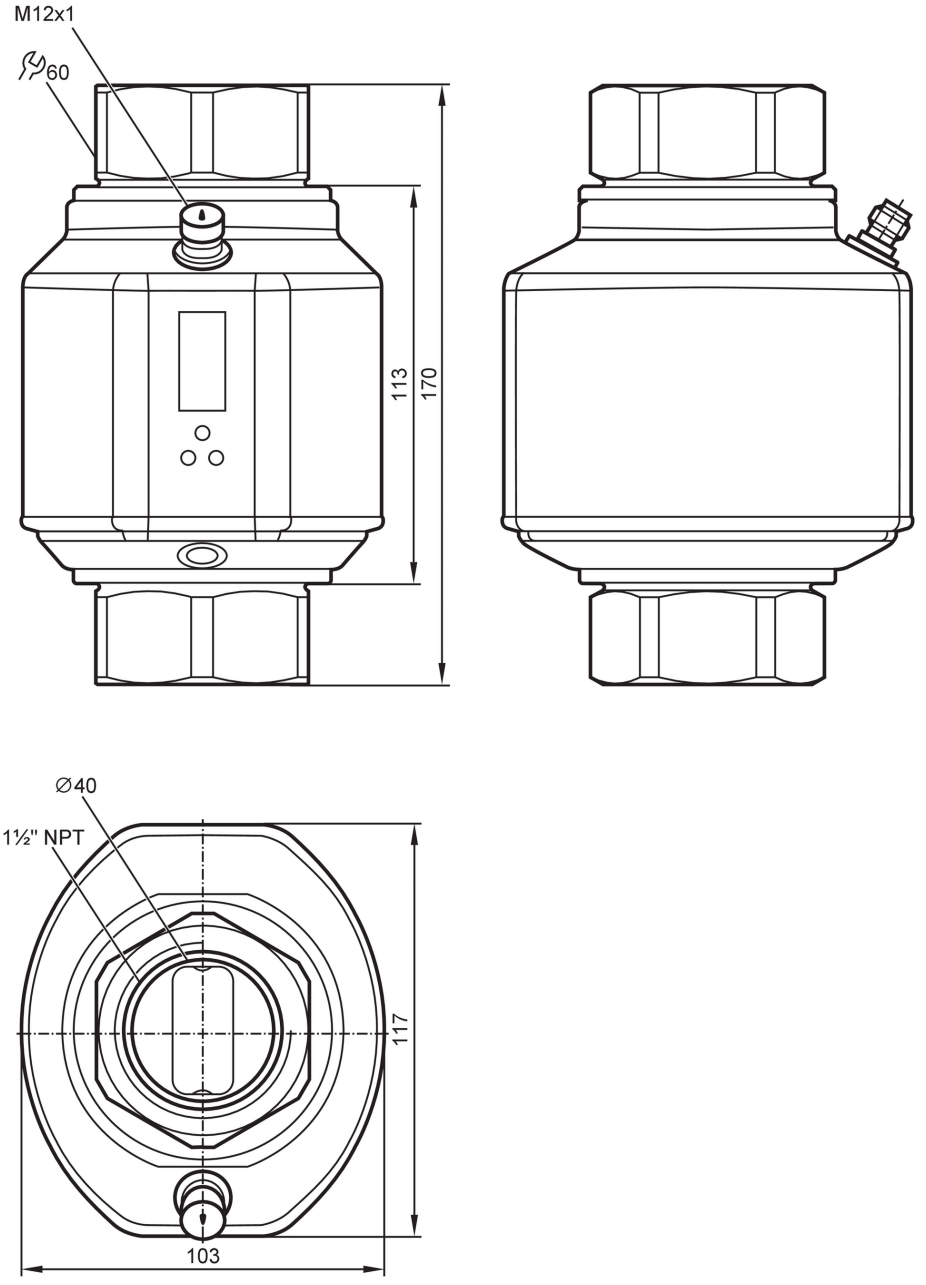
# SM9601

## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100




| | | |
|---|---|---|
| **Product characteristics** | | |
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 | |
| Measuring range | 80...4800 gph | 1.3...80 gpm |
| Process connection | threaded connection 1 1/2" NPT internal thread DN40 | |
| **Application** | | |
| Special feature | Gold-plated contacts | |
| Application | totaliser function; empty pipe detection; for industrial applications | |
| Media | conductive liquids; water; hydrous media | |
| Note on media | conductivity: ≥ 20 µS/cm | |
| | viscosity: < 70 mm²/s (40 °C) | |

# SM9601

## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

| | | | |
|---|---|---|---|
| Medium temperature | [°F] | 14...194 | |
| Pressure rating | | 16 bar | 1.6 MPa |
| MAWP for applications according to CRN | | 8.9 bar | 0.89 MPa |
| **Electrical data** | | | |
| Operating voltage | [V] | 18...32 DC; (to SELV/PELV) | |
| Current consumption | [mA] | < 150 | |
| 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 | |
| **Outputs** | | | |
| Total number of outputs | | 2 | |
| Output signal | | switching signal; analogue signal; pulse signal; frequency 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] | 250; (per output) | |
| 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 | |
| Frequency of the output | [Hz] | 0.1...10000 | |
| **Measuring/setting range** | | | |
| Measuring range | | 80...4800 gph | 1.3...80 gpm |
| Display range | | -5760...5760 gph | -96...96 gpm |
| Resolution | | 5 gph | 0.1 gpm |
| Set point SP | | 105...4800 gph | 1.7...80 gpm |
| Reset point rP | | 80...4775 gph | 1.3...79.6 gpm |
| Analogue start point ASP | | 0...3840 gph | 0...64 gpm |
| Analogue end point AEP | | 960...4800 gph | 16...80 gpm |
| Low flow cut-off LFC | | < 240 gph | < 4 gpm |

# SM9601

## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

| | | | |
|---|---|---|---|
| In steps of | | 5 gph | 0.1 gpm |
| Measuring dynamics | | 1:60 | |
| **Volumetric flow quantity monitoring** | | | |
| Pulse value | | 0.02...80 E06 gal | |
| In steps of | | 0.02 gal | |
| Pulse length | [s] | 0,016...2 | |
| **Temperature monitoring** | | | |
| Measuring range | [°F] | -4...176 | |
| Display range | [°F] | -40...212 | |
| Resolution | [°F] | 0.5 | |
| Set point SP | [°F] | -2...176 | |
| Reset point rP | [°F] | -3...175 | |
| Analogue start point | [°F] | -4...140 | |
| Analogue end point | [°F] | 32...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 | |
| **Temperature monitoring** | | | |
| Temperature drift | | ± 0,0185 °F / K | |
| Accuracy | [K] | ± 1 (77 °F; Q > 4 gpm) | |
| **Response 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 > 4 gpm) | |
| **Software / programming** | | | |
| Parameter setting options | | Flow monitoring; quantity meter; Preset counter; Temperature monitoring; hysteresis / window; normally open / normally 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 - SSP 0 | Generic Profiled Sensor |
| | | Function | Device identification |
| | | Function | Process data variable |
| SIO mode | | yes | |

# SM9601

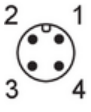
## Magnetic-inductive flow meter

SMN32XGXFRKG/US-100

| | | | |
|---|---|---|---|
| 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 | 392 |
| **Operating conditions** | | | |
| Ambient temperature | [°F] | 14...140 | |
| Storage temperature | [°F] | -13...176 | |
| Protection | | IP 65; IP 67 | |
| **Tests / approvals** | | | |
| EMC | | DIN EN 60947-5-9 | |
| 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 no. | I008 |
| | | 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] | 2776.5 | |
| Housing | | rectangular | |
| Inlet pipe length | | 3 x DN | |
| Outlet pipe length | | 1 x DN | |
| Dimensions | [mm] | 170 x 103 x 117 | |
| Materials | | stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PEI; FKM; PBT-GF20; TPE-U | |
| Materials (wetted parts) | | stainless steel (316L/1.4404); stainless steel (316Ti/1.4571); PEEK; FKM | |
| Process connection | | threaded connection 1 1/2" NPT internal thread DN40 | |
| **Displays / operating elements** | | | |
| Display | | Display unit | 6 x LED, green (gpm, gph, gal, °F, $10^3$, 1000 x $10^3$) |
| | | 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. | |

**Electrical connection**

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated

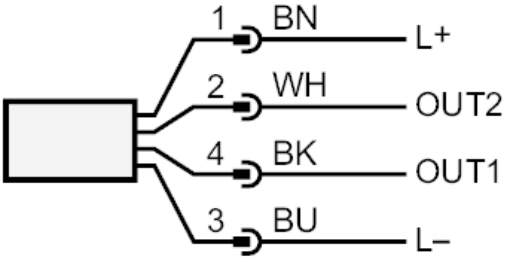


# SM9601

## Magnetic-inductive flow meter

**SMN32XGXFRKG/US-100**

### Connection




| | |
|---|---|
| | colours to DIN EN 60947-5-2 |
| OUT1: | 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 |
| | analogue output volumetric flow quantity monitoring |
| | analogue output Temperature monitoring |
| | input counter reset |
| | Core colours : |
| BK = | black |
| BN = | brown |
| BU = | blue |
| WH = | white |

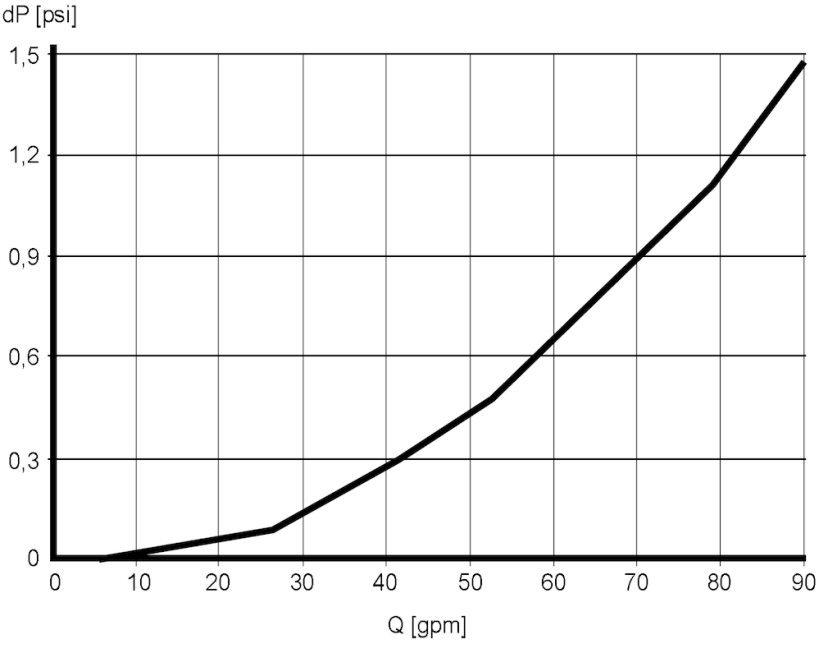
# SM9601

## Magnetic-inductive flow meter

**SMN32XGXFRKG/US-100**

## Diagrams and graphs

Pressure loss




dP Pressure loss

Q volumetric flow quantity