Marport's High-Definition Trawl Explorer is the skipper's eyes under the sea. It can be mounted on the headrope to provide a view of the trawl and seabed. This way, you can see the trawl opening, and see fish passing under the headrope and back into the belly. It can also be mounted on the tunnel to see fish making their way down to the codend.

HDTE has CHIRP technology, that offers higher resolution than standard sensors. Standard sensors use one frequency at a time to identify targets in the sea. This means there is less information received, so it can be difficult to clearly identify individual fish. Sensors with CHIRP technology use a wider range of frequencies and are performant under a noisy environment, so images they produce are more accurate and more detailed.

- Chirp pulse of 48kHz for high resolution
- Measures Depth, Temp, P&R, distance to bottom, battery
- Echogram uses target strength value and is calibrated to provide consistency between all units
- Works with real TVG to compensate sounding attenuation in water
- All raw data can be recorded on SD card for post processing
- Wifi capability to configure sensor or download SD card data

![Main Parts Diagram]

**Caution:**
- Do not insert foreign objects into pressure sensor opening or try to open it.
- Do not remove the shoulder bolts from the outside of the sensor. It may damage the components.

**Beamwidth**

<table>
<thead>
<tr>
<th>Beamwidth for Uplink pings</th>
<th>@ 35 kHz</th>
<th>@ 50 kHz</th>
<th>@ 60 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 3 dB</td>
<td>46°</td>
<td>40°</td>
<td>30°</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beamwidth for Up and Down pings</th>
<th>@ 125 kHz</th>
<th>@ 160 kHz</th>
<th>@ 200 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 3 dB</td>
<td>26°</td>
<td>24°</td>
<td>22°</td>
</tr>
</tbody>
</table>

**Dimensions**

- Beamwidth @ 35 kHz: 46°
- Beamwidth @ 50 kHz: 40°
- Beamwidth @ 60 kHz: 30°
- Beamwidth @ 125 kHz: 26°
- Beamwidth @ 160 kHz: 24°
- Beamwidth @ 200 kHz: 22°
Sensor Configuration

HDTE can be fully configured from the vessel or from the office using Marport MOSA configuring tool, on any Mac Os device via WIFI connection.

To activate the sensor outside sea water, use a jumper to connect the negative charge and the water switch.

Refer to the LED in the transducer to see the state of the sensor:

<table>
<thead>
<tr>
<th>State</th>
<th>Situation</th>
<th>Action</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging</td>
<td>Charger plug is connected.</td>
<td>Batteries are charging.</td>
<td>Flashing red for 10 min.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Stops if no config action)</td>
</tr>
<tr>
<td>Running</td>
<td>Sensor is in water or activated with jumper.</td>
<td>After an initialization phase, echo sounder is operating.</td>
<td>Flashing red</td>
</tr>
<tr>
<td>Configuring</td>
<td>Sensor is out of water.</td>
<td>Test and configuration via WiFi. Turn off after 10 min. without user action.</td>
<td>Steady green when searching for WiFi. Flashing green when connected or in access point.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Flashing red if charging.</td>
</tr>
</tbody>
</table>

You can configure the HDTE to always connect to the same WIFI network or without any preferred network so that it will always be accessible as a WiFi access point itself.

MOSA configuring tool allows to:
- Configure all settings for your sensor
- Download data from the sensor SD card

Note: Sensor configuration should be done by advanced users or Marport technician. For further information, refer to HDTE user guide.

System Configuration

System requirements:
- Mx receiver version 04.02.23 or later
- Scala version 01.02.05 or later

Add your HDTE sensor to the receiver with Marport Scala software.

When adding the sensor to the receiver:
- Make sure that your sensor configuration (Mosa) and receiver configuration (Scala) are identical, especially the uplink frequency of the sensor.
- HDTE sensor uses an 800Hz frequency bandwidth. When adding other sensors to the system, make sure to allow enough distance between their uplink frequency (200 Hz margin above and below used frequency). If not, there will be noise interference.

For more information, refer to HDTE user guide.

Installing

1. Place Marport’s HDTE (1) at the centre of the net’s headrope (2), facing the vessel.
2. Install a double mesh piece of netting (3) to provide stability to the sensor.
3. Buoys (4) on either sides provide a level platform for the unit during trawling operations.
4. Buoys ensure that down-looking transducer beam (5) is vertical for footrope (6) detection.

Marport recommends the use of a netting bag located in the desired mounting position. Use a safety line between one of the sensor’s attachment lugs and a suitable location in the net, as shown in the above image. The safety line should be a steel wire with fitted small shackles at either end. Sensors that are not properly secured may be lost during fishing operations.
Sensor data such as echogram, depth, temperature, pitch and roll are displayed on Scala software.

You can customize their display types:
- Text
- History Plot
- Dial
- Gauge

HDTE has different features to help you monitor your trawl:

- **Target Strength**: Target strength of individual targets is displayed on the echogram when you hover over it with your mouse. It helps you identify fish.

- **Autorange**: The range of the sounding can adapt automatically to the bottom detected. This enables you to have a better echogram image quality when at shallow depths, because the range will become smaller (the smaller the range, the better the image quality).

- **TVG**: Pings sent by the sensor are attenuated in the water. It means the deeper the target is, the more attenuated signals will be received and sent back. TVG (time variable gain) is here to compensate this effect by using a lower gain level when signals travel toward a target at a small distance and higher gain level when signals travel toward deeper targets. The end result is to compensate sounding attenuation and therefore to show a same target strength for a same target at different depths.

You can set TVG at 20 log (better target strength values of bottom and schools of fish.), 40 log (better target strength values of individual targets) or 30 log (compromise between the 2 others).

Below are examples of echograms from HDTE sensors:

Below are echograms from a Trawl Explorer (top) and from an HDTE (bottom). You can see on the HDTE echogram that fish (circled in orange) are better distinguished from the sea bottom (white) and that the image is more precise.
Sensor Daily Use

HDTE sensor automatically starts when placed in sea water. It switches to WiFi mode when out of water. When in WiFi mode, the sensor turns off after 10 minutes if there is no user action.

When the sensor is not in operation, verify with the transducer LED that the unit is not in running mode and discharging the batteries.

Rinse the sensor with fresh water between uses, especially the negative, positive charges and water switch (see illustration p.1). You can do it when the sensor is in running mode out of water. Dry the charging bolt afterwards.

The operational life time can be up to 14 hours depending on the power settings.

HDTE sensors use Lithium-Ion batteries, which must be charged with Marport Basic Sensor Charger or Multi-Charger. Avoid full discharges and charge the battery whenever possible, at any battery level.

Maintenance

External

- Check that all attachment equipment are not worn or torn. Replace when appropriate.
- Make sure that the sensor is clean. Remove debris with a piece of wood or screwdriver. Wash away mud or debris with warm water but do not use highly abrasive materials.

Be careful with the sensor. Sensors and components are sensitive to mechanical shocks and contamination.

Internal

Only an approved Marport dealer can access the internal unit. Warranty will become void if anyone other than an approved dealer tries to do internal maintenance duties on the HDTE sensors.

Dealers, please refer to the HDTE service manual for more detailed maintenance instructions.

Marport recommends you to return sensors to an approved Marport dealer every 2 years for maintenance.

To ensure proper and safe use of this equipment, carefully read and follow the instructions in the HDTE user guide.