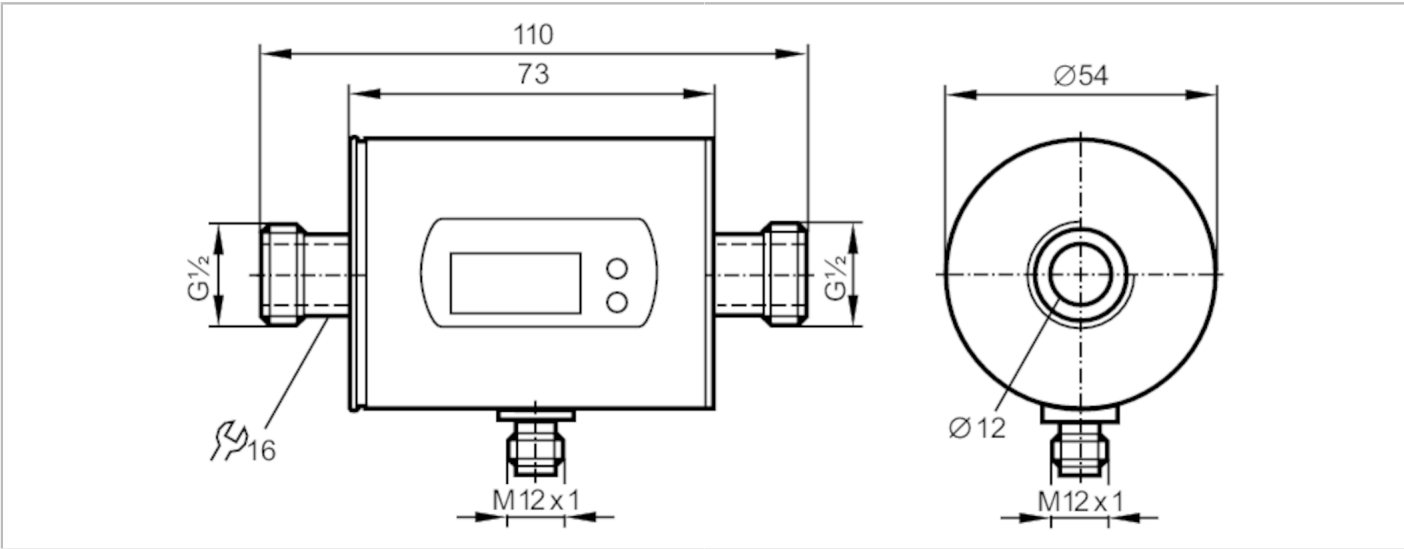


# SM6100



## Magnetic-inductive flow meter

SMR12GGXFRKG/US-100



ACS CE PA CRN  US DNV DNV.COM/AF  IO-Link KTW/W270 Reg31 UK CA

### Product characteristics

|                              |                                                           |                  |
|------------------------------|-----------------------------------------------------------|------------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1 |                  |
| Measuring range              | 0.1...25 l/min                                            | 0.005...1.5 m³/h |
| Process connection           | threaded connection G 1/2 external thread DN15 flat seal  |                  |

### Application

|                                          |                                                                                           |          |
|------------------------------------------|-------------------------------------------------------------------------------------------|----------|
| System                                   | gold-plated contacts                                                                      |          |
| Application                              | Totalizer function; for industrial applications                                           |          |
| Installation                             | connection to pipe by means of an adapter                                                 |          |
| Media                                    | Conductive liquids; water; water-based media                                              |          |
| Note on media                            | conductivity: $\geq 20 \mu\text{S/cm}$<br>viscosity: $< 70 \text{ mm}^2/\text{s}$ (40 °C) |          |
| Medium temperature [°C]                  | -10...70                                                                                  |          |
| Pressure rating                          | 16 bar                                                                                    | 1.6 MPa  |
| MAWP (for applications according to CRN) | 15.3 bar                                                                                  | 1.53 MPa |

### 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 analog outputs: 1 |
|------------------------------|-----------------------------------------------------------|

### Inputs

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

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| Outputs                                              |                                                                        |                    |
|------------------------------------------------------|------------------------------------------------------------------------|--------------------|
| Total number of outputs                              | 2                                                                      |                    |
| Output signal                                        | switching signal; analog signal; pulse signal; IO-Link; (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] | 200                                                                    |                    |
| Number of analog outputs                             | 1                                                                      |                    |
| Analog current output [mA]                           | 4...20; (scalable)                                                     |                    |
| Max. load [Ω]                                        | 500                                                                    |                    |
| Analog 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                     | yes (non-latching)                                                     |                    |
| Overload protection                                  | yes                                                                    |                    |
| Measuring/setting range                              |                                                                        |                    |
| Measuring range                                      | 0.1...25 l/min                                                         | 0.005...1.5 m³/h   |
| Display range                                        | -30...30 l/min                                                         | -1.8...1.8 m³/h    |
| Resolution                                           | 0.02 l/min                                                             | 0.002 m³/h         |
| Set point SP                                         | 0.25...25 l/min                                                        | 0.015...1.5 m³/h   |
| Reset point rP                                       | 0.1...24.9 l/min                                                       | 0.005...1.495 m³/h |
| Analog start point ASP                               | 0...20 l/min                                                           | 0...1.2 m³/h       |
| Analog end point AEP                                 | 5...25 l/min                                                           | 0.3...1.5 m³/h     |
| In steps of                                          | 0.02 l/min                                                             | 0.002 m³/h         |
| Volumetric flow quantity monitoring                  |                                                                        |                    |
| Pulse value                                          | 0.00001...30 000 m³                                                    |                    |
| Pulse length [s]                                     | 0,01...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                                                           |                    |
| Analog start point [°C]                              | -20...60                                                               |                    |
| Analog end point [°C]                                | 0...80                                                                 |                    |
| In steps of [°C]                                     | 0.2                                                                    |                    |
| 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 > 1 l/min)     |
| Reaction 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 > 1 l/min)  |
| Software / programming         |                                                                                                                                                                                                                                |                         |
| Parameter setting options      | Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / 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 - SSP 0                                                                                                                                                                                                           | Generic Profiled Sensor |
|                                | Function                                                                                                                                                                                                                       | Device identification   |
|                                | Function                                                                                                                                                                                                                       | Process data variable   |
|                                | Function                                                                                                                                                                                                                       | Device diagnosis        |
| SIO mode                       | yes                                                                                                                                                                                                                            |                         |
| Required master port class     | A                                                                                                                                                                                                                              |                         |
| Process data analog            | 3                                                                                                                                                                                                                              |                         |
| Process data binary            | 2                                                                                                                                                                                                                              |                         |
| Min. process cycle time        | [ms]                                                                                                                                                                                                                           | 5                       |
| Supported DeviceIDs            | Type of operation                                                                                                                                                                                                              | DeviceID                |
|                                | default                                                                                                                                                                                                                        | 569                     |
| 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                                                                                                                                                                                                                   | 001MI                   |
|                                | accuracy class                                                                                                                                                                                                                 | -                       |
|                                | maximum allowable error                                                                                                                                                                                                        | ± 1,5 % FS              |
|                                | Q (min)                                                                                                                                                                                                                        | 0,005 m³/h              |
|                                | Q (t)                                                                                                                                                                                                                          | -                       |
|                                | Q (max)                                                                                                                                                                                                                        | 1,5 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]                                                                                                                                                                                                                        | 145                     |

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|                              |                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------|
| Pressure equipment directive | sound engineering practice; can be used for group 2 fluids; group 1 fluids on request |
|------------------------------|---------------------------------------------------------------------------------------|

### Mechanical data

|                          |      |                                                          |
|--------------------------|------|----------------------------------------------------------|
| Weight                   | [g]  | 548                                                      |
| Housing                  |      | tubular                                                  |
| Inlet pipe length        |      | 3 x DN                                                   |
| Outlet pipe length       |      | 1 x DN                                                   |
| Dimensions               | [mm] | Ø 54 / L = 110                                           |
| Material                 |      | stainless steel (1.4404 / 316L); PBT-GF20; PC; FKM; TPE  |
| Materials (wetted parts) |      | stainless steel (1.4404 / 316L); PEEK; EPDM              |
| Process connection       |      | threaded connection G 1/2 external thread DN15 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



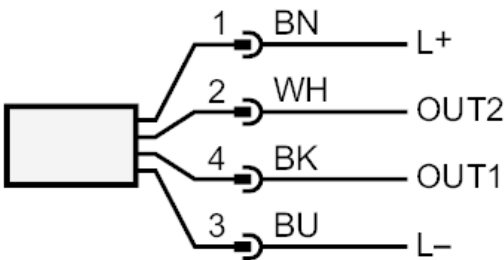
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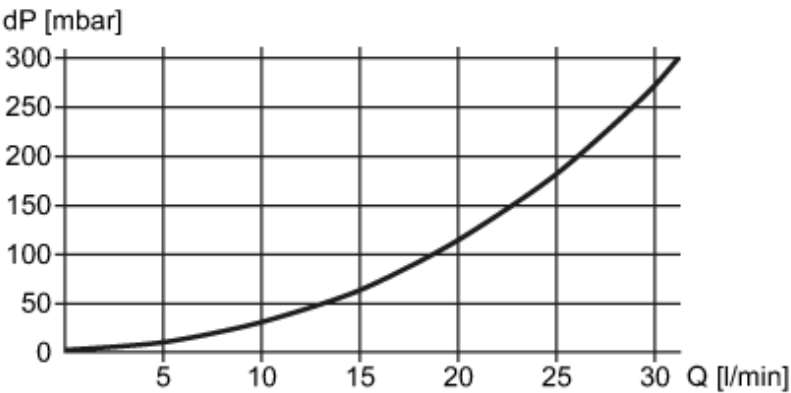
### Connection



|               |                                                      |
|---------------|------------------------------------------------------|
| OUT1:         | Colors to DIN EN 60947-5-2                           |
|               | Switching output Volumetric flow quantity monitoring |
| OUT2:         | Pulse output quantity meter                          |
|               | signal output Preset counter                         |
|               | IO-Link                                              |
|               | Switching output Volumetric flow quantity monitoring |
|               | Switching output Temperature monitoring              |
|               | analog output Volumetric flow quantity monitoring    |
|               | analog output Temperature monitoring                 |
|               | Input counter reset                                  |
| Core colors : |                                                      |
| BK =          | black                                                |
| BN =          | brown                                                |
| BU =          | blue                                                 |
| WH =          | white                                                |

### Diagrams and graphs

#### Pressure loss



dP Pressure loss  
Q volumetric flow quantity