KEYNES CONTROLS

Features:

User-fitted fibre optic cable - simply adjust to suit the application

Lightning protected by design - safe from lightning strikes

Models 17.5 & 22 mm outside diameter - fits any borehole

Self-powered > 10 yr battery life (depending on use).

250K readings storage - 1 sec to 6 hrs logging periods

Temperature-compensated clock - drift <60 sec / yr

**Fibre optic communications -
immune from electromagnetic interference**

Corrosion-resistant enclosure

Bluetooth cable-free network support

Fibre optic communications.

Measurement ranges: 10m,   20m, 50m, 100m

Permanent Deployment - In-situ Data Access

The AquaBAT range of water level recorders from Keynes Controls has been designed for stand-alone monitoring and can run unattended for long periods of time. The sensors also have the ability for in-situ data downloads and firmware upgrade. The communications cable is user-installed and can be set to any length. The fibre cable is very low cost and does not have to have any bespoke fixtures and fitting. There is no skill in fitting the cable to this product, just a little common sense.

Unlike any other water level recorders, the AquaBat uses the same fibre optic cable for deployment and communications as the instrument. The fibre cable can be changed by the user to any length, and so can be used at many different sites. The fibre cable can be changed at any time without the need for any special tools and only the basic of training. Only a sharp blade to cut the fibre, and a Hex key, are required to fit the fibre cable to the AquaBAT.

The fibre optic cable is made entirely from plastic and will never corrode despite its environment or deployment time. Simply cleaning the end of the fibre and refitting to the instrument or Header unit is all that is required to maintain sensor.

Lightning Protection:

There is no direct electrical connection between the AquaBat and Header unit. This makes the AquaBat safe from a lightning strike. It is impossible for lightning to be conducted to the AquaBat along the fibre cable. Any damage to the fibre is easy repaired with a sharp knife or wire cutters. Lightning will not affect a deployed instrument.

Time Stamp:

A temperature-compensated clock is fitted inside the AquaBAT to ensure that all recorded data is accurately time-stamped. The internal clock can also be synchronised to the local clock within a recording device such as a laptop/palmtop, or mobile phone at the time of deployment.

Bluetooth
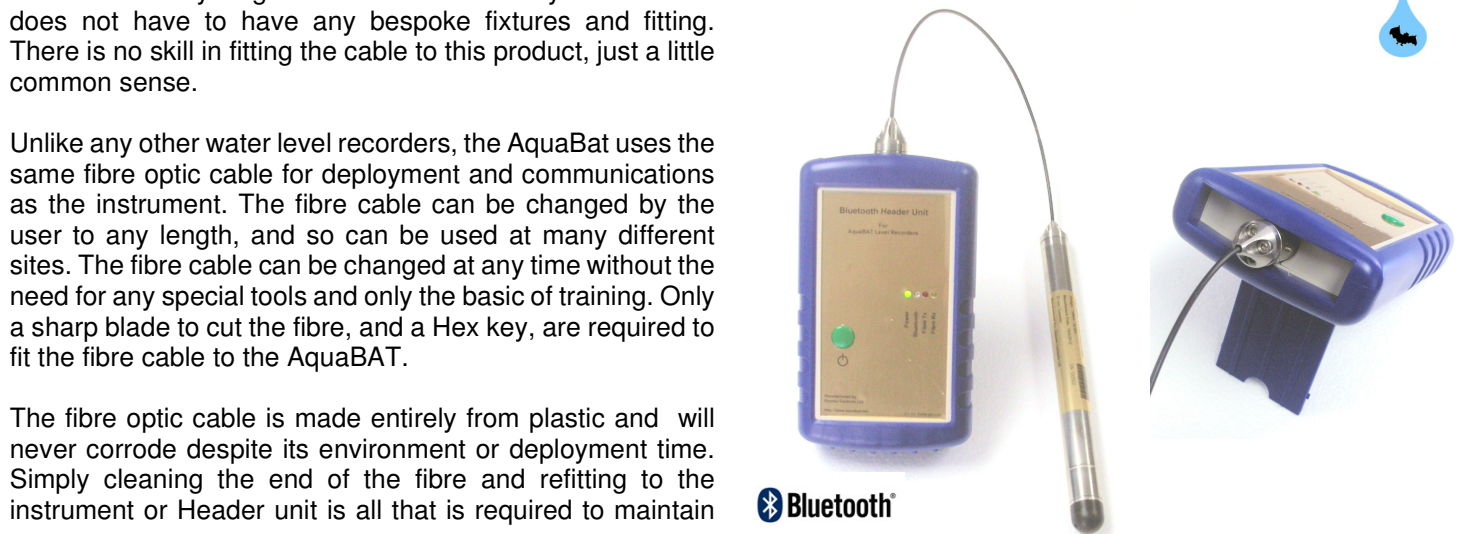
AquaBat connected by optical fibre to Header Unit

Applications Software:

The free application software enables full configuration of the sensor and full management and observation of the data and is available for laptops supporting the Windows operating systems and PDAs/mobile phones supporting the Windows Mobile operating systems.

The application software can be used to configure and download results from the AquaBAT loggers.

Windows Mobile

CE

AquaBat Specifications:

Level sensor: Piezo-resistive silicon in 316L stainless steel
Vacuum sealed

Accuracy (typical):   0.05% net FS
Stability of readings: Superior, low noise
Resolution: 0.002 to 0.0006% FS

Normalization: Automatic temp. compensation
Temperature sensor: Platinum resistance temperature
detector
Temp. sensor accuracy: ±0.01℃
Temp. sensor resolution: 0.001℃
Temp. comp. range: -10 to +45℃
Response time: < 1 Sec

Battery life: 5 years - based on one reading/min
Clock accuracy: ±1 minute / year
Operating temperature: -20℃ to 80℃
Maximum # readings: 250,000 of level and temperature
Memory: High reliability EEPROM 200K pressure & temp. values
Logging options: Event log, one shot
Event log at high sample rate

Communication: Fibre optic, serial at 19200 Baud (min)
Computer connection: Bluetooth
Fibre optic cable: 2.2 mm diameter - PVC sheath
1 mm internal solid plastic core.
Size: 7/8" x 6" (17.5 mm x 200 mm)
Weight: 145 grams

Corrosion resistance: 316-L stainless steel housing,
Delrin pressure sensor cap
PVC sealed enclosure
Sampling modes: Event- and user-selectable,
Measurement rates: 1 sec to 6 hrs
Compensation: Local area (approx. 18 miles/26 km)

Model	Resolution	Accuracy	Measurement Range
AquaBat-bar	0.002 mB		**0 - 1120 mb**
AquaBat-17-1bar	0.002 mm	0.1 cm 1 mm	**1 bar / 10m**
AquaBat-17-2bar	0.005 mm	0.2 cm 2 mm	**2 bar / 20m**
AquaBat-17-5bar	0.010 mm	0.5 cm 5 mm	**5 bar / 50m**
AquaBat-17-10bar	0.020 mm	1 cm 10 mm	**10 bar / 100m**

Header Unit Specifications:

Case: Handheld plastic - soft plastic protected
boot cover
Fibre optic port: 316 Stainless Steel or better
Construction: High impact resistant plastic case
Dimensions: L 150 x W 90 x D 30 (mm)
Sealing: Spray-resistant
Operating voltage: 2 X 1.5V AA Batteries
Data comms: Speed 38 Kb - Fibre optic link only
150Kb   - Bluetooth cable-free link
Operating temp: -20 to +70 Deg C
Battery life (typical):   Greater than 10 yrs - 500 downloads
Low voltage warning in software
Battery included as standard
Date and time: Automatic
Fibre optic fibre: 2.2 mm external diameter -
1 mm diameter inner core
Plastic multi-mode fibre
Range: Typical single fibre < 300 m
Software: PDA/mobile phone Windows Mobile v5
File Format: Comma separated variable (CSV)

Electrical Isolation:

The sensor head sits inside an electrically-isolated Faraday cage and cannot be affected by local electrical conditions.

The fibre optic cable linking the AquaBat (sensor) to the Header unit is plastic and so there is no electrical connection between the 2 units.

Lightning strikes on the fibre and local electrical anomalies will have no effect on the instrumentation.

Fibre Optic Cable Properties

Fibre/jacket diameter   1000um/2.2mm
Number of fibres   1
Min. bend radius   18 mm (typical)
Attenuation   - 0.15 dB/m (typical)
Material   Plastic polymer
Operating temp. range   - 45 to +85 deg C

**Fibre Optic cable connected
to the AquaBat Unit**

Part No. HDR-Bluetooth

Part Numbers:

17.5 mm Diameter

		22 mm Diameter	
AquaBAT-17-1bar	0 - 10m range	**AquaBAT-Bar**	**Barometer**
AquaBAT-17-2bar	0 - 20m range	**AquaBAT-22-1bar**	0 - 10m range
AquaBAT-17-5bar	0 - 50m range	**AquaBAT-22-2bar**	0 - 20m range
AquaBAT-17-10bar	0 - 100m range	**AquaBAT-22-5bar**	0 - 50m range
		AquaBAT-22-10bar	0 - 100m range