

UDR_III

Underwater Diver Receiver



SONOTRONICS

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The SONOTRONICS UDR “Underwater Diver Receiver” is a handheld receiver designed to allow a diver to locate ultrasonic transmitters (pingers) in a marine environment. The unit contains a directional transducer allowing the diver to determine the direction of the pinger based upon the signal strength, as determined by the audio in the waterproof headphones, and shown on the integral display. Applications include: Location of marked equipment, other divers, and many other target locating applications.

The UDR contains an internal rechargeable 9V battery and may be charged using an included power adapter through a jack on the unit.

SPECIFICATIONS:

FREQUENCY: Programmable: 30 to 83 kHz
DISPLAY: LCD: displays frequency and pulse interval.
SENSITIVITY: 20uVolts for 30 dB (S+N)/N
SIZE: 16cm x 11cm x 20cm
WEIGHT: UDR:900g Headphones:415g
POWER: Internal rechargeable battery with charger.
BATTERY LIFE: 8 Hours, recharge time 12 hours.
DEPTH RATING: 100m

UDR OPERATION:

Powering the Unit On: The UDR_III contains 2 modes for cycling power: an internal power switch that allows for long term storage, and “smart sensing” power cycled activated by pressing either of the two select buttons, and set to off by pressing the left select button until “oFF” is displayed, then pressing the right button to choose the off condition. Note that when the unit is switched on, a 3 digit number is shown representing the current battery voltage. For example, a fully charged NiMH (7 cell) battery will show 840, or 8.40V.

Attaching Headphones: Plug the headphones into the side of the unit and tighten down the threaded seal hand tight to secure the O-ring.

Selecting Frequency, Gain, and Volume: Press the left button to cycle through which setting you wish to change, and press the right button to change the setting. Here are the settings that you can change in order:

F XX.X frequency setting, where XX.X is the frequency in kHz, (eg. 75.0)

G X gain setting. You will see a number 1 through 9 for X.

V XX volume setting. You will see a number 1 through 11 for X.

Interval Display: The interval display function can be turned off or on in programming mode. This will display the time between pings in ms on the display. This can be used as a tool to receive telemetry from depth or temperature transmitters, or as an additional quick way to identify pingers when there are multiple pingers on one frequency.

Backlight: The backlight comes on automatically when the user is pressing buttons, or when tags are detected. This feature can be turned off in the programming mode.

Tracking: To track using the UDR, the recommended procedure is to turn on the unit, adjust the volume to a level which is comfortable for the user, adjust the gain to a level appropriate for the tracking situation (see next section), select the frequency of the desired pinger, and begin the dive. A large amount of acoustic noise is generated when the divers bubbles leave the second stage regulator so it is recommended procedure to breathe and then spend a few seconds listening and pointing the UDR to find the direction of the target. It is recommended that programming the unit is done at the surface prior to diving, as there are too many features to cycle through to be feasible while on the dive. The changes to the unit accessed during programming should not be necessary to change during a dive.

Using the signal strength indicator: The signal strength indicator is a group of bars that move from left to right on the screen of the UDR in order to provide data about the strength of the incoming signal. This can be used to aid the diver in locating and approaching a pinger. By default, the signal strength indicator is on in the UDR.

Using the gain control: The gain control in the UDR allows for the receiver to be tailored for different applications, i.e. close range location or long range detection. The UDR's gain control can be changed while diving.

Examples:

A low visibility example: In a extremely low visibility environment an example might be that the gain setting is set to 8 during the approach to the pinger. As the diver gets closer and begins to hear the signal in all directions, he may end up lowering the gain to 2. At this point he will regain directionality and be able to sweep the unit around until finding the greatest signal strength.

A long range example: A diver 200m away from the target may turn the gain up to 9, maximizing detection range. As he gets closer, he may turn down the gain a few times until getting a visual on the target.

PROGRAMMING:

The UDR contains a programming mode which can be entered just after powering the unit on. Just after the unit is turned on an annunciator appears in the upper left corner of the units display. To enter the mode, tap the right button while this annunciator is shown. The left button changes the settings, the right button changes the value of the particular setting.

The unit can then be programmed with the following features:

Number of Channels: 1 - 16 [CH16]:

This is the number of different frequencies you want access to “on the fly”. They are actually labeled 0-9 and the A-F on the display, where a = 10, b = 11, etc.

Frequency of each channel [0.75.0]:

This then allows the user to pick the exact frequency that will be used for each channel chosen above. The channel number you are on and corresponding frequency will be displayed: “3.38.5” would be channel 3 = 38.5kHz.

Light off/on [L on/L oFF]:

The LED backlight may be switched on or off as visibility dictates—for maximum battery life, switch off the LED backlight.

Display [d CS]:

[d In] Interval - Pulse intervals (time between pings) will be displayed (this is useful for identifying specific pingers when multiple pingers are present, or for receiving telemetry from pingers)

[d CS] Continuous Signal Strength Indicator: turns signal strength indicator on

[d oF] Off : neither pulse intervals or signal strength indicator are displayed; when turned on this function will display the interval time in milliseconds between the incoming pings.

[d rC] Rcode : sets the UDR to display the 16 bit hexadecimal value of an Rcode transmitter.

[d AC] ACT code : sets the UDR to display the left justified ACT code of a transmitter.

[d Tc] : UDR display alternates between ACT code and telemetry as temperature (°C)

[d dd] : UDR display alternates between ACT code and telemetry as depth (meters)

[d A°] : UDR display alternates between ACT code and telemetry as tilt (°off vertical)

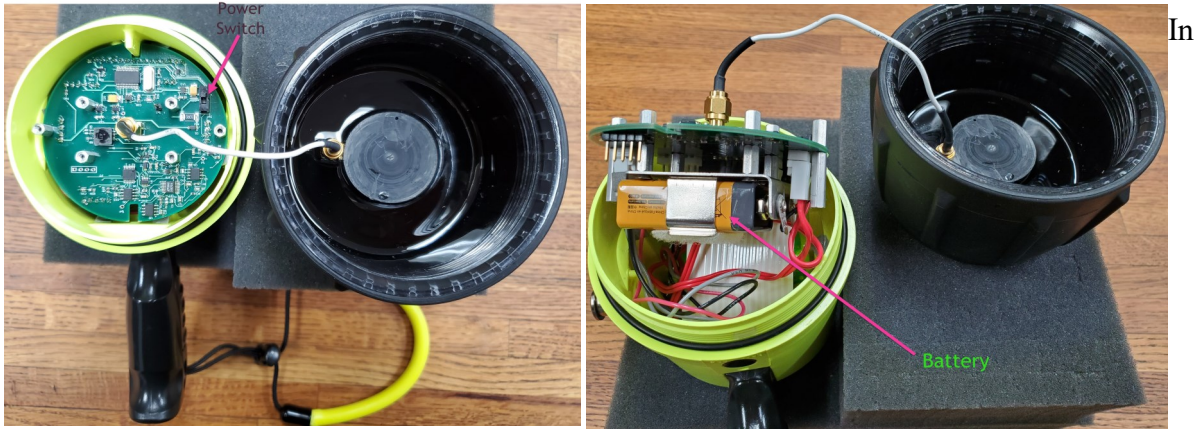
[d PC] : UDR display alternates between ACT code and telemetry as % of Full Scale

Factory settings yes/no [FACn]: Accepting the setting [FAC n] will accept the changes that you have just entered. If you wish to return the default factory settings, advance the setting until it reads [FAC] and accept.

Important tip: *When in the vicinity of the pinger, you will hear the “hum” of the oscillator inside the pinger. You can get even better accuracy by listening to this hum instead of the pings.*

POWER CONSIDERATIONS:

The UDR_III uses 'smart sensing', allowing the user to activate the receiver just by pressing either of the 2 selection buttons under the display. When the UDR_III is de-activated using this method, a small drain (100uA) will cause the internal battery pack to discharge completely after 3-4 months. Normally, the UDR_III should be fully charged, then switched off using the internal switch when stored for periods exceeding 2 months. For shorter runs, after a full charge, the UDR_III will still provide over 5 hours continuous use when left inactive for 1 month.



extreme circumstances, the electronics board may be removed, and the internal 9V NiMH battery may be switched for a non-rechargeable 9V alkaline battery. To exchange batteries, switch off the power, then carefully remove the electronics board and observe the location of the battery. The electronics board is held by a snug fit of the long aluminum standoffs against the inner rails of the UDR body. Remove by gently pulling on the short standoffs until the electronics board is free. Replace the battery in the socket, and reverse steps to insert the circuit board back into the UDR, being careful to not dislodge the wiring.

UDR_BNC:

The UDR_III allows the use of other Sonotronics' hydrophones terminated with a BNC connector, allowing the UDR_III to be used both as a deck receiver and handheld diver receiver. To install, unscrew the front cover, and carefully unscrew the hydrophone connector. Carefully attach the small SMB connector, then slowly screw on the UDR-BNC cover to protect the electronics. External hydrophones may now be attached to the UDR_III, and the full function of the UDR_III is available on deck. The UDR_III integral hydrophone may be re-attached in reverse order, using extreme care to ensure the o-ring seal is not damaged.

NOTES:

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