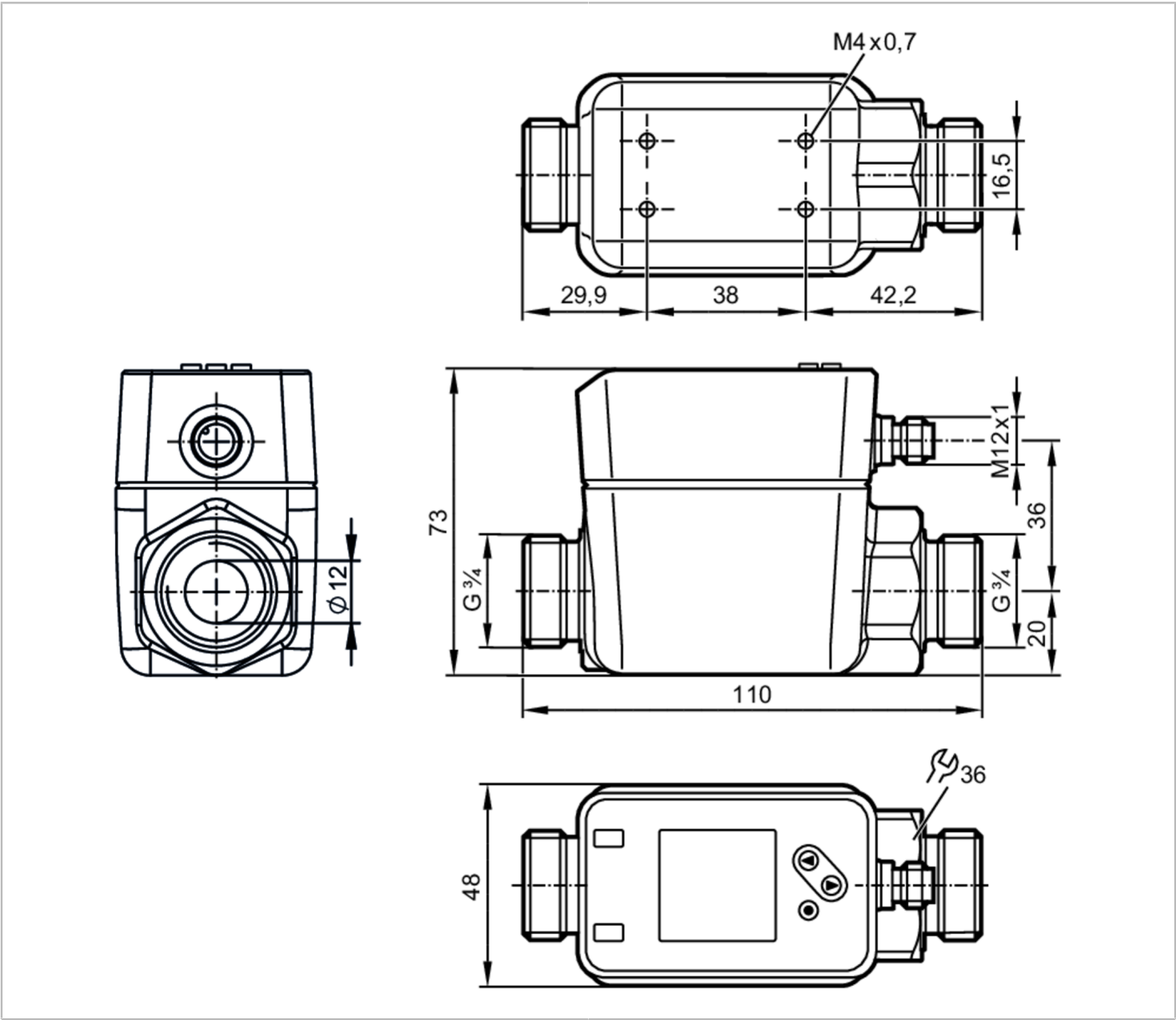


# SM7120

## Magnetic-inductive flow meter

SMR34XGXFRKG/US-100



ACS CE PA c UL US LISTED IO-Link Reg31 UK CA

| Product characteristics      |                                                           |                  |                |                  |
|------------------------------|-----------------------------------------------------------|------------------|----------------|------------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1 |                  |                |                  |
| Measuring range              | 0.1...75 l/min                                            | 0.006...4.5 m³/h | 1.2...1190 gph | 0.02...19.82 gpm |
| Process connection           | threaded connection G 3/4 external thread DN20 flat seal  |                  |                |                  |
| Application                  |                                                           |                  |                |                  |
| System                       | gold-plated contacts                                      |                  |                |                  |
| Media                        | Conductive liquids; water; water-based media              |                  |                |                  |
| Note on media                | conductivity: ≥ 20 µS/cm                                  |                  |                |                  |
|                              | viscosity: < 70 mm²/s (40 °C)                             |                  |                |                  |
| Medium temperature           | -20...90                                                  |                  |                |                  |
| Pressure rating              | 16 bar                                                    |                  | 1.6 MPa        |                  |

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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                                                                                        |                   |                      |
| 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                                                                            |                   |                      |
| 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                                 |      | 0.1...75 l/min                                                                           | 0.006...4.5 m³/h  | 1.2...1190 gph       |
| Display range                                   |      | -90...90 l/min                                                                           | -5.4...5.4 m³/h   | -1426.8...1426.8 gph |
| Resolution                                      |      | 0.1 l/min                                                                                | 0.006 m³/h        | 0.6 gph              |
| Set point SP                                    |      | 0.5...75 l/min                                                                           | 0.03...4.5 m³/h   | 8.4...1189 gph       |
| Reset point rP                                  |      | 0.1...74.6 l/min                                                                         | 0.006...4.48 m³/h | 1.2...1183 gph       |
| Analog start point ASP                          |      | 0...59.9 l/min                                                                           | 0...3.6 m³/h      | 0...950 gph          |
| Analog end point AEP                            |      | 15.1...75 l/min                                                                          | 0.9...4.5 m³/h    | 240...1189 gph       |
| Low flow cut-off LFC                            |      | 0.1...3.8 l/min                                                                          | 0.006...0.23 m³/h | 1.8...59.4 gph       |
| Frequency end point, FEP                        |      | 15.1...75 l/min                                                                          | 0.9...4.5 m³/h    | 240...1189 gph       |
| Frequency at the end point FRP                  | [Hz] | 1...10000                                                                                |                   |                      |
| Volumetric flow quantity monitoring             |      |                                                                                          |                   |                      |
| Pulse length                                    | [s]  | 0.003...2                                                                                |                   |                      |
| Pulse value                                     |      | 0.01...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) |                                                                                                                                                                | ± (0,8 % MW + 0,2 % MEW) |
| Repeatability                     |                                                                                                                                                                | ± 0,2 % MEW              |
| Temperature monitoring            |                                                                                                                                                                |                          |
| Accuracy                          | [K]                                                                                                                                                            | ± 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                                                                                                                                                        | 955                      |
| 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                                                                      |                                       |
| CPA approval                                                                                   | model number                                                                          | 006MI                                 |
|                                                                                                | accuracy class                                                                        | -                                     |
|                                                                                                | maximum allowable error                                                               | ± 1,0 % FS                            |
|                                                                                                | Q (min)                                                                               | 0,006 m³/h                            |
|                                                                                                | Q (t)                                                                                 | -                                     |
|                                                                                                | Q (max)                                                                               | 4,5 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]                                                                               | 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]                                                                                   | 798                                   |
| Housing                                                                                        |                                                                                       | rectangular                           |
| Dimensions                                                                                     | [mm]                                                                                  | 110 x 48 x 73                         |
| 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; EPDM; Centellen             |                                       |
| Process connection                                                                             | threaded connection G 3/4 external thread DN20 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                                           |                                                                                       |                                       |
| <div></div> |                                                                                       |                                       |

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### Connection



- OUT1:

Colors to DIN EN 60947-5-2  
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
- BK =

black
- BN =

brown
- BU =

blue
- WH =

white

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### Diagrams and graphs



Pressure loss / volumetric flow quantity