AQUAREAD
water monitoring instruments

LeveLine-CTD
Water level, temperature, conductivity and salinity logger

The LeveLine 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 LeveLine 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.

High Accuracy
Highly accurate pressure and temperature sensors
Various depth ratings available up to 100m

Corrosion Resistant
Rugged titanium body for corrosion resistance

4 Ring stainless steel conductivity
Measures conductivity which can be output as either absolute, corrected to 20°C or corrected to 25°C. Also calculates salinity value

Extended nose cone
Nose cone offers protection and is an integral part of the conductivity sensor

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 LeveLink 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 LeveLine is set up using the LeveLink PC Software, LeveLine 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.

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Data Management, Viewing and Export

Data is downloaded into the LeveLine 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 LeveLine files at once. Data can be exported in raw or compensated formats into .csv formats for further processing outside of the LeveLink application.

LeveLink PC Application

Deployment Options

The LeveLine-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 LeveLine in a fixed place and removes the need to extract the LeveLine-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 LeveLine 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 LeveLine-CTD. The LeveLine-CTD is compatible with any third-party data logger or telemetry device supporting these protocols.

Communication Options.

LeveLine PC Kit

Data is downloaded from the LeveLine via a USB PC Kit connected the LeveLink application.

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

LeveLine Meter

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

In addition, the LeveLine meter can embed the GPS co-ordinates to your data, allow your to configure the LeveLine logging rates, view live data and calibrate the conductivity sensor when using a LeveLine-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 LeveLink. An LED displays battery level, memory capacity and performs a self-test on the LeveLine.

LeveLine-BARO Atmospheric Pressure Logger

The LeveLine-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 LeveLine using the LeveLink PC application. This LeveLine-BARO data can be downloaded and exported separately for further analysis of site conditions.

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

LeveLine-CTD Specifications

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		LeveLine-CTD	LeveLine-BARO
GENERAL	Temperature ranges	Operational: -20-80° C (-4-176° F) Storage: -40-80° C (-40-176° F) Compensated: -20-80° C (-4-176° F)	Operational: -20-80° C (-4-176° F) Storage: -40-80° C (-40-176° F) 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) 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), 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 (FS) (note 2)	±0.05% FS	±0.1% 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 LeveLink	Pressure: mbar (psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm and m available in LeveLink
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 LeveLink)	Celsius (fahrenheit available in LeveLink)
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