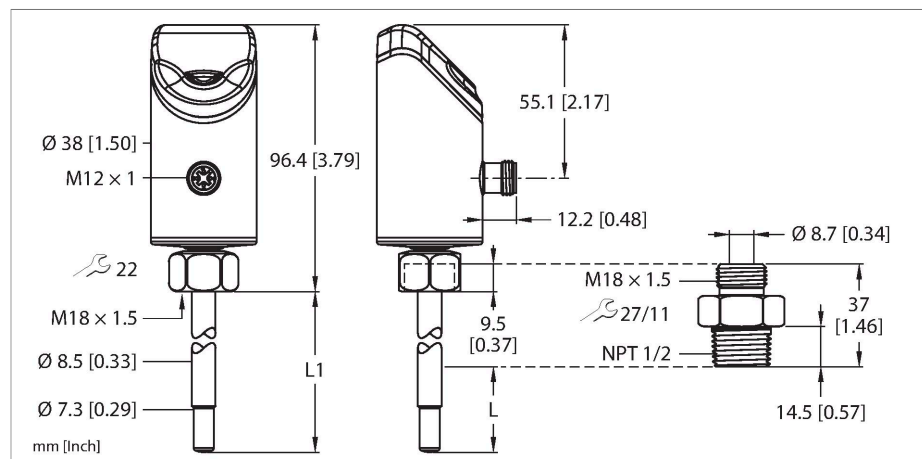


# FS101-300L-16-2LI-H1141

## Flow Sensor



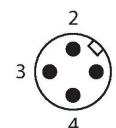
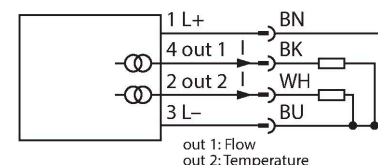
### Technical data

|                               |                                                     |
|-------------------------------|-----------------------------------------------------|
| Type                          | FS101-300L-16-2LI-H1141                             |
| ID                            | 100030875                                           |
| Medium temperature            | -25...+85 °C                                        |
| <b>Application area</b>       |                                                     |
| Mounting                      | Immersion sensor                                    |
| Application area              | liquids                                             |
| Bar length (L1)               | 45 mm                                               |
| Immersion depth (L)           | 16.9 mm, When using the supplied adapter            |
| Process Pressure              | 300 bar                                             |
| <b>Flow Monitoring</b>        |                                                     |
| Standard flow range           | 3...300 cm/s                                        |
|                               | Any axial alignment of the sensor rod in the medium |
| Extended flow range           | 1...300 cm/s                                        |
| Extended flow range comment   | Directed Inflow to Punch Mark $\pm 20^\circ$        |
| Reproducibility               | 1...5 cm/s ; For Water 3...100 cm/s; 10...80 °C     |
| Response time T09             | 6 s                                                 |
| Response time T05             | 3 s                                                 |
| Temperature drift             | 0.5 cm/s $\times$ 1/K                               |
| Temperature gradient          | $\leq 300$ K/min                                    |
| <b>Temperature monitoring</b> |                                                     |
| Measuring range               | -25...85 °C                                         |
| Switching point accuracy      | $\pm 2$ K; for water $>3$ cm/s; 20...70 °C          |

### Features

- Screw-in adapter with process connection NPT 1/2" male thread included in delivery
- Electronics housing material/media-contacting 1.4404 (316L)/1.4571 (316Ti)
- Immersion depth 16.9 mm
- 4-digit 12-segment display, rotatable by 180°
- Flow monitoring for liquid media
- Protection classes IP66, IP67 and IP69K
- Adjustment of flow speed via teach function
- 17...33 VDC
- Analog output 4...20 mA
- Male connector, M12  $\times$  1

### Wiring diagram



### Functional principle

The flow sensor functions according to the calorimetric principle. The distinctive feature of this principle is that the flow rate correlates directly to the thermal loss of energy in the probe. The increased loss of energy is therefore a direct measure of an increased flow rate.

## Technical data

|                                           |                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Reproducibility                           | ≤ 0.5 K                                                                                                   |
| Resolution                                | 0.1 K                                                                                                     |
| Response time T09                         | 12 s                                                                                                      |
| Response time T05                         | 3 s                                                                                                       |
| <b>Electrical data</b>                    |                                                                                                           |
| Operating voltage U <sub>s</sub>          | 17...33 VDC                                                                                               |
| Short-circuit/reverse polarity protection | yes                                                                                                       |
| Power consumption                         | ≤ 3 W, Typ. 1.3 W                                                                                         |
| Overload protection                       | Yes                                                                                                       |
| Insulation class                          | III                                                                                                       |
| Standby delay time                        | 30 s                                                                                                      |
| <b>Outputs</b>                            |                                                                                                           |
| Output 1                                  | Flow: Analog signal within max/min teach-in limits (non-linear)                                           |
| Output 2                                  | Temperature: Analog (default: 4...20 mA corresponds to -25 °C...+85 °C (limits can be set via menu)       |
| Output function                           | Analog output current                                                                                     |
| Current output                            | 4...20 mA                                                                                                 |
| Alternative current output                | 0...20 mA                                                                                                 |
| Current output note                       | Each invertible                                                                                           |
| Load resistance current output            | ≤ 0.5 kΩ                                                                                                  |
| <b>Mechanical data</b>                    |                                                                                                           |
| Housing material                          | Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 |
| Adapter material                          | Stainless steel 1.4571 (316Ti)                                                                            |
| Materials (contact with media)            | Stainless steel 1.4571 (AISI 316Ti), FKM O-ring                                                           |
| Process connection                        | 1/2" NPT male thread                                                                                      |
| Process connection sensor                 | M18 x 1.5 female thread                                                                                   |
| Process connection adapter                | M18 x 1.5 male thread; 1/2" NPT male thread                                                               |
| Electrical connection                     | Connector, M12 x 1                                                                                        |
| Protection class                          | IP66<br>IP67<br>IP69K                                                                                     |
| Electromagnetic compatibility (EMC)       | DIN EN 61326-2-3: 2007                                                                                    |
| <b>Environmental conditions</b>           |                                                                                                           |
| Ambient temperature                       | -40...+80 °C<br>(UL: -25...+80 °C)                                                                        |

## Technical data

|                        |                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------|
| Storage temperature    | -40...+80 °C                                                                                                    |
| Shock resistance       | 50 g (11 ms) EN 60068-2-27                                                                                      |
| Vibration resistance   | 20 g (55...2000 Hz) DIN EN 60068-2-6                                                                            |
| Tests/approvals        |                                                                                                                 |
| Approvals              | CE<br>cULus                                                                                                     |
| UL registration number | E516036                                                                                                         |
| Display                | LED display functions for status of supply voltage and teach processes. Process display via 12-segment display. |
| MTTF                   | 120 years acc. to SN 29500 (Ed. 99) 40 °C                                                                       |

#### LED display

| LED  | Color  | Status   | Description                                                                |
|------|--------|----------|----------------------------------------------------------------------------|
| PWR  | Green  | On       | Operating voltage applied<br>Device is operational                         |
| FLT  | Red    | On       | Error displayed<br>(For error pattern in combination with LEDs see manual) |
|      |        | Off      | No errors displayed                                                        |
| LOC  | Yellow | On       | Device locked                                                              |
|      |        | Off      | Device unlocked                                                            |
|      |        | Flashing | Locking/unlocking process active                                           |
| FLOW | Yellow | Flashing | Teach mode/display of diagnostic data<br>(see manual for specification)    |
| %    | Yellow | On       | Display: max. flow in percent (%)                                          |
| TEMP | Yellow | Flashing | Teach mode/display of diagnostic data<br>(see manual for specification)    |
| °C   | Yellow | On       | Display: temperature in ° Celsius                                          |
| °F   | Yellow | On       | Display: temperature in ° Fahrenheit                                       |

For a detailed description of the display patterns and flashing codes see manual/instructions for use FS101 — Compact Flow Sensors (100030510.pdf)