

## Flow meter with integrated backflow prevention and display

SBG11KL0FRKG



### Product characteristics

|                    |                                         |               |               |                 |
|--------------------|-----------------------------------------|---------------|---------------|-----------------|
| Measuring range    | 2...100 l/min                           | 0.12...6 m³/h | 32...1586 gph | 0.55...26.4 gpm |
| Process connection | threaded connection G 1 internal thread |               |               |                 |

### Application

|                         |                                             |        |
|-------------------------|---------------------------------------------|--------|
| Special feature         | Gold-plated contacts                        |        |
| Media                   | Liquids; oils (viscosity 46 mm²/s at 40 °C) |        |
| Medium temperature [°C] | -10...100                                   |        |
| Pressure rating         | 100 bar                                     | 10 MPa |
| Note on pressure rating | at medium temperature >70°C: 80 bar / 8 MPa |        |



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| Electrical data                       |      |                                                                               |                  |                |
|---------------------------------------|------|-------------------------------------------------------------------------------|------------------|----------------|
| Operating voltage                     | [V]  | 18...30 DC; (to SELV/PELV)                                                    |                  |                |
| Current consumption                   | [mA] | < 50                                                                          |                  |                |
| Protection class                      |      | III                                                                           |                  |                |
| Reverse polarity protection           |      | yes                                                                           |                  |                |
| Power-on delay time                   | [s]  | < 3                                                                           |                  |                |
| Outputs                               |      |                                                                               |                  |                |
| Total number of outputs               |      | 2                                                                             |                  |                |
| Output signal                         |      | switching signal; analogue signal; frequency signal; IO-Link                  |                  |                |
| Output function                       |      | normally open / normally closed; (parameterisable)                            |                  |                |
| Max. voltage drop switching output DC | [V]  | 2                                                                             |                  |                |
| Max. current load per output          | [mA] | 150; (200: ...60 °C; Ambient temperature; 250: ...40 °C; Ambient temperature) |                  |                |
| Analogue current output               | [mA] | 4...20                                                                        |                  |                |
| Max. load                             | [Ω]  | 500                                                                           |                  |                |
| Short-circuit protection              |      | yes                                                                           |                  |                |
| Overload protection                   |      | yes                                                                           |                  |                |
| Frequency of the output               | [Hz] | 0...10000                                                                     |                  |                |
| Measuring/setting range               |      |                                                                               |                  |                |
| Measuring range                       |      | 2...100 l/min                                                                 | 0.12...6 m³/h    | 32...1586 gph  |
| Display range                         |      | 0...120 l/min                                                                 | 0...7.2 m³/h     | 0...1902 gph   |
| Resolution                            |      | 0.1 l/min                                                                     | 0.01 m³/h        | 1 gph          |
| Set point SP                          |      | 0.7...100 l/min                                                               | 0.04...6 m³/h    | 10...1586 gph  |
| Reset point rP                        |      | 0...99.3 l/min                                                                | 0...5.96 m³/h    | 0...1574 gph   |
| Frequency end point, FEP              |      | 6.7...100 l/min                                                               | 0.4...6 m³/h     | 106...1586 gph |
| In steps of                           |      | 0.1 l/min                                                                     | 0.01 m³/h        | 2 gph          |
| Frequency at the end point FRP        | [Hz] | 10...10000                                                                    |                  |                |
| In steps of                           | [Hz] | 10                                                                            |                  |                |
| Measuring dynamics                    |      | 1:50                                                                          |                  |                |
| Temperature monitoring                |      |                                                                               |                  |                |
| Measuring range                       |      | -10...100 °C                                                                  | 14...212 °F      |                |
| Display range                         |      | -32...122 °C                                                                  | -25.6...251.6 °F |                |
| Resolution                            |      | 0.1 °C                                                                        | 0.1 °F           |                |
| Set point SP                          |      | -9.3...100 °C                                                                 | 15.2...212 °F    |                |
| Reset point rP                        |      | -10...99.3 °C                                                                 | 14...210.8 °F    |                |
| In steps of                           |      | 0.1 °C                                                                        | 0.2 °F           |                |
| Frequency start point, FSP            |      | -10...78 °C                                                                   | 14...172.4 °F    |                |
| Frequency end point, FEP              |      | 12...100 °C                                                                   | 53.6...212 °F    |                |
| Frequency at the end point FRP        | [Hz] | 10...10000                                                                    |                  |                |
| In steps of                           | [Hz] | 10                                                                            |                  |                |
| Accuracy / deviations                 |      |                                                                               |                  |                |
| Flow monitoring                       |      |                                                                               |                  |                |
| Accuracy (in the measuring range)     |      | ± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature)                       |                  |                |



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|                                     |                                                                                                                                                                                                                                                                      |                         |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Repeatability                       | ± 1 % MEW                                                                                                                                                                                                                                                            |                         |
| Temperature monitoring              |                                                                                                                                                                                                                                                                      |                         |
| Temperature drift                   | 0,029 °C / K                                                                                                                                                                                                                                                         |                         |
| Accuracy                            | [K]                                                                                                                                                                                                                                                                  | 3 K (25°C; Q > 1 l/min) |
| Response times                      |                                                                                                                                                                                                                                                                      |                         |
| Flow monitoring                     |                                                                                                                                                                                                                                                                      |                         |
| Response time                       | [s]                                                                                                                                                                                                                                                                  | 0.01                    |
| Damping process value dAP           | [s]                                                                                                                                                                                                                                                                  | 0...5                   |
| In steps of                         | [s]                                                                                                                                                                                                                                                                  | 0.1                     |
| Damping for the analogue output dAA | [s]                                                                                                                                                                                                                                                                  | 0...5                   |
| In steps of                         | [s]                                                                                                                                                                                                                                                                  | 0.1                     |
| Temperature monitoring              |                                                                                                                                                                                                                                                                      |                         |
| Dynamic response T05 / T09          | [s]                                                                                                                                                                                                                                                                  | T09 = 120 (Q > 1 l/min) |
| Software / programming              |                                                                                                                                                                                                                                                                      |                         |
| Parameter setting options           | hysteresis / window; normally open / normally closed; switching logic; current/frequency output; damping for the switching output / analogue output; display can be rotated and switched off; standard unit of measurement; process value colour; calibration factor |                         |
| 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, Device Diagnosis                                                                                                                                                                                         |                         |
| SIO mode                            | yes                                                                                                                                                                                                                                                                  |                         |
| Required master port type           | A                                                                                                                                                                                                                                                                    |                         |
| Process data analogue               | 2                                                                                                                                                                                                                                                                    |                         |
| Process data binary                 | 2                                                                                                                                                                                                                                                                    |                         |
| Min. process cycle time             | [ms]                                                                                                                                                                                                                                                                 | 3.2                     |
| Supported DeviceIDs                 | Type of operation                                                                                                                                                                                                                                                    | DeviceID                |
|                                     | default                                                                                                                                                                                                                                                              | 1046                    |
| Operating conditions                |                                                                                                                                                                                                                                                                      |                         |
| Ambient temperature                 | [°C]                                                                                                                                                                                                                                                                 | 0...60                  |
| Note on ambient temperature         | medium temperature < 80 °C                                                                                                                                                                                                                                           |                         |
|                                     | medium temperature < 100 °C: 0...40 °C                                                                                                                                                                                                                               |                         |
| Storage temperature                 | [°C]                                                                                                                                                                                                                                                                 | -15...80                |
| Protection                          | IP 65; IP 67                                                                                                                                                                                                                                                         |                         |
| Tests / approvals                   |                                                                                                                                                                                                                                                                      |                         |
| EMC                                 | DIN EN 61000-6-2                                                                                                                                                                                                                                                     |                         |
|                                     | DIN EN 61000-6-3                                                                                                                                                                                                                                                     |                         |
| 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]                                                                                                                                                                                                                                                              | 145                     |
| UL approval                         | UL Approval no.                                                                                                                                                                                                                                                      | I006                    |
| Pressure Equipment Directive        | Sound engineering practice                                                                                                                                                                                                                                           |                         |



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| Mechanical data                                                                     |                                                                                                                                 |                                                                |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Weight                                                                              | [g]                                                                                                                             | 1575                                                           |
| Materials                                                                           | stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated                                        |                                                                |
| Materials (wetted parts)                                                            | stainless steel (316 / 1.4401); stainless steel (316L/1.4404); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM |                                                                |
| Process connection                                                                  | threaded connection G 1 internal thread                                                                                         |                                                                |
| Switching cycles mechanical                                                         | 10 million                                                                                                                      |                                                                |
| Displays / operating elements                                                       |                                                                                                                                 |                                                                |
| Display                                                                             | Display unit                                                                                                                    | 6 x LED, green                                                 |
|                                                                                     | switching status                                                                                                                | 2 x LED, yellow                                                |
|                                                                                     | measured values                                                                                                                 | alphanumeric display, red/green alternating indication 4-digit |
|                                                                                     | programming                                                                                                                     | alphanumeric display, 4-digit                                  |
| Remarks                                                                             |                                                                                                                                 |                                                                |
| Remarks                                                                             | Recommendation: use a 200-micron filter.                                                                                        |                                                                |
|                                                                                     | All data refer to oil with the following nominal viscosity: 46 mm²/s, 40 °C                                                     |                                                                |
|                                                                                     | 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:

- switching output volumetric flow quantity monitoring
- switching output Temperature monitoring
- frequency output volumetric flow quantity monitoring
- frequency output Temperature monitoring
- IO-Link

#### OUT2:

- switching output volumetric flow quantity monitoring
- switching output Temperature monitoring
- analogue output volumetric flow quantity monitoring
- analogue output Temperature monitoring
- colours to DIN EN 60947-5-2

Core colours :

BK = black  
 BN = brown  
 BU = blue  
 WH = white

### Diagrams and graphs

