-5-2

OUT1:

- Switching output Volumetric flow quantity monitoring
- Pulse output quantity meter
- signal output Preset counter
- IO-Link

OUT2:

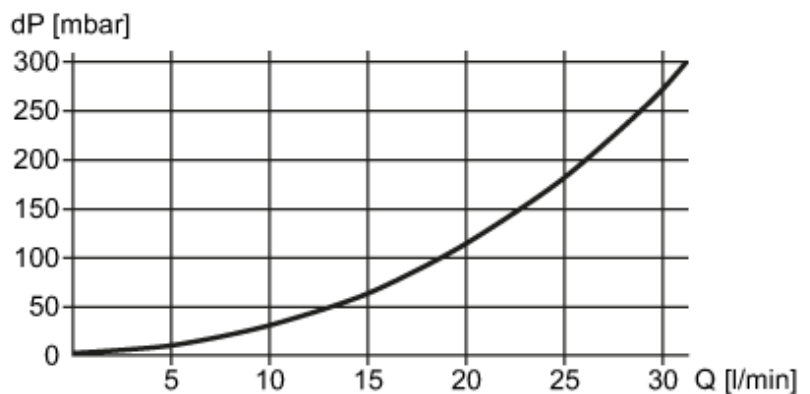
- Switching output Volumetric flow quantity monitoring
- Switching output Temperature monitoring
- analog output Volumetric flow quantity monitoring
- analog output Temperature monitoring
- Input counter reset

Core colors :

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

Diagrams and graphs

Pressure loss



dP Pressure loss

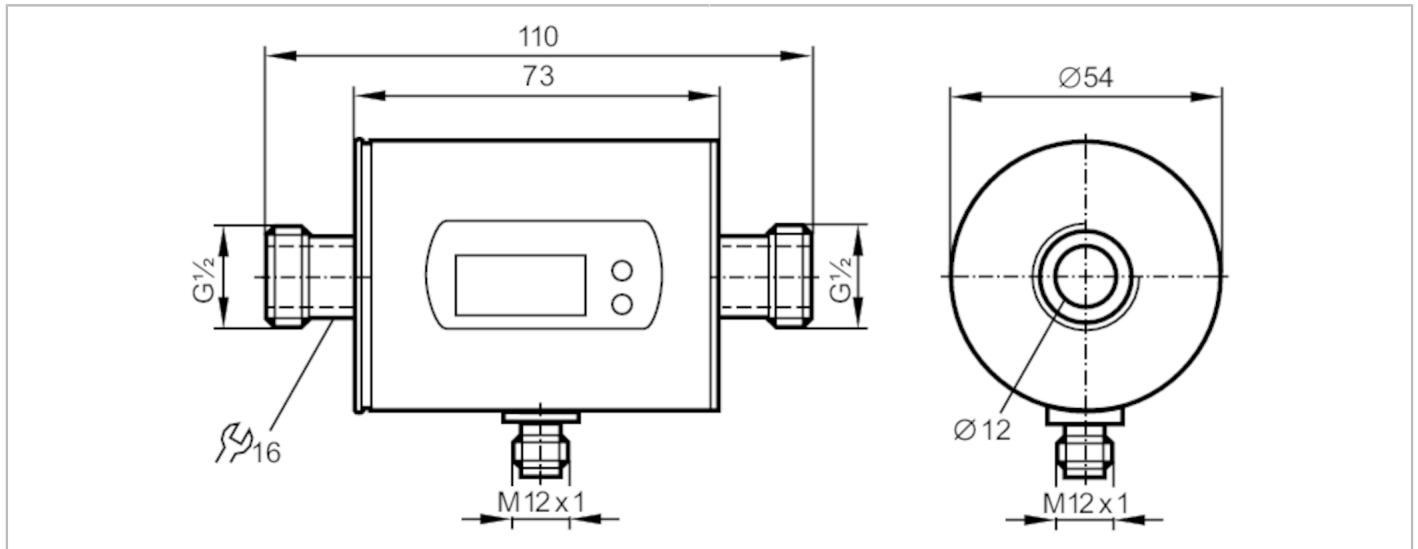
Q volumetric flow quantity

SM6001



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	1.5...396 gph 0.03...6.6 gpm
Process connection	threaded connection G 1/2 external thread DN15 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°F]	14...158
Pressure rating	16 bar 232 psi 1.6 MPa
MAWP (for applications according to CRN)	15.3 bar 1.53 MPa
Electrical data	
Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
Min. insulation resistance [MΩ]	100; (500 V DC)
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 analog outputs: 1
Inputs	
Inputs	counter reset

SM6001



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	1.5...396 gph	0.03...6.6 gpm
Display range	-475.5...475.5 gph	-7.925...7.925 gpm
Resolution	0.5 gph	0.01 gpm
Set point SP	3.5...396.5 gph	0.06...6.6 gpm
Reset point rP	1.5...394 gph	0.03...6.57 gpm
Analog start point ASP	0...318 gph	0...5.3 gpm
Analog end point AEP	78...396 gph	1.3...6.6 gpm
In steps of	0.5 gph	0.01 gpm
Volumetric flow quantity monitoring		
Pulse value	0.01...30 000 000 gal	
Pulse length [s]	0,01...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Resolution [°F]	0.1	
Set point SP [°F]	-2.5...176	
Reset point rP [°F]	-3.5...175	
Analog start point [°F]	-4...140.5	
Analog end point [°F]	31.5...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

SM6001



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,26 gpm)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 0,26 gpm)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	570
Operating conditions		
Ambient temperature	[°F]	14...140
Storage temperature	[°F]	-13...176
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	160
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	546
Housing	tubular	
Dimensions	[mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE	

SM6001



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 1/2 external thread DN15 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

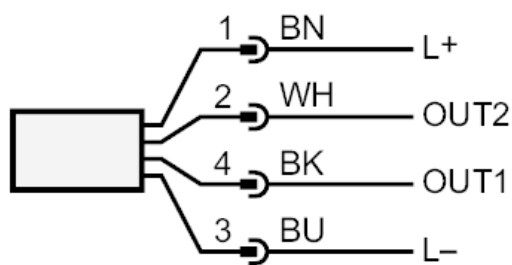
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset
Core colors :
- BK = black
- BN = brown
- BU = blue
- WH = white

SM6001

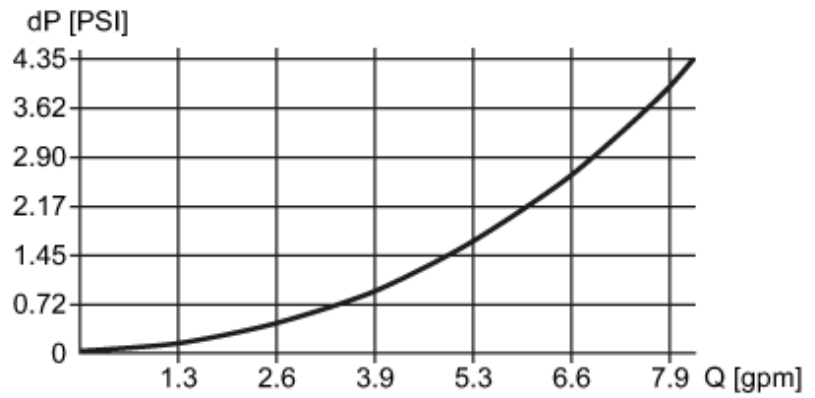


Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

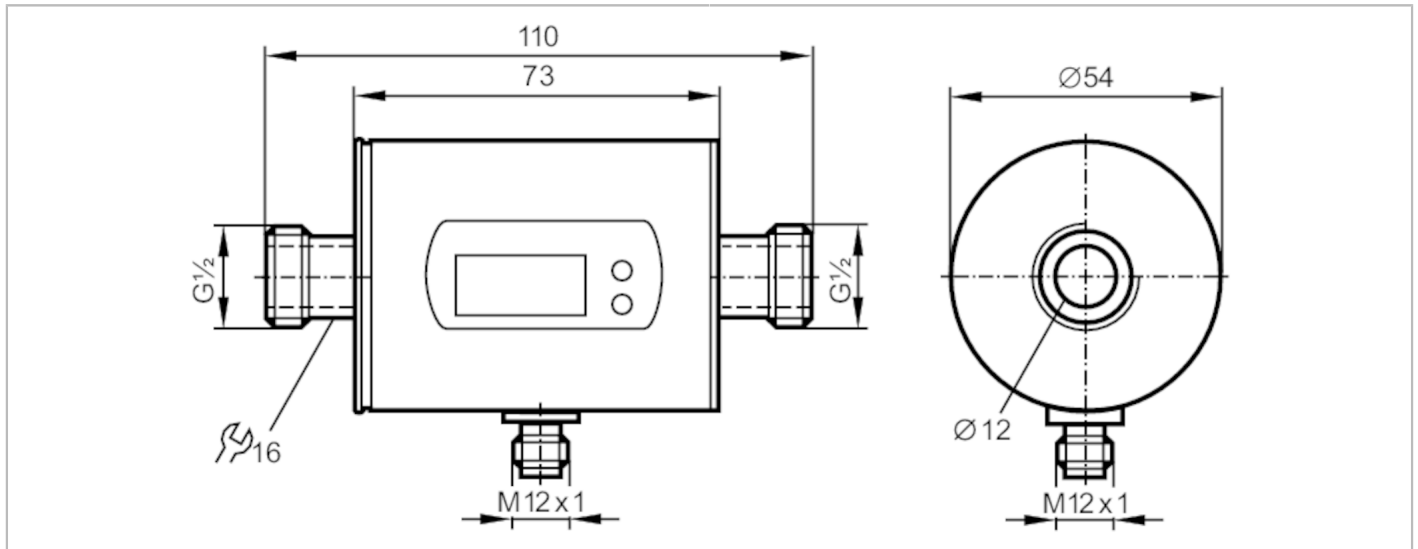
Q volumetric flow quantity

SM6004



Magnetic-inductive flow meter

SMR12GGX50KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.1...25 l/min	0.03...6.6 gpm
Process connection	threaded connection G 1/2 external thread DN15 flat seal	

Application

System	gold-plated contacts	
Application	for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	15.3 bar	1.53 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
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Outputs

Total number of outputs	2	
Output signal	analog signal	
Number of analog outputs	2	

SM6004



Magnetic-inductive flow meter

SMR12GGX50KG/US-100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.1...25 l/min	0.03...6.6 gpm
Display range	-30...30 l/min	-7.92...7.92 gpm
Resolution	0.05 l/min	0.01 gpm
Analog start point ASP	0...20 l/min	0...5.28 gpm
Analog end point AEP	5...25 l/min	1.32...6.6 gpm
In steps of	0.02 l/min	0.01 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring

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

Temperature monitoring

Accuracy	[K]	$\pm 2,5 (Q > 1 \text{ l/min})$
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Reaction times

Flow monitoring

Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
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Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	008MI
	accuracy class	-
	maximum allowable error	$\pm 2,5 \% FS$
	Q (min)	0,005 m ³ /h
	Q (t)	-
	Q (max)	1,5 m ³ /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]	175
Pressure equipment directive		sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

SM6004



Magnetic-inductive flow meter

SMR12GGX50KG/US-100

Mechanical data	
Weight [g]	481.5
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 1/2 external thread DN15 flat seal

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit
Display unit	l/min; m³/h; gpm; gph; °C; °F	

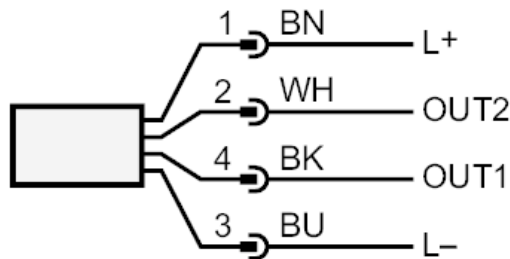
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM6004

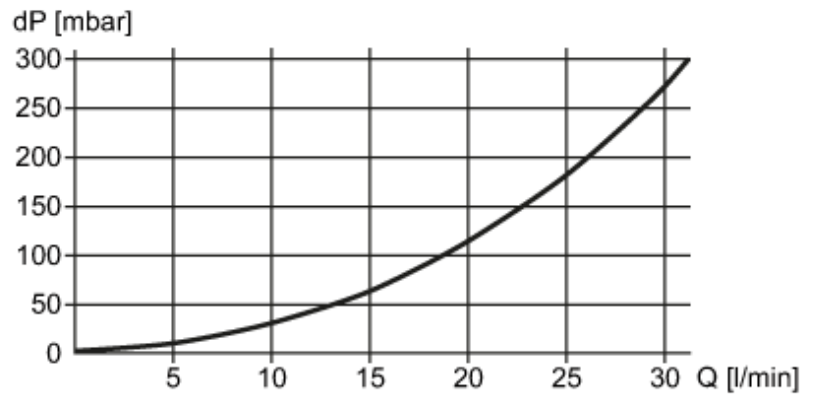


Magnetic-inductive flow meter

SMR12GGX50KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM6020

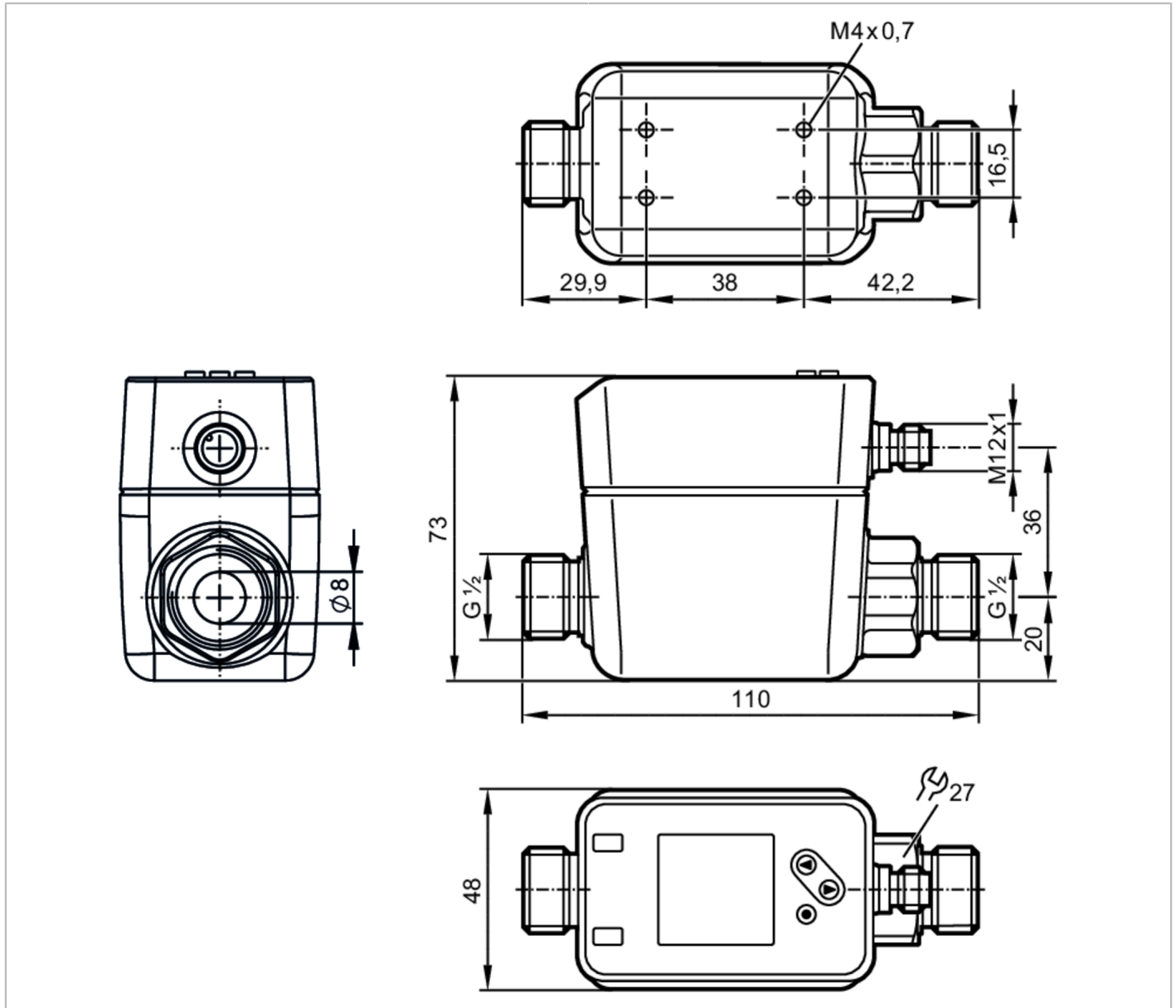


Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Alternative articles: SM6000

When selecting an alternative article and accessories please note that technical data may differ!



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 m³/h	0.6...555 gph	0.01...9.25 gpm
Process connection	threaded connection G 1/2 external thread DN15 flat seal			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM6020



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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 m ³ /h	0.6...555 gph	0.01...9.25 gpm
Display range	-42...42 l/min	-2.5...2.5 m ³ /h	-666...666 gph	-11.1...11.1 gpm
Resolution	0.02 l/min	0.002 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.25...35 l/min	0.015...2.1 m ³ /h	4.2...555 gph	0.07...9.25 gpm
Reset point rP	0...34.8 l/min	0...2.08 m ³ /h	1.2...552 gph	0.02...9.2 gpm
Analog start point ASP	0...28 l/min	0...1.7 m ³ /h	0...666 gph	0...7.4 gpm
Analog end point AEP	7...35 l/min	0.42...2.1 m ³ /h	111...555 gph	1.85...9.25 gpm
Low flow cut-off LFC	0.05...1.75 l/min	0.003...0.1 m ³ /h	0.6...27.6 gph	0.01...0.46 gpm
Frequency end point, FEP	7...35 l/min	0.42...2.1 m ³ /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			

SM6020



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	949
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM6020



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	005MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,003 m ³ /h
	Q (t)	-
	Q (max)	2,1 m ³ /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
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; PEEK; carbon fiber PEEK	
Process connection	threaded connection G 1/2 external thread DN15 flat seal	

Displays / operating elements		
Display		Color 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



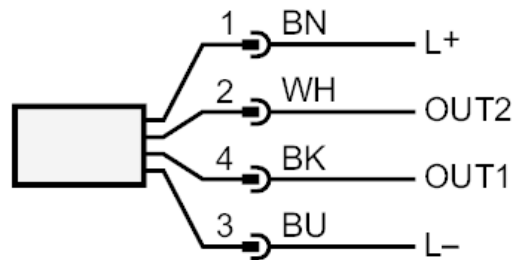
SM6020



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

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

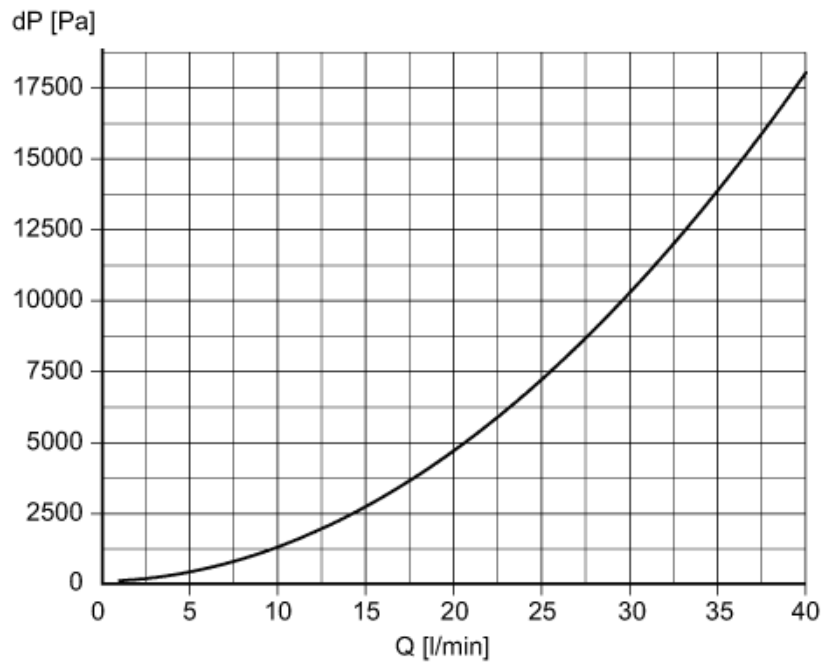
SM6020



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Diagrams and graphs



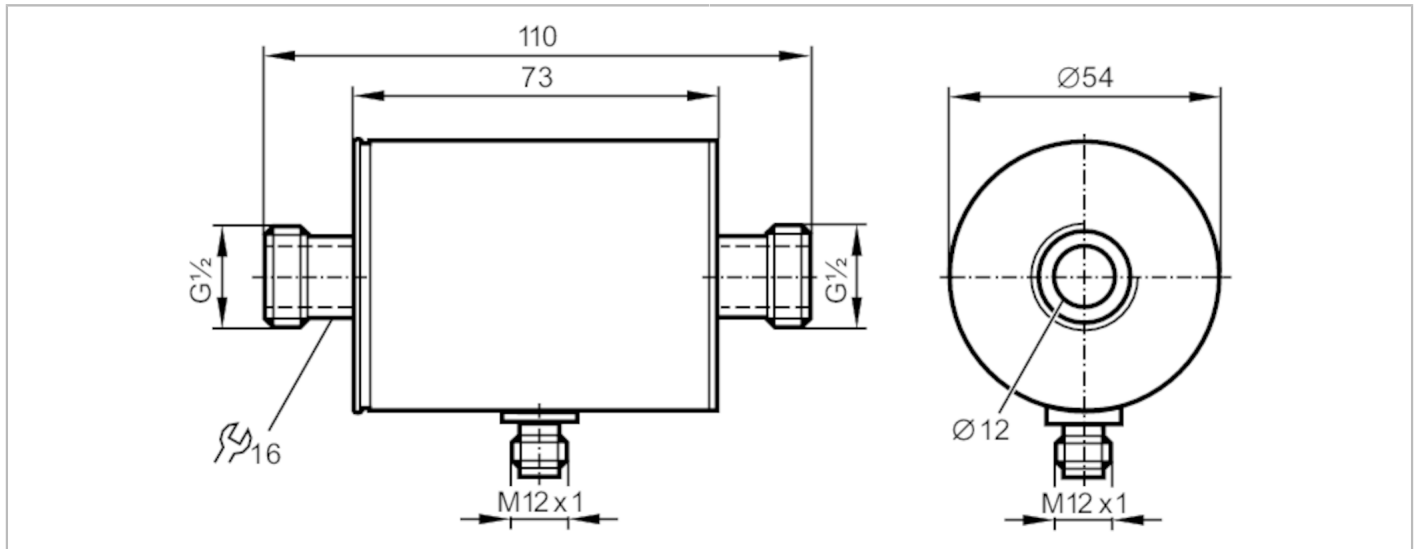
Pressure loss / volumetric flow quantity

SM6050



Magnetic-inductive flow meter

SMR12GGX10KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 1
Measuring range [l/min]	0.1...25
Process connection	threaded connection G 1/2 external thread DN15 flat seal

Application

System	gold-plated contacts
Application	for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-10...70
Pressure rating	16 bar 1.6 MPa
MAWP (for applications according to CRN)	15.3 bar 1.53 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
Min. insulation resistance [MΩ]	100; (500 V DC)
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 analog outputs: 1
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Outputs

Total number of outputs	1
Output signal	analog signal; IO-Link; (configurable)

SM6050



Magnetic-inductive flow meter

SMR12GGX10KG/US-100

Permanent current rating of switching output DC	[mA]	250
Number of analog outputs		1
Analog current output	[mA]	4...20
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	[l/min]	0.1...25
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Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,5 % MEW)
Repeatability		± 0,2% MEW

Reaction times

Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)

Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	571

Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 m³/h

SM6050



Magnetic-inductive flow meter

SMR12GGX10KG/US-100

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]		167
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	480.6	
Housing	tubular	
Dimensions [mm]	Ø 54 / L = 110	
Material	stainless steel (1.4404 / 316L); PBT-GF20; FKM; TPE	
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM	
Process connection	threaded connection G 1/2 external thread DN15 flat seal	

Remarks

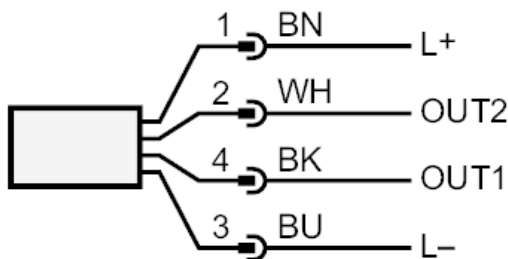
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

Electrical connection

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



Connection



OUT1: IO-Link
 OUT2: analog output
 Core colors :
 BN = brown
 WH = white
 BK = black
 BU = blue

Colors to DIN EN 60947-5-2

SM6050

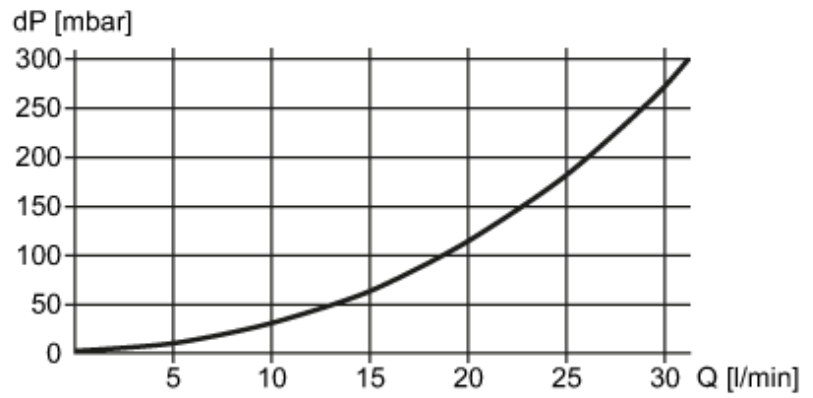


Magnetic-inductive flow meter

SMR12GGX10KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

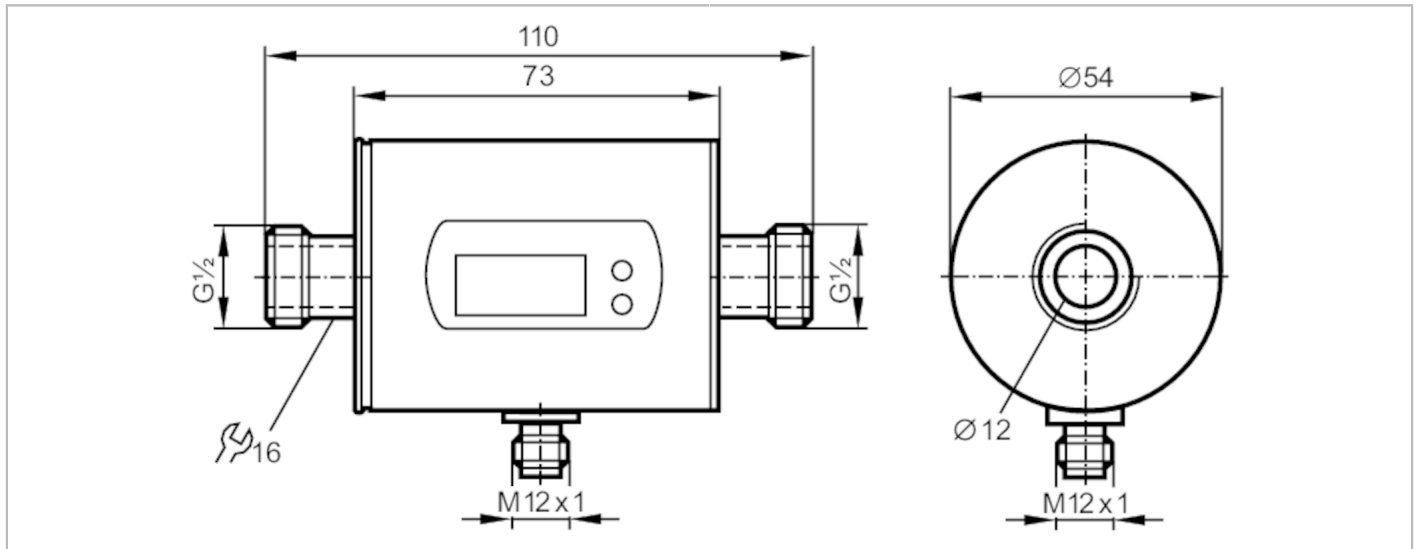
Q volumetric flow quantity

SM6100



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.1...25 l/min	0.005...1.5 m³/h
Process connection	threaded connection G 1/2 external thread DN15 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	15.3 bar	1.53 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
Min. insulation resistance [MΩ]	100; (500 V DC)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM6100



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.1...25 l/min	0.005...1.5 m ³ /h
Display range	-30...30 l/min	-1.8...1.8 m ³ /h
Resolution	0.02 l/min	0.002 m ³ /h
Set point SP	0.25...25 l/min	0.015...1.5 m ³ /h
Reset point rP	0.1...24.9 l/min	0.005...1.495 m ³ /h
Analog start point ASP	0...20 l/min	0...1.2 m ³ /h
Analog end point AEP	5...25 l/min	0.3...1.5 m ³ /h
In steps of	0.02 l/min	0.002 m ³ /h
Volumetric flow quantity monitoring		
Pulse value	0.00001...30 000 m ³	
Pulse length [s]	0,01...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM6100



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	569
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 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]	145

SM6100



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	548
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection	threaded connection G 1/2 external thread DN15 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



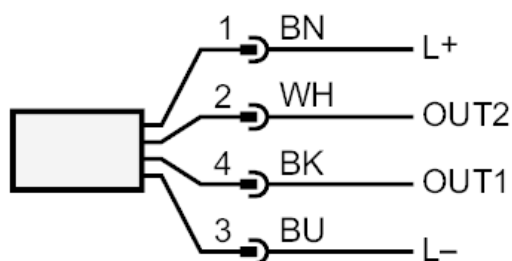
SM6100



Magnetic-inductive flow meter

SMR12GGXFRKG/US-100

Connection



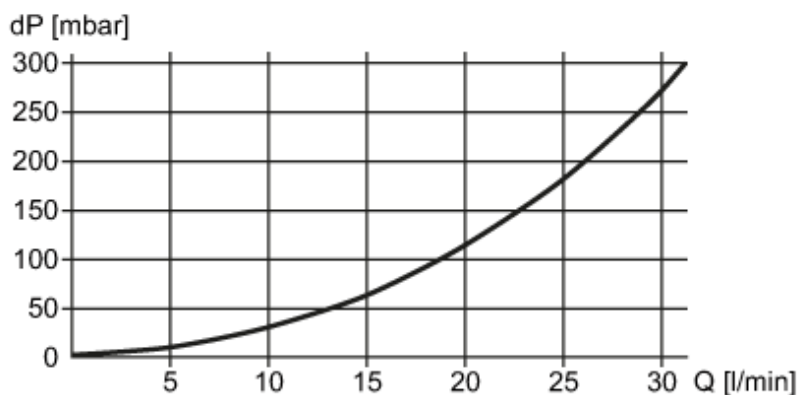
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM6120

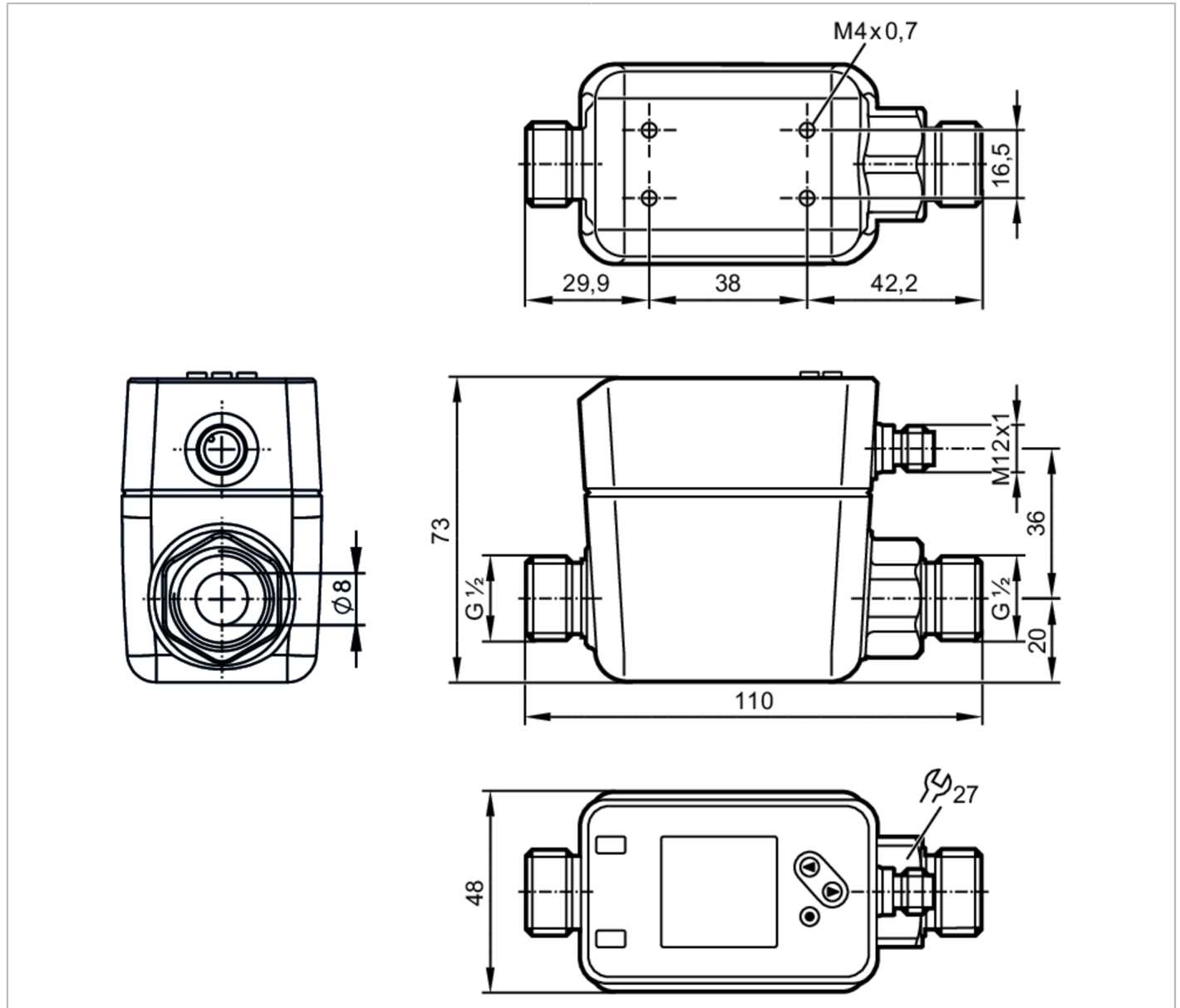


Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Alternative articles: SM6100

When selecting an alternative article and accessories please note that technical data may differ!



ACS CE PA c UL LISTED US IO-Link Reg31 UK CA

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 ³ /h	0.6...555 gph	0.01...9.25 gpm
Process connection	threaded connection G 1/2 external thread DN15 flat seal			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM6120



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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 m ³ /h	0.6...555 gph	0.01...9.25 gpm
Display range	-42...42 l/min	-2.5...2.5 m ³ /h	-666...666 gph	-11.1...11.1 gpm
Resolution	0.02 l/min	0.002 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.25...35 l/min	0.015...2.1 m ³ /h	4.2...555 gph	0.07...9.25 gpm
Reset point rP	0...34.8 l/min	0...2.08 m ³ /h	1.2...552 gph	0.02...9.2 gpm
Analog start point ASP	0...28 l/min	0...1.7 m ³ /h	0...666 gph	0...7.4 gpm
Analog end point AEP	7...35 l/min	0.42...2.1 m ³ /h	111...555 gph	1.85...9.25 gpm
Low flow cut-off LFC	0.05...1.75 l/min	0.003...0.1 m ³ /h	0.6...27.6 gph	0.01...0.46 gpm
Frequency end point, FEP	7...35 l/min	0.42...2.1 m ³ /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			

SM6120



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	949
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM6120



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	005MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,003 m ³ /h
	Q (t)	-
	Q (max)	2,1 m ³ /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]	714.1	
Housing	rectangular	
Dimensions [mm]	110 x 48 x 73	
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; PEEK; EPDM; carbon fiber PEEK	
Process connection	threaded connection G 1/2 external thread DN15 flat seal	

Displays / operating elements		
Display		Color 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



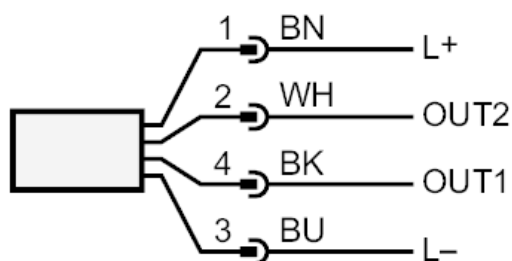
SM6120



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

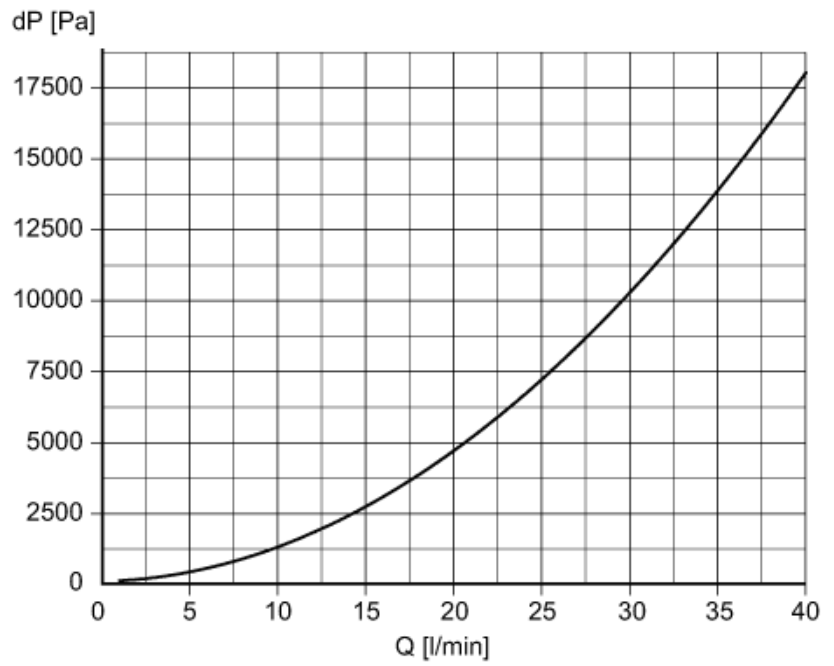
SM6120



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100

Diagrams and graphs



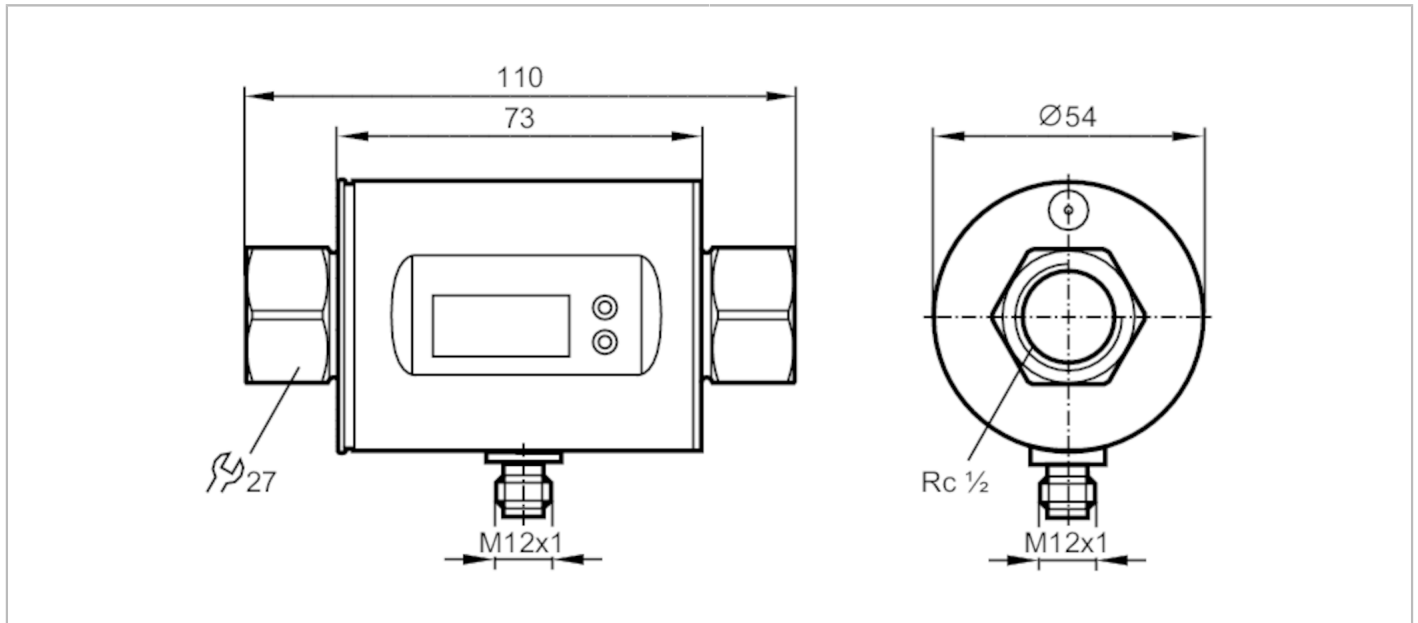
Pressure loss / volumetric flow quantity

SM6400



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.1...25 l/min	0.005...1.5 m ³ /h
Process connection	threaded connection Rc 1/2 Internal thread DN15	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	15.3 bar	1.53 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM6400



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.1...25 l/min	0.005...1.5 m³/h
Display range	-30...30 l/min	-1.8...1.8 m³/h
Resolution	0.02 l/min	0.002 m³/h
Set point SP	0.25...25 l/min	0.015...1.5 m³/h
Reset point rP	0.1...24.9 l/min	0.005...1.495 m³/h
Analog start point ASP	0...20 l/min	0...1.2 m³/h
Analog end point AEP	5...25 l/min	0.3...1.5 m³/h
In steps of	0.02 l/min	0.002 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.00001...30 000 m³	
Pulse length [s]	0,01...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM6400



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	569
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 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]	145
UL approval	UL approval number	I010

SM6400



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	580.5
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection Rc 1/2 Internal thread DN15

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



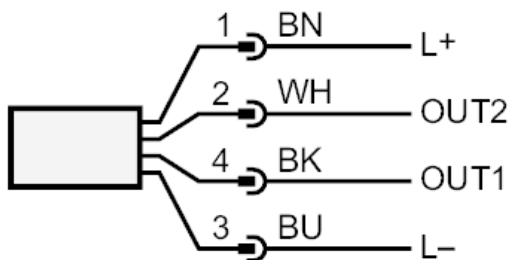
SM6400



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Connection



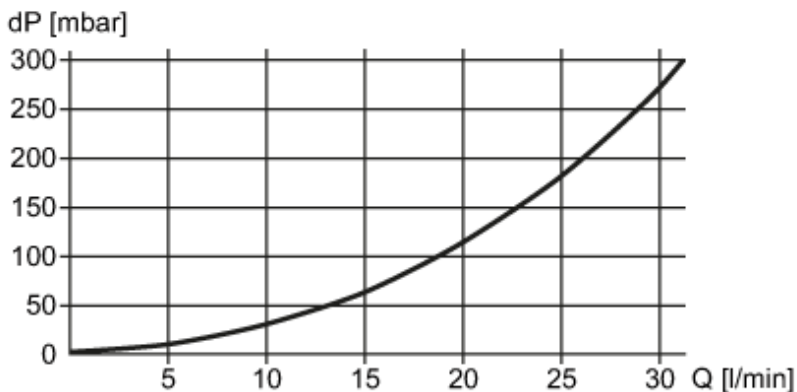
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity

SM6404

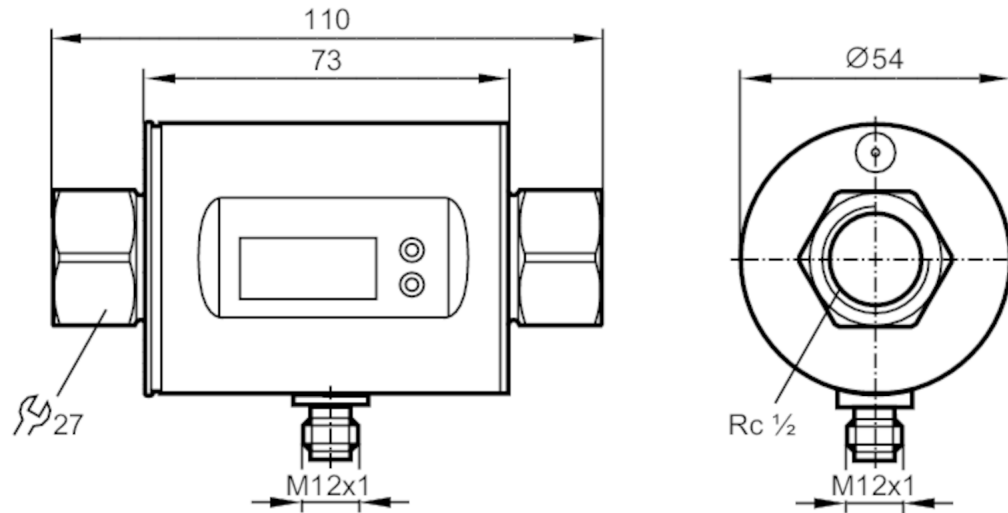


Magnetic-inductive flow meter

SMK12GGX50KG/US-100

Article to be discontinued

Discontinuation date: 03/31/2026



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.1...25 l/min	0.03...6.6 gpm
Process connection	threaded connection Rc 1/2 Internal thread DN15	

Application

System	gold-plated contacts	
Application	for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	15.3 bar	1.53 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
------------------------------	-----------------------------	--

SM6404



Magnetic-inductive flow meter

SMK12GGX50KG/US-100

Outputs		
Total number of outputs		2
Output signal		analog signal
Number of analog outputs		2
Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes
Measuring/setting range		
Measuring range	0.1...25 l/min	0.03...6.6 gpm
Display range	-30...30 l/min	-7.92...7.92 gpm
Resolution	0.05 l/min	0.01 gpm
Analog start point ASP	0...20 l/min	0...5.28 gpm
Analog end point AEP	5...25 l/min	1.32...6.6 gpm
In steps of	0.05 l/min	0.01 gpm
Temperature monitoring		
Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (2 % MW + 0,5 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67
Tests / approvals		
EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)

SM6404



Magnetic-inductive flow meter

SMK12GGX50KG/US-100

CPA approval	model number	008MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 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]	175
UL approval	UL approval number	I011
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight	[g]	515
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection Rc 1/2 Internal thread DN15

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



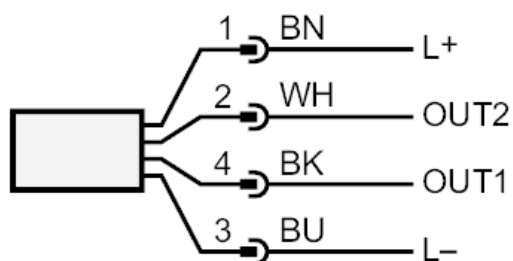
SM6404



Magnetic-inductive flow meter

SMK12GGX50KG/US-100

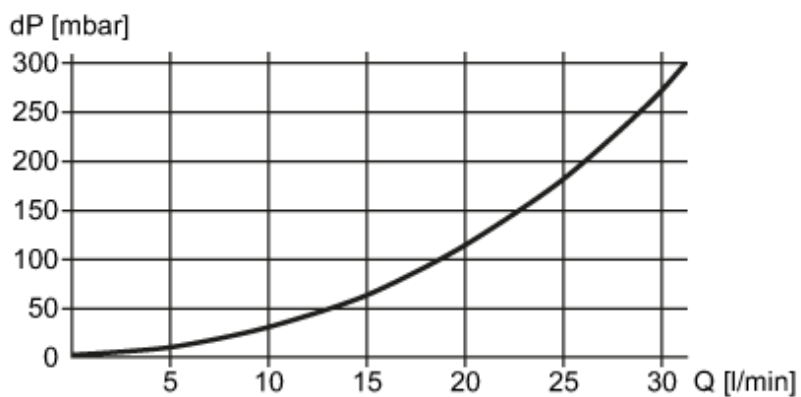
Connection



OUT1: analog output Temperature monitoring
OUT2: analog output Volumetric flow quantity monitoring
Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity

SM6420

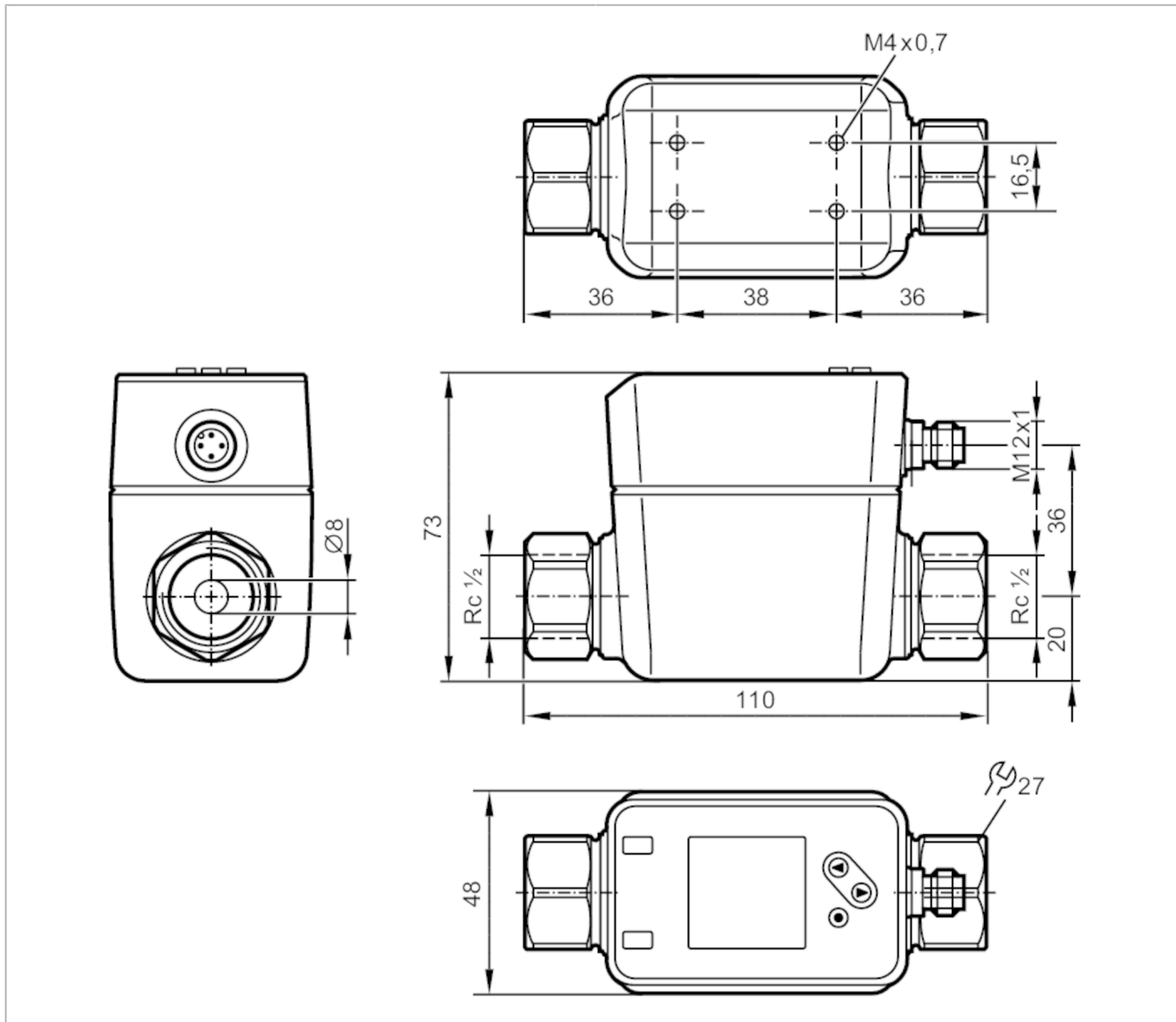


Magnetic-inductive flow meter

SMK12XGXFRKG/US-100

Alternative articles: SM6400

When selecting an alternative article and accessories please note that technical data may differ!



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 m³/h 0.6...555 gph 0.01...9.25 gpm
Process connection	threaded connection Rc 1/2 Internal thread DN15
Application	
System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature	[°C] -20...90

SM6420



Magnetic-inductive flow meter

SMK12XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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			

SM6420



Magnetic-inductive flow meter

SMK12XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	954
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM6420



Magnetic-inductive flow meter

SMK12XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	005MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,003 m ³ /h
	Q (t)	-
	Q (max)	2,1 m ³ /h
	Shock resistance	DIN IEC 68-2-27
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]		733.6
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
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	
Process connection	threaded connection Rc 1/2 Internal thread DN15	

Displays / operating elements		
Display		Color 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



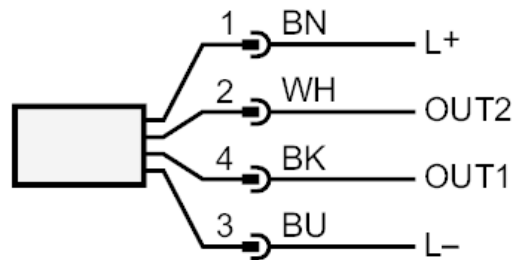
SM6420



Magnetic-inductive flow meter

SMK12XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

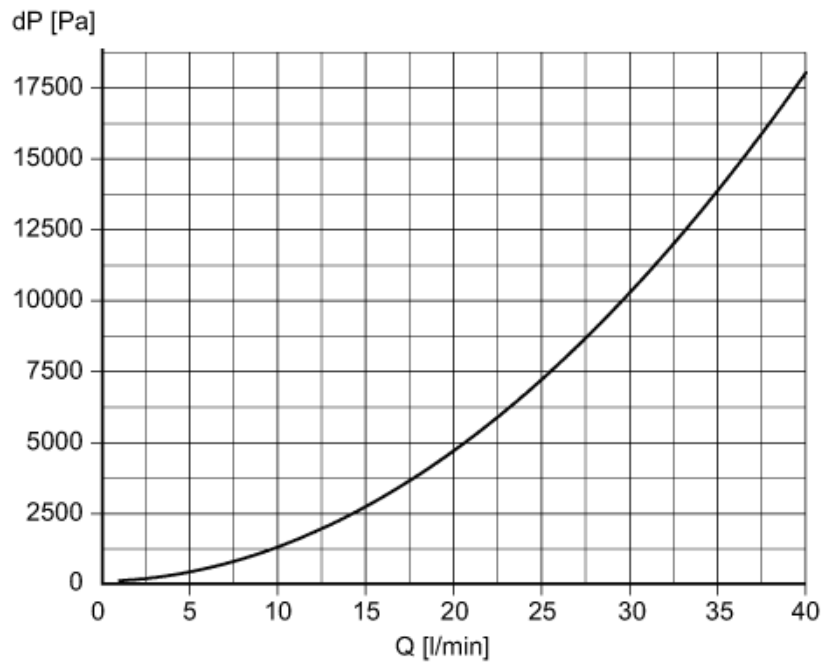
SM6420



Magnetic-inductive flow meter

SMK12XGXFRKG/US-100

Diagrams and graphs



Pressure loss / volumetric flow quantity

SM6500



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.1...25 l/min	0.005...1.5 m³/h
Display range	-30...30 l/min	-1.8...1.8 m³/h
Resolution	0.02 l/min	0.002 m³/h
Set point SP	0.25...25 l/min	0.015...1.5 m³/h
Reset point rP	0.1...24.9 l/min	0.005...1.495 m³/h
Analog start point ASP	0...20 l/min	0...1.2 m³/h
Analog end point AEP	5...25 l/min	0.3...1.5 m³/h
In steps of	0.02 l/min	0.002 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.00001...30 000 m³	
Pulse length [s]	0,01...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM6500



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	569
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 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]	145
UL approval	UL approval number	I010

SM6500



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	580.5
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection		threaded connection Rc 1/2 Internal thread DN15

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



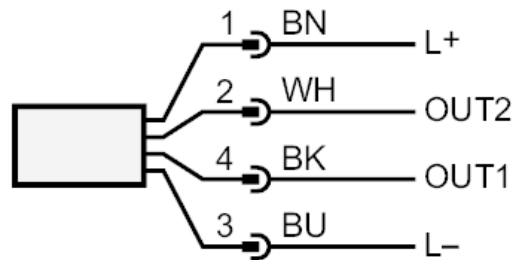
SM6500



Magnetic-inductive flow meter

SMK12GGXFRKG/US-100

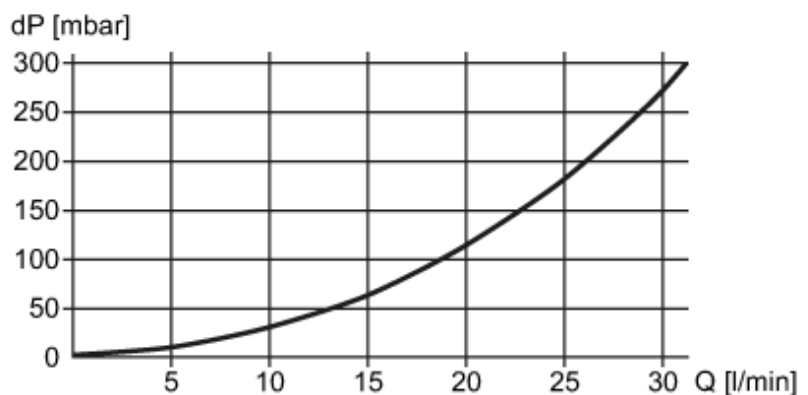
Connection



OUT1:	Colors to DIN EN 60947-5-2 Switching output Volumetric flow quantity monitoring Pulse output quantity meter signal output Preset counter IO-Link
OUT2:	Switching output Volumetric flow quantity monitoring Switching output Temperature monitoring analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset
	Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM6601



Magnetic-inductive flow meter

SMN12GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	1.5...396 gph	0.03...6.6 gpm
Display range	-475.5...475.5 gph	-7.925...7.925 gpm
Resolution	0.5 gph	0.01 gpm
Set point SP	3.5...396.5 gph	0.06...6.6 gpm
Reset point rP	1.5...394 gph	0.03...6.57 gpm
Analog start point ASP	0...318 gph	0...5.3 gpm
Analog end point AEP	78...396 gph	1.3...6.6 gpm
In steps of	0.5 gph	0.01 gpm
Volumetric flow quantity monitoring		
Pulse value	0.01...30 000 000 gal	
Pulse length [s]	0,01...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Resolution [°F]	0.1	
Set point SP [°F]	-2.5...176	
Reset point rP [°F]	-3.5...175	
Analog start point [°F]	-4...140.5	
Analog end point [°F]	31.5...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

SM6601



Magnetic-inductive flow meter

SMN12GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,26 gpm)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 0,26 gpm)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	570
Operating conditions		
Ambient temperature	[°F]	14...140
Storage temperature	[°F]	-13...176
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
Shock resistance	DIN EN 68000-2-27	20 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	593.5
Housing	tubular	
Dimensions	[mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE	

SM6601



Magnetic-inductive flow meter

SMN12GGXFRKG/US-100

Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection 1/2" NPT Internal thread DN15

Displays / operating elements

Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

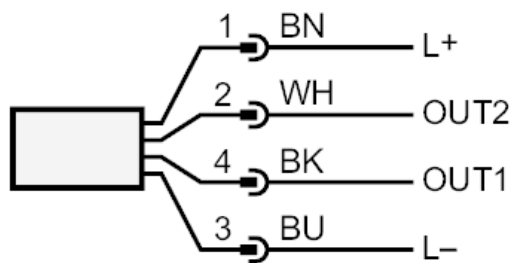
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: Colors to DIN EN 60947-5-2
 Switching output Volumetric flow quantity monitoring
 Pulse output quantity meter
 signal output Preset counter
 IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
 Switching output Temperature monitoring
 analog output Volumetric flow quantity monitoring
 analog output Temperature monitoring
 Input counter reset
 Core colors :
- BK = black
 BN = brown
 BU = blue
 WH = white

SM6601

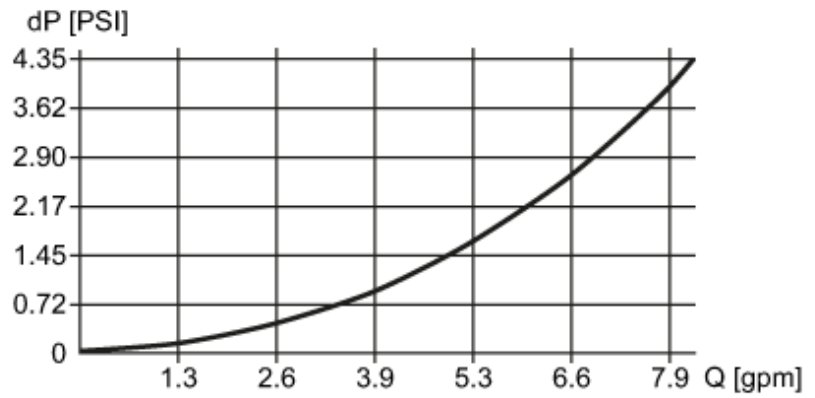


Magnetic-inductive flow meter

SMN12GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

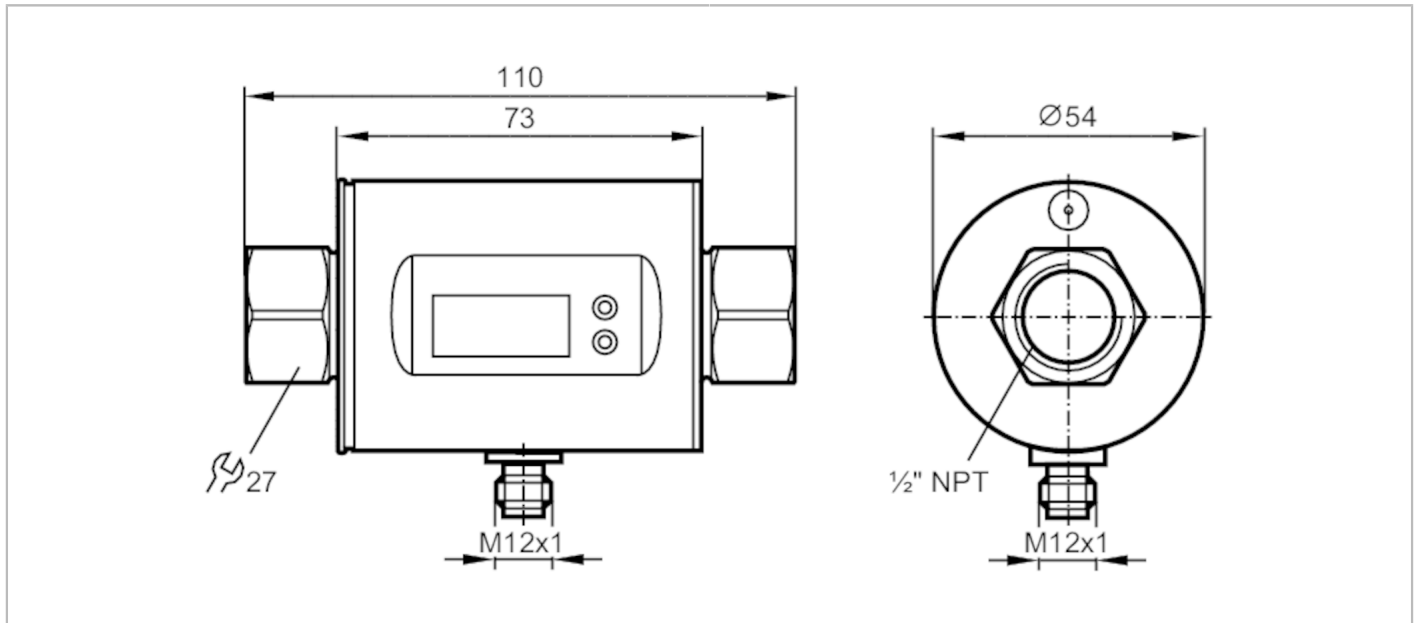
Q volumetric flow quantity

SM6604



Magnetic-inductive flow meter

SMN12GGX50KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.1...25 l/min	0.03...6.6 gpm
Process connection	threaded connection 1/2" NPT Internal thread DN15	

Application

System	gold-plated contacts	
Application	for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	15.3 bar	1.53 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
------------------------------	-----------------------------	--

Outputs

Total number of outputs	2	
Output signal	analog signal	
Number of analog outputs	2	

SM6604



Magnetic-inductive flow meter

SMN12GGX50KG/US-100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.1...25 l/min	0.03...6.6 gpm
Display range	-30...30 l/min	-7.92...7.92 gpm
Resolution	0.05 l/min	0.01 gpm
Analog start point ASP	0...20 l/min	0...5.28 gpm
Analog end point AEP	5...25 l/min	1.32...6.6 gpm
In steps of	0.02 l/min	0.01 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (2 % MW + 0,5 % MEW)
Repeatability		± 0,2% MEW
Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)

Reaction times

Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)

Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	008MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,005 m³/h
	Q (t)	-
	Q (max)	1,5 m³/h
Shock resistance	DIN EN 60068-2-27	20 g (11 ms)
Vibration resistance	DIN EN 68000-2-6	5 g (10...2000 Hz)
MTTF	[years]	175
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM6604



Magnetic-inductive flow meter

SMN12GGX50KG/US-100

Mechanical data	
Weight [g]	523.15
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection 1/2" NPT Internal thread DN15

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit
Display unit	l/min; m³/h; gpm; gph; °C; °F	

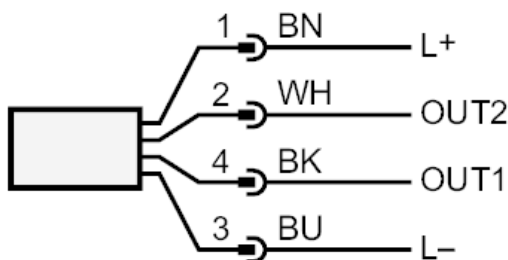
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM6604

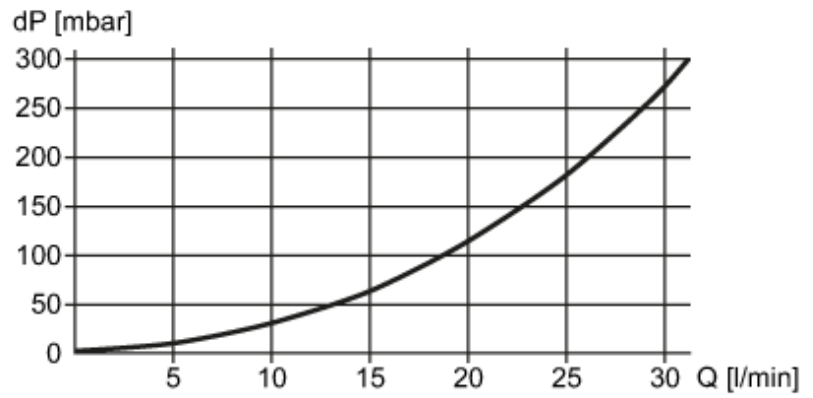


Magnetic-inductive flow meter

SMN12GGX50KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM6621

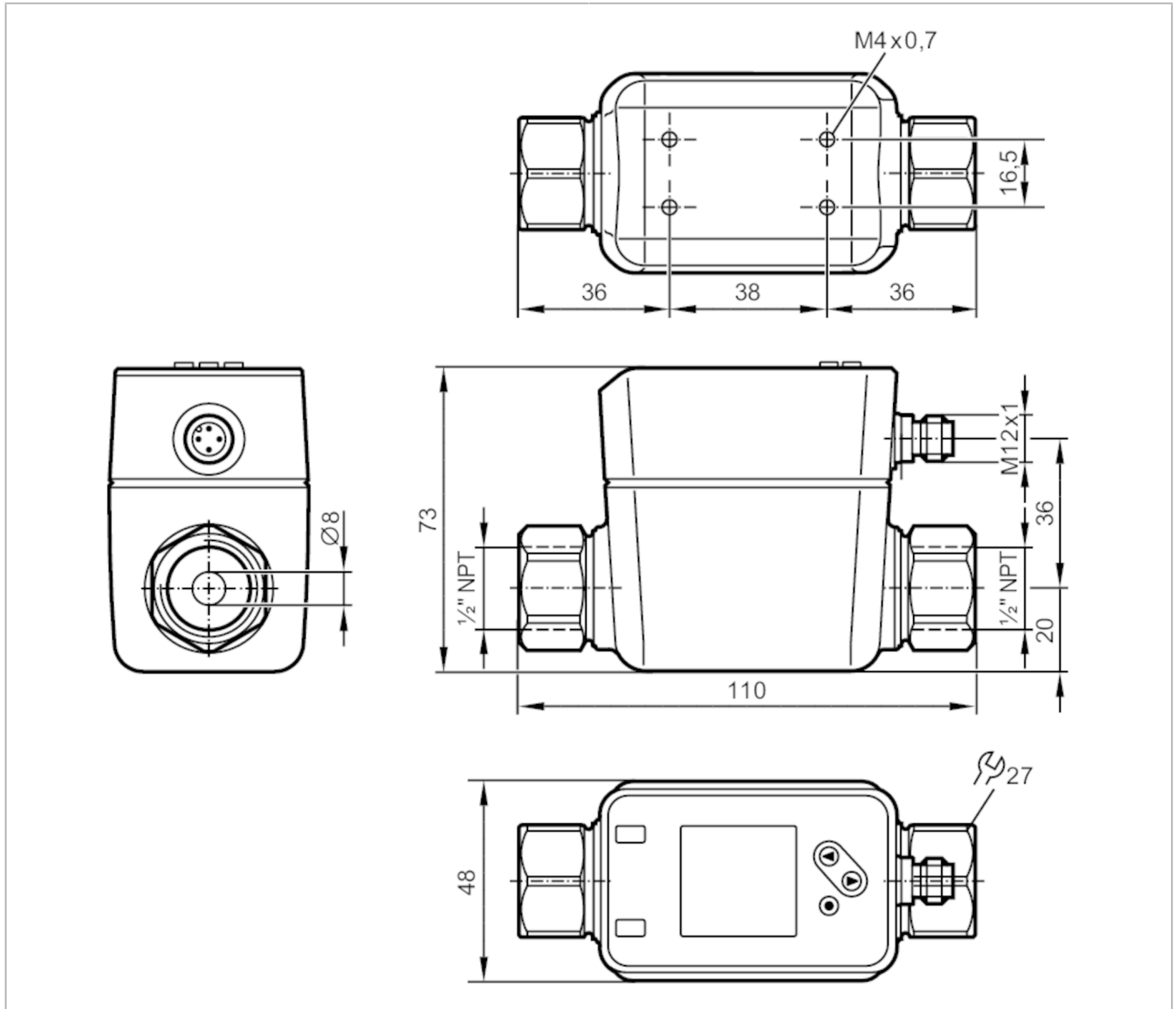


Magnetic-inductive flow meter

SMN12XGXFRKG/US-100

Alternative articles: SM6601

When selecting an alternative article and accessories please note that technical data may differ!



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 m³/h 0.6...555 gph 0.01...9.25 gpm
Process connection	threaded connection 1/2" NPT Internal thread DN15
Application	
System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature	[°F] -4...194

SM6621



Magnetic-inductive flow meter

SMN12XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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 m ³ /h	0.6...555 gph	0.01...9.25 gpm
Display range	-42...42 l/min	-2.5...2.5 m ³ /h	-666...666 gph	-11.1...11.1 gpm
Resolution	0.02 l/min	0.002 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.25...35 l/min	0.015...2.1 m ³ /h	4.2...555 gph	0.07...9.25 gpm
Reset point rP	0...34.8 l/min	0...2.08 m ³ /h	1.2...552 gph	0.02...9.2 gpm
Analog start point ASP	0...28 l/min	0...1.7 m ³ /h	0...666 gph	0...7.4 gpm
Analog end point AEP	7...35 l/min	0.42...2.1 m ³ /h	111...555 gph	1.85...9.25 gpm
Low flow cut-off LFC	0.05...1.75 l/min	0.003...0.1 m ³ /h	0.6...27.6 gph	0.01...0.46 gpm
Frequency end point, FEP	7...35 l/min	0.42...2.1 m ³ /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			

SM6621



Magnetic-inductive flow meter

SMN12XGXFRKG/US-100

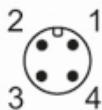
Temperature monitoring		
Measuring range	[°F]	-4...194
Display range	[°F]	-43.6...233.6
Resolution	[°F]	0.1
Set point SP	[°F]	-3.3...194
Reset point rP	[°F]	-4...193.3
Analog start point	[°F]	-4...154.4
Analog end point	[°F]	35.6...194
In steps of	[°F]	0.1
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	952
Operating conditions		
Ambient temperature	[°F]	-4...140
Storage temperature	[°F]	-13...176
Protection	IP 65; IP 67	

SM6621



Magnetic-inductive flow meter

SMN12XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	743	
Housing	rectangular	
Dimensions [mm]	110 x 48 x 73	
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	
Process connection	threaded connection 1/2" NPT Internal thread DN15	
Displays / operating elements		
Display	Color 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		
		

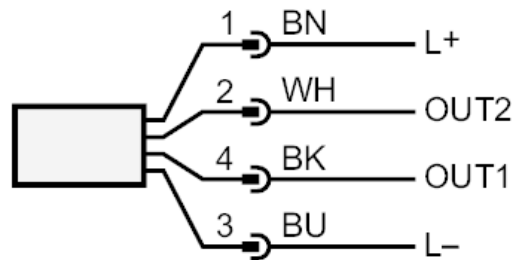
SM6621



Magnetic-inductive flow meter

SMN12XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

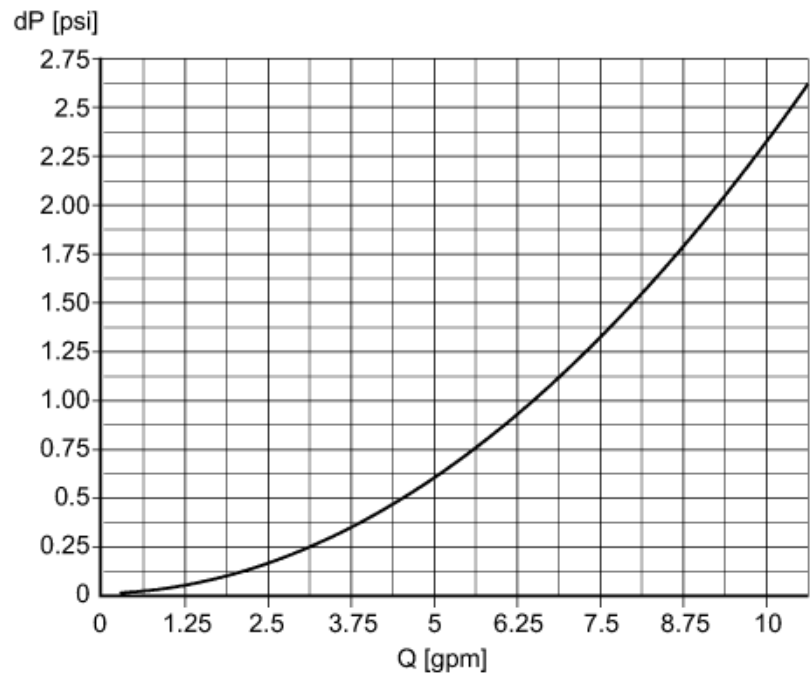
SM6621



Magnetic-inductive flow meter

SMN12XGXFRKG/US-100

Diagrams and graphs



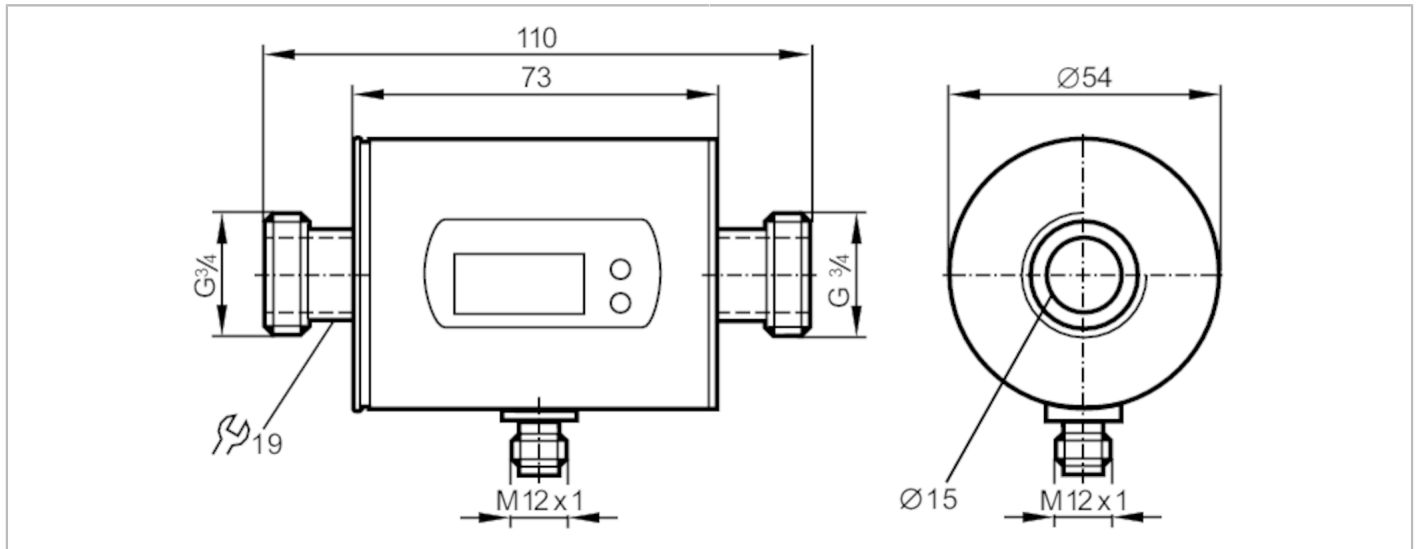
Pressure loss / volumetric flow quantity

SM7000



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	0.2...50 l/min 0.01...3 m³/h
Process connection	threaded connection G 3/4 external thread DN20 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-10...70
Pressure rating	16 bar 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar 1.04 MPa
Electrical data	
Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
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 analog outputs: 1
Inputs	
Inputs	counter reset
Outputs	
Total number of outputs	2

SM7000



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	

Measuring/setting range

Measuring range	0.2...50 l/min	0.01...3 m ³ /h
Display range	-60...60 l/min	-3.6...3.6 m ³ /h
Resolution	0.1 l/min	0.001 m ³ /h
Set point SP	0.5...50 l/min	0.027...3 m ³ /h
Reset point rP	0.2...49.8 l/min	0.012...2.985 m ³ /h
Analog start point ASP	0...40 l/min	0...2.4 m ³ /h
Analog end point AEP	10...50 l/min	0.6...3 m ³ /h
In steps of	0.1 l/min	0.001 m ³ /h

Volumetric flow quantity monitoring

Pulse value	0.00001...50 000 m ³	
Pulse length [s]	0,005...2	

Temperature monitoring

Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

Temperature monitoring

Accuracy [K]	± 2,5 (Q > 5 l/min)	
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SM7000



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	572
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	3 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]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM7000



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Mechanical data	
Weight [g]	587
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 3/4 external thread DN20 flat seal

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



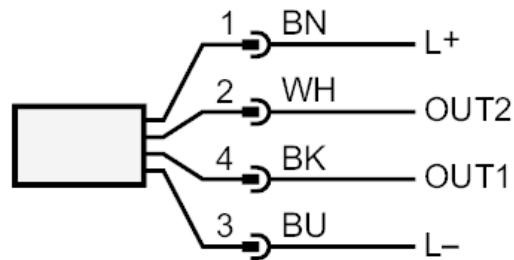
SM7000



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Connection



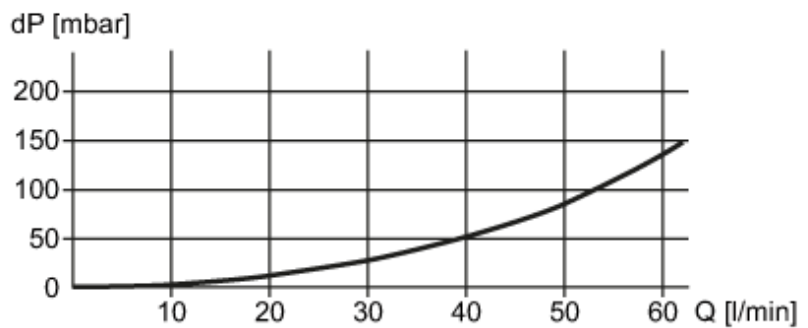
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



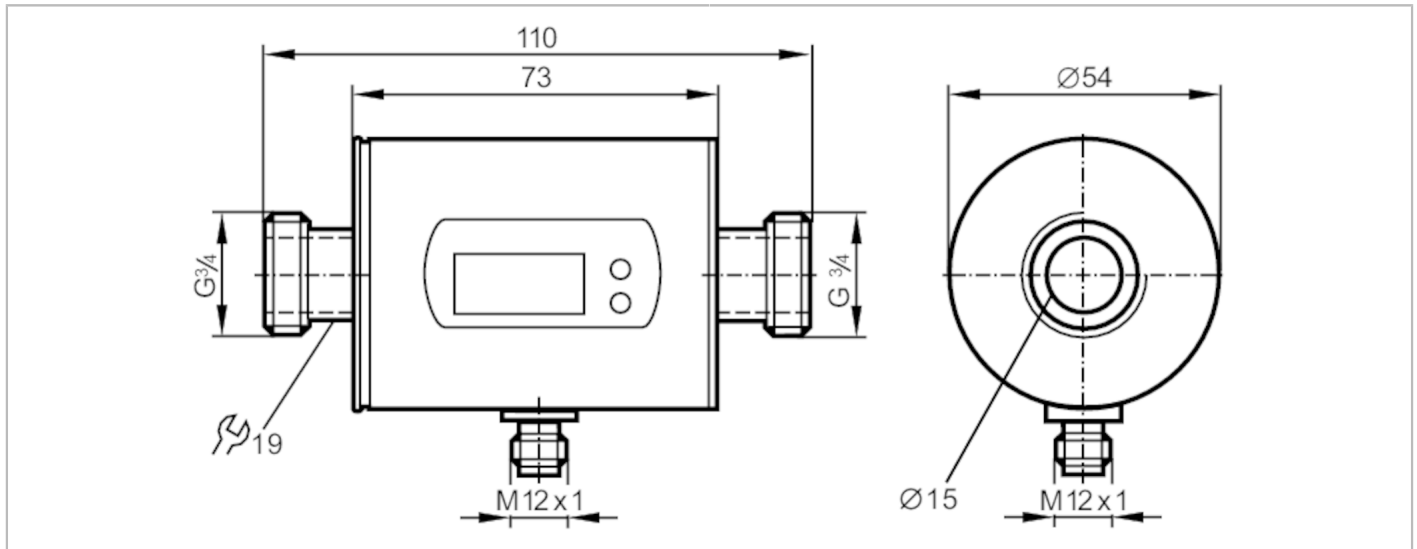
dP Pressure loss
Q volumetric flow quantity

SM7001



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	3...792 gph	0.06...13.2 gpm
Process connection	threaded connection G 3/4 external thread DN20 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°F]	14...158	
Pressure rating	16 bar	232 psi 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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Outputs

Total number of outputs	2	
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SM7001



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	

Measuring/setting range

Measuring range	3...792 gph	0.06...13.2 gpm
Display range	-951...951 gph	-15.84...15.84 gpm
Resolution	1 gph	0.02 gpm
Set point SP	7...792 gph	0.12...13.2 gpm
Reset point rP	3...788 gph	0.06...13.14 gpm
Analog start point ASP	0...636 gph	0...10.6 gpm
Analog end point AEP	156...792 gph	2.6...13.2 gpm
In steps of	1 gph	0.02 gpm

Volumetric flow quantity monitoring

Pulse value	0.01...99 990 000 gal	
Pulse length [s]	0,005...2	

Temperature monitoring

Measuring range [°F]	-4...176	
Resolution [°F]	0.5	
Set point SP [°F]	-2.5...176	
Reset point rP [°F]	-3.5...175	
Analog start point [°F]	-4...140.5	
Analog end point [°F]	31.5...176	
In steps of [°F]	0.5	

Accuracy / deviations

Flow monitoring

Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

Temperature monitoring

Accuracy [K]	± 2,5 (Q > 0,26 gpm)	
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SM7001



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 0,26 gpm)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	573
Operating conditions		
Ambient temperature	[°F]	14...140
Storage temperature	[°F]	-13...176
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	586
Housing	tubular	
Dimensions	[mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE	
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM	
Process connection	threaded connection G 3/4 external thread DN20 flat seal	

SM7001



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Displays / operating elements		
Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

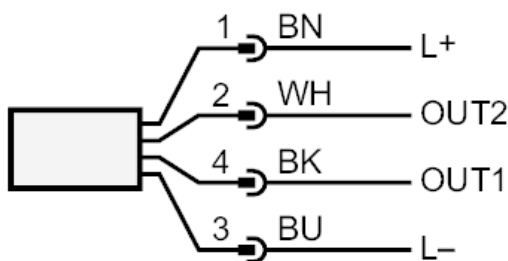
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset
Core colors :
- BK = black
BN = brown
BU = blue
WH = white

SM7001

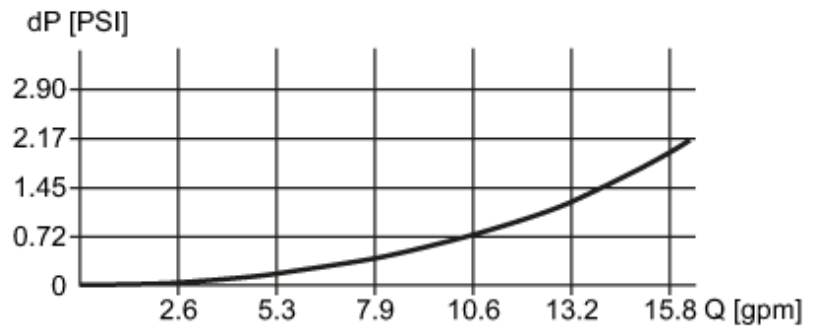


Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

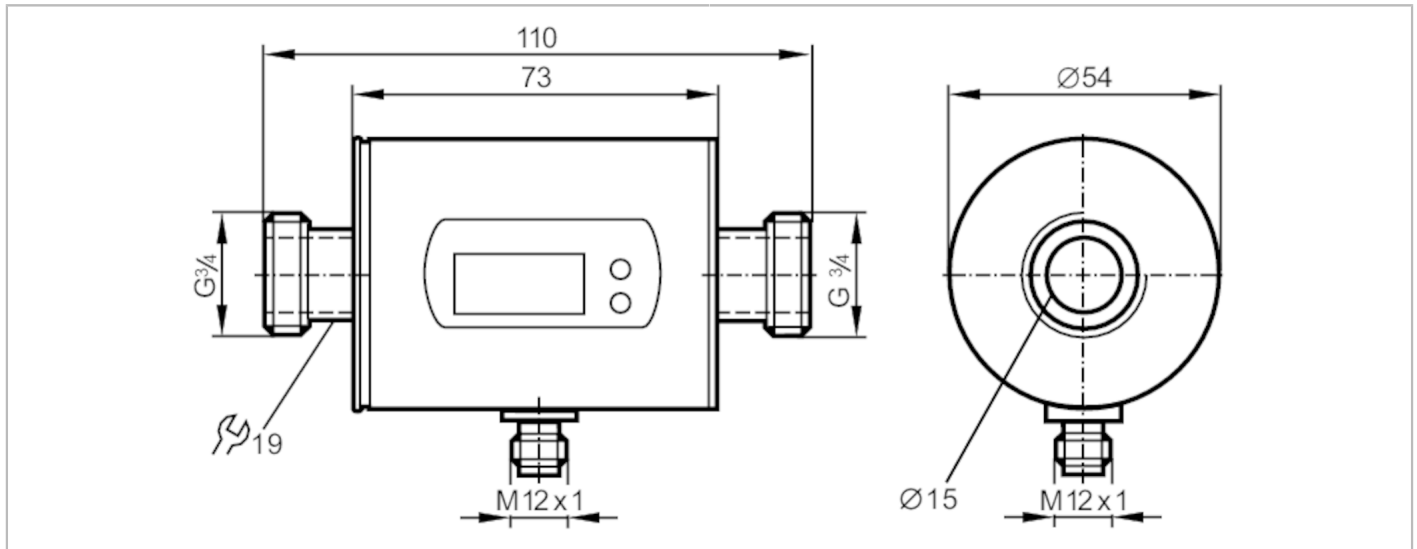
Q volumetric flow quantity

SM7004



Magnetic-inductive flow meter

SMR34GGX50KG/US100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.2...50 l/min	0.02...13.22 gpm
Process connection	threaded connection G 3/4 external thread DN20 flat seal	

Application

System	gold-plated contacts	
Application	for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2
------------------------------	-----------------------------

Outputs

Total number of outputs	2
Output signal	analog signal
Number of analog outputs	2

SM7004



Magnetic-inductive flow meter

SMR34GGX50KG/US100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.2...50 l/min	0.02...13.22 gpm
Display range	-60...60 l/min	-15.86...15.86 gpm
Resolution	0.1 l/min	0.02 gpm
Analog start point ASP	0...40 l/min	0...10.58 gpm
Analog end point AEP	10...50 l/min	2.64...13.22 gpm
In steps of	0.1 l/min	0.02 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring

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

Temperature monitoring

Accuracy	[K]	$\pm 2,5 (Q > 1 \text{ l/min})$
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Reaction times

Flow monitoring

Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
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Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	008MI
	accuracy class	-
	maximum allowable error	$\pm 2,5 \% FS$
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	3 m ³ /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]	175
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM7004



Magnetic-inductive flow meter

SMR34GGX50KG/US100

Mechanical data	
Weight [g]	521.2
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 3/4 external thread DN20 flat seal

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit
Display unit	l/min; m³/h; gpm; gph; °C; °F	

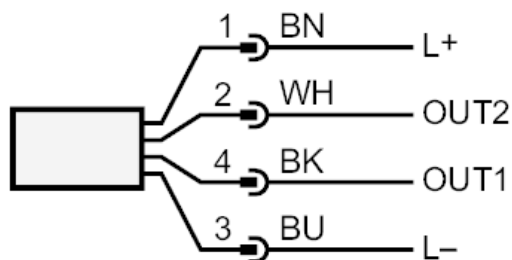
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM7004

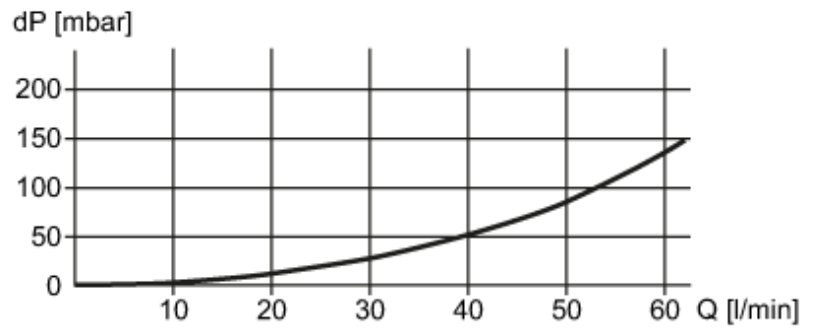
Magnetic-inductive flow meter

SMR34GGX50KG/US100



Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM7020

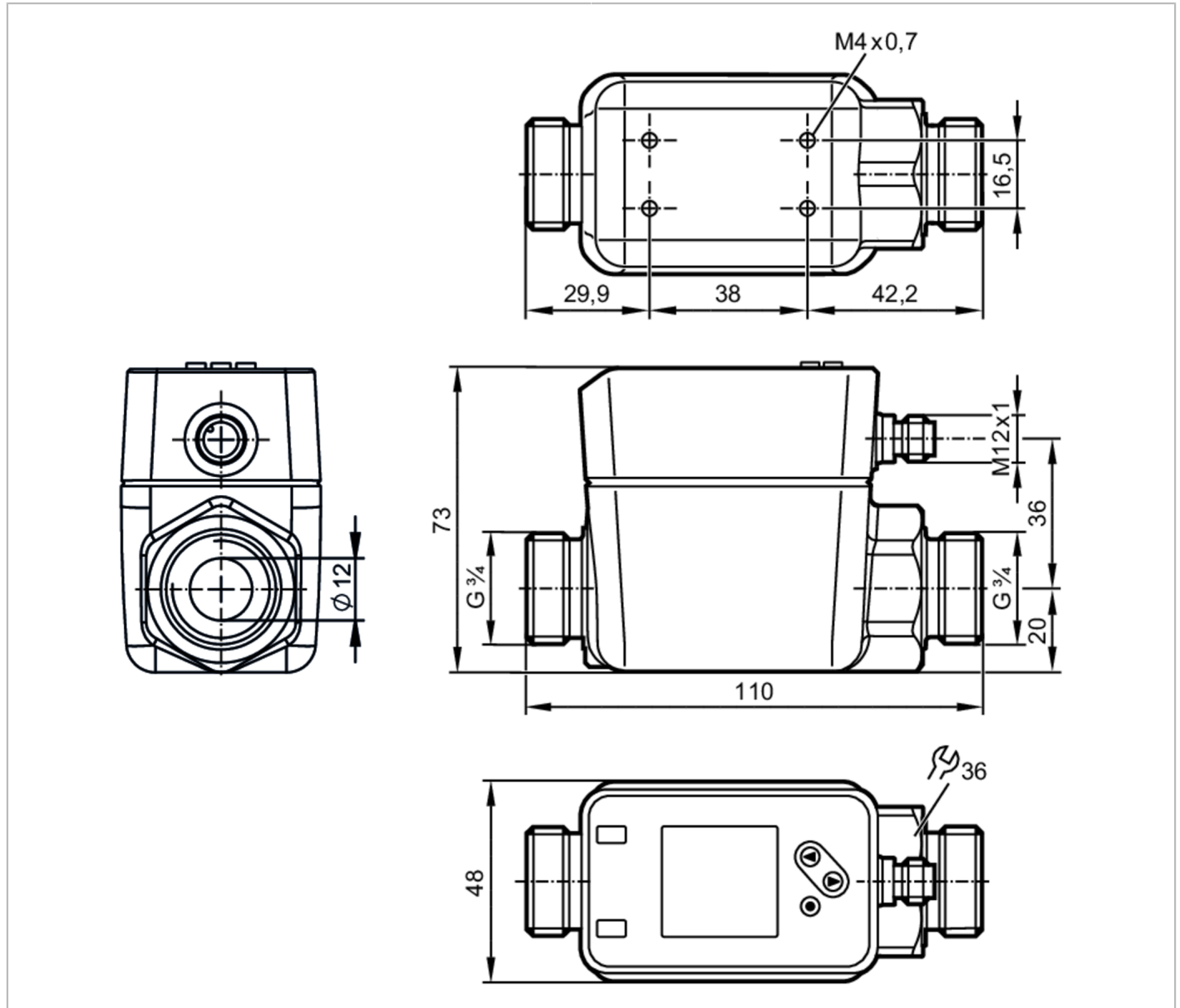


Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Alternative articles: SM7000

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Process connection	threaded connection G 3/4 external thread DN20 flat seal			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM7020



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Display range	-90...90 l/min	-5.4...5.4 m ³ /h	-1426.8...1426.8 gph	-23.78...23.78 gpm
Resolution	0.1 l/min	0.006 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.5...75 l/min	0.03...4.5 m ³ /h	8.4...1189 gph	0.14...19.81 gpm
Reset point rP	0.1...74.6 l/min	0.006...4.48 m ³ /h	1.2...1183 gph	0.03...19.71 gpm
Analog start point ASP	0...59.9 l/min	0...3.6 m ³ /h	0...950 gph	0...15.82 gpm
Analog end point AEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Low flow cut-off LFC	0.1...3.8 l/min	0.006...0.23 m ³ /h	1.8...59.4 gph	0.03...0.99 gpm
Frequency end point, FEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.003...2			
Pulse value	0.01...99990000 l			

SM7020



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	955
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM7020



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	$\pm 1,0$ % FS
	Q (min)	0,006 m ³ /h
	Q (t)	-
	Q (max)	4,5 m ³ /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]		797.5
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; PEEK; carbon fiber PEEK	
Process connection	threaded connection G 3/4 external thread DN20 flat seal	

Displays / operating elements		
Display		Color 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



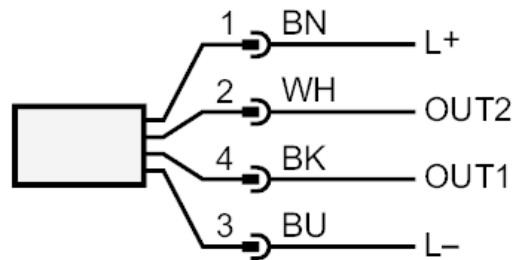
SM7020



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

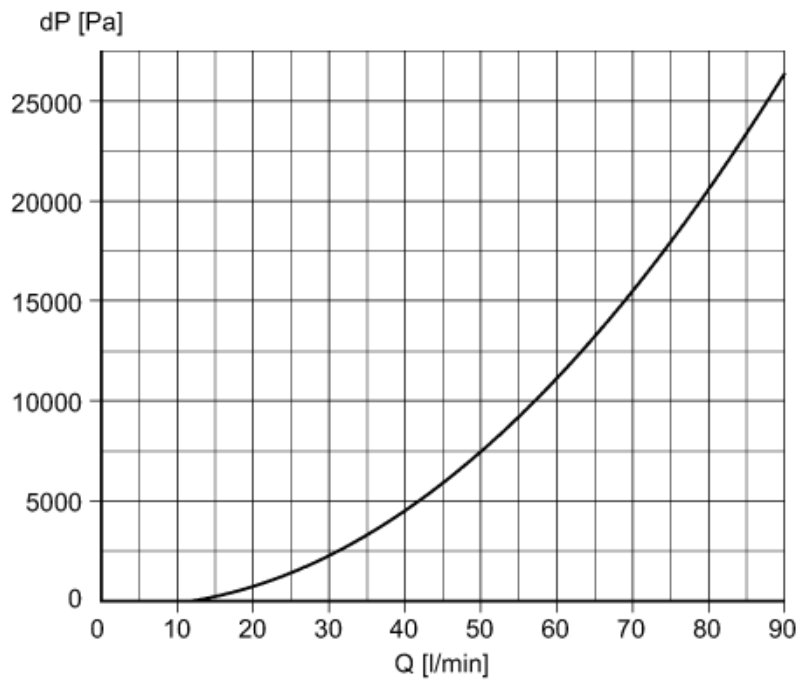
SM7020



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Diagrams and graphs



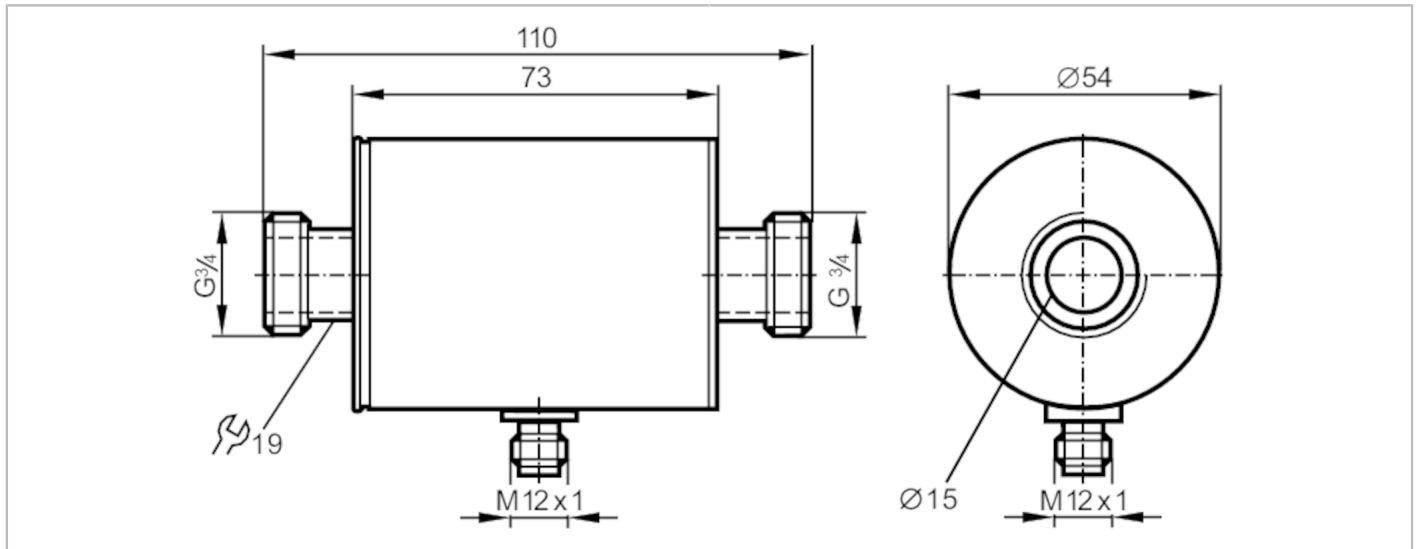
Pressure loss / volumetric flow quantity

SM7050



Magnetic-inductive flow meter

SMR34GGX10KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 1
Measuring range [l/min]	0.2...50
Process connection	threaded connection G 3/4 external thread DN20 flat seal

Application

System	gold-plated contacts
Application	for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-10...70
Pressure rating	16 bar 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar 1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
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 analog outputs: 1
------------------------------	-----------------------------

Outputs

Total number of outputs	1
Output signal	analog signal; IO-Link; (configurable)
Permanent current rating of switching output DC [mA]	250

SM7050



Magnetic-inductive flow meter

SMR34GGX10KG/US-100

Number of analog outputs		1
Analog current output	[mA]	4...20
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	[l/min]	0.2...50
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Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,5 % MEW)
Repeatability		± 0,2% MEW

Reaction times

Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)

Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	574

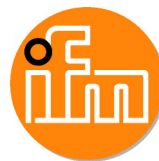
Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	3 m³/h
	Shock resistance	DIN IEC 68-2-27
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000 Hz)
MTTF	[years]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM7050



Magnetic-inductive flow meter

SMR34GGX10KG/US-100

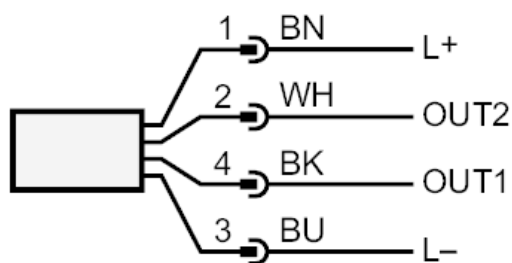
Mechanical data	
Weight [g]	517.55
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 3/4 external thread DN20 flat seal
Remarks	
Remarks	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: IO-Link
OUT2: analog output
Core colors :
BN = brown
WH = white
BK = black
BU = blue

Colors to DIN EN 60947-5-2

SM7050

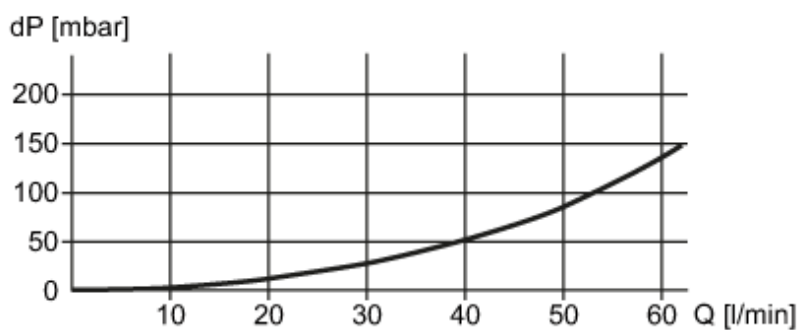


Magnetic-inductive flow meter

SMR34GGX10KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

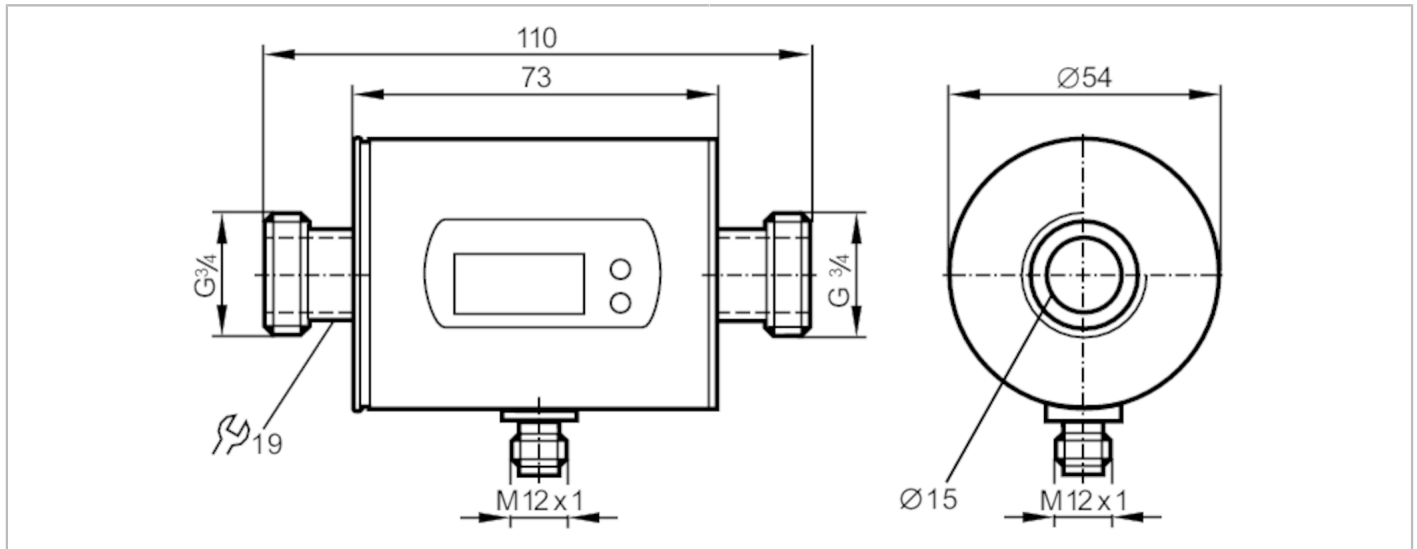
Q volumetric flow quantity

SM7100



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	0.2...50 l/min 0.01...3 m³/h
Process connection	threaded connection G 3/4 DN20 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-10...70
Pressure rating	16 bar 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar 1.04 MPa
Electrical data	
Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
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 analog outputs: 1
Inputs	
Inputs	counter reset
Outputs	
Total number of outputs	2

SM7100



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	

Measuring/setting range

Measuring range	0.2...50 l/min	0.01...3 m ³ /h
Display range	-60...60 l/min	-3.6...3.6 m ³ /h
Resolution	0.1 l/min	0.001 m ³ /h
Set point SP	0.5...50 l/min	0.027...3 m ³ /h
Reset point rP	0.2...49.8 l/min	0.012...2.985 m ³ /h
Analog start point ASP	0...40 l/min	0...2.4 m ³ /h
Analog end point AEP	10...50 l/min	0.6...3 m ³ /h
In steps of	0.1 l/min	0.001 m ³ /h

Volumetric flow quantity monitoring

Pulse value	0.00001...50 000 m ³	
Pulse length [s]	0,005...2	

Temperature monitoring

Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

Temperature monitoring

Accuracy [K]	± 2,5 (Q > 5 l/min)	
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SM7100



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	572
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	3 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]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM7100



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

Mechanical data	
Weight [g]	586.5
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection	threaded connection G 3/4 DN20 flat seal

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



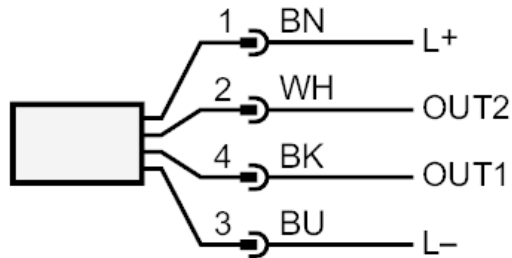
SM7100



Magnetic-inductive flow meter

SMR34GGXFRKG/US-100

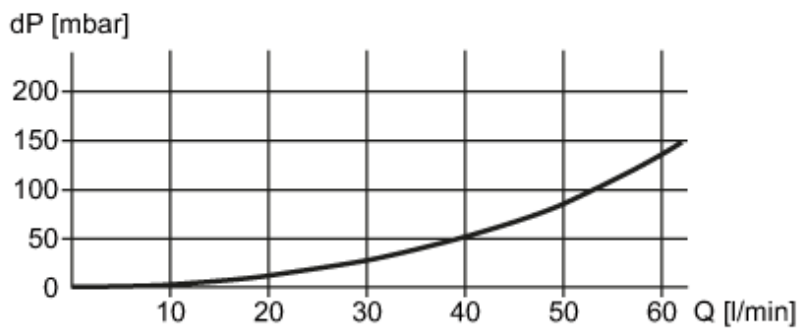
Connection



- OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset
- Core colors :
- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity

SM7120

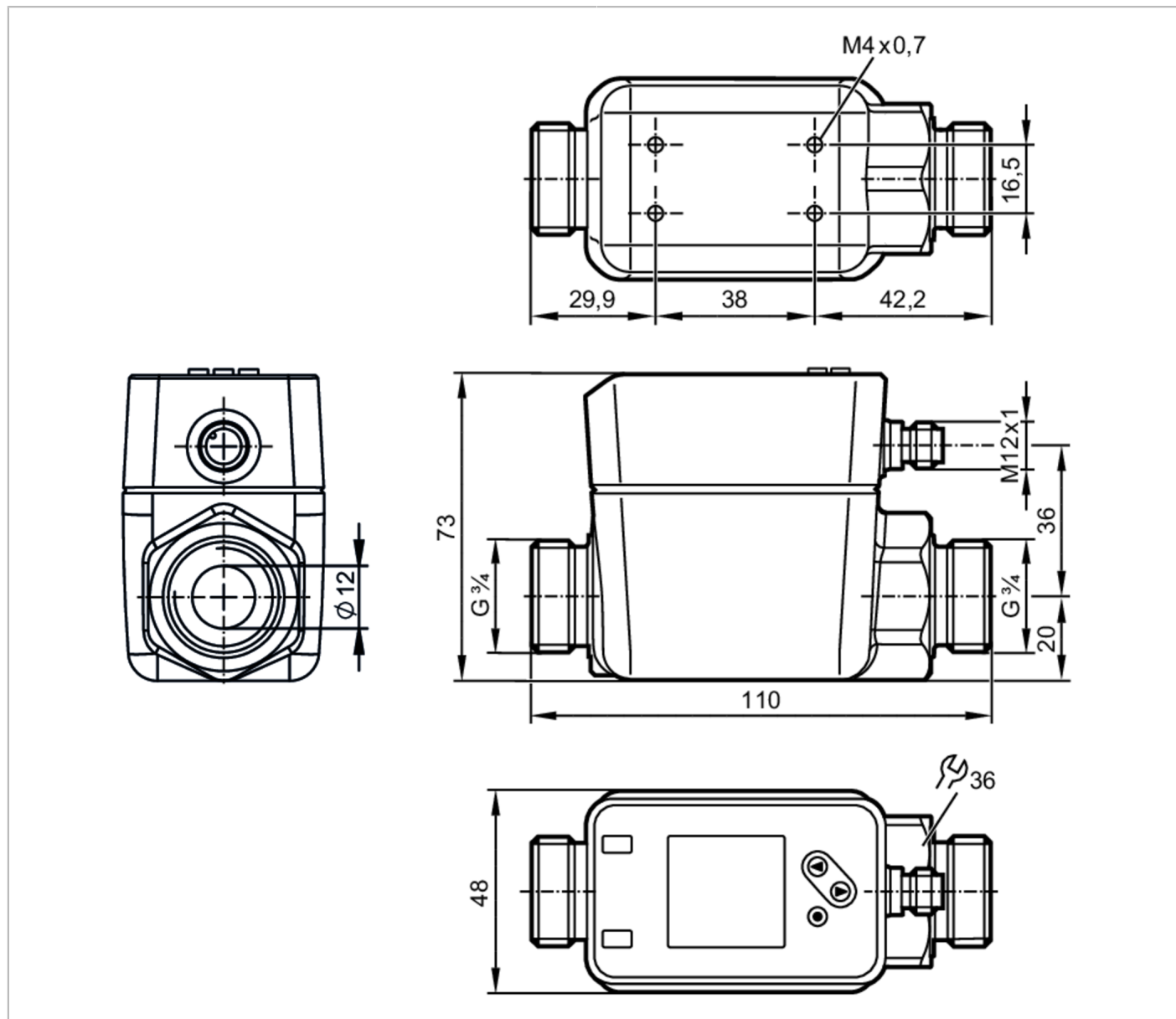


Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Alternative articles: SM7100

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Process connection	threaded connection G 3/4 external thread DN20 flat seal			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM7120



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Display range	-90...90 l/min	-5.4...5.4 m ³ /h	-1426.8...1426.8 gph	-23.78...23.78 gpm
Resolution	0.1 l/min	0.006 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.5...75 l/min	0.03...4.5 m ³ /h	8.4...1189 gph	0.14...19.81 gpm
Reset point rP	0.1...74.6 l/min	0.006...4.48 m ³ /h	1.2...1183 gph	0.03...19.71 gpm
Analog start point ASP	0...59.9 l/min	0...3.6 m ³ /h	0...950 gph	0...15.82 gpm
Analog end point AEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Low flow cut-off LFC	0.1...3.8 l/min	0.006...0.23 m ³ /h	1.8...59.4 gph	0.03...0.99 gpm
Frequency end point, FEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.003...2			
Pulse value	0.01...99990000 l			

SM7120



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	955
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM7120



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,006 m ³ /h
	Q (t)	-
	Q (max)	4,5 m ³ /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]	798	
Housing	rectangular	
Dimensions [mm]	110 x 48 x 73	
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; PEEK; EPDM; carbon fiber PEEK	
Process connection	threaded connection G 3/4 external thread DN20 flat seal	

Displays / operating elements		
Display		Color 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



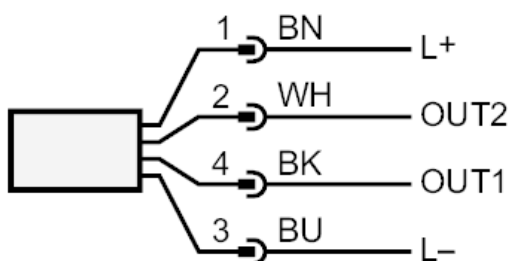
SM7120



Magnetic-inductive flow meter

SMR34XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

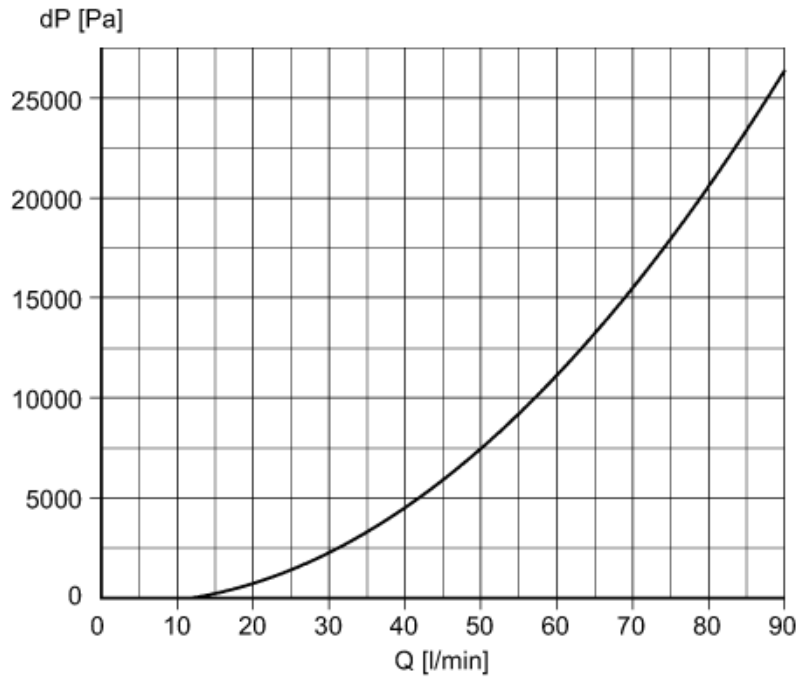
SM7120

Magnetic-inductive flow meter

SMR34XGXFRKG/US-100



Diagrams and graphs



Pressure loss / volumetric flow quantity

SM7400



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.2...50 l/min	0.01...3 m³/h
Display range	-60...60 l/min	-3.6...3.6 m³/h
Resolution	0.1 l/min	0.001 m³/h
Set point SP	0.5...50 l/min	0.027...3 m³/h
Reset point rP	0.2...49.8 l/min	0.012...2.985 m³/h
Analog start point ASP	0...40 l/min	0...2.4 m³/h
Analog end point AEP	10...50 l/min	0.6...3 m³/h
In steps of	0.1 l/min	0.001 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.00001...50 000 m³	
Pulse length [s]	0,005...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM7400



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	572
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	3 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]	145
UL approval	UL approval number	I010

SM7400



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	581
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection Rc 3/4 Internal thread DN20

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



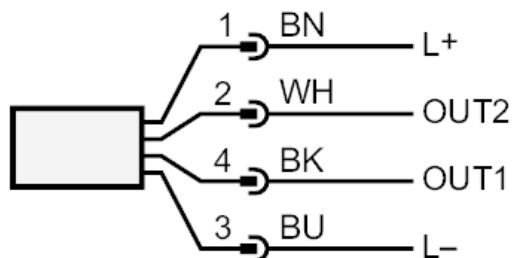
SM7400



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

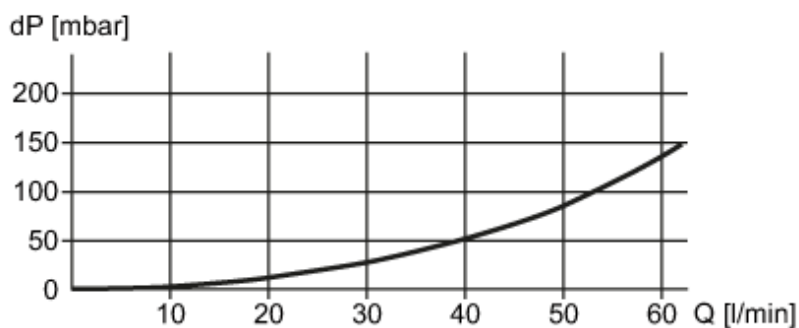
Connection



OUT1:	Colors to DIN EN 60947-5-2 Switching output Volumetric flow quantity monitoring Pulse output quantity meter signal output Preset counter IO-Link
OUT2:	Switching output Volumetric flow quantity monitoring Switching output Temperature monitoring analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset
	Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

Diagrams and graphs

Pressure loss



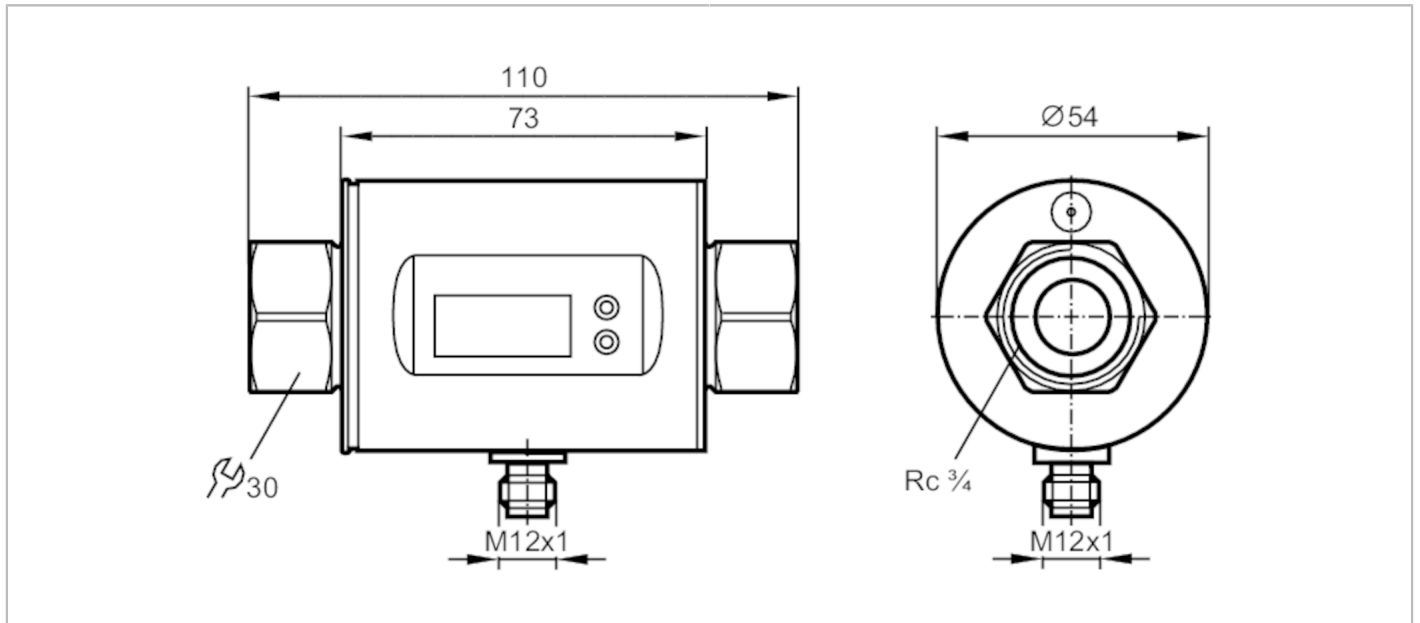
dP Pressure loss
Q volumetric flow quantity

SM7404



Magnetic-inductive flow meter

SMK34GGX50KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.2...50 l/min	0.02...13.22 gpm
Process connection	threaded connection Rc 3/4 Internal thread DN20	

Application

System	gold-plated contacts	
Application	for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
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Outputs

Total number of outputs	2	
Output signal	analog signal	
Number of analog outputs	2	

SM7404



Magnetic-inductive flow meter

SMK34GGX50KG/US-100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.2...50 l/min	0.02...13.22 gpm
Display range	-60...60 l/min	-15.86...15.86 gpm
Resolution	0.1 l/min	0.02 gpm
Analog start point ASP	0...40 l/min	0...10.58 gpm
Analog end point AEP	10...50 l/min	2.64...13.22 gpm
In steps of	0.1 l/min	0.02 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring

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

Temperature monitoring

Accuracy	[K]	$\pm 2,5 (Q > 1 \text{ l/min})$
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Reaction times

Flow monitoring

Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
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Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	008MI
	accuracy class	-
	maximum allowable error	$\pm 2,5 \% FS$
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	3 m ³ /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]	175
UL approval	UL approval number	I011

SM7404



Magnetic-inductive flow meter

SMK34GGX50KG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	545
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection Rc 3/4 Internal thread DN20

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

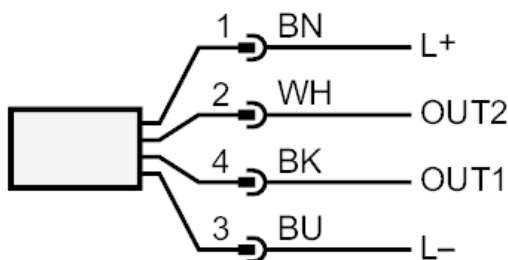
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: Colors to DIN EN 60947-5-2
 analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM7404

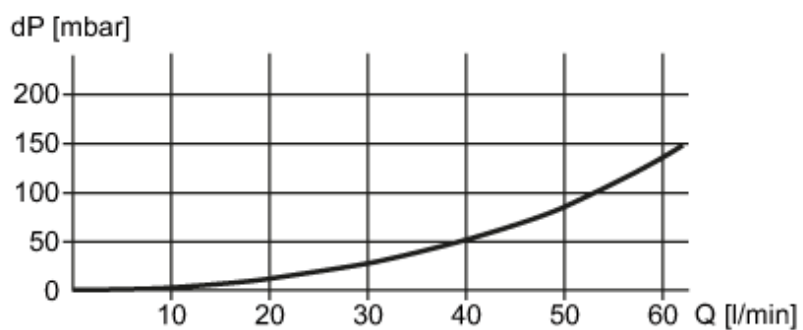


Magnetic-inductive flow meter

SMK34GGX50KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM7420

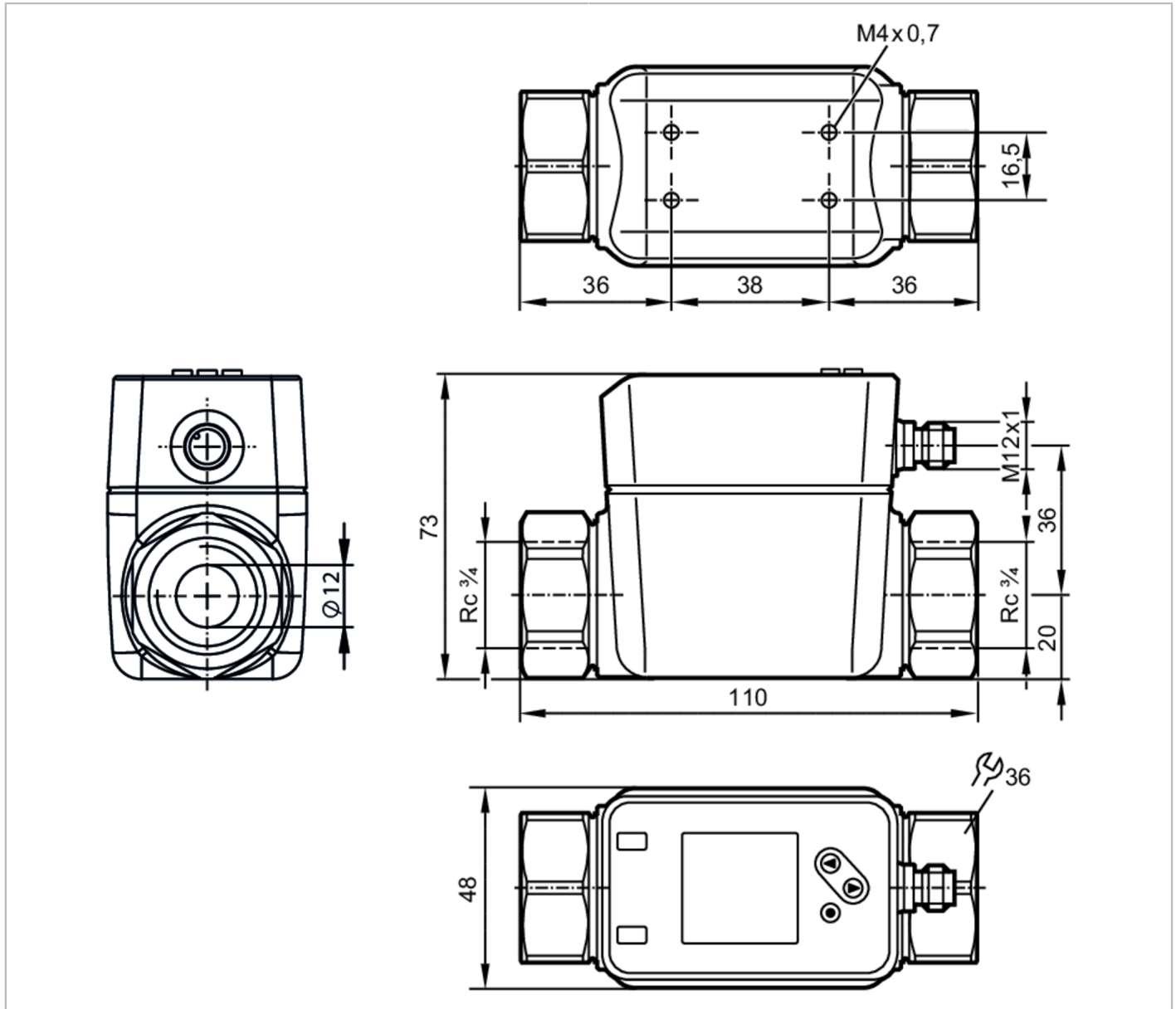


Magnetic-inductive flow meter

SMK34XGXFRKG/US-100

Alternative articles: SM7400

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Process connection	threaded connection Rc 3/4 Internal thread DN20			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM7420



Magnetic-inductive flow meter

SMK34XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Display range	-90...90 l/min	-5.4...5.4 m ³ /h	-1426.8...1426.8 gph	-23.78...23.78 gpm
Resolution	0.1 l/min	0.006 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.5...75 l/min	0.03...4.5 m ³ /h	8.4...1189 gph	0.14...19.81 gpm
Reset point rP	0.1...74.6 l/min	0.006...4.48 m ³ /h	1.2...1183 gph	0.03...19.71 gpm
Analog start point ASP	0...59.9 l/min	0...3.6 m ³ /h	0...950 gph	0...15.82 gpm
Analog end point AEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Low flow cut-off LFC	0.1...3.8 l/min	0.006...0.23 m ³ /h	1.8...59.4 gph	0.03...0.99 gpm
Frequency end point, FEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.003...2			
Pulse value	0.01...99990000 l			

SM7420



Magnetic-inductive flow meter

SMK34XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	

Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	960

Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection		IP 65; IP 67

SM7420



Magnetic-inductive flow meter

SMK34XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,006 m ³ /h
	Q (t)	-
	Q (max)	4,5 m ³ /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]		842
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
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	
Process connection	threaded connection Rc 3/4 Internal thread DN20	

Displays / operating elements		
Display		Color 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



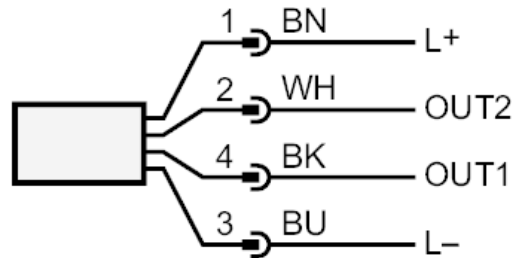
SM7420



Magnetic-inductive flow meter

SMK34XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

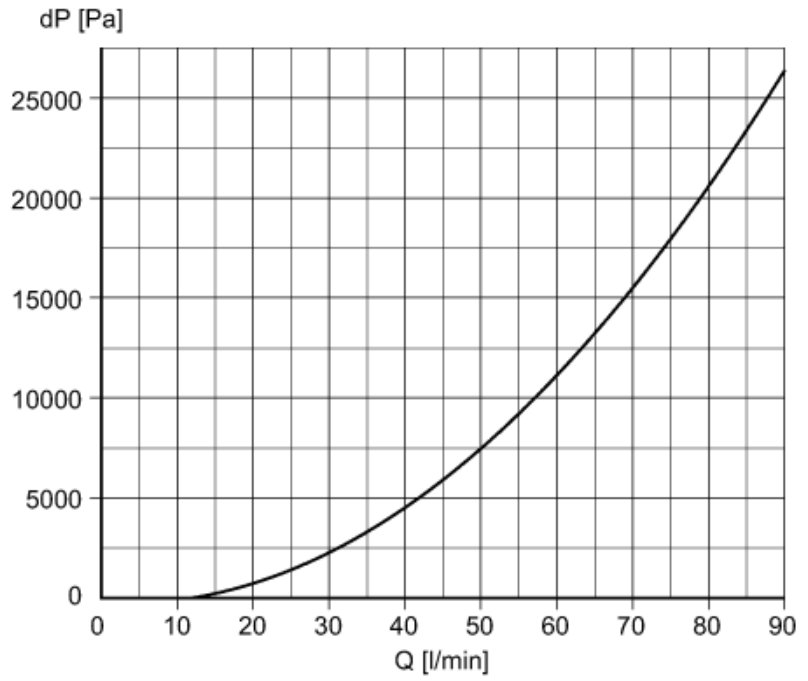
SM7420

Magnetic-inductive flow meter

SMK34XGXFRKG/US-100



Diagrams and graphs



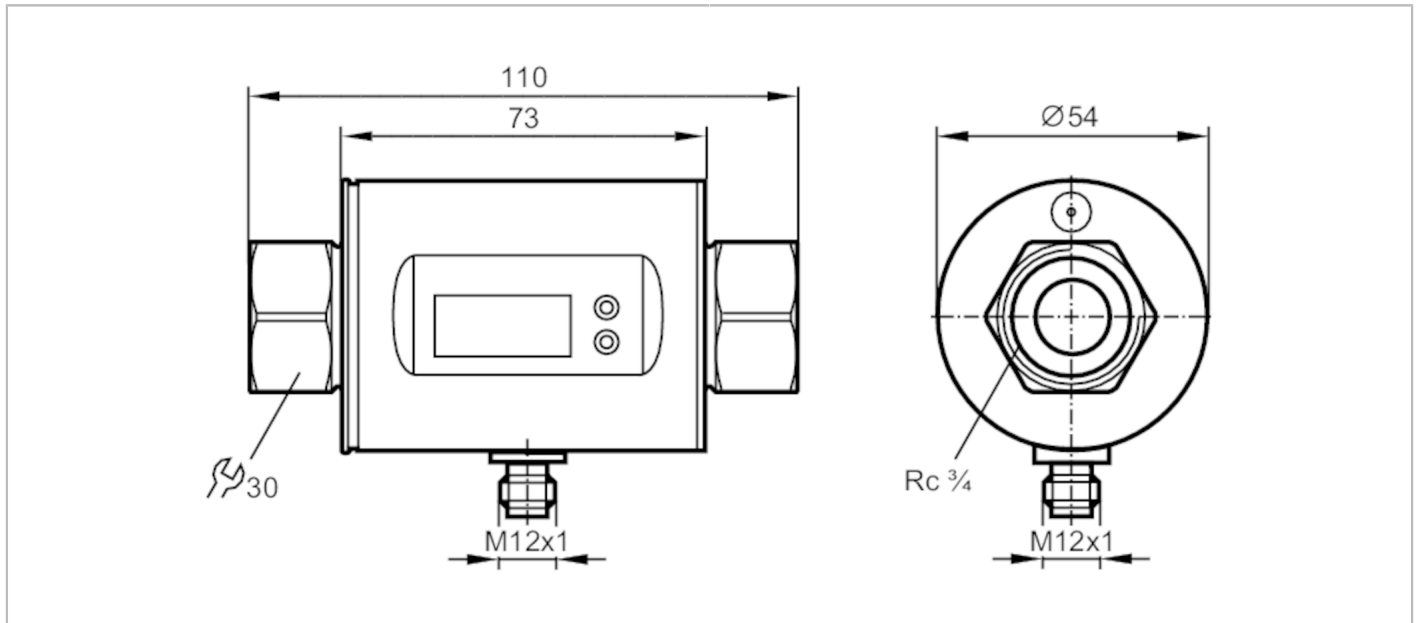
Pressure loss / volumetric flow quantity

SM7500



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.2...50 l/min	0.01...3 m ³ /h
Process connection	threaded connection Rc 3/4 Internal thread DN20	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM7500



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.2...50 l/min	0.01...3 m³/h
Display range	-60...60 l/min	-3.6...3.6 m³/h
Resolution	0.1 l/min	0.001 m³/h
Set point SP	0.5...50 l/min	0.027...3 m³/h
Reset point rP	0.2...49.8 l/min	0.012...2.985 m³/h
Analog start point ASP	0...40 l/min	0...2.4 m³/h
Analog end point AEP	10...50 l/min	0.6...3 m³/h
In steps of	0.1 l/min	0.001 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.00001...50 000 m³	
Pulse length [s]	0,005...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM7500



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	572
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	001MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	3 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]	145
UL approval	UL approval number	I010

SM7500



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	576.5
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection		threaded connection Rc 3/4 Internal thread DN20

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



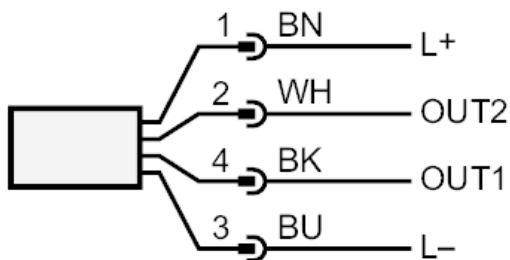
SM7500



Magnetic-inductive flow meter

SMK34GGXFRKG/US-100

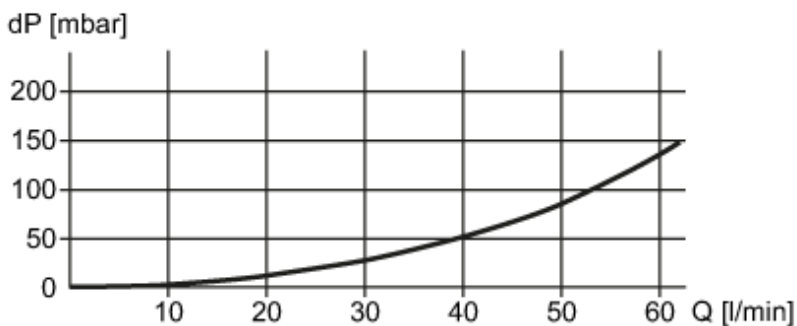
Connection



- OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset
- Core colors :
- BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



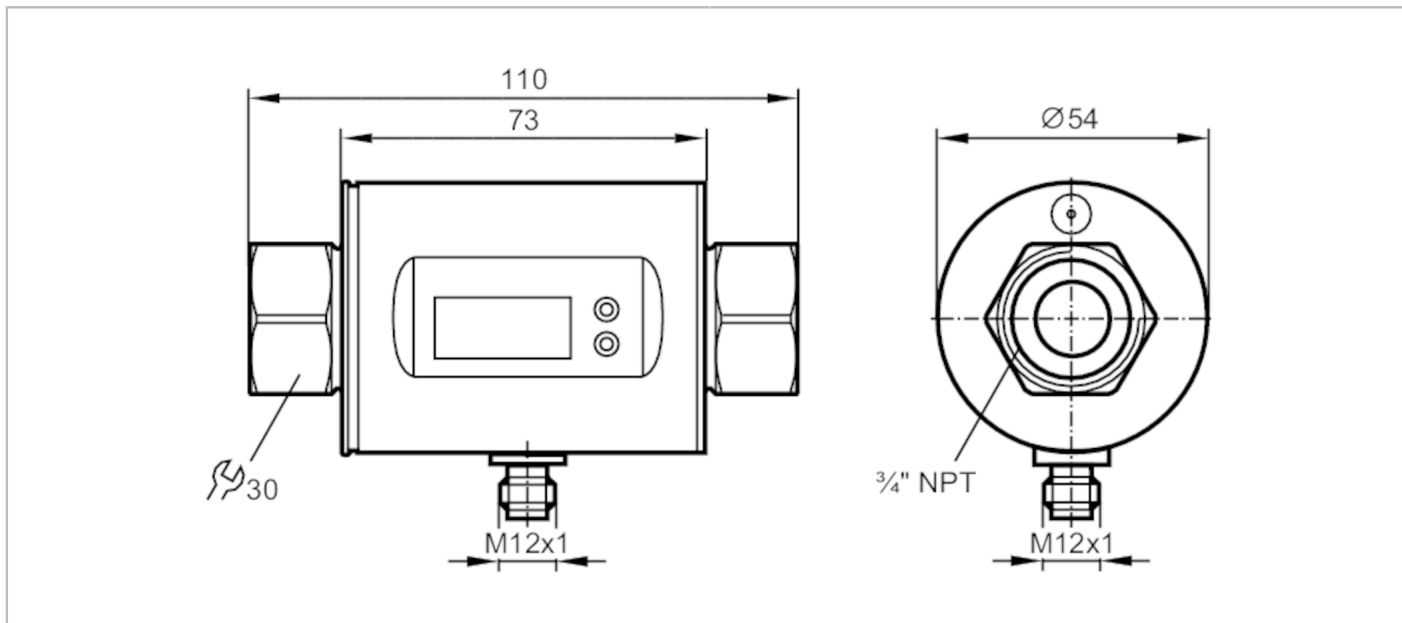
dP Pressure loss
Q volumetric flow quantity

SM7601



Magnetic-inductive flow meter

SMN34GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	3...792 gph	0.06...13.2 gpm
Process connection	threaded connection 3/4" NPT Internal thread DN20	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°F]	14...158	
Pressure rating	16 bar	232 psi 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; ((24))	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM7601



Magnetic-inductive flow meter

SMN34GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	3...792 gph	0.06...13.2 gpm
Display range	-951...951 gph	-15.84...15.84 gpm
Resolution	1 gph	0.02 gpm
Set point SP	7...792 gph	0.12...13.2 gpm
Reset point rP	3...788 gph	0.06...13.14 gpm
Analog start point ASP	0...636 gph	0...10.6 gpm
Analog end point AEP	156...792 gph	2.6...13.2 gpm
In steps of	1 gph	0.02 gpm
Volumetric flow quantity monitoring		
Pulse value	0.01...99 990 000 gal	
Pulse length [s]	0,005...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Resolution [°F]	0.5	
Set point SP [°F]	-2.5...176	
Reset point rP [°F]	-3.5...175	
Analog start point [°F]	-4...140.5	
Analog end point [°F]	31.5...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

SM7601



Magnetic-inductive flow meter

SMN34GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,26 gpm)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 0,26 gpm)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	573
Operating conditions		
Ambient temperature	[°F]	14...140
Storage temperature	[°F]	-13...176
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	588.5
Housing	tubular	
Dimensions	[mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE	

SM7601



Magnetic-inductive flow meter

SMN34GGXFRKG/US-100

Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection 3/4" NPT Internal thread DN20

Displays / operating elements

Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

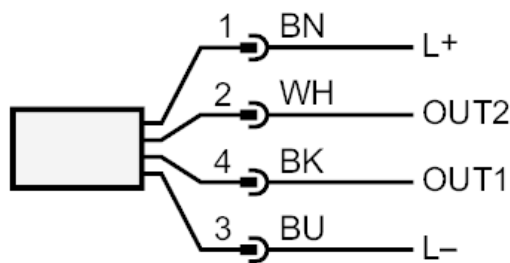
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: Colors to DIN EN 60947-5-2
 Switching output Volumetric flow quantity monitoring
 Pulse output quantity meter
 signal output Preset counter
 IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
 Switching output Temperature monitoring
 analog output Volumetric flow quantity monitoring
 analog output Temperature monitoring
 Input counter reset
 Core colors :
- BK = black
 BN = brown
 BU = blue
 WH = white

SM7601

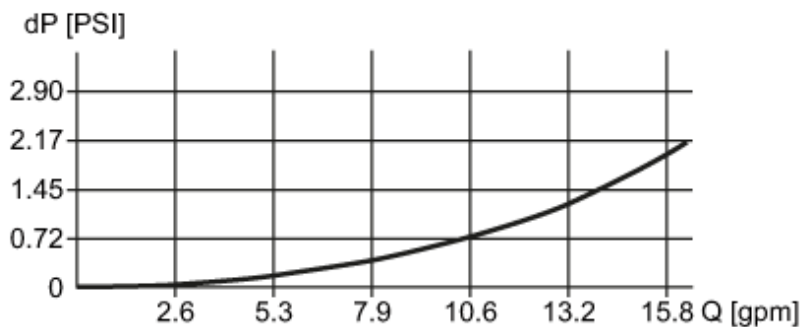


Magnetic-inductive flow meter

SMN34GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

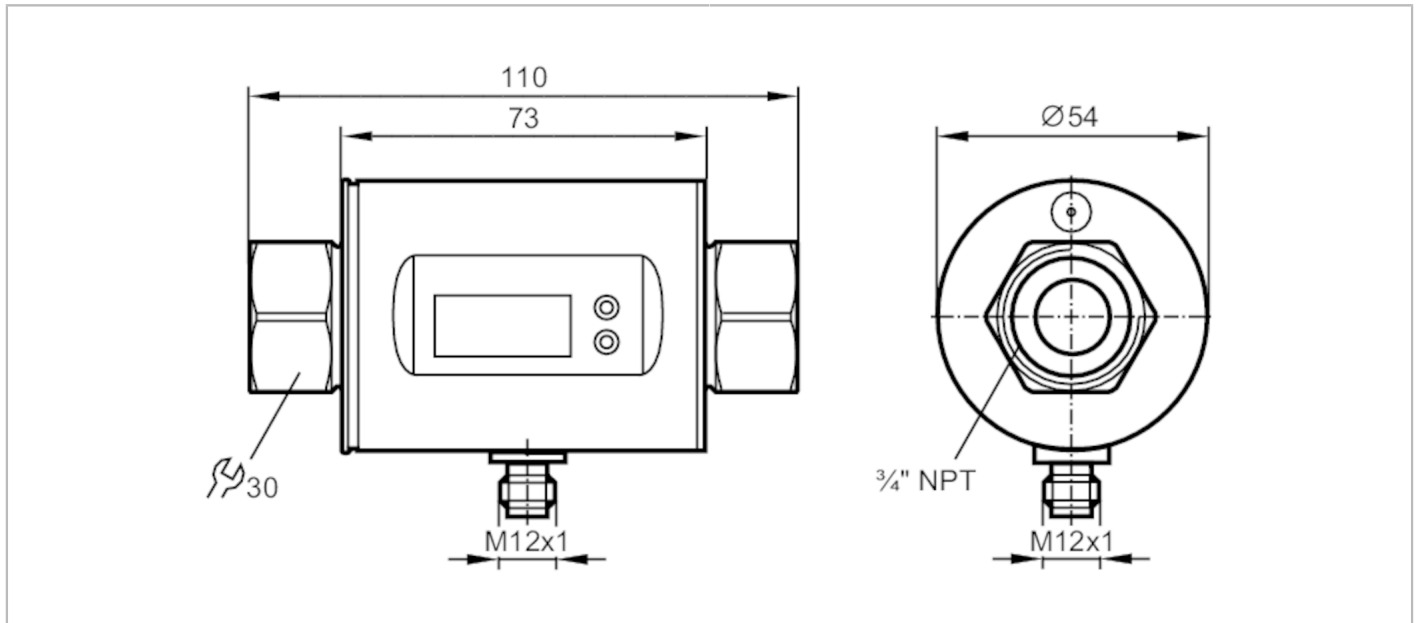
Q volumetric flow quantity

SM7604



Magnetic-inductive flow meter

SMN34GGX50KG/US-100



Product characteristics	
Number of inputs and outputs	Number of analog outputs: 2
Measuring range	0.2...50 l/min 0.02...13.22 gpm
Process connection	threaded connection 3/4" NPT Internal thread DN20
Application	
System	gold-plated contacts
Application	for industrial applications
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-10...70
Pressure rating	16 bar 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar 1.04 MPa
Electrical data	
Operating voltage [V]	20...30 DC; (to SELV/PELV)
Current consumption [mA]	120; (24 V)
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 analog outputs: 2
Outputs	
Total number of outputs	2
Output signal	analog signal
Number of analog outputs	2

SM7604



Magnetic-inductive flow meter

SMN34GGX50KG/US-100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.2...50 l/min	0.02...13.22 gpm
Display range	-60...60 l/min	-15.86...15.86 gpm
Resolution	0.1 l/min	0.02 gpm
Analog start point ASP	0...40 l/min	0...10.58 gpm
Analog end point AEP	10...50 l/min	2.64...13.22 gpm
In steps of	0.1 l/min	0.02 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring

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

Temperature monitoring

Accuracy	[K]	$\pm 2,5 (Q > 1 \text{ l/min})$
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Reaction times

Flow monitoring

Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
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Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	008MI
	accuracy class	-
	maximum allowable error	$\pm 2,5 \% FS$
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	3 m ³ /h
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]	175
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM7604



Magnetic-inductive flow meter

SMN34GGX50KG/US-100

Mechanical data	
Weight [g]	527.5
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection 3/4" NPT Internal thread DN20

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit
Display unit	l/min; m³/h; gpm; gph; °C; °F	

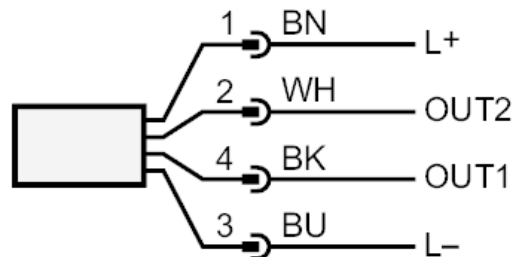
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM7604

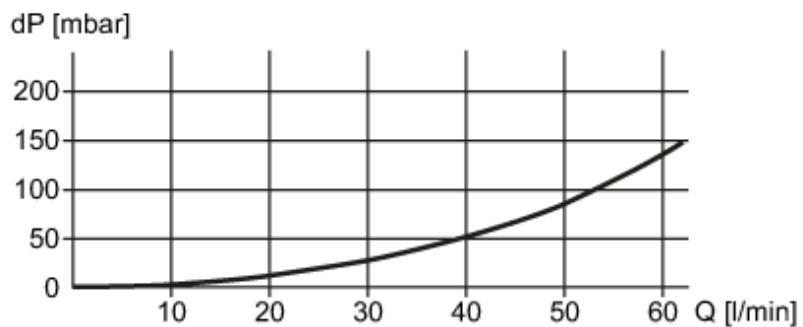


Magnetic-inductive flow meter

SMN34GGX50KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM7621

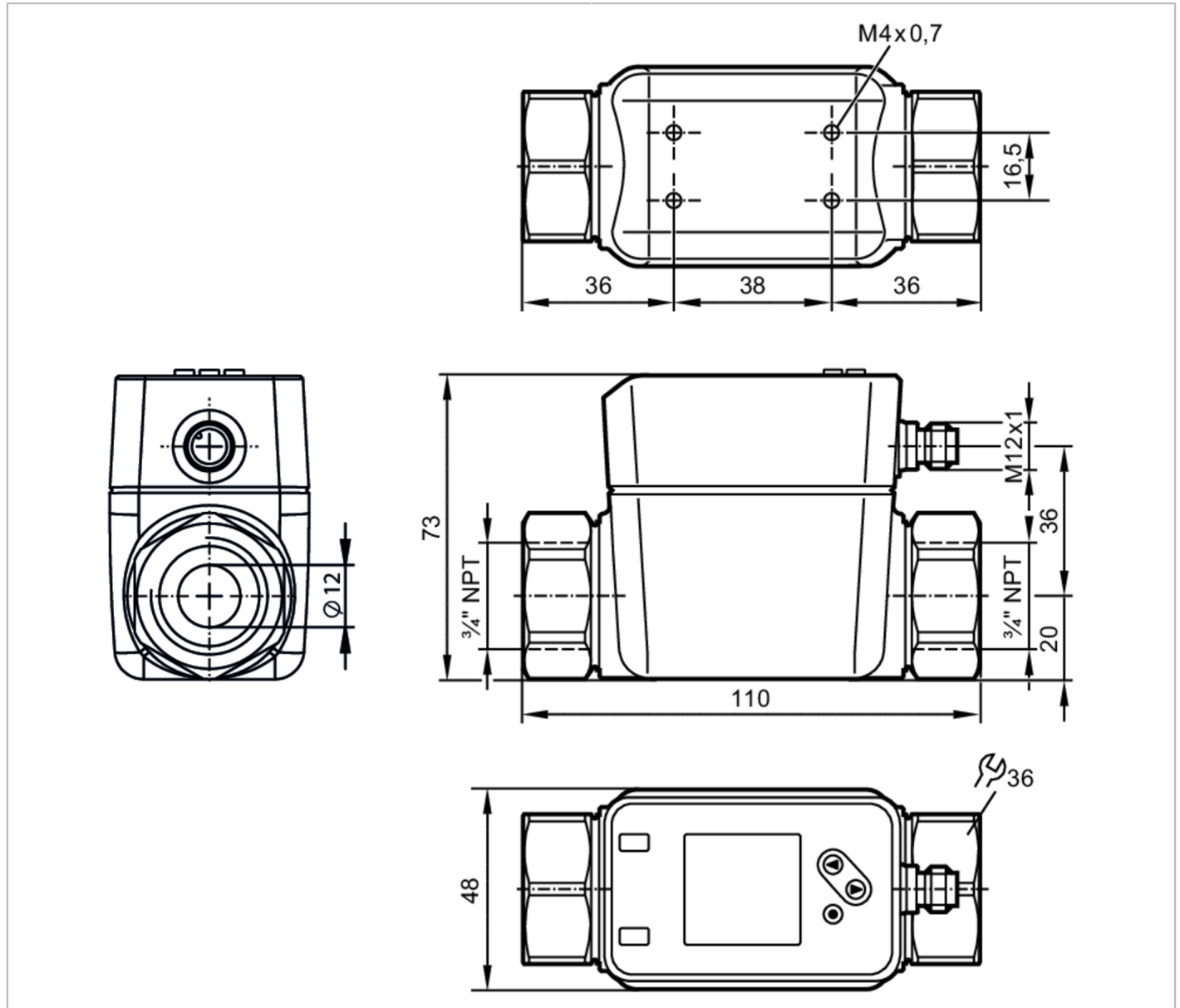


Magnetic-inductive flow meter

SMN34XGXFRKG/US-100

Alternative articles: SM7601

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Process connection	threaded connection 3/4" NPT Internal thread DN20			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°F]	-4...194

SM7621



Magnetic-inductive flow meter

SMN34XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.1...75 l/min	0.006...4.5 m ³ /h	1.2...1190 gph	0.02...19.82 gpm
Display range	-90...90 l/min	-5.4...5.4 m ³ /h	-1426.8...1426.8 gph	-23.78...23.78 gpm
Resolution	0.1 l/min	0.006 m ³ /h	0.6 gph	0.01 gpm
Set point SP	0.5...75 l/min	0.03...4.5 m ³ /h	8.4...1189 gph	0.14...19.81 gpm
Reset point rP	0.1...74.6 l/min	0.006...4.48 m ³ /h	1.2...1183 gph	0.03...19.71 gpm
Analog start point ASP	0...59.9 l/min	0...3.6 m ³ /h	0...950 gph	0...15.82 gpm
Analog end point AEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Low flow cut-off LFC	0.1...3.8 l/min	0.006...0.23 m ³ /h	1.8...59.4 gph	0.03...0.99 gpm
Frequency end point, FEP	15.1...75 l/min	0.9...4.5 m ³ /h	240...1189 gph	3.99...19.81 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.003...2			
Pulse value	0.01...99990000 l			

SM7621



Magnetic-inductive flow meter

SMN34XGXFRKG/US-100

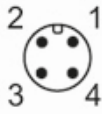
Temperature monitoring		
Measuring range	[°F]	-4...194
Display range	[°F]	-43.6...233.6
Resolution	[°F]	0.1
Set point SP	[°F]	-3.3...194
Reset point rP	[°F]	-4...193.3
Analog start point	[°F]	-4...154.4
Analog end point	[°F]	35.6...194
In steps of	[°F]	0.1
Accuracy / deviations		
Flow monitoring		
Accuracy (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
Interfaces		
Communication interface		IO-Link
Transmission type		COM2 (38,4 kBaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode		yes
Required master port class		A
Process data analog		3
Process data binary		2
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	958
Operating conditions		
Ambient temperature	[°F]	-4...140
Storage temperature	[°F]	-13...176
Protection		IP 65; IP 67

SM7621



Magnetic-inductive flow meter

SMN34XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
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]		848.9
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
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	
Process connection	threaded connection 3/4" NPT Internal thread DN20	
Displays / operating elements		
Display		Color 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		
		

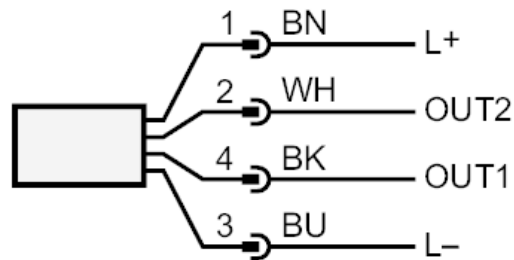
SM7621



Magnetic-inductive flow meter

SMN34XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

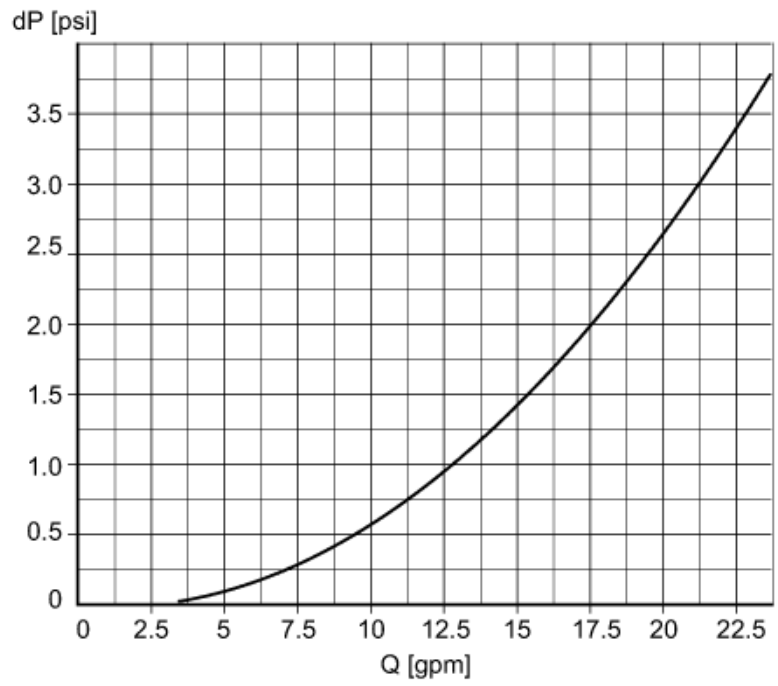
SM7621



Magnetic-inductive flow meter

SMN34XGXFRKG/US-100

Diagrams and graphs



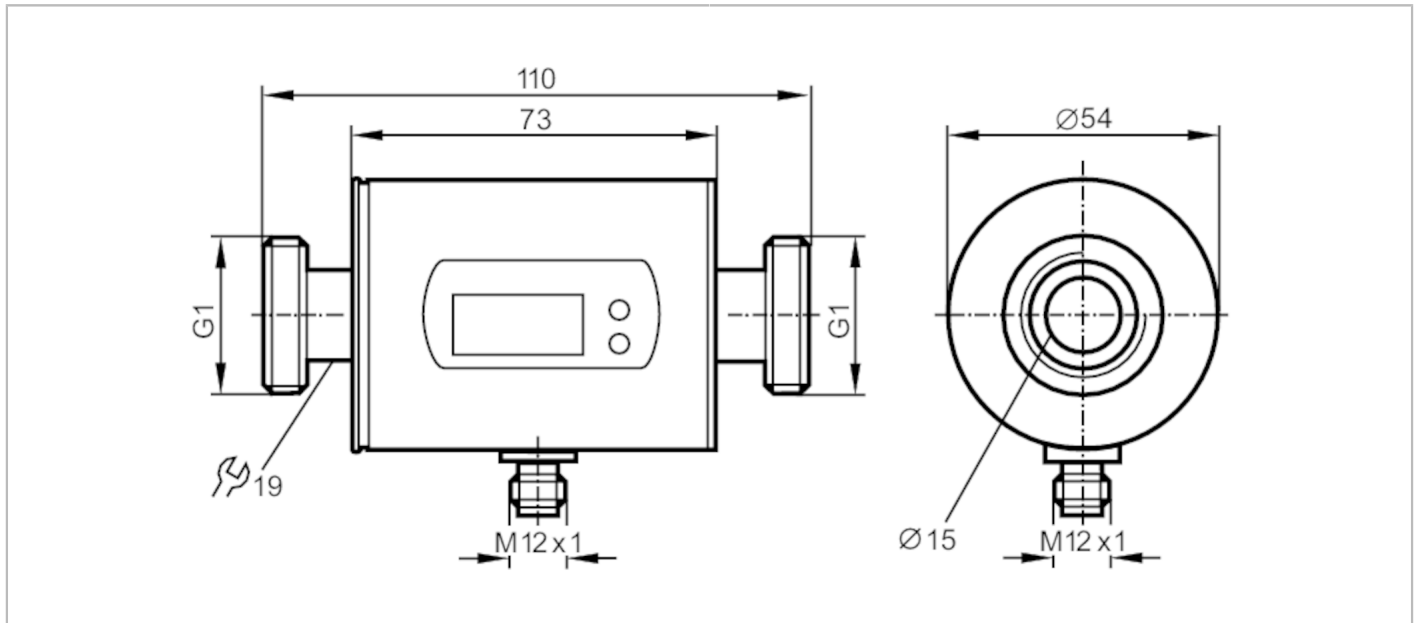
Pressure loss / volumetric flow quantity

SM8000



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.2...100 l/min	0.01...6 m ³ /h
Process connection	threaded connection G 1 external thread DN25 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM8000



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.2...100 l/min	0.01...6 m ³ /h
Display range	-120...120 l/min	-7.2...7.2 m ³ /h
Resolution	0.1 l/min	0.005 m ³ /h
Set point SP	0.7...100 l/min	0.04...6 m ³ /h
Reset point rP	0.2...99.5 l/min	0.01...5.97 m ³ /h
Analog start point ASP	0...80 l/min	0...4.8 m ³ /h
Analog end point AEP	20...100 l/min	1.2...6 m ³ /h
In steps of	0.1 l/min	0.005 m ³ /h
Volumetric flow quantity monitoring		
Pulse value	0.00001...100 000 m ³	
Pulse length [s]	0,0025...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM8000



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	575
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	002MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 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]	145

SM8000



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	577
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 1 external thread DN25 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



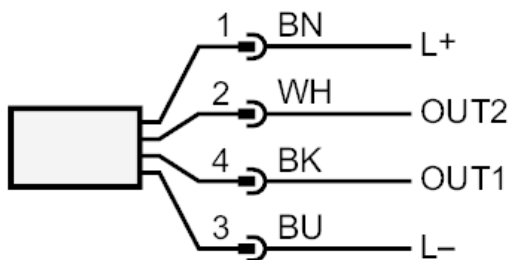
SM8000



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Connection



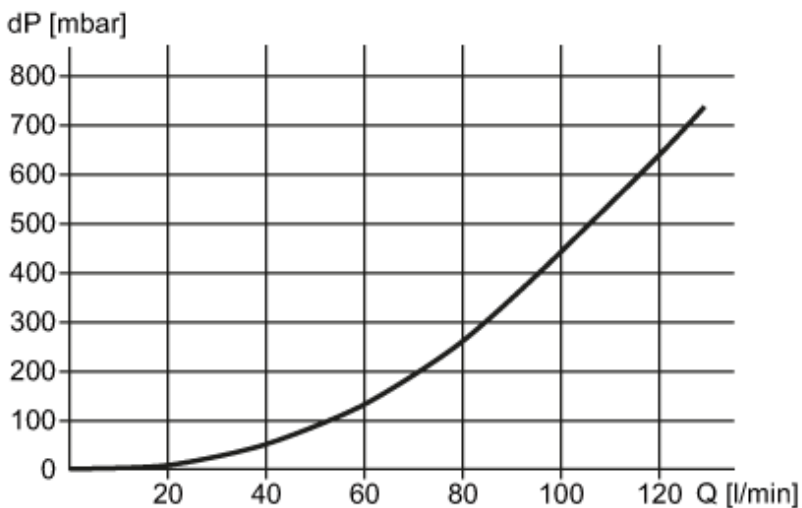
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss

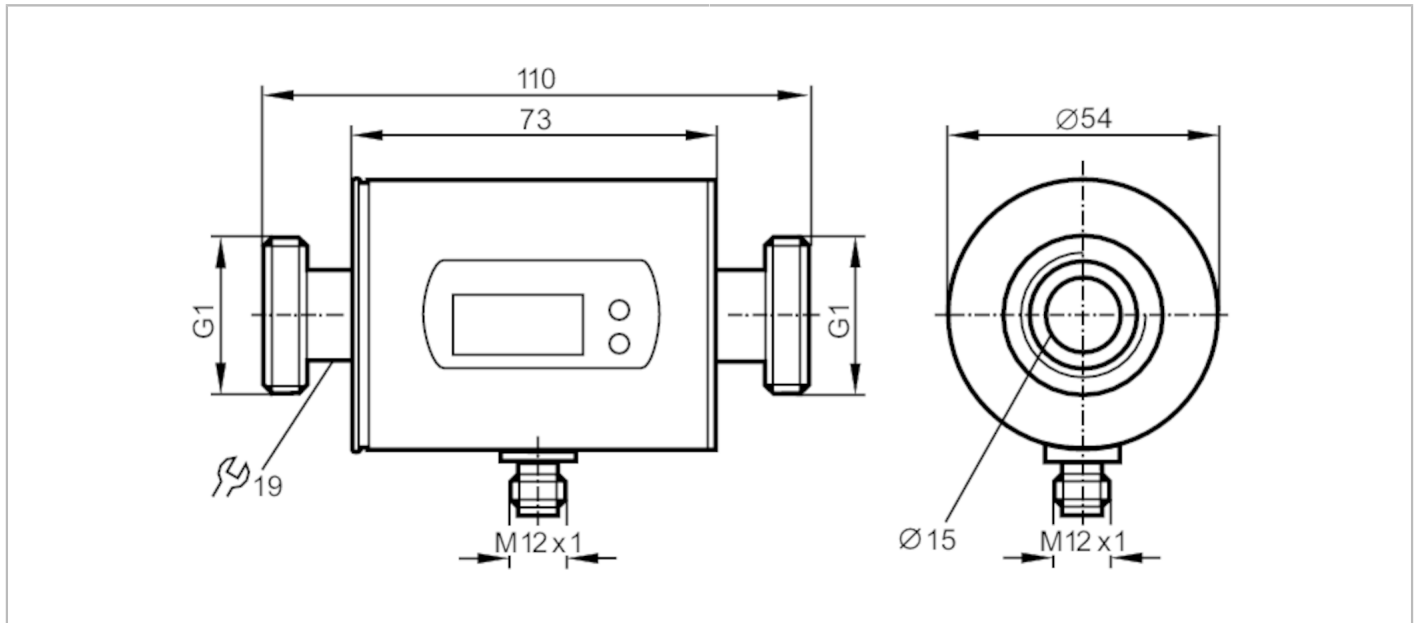
Q volumetric flow quantity

SM8001



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1		
Measuring range	6...1584 gph	0.1...26.4 gpm	
Process connection	threaded connection G 1 external thread DN25 flat seal		

Application

System	gold-plated contacts		
Application	Totalizer function; for industrial applications		
Installation	connection to pipe by means of an adapter		
Media	Conductive liquids; water; water-based media		
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)		
Medium temperature [°F]	14...158		
Pressure rating	16 bar	232 psi	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa	

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)		
Current consumption [mA]	95; (24 V)		
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 analog outputs: 1		
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Inputs

Inputs	counter reset		
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SM8001



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	6...1584 gph	0.1...26.4 gpm
Display range	-1902...1902 gph	-31.7...31.7 gpm
Resolution	2 gph	0.05 gpm
Set point SP	14...1586 gph	0.25...26.4 gpm
Reset point rP	6...1578 gph	0.1...26.25 gpm
Analog start point ASP	0...1272 gph	0...21.2 gpm
Analog end point AEP	312...1586 gph	5.2...26.4 gpm
In steps of	2 gph	0.05 gpm
Volumetric flow quantity monitoring		
Pulse value	0.01...100 000 000 gal	
Pulse length [s]	0,0025...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Resolution [°F]	0.5	
Set point SP [°F]	-2.5...176	
Reset point rP [°F]	-3.5...175	
Analog start point [°F]	-4...140.5	
Analog end point [°F]	31.5...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

SM8001



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,26 gpm)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 0,26 gpm)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	576
Operating conditions		
Ambient temperature	[°F]	14...140
Storage temperature	[°F]	-13...176
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	26
Housing	tubular	
Dimensions	[mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE	

SM8001



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection G 1 external thread DN25 flat seal

Displays / operating elements		
Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

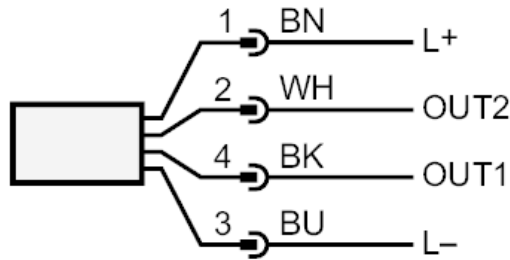
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset
Core colors :
- BK = black
BN = brown
BU = blue
WH = white

SM8001

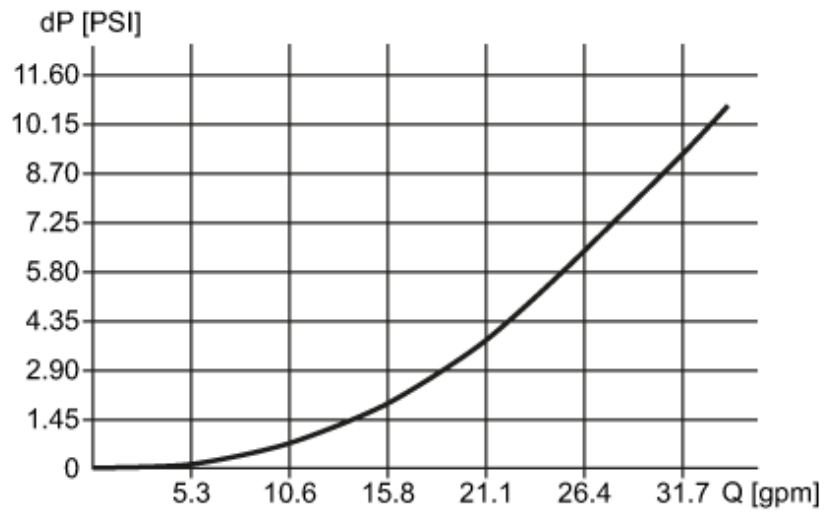


Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

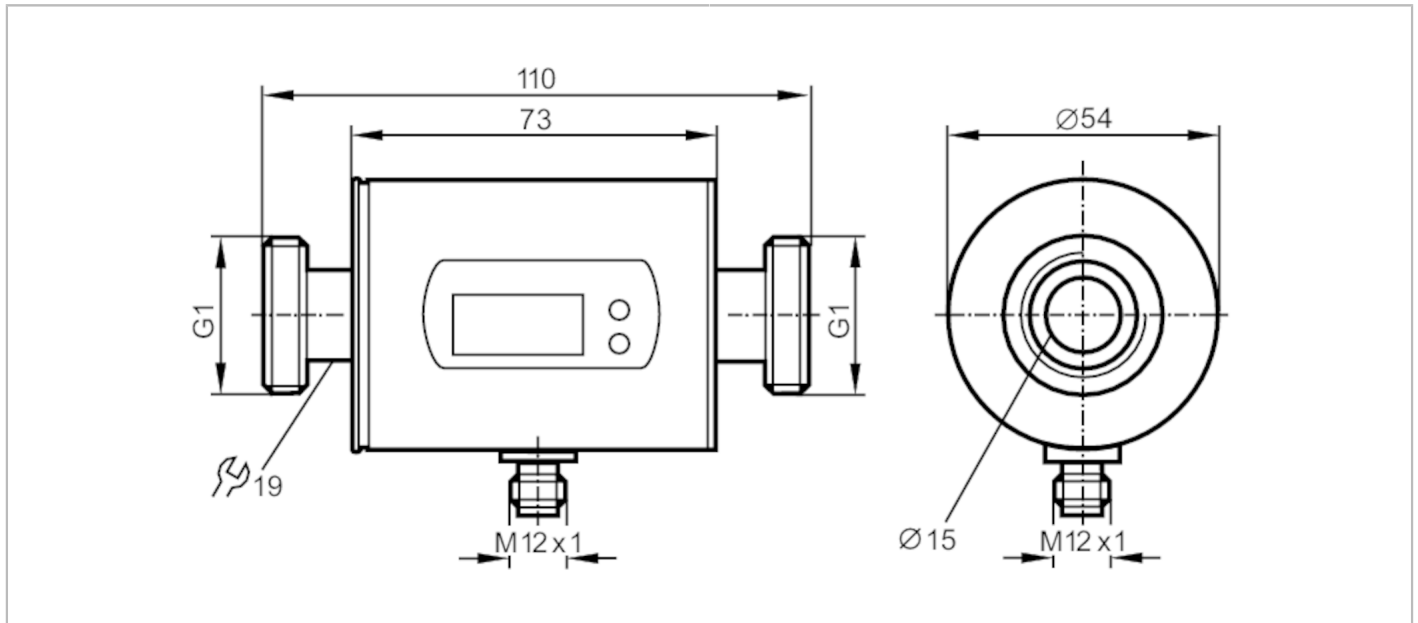
Q volumetric flow quantity

SM8004



Magnetic-inductive flow meter

SMR11GGX50KG/US100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.2...100 l/min	0.1...26.4 gpm
Process connection	threaded connection G 1 external thread DN25 flat seal	

Application

System	gold-plated contacts	
Application	for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
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Outputs

Total number of outputs	2	
Output signal	analog signal	

SM8004



Magnetic-inductive flow meter

SMR11GGX50KG/US100

Number of analog outputs		2
Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.2...100 l/min	0.1...26.4 gpm
Display range	-120...120 l/min	-31.7...31.7 gpm
Resolution	0.1 l/min	0.05 gpm
Analog start point ASP	0...80 l/min	0...21.1 gpm
Analog end point AEP	20...100 l/min	5.3...26.4 gpm
In steps of	0.1 l/min	0.05 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (2 % MW + 0,5 % MEW)
Repeatability		± 0,2% MEW

Temperature monitoring

Accuracy	[K]	± 2,5 (Q > 1 l/min)
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Reaction times

Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
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Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	009MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 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]	175

SM8004



Magnetic-inductive flow meter

SMR11GGX50KG/US100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	576.9
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection G 1 external thread DN25 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit
Display unit		l/min; m³/h; gpm; gph; °C; °F

Remarks

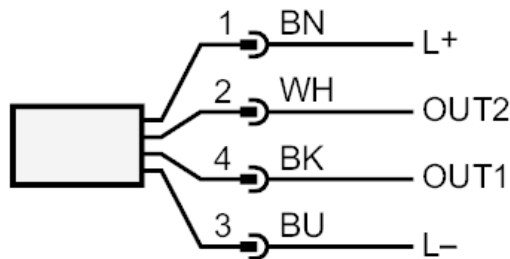
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: Colors to DIN EN 60947-5-2
 analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :

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

SM8004

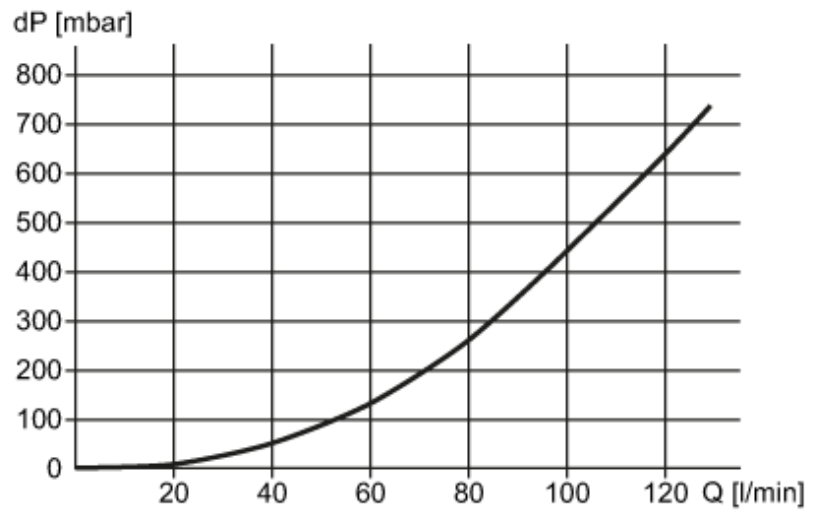


Magnetic-inductive flow meter

SMR11GGX50KG/US100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM8020

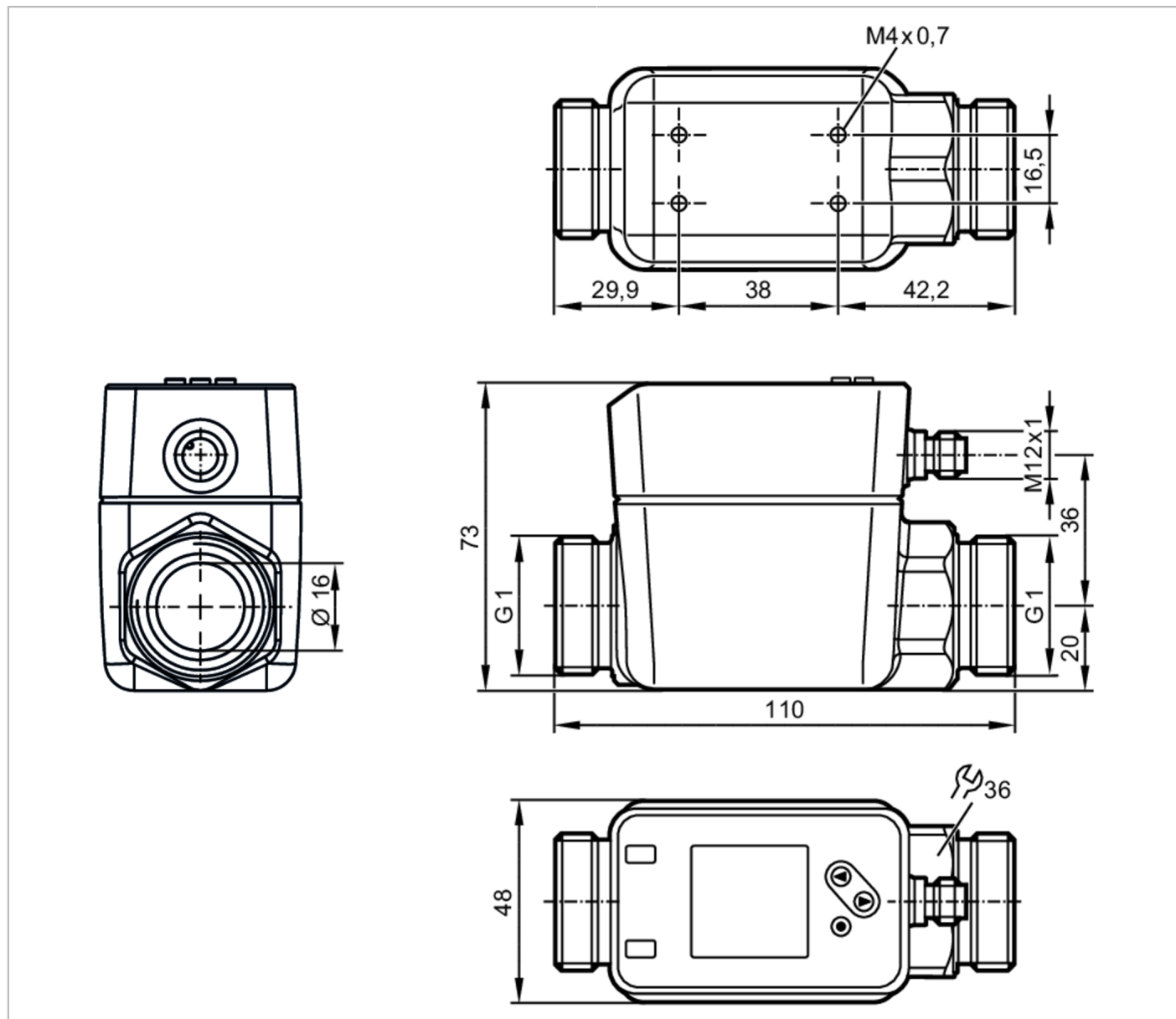


Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Alternative articles: SM8000

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.2...150 l/min	0.012...9 m ³ /h	3.6...2376 gph	0.06...39.6 gpm
Process connection	threaded connection G 1 external thread DN25 flat seal			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM8020



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.2...150 l/min	0.012...9 m ³ /h	3.6...2376 gph	0.06...39.6 gpm
Display range	-180...180 l/min	-10.8...10.8 m ³ /h	-2853.6...2853.6 gph	-47.56...47.56 gpm
Resolution	0.1 l/min	0.006 m ³ /h	0.6 gph	0.01 gpm
Set point SP	1...150 l/min	0.06...9 m ³ /h	16.2...2376 gph	0.27...39.6 gpm
Reset point rP	0.2...149.2 l/min	0.012...8.95 m ³ /h	3.6...1903 gph	0.06...39.42 gpm
Analog start point ASP	0...120 l/min	0...7.2 m ³ /h	0...1903 gph	0...31.71 gpm
Analog end point AEP	30...150 l/min	1.8...9 m ³ /h	475...2376 gph	7.92...39.6 gpm
Low flow cut-off LFC	0.2...7.5 l/min	0.012...0.45 m ³ /h	3...118.4 gph	0.05...1.98 gpm
Frequency end point, FEP	30.2...150 l/min	1.8...9 m ³ /h	480...2376 gph	8...39.6 gpm
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			

SM8020



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
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	

SM8020



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	$\pm 1,0$ % FS
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	9 m ³ /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]		782
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; PEEK; carbon fiber PEEK	
Process connection	threaded connection G 1 external thread DN25 flat seal	

Displays / operating elements		
Display		Color 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



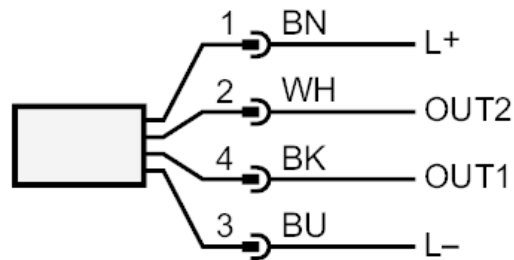
SM8020



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

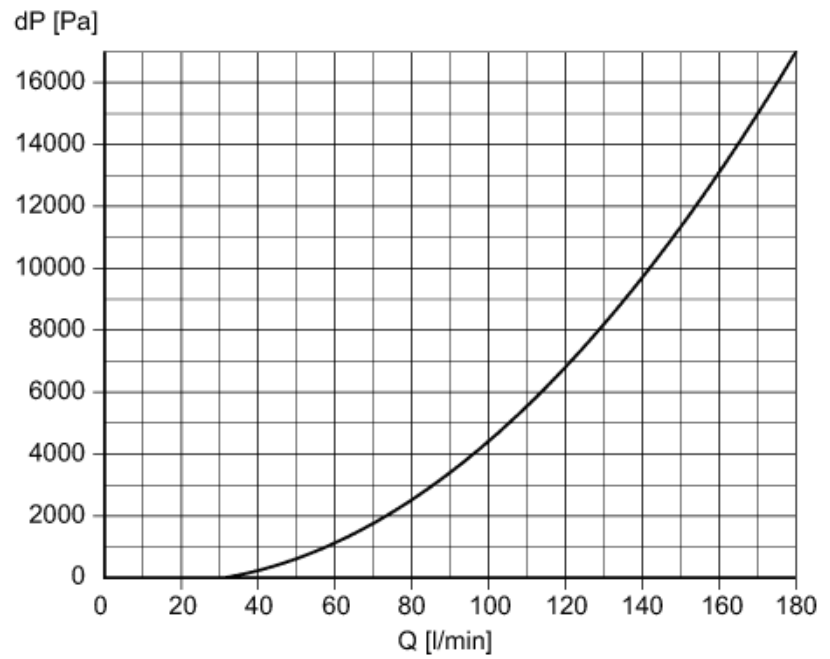
SM8020



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Diagrams and graphs



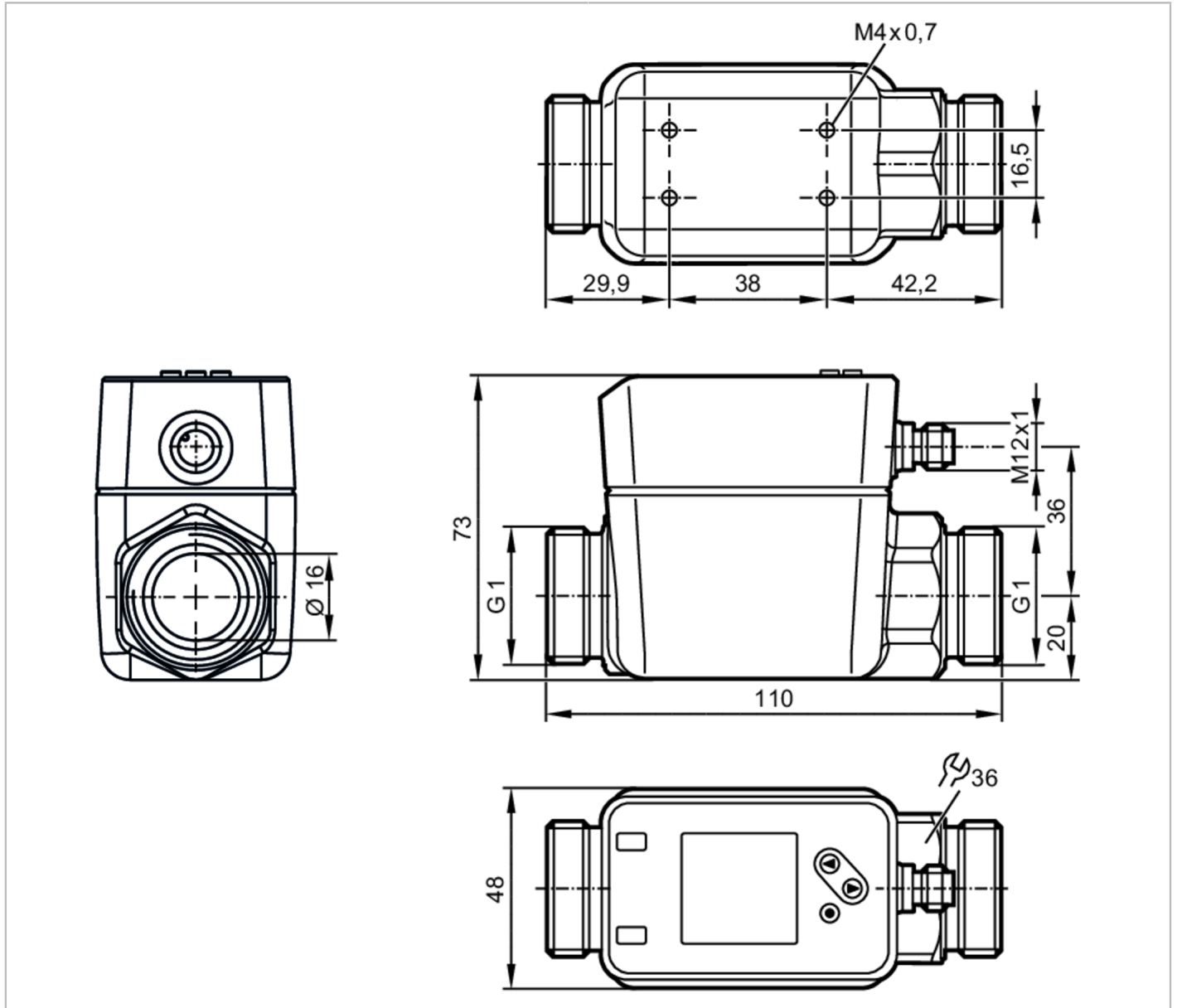
Pressure loss / volumetric flow quantity

SM8030



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range [l/min]	0.2...250
Process connection	threaded connection G 1 external thread DN25 flat seal

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90
Pressure rating	16 bar 1.6 MPa

SM8030



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

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
Measuring principle		magnetic-inductive
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 [l/min]		0.2...250
Display range [l/min]		-300...300
Resolution [l/min]		0.1
Set point SP [l/min]		1.6...250
Reset point rP [l/min]		0.3...248.7
Analog start point ASP [l/min]		0...199.9
Analog end point AEP [l/min]		50.1...250
Low flow cut-off LFC [l/min]		0.2...12.5
Frequency end point, FEP [l/min]		50.1...250
Frequency at the end point FRP [Hz]		1...10000
Volumetric flow quantity monitoring		
Pulse length [s]		0.002...2
Pulse value		0.01...99990000.00 l

SM8030



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

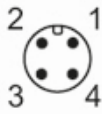
Temperature monitoring		
Measuring range	[°C]	-20...90
Display range	[°C]	-42...112
Resolution	[°C]	0.1
Set point SP	[°C]	-19.6...90
Reset point rP	[°C]	-20...89.6
Analog start point	[°C]	-20...68
Analog end point	[°C]	2...90
In steps of	[°C]	0.1
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	1303
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM8030



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	772.2	
Housing	rectangular	
Dimensions [mm]	110 x 48 x 73	
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; PEEK; carbon fiber PEEK	
Process connection	threaded connection G 1 external thread DN25 flat seal	
Displays / operating elements		
Display	Color 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		
		

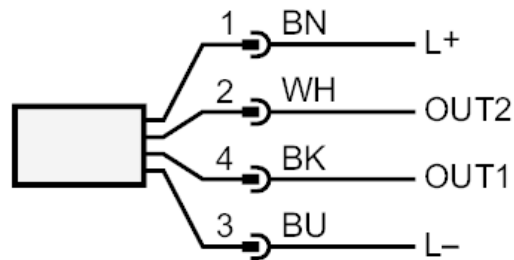
SM8030



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

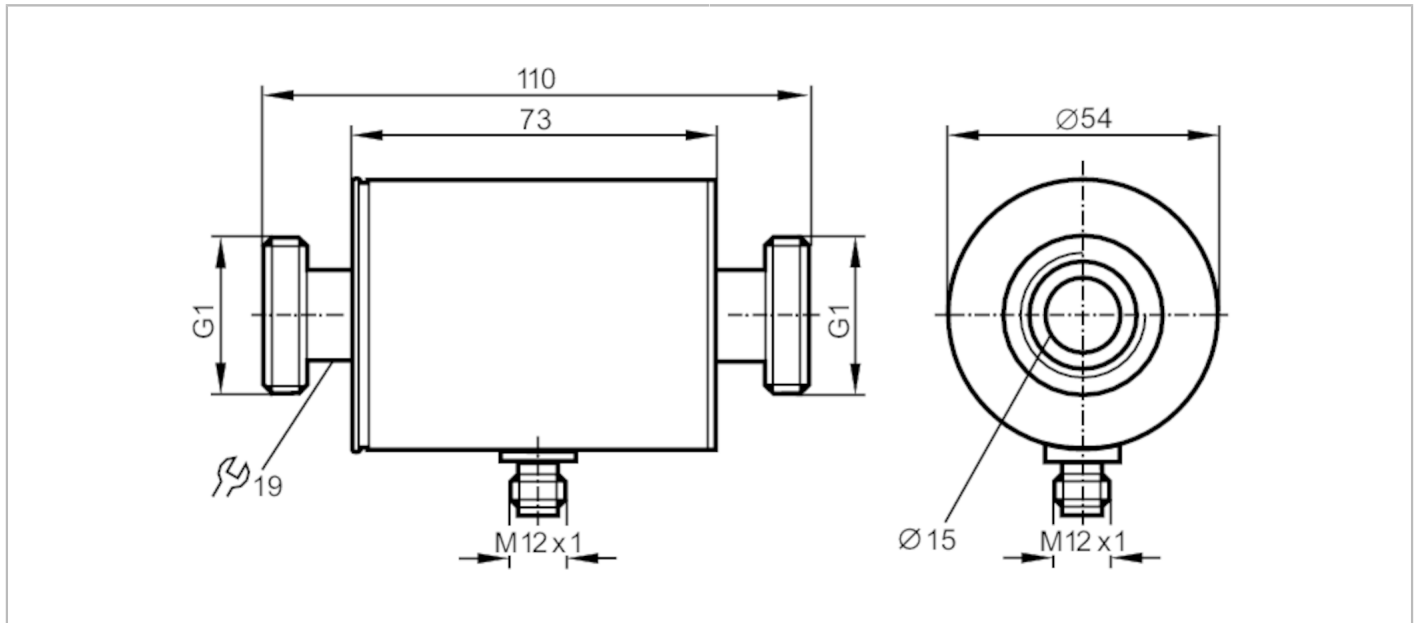
Diagrams and graphs

SM8050



Magnetic-inductive flow meter

SMR11GGX10KG/US



Product characteristics

Number of inputs and outputs	Number of analog outputs: 1
Measuring range [l/min]	0.2...100
Process connection	threaded connection G 1 external thread DN25 flat seal

Application

System	gold-plated contacts
Application	for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-10...70
Pressure rating	16 bar 1.6 MPa
MAWP (for applications according to CRN)	10.4 bar 1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	95; (24 V)
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 analog outputs: 1
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Outputs

Total number of outputs	1
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SM8050



Magnetic-inductive flow meter

SMR11GGX10KG/US

Output signal	analog signal; IO-Link; (configurable)	
Permanent current rating of switching output DC [mA]		250
Number of analog outputs		1
Analog current output [mA]		4...20
Max. load [Ω]		500
Overload protection		yes

Measuring/setting range

Measuring range [l/min]	0.2...100
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Accuracy / deviations

Flow monitoring	
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)
Repeatability	± 0,2% MEW

Reaction times

Flow monitoring	
Response time [s]	0.15; (dAP = 0, T19)

Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	2	
Min. process cycle time [ms]	5	
Supported DeviceIDs	Type of operation	DeviceID
	default	577

Operating conditions

Ambient temperature [°C]	-10...60
Storage temperature [°C]	-25...80
Protection	IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
CPA approval	model number	002MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 m³/h
Shock resistance	DIN IEC 68-2-27 20 g (11 ms)	

SM8050



Magnetic-inductive flow meter

SMR11GGX10KG/US

Vibration resistance	DIN IEC 68-2-6	5 g (10...2000 Hz)
MTTF [years]		167
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]		575
Housing		tubular
Dimensions [mm]		Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection G 1 external thread DN25 flat seal

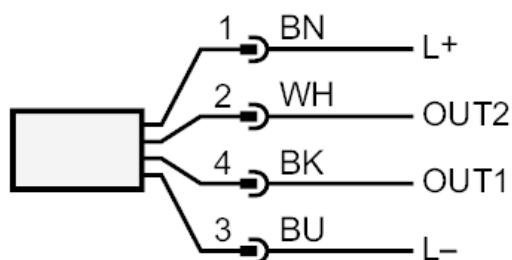
Remarks		
Remarks		MW = Measured value MEW = Final value of the measuring range
Pack quantity		1 pcs.

Electrical connection

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



Connection



Colors to DIN EN 60947-5-2
 OUT1: IO-Link
 OUT2: analog output
 Core colors :
 BN = brown
 WH = white
 BK = black
 BU = blue

SM8050

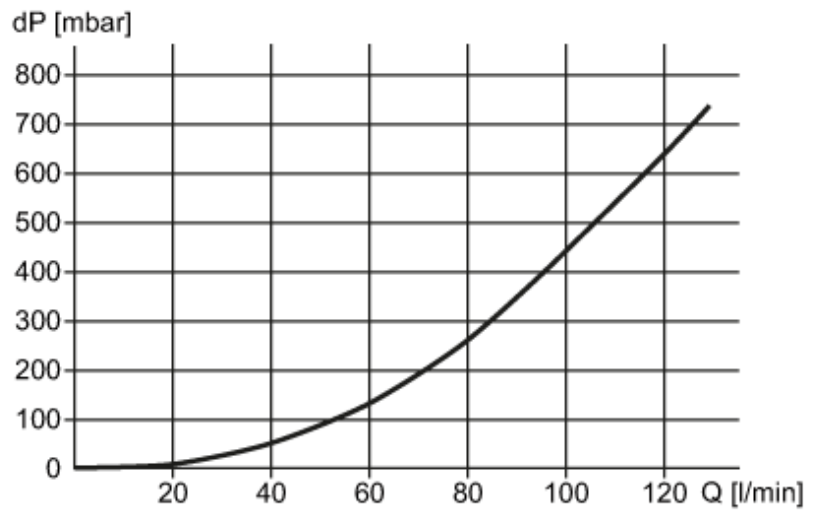


Magnetic-inductive flow meter

SMR11GGX10KG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

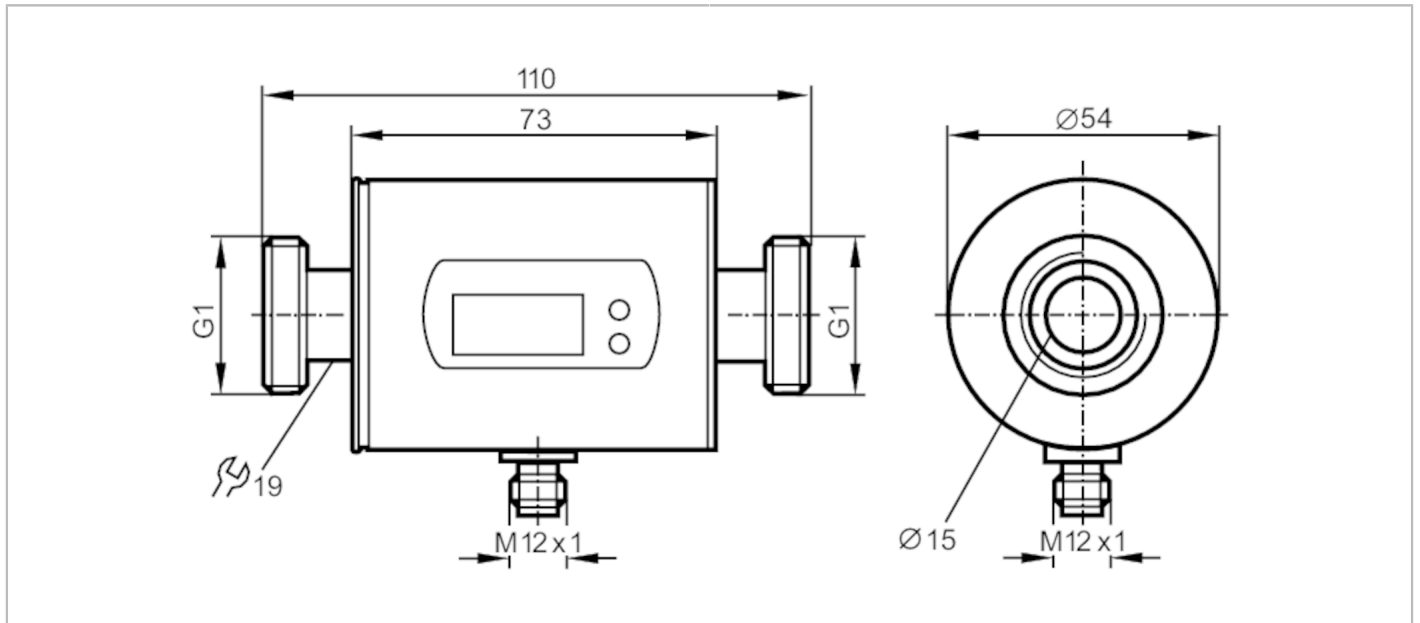
Q volumetric flow quantity

SM8100



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100



ACS CE PA CRN cUL^{us} LISTED DNV DNV.COM/AF IO-Link KTW/W270 Reg31 UK CA

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.2...100 l/min	0.01...6 m ³ /h
Process connection	threaded connection G 1 external thread DN25 flat seal	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Installation	connection to pipe by means of an adapter	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM8100



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.2...100 l/min	0.01...6 m³/h
Display range	-120...120 l/min	-7.2...7.2 m³/h
Resolution	0.1 l/min	0.005 m³/h
Set point SP	0.7...100 l/min	0.04...6 m³/h
Reset point rP	0.2...99.5 l/min	0.01...5.97 m³/h
Analog start point ASP	0...80 l/min	0...4.8 m³/h
Analog end point AEP	20...100 l/min	1.2...6 m³/h
In steps of	0.1 l/min	0.005 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.00001...100 000 m³	
Pulse length [s]	0,0025...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM8100



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	575
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	002MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 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]	145

SM8100



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight [g]	640
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection	threaded connection G 1 external thread DN25 flat seal

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



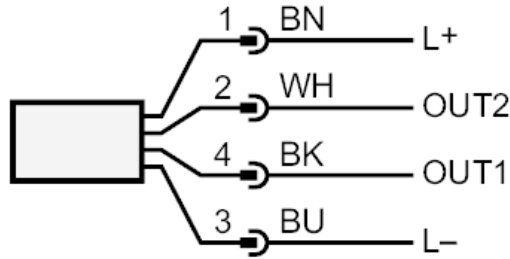
SM8100



Magnetic-inductive flow meter

SMR11GGXFRKG/US-100

Connection



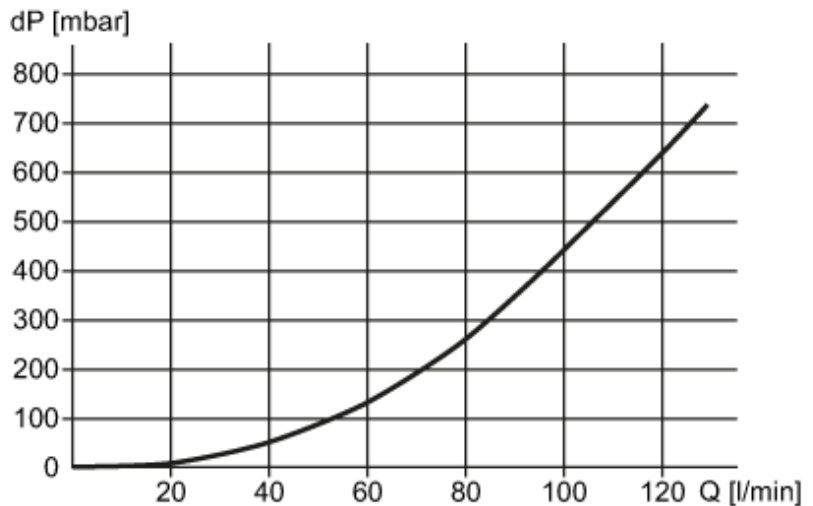
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM8120



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.2...150 l/min	0.012...9 m ³ /h	3.6...2376 gph	0.06...39.6 gpm
Display range	-180...180 l/min	-10.8...10.8 m ³ /h	-2853.6...2853.6 gph	-47.56...47.56 gpm
Resolution	0.1 l/min	0.006 m ³ /h	0.6 gph	0.01 gpm
Set point SP	1...150 l/min	0.06...9 m ³ /h	16.2...2376 gph	0.27...39.6 gpm
Reset point rP	0.2...149.2 l/min	0.012...8.95 m ³ /h	3.6...1903 gph	0.06...39.42 gpm
Analog start point ASP	0...120 l/min	0...7.2 m ³ /h	0...1903 gph	0...31.71 gpm
Analog end point AEP	30...150 l/min	1.8...9 m ³ /h	475...2376 gph	7.92...39.6 gpm
Low flow cut-off LFC	0.2...7.5 l/min	0.012...0.45 m ³ /h	3...118.4 gph	0.05...1.98 gpm
Frequency end point, FEP	30.2...150 l/min	1.8...9 m ³ /h	480...2376 gph	8...39.6 gpm
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			

SM8120



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
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	

SM8120



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	9 m ³ /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]		787.5
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; PEEK; EPDM; carbon fiber PEEK	
Process connection	threaded connection G 1 external thread DN25 flat seal	

Displays / operating elements		
Display		Color 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



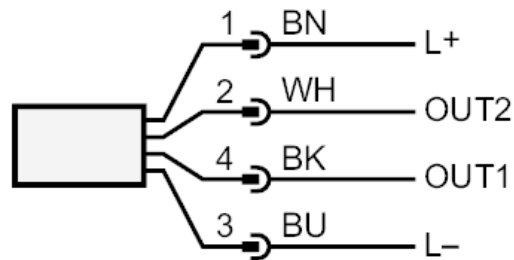
SM8120



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

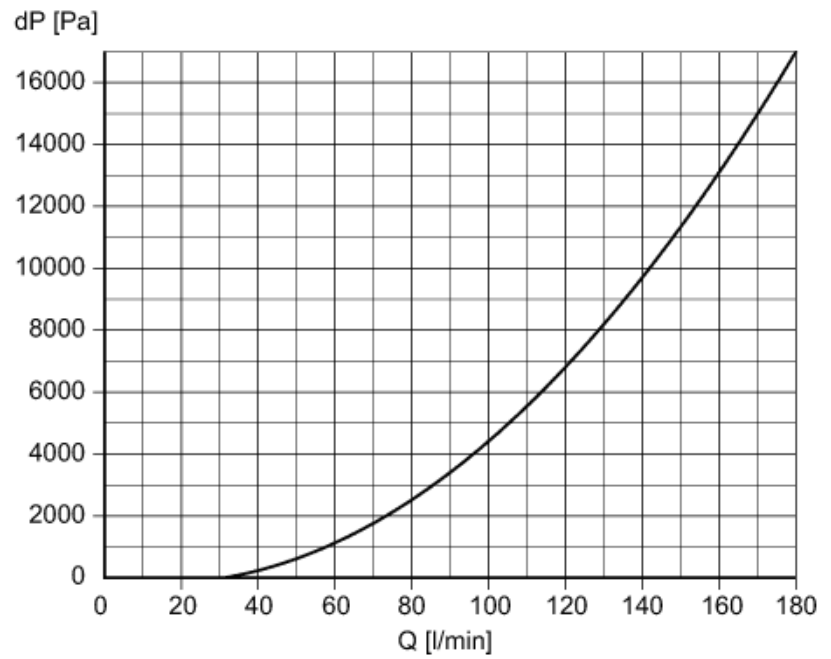
SM8120

Magnetic-inductive flow meter

SMR11XGXFRKG/US-100



Diagrams and graphs



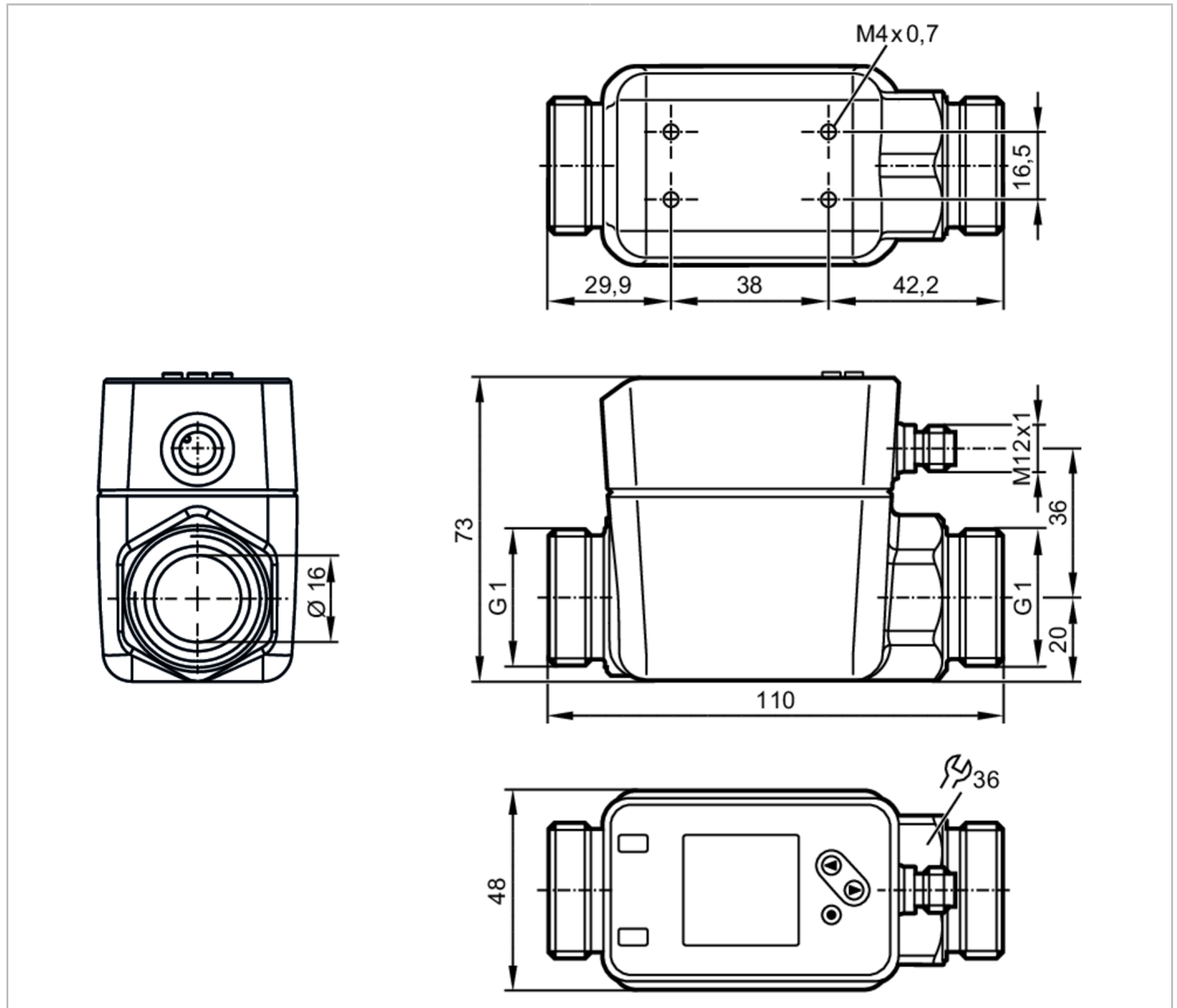
Pressure loss / volumetric flow quantity

SM8130



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100



ACS CE cUL^{us} LISTED IO-Link Reg31 UK PD

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range [l/min]	0.2...250
Process connection	threaded connection G 1 external thread DN25 flat seal

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90
Pressure rating	16 bar 1.6 MPa

SM8130



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

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
Measuring principle		magnetic-inductive
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	[l/min]	0.2...250
Display range	[l/min]	-300...300
Resolution	[l/min]	0.1
Set point SP	[l/min]	1.6...250
Reset point rP	[l/min]	0.3...248.7
Analog start point ASP	[l/min]	0...199.9
Analog end point AEP	[l/min]	50.1...250
Low flow cut-off LFC	[l/min]	0.2...12.5
Frequency end point, FEP	[l/min]	50.1...250
Frequency at the end point FRP	[Hz]	1...10000
Volumetric flow quantity monitoring		
Pulse length	[s]	0.002...2
Pulse value		0.01...99990000.00 l

SM8130



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100


Temperature monitoring		
Measuring range	[°C]	-20...90
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)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	1303
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM8130



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	771.5	
Housing	rectangular	
Dimensions [mm]	110 x 48 x 73	
Material	stainless steel (1.4408/316); stainless steel (1.4404 / 316L); PC; PBT+PC-GF30	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; PEEK; EPDM; carbon fiber PEEK	
Process connection	threaded connection G 1 external thread DN25 flat seal	
Displays / operating elements		
Display	Color 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		
		

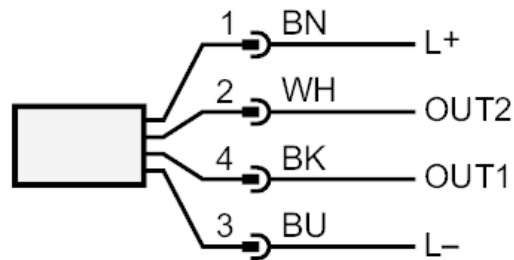
SM8130



Magnetic-inductive flow meter

SMR11XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

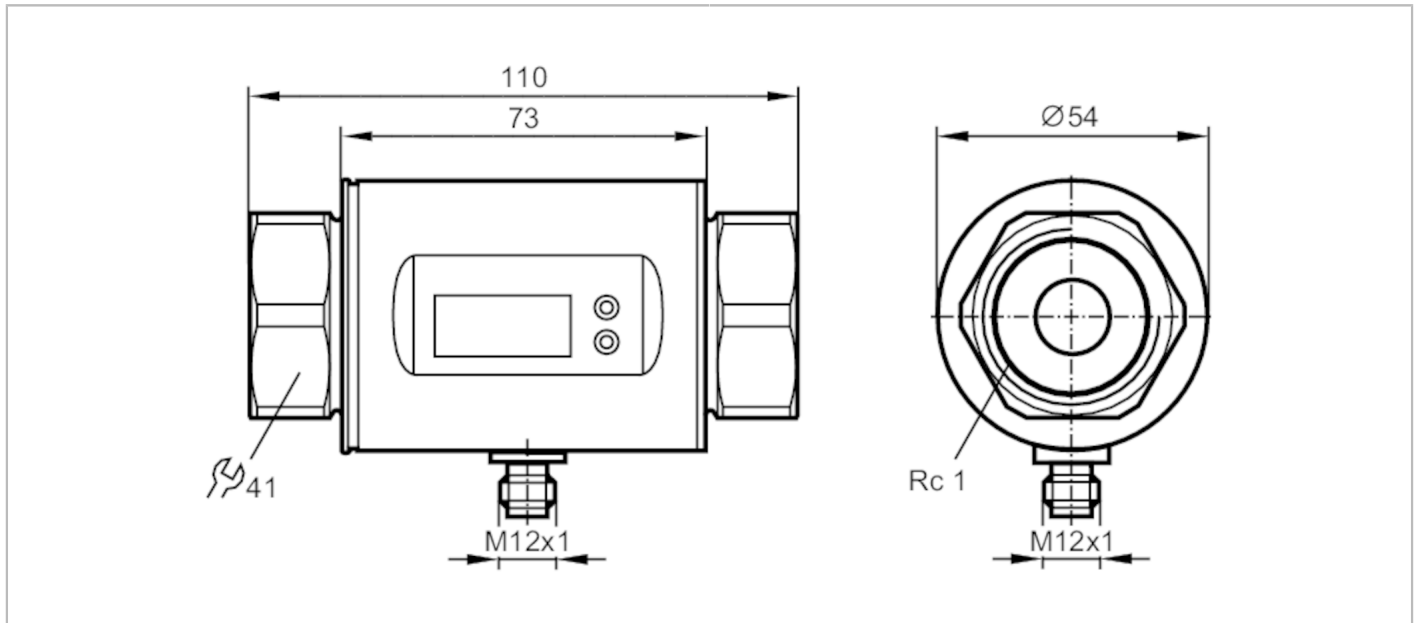
Diagrams and graphs

SM8400



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.2...100 l/min	0.01...6 m ³ /h
Process connection	threaded connection Rc 1 Internal thread DN25	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S}/\text{cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM8400



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	0.2...100 l/min	0.01...6 m³/h
Display range	-120...120 l/min	-7.2...7.2 m³/h
Resolution	0.1 l/min	0.005 m³/h
Set point SP	0.7...100 l/min	0.04...6 m³/h
Reset point rP	0.2...99.5 l/min	0.01...5.97 m³/h
Analog start point ASP	0...80 l/min	0...4.8 m³/h
Analog end point AEP	20...100 l/min	1.2...6 m³/h
In steps of	0.1 l/min	0.005 m³/h
Volumetric flow quantity monitoring		
Pulse value	0.00001...100 000 m³	
Pulse length [s]	0,0025...2	
Temperature monitoring		
Measuring range [°C]	-20...80	
Resolution [°C]	0.2	
Set point SP [°C]	-19.2...80	
Reset point rP [°C]	-19.6...79.6	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	

SM8400



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	575
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	002MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 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]	145
UL approval	UL approval number	I010

SM8400



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	673.5
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection Rc 1 Internal thread DN25

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



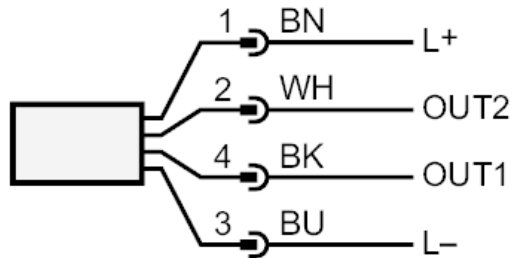
SM8400



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Connection



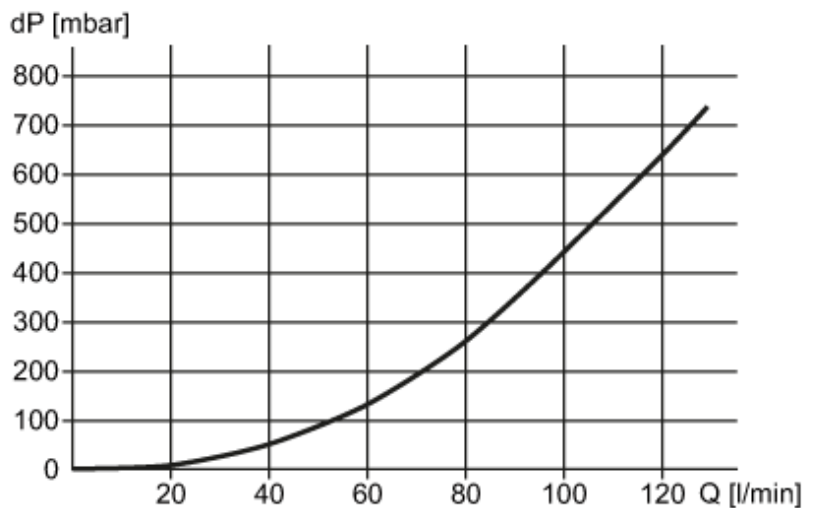
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



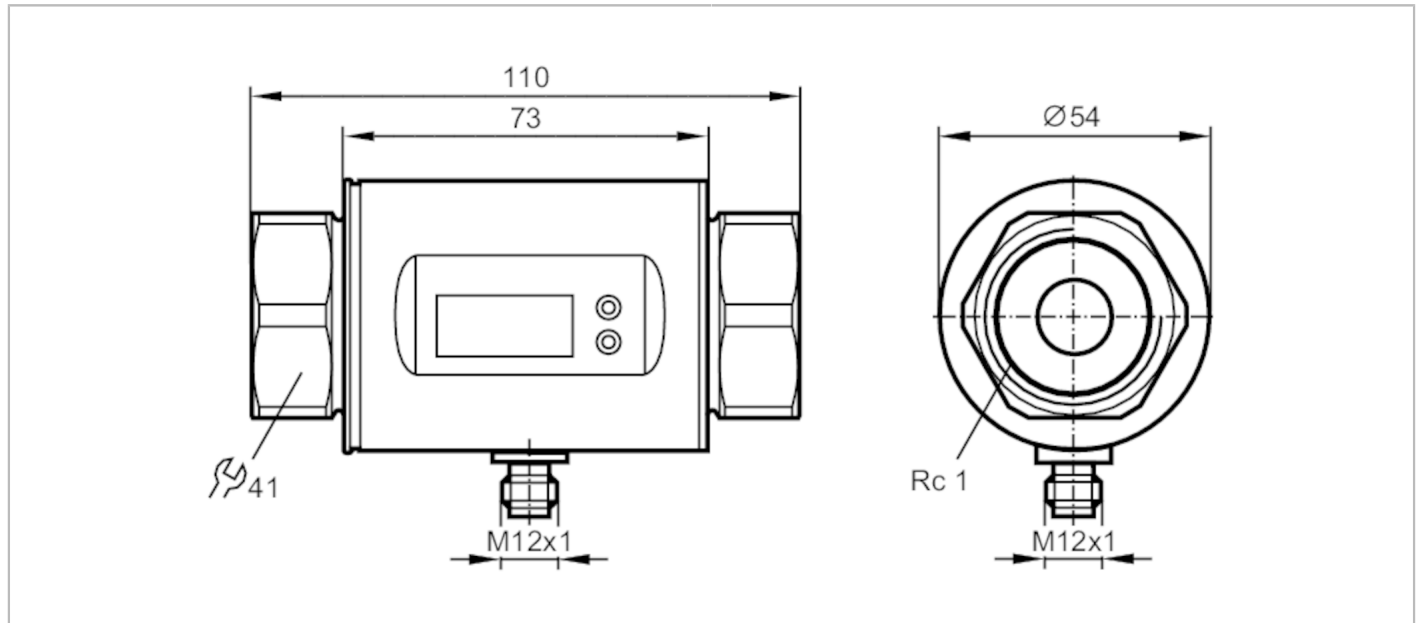
dP Pressure loss
Q volumetric flow quantity

SM8404



Magnetic-inductive flow meter

SMK11GGX50KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.2...100 l/min	0.1...26.4 gpm
Process connection	threaded connection Rc 1 Internal thread DN25	

Application

System	gold-plated contacts	
Application	for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
------------------------------	-----------------------------	--

Outputs

Total number of outputs	2	
Output signal	analog signal	
Number of analog outputs	2	

SM8404



Magnetic-inductive flow meter

SMK11GGX50KG/US-100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.2...100 l/min	0.1...26.4 gpm
Display range	-120...120 l/min	-31.7...31.7 gpm
Resolution	0.1 l/min	0.05 gpm
Analog start point ASP	0...80 l/min	0...21.1 gpm
Analog end point AEP	20...100 l/min	5.3...26.4 gpm
In steps of	0.1 l/min	0.05 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		± (2 % MW + 0,5 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 1 l/min)

Reaction times

Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)

Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 V withstand voltage (V DC)
CPA approval	model number	009MI
	accuracy class	-
	maximum allowable error	± 2,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 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]	175
UL approval	UL approval number	I011

SM8404



Magnetic-inductive flow meter

SMK11GGX50KG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	645
Housing		tubular
Dimensions	[mm]	Ø 54 / L = 110
Material		stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)		stainless steel (1.4404 / 316L); PEEK; FKM
Process connection		threaded connection Rc 1 Internal thread DN25

Displays / operating elements

Display	Display unit	6 x LED, green (l/min, m ³ /h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

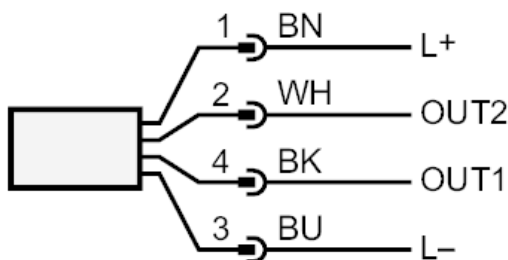
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: Colors to DIN EN 60947-5-2
 analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM8404

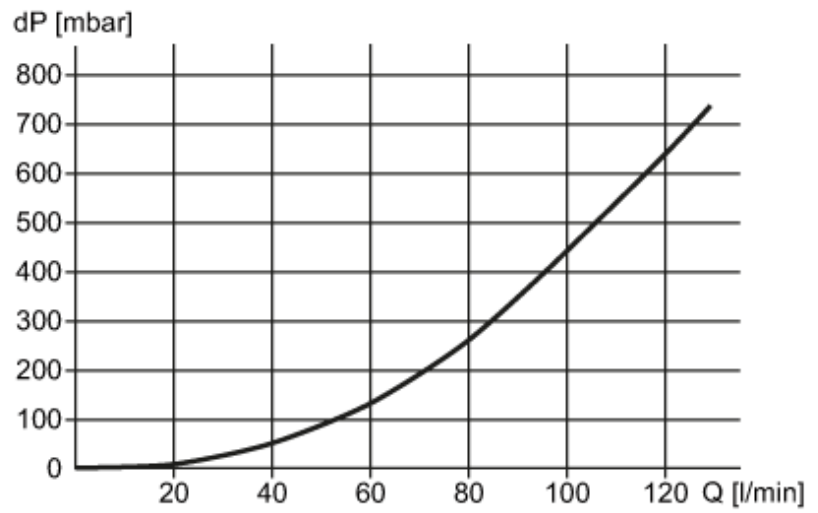


Magnetic-inductive flow meter

SMK11GGX50KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM8420

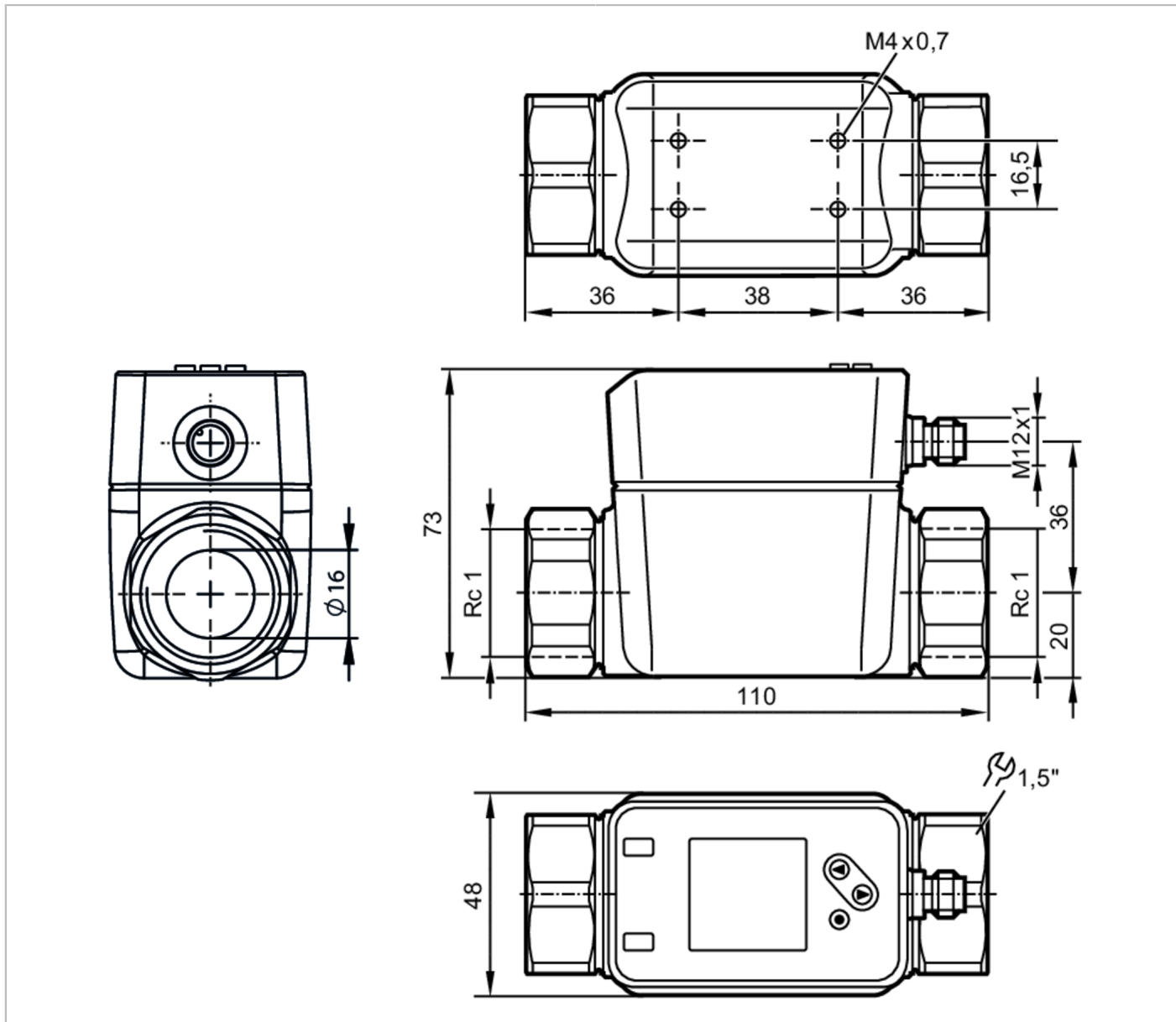


Magnetic-inductive flow meter

SMK11XGXFRKG/US-100

Alternative articles: SM8601

When selecting an alternative article and accessories please note that technical data may differ!



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.2...150 l/min	0.012...9 m ³ /h	3.6...2378 gph	0.06...39.6 gpm
Process connection	threaded connection Rc 1 Internal thread DN25			

Application

System	gold-plated contacts
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)
Medium temperature [°C]	-20...90

SM8420



Magnetic-inductive flow meter

SMK11XGXFRKG/US-100

Pressure rating	16 bar	1.6 MPa		
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			
Measuring principle	magnetic-inductive			
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	0.2...150 l/min	0.012...9 m³/h	3.6...2378 gph	0.06...39.6 gpm
Display range	-180...180 l/min	-10.8...10.8 m³/h	-2853.6...2853.6 gph	-47.56...47.56 gpm
Resolution	0.1 l/min	0.006 m³/h	0.6 gph	0.01 gpm
Set point SP	1...150 l/min	0.06...9 m³/h	16.2...2376 gph	0.27...39.6 gpm
Reset point rP	0.2...149.2 l/min	0.012...8.95 m³/h	3.6...1903 gph	0.06...39.42 gpm
Analog start point ASP	0...120 l/min	0...7.2 m³/h	0...1903 gph	0...31.71 gpm
Analog end point AEP	30...150 l/min	1.8...9 m³/h	475...2376 gph	7.92...39.6 gpm
Low flow cut-off LFC	0.2...7.5 l/min	0.012...0.45 m³/h	3...118.4 gph	0.05...1.98 gpm
Frequency end point, FEP	30.2...150 l/min	1.8...9 m³/h	480...2376 gph	8...39.6 gpm
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			

SM8420



Magnetic-inductive flow meter

SMK11XGXFRKG/US-100

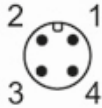
Temperature monitoring		
Measuring range	[°C]	-20...90
Display range	[°C]	-42...112
Resolution	[°C]	0.1
Set point SP	[°C]	-19.6...90
Reset point rP	[°C]	-20...89.6
Analog start point	[°C]	-20...68
Analog end point	[°C]	2...90
In steps of	[°C]	0.1
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (0,8 % MW + 0,2 % MEW)
Repeatability		± 0,2 % MEW
Temperature monitoring		
Accuracy	[K]	± 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	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	966
Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection	IP 65; IP 67	

SM8420



Magnetic-inductive flow meter

SMK11XGXFRKG/US-100

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	006MI
	accuracy class	-
	maximum allowable error	± 1,0 % FS
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	9 m ³ /h
	Shock resistance	DIN IEC 68-2-27
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]		775.3
Housing		rectangular
Dimensions [mm]		110 x 48 x 73
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	
Process connection	threaded connection Rc 1 Internal thread DN25	
Displays / operating elements		
Display		Color 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		
		

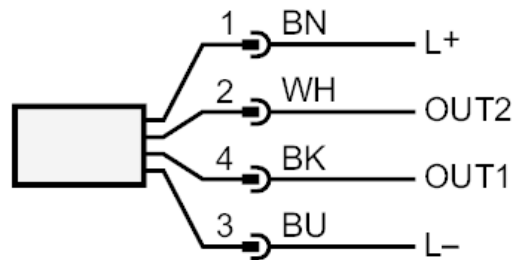
SM8420



Magnetic-inductive flow meter

SMK11XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

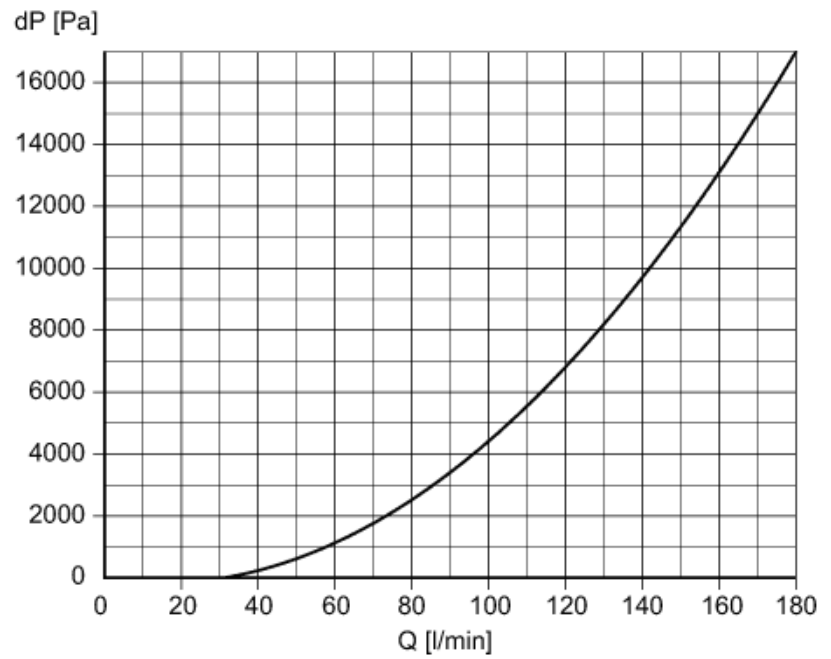
SM8420

Magnetic-inductive flow meter

SMK11XGXFRKG/US-100



Diagrams and graphs



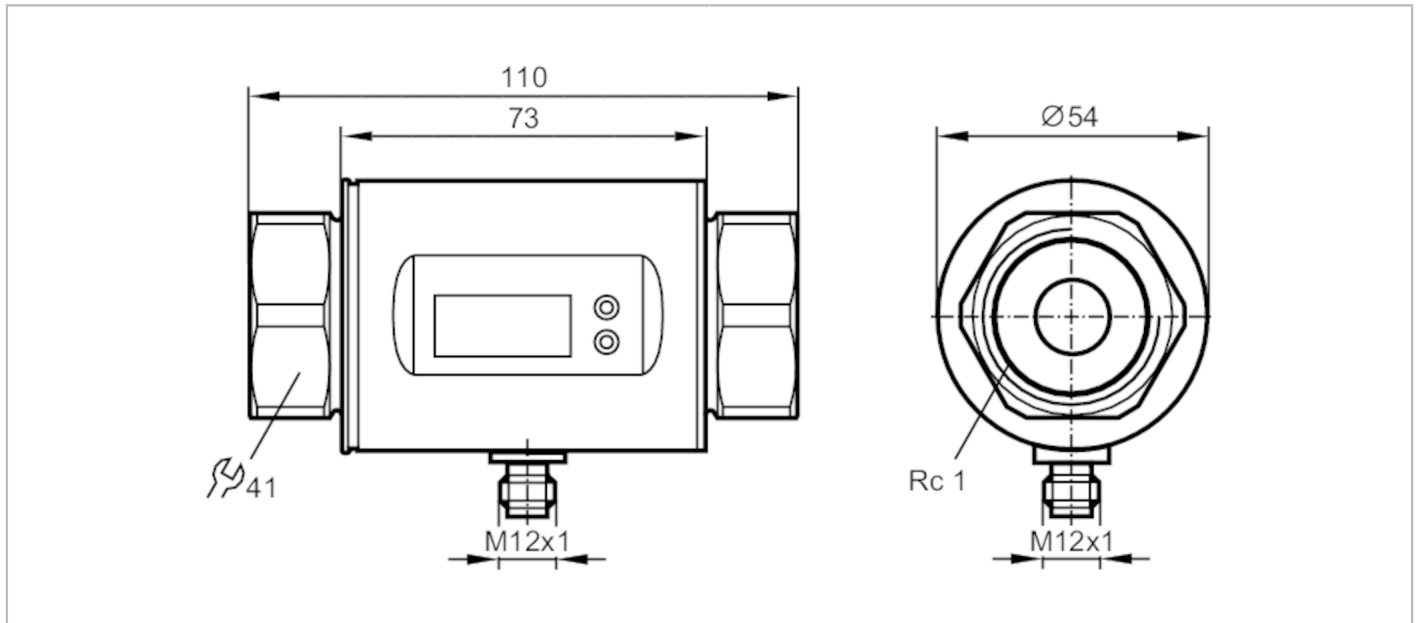
Pressure loss / volumetric flow quantity

SM8500



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	0.2...100 l/min	0.01...6 m ³ /h
Process connection	threaded connection Rc 1 Internal thread DN25	

Application

System	gold-plated contacts	
Application	Totalizer function; for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)	
Current consumption [mA]	95; (24 V)	
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 analog outputs: 1	
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Inputs

Inputs	counter reset	
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SM8500



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Outputs		
Total number of outputs		2
Output signal		switching signal; analog signal; pulse signal; IO-Link; (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]	200
Number of analog outputs		1
Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Analog 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		yes (non-latching)
Overload protection		yes
Measuring/setting range		
Measuring range	0.2...100 l/min	0.01...6 m³/h
Display range	-120...120 l/min	-7.2...7.2 m³/h
Resolution	0.1 l/min	0.005 m³/h
Set point SP	0.7...100 l/min	0.04...6 m³/h
Reset point rP	0.2...99.5 l/min	0.01...5.97 m³/h
Analog start point ASP	0...80 l/min	0...4.8 m³/h
Analog end point AEP	20...100 l/min	1.2...6 m³/h
In steps of	0.1 l/min	0.005 m³/h
Volumetric flow quantity monitoring		
Pulse value		0.00001...100 000 m³
Pulse length	[s]	0,0025...2
Temperature monitoring		
Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Set point SP	[°C]	-19.2...80
Reset point rP	[°C]	-19.6...79.6
Analog start point	[°C]	-20...60
Analog 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)
Repeatability		± 0,2% MEW

SM8500



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 5 l/min)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 5 l/min)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	575
Operating conditions		
Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	002MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,01 m³/h
	Q (t)	-
	Q (max)	6 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]	145
UL approval	UL approval number	I010

SM8500



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Pressure equipment directive sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data	
Weight [g]	674.5
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; EPDM
Process connection	threaded connection Rc 1 Internal thread DN25

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m ³ /h, l, m ³ , 10 ³ , °C)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

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



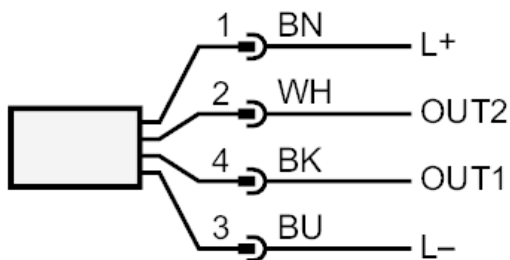
SM8500



Magnetic-inductive flow meter

SMK11GGXFRKG/US-100

Connection



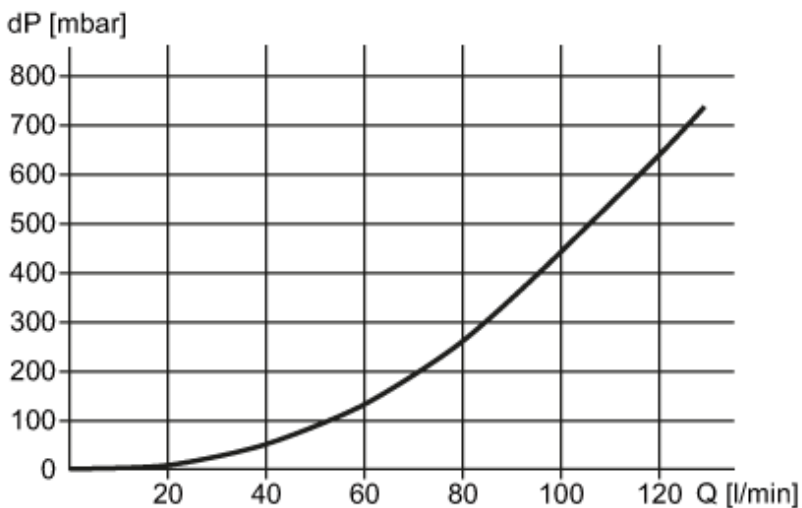
OUT1: Colors to DIN EN 60947-5-2
Switching output Volumetric flow quantity monitoring
Pulse output quantity meter
signal output Preset counter
IO-Link

OUT2: Switching output Volumetric flow quantity monitoring
Switching output Temperature monitoring
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :
BK = black
BN = brown
BU = blue
WH = white

Diagrams and graphs

Pressure loss



dP Pressure loss
Q volumetric flow quantity

SM8601



Magnetic-inductive flow meter

SMN11GGXFRKG/US-100

Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; pulse signal; IO-Link; (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]	200	
Number of analog outputs	1	
Analog current output [mA]	4...20; (scalable)	
Max. load [Ω]	500	
Analog 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	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Measuring range	6...1584 gph	0.1...26.4 gpm
Display range	-1902...1902 gph	-31.7...31.7 gpm
Resolution	2 gph	0.05 gpm
Set point SP	14...1586 gph	0.25...26.4 gpm
Reset point rP	6...1578 gph	0.1...26.25 gpm
Analog start point ASP	0...1272 gph	0...21.2 gpm
Analog end point AEP	312...1586 gph	5.2...26.4 gpm
In steps of	2 gph	0.05 gpm
Volumetric flow quantity monitoring		
Pulse value	0.01...100 000 000 gal	
Pulse length [s]	0,0025...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Resolution [°F]	0.5	
Set point SP [°F]	-2.5...176	
Reset point rP [°F]	-3.5...175	
Analog start point [°F]	-4...140.5	
Analog end point [°F]	31.5...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	

SM8601



Magnetic-inductive flow meter

SMN11GGXFRKG/US-100

Temperature monitoring		
Accuracy	[K]	± 2,5 (Q > 0,26 gpm)
Reaction times		
Flow monitoring		
Response time	[s]	0.15; (dAP = 0, T19)
Delay time programmable dS, dr	[s]	0...50
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	T09 = 20 (Q > 0,26 gpm)
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/pulse output; Start-up delay; display can be deactivated; Display unit	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	5
Supported DeviceIDs	Type of operation	DeviceID
	default	576
Operating conditions		
Ambient temperature	[°F]	14...140
Storage temperature	[°F]	-13...176
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 60947-5-9	
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]	145
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	698.5
Housing	tubular	
Dimensions	[mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE	

SM8601



Magnetic-inductive flow meter

SMN11GGXFRKG/US-100

Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection 1" NPT Internal thread DN25

Displays / operating elements

Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Remarks

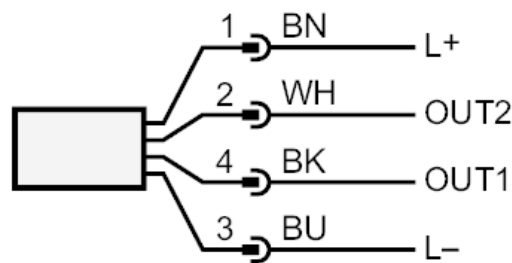
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



- OUT1: Colors to DIN EN 60947-5-2
 Switching output Volumetric flow quantity monitoring
 Pulse output quantity meter
 signal output Preset counter
 IO-Link
- OUT2: Switching output Volumetric flow quantity monitoring
 Switching output Temperature monitoring
 analog output Volumetric flow quantity monitoring
 analog output Temperature monitoring
 Input counter reset
 Core colors :
- BK = black
 BN = brown
 BU = blue
 WH = white

SM8601

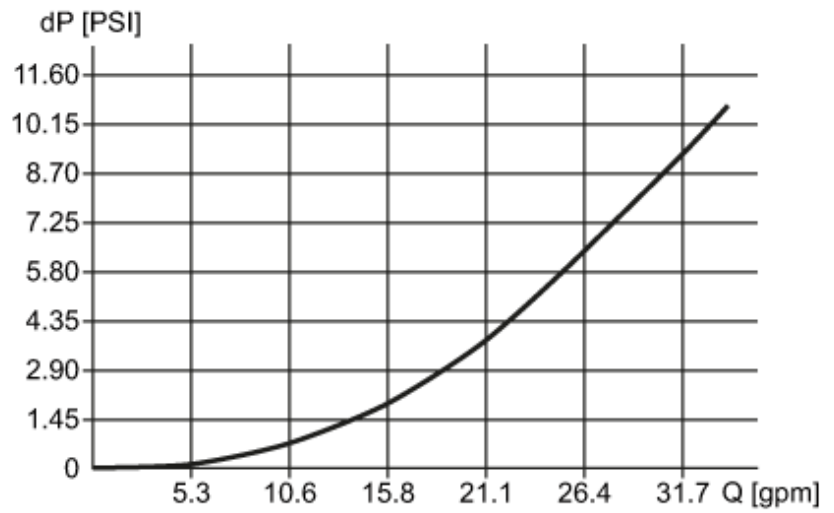


Magnetic-inductive flow meter

SMN11GGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

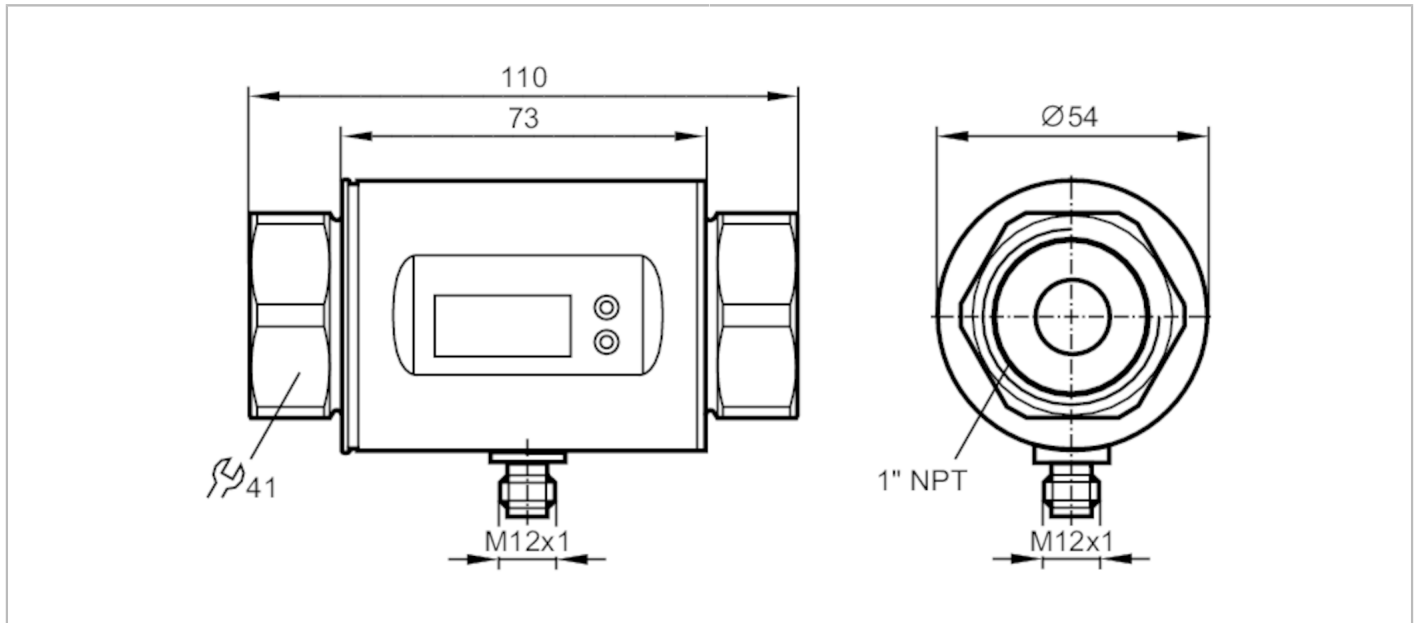
Q volumetric flow quantity

SM8604



Magnetic-inductive flow meter

SMN11GGX50KG/US-100



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2	
Measuring range	0.2...100 l/min	0.1...26.4 gpm
Process connection	threaded connection 1" NPT Internal thread DN25	

Application

System	gold-plated contacts	
Application	for industrial applications	
Media	Conductive liquids; water; water-based media	
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°C]	-10...70	
Pressure rating	16 bar	1.6 MPa
MAWP (for applications according to CRN)	10.4 bar	1.04 MPa

Electrical data

Operating voltage [V]	20...30 DC; (to SELV/PELV)	
Current consumption [mA]	120; (24 V)	
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 analog outputs: 2	
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Outputs

Total number of outputs	2	
Output signal	analog signal	
Number of analog outputs	2	

SM8604



Magnetic-inductive flow meter

SMN11GGX50KG/US-100

Analog current output	[mA]	4...20; (scalable)
Max. load	[Ω]	500
Overload protection		yes

Measuring/setting range

Measuring range	0.2...100 l/min	0.1...26.4 gpm
Display range	-120...120 l/min	-31.7...31.7 gpm
Resolution	0.1 l/min	0.05 gpm
Analog start point ASP	0...80 l/min	0...21.1 gpm
Analog end point AEP	20...100 l/min	5.3...26.4 gpm
In steps of	0.1 l/min	0.05 gpm

Temperature monitoring

Measuring range	[°C]	-20...80
Resolution	[°C]	0.2
Analog start point	[°C]	-20...60
Analog end point	[°C]	0...80
In steps of	[°C]	0.2

Accuracy / deviations

Flow monitoring

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

Temperature monitoring

Accuracy	[K]	$\pm 2,5 (Q > 1 \text{ l/min})$
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Reaction times

Flow monitoring

Response time	[s]	0.15; (dAP = 0, T19)
Damping process value dAP	[s]	0...3

Temperature monitoring

Dynamic response T05 / T09	[s]	T09 = 20 (Q > 1 l/min)
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Operating conditions

Ambient temperature	[°C]	-10...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	500 withstand voltage (V DC)
CPA approval	model number	009MI
	accuracy class	-
	maximum allowable error	$\pm 2,5 \% FS$
	Q (min)	0,01 m ³ /h
	Q (t)	-
	Q (max)	6 m ³ /h
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]	175
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

SM8604



Magnetic-inductive flow meter

SMN11GGX50KG/US-100

Mechanical data	
Weight [g]	636.2
Housing	tubular
Dimensions [mm]	Ø 54 / L = 110
Material	stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE
Materials (wetted parts)	stainless steel (1.4404 / 316L); PEEK; FKM
Process connection	threaded connection 1" NPT Internal thread DN25

Displays / operating elements		
Display	Display unit	6 x LED, green (l/min, m³/h, gpm, gph, °C, °F)
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit
Display unit	l/min; m³/h; gpm; gph; °C; °F	

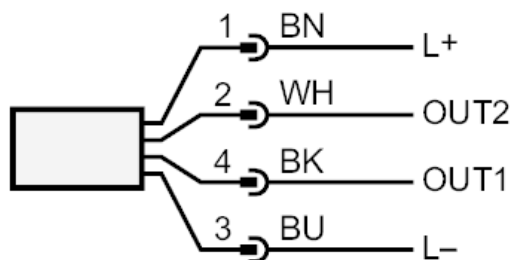
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
 OUT2: analog output Volumetric flow quantity monitoring
 Core colors :
 BK = black
 BN = brown
 BU = blue
 WH = white

SM8604

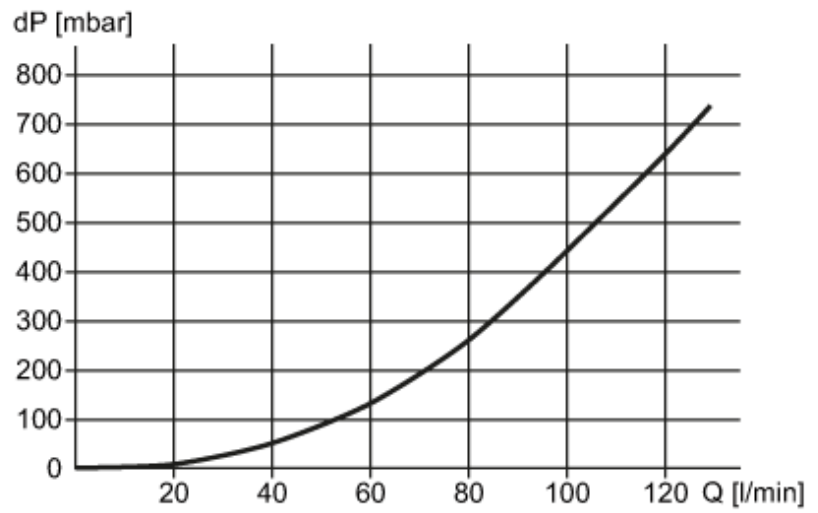


Magnetic-inductive flow meter

SMN11GGX50KG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

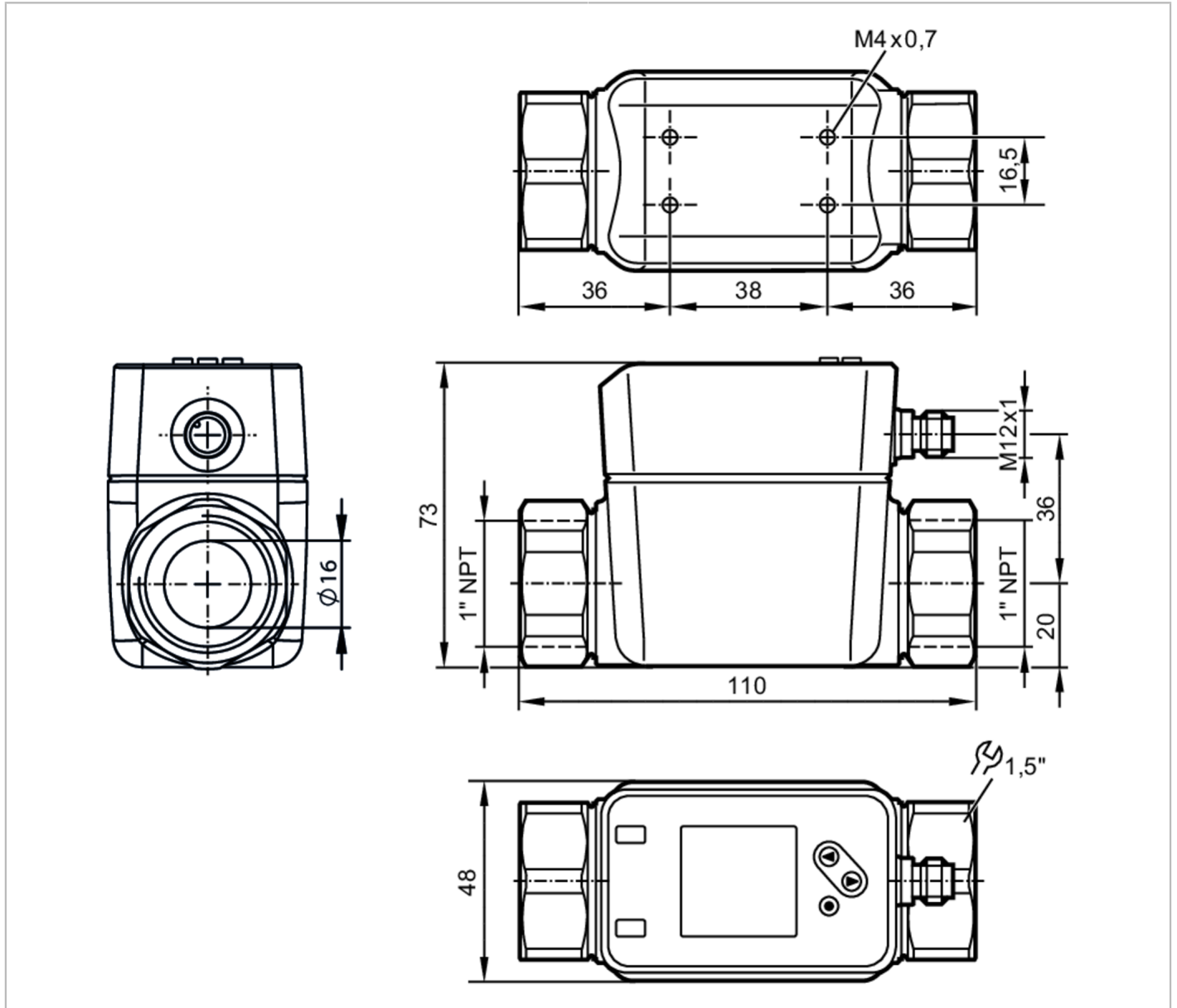
Q volumetric flow quantity

SM8621



Magnetic-inductive flow meter

SMN11XGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.2...150 l/min	0.012...9 m ³ /h	3.6...2376 gph	0.06...39.6 gpm
Process connection	threaded connection 1" NPT Internal thread DN25			

Application

System	gold-plated contacts		
Media	Conductive liquids; water; water-based media		
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)		
Medium temperature [°F]	-4...194		
Pressure rating	16 bar	1.6 MPa	

SM8621



Magnetic-inductive flow meter

SMN11XGXFRKG/US-100

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			
Measuring principle		magnetic-inductive			
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		0.2...150 l/min	0.012...9 m³/h	3.6...2376 gph	0.06...39.6 gpm
Display range		-180...180 l/min	-10.8...10.8 m³/h	-2853.6...2853.6 gph	-47.56...47.56 gpm
Resolution		0.1 l/min	0.006 m³/h	0.6 gph	0.01 gpm
Set point SP		1...150 l/min	0.06...9 m³/h	16.2...2376 gph	0.27...39.6 gpm
Reset point rP		0.2...149.2 l/min	0.012...8.95 m³/h	3.6...1903 gph	0.06...39.42 gpm
Analog start point ASP		0...120 l/min	0...7.2 m³/h	0...1903 gph	0...31.71 gpm
Analog end point AEP		30...150 l/min	1.8...9 m³/h	475...2376 gph	7.92...39.6 gpm
Low flow cut-off LFC		0.2...7.5 l/min	0.012...0.45 m³/h	3...118.4 gph	0.05...1.98 gpm
Frequency end point, FEP		30.2...150 l/min	1.8...9 m³/h	480...2376 gph	8...39.6 gpm
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			

SM8621



Magnetic-inductive flow meter

SMN11XGXFRKG/US-100

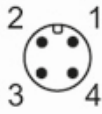
Temperature monitoring		
Measuring range	[°F]	-4...194
Display range	[°F]	-43.6...233.6
Resolution	[°F]	0.1
Set point SP	[°F]	-3.3...194
Reset point rP	[°F]	-4...193.3
Analog start point	[°F]	-4...154.4
Analog end point	[°F]	35.6...194
In steps of	[°F]	0.1
Accuracy / deviations		
Flow monitoring		
Accuracy (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; current/pulse output; Start-up delay; display can be deactivated; Display unit; Frequency output	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9	
Profiles	Common - I&D	Identification and Diagnosis
	Function	Measurement data, standard resolution
SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	8
Supported DeviceIDs	Type of operation	DeviceID
	default	964
Operating conditions		
Ambient temperature	[°F]	-4...140
Storage temperature	[°F]	-13...176
Protection	IP 65; IP 67	

SM8621



Magnetic-inductive flow meter

SMN11XGXFRKG/US-100

Tests / approvals	
EMC	DIN EN 60947-5-9
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]	777
Housing	rectangular
Dimensions [mm]	110 x 48 x 73
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
Process connection	threaded connection 1" NPT Internal thread DN25
Displays / operating elements	
Display	Color 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	
	

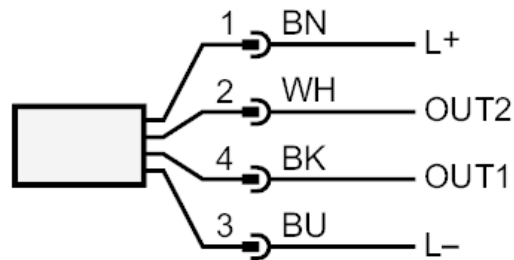
SM8621



Magnetic-inductive flow meter

SMN11XGXFRKG/US-100

Connection



OUT1:	Colors 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 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 Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

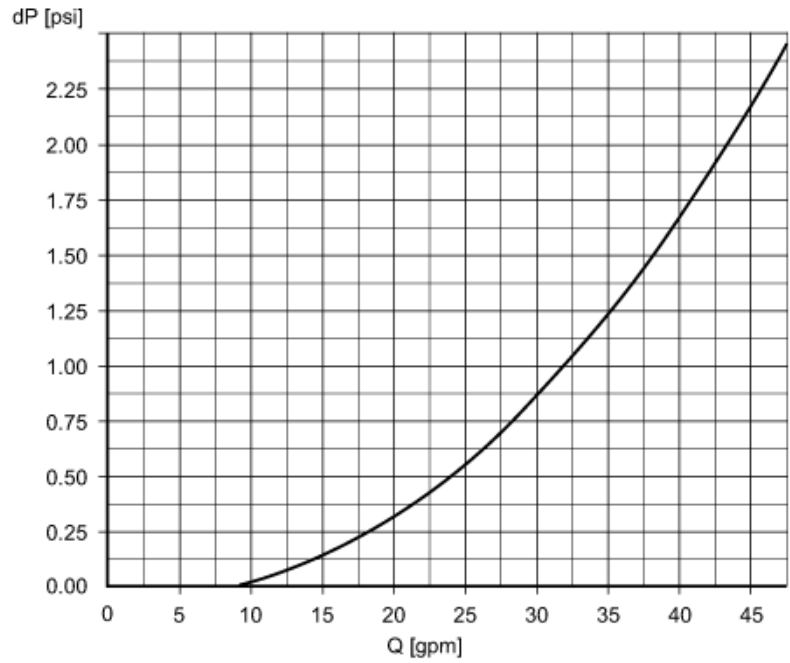
SM8621



Magnetic-inductive flow meter

SMN11XGXFRKG/US-100

Diagrams and graphs



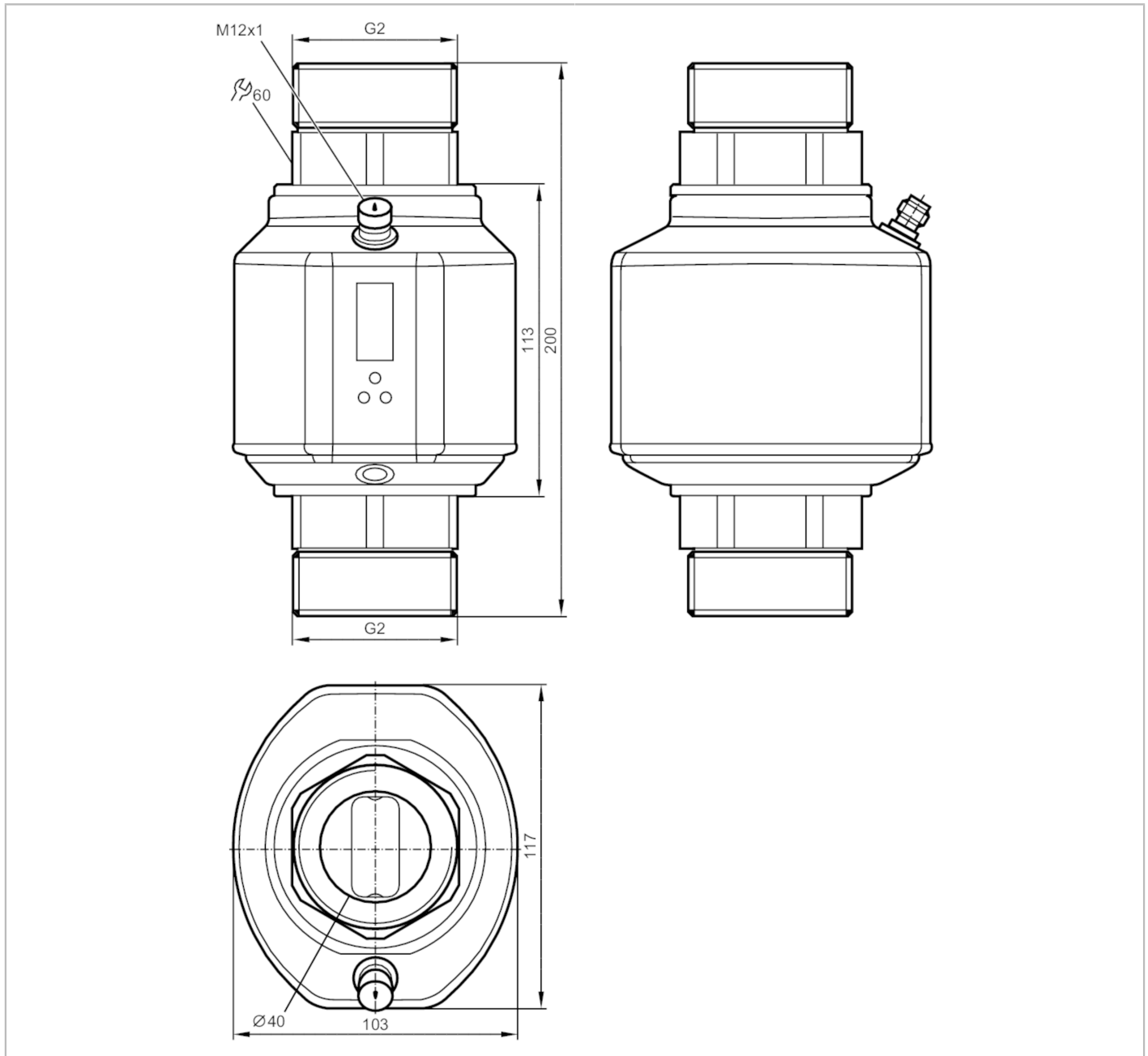
Pressure loss / volumetric flow quantity

SM9000



Magnetic-inductive flow meter

SMR21XGXFRKG/US



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...300 l/min	0.3...18 m³/h
Process connection	threaded connection G 2 external thread DN50 flat seal	

Application

System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM9000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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 analog outputs: 1

Inputs	
Inputs	counter reset

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

Measuring/setting range		
Measuring range	5...300 l/min	0.3...18 m ³ /h
Display range	-360...360 l/min	-21.6...21.6 m ³ /h
Resolution	0.5 l/min	0.02 m ³ /h
Set point SP	6.5...300 l/min	0.4...18 m ³ /h
Reset point rP	5...298.5 l/min	0.3...17.9 m ³ /h
Analog start point ASP	0...240 l/min	0...14.4 m ³ /h
Analog end point AEP	60...300 l/min	3.6...18 m ³ /h

SM9000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h
In steps of	0.5 l/min	0.02 m ³ /h
Measuring dynamics	1:60	
Volumetric flow quantity monitoring		
Pulse value	0.0001...300 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,016...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	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0333 °C / K	
Accuracy [K]	± 1 (25 °C; Q > 15 l/min)	
Reaction 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 / 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

SM9000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time [ms]	5	
Supported DeviceIDs	Type of operation default	DeviceID 391

Operating conditions

Ambient temperature [°C]	-10...60
Storage temperature [°C]	-25...80
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
CPA approval	model number accuracy class maximum allowable error Q (min) Q (t) Q (max) Medium temperature	004MI - ± 1,5 % FS 0,3 m³/h - 18 m³/h -10...70°C
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 number File number UL	I008 E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	3176
Housing	rectangular
Dimensions [mm]	200 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; stainless steel (1.4571/316Ti); PEEK
Process connection	threaded connection G 2 external thread DN50 flat seal

Displays / operating elements

Display	Display unit Switching status Measured values Programming	6 x LED, green (l/min, m³/h, l, m³, 10³, °C) 2 x LED, yellow alphanumeric display, 4-digit alphanumeric display, 4-digit
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Accessories

Items supplied	sealings: 2, Centellen Label
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Remarks

Remarks	MW = Measured value MEW = Final value of the measuring range
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SM9000



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Pack quantity

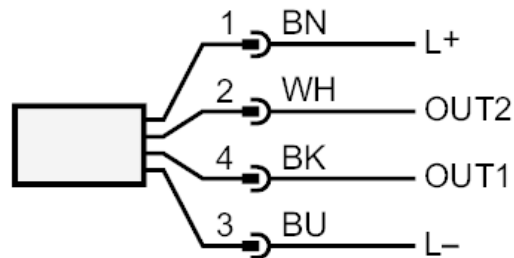
1 pcs.

Electrical connection

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



Connection



- OUT1:

Colors 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
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :

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

SM9000

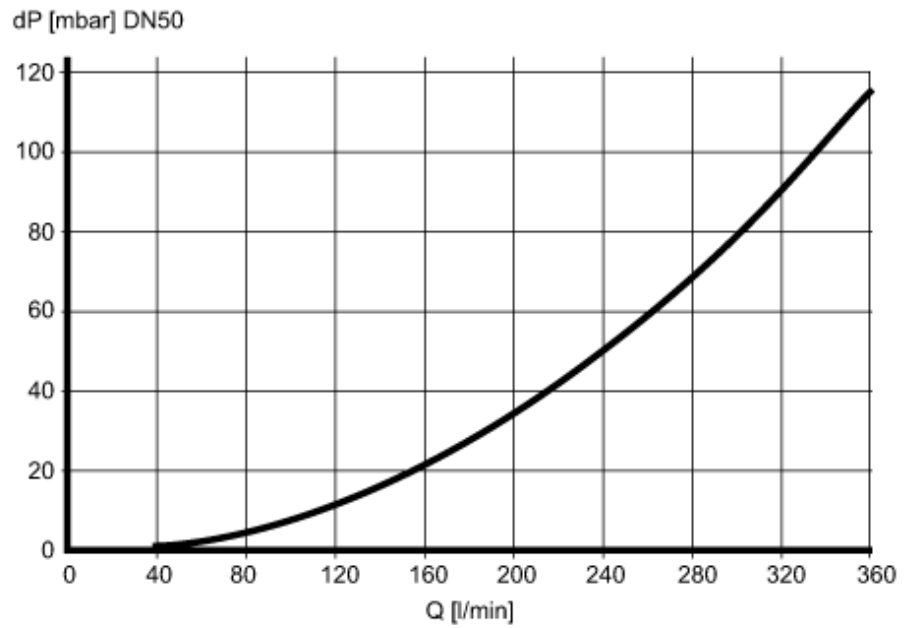


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

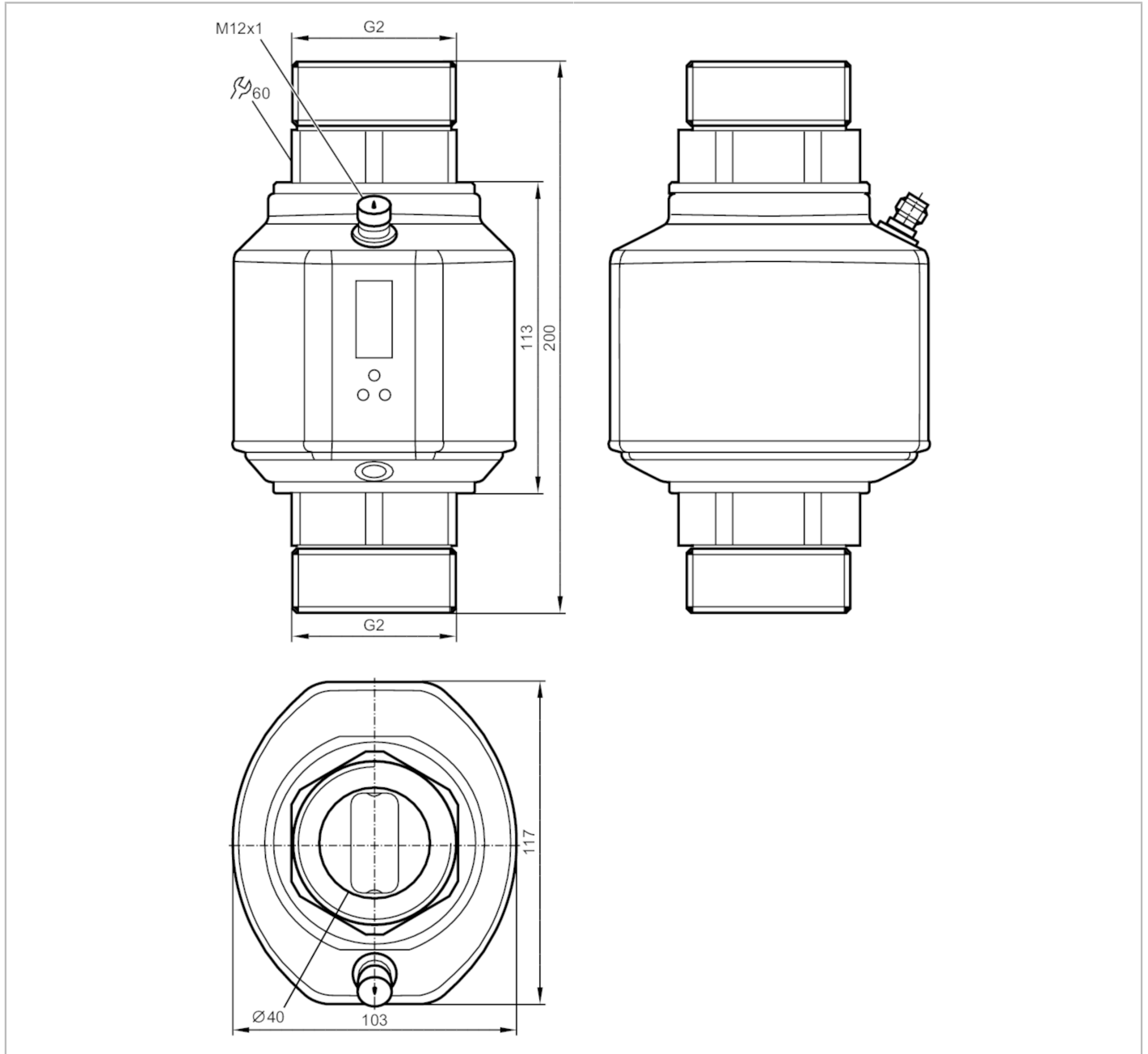
Q volumetric flow quantity

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	80...4800 gph 1.3...80 gpm
Process connection	threaded connection G 2 external thread DN50 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Note on media	conductivity: $\geq 20 \mu\text{S/cm}$	
	viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)	
Medium temperature [°F]	14...194	
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 analog outputs: 1
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Inputs

Inputs	counter reset
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Outputs

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

Measuring/setting range

Measuring range	80...4800 gph	1.3...80 gpm
Display range	-5760...5760 gph	-96...96 gpm
Resolution	5 gph	0.1 gpm
Set point SP	105...4800 gph	1.7...80 gpm
Reset point rP	80...4775 gph	1.3...79.6 gpm
Analog start point ASP	0...3840 gph	0...64 gpm
Analog end point AEP	960...4800 gph	16...80 gpm

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 240 gph	< 4 gpm
In steps of	5 gph	0.1 gpm
Measuring dynamics	1:60	
Volumetric flow quantity monitoring		
Pulse value	0.02...80 E06 gal	
In steps of	0.02 gal	
Pulse length [s]	0,016...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Display range [°F]	-40...212	
Resolution [°F]	0.5	
Set point SP [°F]	-2...176	
Reset point rP [°F]	-3...175	
Analog start point [°F]	-4...140	
Analog end point [°F]	32...176	
In steps of [°F]	0.5	

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0185 °F / K	
Accuracy [K]	± 1 (77 °F; Q > 4 gpm)	

Reaction 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 > 4 gpm)	

Software / programming

Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/frequency/pulse output; Start-up delay; display can be deactivated; Display unit; empty pipe detection	
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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 CDV	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable

SM9001



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode		yes
Required master port class		A
Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	392

Operating conditions

Ambient temperature [°F]		14...140
Storage temperature [°F]		-13...176
Protection		IP 65; IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
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 number	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]		3092
Housing		rectangular
Dimensions [mm]		200 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; stainless steel (1.4571/316Ti); PEEK	
Process connection	threaded connection G 2 external thread DN50 flat seal	

Displays / operating elements

Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	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.

SM9001



Magnetic-inductive flow meter

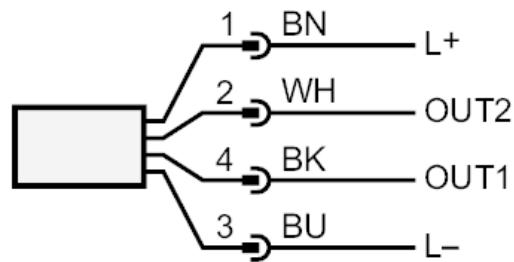
SMR21XGXFRKG/US

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM9001

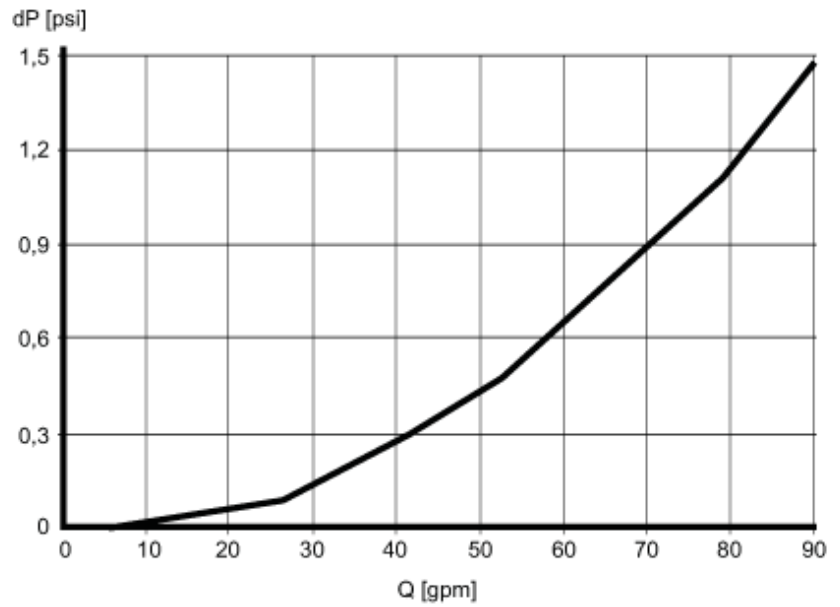


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

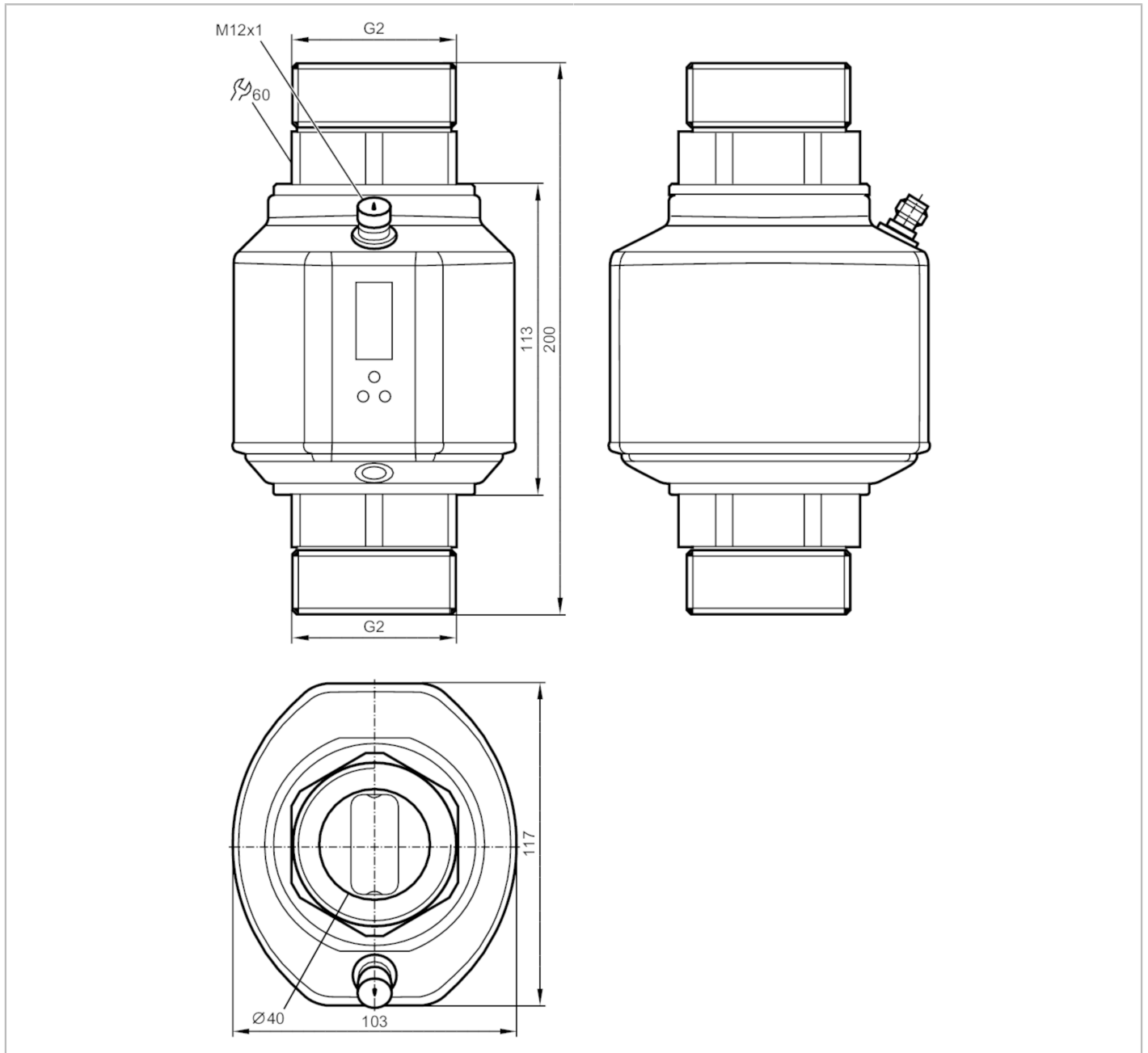
Q volumetric flow quantity

SM9004



Magnetic-inductive flow meter

SMR21XGX50KG/US



Product characteristics				
Number of inputs and outputs	Number of analog outputs: 2			
Measuring range	5...300 l/min	0.3...18 m ³ /h	80...4755 gph	1.3...79.3 gpm
Process connection	threaded connection G 2 external thread DN50 flat seal			
Application				
System	gold-plated contacts			
Application	empty pipe detection; for industrial applications			
Installation	connection to pipe by means of an adapter			
Media	Conductive liquids; water; water-based media			

SM9004



Magnetic-inductive flow meter

SMR21XGX50KG/US

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)	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 analog outputs: 2

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

Measuring/setting range				
Measuring range	5...300 l/min	0.3...18 m ³ /h	80...4755 gph	1.3...79.3 gpm
Display range	-360...360 l/min	-21.6...21.6 m ³ /h	-5705...5705 gph	-95.1...95.1 gpm
Resolution	0.5 l/min	0.02 m ³ /h	5 gph	0.1 gpm
Analog start point ASP	0...240 l/min	0...14.4 m ³ /h	0...3800 gph	0...63.4 gpm
Analog end point AEP	60...300 l/min	3.6...18 m ³ /h	955...4755 gph	15.9...79.3 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	1:60			

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
Analog start point	-20...60 °C	-4...140 °F
Analog 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]	$\pm 1 (25 \text{ }^\circ\text{C}; Q > 15 \text{ l/min}) / \pm 1 (77 \text{ }^\circ\text{F}; Q > 4 \text{ gpm})$

SM9004



Magnetic-inductive flow meter

SMR21XGX50KG/US

Reaction 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)	18 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]		3050
Housing		rectangular
Dimensions [mm]		200 x 103 x 117
Material		stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U
Materials (wetted parts)		Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; FKM; stainless steel (1.4571/316Ti); PEEK
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

SM9004



Magnetic-inductive flow meter

SMR21XGX50KG/US

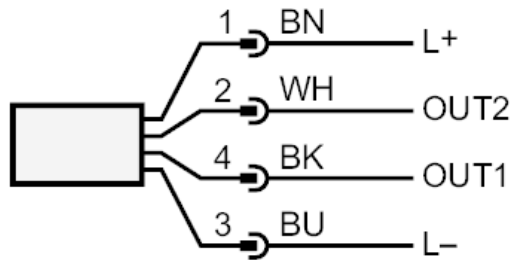
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
OUT2: analog output Volumetric flow quantity monitoring
Core colors :
BK = black
BN = brown
BU = blue
WH = white

SM9004



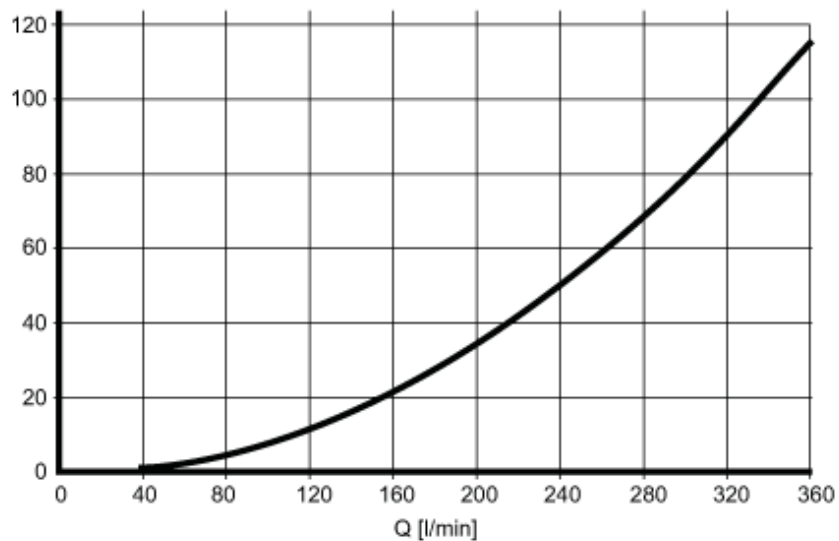
Magnetic-inductive flow meter

SMR21XGX50KG/US

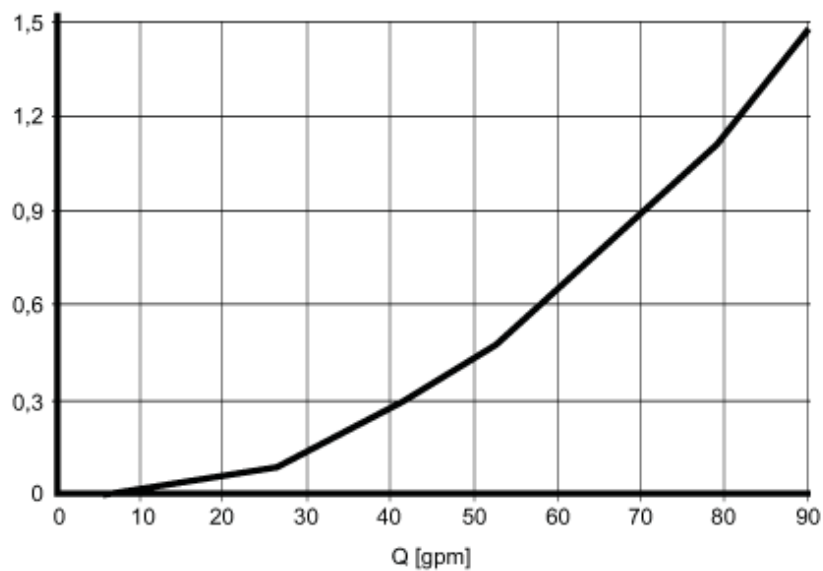
Diagrams and graphs

Pressure loss

dP [mbar] DN50



dP [psi]



dP Pressure loss

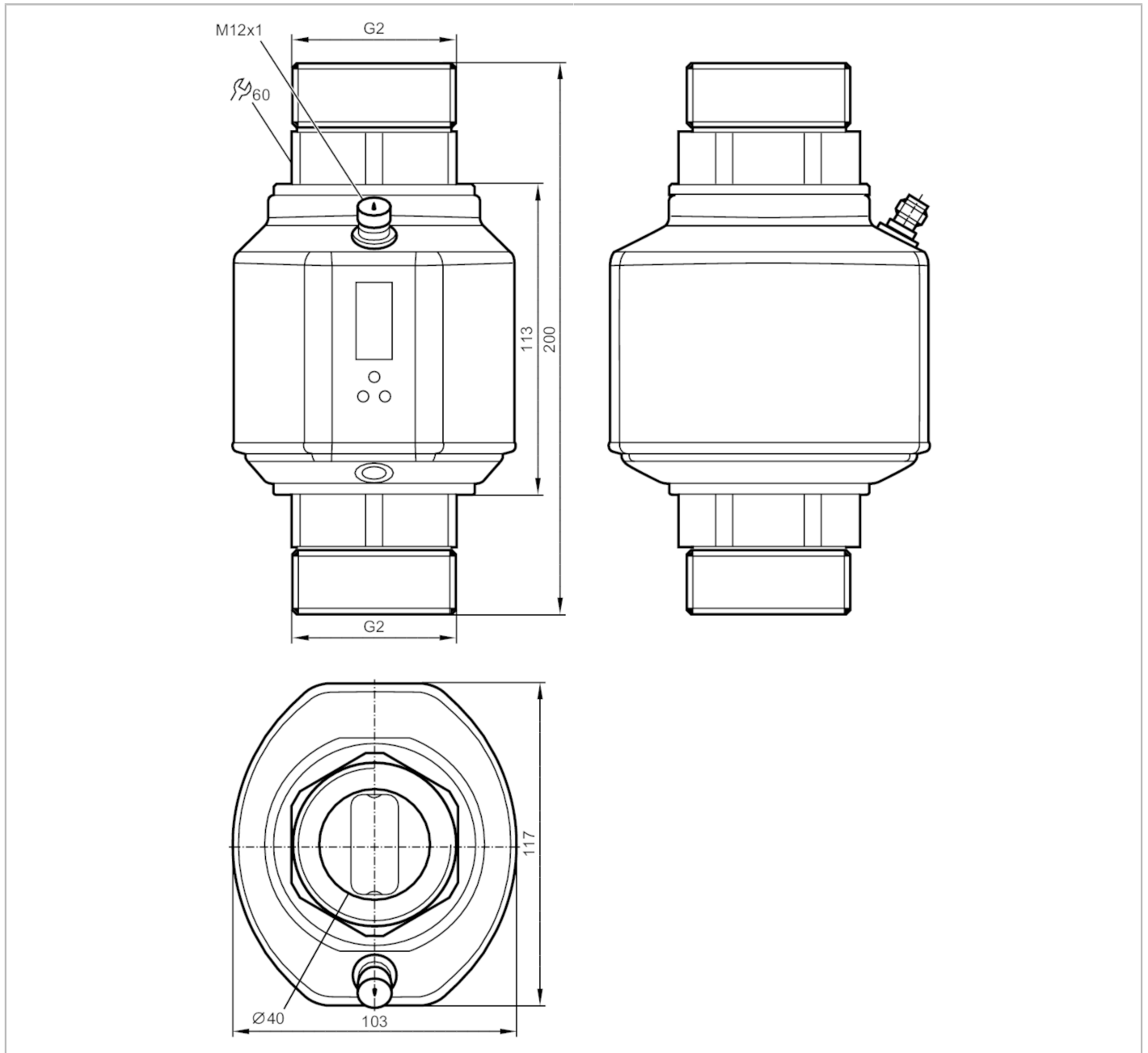
Q volumetric flow quantity

SM9100



Magnetic-inductive flow meter

SMR21XGXFRKG/US



ACS CE PA CRN cUL^{US} LISTED IO-Link KTW/W270 Reg31 UK CA

Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	5...300 l/min 0.3...18 m ³ /h
Process connection	threaded connection G 2 external thread DN50 flat seal
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Installation	connection to pipe by means of an adapter
Media	Conductive liquids; water; water-based media

SM9100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

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 analog outputs: 1	
------------------------------	---	--

Inputs

Inputs	counter reset	
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Outputs

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

Measuring/setting range

Measuring range	5...300 l/min	0.3...18 m ³ /h
Display range	-360...360 l/min	-21.6...21.6 m ³ /h
Resolution	0.5 l/min	0.02 m ³ /h
Set point SP	6.5...300 l/min	0.4...18 m ³ /h
Reset point rP	5...298.5 l/min	0.3...17.9 m ³ /h
Analog start point ASP	0...240 l/min	0...14.4 m ³ /h
Analog end point AEP	60...300 l/min	3.6...18 m ³ /h

SM9100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h
In steps of	0.5 l/min	0.02 m ³ /h
Measuring dynamics	1:60	
Volumetric flow quantity monitoring		
Pulse value	0.0001...300 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,016...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	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0333 °C / K	
Accuracy [K]	± 1 (25 °C; Q > 15 l/min)	
Reaction 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 / 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

SM9100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

SIO mode	yes	
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time [ms]	5	
Supported DeviceIDs	Type of operation default	DeviceID 391

Operating conditions

Ambient temperature [°C]	-10...60
Storage temperature [°C]	-25...80
Protection	IP 65; IP 67

Tests / approvals

EMC	DIN EN 60947-5-9	
CPA approval	model number accuracy class maximum allowable error Q (min) Q (t) Q (max) Medium temperature	004MI - ± 1,5 % FS 0,3 m³/h - 18 m³/h -10...70°C
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 number File number UL	I008 E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	3050
Housing	rectangular
Dimensions [mm]	200 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket; stainless steel (1.4571/316Ti); PEEK; EPDM
Process connection	threaded connection G 2 external thread DN50 flat seal

Displays / operating elements

Display	Display unit Switching status Measured values Programming	6 x LED, green (l/min, m³/h, l, m³, 10³, °C) 2 x LED, yellow alphanumeric display, 4-digit alphanumeric display, 4-digit
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Accessories

Items supplied	sealings: 2, Centellen Label
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Remarks

Remarks	MW = Measured value MEW = Final value of the measuring range
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SM9100



Magnetic-inductive flow meter

SMR21XGXFRKG/US

Pack quantity

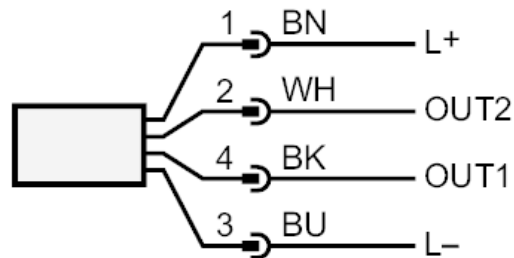
1 pcs.

Electrical connection

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



Connection



OUT1:

Colors 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
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset

Core colors :

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

SM9100

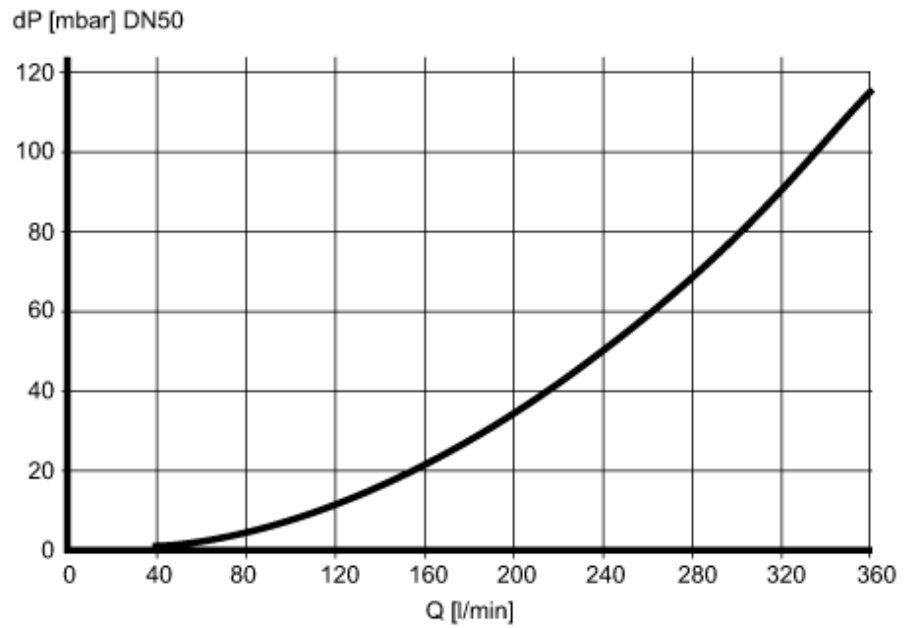


Magnetic-inductive flow meter

SMR21XGXFRKG/US

Diagrams and graphs

Pressure loss



dP Pressure loss

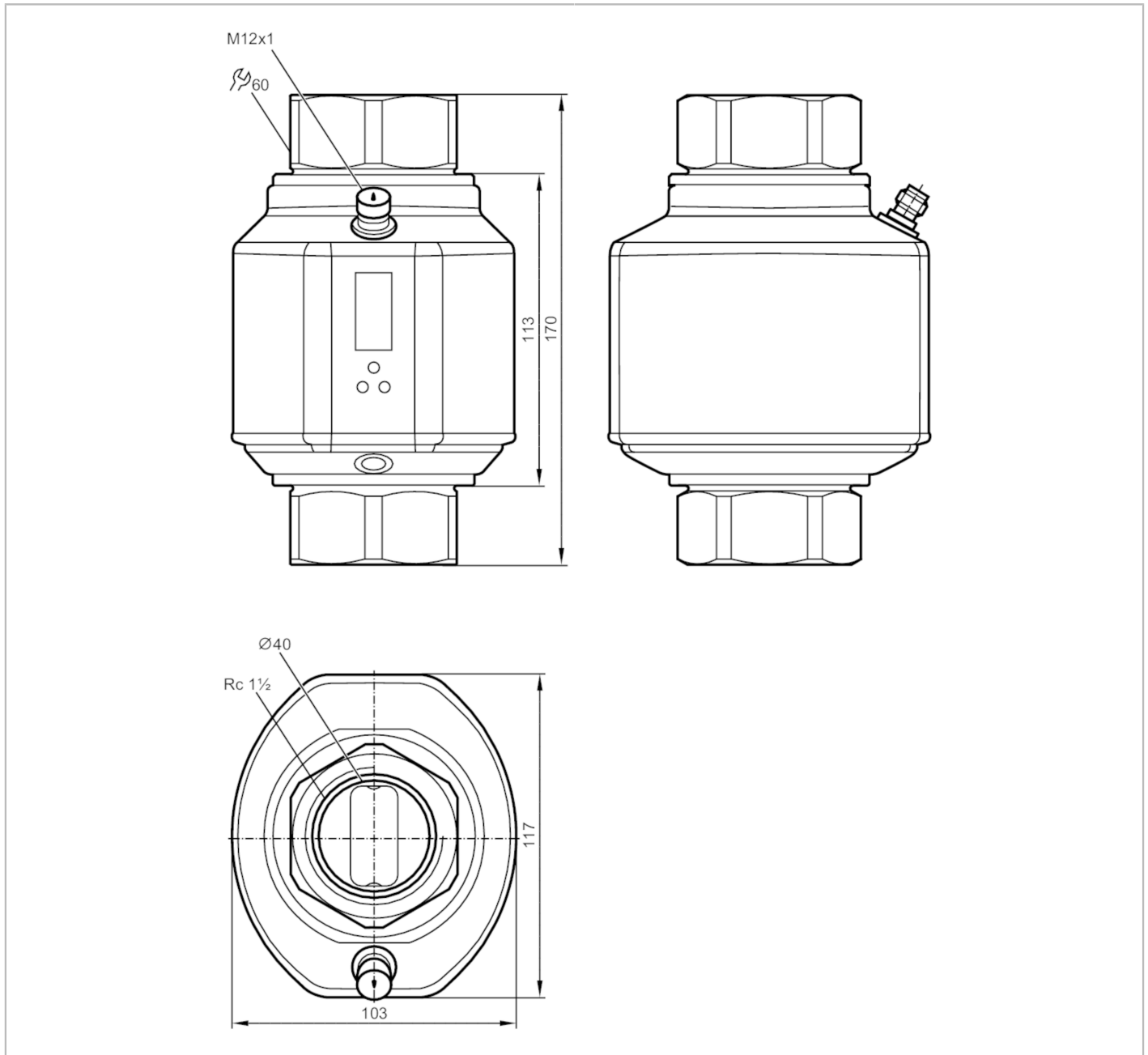
Q volumetric flow quantity

SM9400



Magnetic-inductive flow meter

SMK32XGXFRKG/US-100



Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Measuring range	5...300 l/min	0.3...18 m³/h
Process connection	threaded connection Rc 1 1/2 Internal thread DN40	

Application

System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)

SM9400



Magnetic-inductive flow meter

SMK32XGXFRKG/US-100

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 analog outputs: 1

Inputs	
Inputs	counter reset

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

Measuring/setting range		
Measuring range	5...300 l/min	0.3...18 m³/h
Display range	-360...360 l/min	-21.6...21.6 m³/h
Resolution	0.5 l/min	0.02 m³/h
Set point SP	6.5...300 l/min	0.4...18 m³/h
Reset point rP	5...298.5 l/min	0.3...17.9 m³/h
Analog start point ASP	0...240 l/min	0...14.4 m³/h
Analog end point AEP	60...300 l/min	3.6...18 m³/h
Low flow cut-off LFC	< 15 l/min	< 0.9 m³/h
In steps of	0.5 l/min	0.02 m³/h

SM9400



Magnetic-inductive flow meter

SMK32XGXFRKG/US-100

Measuring dynamics	1:60	
Volumetric flow quantity monitoring		
Pulse value	0.0001...300 x 10 ³ m ³	
In steps of	0.0001 m ³	
Pulse length [s]	0,016...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	
Analog start point [°C]	-20...60	
Analog 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)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0333 °C / K	
Accuracy [K]	± 1 (25 °C; Q > 15 l/min)	
Reaction 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 / 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
SIO mode	yes	
Required master port class	A	

SM9400



Magnetic-inductive flow meter

SMK32XGXFRKG/US-100

Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	391

Operating conditions		
Ambient temperature [°C]		-10...60
Storage temperature [°C]		-25...80
Protection		IP 65; IP 67

Tests / approvals		
EMC	DIN EN 60947-5-9	
CPA approval	model number	003MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,3 m³/h
	Q (t)	-
	Q (max)	18 m³/h
	Medium temperature	-10...70°C
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 number	I008
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]		2750
Housing		rectangular
Dimensions [mm]		170 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM	
Process connection	threaded connection Rc 1 1/2 Internal thread DN40	

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		Label

Remarks		
Remarks	MW = Measured value MEW = Final value of the measuring range	
Pack quantity	1 pcs.	

SM9400



Magnetic-inductive flow meter

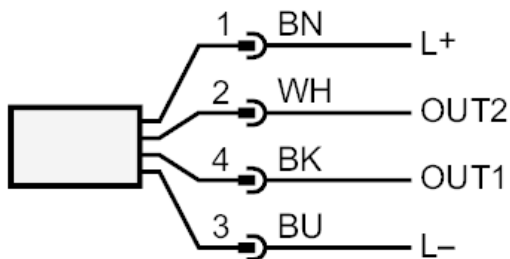
SMK32XGXFRKG/US-100

Electrical connection

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



Connection



- OUT1: Colors 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
analog output Volumetric flow quantity monitoring
analog output Temperature monitoring
Input counter reset
Core colors :
- BK = black
BN = brown
BU = blue
WH = white

SM9400

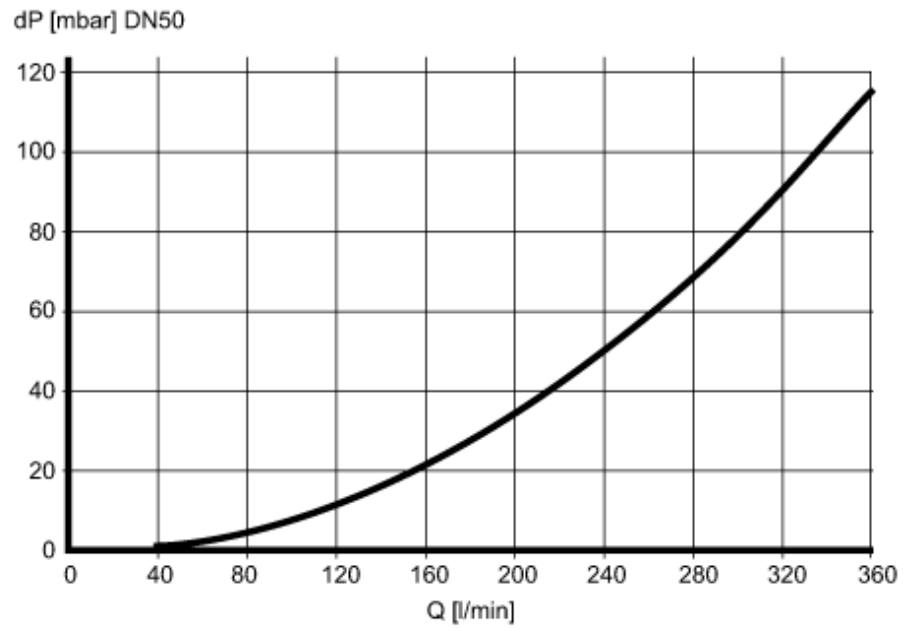


Magnetic-inductive flow meter

SMK32XGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity

SM9404

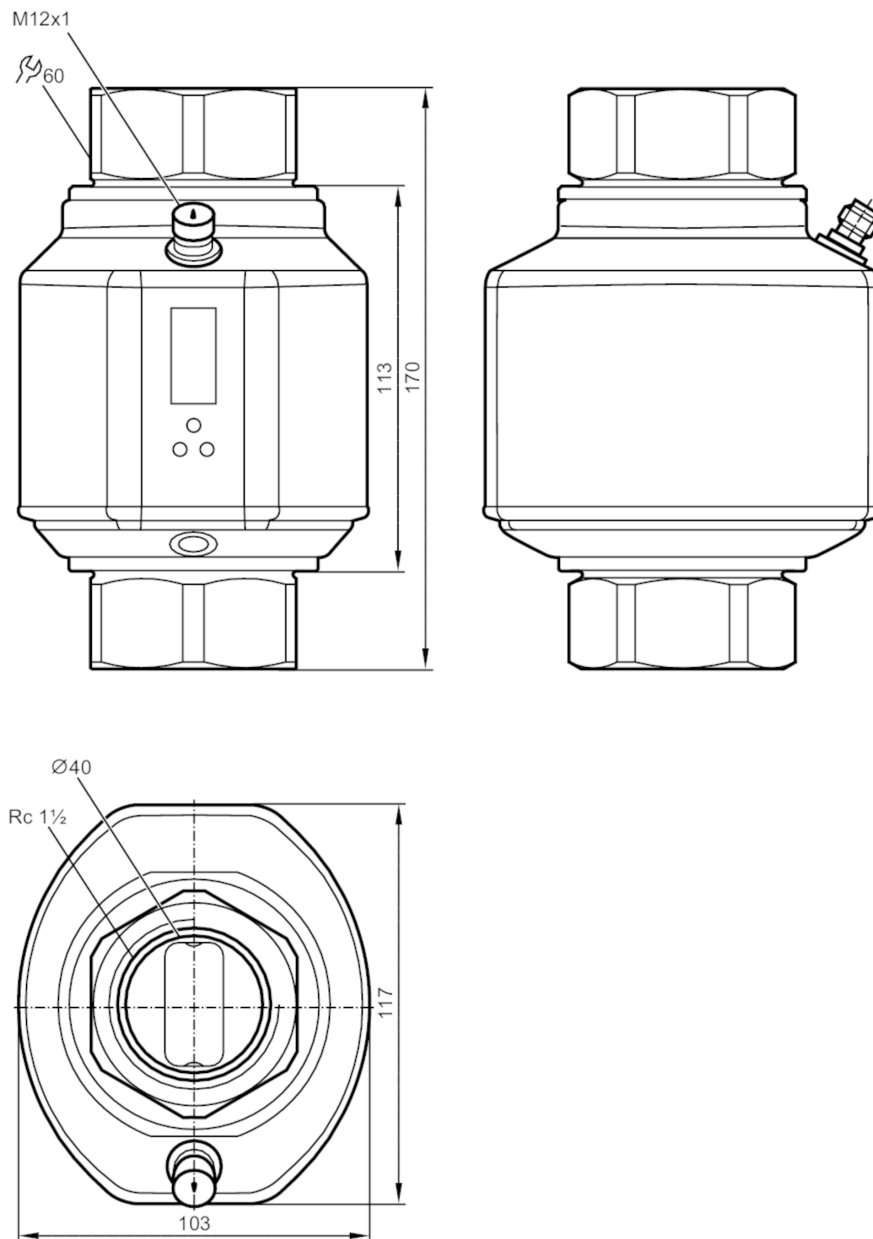


Magnetic-inductive flow meter

SMK32XGX50KG/US-100

Article to be discontinued

Discontinuation date: 03/31/2026



Product characteristics

Number of inputs and outputs	Number of analog outputs: 2			
Measuring range	5...300 l/min	0.3...18 m ³ /h	80...4755 gph	1.3...79.3 gpm
Process connection	threaded connection Rc 1 1/2 Internal thread DN40			

Application

System	gold-plated contacts
Application	empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based media

SM9404



Magnetic-inductive flow meter

SMK32XGX50KG/US-100

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)	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 analog outputs: 2
------------------------------	-----------------------------

Outputs

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

Measuring/setting range

Measuring range	5...300 l/min	0.3...18 m ³ /h	80...4755 gph	1.3...79.3 gpm
Display range	-360...360 l/min	-21.6...21.6 m ³ /h	-5705...5705 gph	-95.1...95.1 gpm
Resolution	0.5 l/min	0.02 m ³ /h	5 gph	0.1 gpm
Analog start point ASP	0...240 l/min	0...14.4 m ³ /h	0...3800 gph	0...63.4 gpm
Analog end point AEP	60...300 l/min	3.6...18 m ³ /h	955...4755 gph	15.9...79.3 gpm
Low flow cut-off LFC	< 15 l/min	< 0.9 m ³ /h	< 240 gph	< 4 gpm
In steps of	0.5 l/min	0.02 m ³ /h	5 gph	0.1 gpm
Measuring dynamics	1:60			

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
Analog start point	-20...60 °C	-4...140 °F
Analog 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]	$\pm 1 (25 \text{ }^\circ\text{C}; Q > 15 \text{ l/min}) / \pm 1 (77 \text{ }^\circ\text{F}; Q > 4 \text{ gpm})$

SM9404



Magnetic-inductive flow meter

SMK32XGX50KG/US-100

Reaction 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	003MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,3 m³/h
	Q (t)	-
	Q (max)	18 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
UL approval	UL approval number	I009
Pressure equipment directive		sound engineering practice; can be used for group 2 fluids; group 1 fluids on request
Mechanical data		
Weight [g]		2741.5
Housing		rectangular
Dimensions [mm]		170 x 103 x 117
Material		stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U
Materials (wetted parts)		stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM
Process connection		threaded connection Rc 1 1/2 Internal thread DN40
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		Label

SM9404



Magnetic-inductive flow meter

SMK32XGX50KG/US-100

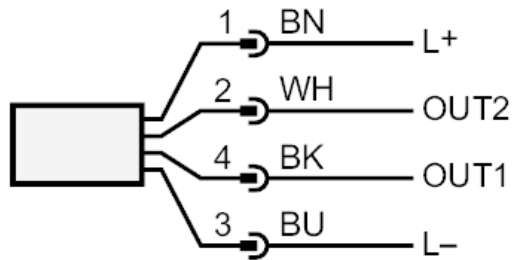
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
OUT2: analog output Volumetric flow quantity monitoring
Core colors :
BK = black
BN = brown
BU = blue
WH = white

SM9404



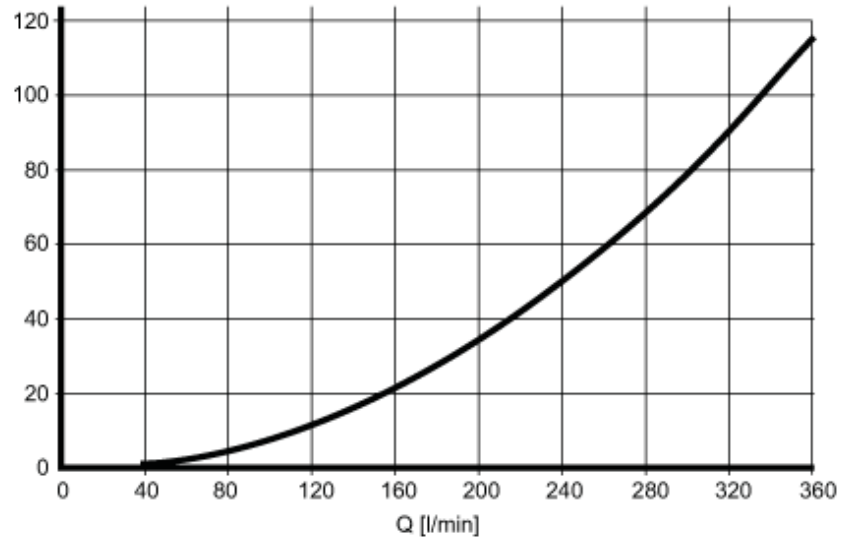
Magnetic-inductive flow meter

SMK32XGX50KG/US-100

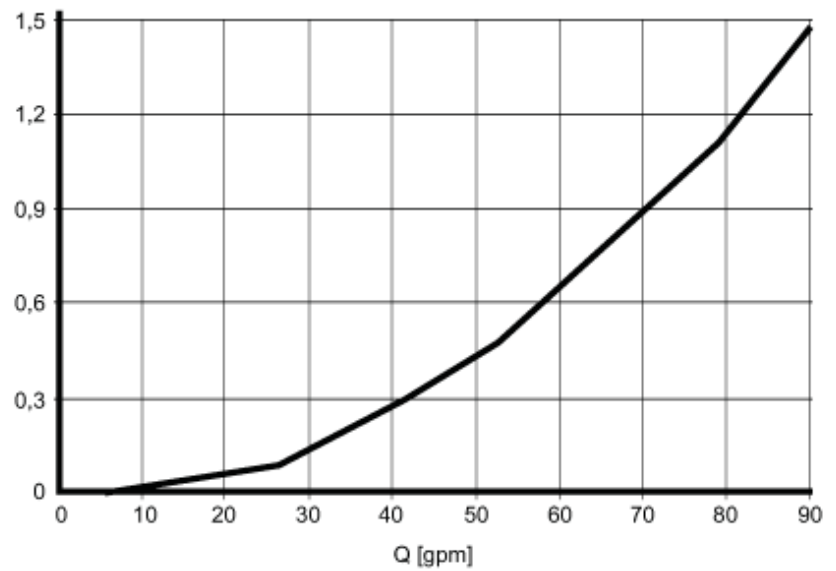
Diagrams and graphs

Pressure loss

dP [mbar] DN50



dP [psi]



dP Pressure loss

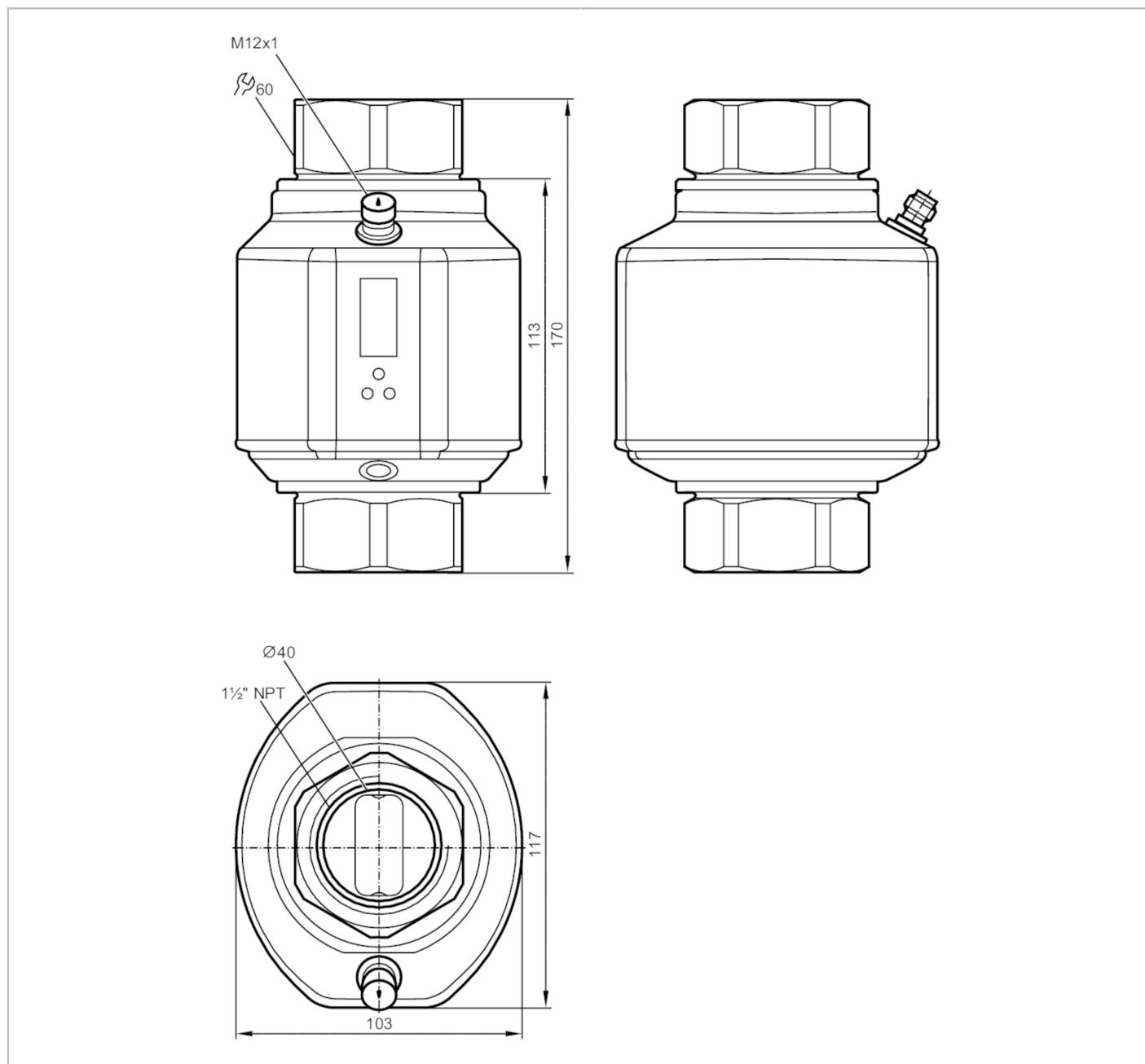
Q volumetric flow quantity

SM9601



Magnetic-inductive flow meter

SMN32XGXFRKG/US-100



Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	80...4800 gph 1.3...80 gpm
Process connection	threaded connection 1 1/2" NPT Internal thread DN40
Application	
System	gold-plated contacts
Application	Totalizer function; empty pipe detection; for industrial applications
Media	Conductive liquids; water; water-based media
Note on media	conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C)

SM9601



Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

Medium temperature	[°F]	14...194
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 analog outputs: 1

Inputs	
Inputs	counter reset

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

Measuring/setting range		
Measuring range	80...4800 gph	1.3...80 gpm
Display range	-5760...5760 gph	-96...96 gpm
Resolution	5 gph	0.1 gpm
Set point SP	105...4800 gph	1.7...80 gpm
Reset point rP	80...4775 gph	1.3...79.6 gpm
Analog start point ASP	0...3840 gph	0...64 gpm
Analog end point AEP	960...4800 gph	16...80 gpm
Low flow cut-off LFC	< 240 gph	< 4 gpm
In steps of	5 gph	0.1 gpm

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Measuring dynamics	1:60	
Volumetric flow quantity monitoring		
Pulse value	0.02...80 E06 gal	
In steps of	0.02 gal	
Pulse length [s]	0,016...2	
Temperature monitoring		
Measuring range [°F]	-4...176	
Display range [°F]	-40...212	
Resolution [°F]	0.5	
Set point SP [°F]	-2...176	
Reset point rP [°F]	-3...175	
Analog start point [°F]	-4...140	
Analog end point [°F]	32...176	
In steps of [°F]	0.5	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (0,8 % MW + 0,5 % MEW)	
Repeatability	± 0,2% MEW	
Temperature monitoring		
Temperature drift	± 0,0185 °F / K	
Accuracy [K]	± 1 (77 °F; Q > 4 gpm)	
Reaction 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 > 4 gpm)	
Software / programming		
Parameter setting options	Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / 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
SIO mode	yes	
Required master port class	A	

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Magnetic-inductive flow meter

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Process data analog		3
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	392

Operating conditions		
Ambient temperature [°F]		14...140
Storage temperature [°F]		-13...176
Protection		IP 65; IP 67

Tests / approvals		
EMC	DIN EN 60947-5-9	
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 number	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]		2776.5
Housing		rectangular
Dimensions [mm]		170 x 103 x 117
Material	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U	
Materials (wetted parts)	stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM	
Process connection	threaded connection 1 1/2" NPT Internal thread DN40	

Displays / operating elements		
Display	Display unit	6 x LED, green (gpm, gph, gal, °F, 10 ³ , 1000 x 10 ³)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, 4-digit
	Programming	alphanumeric display, 4-digit

Accessories		
Items supplied		Label

Remarks		
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
Pack quantity		1 pcs.

SM9601



Magnetic-inductive flow meter

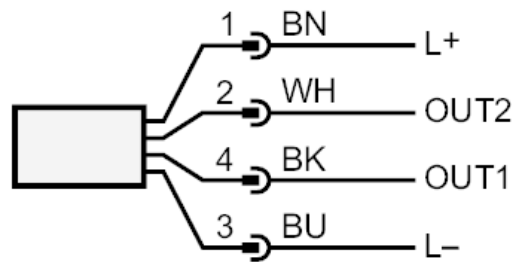
SMN32XGXFRKG/US-100

Electrical connection

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



Connection



OUT1:	Colors 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 analog output Volumetric flow quantity monitoring analog output Temperature monitoring Input counter reset Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white

SM9601

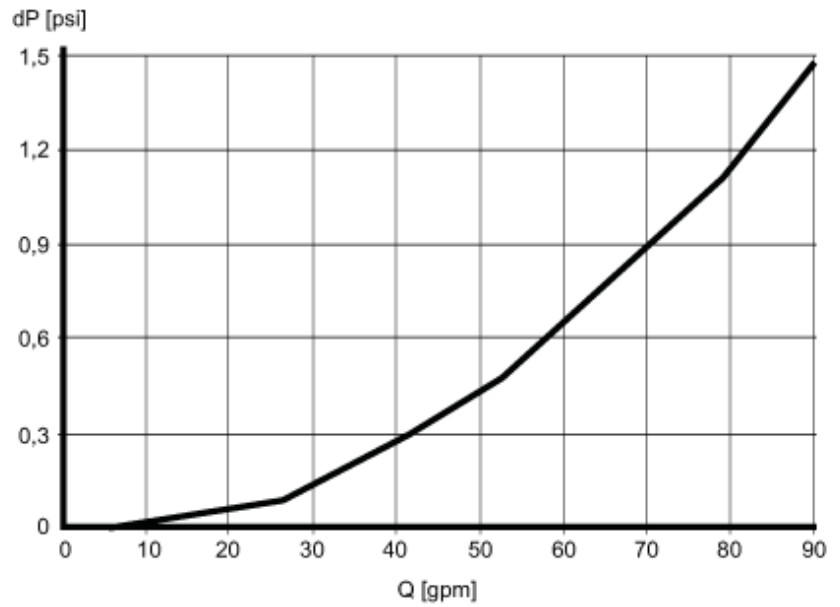


Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

Diagrams and graphs

Pressure loss



dP Pressure loss

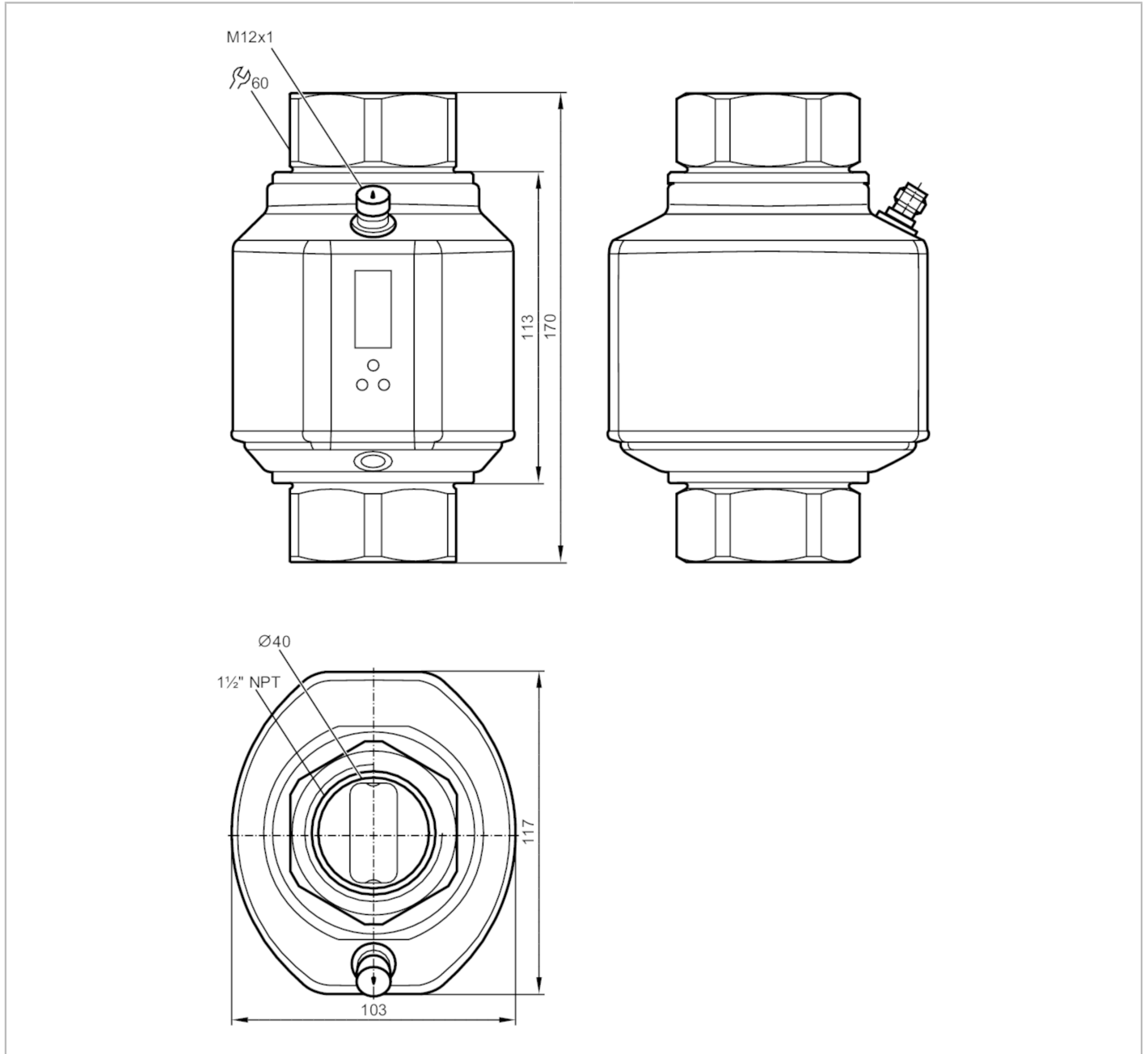
Q volumetric flow quantity

SM9604



Magnetic-inductive flow meter

SMN32XGX50KG/US-100



Product characteristics				
Number of inputs and outputs	Number of analog outputs: 2			
Measuring range	5...300 l/min	0.3...18 m ³ /h	80...4755 gph	1.3...79.3 gpm
Process connection	threaded connection 1 1/2" NPT Internal thread DN40			
Application				
System	gold-plated contacts			
Application	empty pipe detection; for industrial applications			
Media	Conductive liquids; water; water-based media			
Note on media	conductivity: ≥ 20 μS/cm			
	viscosity: < 70 mm ² /s (40 °C)			

SM9604



Magnetic-inductive flow meter

SMN32XGX50KG/US-100

Medium temperature	-10...90 °C		14...194 °F	
Pressure rating	16 bar	232 psi	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 analog outputs: 2			
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Outputs

Total number of outputs	2			
Output signal	analog signal			
Number of analog outputs	2			
Analog current output [mA]	4...20; (≤ 22 mA)			
Max. load [Ω]	500			

Measuring/setting range

Measuring range	5...300 l/min	0.3...18 m³/h	80...4755 gph	1.3...79.3 gpm
Display range	-360...360 l/min	-21.6...21.6 m³/h	-5705...5705 gph	-95.1...95.1 gpm
Resolution	0.5 l/min	0.02 m³/h	5 gph	0.1 gpm
Analog start point ASP	0...240 l/min	0...14.4 m³/h	0...3800 gph	0...63.4 gpm
Analog end point AEP	60...300 l/min	3.6...18 m³/h	955...4755 gph	15.9...79.3 gpm
Low flow cut-off LFC	< 15 l/min	< 0.9 m³/h	< 240 gph	< 4 gpm
In steps of	0.5 l/min	0.02 m³/h	5 gph	0.1 gpm
Measuring dynamics	1:60			

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	
Analog start point	-20...60 °C		-4...140 °F	
Analog 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)	± (0,8 % MW + 0,5 % MEW)			
Repeatability	± 0,2% MEW			

Temperature monitoring

Temperature drift	± 0,0333 °C / K; ± 0,0599 °F / K			
Accuracy [K]	± 1 (25 °C; Q > 15 l/min) / ± 1 (77 °F; Q > 4 gpm)			

SM9604



Magnetic-inductive flow meter

SMN32XGX50KG/US-100

Reaction 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	
	DIN EN 61000-6-2	
CPA approval	model number	003MI
	accuracy class	-
	maximum allowable error	± 1,5 % FS
	Q (min)	0,3 m³/h
	Q (t)	-
	Q (max)	18 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]	2745
Housing		rectangular
Dimensions	[mm]	170 x 103 x 117
Material		stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEI; FKM; PBT-GF20; TPE-U
Materials (wetted parts)		stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti); PEEK; FKM
Process connection		threaded connection 1 1/2" NPT Internal thread DN40
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		Label

SM9604



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Remarks

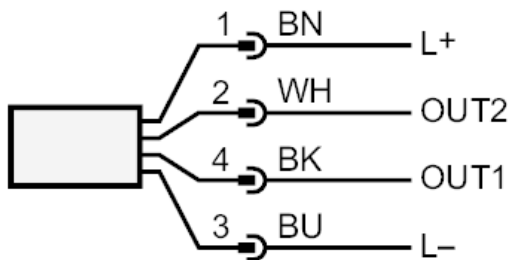
Remarks	MW = Measured value
	MEW = Final value of the measuring range
Pack quantity	1 pcs.

Electrical connection

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



Connection



OUT1: analog output Temperature monitoring
OUT2: analog output Volumetric flow quantity monitoring
Core colors :
BK = black
BN = brown
BU = blue
WH = white

SM9604



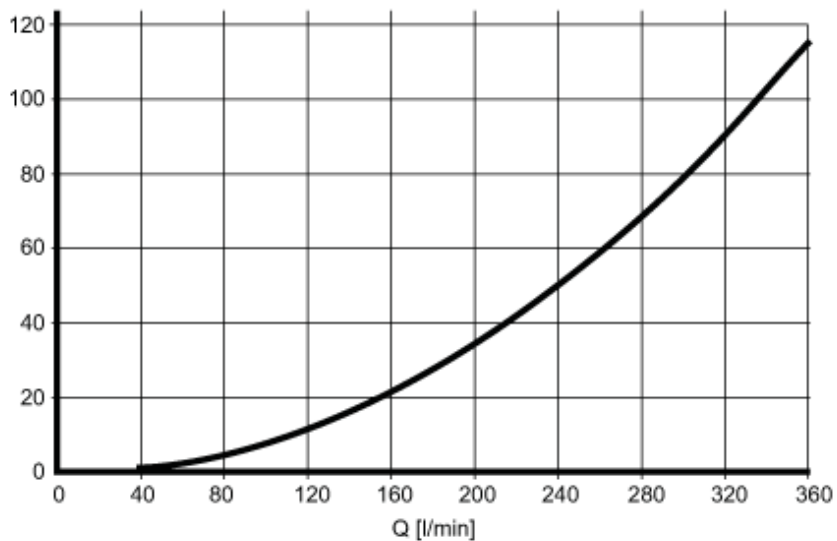
Magnetic-inductive flow meter

SMN32XGX50KG/US-100

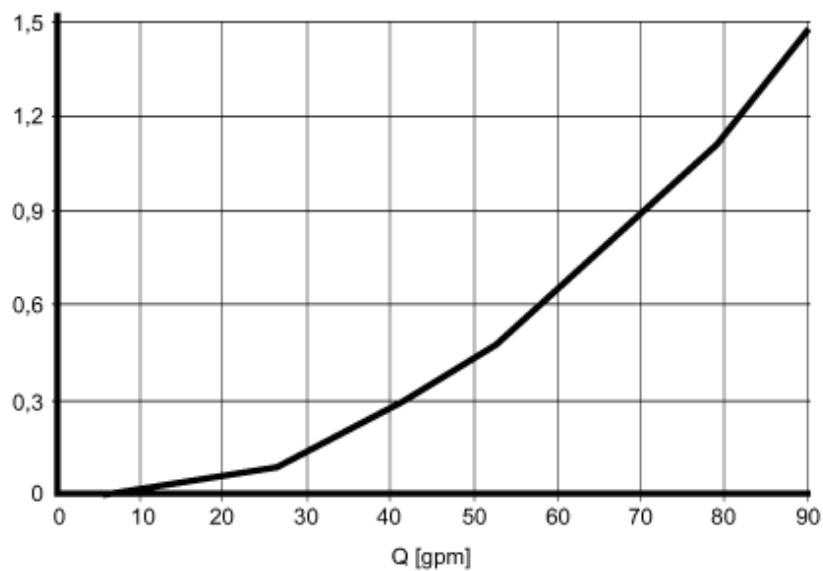
Diagrams and graphs

Pressure loss

dP [mbar] DN50



dP [psi]



dP Pressure loss

Q volumetric flow quantity