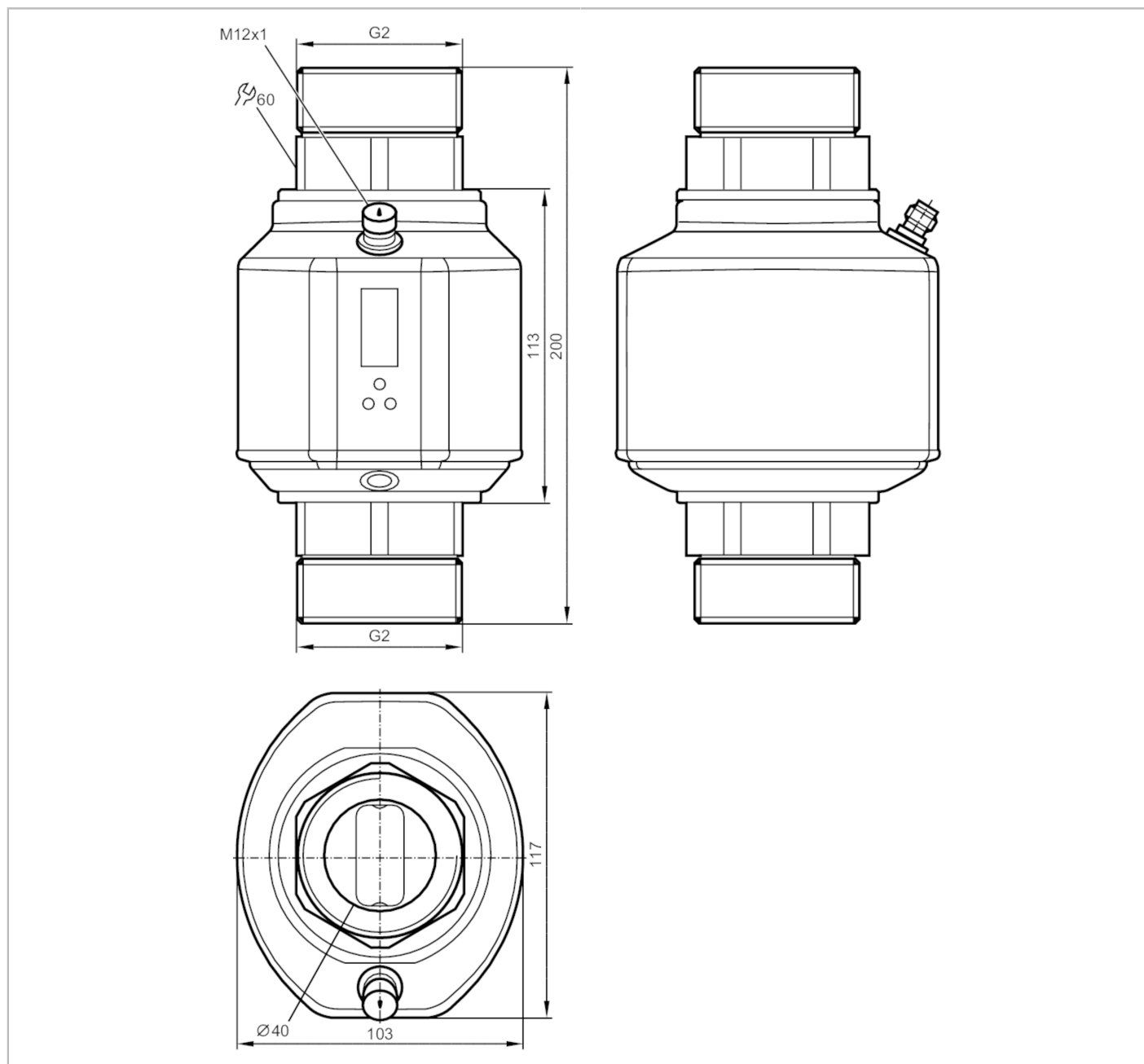


SM2000



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 DN50 flat seal | |

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| 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 |
| 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 [bar] | 16 |
| Pressure rating [Mpa] | 1.6 |
| MAWP (for applications according to CRN) [bar] | 16.5 |
| Electrical data | |
| Operating voltage [V] | 18...32 DC; (according to EN 50178 SELV/PELV) |
| Current consumption [mA] | < 150 |
| Protection class | III |
| Reverse polarity protection | yes |
| Power-on delay time [s] | 5 |
| Inputs / outputs | |
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |
| Inputs | |
| Inputs | counter reset |
| Outputs | |
| Total number of outputs | 2 |
| Output signal | switching signal; analogue signal; pulse signal; frequency signal; IO-Link; (configurable) |
| Electrical design | PNP/NPN |
| Number of digital outputs | 2 |
| Output function | normally open / normally closed; (parameterisable) |
| Max. voltage drop switching output DC [V] | 2 |
| Permanent current rating of switching output DC [mA] | 250; (per output) |
| Number of analogue outputs | 1 |
| Analogue current output [mA] | 4...20; (scalable) |
| Max. load [Ω] | 500 |
| Analogue voltage output [V] | 0...10; (scalable) |
| Min. load resistance [Ω] | 2000 |
| Pulse output | flow rate meter |
| Short-circuit protection | yes |
| Type of short-circuit protection | pulsed |
| Overload protection | yes |
| Frequency of the output [Hz] | 0.1...10000 |

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| 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 |
| Analogue start point ASP | 0...480 l/min | 0...28.8 m³/h |
| Analogue 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 |
| Measuring dynamics | 1:120 | |
| Volumetric flow quantity monitoring | | |
| Pulse value | 0.0001...600 x 10³ m³ | |
| In steps of | 0.0001 m³ | |
| 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 for the switching output 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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Magnetic-inductive flow meter

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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: Process Data Variable; Device Identification | |
| 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 | 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 | |
| | model number | 004MI |
| CPA approval | accuracy class | - |
| | maximum allowable error | ± 1,5 % FS |
| | Q (min) | 0,3 m³/h |
| | Q (t) | - |
| | Q (max) | 36 m³/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] | 78 | |
| 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] | 3208 | |
| Materials | 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; FKM | |
| 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 | |

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Magnetic-inductive flow meter

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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; Contacts: gold-plated



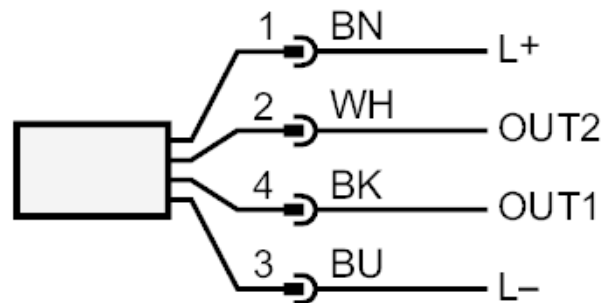
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Connection



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

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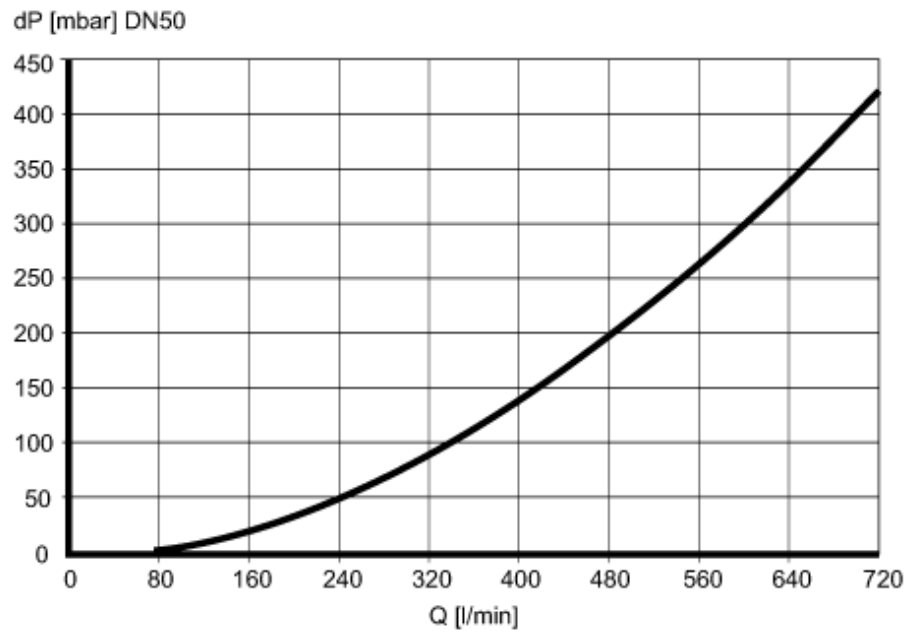


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Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity