



# AquaPlus Package

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

Optical Dissolved oxygen water quality monitoring package

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

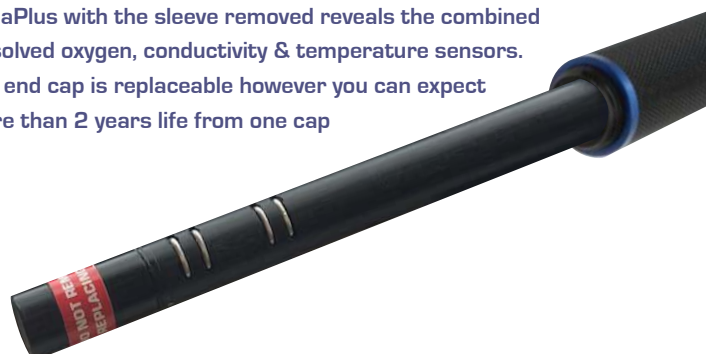
The Aquaread AquaPlus works on the principle of Dynamic Luminescence Quenching. A gas-permeable material known as a luminophore is excited with short bursts of blue light, which causes molecules in the luminophore to emit red photons. By measuring the delay of the returned red photons with respect to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

### AquaPlus Mechanical Specification

Protection Class	IP68 (permanent immersion)
Immersion Depth	Min 75mm. Max 100m**
Operating Temperature	-5 °C - +70 °C
Dimensions (L x Dia)	250mm x 24mm
Weight	400g

\*\*100m submersion for period of 1 week, 30m submersion suitable for permanent deployment.

AquaPlus with the sleeve removed reveals the combined dissolved oxygen, conductivity & temperature sensors. The end cap is replaceable however you can expect more than 2 years life from one cap





# AP-5000 Aquaprobe Package

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

Add even more sensors to your portable water quality monitoring package

Maximise your water quality data collection using  
the extra sensor ports of the portable  
AP-5000 Aquaprobe

## AP-5000 Package

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

pH • ORP • conductivity • TDS • SSG • Res • 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 Aquaprobe Package

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

Add even more sensors to your portable water quality monitoring package

## 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

Protection Class	IP68 (permanent immersion)
Immersion Depth	Min 75mm. Max 100m*
Operating Temperature	-5 °C - +70 °C
Dimensions (L x Dia)	340mm x 55mm
Weight	950g

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

# Water Quality Specifications

Standard Parameters	Dissolved Oxygen	Range	0 – 500.0% / 0 – 50.00 mg/L
		Resolution	0.1% / 0.01mg/L
		Accuracy	0 - 200%: ± 1% of reading, 200% - 500%: ± 10%
	Depth AP-2000/ AP-5000	Range	± 0 – 60.00 m (60m max displayed depth, max probe immersion 100m)
		Resolution	1cm
		Accuracy	± 0.5% FS
	Depth AP-7000	Range	± 0 – 99.99 m
		Resolution	1cm
		Accuracy	± 0.2% FS
	Conductivity (EC)	Range	0 – 200 mS/cm (0 - 200,000 µS/cm)
Resolution		3 Auto-range scales: 0 – 9999 µS/cm, 10.00 – 99.99 mS/cm, 100.0 – 200.0mS/cm	
Accuracy		± 1% of reading	
TDS*	Range	0 – 100,000 mg/L (ppm)	
	Resolution	2 Auto-range scales: 0 – 9999mg/L, 10.00 – 100.00g/L	
	Accuracy	± 1% of reading	
Resistivity*	Range	5 Ω • cm – 1 MΩ • cm	
	Resolution	2 Auto-range scales: 5 – 9999 Ω • cm, 10.0 – 1000.0 KΩ • cm	
	Accuracy	± 1% of reading	
Salinity*	Range	0 – 70 PSU / 0 – 70.00 ppt (g/Kg)	
	Resolution	0.01 PSU / 0.01 ppt	
	Accuracy	± 1% of reading	
Seawater Specific Gravity*	Range	0 – 50 ot	
	Resolution	0.1 ot	
	Accuracy	± 1.0 ot	
pH	Range	0 – 14 pH / ± 625mV	
	Resolution	0.01 pH / ± 0.1mV	
	Accuracy	± 0.1 pH / ± 5mV	
ORP	Range	± 2000mV	
	Resolution	0.1mV	
	Accuracy	± 5mV	
Temperature (non freezing)	Range	-5°C – +50°C (23°F – 122°F)	
	Resolution	0.01°C / 0.1°F	
	Accuracy	± 0.5 °C	

\* Readings calculated from EC and temperature electrode values

ISE	Ammonium	Range	0 – 9,000mg/L (ppm)
		Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 8,999.9 mg/L
		Accuracy	± 10% of reading or 2ppm (whichever is greater)
	Ammonia <sup>†</sup>	Range	0 – 9,000mg/L (ppm)
		Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 8,999.9 mg/L
		Accuracy	± 10% of reading or 2ppm (whichever is greater)
	Chloride	Range	0 – 20,000mg/L (ppm)
		Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 19,999.9 mg/L
		Accuracy	± 10% of reading or 2ppm (whichever is greater)
	Fluoride	Range	0 – 1,000mg/L (ppm)
Resolution		2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 999.9 mg/L	
Accuracy		± 10% of reading or 2ppm (whichever is greater)	
Nitrate	Range	0 – 30,000mg/L (ppm)	
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 29,999.9 mg/L	
	Accuracy	± 10% of reading or 2ppm (whichever is greater)	
Calcium	Range	0 – 2,000mg/L (ppm)	
	Resolution	2 Auto-range scales: 0.00 - 99.99 mg/L, 100.0 – 1,999.9 mg/L	
	Accuracy	± 10% of reading or 2ppm (whichever is greater)	

<sup>†</sup> Ammonium electrode required. Readings calculated from ammonium, pH and temperature values.

Optical	Turbidity	Range	0 – 3000 NTU
		Resolution	2 Auto-range scales: 0.0 - 99.9 NTU, 100 - 3000 NTU
		Accuracy	± 5% of auto-ranged scale
	Chlorophyll	Range	0 – 500.0 µg/L (ppb)
		Resolution	2 Auto-range scales: 0.00 - 99.99 µg/L, 100.0 - 500.0 µg/L
		Repeatability	± 5% of reading
	Phycocyanin (freshwater BGA)	Range	0 – 300,000 cells/mL
		Resolution	1 cell/mL
		Repeatability	± 10% of reading
	Phycerythrin (marine BGA)	Range	200 cells/mL
Resolution		1 cell/mL	
Repeatability		± 10% of reading	
Rhodamine WT Dye	Range	0 – 500 µg/L (ppb)	
	Resolution	2 Auto-range scales: 0.00 - 99.99 µg/L, 100.0 - 500.0 µg/L	
	Accuracy	± 5% of reading	
Fluorescein Dye	Range	0 – 500 µg/L (ppb)	
	Resolution	2 Auto-range scales: 0.00 - 99.99 µg/L, 100.0 - 500.0 µg/L	
	Accuracy	± 5% of reading	
Refined Oil	Range	0 – 10,000 µg/L (ppb) (Napthalene)	
	Resolution	0.1 µg/L	
	Repeatability	± 10% of reading	
CDOM / FDOM	Range	0 – 20,000 µg/L (ppb) (Quinine Sulphate)	
	Resolution	2 Auto-range scales: 0.0 – 9,999.9 µg/L, 10,000 – 20,000 µg/L	
	Repeatability	± 10% of reading	

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)	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	22.2mm (0.875 in)	22.2mm (0.875 in)	22.2mm (0.875 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	Stainless Steel body, Delrin nose cone	Stainless Steel 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; 10 years or 5M readings	3.6V lithium; 10 years or 5M readings	N/A
	External power	6 - 30 VDC	6 - 30 VDC	6 - 30 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), 200m (656 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), 200m (656 ft)
	Range (Gauge)	10.0m (32.8 ft) 50.0m (164 ft), 200m (656 ft)	20.0m (65.6 ft) 100m (326 ft)	N/A	N/A
	Maximum pressure	Max 2x range, Burst 2.5x range		Max 2x range, Burst 2.5x range	Max 2x range, Burst 2.5x range
	Accuracy @ 15° C (See note 1)	±0.05% FS		±0.1% FS	±0.05% FS
	Accuracy (FS) (See note 2)	±0.1% FS		±0.2% FS	±0.1% FS
	Resolution	0.005% FS or 1mm whichever is greater		0.1mb	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		Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O.	Pressure: psi, kPa, bar, mbar, mmHg, inHg, cmH2O, inH2O, Level: in, ft, mm, cm, m

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

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