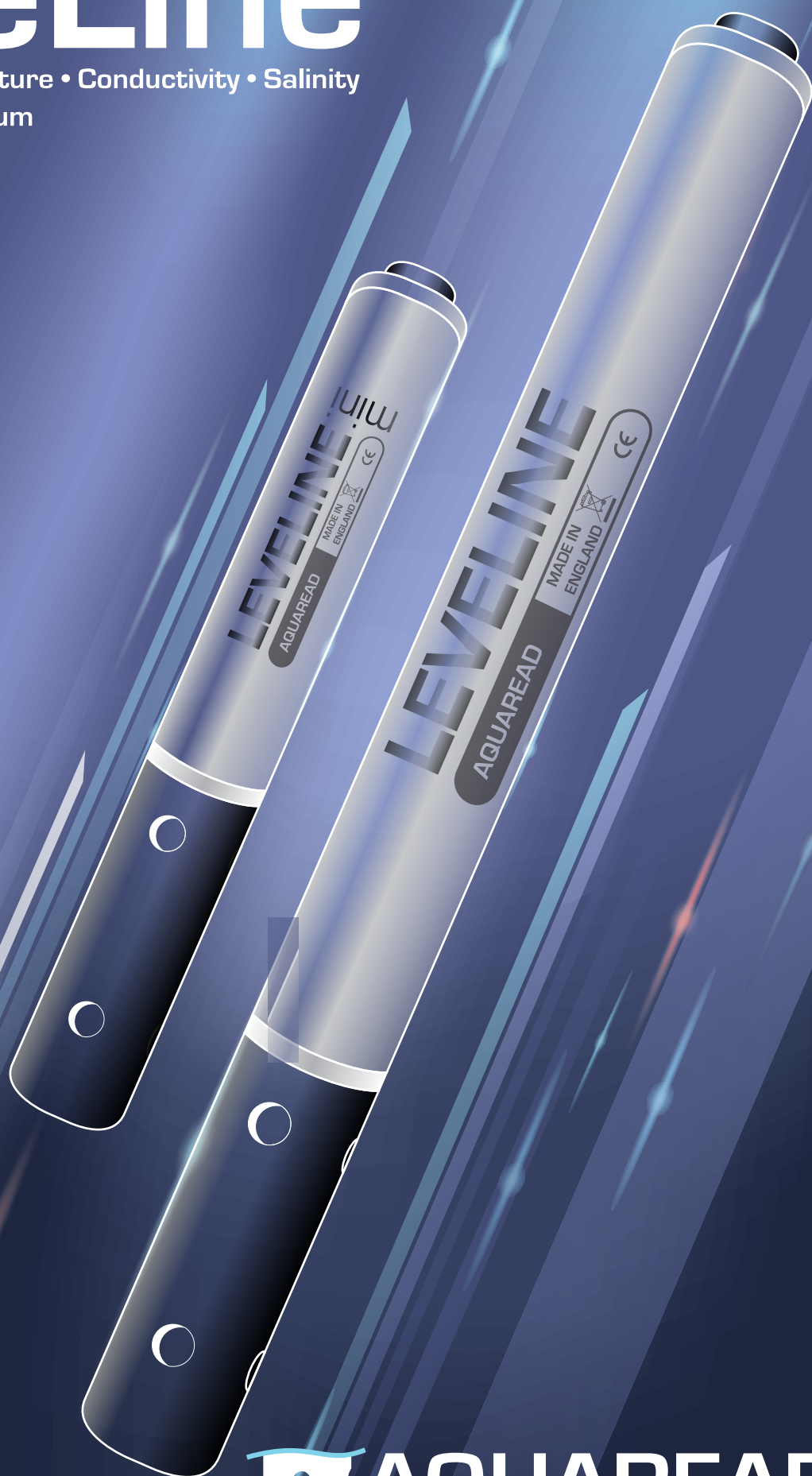


LevelLine

Water Level • Temperature • Conductivity • Salinity
Full range now in titanium



AQUAREAD
water monitoring instruments

LevelLine® - Community Trade Mark Registration No. 011713823

Leveline-CTD® - Community Trade Mark Registration No. 0161873380



LevelLine Water Level Loggers

The LevelLine records highly accurate water level and temperature measurements in groundwater and surface water applications. Housed inside an all titanium 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 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 LevelLine can record as much as 10 readings per second to once every 24 hours. 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.

Features

- 0.05% FS accuracy.
- 500,000 data point memory.
- 10 year battery life.
- Replaceable battery.
- 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.

Applications

- 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.

Leveline 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.



LevelLink PC Application

Data Management, Viewing and Export

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

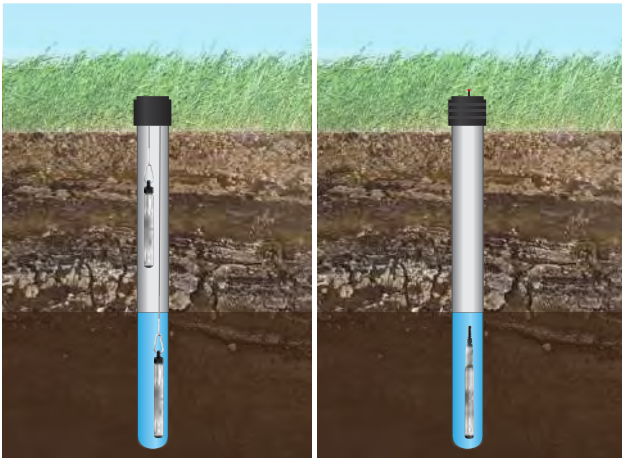
Advanced features include, density correction, manual barometric pressure correction, salinity and EC correction, field zero correction, averaging and automatic depth to water corrections. A bulk data correction facility is also available to compensate multiple LevelLine files at once.

Data can be exported in raw or compensated formats into .csv formats for further processing outside of the LevelLink application.



Deployment Options

The LevelLine is designed to be deployed using our rugged deploy cord, which is available in 10, 20, 30 and 100 meter lengths and is easily cut to size and secured to the eyelet in the Delrin cap and attached to a suitable well cap assembly.



Example LevelLine Deployments

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 remove the LevelLine to extract the data.

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 converter saving time and minimising the footprint of the deployment on site.

As power is drawn from the third-party device the internal battery is switched off enhancing the versatility of the LevelLine. The LevelLine 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.

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.

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

In addition, the LevelLine meter can embed the GPS co-ordinates to your data, allow you 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

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.



LeveLine-MINI Water Level sensors

The LeveLine-Mini is a highly accurate water level and temperature sensor. It can be used in a wide range of groundwater and surface water applications. Housed inside the sealed body is a temperature and level sensor.

The LeveLine-Mini 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. A wide variety of cable configurations are available as well as an absolute or gauge option.

Across the LeveLine mini range of water level loggers we use a carbon fibre and titanium body. The carbon fibre and titanium combination provides strength and corrosion resistance, which is especially important when deploying into harsh or saline environments ensuring dependable long-term deployment.

Features

- 0.05% FS accuracy.
- Carbon fibre and titanium body.
- 2 year warranty.
- SDI-12, RS485/MODBUS direct out communications.
- Vented option available
- LeveLine Mini-CTD version available for salinity and EC measurements.

Applications

- 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.
- Process applications.
- Flood warning systems.

Deployment and Communication

The LeveLine-Mini is a transducer so it outputs level and temperature readings automatically once connected to a suitable data logger, display or other controller which utilises SDI-12, MODBUS/RS485 protocols.

Absolute and gauge versions are available along with vented and non vented cable options.

LeveLine Mini – CTD

The LeveLine-Mini can be purchased with a conductivity sensor included to give level, temperature, conductivity and salinity readings. This sensor comes with a connector on the back end of the probe so it can be connected to the Leveline PC kit for calibration using the LeveLink PC software.



The LeveLine-Mini-CTD uses the same 4 ring stainless steel conductivity as our multiparameter water quality probes for robust EC and salinity measurements.



LeveLine-EWS

Early Flood Warning system

Flood Alert System

The LeveLine-EWS system is an automated alert system that will notify you of rising water levels any time of the day or night via SMS, giving you vital time to safeguard any assets that may be at risk from flooding.

LeveLine-EWS

This cost effective and extremely simple system requires no regular maintenance and no annual subscriptions. The water level sensor measures changes in water level and temperature and the telemetry device will send SMS alerts to up to 50 phone mobile numbers when pre-set alert levels are reached.

You can also send the device an SMS message requesting the current level or configuration settings and receive a reply straight away, meaning you can check the level at any time of the day or night for added peace of mind.



AquaTel telemetry device

EWS Features

- Low cost of ownership.
- System consists of the AquaTel telemetry unit and the small LeveLine-Mini, suspended on a 10m rugged cable.
- Water level measurements are logged at regular intervals.
- Real time alerts can be sent to a number of contacts stored in the AquaTel's phone book.
- Fully set up the device using simple SMS commands.
- Can provide the whole community with the phone number for the AquaTel so anyone can text the device to get instant level readings.



Aquatel

Smart telemetry device designed to simplify setup, lengthen deployment and optimise data management

Aquatel is a carbon fibre telemetry device with a long battery life and modem communications. It features a GPS receiver and a barometric pressure sensor for location and compensation. You can set up the Aquatel remotely using sms commands and request instant readings.

Auto Detect Aquaprobe type and sensor configuration - simply plug in your probe and Aquatel will know the probe type and the fitted optional sensors meaning no complicated customer set up is required, its just plug and play

Remote Configuration - every setting can be checked or updated remotely via sms. Send Re, short for readings, to receive a reply showing all of the current sensor readings

Built in baro logger for compensations on % saturation of DO and for all level measurements - all compensations are automatic

Choose either lithium or alkaline batteries - 24 month battery life depending on set up

Built in GPS receiver to geotag all recorded data and to highlight its position displayed on a map in Inview



Simple Deployment

- 1) When Aquatel is switched on after a quick initialisation it will begin to connect to the network. As this happens an LED on the top of the device will give an indication of the network signal strength. For example green is a strong signal.
- 2) Once its connected you send Aquatel the sms command to start the GPS detection, you will then receive a reply confirming its GPS location. You have now established that the Aquatel is connected to the mobile network, you know the signal strength and its location.
- 3) The final test is to send the device 'Re' for readings to check that the connected probe is reading correctly. Once these few simple steps are complete your deployment is ready and you can leave the site. Any further settings changes can be adjusted remotely.

View Aquaprobe data online via **inview**
by nke



DATA MONITORING DASHBOARD

Real-time visualisation  User-friendly platform 

Alarm monitoring  Customisable interface 

Secure access and data storage  Export customised reports 

Aquatel Specification

Dimensions (L x Dia)	44mm x 605mm	Sensor compatibility	Aquaprobe version of Aquatel Leveline version of Aquatel
Weight (inc batteries)	1.2kg	Communications	GSM quad band—850, 900, 1800, 1900 MHz (GPRS, SMS, and FTP); 2G and 4G LTE CAT-M
Materials	Aluminium and carbon fibre	Data access	Inview, FTP, realtime via SMS
Operating temp & humidity	-20 °C - +70 °C 97% maximum humidity	Geotagging	All logged data geotagged
Rating	IP67 cannot be submerged	Programming	Remote by SMS
Power supply	4 x D cells. Can be Alkaline or Lithium. Optional external 12V *	Alarm capacity	16 unique alarms can be sent to up to 40 stored numbers
Battery life	2 years logging every 15 min upload 1/day probe dependant	Internal sensors	Barometric air pressure Air temperature
Connections	AquaConn connector for Aquaprobe or Aquasonde	Warranty	1 Year
Antennae	SMA connector with stud antenna. Option for external		

*Connect external power via splitter cable connector, available from Aquaread

		LEVELINE (Abs & Gauge)	LEVELINE - BARO	LEVELINE- MINI
General	Temperature ranges (non freezing)	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)	Operational: -20-80° C (-4-176° F) Storage: -40-80° C (-40-176° F) Compensated: -20-80° C (-4-176° F)
	Diameter	22mm (0.866 in)	22mm (0.866 in)	22mm (0.866 in)
	Length	186mm (7.32 in)	186mm (7.32 in)	87mm (3.43 in)
	Weight	150g (5.3oz)	160g (5.6oz)	120g (4.2oz)
	Materials	Titanium body, Delrin nose cone	Titanium body, Delrin nose cone	Titanium body, Delrin nose cone
	Output options	Modbus/RS485, SDI-12, Aquaread proprietary	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)	N/A
	External power	6 - 24 VDC	6 - 24 VDC	6 - 24 VDC
Memory	Size	8.0 MB	2.0 MB	N/A
	Data Records	500,000	150,000	N/A
	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	N/A
	Fastest logging rate & Modbus rate	10 per second	1 per minute (logging) 5 per second (Modbus)	10 per second (Modbus Rate)
	Fastest SDI-12 output rate	1 per second	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)	N/A
Pressure Sensor	Type / Material	Piezoresistive; ceramic	Piezoresistive; ceramic	Piezoresistive; ceramic
	Range (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	10.0m (32.8 ft) 50.0m (164 ft), 20.0m (65.6 ft) 100m (326 ft)
	Range (Gauge)	10.0m (32.8 ft) 50.0m (164 ft), 20.0m (65.6 ft) 100m (326 ft)	N/A	10.0m (32.8 ft) 50.0m (164 ft), 20.0m (65.6 ft) 100m (326 ft)
	Maximum pressure	Max 2x range, Burst 2.5x range	Max 2x range, Burst 2.5x range	Max 2x range, Burst 2.5x range
	Accuracy (FS) (see note 2)	±0.05% FS	±0.1% FS	±0.05% FS
	Resolution	0.002% FS or 1mm whichever is greater	0.1mb	0.002% FS or 1mm whichever is greater
	Units of measure	Pressure: mbar (psi, kPa, bar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm and m available in LeveLink)	Pressure: mbar (psi, kPa, bar, mbar, mmHg, inHg, cmH2O and inH2O available in LeveLink)	Pressure: mbar (psi, kPa, bar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm and m available in LeveLink)
Temperature Sensor	Accuracy Resolution	±0.1° C 0.01° C	±0.1° C 0.01° C	±0.1° C 0.01° C
	Output Units	Celsius (fahrenheit available in LeveLink)	Celsius (fahrenheit available in LeveLink)	Celsius (fahrenheit available in LeveLink)

Notes: 1) Dependent on logging rate. 2) Across factory-calibrated pressure and temperature ranges.

		LevelLine-CTD	LevelLine-Mini-CTD
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	146mm
	Weight	250g	210g
	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)	N/A
	External power	6 - 24 VDC	6 - 24 VDC
MEMORY	Size	8.0 MB	N/A
	Data records	500,000	N/A
	Log types	Linear, Event & User-Selectable Schedule with Future Start, Future Stop, Deploy Start and Real Time View	N/A
	Fastest logging rate & Modbus rate	1 per second	1 per second
	Fastest SDI-12 output rate	1 per second	1 per second
	Real-time clock	Accurate to 1 second/24-hr period (± 6 minutes/year)	N/A
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)	10.0M (32.8 ft) 50.0M (164 ft), 20.0M (65.6 ft), 100M (326 ft)
	Maximum pressure	Max 2x range, Burst 2.5x range	Max 2x range, Burst 2.5x range
	Accuracy (FS) [note 2]	±0.05% FS	±0.05% FS
	Resolution	0.002% FS or 1mm whichever is greater	0.002% FS or 1mm whichever is greater
	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)	0 - 200mS/cm (0 - 200,000µS/cm)
	Resolution	1µS	1µS
	Accuracy	± 1% reading or ±1µS whichever is greater (see note 5)	(see note 5)
Salinity [note 4]	Range	0 - 70 PSU / 0 - 70 ppt (g/Kg)	0 - 70 PSU / 0 - 70 ppt (g/Kg)
	Resolution	0.01PSU / 0.01 ppt	0.01PSU / 0.01 ppt
	Accuracy	±1% reading or ± 0.1 unit if greater	±1% reading or ± 0.1 unit if greater
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 on LevelLine and LevelLine-CTD	2 years on all LevelLine-Mini versions
	Extended	Options Available	Options Available

Notes: 1) Dependent on logging rate. 2) Across factory-calibrated pressure and temperature ranges.
 4) Readings calculated from EC and temperature values. 5) At the calibration point at 25°C