



Instruction Manual
for the
Aquaread[®] Programmer

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Aquaread[®] Ltd

Bridge House
Northdown Industrial Park
Broadstairs
Kent
CT10 3JP
ENGLAND

Phone: +44 1843 600 030
www.aquaread.com

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1. Introduction

This manual covers the setup and operation of the Aquaread® Programmer Kit.

The Aquaread® Programmer allows you to program and update most Aquaread® main-line products with the very latest software in your own facility.

The Programmer Kit consists of a custom made Programmer, a set of cables to connect the various Aquaread products, and the Aquaread® Programmer PC application.

The Programmer is connected to a PC using the integral USB cable. The Programmer is then connected to the piece of target equipment that requires updating using the appropriate programming cable.

Using the on-screen instructions, the programming procedure is extremely simple. After downloading the latest Codepack from the Aquaread® website, the Programmer application can be run and the Codepack imported.

As soon as a compatible piece of Aquaread® equipment is connected to the Programmer, the PC application will automatically detect the equipment type and the current software revision. At this point, a simple click on the Program button is all that is required. The PC application will automatically select the most appropriate software for the target equipment and will then automatically program the target.

1.1. Compatibility

The Aquaread® Programmer is compatible with the following Aquaread® products:

Aquaprobe® AP-Lite	All versions
Aquaprobe® AP-700	All metal connector versions*
Aquaprobe® AP-700-D	All metal connector versions*
Aquaprobe® AP-800	All metal connector versions*
Aquaprobe® AP-800-D	All metal connector versions*
Aquaprobe® AP-2000	All versions
Aquaprobe® AP-2000-D	All versions
Aquaprobe® AP-5000	All versions
Aquaprobe® AP-7000	All versions
AquaPlus Probe	All versions
Aquameter® AM-200	Hardware Rev D and above [†]
AquaPlus Meter DO-200	Hardware Rev D and above [‡]

* 2014 or later model with blue socket block and metal connector only. Older models are not supported.

[†] Hardware D and above is recognisable as any Aquameter currently running software V4.50 and above.

[‡] Hardware D and above is recognisable as any AquaPlus Meter currently running software V2.00 or above.

Please note, pre-2014 AP-100 through AP-1000 Aquaprobes are not supported.

Any equipment not listed as compatible must be returned to Aquaread® Ltd if updating is required.

2. Very Important Information

Re-programming any model of Aquaprobe® or Aquameter® involves clearing the equipment's memory and resetting all stored values to factory defaults.

This means that all current user data, settings and user calibration values will be lost.

When re-programming an Aquameter® or AquaPlus Meter® please ensure that any stored data that is needed has been downloaded to a PC and saved using the appropriate software package, such as AquaLink™ or OxiLink™, before connecting the Meter to the Programmer.

When programming any Aquaprobe®, it is essential that a full calibration of all basic parameters is carried out directly after programming. On all models except the AP-5000 and AP-7000 it will also be necessary to re-assign any AUX ports that have optional electrodes fitted and to re-calibrate those electrodes.

On AP-5000 and AP-7000 models, the AUX electrodes are controlled by a second microprocessor, which is not affected by the re-programming procedure. On these models, the basic parameters (DO, EC, pH and ORP) will need to be re-calibrated, but the AUX assignments and calibration data will be retained.

If you do not have the necessary chemicals or facilities to carry out a full re-calibration, please delay re-programming until you have all the necessary items in place.

2.1. AP-700 & AP-800 Serial Numbers

The software in the Aquameter® and other equipment, such as the Aquaread® BlackBox™ use the last two digits in the Aquaprobe's serial number to identify the Probe model. In earlier versions of the AP-700 and AP-800, the serial numbers ended with 17 and 08 respectively.

Due to product enhancements and added options in more recent versions of the AP-700 and AP-800, the serial numbers now end in 40, 50, 60 or 70 dependant on the model and optional features. This allows the latest software to correctly identify the Probe.

For this reason, if you re-program an AP-700 or an AP-800 with a serial number ending in 17 or 08, the last two digits of the serial number will be automatically changed to allow full access to all the new features.

2.2. New Manuals

Re-programming usually means that new features have been added to the equipment or that existing features have been changed or improved.

After re-programming, always download the latest Instruction Manual for the equipment from the Aquaread® website using the following link:

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

Ensure that the software revision on the front cover of the downloaded manual corresponds with the software loaded in to the equipment.

3. Software Download and Installation

Access to the Aquaread® Programmer PC Software is restricted to authorised dealers and is available for download using the following link:

<http://www.aquaread.com/portfolio/aquaread-programmer-software-download>

In order to gain access to the Programmer software and the CodePack, you need to enter a password.

In order to obtain a password, email your company information along with the serial number of your Programmer to <mailto:info@aquaread.com>. A password will be emailed to you, which you can input on this page to gain access to the restricted area of the website.

Please remember that Aquaread Ltd is based in the UK, so emails will only be answered during normal UK office hours.

Once access to the restricted area has been gained, download the 'Aquaread® Programmer Utility'. The software will be downloaded as a .ZIP file. Unzip the downloaded .ZIP file into a temporary directory.

3.1. Driver Installation

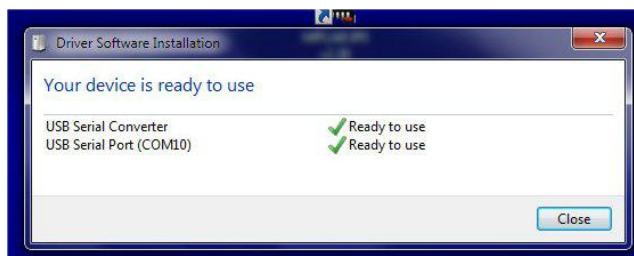
To communicate with the Programmer, two software 'drivers' need to be installed. These are a '**USB Serial Converter**' driver and a '**USB Serial Port**' driver.

Connect the Programmer USB cable to your PC. You do not need an Aquaprobe® or Aquameter® connected at this point. The 'Found New Hardware' wizard on your PC should activate automatically and the blue LED on the Programmer should light up. If the blue LED does not light up, refer to section [7.2:Power Issues](#)

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, you can allow this to happen or you can stop the search and direct Windows® to your temporary directory, which is usually quicker.

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 section [7: Troubleshooting](#).

3.2. Software Installation

Now you must install the Programmer 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, the Programmer application will run automatically. Thereafter, the Programmer software can be found in your list of programs under Aquaread.

4. Connecting an Aquaprobe® or Aquameter®

The Programmer is designed to connect to the target equipment using the programming cables provided. The only exception to this rule is the AquaPlus™ Probe, which connects directly to the programmer.

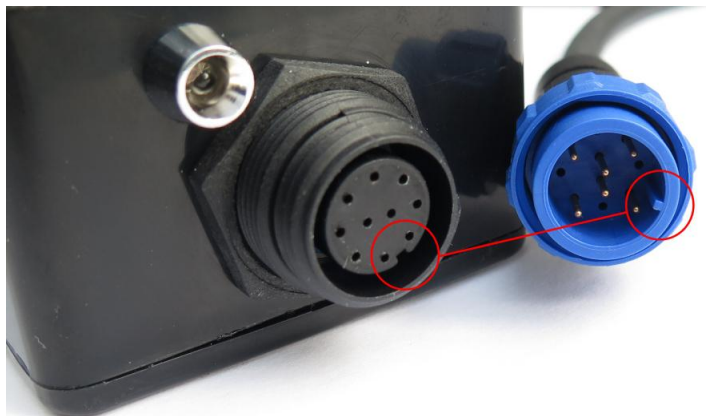
Five programming cables are provided with the Programmer. These are to suit:

1. Aquaprobe® models AP-700/800
2. Aquaprobe® models AP-2000/AP-Lite
3. Aquaprobe® models AP-5000/7000
4. Aquameter® (AM-200)
5. AquaPlus™ Meter (DO-200)

All cables are labelled and numbered. Please be sure to use the correct cable for the target equipment.

CAUTION: Some cables, such as the AP-5000/7000 cable and the Aquameter (AM-200) cable look identical, but are wired differently and **are not interchangeable**. If you connect an AM-200 to the Programmer using the cable designed for the AP-5000/7000, serious damage can occur to both the Programmer and the AM-200, which will not be repaired under warranty.

All programming cables feature a blue plastic connector at one end that is designed to plug into the programmer.



Referring to the photograph above, align the key in the plug with the key-way on Programmer's socket, then push the plug into the socket and tighten the retaining collar.

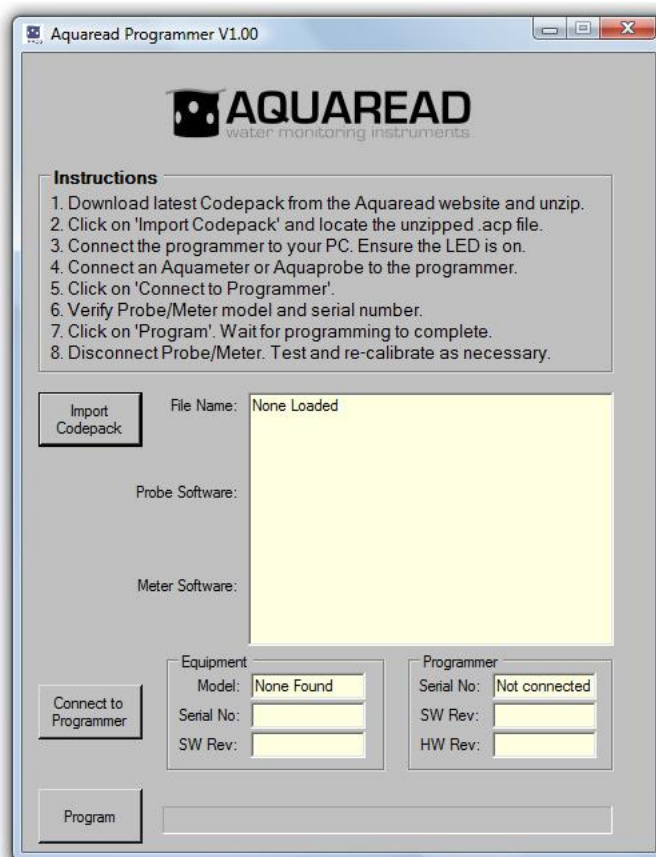
The AquaPlus™ Meter (DO-200) cable features two plastic connectors. The end with the retaining collar should be connected to the Programmer. The end without the retaining collar should be connected to the AquaPlus™ Meter. If these two ends are reversed, the Programmer will not be able to communicate with the Meter.



Once the programming cable is fitted to the Programmer, connect your target equipment for programming to the other end of the cable.

5. Starting the Programmer Application

If the Programmer software is not already running following installation, select ►Aquaread then ►Aquaread Programmer from your Programs menu.



5.1. Downloading a Codepack

Before proceeding, it is necessary to download the latest Aquaread® 'Codepack' from the Aquaread® website.

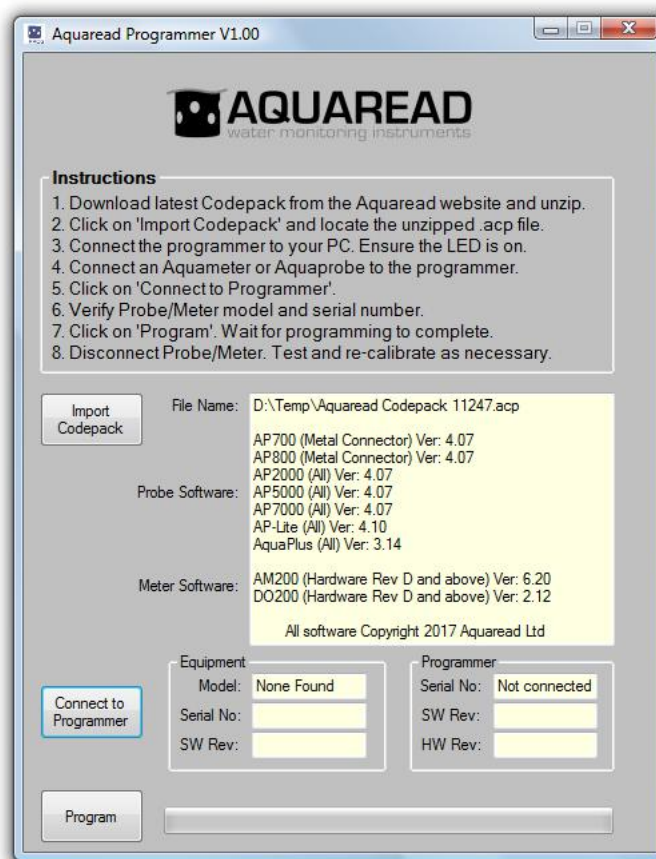
The Codepack contains the software for all the compatible equipment and can be found in the restricted downloads section using the following link:

<http://www.aquaread.com/portofolio/aquaread-programmer-software-download>

Select 'Aquaread® Codepack XXXXX' (xxxxx represents the version number). The Codepack will be downloaded as a .ZIP file. Unzip the .ZIP file into a temporary directory. The unzipped file will have a '.acp' extension.

5.2. Importing the Codepack

Click on the 'Import Codepack' button then select the .acp file you have just unzipped. The Codepack will be imported and the following screen will be displayed. This may take several minutes as the Codepack is highly encrypted and needs to be unpacked and prepared for use.

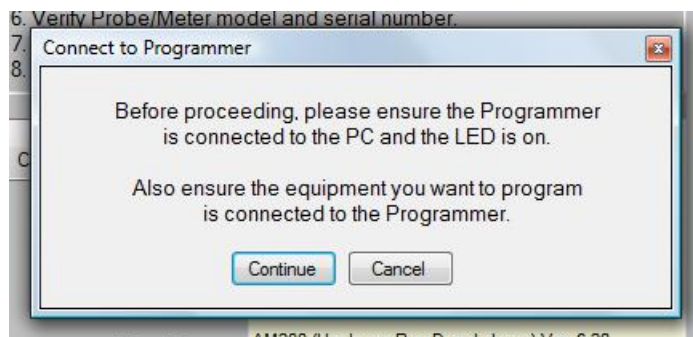


The various versions of software contained in the Codepack are displayed in the main box along with other file and compatibility information.

5.3. Connecting to the Programmer

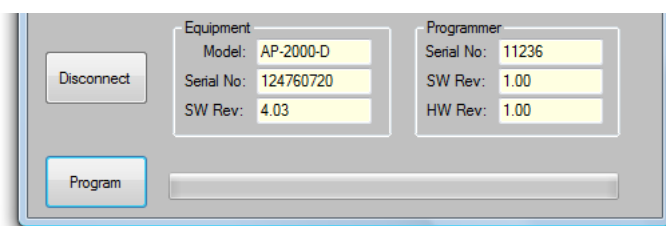
Once the Codepack has be loaded and the target equipment connected, click the 'Connect to Programmer' button.

You will be asked to check everything and confirm with the following message:



Click the 'Continue' button.

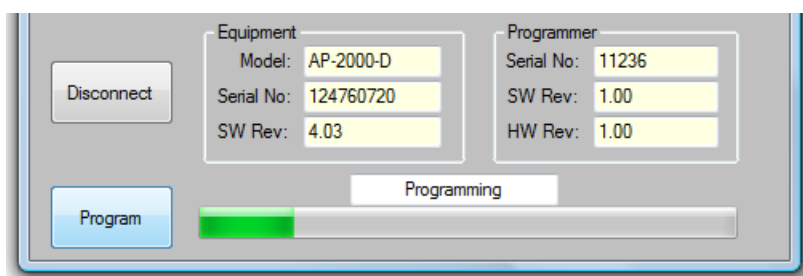
If the drivers are correctly loaded and the target equipment is connected using the correct cable, the Equipment and Programmer boxes adjacent to the 'Connect to Programmer' button will be populated and the button will change to 'Disconnect' as shown below.



5.4. Programming the Target Equipment

When the target is ready to be programmed, the 'Program' button will become active. To program the target, click the 'Program' button.

As programming starts, a progress bar will be shown with an information box above it showing what action is currently being carried out.



When programming has been successfully completed, the information box will show 'Programming Complete'.



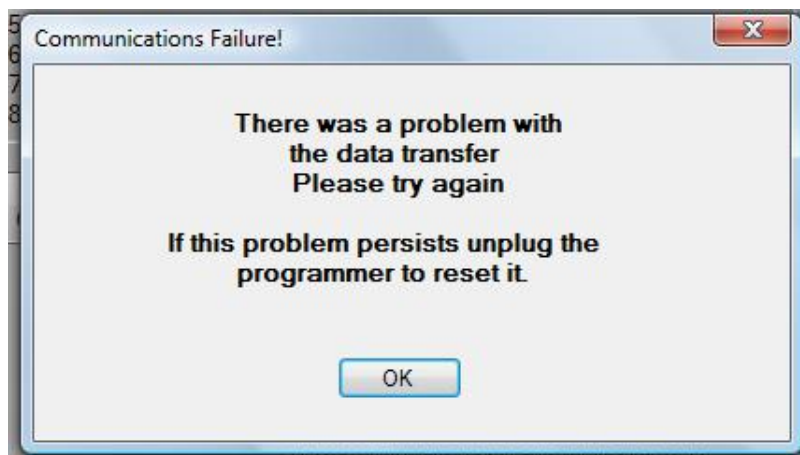
Click the Disconnect button and then disconnect the target equipment.

Ensure the target equipment is tested and re-calibrated as necessary. See section [6:After Programming](#) for more details.

5.5. Problems During Programming

5.5.1. Communications Problems

If there is a communication problem with either the Programmer or the target equipment during programming, an error box will appear showing the following:



The information box will show 'Programming Failed' and the Programmer will disconnect.

If this occurs, check all the connectors are properly inserted then click the 'Connect to Programmer' button again.

If the Programmer will not respond or re-connect, it may have crashed. To reset the Programmer, unplug the USB lead from the PC, wait five seconds, then re-connect it.

5.5.2. No Blue LED

The Programmer box contains a switch-mode power supply that takes the 5 volt output from the USB socket of your PC and converts it to 12 volts, which is needed for the programming operation.

The 12 volt output is protected by a fuse, which is located just under the removable cover of the Programmer. In the event of a cable malfunction resulting in a short circuit, this fuse will blow in order to protect the Programmer circuitry.

If the fuse blows, the blue LED will not illuminate when the unit is plugged into a USB socket. If this occurs, remove the cover from the Programmer and replace the fuse with a 20mm x 5mm, 1A, quick-blow type.

6. After Programming

Re-programming any model of Aquaprobe® or Aquameter® involves clearing the equipment's memory and resetting all stored values to factory defaults. This means that all previously stored user data, settings and user calibration values will have been lost.

When programming any Aquaprobe®, it is essential that a full calibration of all basic parameters is carried out directly after programming. On all models except the AP-5000 and AP-7000 it will also be necessary to re-assign any AUX ports that have optional electrodes fitted and to re-calibrate those electrodes.

On AP-5000 and AP-7000 models, the AUX electrodes are controlled by a second microprocessor, which is not affected by the re-programming procedure. On these models, the basic parameters (DO, EC, pH and ORP) will need to be re-calibrated, but the AUX assignments and calibration data will be retained.

6.1. Aquameter® Setup

On the first switch-on after re-programming, the Aquameter® will show the language selection page and the clock setup page to ensure that basic setup is carried out.

In addition, the contrast of the display and the accuracy of the internal barometer can be set up.

To setup the display contrast, switch the Aquameter® off, then holding the left hand arrow key, switch the Aquameter® back on again. A contrast adjustment screen will be shown. Using the up/down arrow keys, adjust the contrast then hit the OK key.

To fine-tune the internal barometer, you must first establish the current barometric pressure at your location and altitude in millibars. If you can not establish this information accurately, do not adjust the Aquameter's barometer. By default it will be reading within +/- 2 mB.

If you do wish to fine tune the barometer, switch the Aquameter® off, then holding the 'MENU' key, switch the Aquameter® back on again. The current barometric pressure that the Aquameter® is reading will be displayed. To fine-tune this up or down, use the up/down keys then hit OK to save the change.

6.2. New Manuals

Re-programming usually means that new features have been added to the equipment or that existing features have been changed or improved.

After re-programming, always download the latest Instruction Manual for the equipment from the Aquaread® website using the following link:

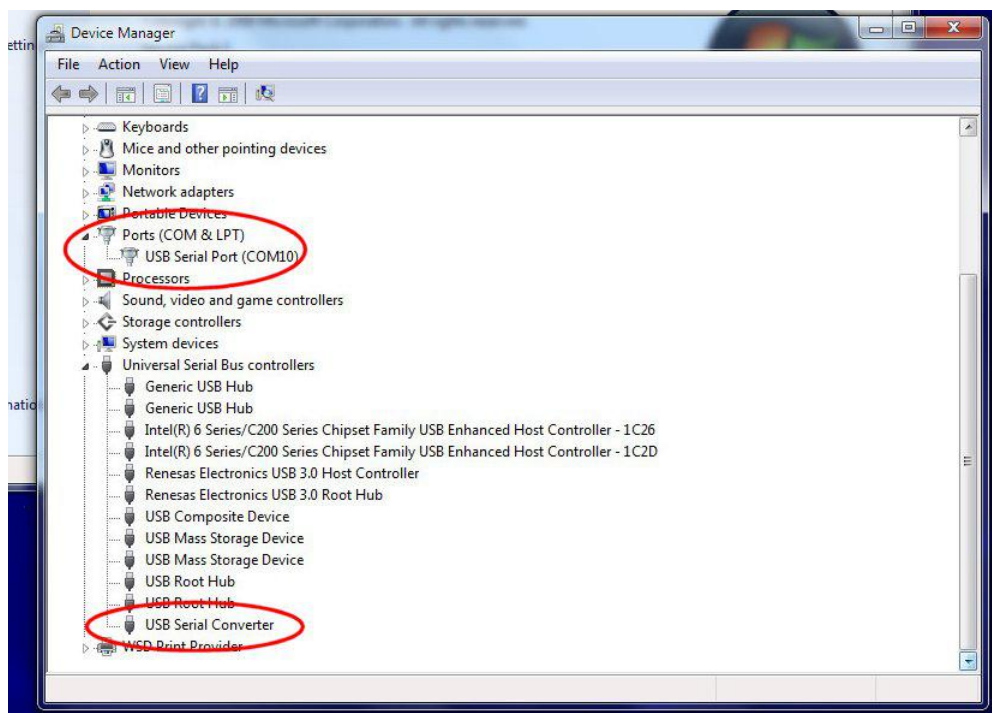
<http://www.aquaread.com/brochures-and-manuals>

Ensure that the software revision on the front cover of the downloaded manual corresponds with the software loaded in to the equipment.

7. Troubleshooting

7.1. Installation Issues

If the Programmer software can not find the Programmer, 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 Serial 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 Programmer (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 Programmer.

7.2. Power Issues

The Programmer box contains a switch-mode power supply that takes the 5 volt output from the USB socket of your PC and converts it to 12 volts, which is needed for the programming operation.

The 12 volt output is protected by a fuse, which is located just under the removable cover of the Programmer. In the event of a cable malfunction resulting in a short circuit, this fuse will blow in order to protect the Programmer circuitry.

If the fuse blows, the blue LED will not illuminate when the unit is plugged into a USB socket. If this occurs, remove the cover from the Programmer and replace the fuse with a 20mm x 5mm 1A, quick-blow type.