ACOUSTIC MULTIFREQUENCY RECEIVER

TBR 800

TBR 800 is a robust, low-power, standalone digital acoustic receiver that utilizes state-of-the-art digital signal processing technology to operate in the 63-77 kHz frequency range. Data reception is maximized by monitoring and adapting to background noise levels. Received data is stored in internal memory, along with logged temperature data, noise conditions, inclination, power consumption, and battery status. Together with the DeckBox, the TBR 800 can transmit and send status updates with information regarding battery status and power consumption upon request.

With precise millisecond timestamping, TBR 800 offers data for accurate calculations of transmitter positions for fine-scale tracking. The tag data is conveniently accessible through Thelma Biotel's interface software, ComPort, using a wireless Bluetooth connection. ComPort allows for quick and easy filtering, browsing, plotting, and data transfer. The TBR 800 is designed to be used for fine-scale 3D positioning through open-source YAPS (R-package) or Thelma Biotel PinPoint data service.

The TBR 800 has a robust and easy-to-operate design with market-leading acoustic sensitivity and detection range. It has a protective hoop surrounding the transducer tip, making the most sensitive part of the receiver significantly more resistant to abrasion and damage. It uses standard DD battery cells without custom wires or connectors, making batteries easily accessible.

The TBR 800 has a modular design, where the bottom housing can be exchanged with a release module, converting the TBR 800 into an acoustic release.

SIGNAL PROCESSING

The TBR 800 is a powerful digital acoustic receiver with a modular design. It uses state-of-the-art digital processing optimized for maximum reception. The TBR 800 has a ~2 dB increased signal-to-noise ratio compared to the TBR 700. The upgraded signal processing capacity results in an even greater detection range. It dynamically adjusts the signal threshold levels to increase performance in challenging conditions where high noise levels are present, such as ambient and biological noise. Multichannel reception ensures that weak signals do not interfere with stronger signals, significantly reducing the number of signal collisions, which is often seen with similar technologies. The TBR 800 logs the signal intensity of every detection, which provides information on signal detection conditions and the approximate range/distance.

SPECIFICATIONS

DIMENSIONS

Length:	245 mm
Diameter:	80 mm
Weight:	1074 g

BATTERY

Battery type:	SL 2790
Battery Life:	24 months

DEPTH

Maximum Depth:	500 m

FREQUENCIES

Avaliable frequencies:	63-77 kHz
Multi-frequency:	3 frequencies

DATA STORAGE

Memory:	32 MB
Number of detections:	3 million

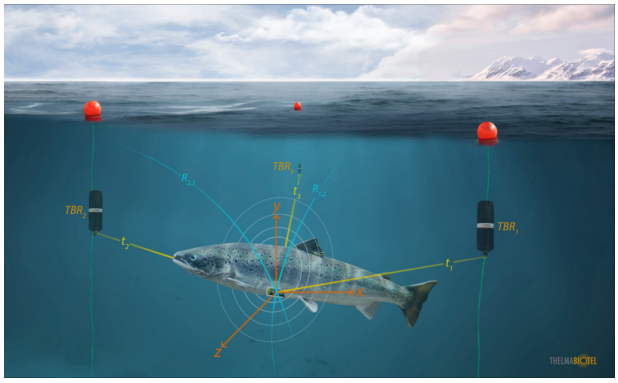
COMMUNICATION

The TBR 800 can transmit and receive signals, such as distance-ranging and status updates. To use the communication abilities on the TBR 800, a DeckBox Field Kit is needed to communicate with the deployed TBR 800. The communication functions include distance ranging, status updates with the number of detections, battery status, inclination, and more.

The TBR 800 comes with a built-in synchronization transmit (sync tag), which can be customized by the user in ComPort. The user can select parameters such as transmit interval, transmit power, and frequency. The synchronization signal requires a negligible amount of battery power and does not affect the battery life of the receiver significantly.

BUILT-IN SENSORS

Additional sensors such as acoustic background noise, water temperature, battery voltage, current consumption, and inclination/tilt are logged as separate data packages. The built-in sync tag is used to synchronize the timestamping of data with nearby receivers to use with positioning or general clock synchronization. All logged data is available for the user, free to use for positioning calculations and other data analysis.



DESIGN AND OPERATION

The receiver is robust in its design and can be used in lakes, rivers, fjords, or in the ocean down to several hundred meters in depth. Precision milled Delrin© is used in the pressure hull and battery compartment to ensure maximum ruggedness. The TBR 800 is designed with ease of use and efficiency in mind. To provide the means for a secure attachment during deployment, we have put in two deep grooves and a hole through the bottom. Attachment points are placed on the base housing for batteries to be replaced while the unit is still attached to its mooring line. The housing is fitted with a stainless steel threaded bolt, making it quick to open and close with a standard screwdriver, drill - or even a coin. A protective hoop on the transducer tip is added to make the receiver withstand hard hits or drops.

The TBR 800 uses standard, off-the-shelf DD batteries without wires or connectors. A separate circuit keeps the receiver timestamp with a backup power source, so the clock does not need to be reset after a battery change. Intuitive LED signals confirm whether the receiver is ready to be deployed or not. Firmware updates can be done wirelessly in the field, using Bluetooth and ComPort.

COMPATIBILITY

TBR 800 receivers and Thelma Biotel transmitters are compatible with the Open Protocol system to enable efficient research cooperation across borders and among different projects and universities. The Open Protocol allows users to freely choose equipment from other manufacturers and have open tenders for equipment for follow-up orders of future equipment. The TBR 800 is also compatible with the older R64K and R256 protocols, allowing for compatibility with most manufacturers operating at and around 69 kHz.

Thelma Biotel AS
Klæbuveien 196B
7037 Trondheim
Norway

Phone: +47 920 31 433
mail@thelmabiotel.com

www.thelmabiotel.com

THELMABIOTEL
let the fish talk to you