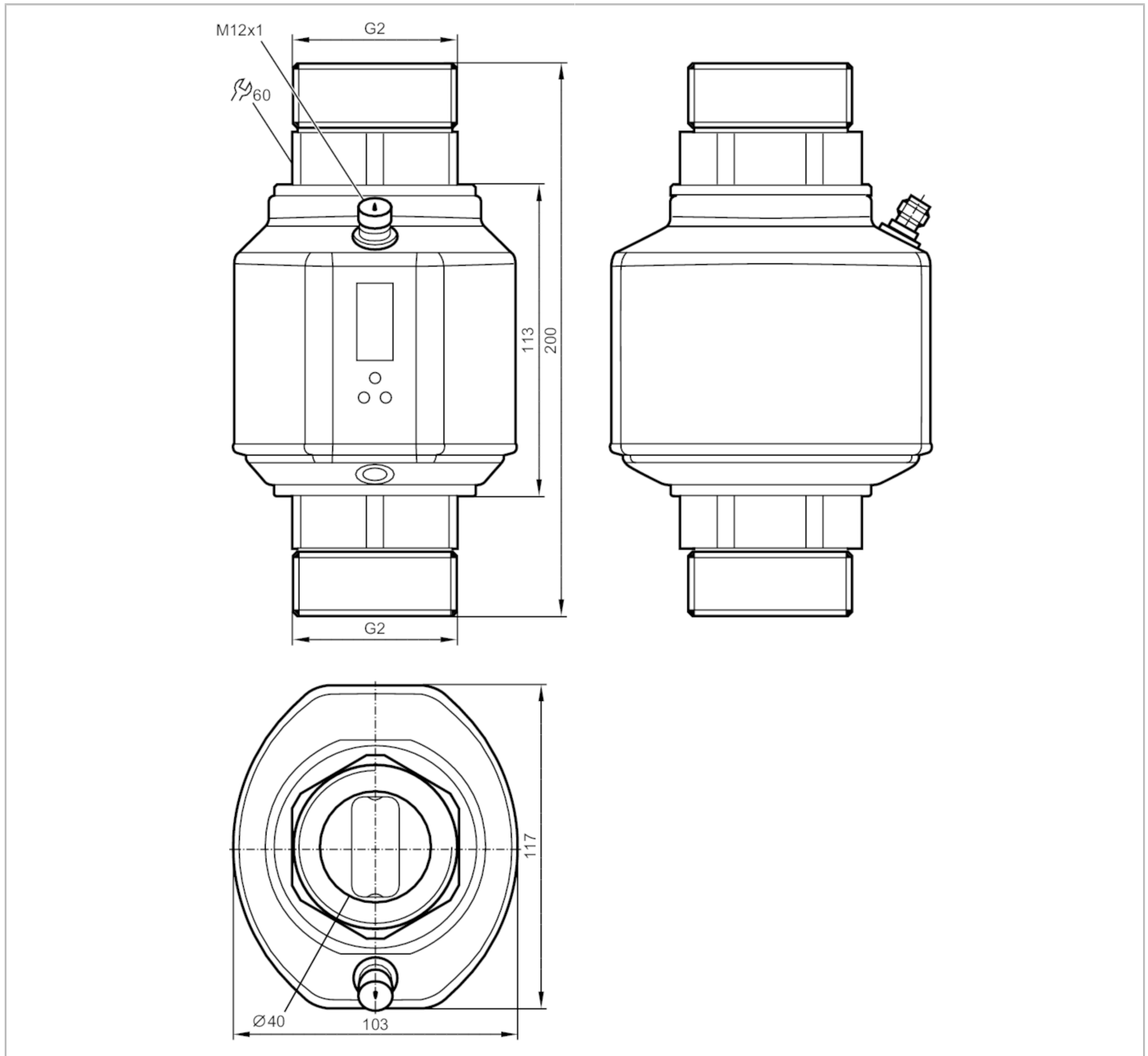


SM2100



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 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 |

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| | | |
|--|-------|---|
| Note on media | | conductivity: $\geq 20 \mu\text{S/cm}$ viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C) |
| Medium temperature | [°C] | -10...90 |
| Pressure rating | [bar] | 16 |
| Pressure rating | [MPa] | 1.6 |
| MAWP (for applications according to CRN) | [bar] | 16 |

Electrical data

| | | |
|-----------------------------|------|----------------------------|
| Operating voltage | [V] | 18...32 DC; (to SELV/PELV) |
| Current consumption | [mA] | < 150 |
| Protection class | | III |
| Reverse polarity protection | | yes |
| Power-on delay time | [s] | 5 |

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 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 |

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| | | |
|--|---|-------------------------|
| 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: Process Data Variable; Device Identification |
| SIO mode | yes |
| Required master port class | A |

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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 | 357 |

| 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 |
| 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; Centellen; EPDM | |
| Process connection | threaded connection G 2 DN50 flat seal | |

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

| Accessories | | |
|----------------|------------------------|--|
| Items supplied | sealings: 2, Centellen | |
| | Label | |

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

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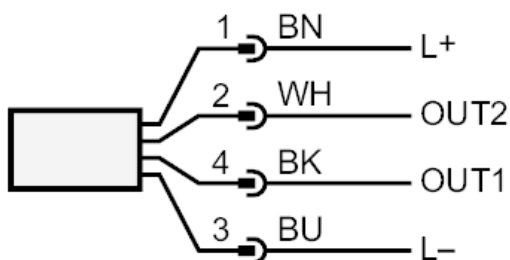
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Electrical connection

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 |

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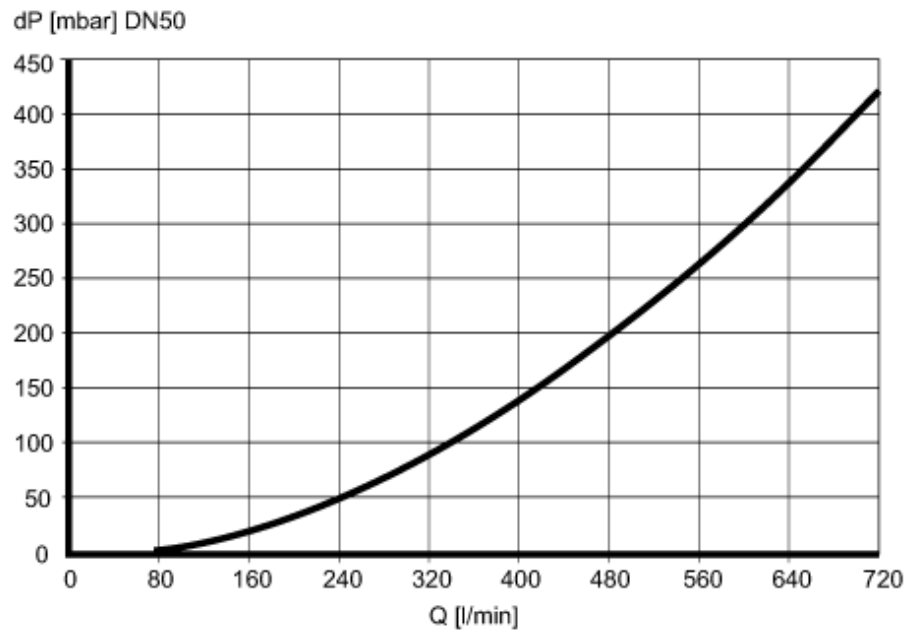
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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity