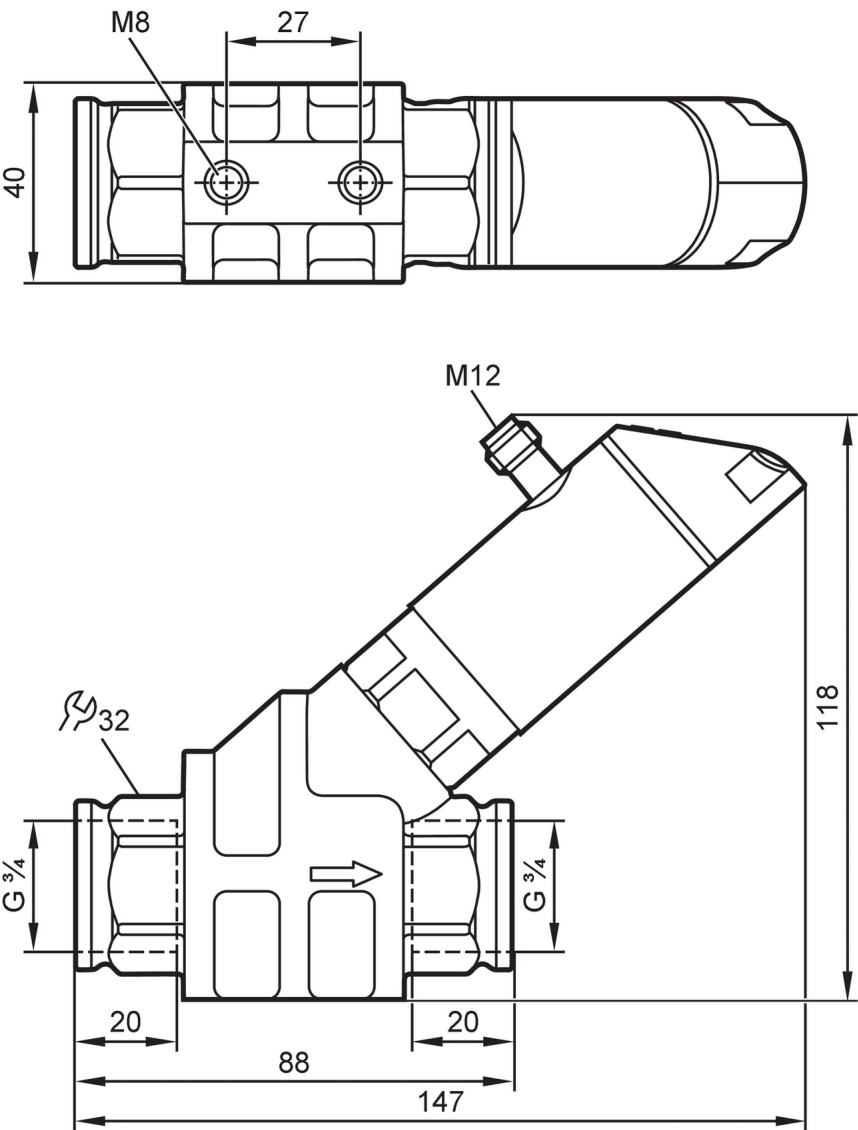


# SB1233



## Flow meter with fast response and display

SBG34KL0FRKG



CRN



IO-Link

### Product characteristics

|                    |                                           |                 |               |                |
|--------------------|-------------------------------------------|-----------------|---------------|----------------|
| Measuring range    | 0.5...25 l/min                            | 0.03...1.5 m³/h | 8...396.5 gph | 0.13...6.6 gpm |
| Process connection | threaded connection G 3/4 Internal thread |                 |               |                |

### Application

|                         |                                             |        |
|-------------------------|---------------------------------------------|--------|
| Special feature         | gold-plated contacts                        |        |
| Media                   | Liquids; oils (viscosity 10 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 |        |

### Electrical data

|                             |                            |  |  |  |
|-----------------------------|----------------------------|--|--|--|
| Operating voltage [V]       | 18...30 DC; (to SELV/PELV) |  |  |  |
| Current consumption [mA]    | < 50                       |  |  |  |
| Protection class            | III                        |  |  |  |
| Reverse polarity protection | yes                        |  |  |  |



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|                     |     |     |
|---------------------|-----|-----|
| Power-on delay time | [s] | < 3 |
|---------------------|-----|-----|

| Outputs                               |      |                                                                               |
|---------------------------------------|------|-------------------------------------------------------------------------------|
| Total number of outputs               |      | 2                                                                             |
| Output signal                         |      | switching signal; analog signal; frequency signal; IO-Link                    |
| Output function                       |      | configurable                                                                  |
| 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                | 0.5...25 l/min  | 0.03...1.5 m³/h | 8...396.5 gph  | 0.13...6.6 gpm |
| Display range                  | 0...30 l/min    | 0...1.8 m³/h    | 0...475.5 gph  | 0...7.93 gpm   |
| Resolution                     | 0.01 l/min      | 0.001 m³/h      | 0.1 gph        | 0.01 gpm       |
| Set point SP                   | 0.16...25 l/min | 0.01...1.5 m³/h | 2.5...396 gph  | 0.04...6.6 gpm |
| Reset point rP                 | 0...24.84 l/min | 0...1.49 m³/h   | 0...393.5 gph  | 0...6.56 gpm   |
| Frequency end point, FEP       | 1.66...25 l/min | 0.1...1.5 m³/h  | 26.5...396 gph | 0.44...6.6 gpm |
| In steps of                    | 0.02 l/min      | 0.002 m³/h      | 0.5 gph        | 0.01 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       |
| 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) |
| 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]                                                                                                                                                                                                                                                     | 3.2                     |
| Supported DeviceIDs               | Type of operation                                                                                                                                                                                                                                        | DeviceID                |
|                                   | default                                                                                                                                                                                                                                                  | 1044                    |
| 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 number                                                                                                                                                                                                                                       | I005                    |
|                                   | File number UL                                                                                                                                                                                                                                           | E174189                 |
| Pressure equipment directive      | sound engineering practice                                                                                                                                                                                                                               |                         |

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| Mechanical data                                                                     |                                                                                                                                   |                                                                |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Weight                                                                              | [g]                                                                                                                               | 995                                                            |
| Material                                                                            | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC; brass chemically nickel-plated                                        |                                                                |
| Materials (wetted parts)                                                            | stainless steel (1.4401 / 316); stainless steel (1.4404 / 316L); 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 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: 10 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: 4, 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
- 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

