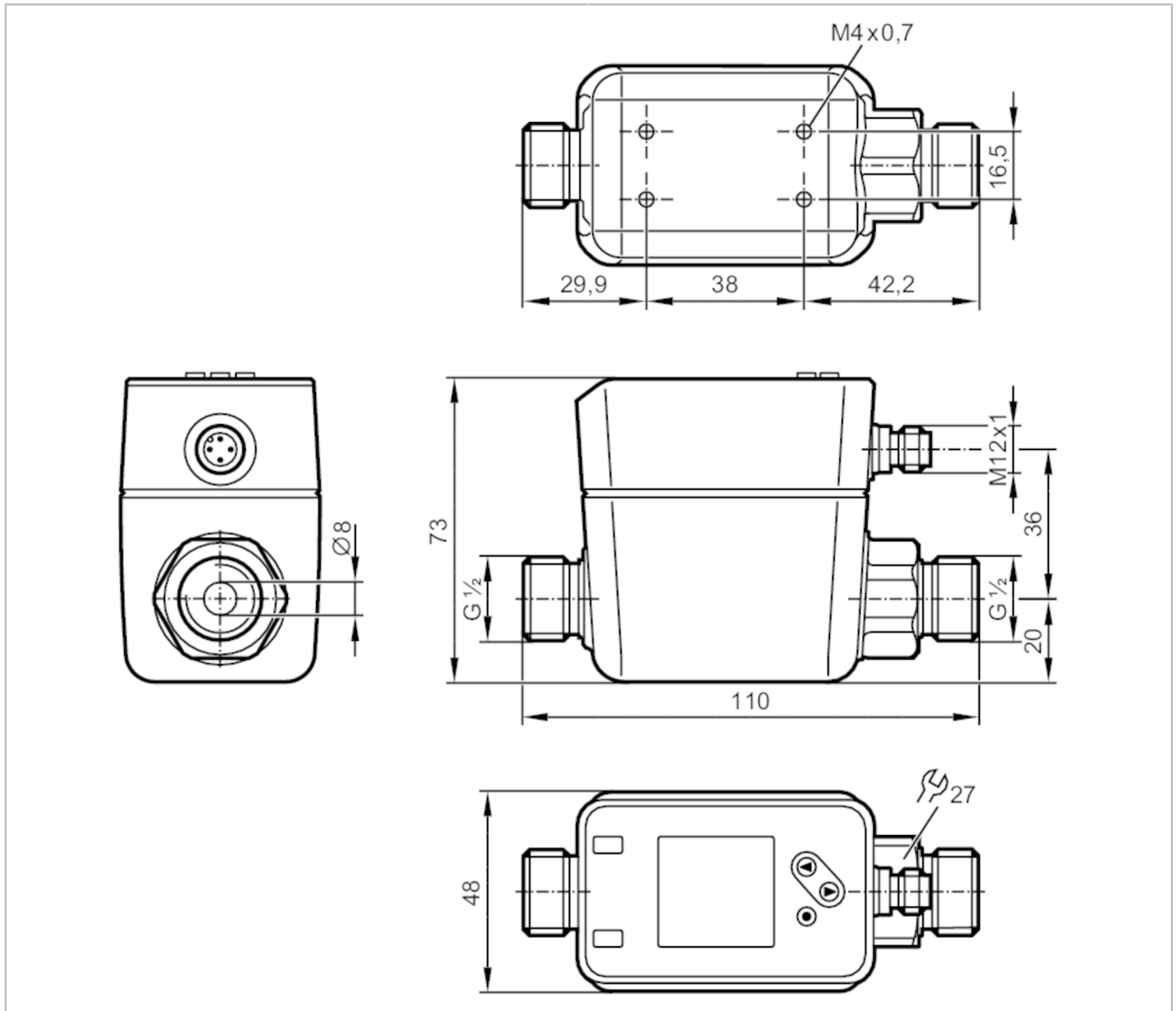


SM6020



Magnetic-inductive flow meter

SMR12XGXFRKG/US-100



| Product characteristics | |
|------------------------------|---|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1 |
| Process connection | G 1/2 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 |
| Pressure rating | [bar] 16 |
| Pressure rating | [Mpa] 1.6 |

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| 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 | | | |
| 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 | | | |

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| 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] | $\pm 2,5 (Q > 5 \% MEW)$ |

| 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 | Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis | |
| SIO mode | yes | |
| Required master port class | A | |
| Process data analog | 3 | |
| Process data binary | 2 | |
| Min. process cycle time | [ms] 6 | |
| 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 |

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| Tests / approvals | | |
|--|---|--------------------|
| EMC | DIN EN 60947-5-9 | |
| | model number | 005MI |
| | accuracy class | - |
| CPA approval | maximum allowable error | ± 1,0 % FS |
| | Q (min) | 0,003 m³/h |
| | Q (t) | - |
| | Q (max) | 2,1 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] | 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 |
| 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; Centellen | |
| Process connection | G 1/2 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 | | |
| | | |

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Connection



Colors to DIN EN 60947-5-2

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

Core colors :

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

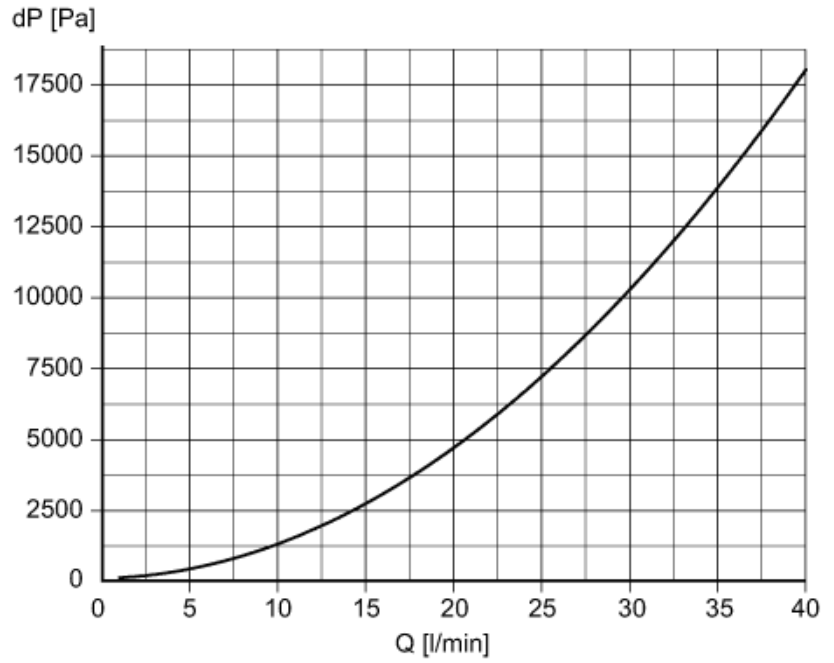
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Diagrams and graphs



Pressure loss / volumetric flow quantity