The CTD48 is a very small multiparameter probe for precise online measurements of pressure, temperature, conductivity and one optional parameter up to 6000 m.

Main features:
- depth range up to 6000 m
- low weight
- easy handling
- non-corrosive titanium housing
- up to 4 sensors on the bottom cap
- data acquisition software for various versions of Microsoft Windows
- calculations according to UNESCO formulae

sensors: max. 4 on the bottom cap
standard sensors:
- Conductivity (C)
- Temperature (T)
- Pressure (D)
additional sensors:
- Oxygen
- Turbidity
- pH
- Redox (ORP)
The CTD48 is a high quality, high accuracy 4 channel probe for oceanographic and limnological online measurement of conductivity, temperature, pressure and one optional parameter for depth up to 6000 m.

The probe is equipped with a precision microprocessor-controlled 4 channel 20 bit analog to digital converter.

Software:
The supplied Standard Data Acquisition Software package “SST-SDA” includes the handling of the logging process and the display of online data with a shared graphical user interface.

The “SST-SDA” calculates the physical values from the raw values supplied by the probe and the associated calibration coefficients. Salinity, density, sound velocity and depth will be calculated by using the UNESCO formulae.

Interface:
The CTD48 is equipped with several interfaces:
- RS-232
- RS-485
- FSK

The RS-232 port can be used with multi-conductor cable up to several hundred metres long. The user can operate the probe easily from small boats and ships. The serial data will be applied directly to the serial port of a PC. Power has to be provided externally e.g. by a 12V battery or a external power supply.

The RS-485 is used for data transfer in areas with high environmental electromagnetic noise. RS-485 interface can drive up to 1000 m cable length on nearly any cable. FSK transmission is used mainly on single-conductor cables. Data is modulated on the power supply rail for a long distance data transmission. FSK operation requires a special power supply interface with a demodulator unit that converts the FSK data into RS-232 or USB 2.0 format.

Electrical specifications:
- Supply voltage: 9...30V DC
- Power consumption: approx. 0.5 W (sensor-dependent)
- Serial port: RS-232; RS-485; FSK
- Data sampling rate: 5 CTD sets/s
- Connector: SUBCONN MCBH4M Ti

Mechanical specifications:
Materials:
Housing: titanium, grade 2 (up to 2000 m), grade 5 (up to 6000 m)
Connector: titanium, neoprene

Dimensions and weights:
Length (housing):
- 240 mm (probes up to 2000 m)
- 260 mm (probes up to 6000 m)
Length (protection frame): 130 mm
Length (overall, with connector):
- approx. 450 mm (probes up to 2000 m)
- approx. 470 mm (probes up to 6000 m)

Diameter (housing): 48 mm
Weight (in air): approx. 1.2 kg

PC requirements:
- Operating system: Microsoft Windows (all versions)
- Interface: USB or RS-232

All calculations correspond to the current UNESCO formulae.

We would be pleased to make an offer according to your requests and requirements.

Ordering:
30100001 CTD48 up to 2000 m
30100003 CTD48 up to 6000 m
sensors and equipment available on request

Equipment
1. Sea & Sun DataWatch
2. Bluetooth® Cable Drum
3. Cable Drum
4. Winch
5. Cable
**Standard sensors:**

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Principle</th>
<th>Range</th>
<th>Accuracy</th>
<th>Resolution</th>
<th>Response time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pressure</strong></td>
<td>piezo, resistive</td>
<td>5, 10, 20, 50, 100, 200, 400, 600 bar</td>
<td>up to 0.05 % full scale in the range of –2...35°C</td>
<td>0.002 % full scale</td>
<td>150 ms</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>Pt 100 4-pole</td>
<td>-2 – 36 °C, -2 – 60 °C</td>
<td>±0.002 °C, ±0.005 °C</td>
<td>0.0005 °C, 0.0005 °C</td>
<td>150 ms</td>
</tr>
<tr>
<td><strong>Conductivity</strong></td>
<td>7-pole-cell</td>
<td>0 – 1 mS/cm, 0 – 6 mS/cm, 0 – 10 mS/cm, 0 – 70 mS/cm, 0 – 200 mS/cm, 0 – 300 mS/cm</td>
<td>±0.002 mS/cm, ±0.010 mS/cm</td>
<td>0.0005 mS/cm, 0.005 mS/cm</td>
<td>150 ms</td>
</tr>
</tbody>
</table>

**Additional sensors:**

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Principle</th>
<th>Range</th>
<th>Accuracy</th>
<th>Resolution</th>
<th>Response time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pH</strong> (standard or H₂S resistant)</td>
<td>combined electrode</td>
<td>4 – 10 pH, 0 – 14 pH</td>
<td>±0.02 pH</td>
<td>0.0002 pH</td>
<td>1 s</td>
</tr>
<tr>
<td><strong>Redox</strong> (standard or H₂S resistant)</td>
<td>combined electrode</td>
<td>±2 Volt</td>
<td>±20 mV</td>
<td>1.0 mV</td>
<td>1 s</td>
</tr>
<tr>
<td><strong>Oxygen</strong></td>
<td>clark electrode</td>
<td>0 – 250 %</td>
<td>±3 % sat.</td>
<td>0.1 % sat.</td>
<td>3 s (63 %), 10 s (90 %)</td>
</tr>
<tr>
<td><strong>Fast Oxygen</strong></td>
<td>clark electrode</td>
<td>0 – 150 %</td>
<td>±2 % sat.</td>
<td>0.1 % sat.</td>
<td>200 ms (90%)</td>
</tr>
<tr>
<td><strong>Turbidity</strong></td>
<td>90 ° back scatter</td>
<td>0 – 25 FTU, 0 – 125 FTU, 0 – 500 FTU, 0 – 4000 FTU **</td>
<td>±0.1 FTU / NTU</td>
<td>0.1 FTU / NTU</td>
<td>100 ms</td>
</tr>
</tbody>
</table>

* max. depth 100 m  
** output is non-linear above 1250 FTU

**Possible configuration:**

- Computer for data acquisition
- Tablet
- Sea & Sun DataWatch
- Multi-conductor cable up to 250 m
- Bluetooth® Cable Drum with internal rechargeable battery for powering the probe
- Bluetooth / RS-232 connection
Delivery

The CTD48 will be delivered in a compact, robust and water resistant transport case including cables, connection plugs, instruction manual, USB stick with software, etc.