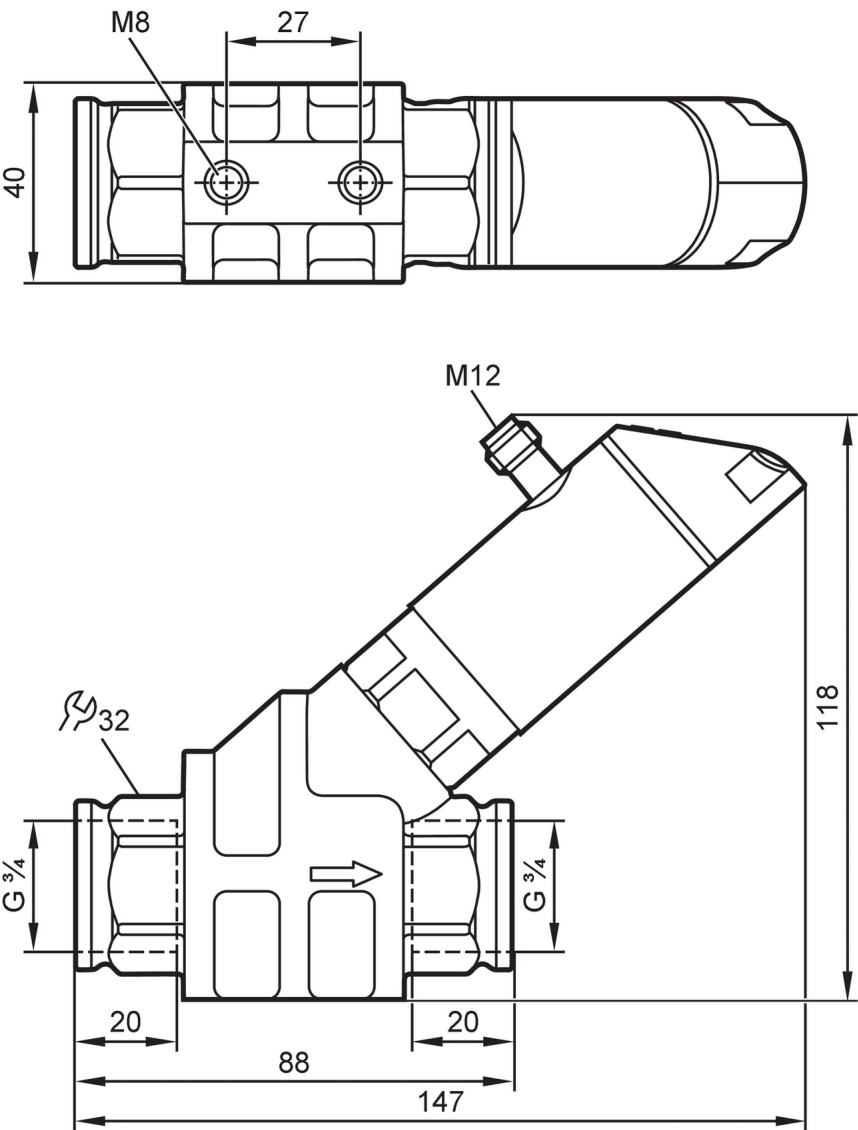


# SB0301



## Flow meter with fast response and display

SBG34KL0FRKG



| Product characteristics                  |                                             |                  |                 |                  |
|------------------------------------------|---------------------------------------------|------------------|-----------------|------------------|
| Measuring range                          | 0.3...15 l/min                              | 0.018...0.9 m³/h | 4.8...237.8 gph | 0.08...3.965 gpm |
| Process connection                       | threaded connection G 3/4 Internal thread   |                  |                 |                  |
| Application                              |                                             |                  |                 |                  |
| Special feature                          | gold-plated contacts                        |                  |                 |                  |
| Media                                    | Liquids; oils (viscosity 5 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 |                  |                 |                  |
| MAWP (for applications according to CRN) | 79 bar                                      | 7.9 MPa          |                 |                  |
| Electrical data                          |                                             |                  |                 |                  |
| Operating voltage [V]                    | 18...30 DC; (to SELV/PELV)                  |                  |                 |                  |
| Current consumption [mA]                 | < 50                                        |                  |                 |                  |



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|                             |     |
|-----------------------------|-----|
| Protection class            | III |
| Reverse polarity protection | yes |
| Power-on delay time [s]     | < 3 |

## Outputs

|                                           |                                                                               |
|-------------------------------------------|-------------------------------------------------------------------------------|
| Total number of outputs                   | 2                                                                             |
| Output signal                             | switching signal; analog signal; frequency signal; IO-Link                    |
| 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) |
| Analog 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                     | 0.3...15 l/min | 0.018...0.9 m³/h | 4.8...237.8 gph  | 0.08...3.965 gpm  |
| Display range                       | 0...18 l/min   | 0...1.08 m³/h    | 0...285.4 gph    | 0...4.755 gpm     |
| Resolution                          | 0.01 l/min     | 0.001 m³/h       | 0.1 gph          | 0.001 gpm         |
| Set point SP                        | 0.1...15 l/min | 0.006...0.9 m³/h | 1.6...237.8 gph  | 0.025...3.965 gpm |
| Reset point rP                      | 0...14.9 l/min | 0...0.894 m³/h   | 0...236.2 gph    | 0...3.935 gpm     |
| Frequency end point, FEP            | 1...15 l/min   | 0.06...0.9 m³/h  | 15.8...237.8 gph | 0.265...3.965 gpm |
| In steps of                         | 0.01 l/min     | 0.001 m³/h       | 0.2 gph          | 0.005 gpm         |
| 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    |                  |

## Accuracy / deviations

## Flow monitoring

|                                   |                                                         |
|-----------------------------------|---------------------------------------------------------|
| Accuracy (in the measuring range) | ± 5 % MEW; (Q > 1 l/min; 20...70 °C Medium temperature) |
| Repeatability                     | ± 1 % MEW                                               |

## Temperature monitoring

|                   |                         |
|-------------------|-------------------------|
| Temperature drift | 0,029 °C / K            |
| Accuracy [K]      | 3 K (25°C; Q > 1 l/min) |



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| Reaction times                    |                                                                                                                                                                                                                                                          |                         |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Flow monitoring                   |                                                                                                                                                                                                                                                          |                         |
| Response time                     | [s]                                                                                                                                                                                                                                                      | 0.01                    |
| Damping process value dAP         | [s]                                                                                                                                                                                                                                                      | 0...5                   |
| In steps of                       | [s]                                                                                                                                                                                                                                                      | 0.1                     |
| Damping for the analog 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 / closed; switching logic; current/frequency output; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color; 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 - SSP 0                                                                                                                                                                                                                                     | Generic Profiled Sensor |
|                                   | Function                                                                                                                                                                                                                                                 | Device identification   |
|                                   | Function                                                                                                                                                                                                                                                 | Process data variable   |
|                                   | Function                                                                                                                                                                                                                                                 | Device diagnosis        |
| SIO mode                          | yes                                                                                                                                                                                                                                                      |                         |
| Required master port class        | A                                                                                                                                                                                                                                                        |                         |
| Process data analog               | 2                                                                                                                                                                                                                                                        |                         |
| Process data binary               | 2                                                                                                                                                                                                                                                        |                         |
| Min. process cycle time           | [ms]                                                                                                                                                                                                                                                     | 8                       |
| Supported DeviceIDs               | Type of operation                                                                                                                                                                                                                                        | DeviceID                |
|                                   | default                                                                                                                                                                                                                                                  | 1048                    |
| 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                     |
| Pressure equipment directive      | sound engineering practice                                                                                                                                                                                                                               |                         |
| Mechanical data                   |                                                                                                                                                                                                                                                          |                         |
| Weight                            | [g]                                                                                                                                                                                                                                                      | 994                     |

# SB0301



## Flow meter with fast response and display

SBG34KL0FRKG

|                             |                                                                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Material                    | stainless steel (1.4404 / 316L); PBT+PC-GF30;<br>PBT-GF20; PC; brass chemically nickel-plated                                        |
| Materials (wetted parts)    | stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L);<br>brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM |
| Process connection          | threaded connection G 3/4 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<br>indication 4-digit |
|         | Programming      | alphanumeric display, 4-digit                                     |

### Remarks

|               |                                                                                         |
|---------------|-----------------------------------------------------------------------------------------|
| Remarks       | Use of 200 micron filtration is recommended.                                            |
|               | All data refer to oil with the following nominal viscosity: 5 mm <sup>2</sup> /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: 4, gold-plated





## Flow meter with fast response and display

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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
  - analog output Volumetric flow quantity monitoring
  - analog output Temperature monitoring
- Colors to DIN EN 60947-5-2

Core colors :

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

### Diagrams and graphs

