



- fully compatible with the BioProTT™ Product Range
- non-invasive flow measurement of liquids
- for use on flexible tubing
- no additional shear stress
- economical—designed for long-term use

## Technical Specification

|  | up to OD 5/8"  | up to OD 3/4"   | up to OD 1-1/8"                     | up to OD 1-5/8" |
|--|--|-----------------|-------------------------------------|-----------------|
| <b>Size (H x W x D)</b>                    | 25 x 33 x 45 mm  | 28 x 38 x 51 mm | 35 x 43 x 69 mm                     | 46 x 56 x 84 mm |
| <b>Weight Transducer Head</b>              | 52 g   | 72 g            | 140 - 160 g                         | 295 - 315 g     |
| <b>Total Weight (incl. cable and plug)</b> | 137 g  | 153 g           | 225 - 245 g                         | 380 - 400 g     |
| <b>Housing and Lid Material</b>            | epoxy resin, aluminum, brass   |                 | polymeric compound, aluminum, brass |                 |
| <b>Cable Length</b>                        | 2.9 m ± 5 cm   |                 |                                     |                 |
| <b>IP-Code</b>                             | <p><b>Please note:</b><br/>It is possible to adjust the cable length as long as the total cable length does not exceed 4 m (incl. the extension cable).</p> sensor head and cable: IP67<br>sensor connector: IP67 in mated condition |                 |                                     |                 |
| <b>Compatibility</b>                       | BioProTT™ FlowTrack SL and BioProTT™ FlowMCP Series  |                 |                                     |                 |
| <b>Connector plug</b>                      | 16-pin round plug  |                 |                                     |                 |
| <b>Expected Product Life</b>               | 10 years   |                 |                                     |                 |
| <b>Cleaning and Disinfection</b>           | disinfect easily using alcohol based surface cleaners  |                 |                                     |                 |

## Accuracy\* (in Combination with a BioProTT™ Transmitter)

| Outer Tubing Diameter (OD) | Accuracy                    |
|----------------------------|-----------------------------|
| up to OD 3/4"              | ±2 % of reading ±20 ml/min  |
| up to OD 7/8"              | ±2 % of reading ±80 ml/min  |
| up to OD 1-1/8"            | ±2 % of reading ±200 ml/min |
| up to OD 1-5/8"            | ±2 % of reading ±400 ml/min |

**\*Please note:**

The accuracy largely depends on the calibration parameters. The specified accuracies were determined under the following conditions: Medium: Water; Medium Temperature: Calibration Temperature; Straight Inlet Section: 15 x Inner Diameter (ID) of the tube; fully developed flow profile (i.e. system was given time to adjust to atmosphere temperature; tube was fully filled with liquid; steady flow); Tubing: Tubing the sensor was adjusted and calibrated for. The installation position of the BioProTT™ Clamp-On SL as well as the positioning of pumps and valves within the circuit impact the measurement and must be taken into account when it comes to the accuracy of the BioProTT™ FlowMeasurement System.

## Adjustment and Calibration

|                                     |  |
|-------------------------------------|--|
| <b>Recommended tube type</b>        | flexible, non-reinforced tubing, e.g. silicone, PVC  |
| <b>Medium type</b>                  | liquids including buffer solutions, cell culture media, fermentation media, hydrocarbons, nutrition media, salines solutions, water, blood, blood substitutes<br><br><b>Please note:</b> Due to safety and hygienic reasons, we can only carry out the adjustment using water or, in some cases, glycerol. |
| <b>Medium Operating Temperature</b> | 4 °C to 45 °C (40 °F to 113 °F)  |
| <b>Calibration Tables</b>           | <ul style="list-style-type: none"> <li>• up to seven calibration tables can be stored to each sensor plug for different applications</li> <li>• on-site calibration is possible, as is the use of a customer-specific calibration factor to enhance accuracy</li> </ul>                                    |

## Range of BioProTT™ Clamp-On SLs and Their Flow Measurement Range

| Size*              | Flow Range 1 [l/min]** |      | Flow Range 2 [l/min]** |      | Flow Range 3 [l/min]** |      | Tube Size*** |         |         |
|--------------------|------------------------|------|------------------------|------|------------------------|------|--------------|---------|---------|
|                    | Qmin                   | Qmax | Qmin                   | Qmax | Qmin                   | Qmax | ID [in]      | WT [in] | OD [in] |
| PCT 1/8" x 1/16"   | 0.017                  | 2.0  | —                      | —    | —                      | —    | 1/8          | 1/16    | 1/4     |
| PCT 11/64" x 3/64" | 0.017                  | 2.0  | 0.100                  | 6    | —                      | —    | 11/64        | 3/64    | 17/64   |
| PCT 3/16" x 1/16"  | 0.017                  | 2.0  | 0.100                  | 6    | —                      | —    | 3/16         | 1/16    | 5/16    |
| PCT 1/4" x 1/16"   | 0.017                  | 2.0  | 0.100                  | 8    | —                      | —    | 1/4          | 1/16    | 3/8     |
| PCT 1/4" x 3/32"   | 0.017                  | 2.0  | 0.100                  | 8    | —                      | —    | 1/4          | 1/16    | 7/16    |
| PCT 3/8" x 1/16"   | 0.017                  | 2.5  | 0.100                  | 10   | —                      | —    | 3/8          | 1/8     | 1/2     |
| PCT 3/8" x 3/32"   | 0.017                  | 2.5  | 0.100                  | 10   | —                      | —    | 3/8          | 3/32    | 9/16    |
| PCT 3/8" x 1/8"    | 0.017                  | 2.5  | 0.100                  | 10   | —                      | —    | 3/8          | 1/8     | 5/8     |
| PCT 1/2" x 3/32"   | 0.017                  | 2.5  | 0.100                  | 16.9 | 2                      | 40   | 1/2          | 3/32    | 11/16   |
| PCT 1/2" x 1/8"    | 0.017                  | 2.5  | 0.100                  | 16.9 | 2                      | 40   | 1/2          | 1/8     | 3/4     |
| PCT 1/2" x 3/16"   | 0.017                  | 2.5  | 0.100                  | 16.9 | 2                      | 40   | 1/2          | 3/16    | 7/8     |
| PCT 3/4" x 1/8"    | —                      | —    | 2                      | 75   | —                      | —    | 3/4          | 1/8     | 1       |
| PCT 3/4" x 3/16"   | —                      | —    | 2                      | 75   | —                      | —    | 3/4          | 3/16    | 1-1/8   |
| PCT 1" x 1/8"      | —                      | —    | 2                      | 100  | —                      | —    | 1            | 1/8     | 1-1/4   |
| PCT 1" x 3/16"     | —                      | —    | 2                      | 100  | —                      | —    | 1            | 3/16    | 1-3/8   |
| PCT 1-1/4" x 3/16" | —                      | —    | 2                      | 100  | —                      | —    | 1-1/4        | 3/16    | 1-5/8   |

\* Custom sizes are available upon request.

\*\*Please note:

- Customized flow ranges must be requested and checked regarding their feasibility.
- While a measurement is possible outside the given flow measurement range, the accuracy indicated above is only valid within that range.
- The possible flow rate also depends on the tubing.

\*\*\* ID = Inner Diameter; WT = Wall Thickness; OD = Outer Diameter

## Ambient Conditions during Transport, Storage, and Operation

### Transport and Storage

|                      |                                   |
|----------------------|-----------------------------------|
| Atmospheric Pressure | 70 kPa to 106 kPa                 |
| Temperature Range    | -20 °C to 55 °C (-4 °F to 131 °F) |
| Relative Humidity    | 10 % to 96 % (non-condensing)     |

### Operation

|                      |                                  |
|----------------------|----------------------------------|
| Atmospheric Pressure | 70 kPa to 106 kPa                |
| Operating Altitude   | up to 3 000 m (9 842 feet)       |
| Temperature Range    | 10 °C to 40 °C (50 °F to 104 °F) |
| Relative Humidity    | 10 % to 96 % (non-condensing)    |

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Where Innovation Flows