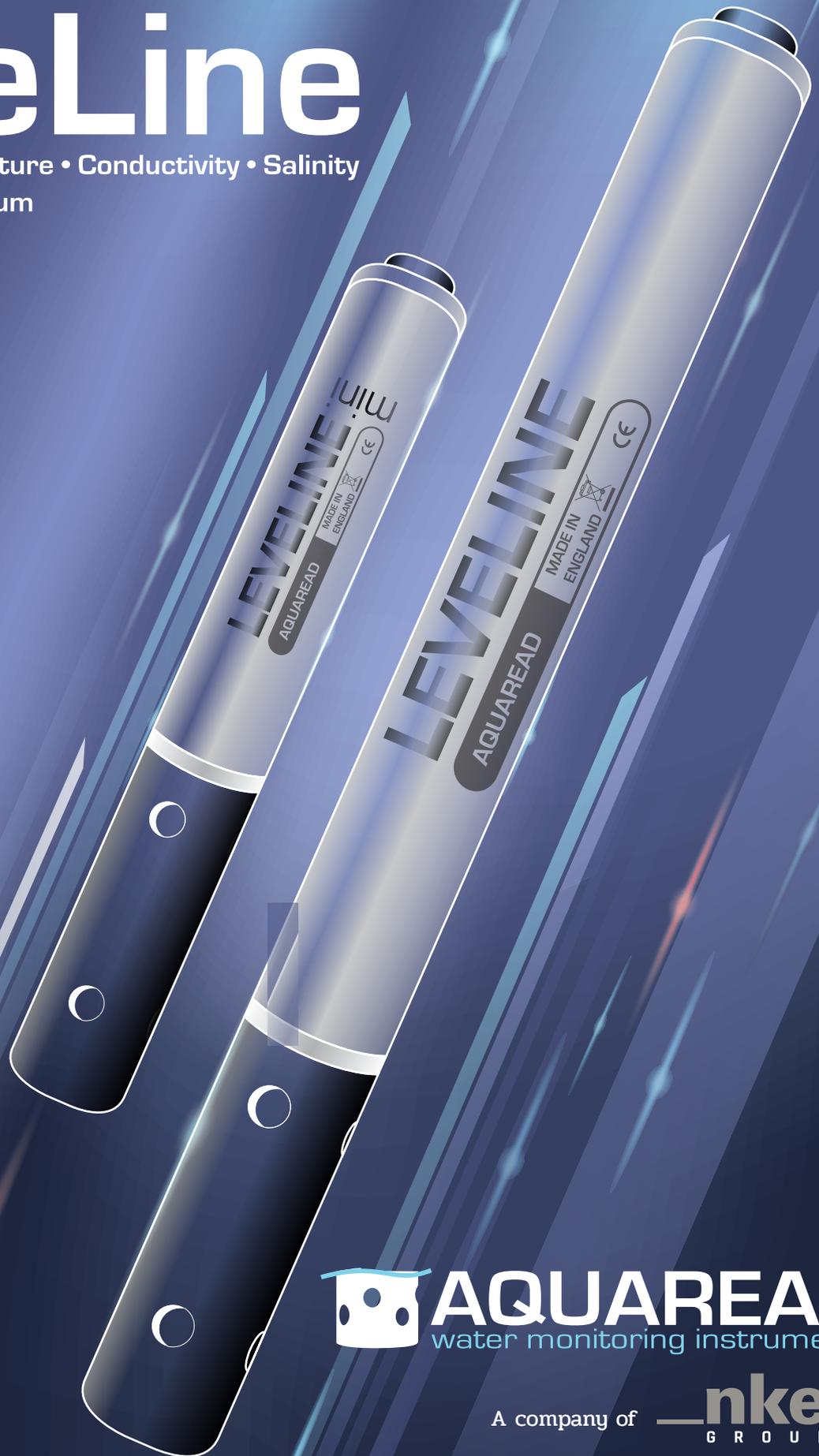# LeveLine

Water Level • Temperature • Conductivity • Salinity

Full range now in titanium

AQUAREAD
water monitoring instruments

A company of **nke** GROUP

LeveLine Range

10m

20m

50m

100m

LEVELINE MINI

Water level and temperature SDI-12 sensor, down to 100m.

LEVELINE

Self contained water level and temperature logger with replaceable battery, down to 100m.

LEVELINE CTD

For water level conductivity, temperature and salinity, down to 100m.

LEVELINE MINI CTD

For water level conductivity, temperature and salinity, down to 100m.

LeveLine

The LeveLine is a self-contained data-logging device that records water level and temperature continuously during its deployment. It features a highly accurate pressure sensor and a temperature thermistor. Leveline comes with a confident 5 year warranty!

Discover LeveLine

Explore the LeveLine's key features:

Set up Options
Use PC or GPS LeveLine Meter
Planned start date / duration
Logging rate
Event trigger levels & rate
GPS deployment coordinates

Corrosion Resistant
Rugged titanium body
for corrosion resistance

Market Leading Internals
500,000 data set logging memory
10 recordings per second
Fastest logging rate

Tough
Delrin Nose Cone

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

Comms
USB cable
SDI-12 / Modbus direct output
QuickDeploy Key to start logger
GPS LeveLine Meter connection

Telemetry available
Discreet telemetry system
available for concealed deployments

Years of Battery Life
Internal lithium battery for up to 10 years operation
Battery is replaceable when expired
Not enough? Then use external 6-24v power supply from
batteries or solar panel

Capture the water level data as quickly as 10 times per second and store up to 500,000 data records on the instrument's built-in memory. All this technology is neatly sealed within a small, corrosion resistant, titanium housing (22 x 186mm) that can be deployed to measure either absolute pressure (ABS, non vented) or gauge pressure (GAUGE, vented) to depths of up to 100m.

See back pages for Sensor Specifications

LeveLine Deployment Examples

ABSOLUTE   GAUGE   TELEMETRY   REALTIME

LeveLine-Mini

LeveLine-Mini

This mini water level and temperature sensor is also 22mm diameter and is made from the same corrosion resistant titanium as the larger LeveLine.

It outputs directly in SDI-12 or Modbus (RS-485) meaning you can connect it to any SDI-12 ready logging device as well as our Aquatel telemetry system. It has no internal power or memory, it's simply a sensor that will send data to your chosen logging device.

The LeveLine-Mini is available as either gauge or absolute versions.

LeveLine-Mini Features:

• Corrosion resistant titanium body

• Features a Delrin nose cone

• Uses the same Piezoresistive pressure sensor found in the LeveLine for highest accuracy

• Impressive accuracy of 0.1% FS

• Various cable lengths available to suit every deployment

• SDI-12 / Modbus output as standard

• Sensors come with a 2 year warranty

QuickDeploy Key

LeveLine & LeveLine-Mini

Mechanical
Specification

	LeveLine (Gauge & Abs)	LeveLine-Mini
Dimensions (L x Dia)	186 x 22mm	87 x 22mm
Material	Titanium	Titanium
Memory and battery	Yes	No
Output options	SDI-12, Modbus, Proprietary	SDI-12, Modbus, Proprietary

LeveLine-CTD

Water level and temperature logger that incorporates a 4 ring conductivity sensor

One of the questions raised when monitoring water level is, "what is causing the changes that I am recording?" Monitoring the conductivity can give an indication of the source of the water causing the water level to change. This is particularly useful in salt water intrusion studies in coastal

LeveLine-CTD with nose cone fitted

LeveLine-CTD

The LeveLine-CTD incorporates our tried and tested 4 ring conductivity sensor under the extended nose cone. It includes many of the great features of the original LeveLine such as the titanium body, huge 500,000 data point memory and an internal lithium battery. The built-in conductivity sensor allows the device to calculate salinity automatically.

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

The LeveLine-CTD is available in both absolute and gauge versions depending on your requirements. In addition to the conductivity measurement, the device also calculates the water's salinity in real time.

The conductivity sensor on the device requires occasional calibration, this can be performed within the LeveLink software or by using the GPS LeveLine Meter. Choose your own single point concentration for calibration, its quick and simple. Leveline-CTD comes with an impressive 5 year warranty!

LeveLine-Mini-CTD

The LeveLine-Mini-CTD adds conductivity and salinity measurements to the small SDI-12 ready sensor. Like the standard LeveLine-Mini, the CTD version is housed in a titanium body making it suitable for deployment in both fresh and salt waters. It also features the same titanium connector as the larger LeveLine loggers. The connector allows the unit to be connected to your PC or to the GPS LeveLine Meter to calibrate the conductivity sensor.

The LeveLine-Mini-CTD is available in both absolute and gauge versions. If your chosen datalogger / telemetry device includes a built-in air pressure sensor, we recommend the absolute version as the logging device can utilise the air pressure reading for compensation. If an air pressure sensor is unavailable then the gauge version is best suited for telemetric logging.

Gauge sensors require vented cables and desiccant cartridges to remove any moisture from the vent to prevent blocking and inaccurate compensation.

LeveLine-CTD & LeveLine-Mini-CTD

Mechanical
Specification

	LeveLine-CTD	LeveLine-Mini-CTD
Dimensions (L x Dia)	260 x 22 mm	146 x 22mm
Material	Titanium	Titanium
Memory and battery	Yes	No
Output options	SDI-12, Modbus, Proprietary	SDI-12, Modbus, Proprietary

Data & Communications

Aquatel Telemetry

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.

When used with Leveline will provide years of power before battery replacement is required.

Data captured by Aquatel can either be sent to your own FTP site or it can be sent to the Inoview web platform where users can see the location of their device and visualise data.

Inoview web platform features

Inoview can display data from a LeveLine-Mini or a LeveLine-Mini-CTD. It will allow you to visualise historic data easily in graphical form and pinpoint the location of the equipment on a map.

Easily navigate the user-friendly platform's customisable interface. It offers secure access and data storage, the ability to export customized reports and provides alarm monitoring at a glance via the dashboard.

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.

LeveLine Accessories

Accessories designed to make your monitoring project simpler

GPS LeveLine Meter

Embed the LeveLine's GPS Coordinates using the GPS LeveLine Meter
The hand-held GPS LeveLine Meter takes the features of the QuickDeploy key and builds on them:

- Embed the GPS coordinates in the LeveLine's memory as it is deployed, so that it appears as part of the dataset upon retrieval

- Download data from multiple LeveLine loggers

- Full on-site logger set up, data retrieval / storage

- Make deployment changes in the field

- View live level data; ideal for pumping situations

- Measure barometric air pressure and add a salinity value for auto compensation

- View live level, conductivity, salinity and temperature when used with a LeveLine-CTD

- Calibrate the conductivity using a custom calibration value when used with a LeveLine-CTD

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

Bluelink - Bluetooth Module

- View live readings on your mobile device and perform sensor calibrations

- BlueLink adaptor will allow you to view probe data on your Apple or Android device

- Fully customise your Leveline logging settings prior to deployment

- Bluelink features a built in pressure sensor for barometric data compensations

- Upload logged data from your Leveline to your apple or Android device

www.aquaread.com • info@aquaread.com • +44 (0) 1843 600 030

Accessories designed to make your monitoring project simpler

LeveLine-Baro

The LeveLine-Baro is used to capture changes in barometric air pressure that can be used to compensate measurements collected from multiple absolute LeveLine loggers to give highly accurate level data.
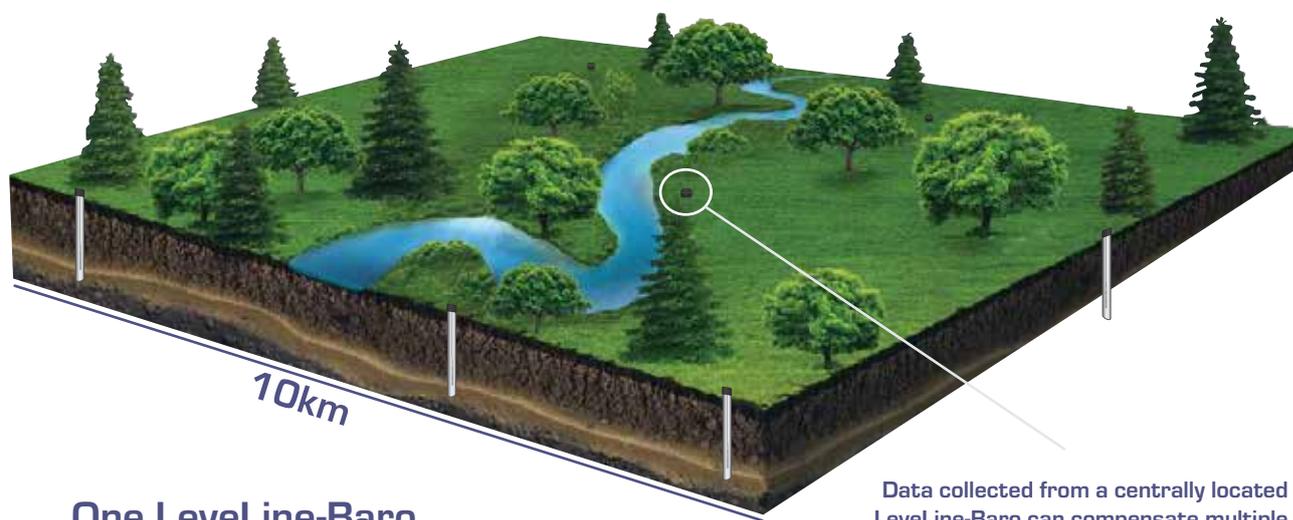
10km

One LeveLine-Baro
required for a 10km radius

Data collected from a centrally located
LeveLine-Baro can compensate multiple
absolute LeveLine loggers

LeveLine Baro

Mechanical
Specification

	LeveLine Baro
Dimensions (L x Dia)	186 x 22mm
Material	Titanium
Memory and battery	Yes
Output options	SDI-12, Modbus, Proprietary

LeveLine Accessories

QuickDeploy Key

Simply plug the QuickDeploy key into the logger's connector as the unit is deployed to:

• **Zero the depth sensor to measure absolute depth from the start**
No need for any data correction during the analysis stages after the deployment saving you time and simplifying the analysis process

• **Initiate your pre-programmed logging scheme at the exact instant of deployment and check the battery and memory levels are ok**
Use the LED indicator as a final sanity check for both battery and memory it could save you from a costly failed deployment

• **Use one deployment key for your whole range of Levelines**

LeveLink PC Software Features

• **Set up the logging regime including location ID, logging frequency, start date and duration**

• **Import and display data from a LeveLine, LeveLine-CTD or GPS LeveLine Meter**

• **Import and display data from a LeveLine-Baro**

• **Various compensation options including baro and salinity**

• **Calibrate the conductivity sensor on the LeveLine-CTD**

• **Export data as Google Earth file where GPS data is available**

• **Export data as a spreadsheet for manipulation**

• **Store and save data sets to your PC**

Use the Leveline-PC-KIT usb cable to connect your Leveline to a PC for data download and logger set up

Leveline Applications

Give way to oncoming vehicles

FLOOD MONITORING

Flood

SEA WATER LEVEL

MINING

GROUND WATER LEVEL

Specifications

		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) 20.0m (65.6 ft) 50.0m (164 ft), 100m (326 ft)	0 to 16.7 psi; 0 to 1.15 bar	10.0m (32.8 ft) 20.0m (65.6 ft) 50.0m (164 ft), 100m (326 ft)
	Range (Gauge)	10.0m (32.8 ft) 20.0m (65.6 ft) 50.0m (164 ft), 100m (326 ft)	N/A	10.0m (32.8 ft) 20.0m (65.6 ft) 50.0m (164 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, cmH$_2$O, 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, cmH$_2$O, 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.

Specifications

		LeveLine-CTD	LeveLine-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

		LeveLine-CTD	LeveLine-Mini-CTD
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

		LeveLine-CTD	LeveLine-Mini-CTD
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 LeveLink	Pressure: mbar (psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm and m available in LeveLink

		LeveLine-CTD	LeveLine-Mini-CTD
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)	± 1% reading or ±1µS whichever is greater (see note 5)

		LeveLine-CTD	LeveLine-Mini-CTD
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

		LeveLine-CTD	LeveLine-Mini-CTD
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)

		LeveLine-CTD	LeveLine-Mini-CTD
Warranty	Standard	5 years on LeveLine and LeveLine-CTD	2 years on all LeveLine-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. Upon request Levelines can be calibrated for 0-5m range.

AQUAREAD
water monitoring instruments

A company of **nke** GROUP

UK	France
Aquaread Limited	**nke Instrumentation**
Bridge House Northdown	**6 rue Gutenberg**
Industrial Park	**56700**
Broadstairs, Kent	**Hennebont**
CT10 3JP, UK	**France**

bsi.

ISO 9001 Quality Management	ISO 14001 Environmental Management
FS621752	EMS621753

Aquaread® - Community Trade Mark Registration No. 011713815
Aquaread® - Australia Trade Mark Registration No. 1436803
LeveLine® - Community Trade Mark Registration No. 011713823
Aquaprobe® - UK Trade Mark Registration No. 00003000628
Aquameter® - UK Trade Mark Registration No. 00003000627
LoggerLink® - UK Trade Mark Registration No. 3081814
LeveLine® - Community Trade Mark Registration No. 011713823
Leveline-CTD® - Community Trade Mark Registration No. 0161873380