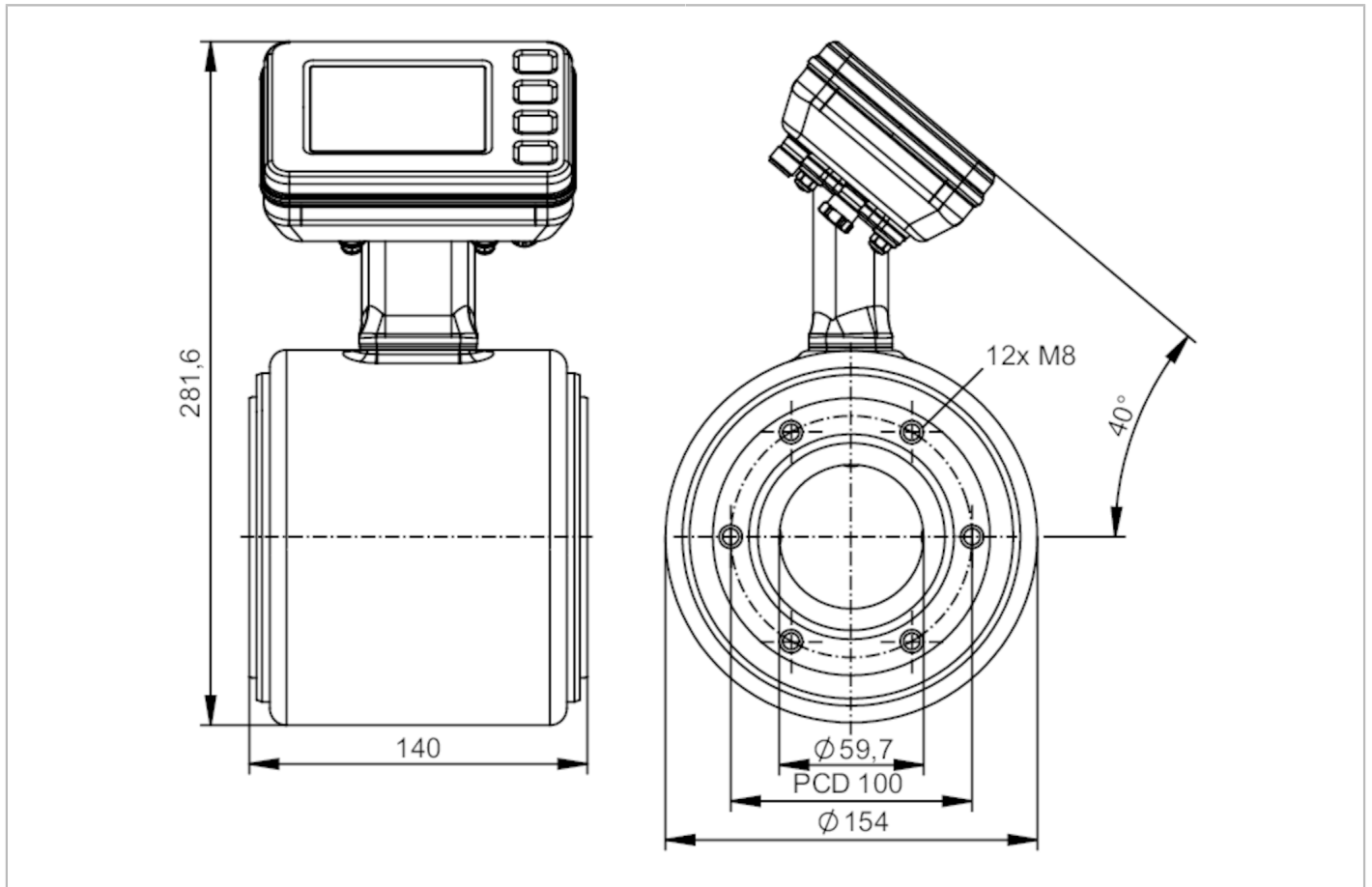


SMF520



Magnetic-inductive flow meter

SMG65KGFFRKG/USD



EC 1935/2004

FCM



Product characteristics

| | | | | |
|--------------------|----------------------------|-------------------|--------------|----------------|
| Measuring range | 20...2000 l/min | 1200...120000 l/h | 0.1...10 m/s | 1.2...120 m³/h |
| Nominal diameter | DN65 (2 1/2") | | | |
| Process connection | ifm-specific device flange | | | |

Application

| | | | | |
|-------------------------|---|----------|--|--|
| Special feature | Gold-plated contacts | | | |
| Application | food and beverage industry | | | |
| Media | conductive liquids; water; hydrous media | | | |
| Note on media | food products such as beer, milk, fruit juices, soft drinks, ketchup, yoghurt, yoghurt toppings, ice cream conductivity: $\geq 5 \mu\text{S/cm}$ | | | |
| Medium temperature [°C] | -20...150 | | | |
| Min. burst pressure | 37.5 bar | 3.75 MPa | | |
| Pressure rating | 25 bar | 2.5 MPa | | |

Electrical data

| | | | | |
|-----------------------------|------------|--|--|--|
| Operating voltage [V] | 18...32 DC | | | |
| Current consumption [mA] | 250; (24V) | | | |
| Protection class | III | | | |
| Reverse polarity protection | yes | | | |
| Power-on delay time [s] | < 5 | | | |

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| | | | | |
|--|----------------------------|--|-------------------|------------------------------|
| Measuring principle | magnetic-inductive | | | |
| Inputs / outputs | | | | |
| Total number of inputs and outputs | 2 | | | |
| Inputs | | | | |
| Inputs | OUT2 | external totaliser reset | | |
| Outputs | | | | |
| Total number of outputs | 2 | | | |
| Output signal | OUT1 | pulse signal; totaliser switching signal; diagnostic signal; IO-Link | | |
| | OUT2 | analogue signal; pulse signal; totaliser switching signal; diagnostic signal | | |
| Electrical design | PNP/NPN | | | |
| Pulse output | flow rate meter | | | |
| Short-circuit protection | yes | | | |
| Type of short-circuit protection | pulsed | | | |
| Overload protection | yes | | | |
| Analogue | | | | |
| Number of analogue outputs | 1 | | | |
| Analogue current output [mA] | 4...20; (skalierbar) | | | |
| Max. load [Ω] | 500 | | | |
| Resolution of analogue output | 0.38 μ A | | | |
| Digital | | | | |
| Number of digital outputs | 2 | | | |
| Max. voltage drop switching output DC [V] | 2 | | | |
| Permanent current rating of switching output DC [mA] | 100 | | | |
| Switching frequency DC [Hz] | 0...10000 | | | |
| Measuring/setting range | | | | |
| Measuring range | 20...2000 l/min | 1200...120000 l/h | 0.1...10 m/s | 1.2...120 m ³ /h |
| Display range | -2400...2400 l/min | -144000...144000 l/h | -12...12 m/s | -144...144 m ³ /h |
| Resolution | 0.1 l/min | 100 l/h | 0.01 m/s | 0.01 m ³ /h |
| Note on factory setting | 0...30,0 m ³ /h | | | |
| Analogue start point ASP | -2000...1600 l/min | -120000...96000 l/h | -10.05...8.05 m/s | -120...96 m ³ /h |
| Analogue end point AEP | -1600...2000 l/min | -96000...120000 l/h | -8.05...10.05 m/s | -96...120 m ³ /h |
| Low flow cut-off LFC | 0...1600 l/min | 0...96000 l/h | 0...8.05 m/s | 0...96 m ³ /h |
| Pulse length [s] | 0.00005...2 | | | |
| Pulse value | 0.004...99990000 l | | | |
| Temperature monitoring | | | | |
| Measuring range [°C] | -20...150 | | | |
| Display range [°C] | -20...150 | | | |
| Resolution [°C] | 0.01 | | | |
| Analogue start point [°C] | -20...116 | | | |
| Analogue end point [°C] | 14...150 | | | |

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Magnetic-inductive flow meter

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| Conductivity monitoring | | |
|---------------------------------------|---|--|
| Measuring range | [μ S/cm] | 100...100000 |
| Display range | [μ S/cm] | 0...10000000 |
| Resolution | [μ S/cm] | 1 |
| Analogue start point | [μ S/cm] | 0...80000 |
| Analogue end point | [μ S/cm] | 20000...100000 |
| Accuracy / deviations | | |
| Volumetric flow monitoring | | |
| Accuracy (under reference conditions) | with optional factory calibration (availability is being planned) | $\pm (0,2 \% \text{ MW} + 2 \text{ mm/s})$ |
| | standard | $\pm (0,5 \% \text{ MW} + 1,5 \text{ mm/s})$ |
| Repeatability | | 0,1% MW |
| Temperature monitoring | | |
| Accuracy | [K] | ± 1 |
| Repeatability | [K] | $\pm 0,5$ |
| Conductivity monitoring | | |
| Accuracy (in the measuring range) | in the range of 100...20000 μ S/cm | $\pm 10\% \text{ MW}$ |
| | in the range of 20000...100000 μ S/cm | $\pm 20\% \text{ MW}$ |
| Repeatability | | $\pm 5\% \text{ MW}$ |
| Response times | | |
| Volumetric flow monitoring | | |
| Response time | [s] | < 0.3 |
| Damping process value dAP | [s] | 0...5 |
| Temperature monitoring | | |
| Response time | [s] | < 3; (flow velocity: $\geq 0,5\text{m/s}$) |
| Conductivity monitoring | | |
| Response time | [s] | < 2 |
| Software / programming | | |
| Diagnostic functions | | direction of flow detection; liquid detection |
| Interfaces | | |
| Communication interface | | IO-Link |
| Transmission type | | COM3 (230,4 kBaud) |
| IO-Link revision | | 1.1.3 |
| SDCI standard | | IEC 61131-9 |
| Profiles | Smart Sensor - SSP 4.3.4 | Measuring and Switching Sensor, floating point, 4 channel |
| | BLOB | Binary Large Object transfer |
| | Common - I&D | Identification and Diagnosis |
| | Extension | Sensor Control Wide |
| | Extension | Quantity detection, switches when value exceeds the setpoint |
| | Function | Locator |
| Function | ProductURI | |
| SIO mode | | yes |

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Magnetic-inductive flow meter

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| | | |
|---------------------------------|--|-------------------|
| Required master port type | A | |
| Process data analogue | 6 | |
| Process data binary | 8 | |
| Min. process cycle time [ms] | 1.9 | |
| IO-Link process data (cyclical) | function | bit length |
| | totaliser | 32 |
| | flow | 32 |
| | temperature | 32 |
| | conductivity | 32 |
| | status | 4 |
| | binary switching information | 8 |
| IO-Link functions (acyclical) | direction of flow detection; totaliser; memory; operating hours counter; internal temperature; simulation function | |
| Supported DeviceIDs | Type of operation | DeviceID |
| | default | 1795 |

Operating conditions

| | |
|--------------------------|---------------------------------|
| Ambient temperature [°C] | -20...65 |
| Storage temperature [°C] | -20...80 |
| Protection | IP 67; IP 69; (to DIN EN 60529) |

Tests / approvals

| | | |
|------------------------------|---|-------------|
| EMC | DIN 61326-1 | |
| CPA approval | model number | SMF |
| | accuracy class | 0,5 |
| | Shock resistance | 20 g (18ms) |
| Vibration resistance | DIN IEC 68-2-6 | |
| MTTF [years] | 81 | |
| UL approval | UL approval no. | I031 |
| Pressure Equipment Directive | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request | |

Mechanical data

| | |
|---|---|
| Weight [g] | 6925.7 |
| Housing | cylindrical |
| Inlet pipe length | 5 x DN |
| Outlet pipe length | 2 x DN |
| Dimensions [mm] | Ø 154 / L = 140 |
| Materials | housing: stainless steel (316L/1.4404); flange: stainless steel (304/1.4301); electronics fixture: stainless steel (304/1.4301); electronics: stainless steel (316L/1.4404); Display: polysulfone; Display-Sealing: FKM; LED ring: PP |
| Materials (wetted parts) | Pipe section: PFA; electrodes: stainless steel (316L/1.4435) |
| Nominal diameter | DN65 (2 1/2") |
| Process connection | ifm-specific device flange |
| Surface characteristics Ra/Rz of the wetted parts | Ra < 0.4 µm |

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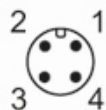
Magnetic-inductive flow meter

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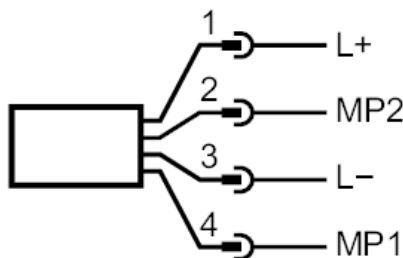
| Displays / operating elements | | |
|-------------------------------|---|--|
| Display | process value | full graphics TFT display, multi-colour 3,5" 320 x 240 Pixel |
| | | display layouts: 4 |
| | | display rotation: 4 x 90° |
| | operating status | LED ring, three-colour |
| Display unit | l/min; l/h; hl/min; hl/h; m³/min; m³/h; m/s; °C; µS/cm; S/m; ms/cm | |
| Factory setting | m³/h; °C; µS/cm | |
| Language | German; English; Spanish; French; Italian; Japanese; Korean; Portuguese; Chinese | |
| Operating elements | 4 | capacitive pushbuttons |
| Remarks | | |
| Remarks | MW = measured value | |
| | MEW = Final value of the measuring range | |
| | pulse and totaliser signal are only available for one of the two outputs | |
| | reference conditions (1/2): water (free of gas bubbles), 15...35 °C, process connection: DIN32676 series A, pipe standard suitable for process connection | |
| | reference conditions (2/2): inlet pipe length 10xDN, outlet pipe length 5xDN, device settling time: 30 minutes, device orientation: horizontal, display orientation: up | |
| | accuracy specifications according to factory certificate on delivery | |
| Pack quantity | 1 pcs. | |

Electrical connection

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



Connection



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Magnetic-inductive flow meter

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Electrical connection - plug

| | | |
|---|-----|----------------|
| 1 | L+ | |
| 2 | MP2 | DO2, AO, reset |
| 3 | L- | |
| 4 | MP1 | DO1, IO-Link |

AO: analogue output; DO: digital output; MP: multi-function connection