

## ACOUSTIC MULTI-FREQUENCY RECEIVER

# TBR 700

TBR 700 is a robust, low-power standalone acoustic receiver designed to operate in the 63-77 kHz channel range, utilizing state of the art digital signal processing technology. Data reception is maximized by monitoring and adapting to background noise levels. Received data is stored in an internal memory, as well as temperature data and noise conditions.

With precise millisecond timestamping, TBR 700 offers data for accurate calculations of transmitter positions for fine scale tracking. Tag transmits, signal intensity, water temperature and background noise levels are securely stored in the internal memory. The data is conveniently accessible through Thelma Biotel's user interface software, ComPort, with either USB or Bluetooth. ComPort allows for quick and easy filtering, browsing, plotting and data transfer.

TBR 700 is available in two versions; the standalone acoustic data logger, and a wired real-time receiver allowing for immediate data access. The real-time receiver supports standard RS-485 interface, which gives great stability and supports over 100 m cable lengths.

## ACOUSTIC SIGNAL DETECTION

The TBR 700 carries a broad-range acoustic element with user selectable frequencies in the range 63-77 kHz. Using state of the art digital technology, the receiver is compatible with standard transmit protocols at 69 kHz. Used in combination with Thelma Biotel's transmitters, the receiver will support user adaptable transmit protocols to ensure better sensor data resolution and support millions of unique transmitter IDs.

Every detection is stored along with its average signal intensity, a useful metadata for assessing your setup efficiency.



## SPECIFICATIONS

### TBR 700 / TBR 700 RT

Diameter:	75 mm
Length:	230 mm
Weight air:	1140 g

### TBR 700 L

Diameter:	75 mm
Length:	374 mm
Weight air:	2000 g

### Battery Life

TBR 700:	9 months
TBR 700 L:	18 months
TBR 700 RT:	4 months

### Storage

Storage space:	16 MB
Detections:	1.5 million

### Depth

Max. depth:	500 m
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### Frequencies

Frequency range:	63-77 kHz
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## DURABLE DESIGN

The receiver is robust in its design and can be used in lakes, rivers, fjords or in the ocean down to several hundred meters depth. Precision milled Delrin© is used in the pressure hull and battery compartment to ensure maximum ruggedness. To provide the means for a secure attachment during deployment, we have put in two deep grooves and a hole through the bottom. All means for fastening is placed in the bottom half of the receiver and this way, the batteries can be replaced while the unit is still attached to its fixture. The hull is fitted with a stainless steel threaded bolt, making it easy and effortless to open and close, with a standard screwdriver - or even a coin.

## DIGITAL SIGNAL PROCESSING

Equipped with a powerful microprocessor the receiver makes use of advanced digital signal processing to obtain maximum reception and flexibility. By monitoring background noise levels, it will dynamically adjust threshold levels for optimized performance under difficult conditions. TBR receivers differentiate between several power levels and store the strongest transmits even though there are overlapping, weaker signals present. They also support multiple frequency channels, greatly reducing the problem with transmit collisions. The receiver is logging not only fish ID and possible sensor values, but also the received signal strength. Background noise and water temperature is logged at chosen intervals, which enables the user to keep track of the receiver's working conditions during the entire deployment.

## TBR 700 RT

The TBR 700 RT is a wired real-time digital acoustic receiver allowing for immediate data access. Used with the Real View software on your field computer, manual tracking is easier than ever. Built on the same principles as the standard TBR 700, the TBR 700 RT utilizes state-of-the-art digital signal processing technology to maximize data reception and quality. It runs an open ASCII protocol on RS-485 which offers great stability and can support cable lengths over 100 m . With a four-wire connection the receiver is supplied with power through the cable while it maintains secure operation with an internal battery in case of instability in the remote power supply. All data is stored locally as well as it is transferred through the wire connection. The connectors used in the TBR 700 RT are high quality, rugged, wet-pluggable connectors for trouble free operation and reliability.

### Applications

The TBR 700 RT is versatile in its use. It can be used for real-time monitoring and manual tracking of animals or objects tagged with acoustic transmitters. Its data logging capabilities allow for live background noise monitoring when investigating deployment sites and performing range tests, which in turn will help determine an optimized receiver grid. Access your live data from anywhere by connecting the TBR 700 RT to a self-sufficient buoy with a wireless platform. Connecting the TBR 700 RT to a wireless platform such as LoRa, GSM, etc. will allow for live access nearly anywhere in the world. When not used for manual tracking or IoT, the TBR 700 RT can be plugged with a dummy plug and be deployed just like a normal stand-alone acoustic receiver.

