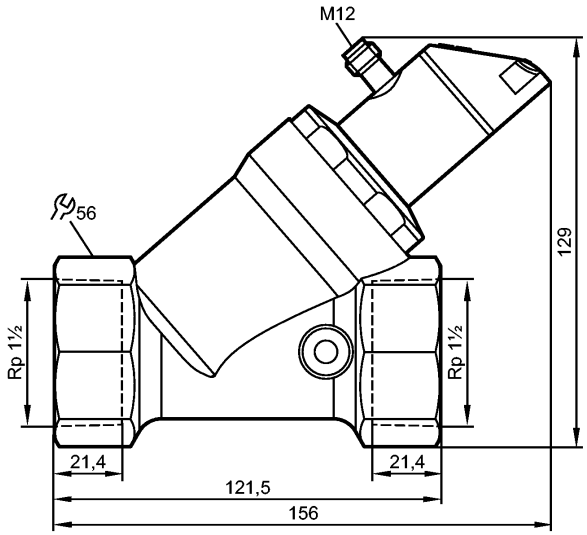
# SBY257

SBY32IF0FRKG

**Flow sensors**




| | | |
|---|---|---|
| **Product characteristics** | | |
| Mechatronic flow meter | | |
| with non-return valve | | |
| Process connection: Rp 1½ | | |
| With display (360° rotatable); IO-Link; temperature measurement | | |
| **Application** | | |
| Application | | Liquids (water, glycol solutions, coolants, oil<br>(oil 1 with viscosity 10 mm²/s at 40 °C; oil 2 with viscosity 46 mm²/s at 40 °C) |
| Pressure rating | [bar] | 25 |
| Medium temperature | [°C] | -10...100 |
| **Electrical data** | | |
| Electrical design | | DC |
| Operating voltage | [V] | 18...30 DC; to DIN EN 50178, SELV, PELV |
| Current consumption | [mA] | < 50 |
| Protection class | | III |
| Reverse polarity protection | | yes |
| **Outputs** | | |
| Output function | | OUT1: NO / NC programmable or frequency or IO-Link<br>OUT2: NO / NC programmable or analogue |
| Current rating | [mA] | 2 x 150; 2 x 200 (...60 °C); 2 x 250 (...40 °C) |
| Voltage drop | [V] | < 2 |
| Short-circuit protection | | yes |
| Overload protection | | yes |
| Analog output | | 4...20 mA |
| Max. load | [Ω] | 500 |
| Frequency range [Hz] | | 0...10000 |
| **Measuring / setting range** | | |
| Flow monitoring | | |
| Measuring range | | 4...200 [l/min] / 0.24...12 [m³/h] |
| Display range | | 0...240 [l/min] / 0...14.4 [m³/h] |

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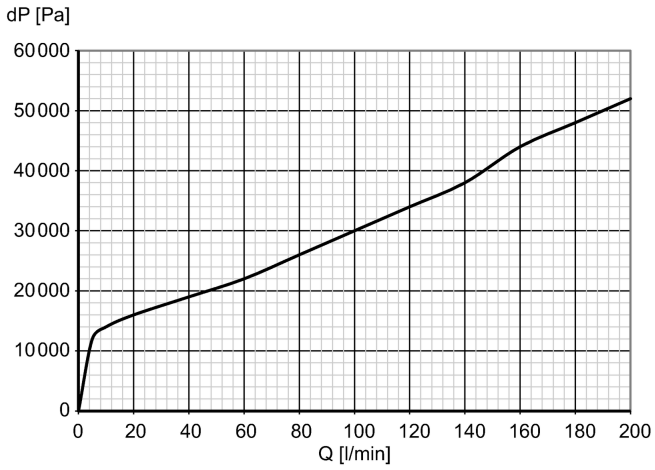
| | | | |
|---|---|---|---|
| Resolution | | 1 [l/min] | 0.05 [m³/h] |
| Set point, SP | | 2...200 [l/min] | 0.1...12 [m³/h] |
| Reset point, rP | | 0...198 [l/min] | 0...11.9 [m³/h] |
| Frequency end point, FEP | | 13...200 [l/min] | 0.8...12 [m³/h] |
| in steps of | | 1 [l/min] | 0.05 [m³/h] |
| Frequency at the end point, FrP | [Hz] | 10...10000 | |
| in steps of | | 10 Hz | |
| Measuring dynamics | | 1:50 | |
| Temperature monitoring | | | |
| Measuring range | [°C] | -10...100 | |
| Display range | [°C] | -32...122 | |
| Resolution | [°C] | 1 | |
| Set point, SP | [°C] | -9...100 | |
| Reset point, rP | [°C] | -10...99 | |
| Frequency start point, FSP | [°C] | -10...78 | |
| Frequency end point, FEP | [°C] | 12...100 | |
| in steps of | [°C] | 1 | |
| Frequency at the end point, FrP | [Hz] | 10...10000 | |

## Accuracy / deviations

| | | |
|---|---|---|
| Flow monitoring | | |
| Accuracy | [% of the final value] | ± (4 % MW + 1 % MEW);<br>Q > 1 l/min, medium and ambient temperature +22 °C ± 4 K |
| Repeatability | | ± 1 % MEW |
| Pressure loss (dP) / flow rate (Q) | |  |
| Temperature monitoring | | |
| Accuracy | [K] | 3 K (25°C; Q > 1 l/min) |
| Temperature drift | | 0.029 °C / K |



## Reaction times

| | | |
|---|---|---|
| Power-on delay time | [s] | < 3 |
| Flow monitoring | | |
| Response time | [s] | 0.01 |
| Damping for the switching output (dAP) | [s] | 0...5 |
| Damping for the analog output (dAA) | [s] | 0...5 |

| | | |
|---|---|---|
| in steps of | | 0.1 s |
| Temperature monitoring | | |
| Response time | [s] | T09 = 120 (Q > 1 l/min) |
| **Software / programming** | | |
| Programming options | | Hysteresis/window; NO/NC; switching logic; current / frequency output; fluid selection, damping switching/analogue output, display can be rotated/switched off; standard unit of measurement/colour process value |
| **Interfaces** | | |
| IO-Link Device | | |
| Transfer type | | COM2 (38.4 kBaud) |
| IO-Link revision | | 1.1 |
| SDCI standard | | IEC 61131-9 CDV |
| IO-Link Device ID | | 564 d / 0234 h |
| Profiles | | Smart Sensor: Process Data Variable; Device Identification |
| SIO mode | | yes |
| Required master port class | | A |
| Process data analogue | | 2 |
| Process data binary | | 2 |
| Min. process cycle time | [ms] | 5 |
| **Environment** | | |
| Ambient temperature | [°C] | 0...60, at max. 80 °C medium temperature (0...40 °C at max. 100 °C medium temperature) |
| Storage temperature | [°C] | -15...80 |
| Protection | | IP 65 / IP 67 |
| **Tests / approvals** | | |
| Pressure equipment directive | | sound engineering practice |
| EMC | | DIN EN 61000-6-2<br>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 number | | I007 |
| **Mechanical data** | | |
| Process connection | | Rp 1½ |
| Materials (wetted parts) | | stainless steel 316 / 1.4401; stainless steel 316L / 1.4404; brass chemically nickel-plated; PPS; PP GF30; O-ring: FKM |
| Housing materials | | stainless steel 316L / 1.4404; PBT+PC-GF 30; PBT-GF 20; PC; brass chemically nickel-plated |
| Weight | [kg] | 1.726 |
| Switching cycles min. | | 10 million |
| **Displays / operating elements** | | |
| Display | | Display unit 3 x LED green<br>Switching status 2 x LED yellow<br>4-digit alphanumeric display / alternating indication<br>Measured values of red and green<br>Programming 4-digit alphanumeric display |
| **Electrical connection** | | |

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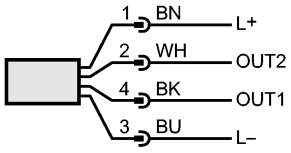
| | |
|---|---|
| Connection | M12 connector; gold-plated contacts |

**Wiring**

Core colors

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




OUT1:
- switching output flow rate monitoring
- switching output temperature monitoring
- frequency output flow rate monitoring
- frequency output temperature monitoring
- IO-Link

OUT2:
- switching output flow rate monitoring
- switching output temperature monitoring
- analogue output flow rate
- analogue output temperature

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Colours to DIN EN 60947-5-2

## Remarks

| | |
|---|---|
| Remarks | Use of 200 micron filtration is recommended.<br>All data refer to water (20 °C).<br>MW = measured value<br>MEW = final value of the measuring range |
| Pack quantity [piece] | 1 |