The

AQUAREAD PRODUCT RANGE
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AquaPlus Package

optical dissolved oxygen • conductivity • TDS • SSG • resistivity • salinity • temperature

Combined optical dissolved oxygen, conductivity and temperature sensor for portable field use. Package comes complete with 3m cable, GPS meter and carry case.

Why Optical?

Traditionally, DO measurement in portable field equipment has been done using membrane covered detectors known as Clark Cells. This type of cell suffers from problems including membrane fouling, calibration instability and worst of all, oxygen consumption. During measurement, a Clark Cell will consume oxygen making it necessary to have a constant flow of water over the cell.

Optical technology eliminates all these problems allowing high precision, membrane-free, long-term stability along with infrequent calibration and immunity to fouling by sulphides and other gases.

The Aquaread AquaPlus is the only Optical DO system that measures salinity directly. This allows for automatic salinity compensation giving you the highest accuracy in any type of water.

The Tech Behind AquaPlus

The Aquaread AquaPlus works on the principle of Dynamic Luminescence Quenching. A gas-permeable material known as a luminophore is excited with short bursts of blue light, which causes molecules in the luminophore to emit red photons. By measuring the delay of the returned red photons with respect to the blue excitation, the level of dissolved oxygen present can be determined.

AquaPlus Mechanical Specification

<table>
<thead>
<tr>
<th>Protection Class</th>
<th>IP68 (permanent immersion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immersion Depth</td>
<td>Min 75mm. Max 100m**</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5˚C - +70˚C</td>
</tr>
<tr>
<td>Dimensions (L x Dia)</td>
<td>250mm x 24mm</td>
</tr>
<tr>
<td>Weight</td>
<td>400g</td>
</tr>
</tbody>
</table>

** 100m submersion for period of 1 week, 30m submersion suitable for permanent deployment.
AP-LITE

The AP-LITE is a simple probe with a single optical socket. This socket is able to house any of our optical electrodes, including turbidity and chlorophyll. A temperature sensor is also included on the probe. The AP-LITE package includes our rugged 3m cable, our GPS Aquameter, a range of accessories and a rugged carry case.

The AP-LITE is commonly used with our sapphire lensed turbidity sensor, chlorophyll sensor or blue-green algae sensors. Whilst the package includes an Aquameter the AP-LITE can also be used with one of our AquaLoggers for unmanned turbidity, chlorophyll or blue-green algae monitoring.

**AP-LITE Mechanical Specification**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Class</td>
<td>IP68 (permanent immersion)</td>
</tr>
<tr>
<td>Immersion Depth</td>
<td>Min 75mm. Max 100m * *</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5˚C - +70˚C</td>
</tr>
<tr>
<td>Dimensions (L x Dia)</td>
<td>250mm x 24mm</td>
</tr>
<tr>
<td>Weight</td>
<td>400g</td>
</tr>
</tbody>
</table>

* *100m submersion for period of 1 week, 30m submersion suitable for permanent deployment.
AP-700 / 800 Aquaprobe Package

Affordable multiparameter water quality testing packages that cover all the basics

AP-700 vs 800

The AP-700
- pH • ORP • conductivity • TDS
- SSG • Res • salinity
- dissolved oxygen • temperature

The AP-800
- pH • ORP • conductivity • TDS • SSG
- Res • salinity • dissolved oxygen
- temperature • TURBIDITY

See back pages for Sensor Specifications

“"The AP-700 and the AP-800 Aquaprobes have a very similar build to the more advanced AP-2000, the fitted sensors even have the same high accuracy”"

These packages are ideal if you are new to water quality monitoring. They will provide you with measurements for all of the commonly monitored parameters.

Both Aquaprobes come fitted with pH/ORP sensor, a conductivity sensor a dissolved oxygen sensor and a temperature sensor. The AP-800 also features our sapphire lensed turbidity sensor.

A 3m cable comes hard wired to the probe, extension cables are available if longer lengths are required; 10, 20 and 30m as standard.

Aquaprobe Facts
- Every sensor on the 700/800 Aquaprobe is replaceable, pH/ORP sensors are user replaceable whereas the conductivity and dissolved oxygen sensors are factory replaceable
- Both the AP-700 and AP-800 can be supplied with optical DO and depth sensors on request
- The turbidity sensor on the AP-800 can be replaced with any of our optical or ISE sensors
AP-700 with the sleeve removed reveals the pH/ORP sensor, the conductivity/temperature sensor and the dissolved oxygen sensor.

Improved rugged galvanic DO sensor
Both the AP-700 and AP-800 feature the same new rugged DO sensor. The sensor tip is made from a solid zinc block meaning you can easily polish and clean the sensor to extend its life.

Designed to be used with the GPS Aquameter
Both Packages come with the GPS Aquameter for data collection, live readings and sensor calibration.

AP-700/800 both feature a newly designed rugged galvanic DO sensor tip.

### AP-700 / 800 Mechanical Specification

<table>
<thead>
<tr>
<th>Protection Class</th>
<th>IP68 (permanent immersion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immersion Depth</td>
<td>Min 75mm, Max 50m *</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5 °C - +70 °C</td>
</tr>
<tr>
<td>Dimensions (L x Dia)</td>
<td>290mm x 42mm</td>
</tr>
<tr>
<td>Weight</td>
<td>700g</td>
</tr>
</tbody>
</table>

* 50m submersion for period of 1 week, 10m submersion suitable for permanent deployment.

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AP-2000 / AP-2000-D

The AP-2000 comes pre-loaded with a selection of sensors:
- pH • ORP • conductivity • TDS • SSG • Res • salinity
- optical dissolved oxygen • temperature • depth (AP-2000-D Only)

See back pages for Sensor Specifications

Package comes complete with Aquaprobe, GPS Aquameter, 3m cable, rugged case and accessories. Various cable lengths are available; 10, 20 and 30m as standard.

There are an additional 2 ports allowing you to add more:
- Aux port 1 can be fitted with either an optical sensor or an ion selective sensor (ISE)
- Aux port 2 can be fitted with only an ISE sensor

ISE Electrode Options:
- Ammonium / Ammonia,
- Chloride,
- Nitrate,
- Fluoride,
- Calcium.

Optical Electrode Options:
- Turbidity,
- Chlorophyll,
- Blue Green Algae,
- Rhodamine,
- Fluorescein,
- Refined Oil,
- CDOM / FDOM.

Aquaprobe Facts
- The IP68 rated Aquaprobe is constructed of marine grade aluminium and is designed for use in fresh, marine and waste-water applications.
- Its metal construction and weight reflect the superior build quality of the instrument.
**AP-2000 / AP-2000-D Aquaprobe Package**

**pH • ORP • conductivity • TDS • SSG • resistivity • salinity**

• optical dissolved oxygen • temperature • depth

Measures more parameters than any other 2” diameter multiparameter probe

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**GPS Aquameter**

Every Aquaprobe package comes with a GPS Aquameter for live readings, automatic data recording and probe calibration.

*Record the location of every data set using the GPS Aquameter.*

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**3m Cable with AquaConn Connectors**

The AP-2000 is fitted with our robust AquaConn metal connectors, each package comes with a 3m cable with AquaConn connectors at each end and Kevlar strands running the length of the cable for extra tensile strength.

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**Flowcell available for every Aquaprobe**

Every water quality testing probe has its own flowcell allowing you to bring sample water straight to the probe. This is ideal for ground water monitoring and some process applications.

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**Optical Dissolved Oxygen (DO) Sensor**

The AP-2000 has a factory installed and fully calibrated optical DO sensor. The sensor requires much less maintenance than the galvanic version, gives more stable readings and requires cap changes only once every 2 years.

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**AP-2000/2000-D Mechanical Specification**

<table>
<thead>
<tr>
<th>Protection Class</th>
<th>IP68 (permanent immersion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immersion Depth</td>
<td>Min 75mm. Max 100m*</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5°C - +70°C</td>
</tr>
<tr>
<td>Dimensions [L x Dia]</td>
<td>290mm x 42mm</td>
</tr>
<tr>
<td>Weight</td>
<td>700g</td>
</tr>
</tbody>
</table>

*100m submersion for period of 1 week, 30m submersion suitable for permanent deployment, depth measurement displayed up to 60m on Aquameter.*

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AP-5000 Package

The AP-5000 comes pre-loaded with a selection of sensors:

- pH • ORP • conductivity • TDS • SSG • Resistivity • Salinity
- Optical dissolved oxygen • Temperature • Depth

See back pages for Sensor Specifications

Package comes complete with Aquaprobe, GPS Aquameter, 3m cable, rugged case and accessories. Various cable lengths are available; 10, 20 and 30m as standard.

There are an additional 4 ports allowing you to add more:

All 4 Aux ports can be fitted with either an optical sensor or an ISE from the list below

**ISE Electrode Options:**
- Ammonium
- Ammonia
- Chloride
- Nitrate
- Fluoride
- Calcium

**Optical Electrode Options:**
- Turbidity
- Chlorophyll
- Blue Green Algae
- Rhodamine
- Fluorescein
- Refined Oil
- CDOM / FDOM

**Aquaprobe Facts**

- All Aquaprobes are completely filled with resin protecting the circuitry and processors within the probe. The resin also make the probe completely water tight ensuring no leaks even at depth.

- The weight of the Aquaprobe means no external weights are required to allow the probe to drop below the surface.
AP-5000 Package Contents

Full range of accessories in every package
Every Aquaprobe package comes with a range of relevant accessories including a 3m cable, calibration vessels, USB cable to connect the GPS Aquameter to your PC, RapidCal calibration solution and batteries.

AP-5000 can house more than one optical sensor
The AP-5000 has one major advantage over the AP-2000, it can house more than one optical sensor in its unrestricted Aux ports. Many applications require both turbidity and chlorophyll monitoring at the same time, this is made possible using the AP-5000. Seen to the left is the AP-5000 fully loaded with 2 ISE and 2 optical sensors connected.

The hidden depth sensor
With all of the sensors removed, in the image to the right, the depth sensor hole can be seen in the centre of the probe body.

AP-5000 Mechanical Specification

<table>
<thead>
<tr>
<th>Protection Class</th>
<th>IP68 (permanent immersion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immersion Depth</td>
<td>Min 75mm. Max 100m*</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-5 °C - +70 °C</td>
</tr>
<tr>
<td>Dimensions (L x Dia)</td>
<td>340mm x 55mm</td>
</tr>
<tr>
<td>Weight</td>
<td>950g</td>
</tr>
</tbody>
</table>

*100m submersion for period of 1 week, 30m submersion suitable for permanent deployment, depth measurement displayed up to 60m on Aquameter.

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AP-7000 Aquaprobe Package

The AP-7000 comes pre-loaded with a selection of sensors:

- pH
- ORP
- conductivity
- TDS
- SSG
- resistivity
- salinity
- optical dissolved oxygen
- temperature
- depth

See back pages for Sensor Specifications

Package comes complete with Aquaprobe, GPS Aquameter, 3m cable and accessories. Various cable lengths are available; 10, 20 and 30m as standard

There are an additional 6 ports allowing you to add much more:

All 6 Aux ports can be fitted with either an optical sensor or an ISE from the list below

ISE Electrode Options:
- Ammonium / Ammonia,
- Chloride,
- Nitrate,
- Fluoride,
- Calcium.

Optical Electrode Options:
- Turbidity,
- Chlorophyll,
- Blue Green Algae,
- Rhodamine,
- Fluorescein,
- Refined Oil,
- CDOM / FDOM.

Aquaprobe PC KIT available

You are now able to connect your Aquaprobe direct to your PC via the Aquaprobe PC-KIT’s USB interface. Using the provided software you can take live readings, log data direct to your hard drive and calibrate probes with fully recorded calibration reports.

Record up to 17 water quality parameters over long periods of unmanned monitoring using the AP-7000
AP-7000 Self Cleaning System

Easy and cost effective to maintain
The self cleaning system on the AP-7000 cleans every sensor installed on the probe including pH and conductivity. Over time the brushes can become fouled particularly during long deployments so the wiper arm is designed to be easily removed for quick and simple brush replacement:

Top right: Remove the pin from the top of the cleaning arm
Right: Slide out the cleaning arm
Bottom right: slide out the brushes and quickly replace

Various Logging options
See next page for more details on logging options

GPS Aquameter
AquaLogger-7000
BlackBox
Aquaprobe Logging Options

The GPS Aquameter is a hand held device with a display for live data viewing and data recording. As one of our flagship products it is included in every Aquaprobe package. It is designed to be very simple to use and to make your job easier in the field.

All currently measured data can be recorded by pressing the M+ button, as you record your dataset the Aquameter uses its built in GPS receiver to record the precise location that the measurements were taken from, with data being viewable in Google Earth.

### GPS Aquameter Mechanical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L x H x D)</td>
<td>90mm x 180mm x 39mm</td>
</tr>
<tr>
<td>Weight</td>
<td>425g</td>
</tr>
<tr>
<td>Display</td>
<td>80 character backlit LCD</td>
</tr>
<tr>
<td>Data Memory</td>
<td>1110 full sets inc GLP data</td>
</tr>
<tr>
<td>GPS Receiver</td>
<td>12 channel with int antenna</td>
</tr>
<tr>
<td>GPS Accuracy</td>
<td>+/- 10m in all 3 dimensions</td>
</tr>
<tr>
<td>Atmospheric Pressure</td>
<td>150mb – 1150mb Accuracy +/- 1mb</td>
</tr>
<tr>
<td>Interface</td>
<td>USB (cable provided)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>5 x AA cells. Alkaline or Ni-MH rechargeable</td>
</tr>
<tr>
<td>Battery Life</td>
<td>Alkaline &gt; 20 hours Ni-MH &gt; 40 hours</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20°C to +70°C</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP67</td>
</tr>
</tbody>
</table>
Aquaprobe
Logging Options

GPS Aquameter • AquaLogger
• BlackBox • AquaTel Telemetry
Many different logging options from spot testing to long term monitoring

AquaLogger

The AquaLogger is designed to be robust enough to handle unmanned deployments in all kinds of conditions. There are 2 types of AquaLogger available:

• AquaLogger-2000: for use with the AquaPlus, AP-LITE, AP-700, AP-800 and AP-2000 probes

• AquaLogger-7000: for use with the AP-5000 and AP-7000 Aquaprobes

Every AquaLogger comes complete with LoggerLink PC software and USB data cable so that you can set up your logging regime at your desk. Logging is initiated when the probe is connected

BlackBox

The BlackBox is a data converter that outputs our probes signals to industry standard SDI-12 or Modbus (RS485) protocols.

The BlackBox features an internal pressure sensor to detect changes in atmospheric pressure

All data output by the BlackBox is therefore fully compensated ready to be handled/displayed by the chosen third party hardware

Aquaprobe Mechanical Specification

<table>
<thead>
<tr>
<th>AquaLogger Mechanical Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L x Dia)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Data Memory</td>
</tr>
<tr>
<td>Atmospheric Pressure</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Interface</td>
</tr>
<tr>
<td>Power Supply</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Battery Life</td>
</tr>
<tr>
<td>Operating Temperature</td>
</tr>
<tr>
<td>Protection Class</td>
</tr>
</tbody>
</table>

AquaLogger Mechanical Specification

| Dimensions (L x Dia) | AquaLogger 2000: 44mm x 250mm |
| | AquaLogger 7000: 77mm x 250mm |
| Weight | AquaLogger 2000: 420g |
| | AquaLogger 7000: 1500g |
| Input Voltage | 10V – 14V DC |
| Input Current (awake) | - 40mA (AP-Lite / AquaPlus / AP-700 - AP-2000) |
| | - 100mA (AP-5000 or AP-7000 attached) |
| | - 500mA (AP-7000 during self cleaning cycle) |
| Input Current (asleep) | < 100µA (includes current drawn by attached Probe) |
| Protection Class | IP67 |
| Dimensions | 140mm x 65mm x 30mm |
| Weight | 400g |
| Connections | Probe socket on flying lead & 1M screened power/data cable |
| Fixing | Aluminium flange with four 5mm mounting holes |
| Digital Interface | User selectable between SDI-12 & Modbus (RS485) |
| Update rate | All data is refreshed every 2 seconds |

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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, which are powered for up to 10 years by the internal 3.6V lithium battery.

**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

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

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

- **Tough**
  - Delrin Nose Cone

- **Telemetry available**
  - Discreet telemetry system available for concealed deployments

- **High Accuracy**
  - Highly accurate pressure sensor
  - Various depth ratings available up to 200m

- **Years of Battery Life**
  - Internal lithium battery for up to 10 years operation
  - Battery is replaceable when expired
  - Not enough? Then use external 6-30v 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 200m.

See back pages for Sensor Specifications

**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
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

There are various other accessories available for the Leveline such as desiccant housings for use with vented cables and special cable adapters allowing direct connection to telemetry devices

LeveLine Deployment Examples

Many deployment options available helping you achieve the most cost effective deployment

ABSOLUTE  GAUGE  TELEMETRY  REALTIME
LeveLine Early Warning System (EWS) and LeveLine-Mini

• Water Level • Temperature • Alerts • Remote data capture

Simple SDI-12 / Modbus water level and temperature sensor combined with a secure and subtle early warning system that automatically alerts on rising water levels

The LeveLine-EWS system is an automated alert system that will notify you of rising water levels any time of the day via SMS and email messaging, giving you vital time to safeguard your 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 / email alerts when preset 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.

EWS Features

• System consists of the AquaTel telemetry unit and the small LeveLine-Mini suspended on a 3m rugged cable.

• The AquaTel system is held securely to the mounting point using a metal bracket - the system is tamper proof.

• Aquaread offer an installation and set up service that includes all fixings and tubing, to ensure the systems is set up effectively.

• Full training can be provided to key contacts allowing them to maintain the system and to add new contacts for alerts etc.
LeveLine-Mini
The LeveLine-Mini features the same great specification as its larger counterpart the LeveLine. (see back pages for Sensor Specifications) This mini water level and temperature sensor is made from high quality stainless steel and is the same diameter at 22mm. 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 system.

It has no internal power or memory, it’s simply a sensor that will send data to your chosen logging device.

LeveLine-Mini Features:
• High quality stainless steel 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
• Sensor can log as fast as 10 times per second
• Cable is hard wired into the sensor, various lengths available to suit every deployment
• SDI-12 / Modbus output as standard
• Sensors come with a 2 year warranty

LeveLine & LeveLine-Mini Mechanical Specification

<table>
<thead>
<tr>
<th></th>
<th>LeveLine [Gauge &amp; Abs]</th>
<th>LeveLine-Mini</th>
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</thead>
<tbody>
<tr>
<td>Dimensions (L x Dia)</td>
<td>186 x 22.2 mm</td>
<td>87 x 22.2mm</td>
</tr>
<tr>
<td>Material</td>
<td>Titanium</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Memory and battery</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Output options</td>
<td>SDI-12, Modbus, Proprietary</td>
<td>SDI-12, Modbus, Proprietary</td>
</tr>
</tbody>
</table>
AquaTel Telemetry System

3G, GPRS telemetry device with SMS and email communications

No remote server means no annual subscriptions, you Own Your Data

The AquaTel unit is a logging and telemetry device with a built in air pressure sensor that is designed to interface to a variety of measuring devices to provide remote control, data logging and data retrieval via the mobile phone networks. The device works seamlessly with all Aquaprobes and LeveLine measuring instruments along with up to 5 third party SDI-12 sensors.

Why Choose AquaTel?

Because with AquaTel there are no annual subscriptions meaning the only recurring cost is the minimal cost to send data and SMS via the mobile networks.

Because the data is sent directly to you, it is not stored on a server owned by someone else potentially in a different country meaning you truly do Own Your Data.

Because it’s easy to operate, just send it an SMS message and get instant readings on all parameters being measured or wait for the daily Email containing the days full dataset.

Because it is easy to securely install in the field with the optional mounting bracket. You can be sure you have a good connection to the mobile network using the internal LED system giving indication of signal strength or by using the optional internal display screen.

AquaTel Features

- Tamper proof housing with secure wall mountable bracket available
- Small subtle size 90 x 90 x 160mm
- Powered by internal Lithium batteries or an external 12v supply as standard
- Built in pressure sensor for barometric compensation of water quality and water level parameters
- Can be used with all Aquaprobes and all LeveLine instruments
- Can be used with up to 5 third party SDI-12 measuring devices
- No annual subscriptions required, data is sent direct via SMS or Email
- Internal memory to store logged data between uploads
- Configurable alarm settings that lead to SMS or Email notifications direct from the device
- Communicate directly with the unit via pre-defined SMS or Email commands
AquaTel Telemetry System Specification

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Protection</th>
<th>Power reverse polarity protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Range</td>
<td>Internally powered by 2 Lithium D cells or 6 - 14VDC external</td>
<td></td>
</tr>
<tr>
<td>Type of Power</td>
<td>Battery or external supply</td>
<td></td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Sleep mode</td>
<td>360 uW</td>
</tr>
<tr>
<td></td>
<td>Standby mode</td>
<td>12 mW</td>
</tr>
<tr>
<td></td>
<td>Send mode</td>
<td>~1 Watt</td>
</tr>
</tbody>
</table>

| General Environment | Temperature | Operating: -40 ~ + 70 °C; Storage -40 ~ +85 °C |
| Pulgar hygiene | Humidity | 5 ~ 100 % RH |
| IP Protection | IP 65 |

| Operation | Battery life | up to 5 years; consult user manual for more information |
| Configuration Programming | Via GPRS (SMS / Email) or PC software |
| Data Retrieval | Automatic via GPRS (Email / FTP / Native protocol) |
| | Via USB-Connection by means of a Computer (Windows) |
| Alarming | On pre-defined thresholds and rate of change of measurements; Via SMS / Email |
| PowerSwitch | Internal voltage converter for supplying remote sensors |

| System | Watchdog | Yes |
| | RTC(Real Time Clock) | Yes, internally calibrated; accuracy < 100 ppm; Battery Backped |
| Memory | 64Mb |
| Pressure sensor | Yes |
| Temperature sensor | Yes |
| Power Sensor | Yes, Monitors power consumption, rest-capacity of battery |
| Expansion Bus | One, for optional modules** Extra I/O, future functionality |
| RS485 port | Yes |
| Sample Frequency | 1 reading per second |
| Datalog Frequency | 1 reading per minute |
| Display | Optional LCD Module** |
| Rohs Compliant | Yes |

| Communication Ports | Serial Data | RS485 |
| Serial Data | SDI-12 |
| Expansion port | Optional RS232 for external modem** |

| 3G / GPRS / GSM modem | Frequency Range | Quad Band EGSM 850 / 900 / 1800 / 1900 MHz |
| Capabilities | 3G / GPRS / GSM / FTP / EMAIL / SMS |

| Dimensions | D x W x H | 90 x 90 x 160mm |
| Weight | Nett Weight | 650g |

* The Power consumption in sleep mode is when Datalogger is idle, and no tasks are performing. Only the RTC is running
** LCD display / RS232 interface option sold together as a single module

AquaTel Set up Utility

The AquaTel Set up screen allows you to set up the following parameters:
- The AquaTel unit’s real time clock
- An email account for data uploads
- A mobile internet access point
- Multiple contact email addresses
- Multiple contact SMS numbers

In addition, the software allows you to download logged data and save it to a file on your PC.
The AquaStation
Remote water quality monitoring station with auto cleaning and calibration

Auto cleaning and auto calibration means fewer site visits - can you reduce your carbon footprint?

Every AquaStation is custom made depending on the nature and location of your deployment. There are various options in terms of pumping sample into the system for test, how many calibration vessels you require, how many sensors you require and various power options. Please contact us with your exact requirements for advice and a custom quote.

The AQUASTATION
Monitor water quality in remote areas with even fewer site visits

The AquaStation can independently

• Take test samples using the integrated AP-7000
• Clean all water quality sensors installed on the AP-7000
• Calibrate 4 key parameters
• Self powered (solar/wind)
• Send data via GPRS /3G for on-line access
• Raise alarms if alarm conditions are met

These key features allow this data collecting station to run without human interaction for much longer than previously possible thanks to the novel auto calibration feature.
All Software provided

Every Aquaread product that requires PC software comes with a USB data cable, software is available to download from our web site at www.aquaread.com/software-downloads/

GPS Aquameter - AquaLink
AquaPlus Meter - OxiLink

AquaLink / OxiLink Features
• Simple data download via button
• Tick and un-tick datasets to customise your outputs
• Output a text report for all highlighted data
• Output data as a CSV file that you can open in Excel
• Output data as a .KML file for use in Google Earth

AquaLogger - LoggerLink

LoggerLink Features
• Simple data download
• Export data as a full report or save file to your PC
• Set up the logging regime and event triggers
• Upload settings back to the AquaLogger
• Check available memory and battery life

LeveLine - LeveLink

LeveLink Features
• Set up the logging regime including start date and duration
• Import data from a Baro-logger
• Import recorded data from a LeveLine
• Produce fully compensated data
• View recorded data as a graph
### Water Quality Specifications

#### Standard Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissolved Oxygen</td>
<td>0 – 500.0 mg/L / 0 – 50.0 mg/L</td>
<td>0.1% / 0.01 mg/L</td>
<td>± 0.5% FS</td>
</tr>
<tr>
<td>Depth</td>
<td>Range</td>
<td>Resolution</td>
<td>Accuracy</td>
</tr>
<tr>
<td>AP-2000/</td>
<td>± 0 – 60.00 m (60 m max displayed depth, max probe immersion 100 m)</td>
<td>1 cm</td>
<td>± 0.5% FS</td>
</tr>
<tr>
<td>AP-5000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>Range</td>
<td>Resolution</td>
<td>Accuracy</td>
</tr>
<tr>
<td>AP-7000</td>
<td>± 0 – 99.9 m</td>
<td>1 cm</td>
<td>± 0.2% FS</td>
</tr>
<tr>
<td>Conductivity</td>
<td>Resolution 3 Auto-range scales: 0 – 9,999 µS/cm, 10.00 – 99.99 µS/cm, 100.0 – 200.0 µS/cm</td>
<td>± 1% of reading</td>
<td>± 1% of reading</td>
</tr>
<tr>
<td>Resistivity*</td>
<td>Range</td>
<td>Resolution 2 Auto-range scales: 5 – 9,999 µS/cm, 10.00 – 10,000.0 µS/cm</td>
<td>± 1% of reading</td>
</tr>
<tr>
<td>Salinity*</td>
<td>Range</td>
<td>Resolution 0 – 70 PSU / 0 – 70.00 ppt (g/Kg)</td>
<td>± 1% of reading</td>
</tr>
<tr>
<td>Seawater Specific</td>
<td>Resolution</td>
<td>0.1 ct</td>
<td>± 1.0 ct</td>
</tr>
<tr>
<td>Gravity*</td>
<td>Range</td>
<td>0 – 50 ct</td>
<td>± 1.0 ct</td>
</tr>
<tr>
<td>pH</td>
<td>Resolution 0.01 pH / 0.01 mV</td>
<td>± 0.01 pH / ± 0.1 mV</td>
<td>± 1 mV</td>
</tr>
<tr>
<td>ORP</td>
<td>Resolution 0 – 2000 mV</td>
<td>± 2000 mV</td>
<td>± 5 mV</td>
</tr>
<tr>
<td>Temperature (non</td>
<td>Resolution</td>
<td>± 3°C – +50°C (23°F – 122°F)</td>
<td>± 0.1°C / ± 0.1°F</td>
</tr>
<tr>
<td>freezing)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### ISE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution 2 Auto-range scales: 0.00 – 19.999 mg/L, 100.0 – 9999.9 mg/L</th>
<th>± 10% of reading or 2 ppm (whichever is greater)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium</td>
<td>Range</td>
<td>0 – 9,000 mg/L (ppm)</td>
<td>± 10% of reading or 2 ppm (whichever is greater)</td>
</tr>
<tr>
<td>Ammonia*</td>
<td>Range</td>
<td>0 – 5,000 mg/L (ppm)</td>
<td>± 10% of reading or 2 ppm (whichever is greater)</td>
</tr>
<tr>
<td>Chloride</td>
<td>Range</td>
<td>0 – 20,000 mg/L (ppm)</td>
<td>± 10% of reading or 2 ppm (whichever is greater)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>Range</td>
<td>0 – 20,000 mg/L (ppm)</td>
<td>± 10% of reading or 2 ppm (whichever is greater)</td>
</tr>
<tr>
<td>Nitrate</td>
<td>Range</td>
<td>0 – 30,000 mg/L (ppm)</td>
<td>± 10% of reading or 2 ppm (whichever is greater)</td>
</tr>
<tr>
<td>Calcium</td>
<td>Range</td>
<td>0 – 2,000 mg/L (ppm)</td>
<td>± 10% of reading or 2 ppm (whichever is greater)</td>
</tr>
</tbody>
</table>

#### Optical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution 2 Auto-range scales: 0.00 – 300,000 cells/mL, 100.0 – 3,000,000 cells/mL (whichever is greater)</th>
<th>± 10% of reading or 2 ppm (whichever is greater)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity</td>
<td>Range</td>
<td>0 – 3000 NTU</td>
<td>± 5% of auto-ranged scale</td>
</tr>
<tr>
<td>Chlorophyll</td>
<td>Range</td>
<td>0 – 500.0 µg/L (µg/L)</td>
<td>± 10% of reading</td>
</tr>
<tr>
<td>Phycocyanin (freshwater BSA)</td>
<td>Resolution</td>
<td>0 – 500.0 cells/mL</td>
<td>± 10% of reading</td>
</tr>
<tr>
<td>Phycerythrin (marine BSA)</td>
<td>Resolution</td>
<td>0 – 500.0 cells/mL</td>
<td>± 10% of reading</td>
</tr>
<tr>
<td>Rhodamine WT Dye</td>
<td>Range</td>
<td>0 – 500 µg/L (µg/L)</td>
<td>± 10% of reading</td>
</tr>
<tr>
<td>Fluorescein Dye</td>
<td>Range</td>
<td>0 – 500 µg/L (µg/L)</td>
<td>± 10% of reading</td>
</tr>
<tr>
<td>Refined Oil</td>
<td>Range</td>
<td>0 – 500 µg/L (µg/L)</td>
<td>± 10% of reading</td>
</tr>
<tr>
<td>CDOM / FDOM</td>
<td>Range</td>
<td>0 – 20,000 µg/L (µg/L)</td>
<td>± 10% of reading</td>
</tr>
</tbody>
</table>

* Readings calculated from EC and temperature electrode values.

† Ammonium electrode required. Readings calculated from ammonium, pH and temperature values.

The accuracy figures quoted throughout this document represent the equipment’s capability at the calibration points at 25°C. These figures do not take into account errors introduced by variations in the accuracy of calibration solutions and errors beyond the control of the manufacturer that may be introduced by environmental conditions in the field. Accuracy in the field is also dependent upon full calibration and minimal time between calibration and use.
# Water Level Specifications

## LEVELINE (Abs & Gauge)
- **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)

## LEVELINE - BARO
- **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)

## LEVELINE - MINI
- **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)

## General
- **Diameter**
  - 22.2mm (0.875 in)
- **Length**
  - 186mm (7.32 in)
- **Weight**
  - 150g (5.3oz)
- **Materials**
  - Titanium body, Delrin nose cone
- **Output options**
  - Modbus/RS485, SDI-12, Aquaread proprietary
- **Battery type & life**
  - 3.6V lithium; 10 years or 5M readings
- **External power**
  - 6 - 30 VDC

## Memory
- **Size**
  - 8.0 MB
- **Data Records**
  - 500,000
- **Log types**
  - Linear, Event & User-Selectable Schedule with Future Start, Future Stop, Deploy Start and Real Time View
- **Fastest logging rate & Modbus rate**
  - 10 per second
- **Fastest SDI-12 output rate**
  - 1 per second
- **Real-time clock**
  - Accurate to 1 second/24-hr period (± 6 minutes/year)

## Pressure Sensor
- **Type / Material**
  - Piezoresistive; ceramic
- **Range (Absolute)**
  - 10.0m (32.8 ft)
  - 50.0m (164 ft)
  - 200m (656 ft)
- **Range (Gauge)**
  - 10.0m (32.8 ft)
  - 50.0m (164 ft)
  - 200m (656 ft)
- **Maximum pressure**
  - Max 2x range, Burst 2.5x range
- **Accuracy @ 15° C**
  - ±0.05% FS
- **Accuracy (FS)**
  - ±0.1% FS
- **Resolution**
  - 0.005% FS or 1mm whichever is greater
- **Units of measure**
  - Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm, m

## Temperature Sensor
- **Accuracy Resolution**
  - ±0.1° C
  - 0.01° C
- **Output Units**
  - Celsius

## Notes:
1) Across factory-calibrated pressure range at a constant temperature.
2) Across factory-calibrated pressure and temperature ranges.