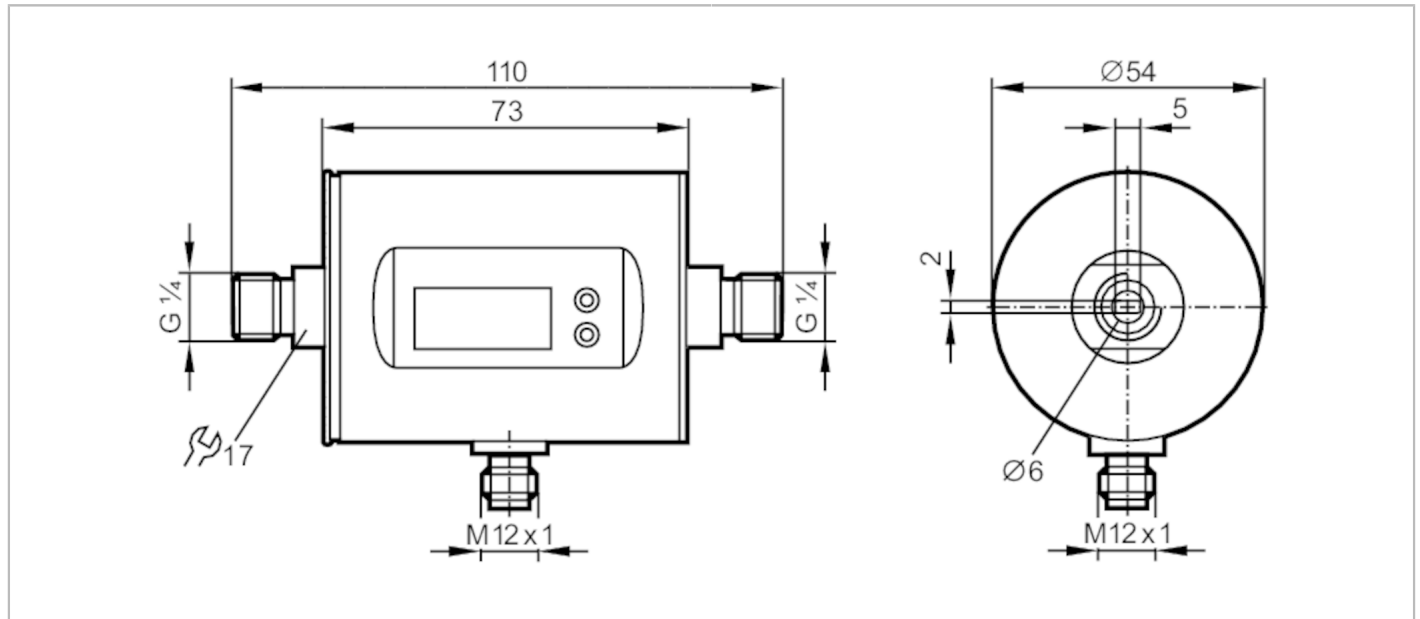


# SM4000



## Magnetic-inductive flow meter

SMR14DXXFRKG/US-100



### Product characteristics

|                              |   |                 |
|------------------------------|---|-----------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |                 |
| Measuring range              | 5...3000 ml/min   | 0.005...3 l/min |
| Process connection           | threaded connection G 1/4 DN6 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: $\geq 20 \mu\text{S/cm}$<br>viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C) |  |
| Medium temperature [°C]                        | 0...60  |  |
| Pressure rating [bar]                          | 10  |  |
| Pressure rating [Mpa]                          | 1.2   |  |
| MAWP (for applications according to CRN) [bar] | 7.3   |  |

### Electrical data

|                             |   |  |
|-----------------------------|---|--|
| Operating voltage [V]       | 18...30 DC; (according to EN 50178 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 analogue outputs: 1 |  |
|------------------------------|---|--|

### Inputs

|        |               |  |
|--------|---------------|--|
| Inputs | counter reset |  |
|--------|---------------|--|

# SM4000



## Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

| 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 [ $\Omega$ ]                               | 500  |
| Analogue voltage output [V]                          | 0...10; (scalable)   |
| Min. load resistance [ $\Omega$ ]                    | 2000   |
| Pulse output   | flow rate meter  |
| Short-circuit protection                             | yes  |
| Type of short-circuit protection                     | pulsed   |
| Overload protection                                  | yes  |
| Measuring/setting range                              |  |
| Measuring range                                      | 5...3000 ml/min   0.005...3 l/min  |
| Display range [ml/min]                               | -1999...3600   |
| Resolution [ml/min]                                  | 1  |
| Set point SP [ml/min]                                | 20...3000  |
| Reset point rP [ml/min]                              | 5...2984   |
| Analogue start point ASP [ml/min]                    | 0...2400   |
| Analogue end point AEP [ml/min]                      | 600...3000   |
| Low flow cut-off LFC [ml/min]                        | < 60   |
| Volumetric flow quantity monitoring                  |  |
| Pulse value  | 1...3000 ml  |
| Pulse length [s]                                     | 0,008...2  |
| Temperature monitoring                               |  |
| Measuring range [ $^{\circ}\text{C}$ ]               | -20...80   |
| Resolution [ $^{\circ}\text{C}$ ]                    | 0.2  |
| Set point SP [ $^{\circ}\text{C}$ ]                  | -19.2...80   |
| Reset point rP [ $^{\circ}\text{C}$ ]                | -19.6...79.6   |
| Analogue start point [ $^{\circ}\text{C}$ ]          | -20...60   |
| Analogue end point [ $^{\circ}\text{C}$ ]            | 0...80   |
| In steps of [ $^{\circ}\text{C}$ ]                   | 0.2  |
| Accuracy / deviations                                |  |
| Flow monitoring                                      |  |
| Accuracy (in the measuring range)                    | $\pm (2 \% \text{ MW} + 0,5 \% \text{ MEW})$                             |
| Repeatability  | $\pm 0,2\% \text{ MEW}$  |

# SM4000



## Magnetic-inductive flow meter

SMR14DXXFRKG/US-100


|                                      |  |                              |
|--------------------------------------|--|------------------------------|
| Temperature monitoring               |  |                              |
| Accuracy                             | [K]  | $\pm 2,5$ ( $Q > 0,5$ l/min) |
| <b>Response times</b>                |  |                              |
| Flow monitoring                      |  |                              |
| Response time                        | [s]  | 0.15; (dAP = 0, T19)         |
| 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 = 40 ( $Q > 1$ l/min)    |
| <b>Software / programming</b>        |  |                              |
| 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 |                              |
| <b>Interfaces</b>                    |  |                              |
| 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]   | 4                            |
| Supported DeviceIDs                  | Type of operation  | DeviceID                     |
|                                      | Default  | 671                          |
| <b>Operating conditions</b>          |  |                              |
| Ambient temperature                  | [°C]   | -10...60                     |
| Storage temperature                  | [°C]   | -25...80                     |
| Protection                           | IP 67  |                              |
| <b>Tests / approvals</b>             |  |                              |
| EMC                                  | DIN EN 60947-5-9   |                              |
|                                      | model number   | 007MI                        |
|                                      | accuracy class   | -                            |
|                                      | maximum allowable error  | $\pm 2,5$ % FS               |
|                                      | Q (min)  | 0,0003 m <sup>3</sup> /h     |
|                                      | Q (t)  | -                            |
| CPA approval                         | Q (max)  | 0,18 m <sup>3</sup> /h       |
|                                      | Shock resistance   |                              |
|                                      | DIN IEC 68-2-27  |                              |
| Vibration resistance                 |  | DIN IEC 68-2-6               |
|                                      |  | 20 g (11 ms)                 |
| MTTF                                 | [years]  | 144                          |
| Pressure Equipment Directive         | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request  |                              |

# SM4000



## Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

| Mechanical data   |   |  |
|---|---|--|
| Weight [g]  | 536.5   |  |
| Materials   | stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE         |  |
| Materials (wetted parts)  | stainless steel (1.4404 / 316L); PEEK; FKM                      |  |
| Process connection  | threaded connection G 1/4 DN6 flat seal                         |  |
| Displays / operating elements   |   |  |
| Display   | Display unit  | 6 x LED, green (ml/min, l/h, l, m <sup>3</sup> , °C, 10 <sup>3</sup> ) |
|   | switching status  | 2 x LED, yellow  |
|   | measured values   | alphanumeric display, 4-digit  |
|   | programming   | alphanumeric display, 4-digit  |
| Remarks   |   |  |
| Remarks   | MW = measured value<br>MEW = Final value of the measuring range |  |
| Pack quantity   | 1 pcs.  |  |
| Electrical connection   |   |  |
| Connector: 1 x M12; Contacts: gold-plated   |   |  |
|  |   |  |

# SM4000



## Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

### 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

# SM4000

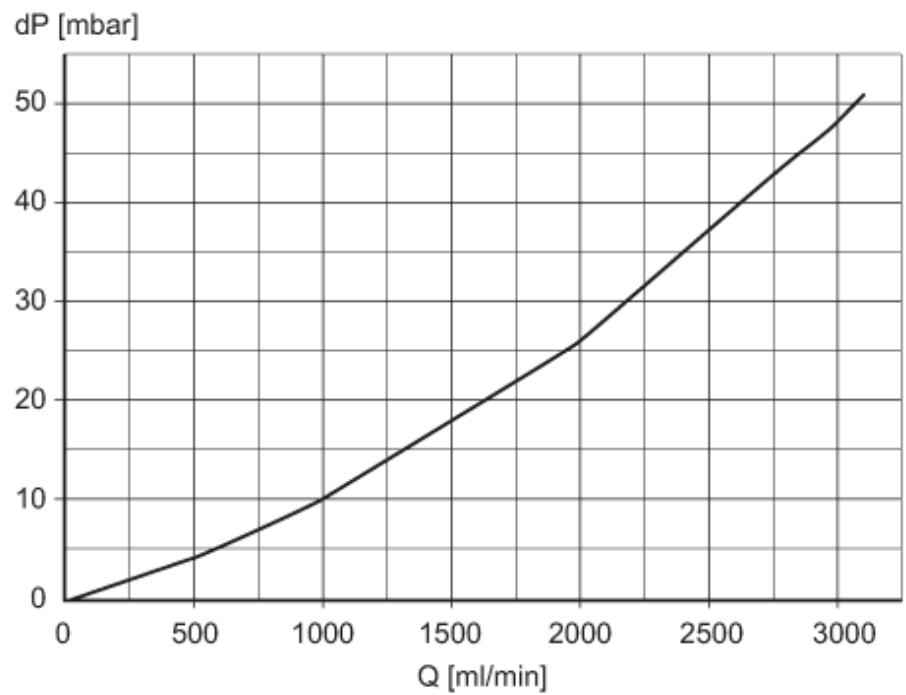


## Magnetic-inductive flow meter

SMR14DXXFRKG/US-100

### Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity