# SEAGUARD® CTD
## Conductivity, Temperature and Depth

**SEAGUARD® CTD**

*The new AADI SEAGUARD® CTD is a robust instrument based on the SEAGUARD® Platform. It is a self contained instrument for measuring conductivity, temperature and depth. The instrument can be used as a platform for additional measurements (like e.g. current, dissolved oxygen, turbidity, wave and tide).*

**Features of the SEAGUARD® CTD:**

- High Resolution and low drift
- Low maintenance needs
- Selectable interval from 2 seconds to 2 hours
- SEAGUARD® Studio vizualisation software
- Smart sensor topology based on a reliable CANbus interface (AiCaP)
- Output parameters: *Pressure, Temperature, Conductivity. The CTD also provides raw data of the Pressure, Temperature and Conductivity measurements.*
- Windows CE based datalogger with TFT based colour touch panel for configuration
- Real-Time XML Output on RS-422(optional)
- For use in sea and fresh water
- 3 Measurement ranges: 0 - 300m
  0 - 2000m
  0 - 6000m

The SEAGUARD® CTD is a primary tool for determining essential physical properties of sea and fresh water. Standard parameters are Conductivity, Pressure/Instrument depth and Temperature. From these parameters the salinity of the water as well as the density are calculated.

The SEAGUARD® CTD is designed for continuous recordings of salinity (via conductivity measurements), temperature and depth (via pressure measurements) used in long term deployments. Typical application areas are related to e.g. coastal circulation, climatic studies and aquaculture. The SEAGUARD® CTD can also be used as a multiparameter platform for additional measurements.

The included Conductivity Sensor (4319B) is an intelligent sensor based on an inductive principle. This provides for stable measurement without electrodes that are easily fouled and may wear out in the field.

The included Temperature Sensor (4880/4060) is an intelligent sensor based on a thermistor-bridge.

The included Pressure Sensor (4646/4117) is a compact yet intelligent sensor based on a silicon piezoresistive bridge sampled and temperature compensated by an advanced Digital Signal Processor.

The output parameters from the SEAGUARD® CTD are easily presented in SEAGUARD® Studio. Salinity, Density, Depth and Sound of speed is post- calculated in SEAGUARD® Studio.

The SEAGUARD® CTD and the AADI smart sensors are interfaced by means of a reliable CANbus protocol (AiCaP) using XML for plug and play capabilities. The smart sensors can be mounted directly on the top end plate of an AADI SEAGUARD® and are automatically detected and recognized.

The SEAGUARD® CTD can be used with AADI Real-Time Collector for Real-Time data.

The SEAGUARD® CTD has 2 battery compartments for long deployment time.

# Specifications CTD

| | |
|---|---|
| **Top-end Plate:** | Multiparameter platform |
| **Recording system:** | Data Storage on SD card |
| **Storage capacity:** | ≤ 4GB |
| **Battery:** | 1 or 2 batteries inside the instrument |
| Alkaline 3988 | 9V, 15Ah (nominal 12.5Ah; 20W down to 6V at 4°C) |
| or Lithium 3908: | 7V, 35Ah |
| **Supply voltage:** | 6 to 14VDdc |
| **Operating temperature:** | -5 – +40°C (23 – 104°F) |
| **Deployment depth:** | |
| Shallow Water (SW): | 0 - 300m (0 - 984.3ft) |
| Intermediate Water (IW): | 0 - 2000m (0 - 6590ft) |
| Deep Water (DW): | 0 - 6000m (0 - 19690ft) |
| **Platform dimensions:** | |
| Shallow Water (SW): | OD: 139mm H: 356mm |
| Intermediate Water (IW): | OD: 140mm H: 352mm |
| Deep Water (DW): | OD: 143mm H: 368mm |

| **Weight:** | In Air | In Water |
|---|---|---|
| Shallow Water (SW): | 6.3 kg | 1.8 kg |
| Intermediate Water (IW): | 12.2 kg | 7.4 kg |
| Deep Water (DW): | 13.1 kg | 8.6 kg |

| **External materials:** | |
|---|---|
| 300m version: | PET, Titanium, Stainless Steel 316, |
| 2000/6000m version: | Titanium, Stainless steel 316, OSNISIL |

**Average current drain(@ 9V):** Depends on configurations:

*Note! The instrument will calculate and present the average current drain based on the configuration. refer to TN 320*

| Recording Inteval | 2 min | 10 min | 30 min | 60 min |
|---|---|---|---|---|
| Seaguard® CTD | 25.1 mA | 5.0 mA | 1.4 mA | 1.2 mA |

**CONDUCTIVITY (4319B, ref D369):**

| | |
|---|---|
| Range: | 0 - 7.5S/m (0 - 75mS/cm) |
| Resolution: | 0.0002S/m (0.002mS/cm) |
| Accuracy: | ±0.0018S/m (±0.018mS/cm) |
| Response time: | < 3s (depends on flow through cell bore) |

**TEMPERATURE (4880, ref D391, 4060, ref D363):**

| | |
|---|---|
| Range: | -4 to 36°C (24.8 – 96.8°F) |
| Resolution: | 0.001°C (0.0018°F) |
| Accuracy: | ±0.03°C (0.054°F) |
| Response time (63%): | < 2 seconds |

**PRESSURE (4117, ref D362, 4646, ref D381):**

| | |
|---|---|
| SW Range: (4646C) | 0 – 3100kPa (449 psia) |
| IW Range: (4117D) | 0 – 20000kPa (2900 psia) |
| DW Range: (4117E) | 0 – 60000kPa (8702 psia) |
| Resolution: | 0.0001% FSO |
| Accuracy: | ±0.04% FSO |
| Pressure connection: | Swagelok™ 1/8 inch |
| Inlet port (reference): | top of the pressure port |
| **Measurement units:** | Engineering units and raw data |

*Specifications subject to change without prior notice.*

**ACCESSORIES**

| included: | SEAGUARD® Studio |
|---|---|
| | SD card: 2 GB |
| | 1 Alkaline Battery 3988 |
| | Documentation on CD |
| | Carrying handle 4132 |

**ACCESSORIES**

| not included: | Carrying handle 4032,3965 |
|---|---|
| | SD card with capacity up to 4GB |
| | Electrical terminal 4784 |
| | In-line mooring frame 4044/3824A, |
| | Base Brackets 4722 for 3824A |
| | Protecting Rods 3783 |
| | Sub-surface floats 2211,2212 |
| | Bottom mooring frame 3448R |
| | Real Time licence and collector 4715 |
| | Offline Configuration 4811 |
| | Internal Lithium battery 3908 |
| | Internal Alkaline battery 3988 |
| | Internal battery shell 4513 |
| | Analog cable/licence 4564/4802 |
| | Maintenance Kit 3813/3813A |
| | Tools kit 3986A |
| | Hardcopy Documentation |
| | Oxygen optode 4330, refer D378 |
| | Turbidity sensor 4112 (analog), refer D377 |
| | for Wave and Tide measurements, refer SEAGUARD® WTR (D386) and SEAGUARD® WLR (D387) |
| | for Current measurements, refer SEAGUARD® RCM (D368) |

# AADI Real-Time

The data message from the instrument is in XML format A user application can access the AADI Real-Time Collector over the Internet or Intranet. Each user application will experience an individual connection to the instrument data due to a queue management system in the collector. One license per SEAGUARD® instrument serves multiple user applications. Including AADI Real-Time Collector, AADI Real-time Viewer, Style Sheets and example application (refer B163).

# Offline Configuration

The Seaguard Offline Configuration is a PC application used to create and modify configuration files for the SEAGUARD®. The configuration files can be imported to one or multiple SEAGUARD® instruments using a compatible memory card (SD card) (refer TD 275).

Representative's Stamp