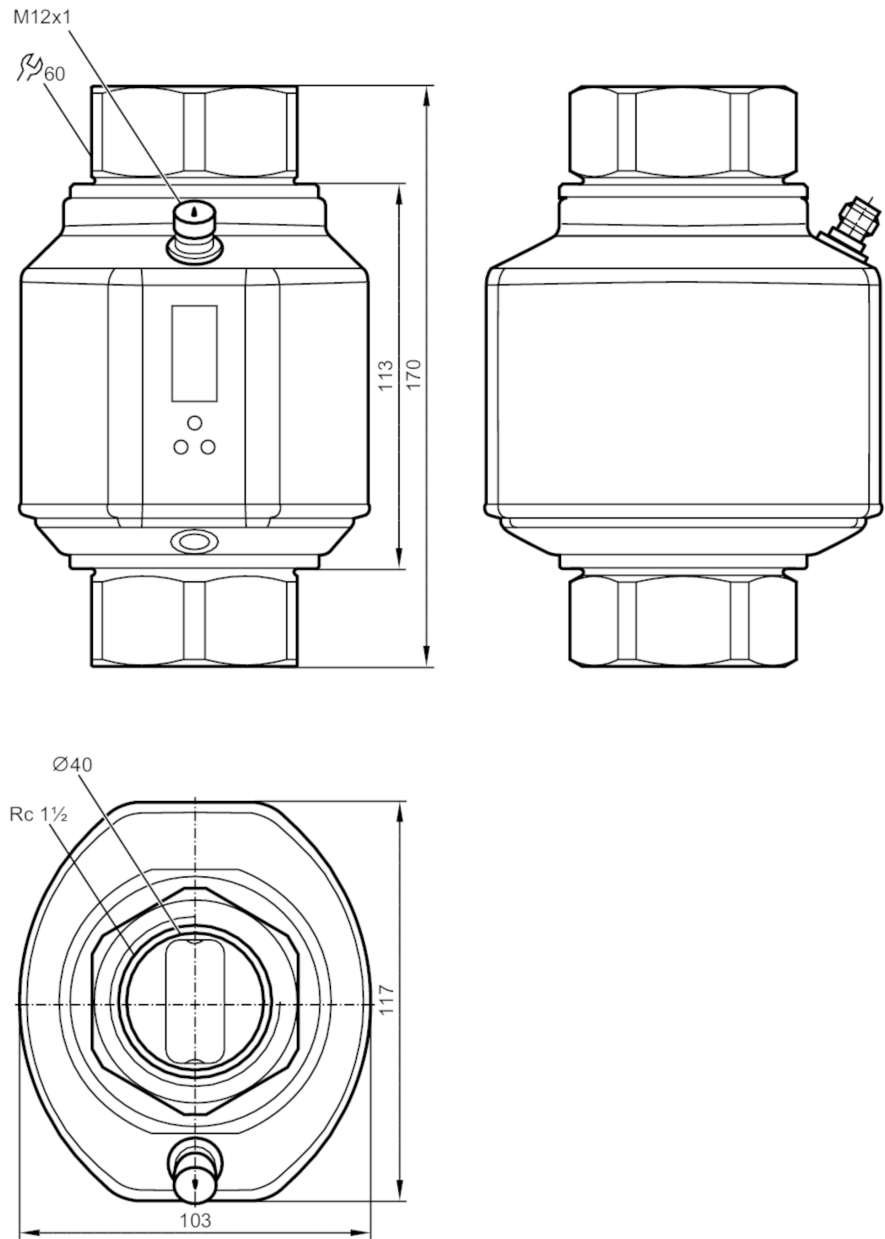


SM9400



Magnetic-inductive flow meter

SMK32XGXFRKG/US-100



| Product characteristics      |                                                                       |               |
|------------------------------|-----------------------------------------------------------------------|---------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1             |               |
| Measuring range              | 5...300 l/min                                                         | 0.3...18 m³/h |
| Process connection           | threaded connection Rc 1 1/2 Internal thread DN40                     |               |
| Application                  |                                                                       |               |
| System                       | gold-plated contacts                                                  |               |
| Application                  | Totalizer function; empty pipe detection; for industrial applications |               |
| Media                        | Conductive liquids; water; water-based media                          |               |
| Note on media                | conductivity: ≥ 20 µS/cm                                              |               |
|                              | viscosity: < 70 mm²/s (40 °C)                                         |               |

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## Magnetic-inductive flow meter

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|                                                 |                  |                                                                                          |
|-------------------------------------------------|------------------|------------------------------------------------------------------------------------------|
| Medium temperature                              | [°C]             | -10...90                                                                                 |
| Pressure rating                                 | 16 bar           | 1.6 MPa                                                                                  |
| Electrical data                                 |                  |                                                                                          |
| Operating voltage                               | [V]              | 18...32 DC; (to SELV/PELV)                                                               |
| Current consumption                             | [mA]             | < 150                                                                                    |
| 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; frequency 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]             | 250; (per output)                                                                        |
| 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                                                                                      |
| Frequency of the output                         | [Hz]             | 0.1...10000                                                                              |
| Measuring/setting range                         |                  |                                                                                          |
| Measuring range                                 | 5...300 l/min    | 0.3...18 m³/h                                                                            |
| Display range                                   | -360...360 l/min | -21.6...21.6 m³/h                                                                        |
| Resolution                                      | 0.5 l/min        | 0.02 m³/h                                                                                |
| Set point SP                                    | 6.5...300 l/min  | 0.4...18 m³/h                                                                            |
| Reset point rP                                  | 5...298.5 l/min  | 0.3...17.9 m³/h                                                                          |
| Analog start point ASP                          | 0...240 l/min    | 0...14.4 m³/h                                                                            |
| Analog end point AEP                            | 60...300 l/min   | 3.6...18 m³/h                                                                            |
| Low flow cut-off LFC                            | < 15 l/min       | < 0.9 m³/h                                                                               |
| In steps of                                     | 0.5 l/min        | 0.02 m³/h                                                                                |
| Measuring dynamics                              |                  | 1:60                                                                                     |



## Magnetic-inductive flow meter

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| Volumetric flow quantity monitoring |                                                                                                                                                                                                                                                               |                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Pulse value                         |                                                                                                                                                                                                                                                               | 0.0001...300 x 10³ m³     |
| In steps of                         |                                                                                                                                                                                                                                                               | 0.0001 m³                 |
| Pulse length                        | [s]                                                                                                                                                                                                                                                           | 0,016...2                 |
| Temperature monitoring              |                                                                                                                                                                                                                                                               |                           |
| Measuring range                     | [°C]                                                                                                                                                                                                                                                          | -20...80                  |
| Display range                       | [°C]                                                                                                                                                                                                                                                          | -40...100                 |
| 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                |
| Temperature monitoring              |                                                                                                                                                                                                                                                               |                           |
| Temperature drift                   |                                                                                                                                                                                                                                                               | ± 0,0333 °C / K           |
| Accuracy                            | [K]                                                                                                                                                                                                                                                           | ± 1 (25 °C; Q > 15 l/min) |
| Reaction times                      |                                                                                                                                                                                                                                                               |                           |
| Flow monitoring                     |                                                                                                                                                                                                                                                               |                           |
| Response time                       | [s]                                                                                                                                                                                                                                                           | 0.35; (dAP = 0)           |
| Delay time programmable dS, dr      | [s]                                                                                                                                                                                                                                                           | 0...50                    |
| Damping process value dAP           | [s]                                                                                                                                                                                                                                                           | 0...5                     |
| Temperature monitoring              |                                                                                                                                                                                                                                                               |                           |
| Dynamic response T05 / T09          | [s]                                                                                                                                                                                                                                                           | T09 = 3 (Q > 15 l/min)    |
| Software / programming              |                                                                                                                                                                                                                                                               |                           |
| Parameter setting options           | Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / closed; switching logic; current/voltage/frequency/pulse output; Start-up delay; display can be deactivated; Display unit; empty pipe detection |                           |
| Interfaces                          |                                                                                                                                                                                                                                                               |                           |
| Communication interface             | IO-Link                                                                                                                                                                                                                                                       |                           |
| Transmission type                   | COM2 (38,4 kBaud)                                                                                                                                                                                                                                             |                           |
| IO-Link revision                    | 1.1                                                                                                                                                                                                                                                           |                           |
| SDCI standard                       | IEC 61131-9 CDV                                                                                                                                                                                                                                               |                           |
| Profiles                            | Smart Sensor: Process Data Variable; Device Identification                                                                                                                                                                                                    |                           |
| SIO mode                            | yes                                                                                                                                                                                                                                                           |                           |
| Required master port class          | A                                                                                                                                                                                                                                                             |                           |
| Process data analog                 | 3                                                                                                                                                                                                                                                             |                           |
| Process data binary                 | 2                                                                                                                                                                                                                                                             |                           |
| Min. process cycle time             | [ms]                                                                                                                                                                                                                                                          | 5                         |

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## Magnetic-inductive flow meter

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|                               |                                          |                                                                                             |                                              |
|-------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------|
| Supported DeviceIDs           |                                          | Type of operation                                                                           | DeviceID                                     |
|                               |                                          | default                                                                                     | 391                                          |
| Operating conditions          |                                          |                                                                                             |                                              |
| Ambient temperature           | [°C]                                     | -10...60                                                                                    |                                              |
| Storage temperature           | [°C]                                     | -25...80                                                                                    |                                              |
| Protection                    |                                          | IP 65; IP 67                                                                                |                                              |
| Tests / approvals             |                                          |                                                                                             |                                              |
| EMC                           | DIN EN 60947-5-9                         |                                                                                             |                                              |
| CPA approval                  | model number                             |                                                                                             | 003MI                                        |
|                               | accuracy class                           |                                                                                             | -                                            |
|                               | maximum allowable error                  |                                                                                             | ± 1,5 % FS                                   |
|                               | Q (min)                                  |                                                                                             | 0,3 m³/h                                     |
|                               | Q (t)                                    |                                                                                             | -                                            |
|                               | Q (max)                                  |                                                                                             | 18 m³/h                                      |
|                               | Medium temperature                       |                                                                                             | -10...70°C                                   |
| Shock resistance              |                                          | DIN EN 60068-2-27                                                                           | 20 g (11 ms)                                 |
| Vibration resistance          |                                          | DIN EN 60068-2-6                                                                            | 5 g (10...2000 Hz)                           |
| MTTF                          | [years]                                  | 85                                                                                          |                                              |
| UL approval                   |                                          | UL approval number                                                                          | I008                                         |
| Pressure equipment directive  |                                          | sound engineering practice; can be used for group 2 fluids; group 1 fluids on request       |                                              |
| Mechanical data               |                                          |                                                                                             |                                              |
| Weight                        | [g]                                      | 2750                                                                                        |                                              |
| Housing                       |                                          | rectangular                                                                                 |                                              |
| Dimensions                    | [mm]                                     | 170 x 103 x 117                                                                             |                                              |
| Material                      |                                          | stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti ); PEI; FKM; PBT-GF20; TPE-U |                                              |
| Materials (wetted parts)      |                                          | stainless steel (1.4404 / 316L); stainless steel (1.4571/316Ti ); PEEK; FKM                 |                                              |
| Process connection            |                                          | threaded connection Rc 1 1/2 Internal thread DN40                                           |                                              |
| 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                |
| Accessories                   |                                          |                                                                                             |                                              |
| Items supplied                |                                          | Label                                                                                       |                                              |
| Remarks                       |                                          |                                                                                             |                                              |
| Remarks                       | MW = Measured value                      |                                                                                             |                                              |
|                               | MEW = Final value of the measuring range |                                                                                             |                                              |
| Pack quantity                 | 1 pcs.                                   |                                                                                             |                                              |

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## Magnetic-inductive flow meter

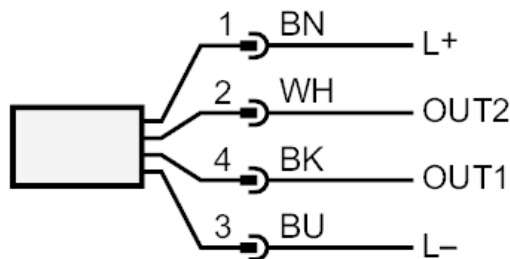
SMK32XGXFRKG/US-100

### Electrical connection

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



### Connection



- OUT1:
- Colors to DIN EN 60947-5-2
  - Switching output empty pipe detection
  - Switching output Volumetric flow quantity monitoring
  - Frequency output Volumetric flow quantity monitoring
  - Pulse output quantity meter
  - signal output Preset counter
  - IO-Link
- OUT2:
- Switching output empty pipe detection
  - 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

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## Magnetic-inductive flow meter

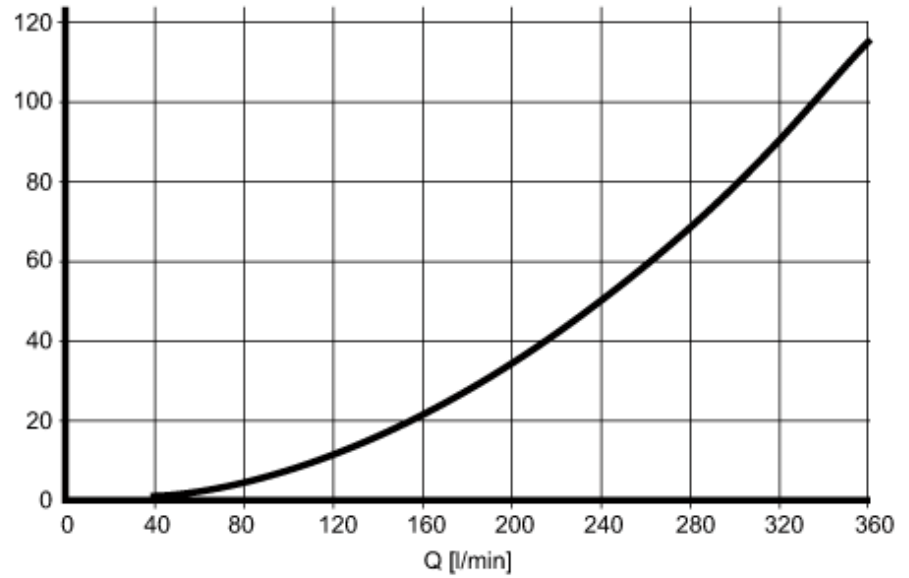
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### Diagrams and graphs

#### Pressure loss

dP [mbar] DN50



dP Pressure loss

Q volumetric flow quantity