



## LevelLine-CTD

# Water level, temperature, conductivity and salinity logger

The LevelLine CTD records highly accurate water level, temperature, conductivity and salinity measurements in a wide range of groundwater and surface water applications. Housed inside the sealed body is a ceramic level sensor, temperature sensor, 10-year lithium battery and a versatile datalogger with capacity for 500,000 data points.

The LevelLine CTD Absolute uses a piezoresistive ceramic pressure sensor to provide excellent durability and long-term stability whilst delivering an impressive accuracy of 0.05% FS. A variety of level ranges are available and all of them are temperature compensated across a scale of -20 to 80 deg. C. The conductivity sensor is adapted from our long established Aquaprobe range and records measurements of conductivity and salinity with an impressive 0-200,000 us/cm range or 0-70 PSU for Salinity.

Across the range of Leveline water level loggers we use an all Titanium body. Titanium is widely regarded as the best material to use in any water level logger but especially important when deploying into harsh or saline environments ensuring dependable long-term deployment.

### Applications

- Saltwater Intrusion.
- Contaminant plume profiling.
- Tracer tests.
- Leachate monitoring.
- Groundwater level monitoring, pump tests, slug tests etc.
- Stream, lake and reservoir water level measurement.
- Wetland and flood water monitoring.
- Coastal monitoring.
- Tank level measurement.
- Long term continuous monitoring in boreholes, surface water and seawater applications.
- Spot Measurements.



### Features

- 0.05% FS Accuracy for Level
- 1% of reading accuracy for conductivity and salinity.
- 500,000 data point memory.
- 10 Year Battery Life.
- Titanium Body.
- 5 Year Warranty.
- Included LevelLink PC Software for basic and advanced data compensation.
- SDI-12, RS485/MODBUS direct out communications.
- 22mm x 186mm.
- Vented option available.

### Leveline-CTD Battery and Logging

The LevelLine is set up using the LevelLink PC Software, LevelLine Meter or Quick Deploy Key. A variety of logging types are available these include Linear, Event Based, Schedule, Future Start, Future Stop, Deployed Start and Real Time View.

Event based logging can be used to respond to a set level or temperature change with the option of scheduling logging which is faster or slower for a defined time frame to maximise memory and battery usage.

## Data Management, Viewing and Export

Data is downloaded into the LevelLine PC application. This intuitive software allows for data to be compensated and then exported. Basic compensation can be carried out by using a BaroLine file to correct the level data for atmospheric pressure.

Advanced features include, density correction, manual barometric pressure correction, salinity and EC correction, field zero correction, averaging and automatic depth to water corrections. A bulk data correction facility is also available to compensate multiple LevelLine files at once. Data can be exported in raw or compensated formats into .csv formats for further processing outside of the LevelLink application.



LevelLink PC Application

## Deployment Options

The LevelLine-CTD is designed to be deployed using our rugged deploy cord, which is available in a variety of lengths and is easily cut to size and secured to the eyelet in the Delrin cap and attached to a suitable well cap assembly.

Direct read cables are available in set or customisable lengths up to 500 meters. This convenient method keeps the LevelLine in a fixed place and removes the need to extract the LevelLine-CTD to extract the data or make changes to the logging scheme.

Direct Out SDI-12 RS485/MODBUS communication is available across the range of LevelLine water level loggers when used with a direct read cable. This in-built feature removes the need for an external convertor saving time and minimising the footprint of the deployment on site.

As power is drawn from the third-party device the internal battery is switch off enhancing the versatility of the LevelLine-CTD. The LevelLine-CTD is compatible with any third-party data logger or telemetry device supporting these protocols.

## Communication Options.

### LevelLine PC Kit

Data is downloaded from the LevelLine via a USB PC Kit connected the LevelLink application.



See exactly where the LevelLine logger came from, in Google Earth with the completely unique GPS embedding feature

### LevelLine Meter

is available to remove the need to take your computer into the field. Data can be gathered from multiple LevelLine's and later downloaded to your PC for compensation.

In addition, the LevelLine meter can embed the GPS co-ordinates to your data, allow your to configure the LevelLine logging rates, view live data and calibrate the conductivity sensor when using a LevelLine-CTD.

### Quick Deploy Key

The Quick Deploy Key is a simple device which allows the safe initiation of a pre-programmed logging scheme at the time of deployment. The Quick Deploy Key can also zero the depth and zero the logger to start it in the field if no scheme has been pre-programmed in LevelLink. An LED displays battery level, memory capacity and performs a self-test on the LevelLine.

### LevelLine-BARO Atmospheric Pressure Logger

The LevelLine-BARO Logger records atmospheric pressure in mbar, psi, kPa, bar, mbar, mmHg, inHg, cmH2O and inH2O. It is the preferred method to compensate the absolute data recorded by the LevelLine using the LevelLink PC application. This LevelLine-BARO data can be downloaded and exported separately for further analysis of site conditions.

The LevelLine-BARO is deployed onsite away from the highest water level. One LevelLine-BARO is suitable for multiple LevelLine's within a 10km radius.

# LevelLine-CTD Specifications

|                         |                                    | LevelLine-CTD   | LevelLine-BARO  |
|-------------------------|------------------------------------|---|---|
| GENERAL                 | Temperature ranges                 | Operational: -20-80° C (-4-176° F)<br>Storage: -40-80° C (-40-176° F)<br>Compensated: -20-80° C (-4-176° F)       | Operational: -20-80° C (-4-176° F)<br>Storage: -40-80° C (-40-176° F)<br>Compensated: -20-80° C (-4-176° F)       |
|                         | Diameter                           | 22mm  | 22mm  |
|                         | Length                             | 260mm   | 186mm   |
|                         | Weight                             | 250g  | 160g  |
|                         | Materials                          | Titanium body, Delrin nose cone   | Titanium body, Delrin nose cone   |
|                         | Output options                     | Modbus/RS485, SDI-12, Aquaread proprietary  | Modbus/RS485, SDI-12, Aquaread proprietary  |
|                         | Battery type & life                | 3.6V lithium; up to 10 years (see note 1)   | 3.6V lithium; up to 10 years (see note 1)   |
|                         | External power                     | 6 - 24 VDC  | 6 - 24 VDC  |
| MEMORY                  | Size                               | 8.0 MB  | 2.0MB   |
|                         | Data records                       | 500,000   | 150,000   |
|                         | Log types                          | Linear, Event & User-Selectable Schedule with Future Start, Future Stop, Deploy Start and Real Time View          | Linear, Event & User-Selectable Schedule with Future Start, Future Stop, Deploy Start and Real Time View          |
|                         | Fastest logging rate & Modbus rate | 1 per second  | 1 per minute (logging)<br>5 per second (Modbus)   |
|                         | Fastest SDI-12 output rate         | 1 per second  | 1 per second  |
|                         | Real-time clock                    | Accurate to 1 second/24-hr period (± 6 minutes/year)  | Accurate to 1 second/24-hr period (± 6 minutes/year)  |
| SENSOR                  | Type / Material                    | Piezoresistive; ceramic   | Piezoresistive; ceramic   |
|                         | Range (Gauge & Absolute)           | 10.0M (32.8 ft) 50.0M (164 ft),<br>20.0M (65.6 ft), 100M (326 ft)   | 0 to 16.7 psi; 0 to 1.15 bar  |
|                         | Maximum pressure                   | Max 2x range, Burst 2.5x range  | Max 2x range, Burst 2.5x range  |
|                         | Accuracy (note 2)                  | ±0.02% FS   | ±0.1% FS  |
|                         | Accuracy (FS) (note 2)             | ±0.1% FS  | ±0.2% FS  |
|                         | Resolution                         | 0.002% FS or 1mm whichever is greater   | 0.1mb   |
|                         | Units of measure                   | Pressure: mbar (psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm and m available in LevelLink | Pressure: mbar (psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm and m available in LevelLink |
| Electrical Conductivity | Range                              | 0 - 200mS/cm (0 - 200,000µS/cm)   | NA  |
|                         | Resolution                         | 1µS   | NA  |
|                         | Accuracy                           | ± 1% reading or ±1µS whichever is greater (see note 4)  | NA  |
| Salinity (note 3)       | Range                              | 0 - 70 PSU / 0 - 70 ppt (g/Kg)  | NA  |
|                         | Resolution                         | 0.01PSU / 0.01 ppt  | NA  |
|                         | Accuracy                           | ±1% reading or ± 0.1 unit if greater  | NA  |
| Temperature sensor      | Accuracy & resolution              | ±0.1° C; 0.01° C  | ±0.1° C; 0.01° C  |
|                         | Units of measure                   | Celsius (fahrenheit available in LevelLink)   | Celsius (fahrenheit available in LevelLink)   |
| Warranty                | Standard                           | 5 years   | 5 Years   |
|                         | Extended                           | Options Available   | Options Available   |

Notes: 1) Dependent on logging rate. 2) Across factory-calibrated pressure and temperature ranges.  
3) Readings calculated from EC and temperature values. 4) At the calibration point at 25°C