

BioProTT™ Clamp-On SL



Range of Ultrasound Flow Sensors

FEATURES

- non-invasive flow measurement of liquids
- no additional shear stress
- for use on flexible tubing
- fully compatible with the BioProTT™ FlowMCP Series and the BioProTT™ FlowTrack SL



Technical Specification

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

Accuracy* (in Combination with a BioProTT™ FlowMCP and/or BioProTT™ FlowTrack SL)

Outer Tubing Diameter (OD)	Accuracy	Resolution
up to OD 3/4"	±2 % of reading ±20 ml/min	The resolution depends on the respective measurement system.
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: tube 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

Recommended tube type

flexible, non-reinforced tubing, e.g. silicone, PVC

Medium type

liquids including buffer solutions, cell culture media, fermentation media, hydrocarbons, nutrition media, salines solutions, water, blood, blood substitutes

Please note: Due to safety and hygienic reasons, we can only carry out the adjustment using water or, in some cases, glycerol.

Medium Operating Temperature

4 °C to 45 °C (40 °F to 113 °F)

Calibration Tables

- up to seven calibration tables can be stored to each sensor plug for different applications
- on-site calibration is possible, as is the use of a customer-specific calibration factor to enhance accuracy

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.

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

**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.

Ambient Conditions during Transport, Storage, and Operation

Atmospheric Pressure

70 kPa to 106 kPa

Temperature Range Transport and Storage

-20 °C to 55 °C (-4 °F to 131 °F)

Temperature Range Operation

10 °C to 40 °C (50 °F to 104 °F)

Relative Humidity

10 % to 96 % (non-condensing)

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