

Sensor Transmitter

DEPTH



The Thelma Biotel depth sensors can deliver depth data down to 1000 meters and can be made to present high-resolution data in any range of interest. The depth sensor is available in all transmitter sizes and with a wide range of battery packs, allowing optimization in size and operational life. Two sensor types are available, the standard depth sensor, with a detection range down to 290 m, and the 1K depth sensor, with a range down to 1000 m.

FEATURES

- Standard depth resolution of 0.1 m
- Available in all transmitter sizes 6, 7, 9, 13 and 16
- Long operational lifetime ~ 4 months - > 10 years
- Can be combined with other sensor option



DEPTH AND RESOLUTION

The depth sensor can be produced with a set of different depth range alternatives depending on the maximum depth, resolution, and transmit protocol. The standardized range of the depth sensor runs from 0 to 30 bar, or 0 to 290 m, with a standardized resolution of 0.1 m on the OPs protocol. If one of the other protocols is more relevant, seven standard depth ranges are offered to provide flexibility for different cases. Here, the resolution may be traded for a greater depth range.

If the depth range exceeds that of the standard sensor scope, the 1K sensor can offer a greater maximum measured depth.

APPLICATIONS

The depth sensors are extremely versatile and suitable for use in tracking many different aquatic species, and for deployment control of oceanographic instruments and infrastructures like mooring lines, fishin gear, nets, sinker tubes and cage weights in aquaculture facilities.

SPECIFICATIONS

Standard sensor

Max measured depth:	290 m
Max survival depth:	500 m
Max resolution:	0.01 m
Max offset:	0.5 m

1K sensor

Max measured depth:	1000 m
Max survival depth:	2000 m
Max resolution:	0.05 m
Max offset:	1.5 m

COMBINATIONS



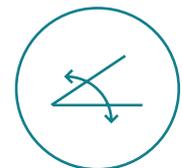
MORTALITY



TEMPERATURE



ACTIVITY



TILT

PRESSURE

The pressure sensor is located at the top of the transmitter, and measurements are taken through a small port in the epoxy casting. Pressure beyond maximum absolute pressure (Max survival depth) may rupture and damage the sensor.

All Thelma Biotel depth transmitters measure absolute pressure and are calibrated to 1000 mBar atmospheric pressure at the surface level. Variations in atmospheric pressure should be accounted for. The atmospheric pressure of, for example, 1030 mBar will add 30 cm without correction. The following equation takes this into consideration when converting transmitted values to depth:

$$\text{depth [m]} = \text{transmit value} \times \text{resolution} - \frac{(P_{\text{atm}} [\text{mBar}] - 1000)}{100}$$

The equation above is the general equation to calculate the actual depth from the transmitter values.

HANDLING

The sensor is well protected for normal use and handling, but we propose to avoid long immersion in solvents. 70% ethanol dip and wipe is the preferred disinfection procedure.



PROTOCOLS

The OPs protocol offers a standardized resolution of 0.1 m, 0 to 30 bar. With an increased datapoint capacity, this protocol supports 4096 data points resulting in a higher standard resolution.

Other protocols of only 256 available data points offer several different standard depth ranges to provide flexibility for different cases. In this instance, higher resolution might be traded for a higher depth range as shown in the table to the right.

Max Depth [m]	Resolution [m]
25.5	0.1000
51	0.2000
63.75	0.2500
86.7	0.3400
100	0.3922
130	0.5098
290	1.1373

