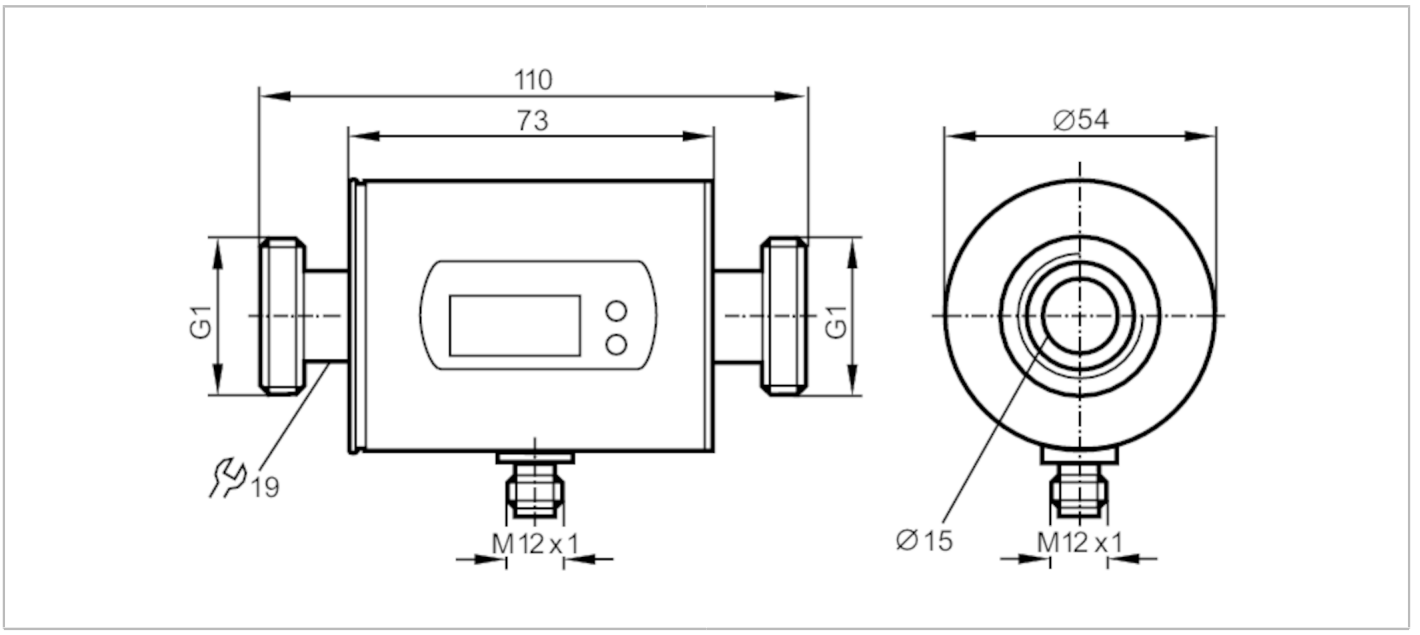
# SM8000

## 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 m³/h |
| Process connection | | threaded connection G 1 external thread DN25 flat seal | |
| **Application** | | | |
| Special feature | | Gold-plated contacts | |
| Application | | totaliser function; for industrial applications | |
| Installation | | connection to pipe by means of an adapter | |
| Media | | conductive liquids; water; hydrous media | |
| Note on media | | conductivity: ≥ 20 µS/cm | |
| | | viscosity: < 70 mm²/s (40 °C) | |
| Medium temperature | [°C] | -10...70 | |
| Pressure rating | [bar] | 16 | |
| Pressure rating | [MPa] | 1.6 | |
| MAWP (for applications according to CRN) | [bar] | 11.2 | |
| **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 analogue outputs: 1 | |

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| **Inputs** | | | |
| Inputs | | counter reset | |
| **Outputs** | | | |
| Total number of outputs | | 2 | |
| Output signal | | switching signal; analogue signal; pulse 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] | 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 | | 0.00001...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 | |
| Analogue start point | [°C] | -20...60 | |
| Analogue end point | [°C] | 0...80 | |
| In steps of | [°C] | 0.2 | |

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| **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) | |
| **Response 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 / normally 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: Process Data Variable; Device Identification, Device Diagnosis | |
| 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 | 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) |

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

### Displays / operating elements

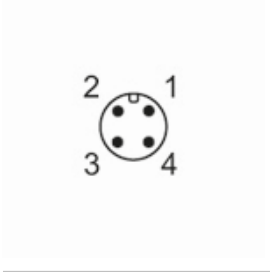
| | | | |
|---|---|---|---|
| Display | | Display unit | 6 x LED, green (l/min, m³/h, l, m³, 10³, °C) |
| | | switching status | 2 x LED, yellow |
| | | measured values | alphanumeric display, 4-digit |
| | | programming | alphanumeric display, 4-digit |

### 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



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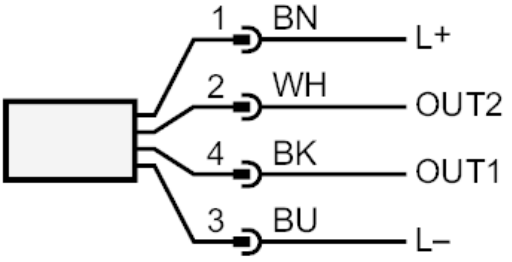
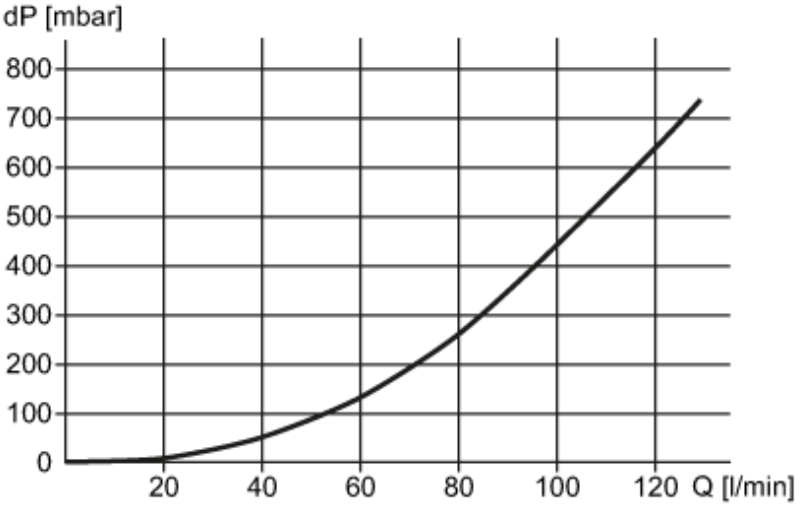
### Connection




| | |
|---|---|
| | colours 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 |
| | analogue output volumetric flow quantity monitoring |
| | analogue output Temperature monitoring |
| | input counter reset |
| | Core colours : |
| BK = | black |
| BN = | brown |
| BU = | blue |
| WH = | white |

### Diagrams and graphs

Pressure loss




dP Pressure loss

Q volumetric flow quantity