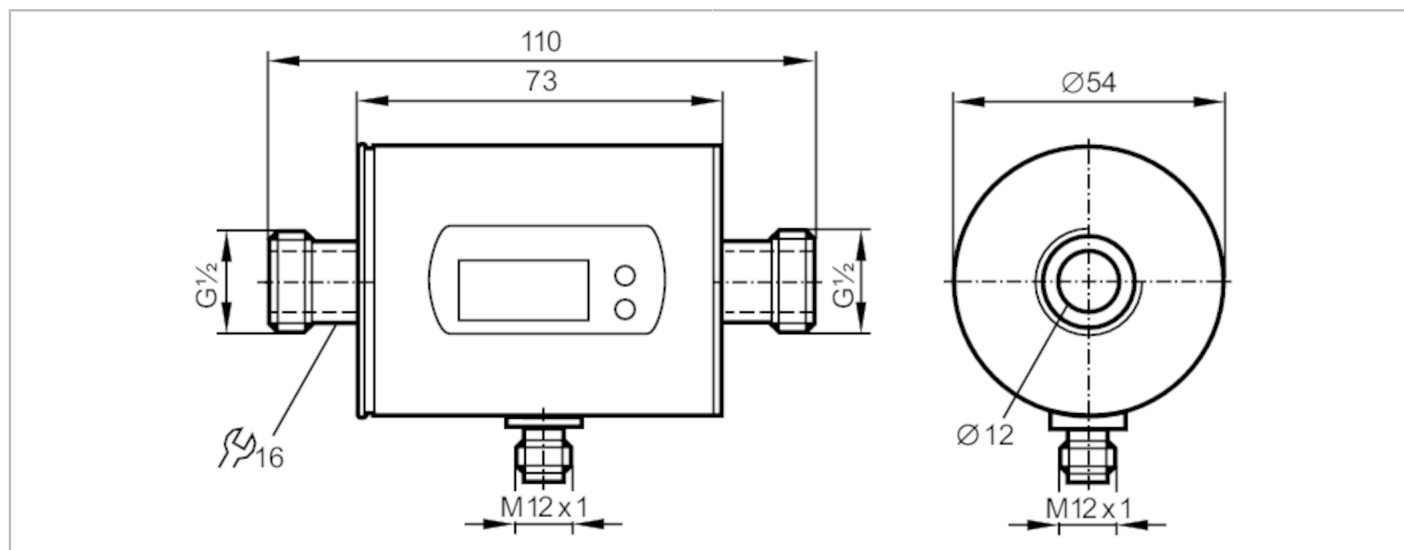


# SM6001



## Magnetic-inductive flow meter

SMR12GGXFRKG/US-100



### Product characteristics

|                              |                                                             |                |
|------------------------------|-------------------------------------------------------------|----------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |                |
| Measuring range              | 1.5...396 gph                                               | 0.03...6.6 gpm |
| Process connection           | threaded connection G 1/2 external thread DN15 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: $\geq 20 \mu\text{S/cm}$          |          |
|                                          | viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C) |          |
| Medium temperature                       | [°F]                                            | 14...158 |
| Pressure rating                          | [bar]                                           | 16       |
| Pressure rating                          | [psi]                                           | 232      |
| MAWP (for applications according to CRN) | [bar]                                           | 17.7     |

### Electrical data

|                             |      |                            |
|-----------------------------|------|----------------------------|
| Operating voltage           | [V]  | 18...30 DC; (to SELV/PELV) |
| Current consumption         | [mA] | 95; (24 V)                 |
| Min. insulation resistance  | [MΩ] | 100; (500 V DC)            |
| 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 |
|------------------------------|-------------------------------------------------------------|

### Inputs

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



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| 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                                      | 1.5...396 gph                                                            | 0.03...6.6 gpm     |
| Display range                                        | -475.5...475.5 gph                                                       | -7.925...7.925 gpm |
| Resolution                                           | 0.5 gph                                                                  | 0.01 gpm           |
| Set point SP                                         | 3.5...396.5 gph                                                          | 0.06...6.6 gpm     |
| Reset point rP                                       | 1.5...394 gph                                                            | 0.03...6.57 gpm    |
| Analogue start point ASP                             | 0...318 gph                                                              | 0...5.3 gpm        |
| Analogue end point AEP                               | 78...396 gph                                                             | 1.3...6.6 gpm      |
| In steps of                                          | 0.5 gph                                                                  | 0.01 gpm           |
| Volumetric flow quantity monitoring                  |                                                                          |                    |
| Pulse value                                          | 0.01...30 000 000 gal                                                    |                    |
| Pulse length [s]                                     | 0,01...2                                                                 |                    |
| Temperature monitoring                               |                                                                          |                    |
| Measuring range [°F]                                 | -4...176                                                                 |                    |
| Resolution [°F]                                      | 0.1                                                                      |                    |
| Set point SP [°F]                                    | -2.5...176                                                               |                    |
| Reset point rP [°F]                                  | -3.5...175                                                               |                    |
| Analogue start point [°F]                            | -4...140.5                                                               |                    |
| Analogue end point [°F]                              | 31.5...176                                                               |                    |
| In steps of [°F]                                     | 0.5                                                                      |                    |
| Accuracy / deviations                                |                                                                          |                    |
| Flow monitoring                                      |                                                                          |                    |
| Accuracy (in the measuring range)                    | ± (0,8 % MW + 0,5 % MEW)                                                 |                    |
| Repeatability                                        | ± 0,2% MEW                                                               |                    |



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|                                |                                                                                                                                                                                                                                         |                         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Temperature monitoring         |                                                                                                                                                                                                                                         |                         |
| Accuracy                       | [K]                                                                                                                                                                                                                                     | ± 2,5 (Q > 0,26 gpm)    |
| 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 > 0,26 gpm) |
| 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                                                                                                                                                                                                                                 | 570                     |
| Operating conditions           |                                                                                                                                                                                                                                         |                         |
| Ambient temperature            | [°F]                                                                                                                                                                                                                                    | 14...140                |
| Storage temperature            | [°F]                                                                                                                                                                                                                                    | -13...176               |
| Protection                     | IP 67                                                                                                                                                                                                                                   |                         |
| Tests / approvals              |                                                                                                                                                                                                                                         |                         |
| EMC                            | DIN EN 60947-5-9                                                                                                                                                                                                                        |                         |
| 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]                                                                                                                                                                                                                                 | 160                     |
| Pressure Equipment Directive   | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request                                                                                                                                                   |                         |
| Mechanical data                |                                                                                                                                                                                                                                         |                         |
| Weight                         | [g]                                                                                                                                                                                                                                     | 546                     |
| 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 1/2 external thread DN15 flat seal                                                                                                                                                                                |                         |

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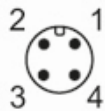
SMR12GGXFRKG/US-100

| Displays / operating elements |                  |                                                                               |
|-------------------------------|------------------|-------------------------------------------------------------------------------|
| Display                       | Display unit     | 6 x LED, green (gpm, gph, gal, °F, 10 <sup>3</sup> , 1000 x 10 <sup>3</sup> ) |
|                               | switching status | 2 x LED, yellow                                                               |
|                               | measured values  | alphanumeric display, 4-digit                                                 |
|                               | programming      | alphanumeric display, 4-digit                                                 |

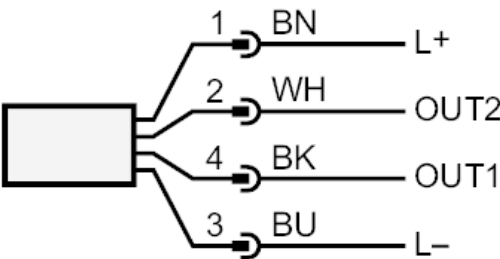
| Remarks       |                                          |
|---------------|------------------------------------------|
| Remarks       | MW = measured value                      |
|               | MEW = Final value of the measuring range |
| Pack quantity | 1 pcs.                                   |

### Electrical connection

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



### Connection



|       |                                                                                                                                                                                                                                           |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUT1: | colours to DIN EN 60947-5-2<br>switching output volumetric flow quantity monitoring<br>Pulse output quantity meter<br>signal output Preset counter<br>IO-Link                                                                             |
| OUT2: | switching output volumetric flow quantity monitoring<br>switching output Temperature monitoring<br>analogue output volumetric flow quantity monitoring<br>analogue output Temperature monitoring<br>input counter reset<br>Core colours : |
| BK =  | black                                                                                                                                                                                                                                     |
| BN =  | brown                                                                                                                                                                                                                                     |
| BU =  | blue                                                                                                                                                                                                                                      |
| WH =  | white                                                                                                                                                                                                                                     |

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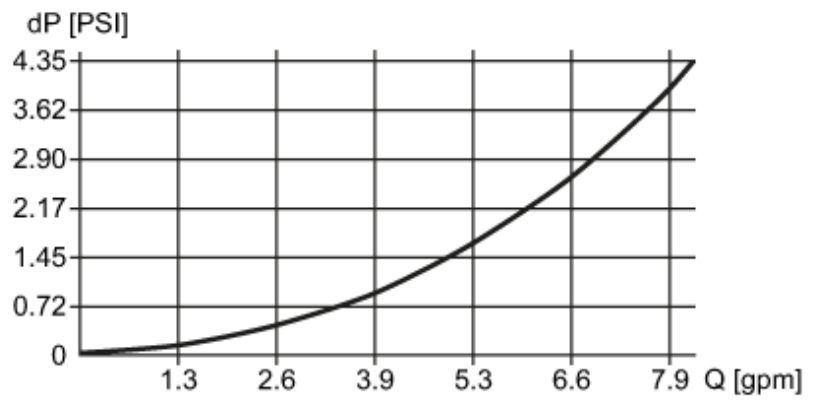


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### Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity