



Instruction Manual

for the

AquaCal™

Aquaprobe® Calibration and Live Data

Software Package

Version 2.00+

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1. Introduction

This manual covers the setup and operation of the AquaCal™ PC software package.

AquaCal™ is a utility that allows live operation, live data logging and calibration of any model of Aquaread® multiparameter water quality Probe using a PC rather than an Aquameter®.

In order to connect your PC to an Aquaprobe®, you will need a PC - Aquaprobe® USB interface kit (shown below).



The Aquaprobe® PC Kit (Part No. AP-PC-KIT) allows direct connection of an Aquaprobe® to a PC via a USB port. The PC will also supply the necessary power to the Aquaprobe®.

Please quote your Aquaprobe® model when ordering a AP-PC-KIT as connectors may vary (see below).

AquaCal™ is compatible with the following Aquaread® Aquaprobes:

AP-Lite	Software version 4.00 and above
AP-700*	Software version 3.50 and above
AP-700-D*	Software version 3.50 and above
AP-800*	Software version 3.50 and above
AP-800-D*	Software version 3.50 and above
AP-2000	Software version 4.00 and above
AP-2000-D	Software version 4.00 and above
AP-5000	Software version 4.00 and above
AP-7000	Software version 4.00 and above
AquaPlus* *	Software version 1.00 and above

* New 2014 or later model with metal connector only. Older models are not supported.

** Requires plastic connector version of AP-PC-Kit, available to special order.

If your Aquaprobe® is listed above but is not fitted with a compatible level of software, you can have it upgraded. Please contact your Aquaread® dealer for details of this service.

Please note, this does not apply to pre-2014 AP-100 through AP-1000 Aquaprobes. These models of Aquaprobe are not supported at all, even with a software upgrade.

2. Software Download and Installation

The AquaCal™ PC Software is available for download using the following link:

<http://www.aquaread.com/software-downloads>

From the Aquaread® Downloads page, select 'AquaCal™ - Aquaprobe® Utility'. The software will be downloaded as a .ZIP file. Unzip the downloaded .ZIP file into a temporary directory.

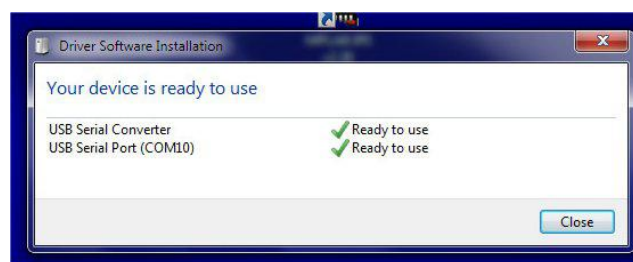
2.1. Driver Installation

To communicate with an Aquaprobe®, two software 'drivers' need to be installed. These are a '**USB Serial Converter**' driver and a '**USB Serial Port**' driver. Connect the AquaCal™ interface kit USB cable to your PC. You do not need an Aquaprobe® connected at this point. The 'Found New Hardware' wizard on your PC should activate automatically.

Different versions of Windows® react to plugging USB devices in differently. Earlier versions will give you the option to '**locate and install driver software**'. If this happens, direct Windows® to your temporary directory containing the unzipped download.

If your version of Windows® tries to search the Internet or 'Windows Update' for the drivers, stop the search and direct Windows® to your temporary directory.

After successful driver installation, the following message should be displayed.



The USB Serial Port number (COM10 in the above example) may be different, but that is fine provided it shows 'Ready to use'. If the drivers do not install properly, refer to the [Troubleshooting](#) section.

2.2. Software Installation

Now you must install the AquaCal™ software application. To do this, browse the temporary directory into which you unzipped the download and click on '**setup.exe**'.

You will be given the usual Windows® security warnings. Allow the software to install. Once installed, AquaCal™ will run automatically.

2.3. Downloading the Aquaprobe® Manual

In addition to the AquaCal™ software and this manual, you will need a current copy of the instruction manual for the Aquaprobe® you intend to use.

This manual covers the AquaCal™ software only and does not contain detailed information on the calibration requirements of specific Aquaprobe's and optional electrodes.

Please download the latest manual for your Aquaprobe® at:

<http://www.aquaread.com/brochures-and-manuals>

3. Connecting an Aquaprobe®

The AP-PC-KIT is designed to connect to the Aquaprobe® using a standard Aquaprobe® cable, which features a rugged metal connector.



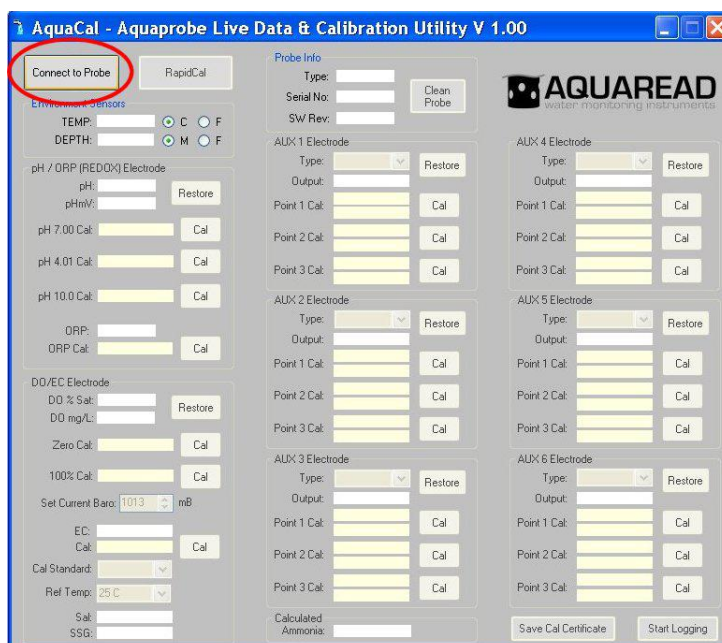
Align the ◀Aquaread® logo on the plug body with white dot on the AP-PC-KIT, then press the plug into the socket and tighten the retaining collar.

DO NOT TWIST THE CONNECTOR BODY WITH RESPECT TO THE BOX.

Once the Aquaprobe® is connected to the AP-PC-KIT, and the USB cable is connected to your PC, you are ready to run the AquaCal™ software. **Do not submerge your probe at this stage.**

4. Starting AquaCal™

If AquaCal™ is not already running following installation, select ▶Aquaread then ▶AquaCal™ from your Programs menu. The AquaCal™ Setup screen will appear:



If you are using a laptop or notebook with a small screen, the window can be resized by dragging the bottom right hand corner.

Click on the 'Connect to Probe' button in the top left hand corner.

If you have a compatible Aquaprobe® connected, the relevant boxes on the AquaCal™ screen will be populated as shown below. If the software can not find the Probe, refer to the [Troubleshooting](#) section.

The 'Probe Info' group box at the top of the screen will show the model, serial number and software revision of your Aquaprobe®.

4.1. Setting the Barometric Pressure

It is very important to set the current barometric pressure if you intend to read or calibrate the Dissolved Oxygen (DO) sensor or the Depth sensor. The Baro setting box is in the 'DO/EC Electrode' group box on the left of the screen.

If your Aquaprobe® has a depth function and is not submerged (i.e. EC value is zero), the current barometric pressure will be set automatically using the pressure sensor in the Probe when the Probe is first connected.

If your Aquaprobe® does not have a depth function, you must set the current barometric pressure manually. On-line weather sites can usually provide the current local pressure.

4.2. Optical DO Sensor Error Indication

If the Optical DO sensor cap needs replacing or the DO Zero point requires calibration, the two DO reading boxes will be shaded red. In this case, try calibrating the DO Zero point first.

4.3. Selecting Units of Measurement

Temperature and depth measurement values are displayed in the 'Environment Sensors' group box at the top left of the screen. Temperature units can be selected between °C and °F and depth can be selected between metres and feet using the relevant controls.

4.4. Selecting the EC Calibration Standard

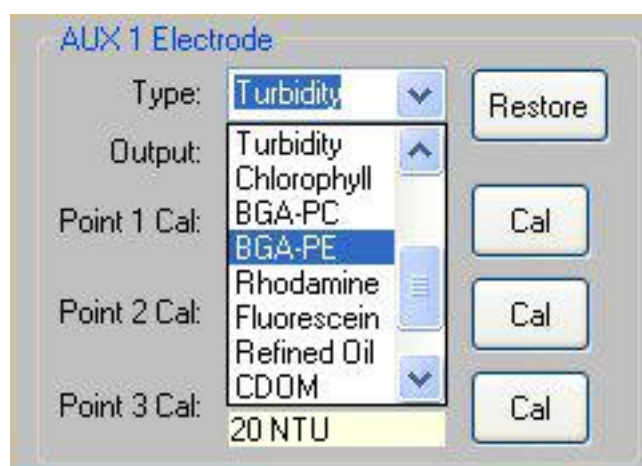
When calibrating Electrical Conductivity (EC), use the drop-down box labelled 'Cal Standard' to select the desired standard. On compatible Probes, if 'User' is selected, a new box will appear allowing you to input any calibration standard value. This value should be the calibration standard's published value at 25°C.

4.5. Selecting the EC Reading Reference Temperature

During measurement of EC, the readings can be displayed without any temperature correction, corrected to 20°C, or corrected to 25°C. The desired method of display can be selected using the drop-down box labelled 'Ref Temp'.

4.6. AUX Socket Assignment

When using an Aquaprobe® that features AUX sockets, the function of each socket can be assigned using the drop-down box labelled 'Type' within each AUX socket group box as shown below.



You will be asked to confirm the assignment change before it is implemented in the Aquaprobe®.

4.7. Probe Cleaning (AP-7000 Only)

If you are using an AP-7000 model Aquaprobe®, you can activate the self cleaning function on the probe by clicking on the 'Clean Probe' button in the 'Probe Info' group box.

4.8. Automatic Data Logging

At any time an Aquaprobe® is connected and running, you can save the readings to a log file on your PC. To start logging data, click on the 'Start Logging' button. You will be asked for a file name, which will default to the Aquaprobe's type and serial number. Once started, data will be logged every two seconds. To stop data logging, click on the 'Stop Logging' button. If you start to calibrate the Aquaprobe® with the log running, the logging function will be automatically stopped.

The logged data is saved as a TAB delimited file, which can be opened in any spreadsheet application such as Microsoft® Excel®.

5. Calibration

Any electrode on the connected Aquaprobe® can be calibrated using this software.

It is essential to follow the calibration procedure laid down in the relevant Aquaprobe® Instruction Manual for each electrode.

5.1. Tips for successful calibration

- Always fit the Aquaprobe's sleeve and end cap
- Always use fresh calibration standards
- Always allow the readings to stabilise completely before calibration
- Carefully observe temperature requirements for calibration
- Always clean the Probe in DI water between calibration solutions to prevent cross-contamination.

5.2. Calibration Points

Each electrode has a dedicated control for each calibration point. The example below shows the Chloride electrode.

AUX 4 Electrode	
Type:	Chloride <input type="button" value="Restore"/>
Output:	1.06 mg/L
Point 1 Cal:	12/May/15 <input type="button" value="Cal"/>
	10ppm T1
Point 2 Cal:	8/May/15 <input type="button" value="Cal"/>
	100ppm T1±1C
Point 3 Cal:	---/--/-- <input type="button" value="Cal"/>
	10ppm T1-10C

The 'Type' box shows the electrode type. The 'Output' box shown the current electrode reading. If the 'Output' box is shaded green, this means the reading is stable. The three pairs of boxes labelled 'Point 1', 'Point 2' and 'Point 3' show the date of the last successful calibration and the calibration standard that should be used to calibrate that point. If the date box shows '--/--/--', this means that point has not been calibrated.

If the Aquaprobe (excluding AquaPlus) you are calibrating is running software version 4.07 or later, each calibration date will be followed by the calibration report value for that point.

To calibrated any point on any electrode, refer to the relevant Aquaprobe® manual for the correct procedure, then when the Aquaprobe® is submerged in the correct calibration standard and all readings are stable, click on the relevant 'Cal' button. When the 'Cal' button has been clicked, an information box will appear whilst the software ensures all readings are stable. When a reading is stable, its output box is shaded green.



When all stabilisation requirements have been met, the information box will change to show calibration progress.



5.3. Calibration Reports

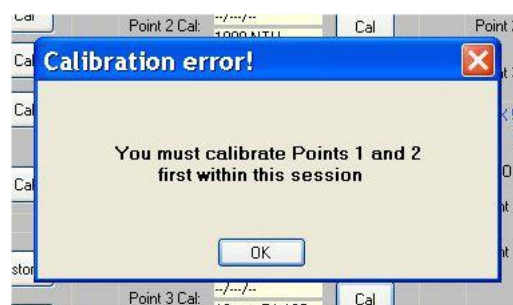
When calibration is complete, an information box will appear showing the calibration report.



If the Aquaprobe (excluding AquaPlus) you are calibrating is running software version 4.07 or later, this information will also be shown on the main screen follow the calibration date for each calibration point.

5.4. Calibration Errors

In the event of a calibration error occurring, an information box will appear giving details of the error.



Refer to your Aquaprobe® Manual for help resolving calibration errors.

5.5. Calibrating the Depth Sensor

On Aquaprobes that include a depth sensor, the depth zero point is always calibrated automatically when a Dissolved Oxygen 100% point calibration is carried out.

In the unlikely event that a full two point depth calibration is required, follow this procedure:

1. Set the barometric pressure accurately. **This is very important!**
2. With the Aquaprobe in free air, click the 'Cal Zero' button next to the Depth box.
3. Allow the calibration to complete.
4. **Without disconnecting the Aquaprobe**, place the Probe in water so that the top edge of the top ring of holes in the sleeve is EXACTLY 1m under the surface of the water. When this is done, the 'Cal Zero' button will change to 'Cal 1m'.
5. Allow the temperature to stabilise completely then click the 'Cal 1m' button.
6. Allow the calibration to complete.

Please note, AP-7000 models feature a fully pre-calibrated depth sensor that requires only single point referencing to zero, which is carried out automatically whenever the DO 100% point is calibrated. No further depth calibration is required.

5.6. Saving a Calibration Certificate

Once you have calibrated as many of the electrodes as you want to, you can produce the text for a calibration certificate by clicking on the 'Save Cal Certificate' button.

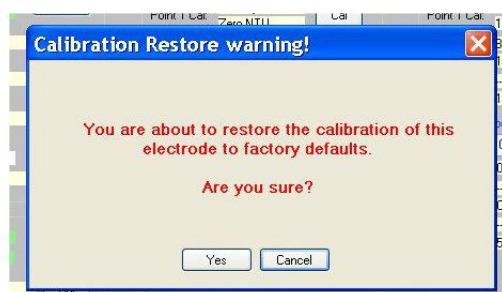
You will be asked for a file name, which will default to the Aquaprobe's type and serial number. The file produced will be a TAB delimited text file that can be opened in any word processor package.

Once the file is open in your word-processor, you can select a suitable font then align the columns using the TAB key.

5.7. Restoring Factory Calibration Defaults

Within each electrode's group box there is a 'Restore' button. If you wish to restore an electrode to the factory default calibration values, click on this button.

Before restoring the calibration defaults, a warning will be displayed:



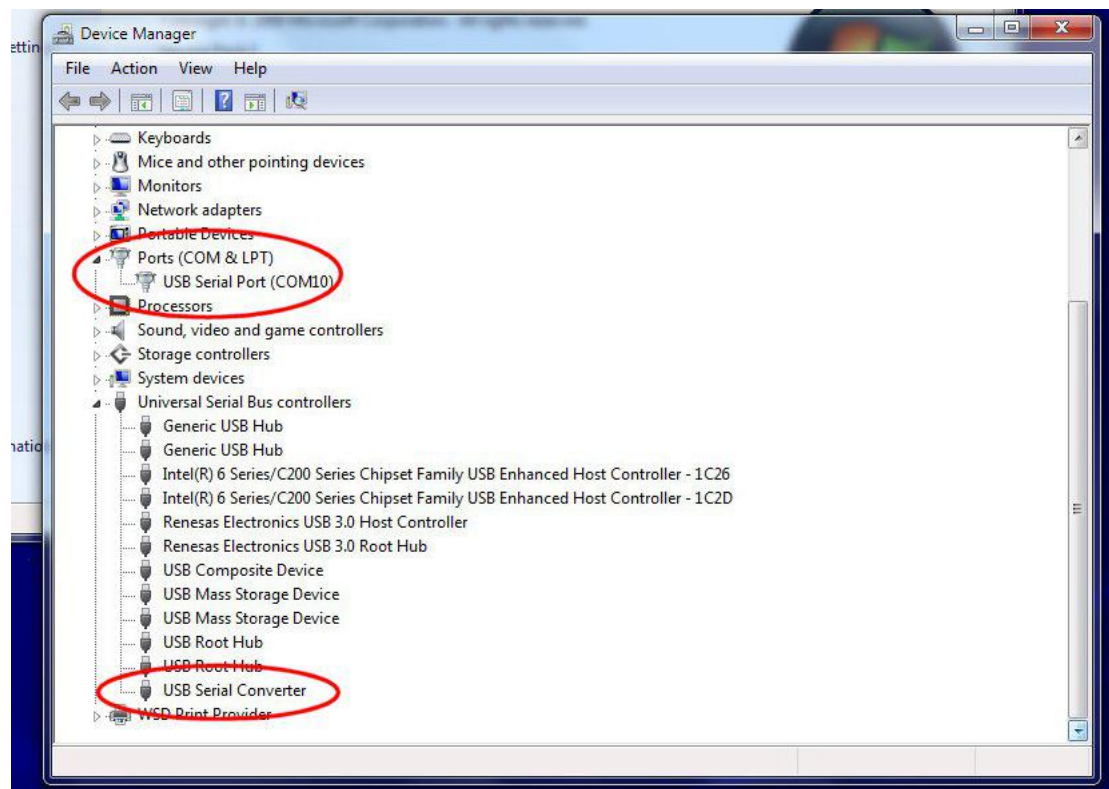
You can choose to proceed or cancel.

6. Disconnecting

At the end of your session, click the 'Disconnect' button to terminate the connection, then unplug the Aquaprobe® and the AP-PC-KIT.

7. Troubleshooting

If the AquaCal™ software can not find the Aquaprobe®, or if Windows® reports a problem installing the drivers, go to your Windows® Device Manager. The following two components should be present:



The USB Serial Port number (COM10 in the above example) may be different, but that is fine

If one or other of these components are not installed or are showing an error, re-install the drivers forcing Windows® to search your temporary directory for the drivers you downloaded from the Aquaread® website.

If more than one USB Serial Port is showing, determine which one is associated with the PC-KIT (by unplugging it then re-connecting it), then temporarily disable all other USB serial ports as they may be causing interference with communications to the PC-KIT.