

## Overview of the Help System

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### Introduction

This online manual is a guide to the installation and usage of the **Wi-Fi / FDI** Data Recording System.

The unit connects to an RS232 / RS485 Serial Port on the User's equipment and can be configured for most formats.

The data can be recorded in the unit and locally accessed using a standard USB memory stick. It can also be accessed remotely using Wi-Fi from anywhere in the world. Each record is automatically time stamped with a sequential number if required.

The PC software can connect to a maximum of 16 units and each unit can communicate simultaneously with a maximum of 5 PC's.

The unit has 1000 Volts isolation on the Power and Serial lines, providing excellent noise immunity.

A password system and data encryption techniques are used to ensure maximum information security.

This manual may be printed if desired. **Ensure to select 'shrink oversized pages' before printing from the PDF file.**

## Getting Started Guide

### Un - Installing the PC Software

\*\*\* If the PC software is already installed Un-Install the old software \*\*\*

Go to **Windows Start -> Control Panel -> Uninstall a Program** Double click on the **USB\_FDI\_Client** program then select **Remove the Application from this computer** then click the **Remove** button.

### Installing the PC Software

Once the PC software is installed you can view or print this complete HELP manual,

Initially create two directories on your hard drive – typically:

C:\WIFI_FDI	-	Application folder
C:\WIFI_FDI_DATA	-	Data folder

Go to the website [www.advancedmicropower.co.uk](http://www.advancedmicropower.co.uk) (Select the **WiFi – FDI** button and then choose the latest **PC Application** from the **Downloads** section)

This will automatically go into your Downloads folder and will be a file named **PC\_APP\_X\_XX\_XX.zip** (Where X\_XX\_XX is the software version number)


Select the download up arrow (^) and select **Show in Folder** and **copy** then **paste** the file to the Application folder (**C:\WIFI\_FDI**)

Right click on the downloaded file and select either **7-Zip** or **WinZip** then select **Extract Here** to extract the files

Double click the **USB\_FDI\_Client.application** (ClickOnce Application)

Select **Install** to install the application



Go to the Windows Start button, click on **USB\_FDI\_Client** then select the  **USB\_FDI\_Client** program and pin to the Taskbar for ease of access

### Introduction

The unit should have suitable DC power applied (9 – 36V DC fused power source) and the RS232 Serial input wired to the User Connected Equipment (See [Appendix A](#) below).

It is advisable to view the video tutorials on our website [www.advancedmicropower.co.uk](http://www.advancedmicropower.co.uk) (Select the **WiFi – FDI** button and then choose a video tutorial)

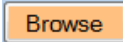
The first three video tutorials are described in detail below:

### Video Tutorial 1 - Initial Unit Setup – Creating a WiFi / Password USB file


The PC software is first used to generate a Wi-Fi / Password file on a USB stick, to allow the unit to be initially configured.

From the main screen of the PC software, go to: Setup -> Remote Units -> Installation Files

In the blue box the Wi-Fi / Password option should be selected and the following information should be entered (see also [below](#)):

USB Create Path	-	This is the path of the USB stick on the PC and the  button may be used to locate the stick
WiFi / SSID	-	SSID of the network to which the unit is being connected
WiFi Key	-	Security key of the network to which the unit is being connected
WiFi Port	-	The desired port to be used on the network (1 – 65535) <b>1-1023 are Internet Assigned Numbers and should be avoided</b>
Unit Password	-	A password to for the unit to ensure security

A blank USB stick should be inserted into the PC and the  button should be pressed to create a **COMMAND.TXT** file on the USB stick.

The  button should be used before removing the USB stick from the PC.

The unit **MUST** be power off and the USB stick should be inserted into the unit and after a few seconds the Green lamp should light and the USB stick may now be removed.

If the USB stick is **NOT** removed within 10 seconds the red lamp will flash. The unit will automatically restart and will display a red lamp which should go off after about 10 seconds if it successfully connects to the Wi-Fi network. If unable to connect to the network it will restart and retry forever.

**The file on the USB stick contains sensitive password information which should now be deleted.**

Ensure the chosen Password is remembered for later.


### Video Tutorial 2 – First connection to a unit

The PC software is used to configure the Wi-Fi parameters required for its operation.

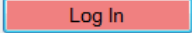
From the main screen of the PC software, go to: Setup -> Wi-Fi Parameters and the following information should be entered (see also [below](#))

### Back to Contents

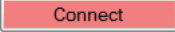
Name	-	Unit name which should be chosen to represent its location or function ( <b>It MUST be a valid Windows filename</b> )
URL Address	-	This is the web address of the unit e.g. <b>www.ampwifi.ddns.net</b> or a local i.p address e.g. <b>192.168.1.243</b>
Port	-	The port MUST match the one previously set in the unit above

The  button can be used to display all devices on the network (not shown on tutorial video), and the unit IP address and MAC address may be displayed.

See [Appendix C](#) (Port Forwarding) if it is required to connect the PC from outside the local network.

Returning to the main screen, use the  button to enter the unit password (the button will go Green).

Click on the Network menu option and select (tick) one unit to be connected.


Click on the  button to attempt to connect to the unit. If successful the Green activity arrows will flash.

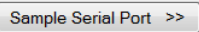
The Used memory in the machine will also become active (0% if the machine has no data stored)

### [Video Tutorial 3 – Interfacing the unit to user equipment \(RECORDING MODE\)](#)

The unit can now be configured for connection to the user equipment.

From the main menu of the PC software, go to: **Setup -> Remote Units** and set up the unit in the order as described below.

Initially set the Baud Rate and Parity to match the connected equipment. Use the  button to send these settings to the unit.

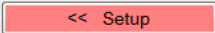
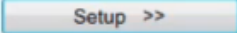
Use the  button to set the unit in capture mode then make the user equipment output serial data from the connected equipment (see also [below](#)).



The sampled data will appear in red below the vertically labelled titles.

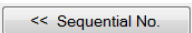
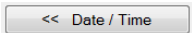
The **length** of the sampled data (including the asterisks which are characters which cannot be displayed) should be entered in **Size** for **Recording String 1**

The **start** and **end** of each part of the string to be recorded should be noted and entered in each **T1 – T8** box for **Recording String 1**

SEQUENTIAL, DATE and TIME options to be recorded may be selected as desired

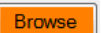
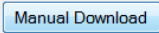
The  button should now be used to send this setup to the unit. The  button can read the setup back off the unit if desired.

The setup can be optionally saved to file for later use using the   button.

The sequential number  and Date / Time  may also be optionally set.

Returning to the main screen the system is ready to accept data from the user equipment and may now be tested.

Ensure the connected equipment's serial output flashes the Green light on the unit and the information appears correctly on the Main Screen.

Ensure the path as give in the Automatic option exists (use the  button) and then perform a Manual Download  and ensure a file with **UNITNAME.CSV** has been created which may be viewed using Microsoft Excel™.

Repeat this procedure for all other connected units in the Network.

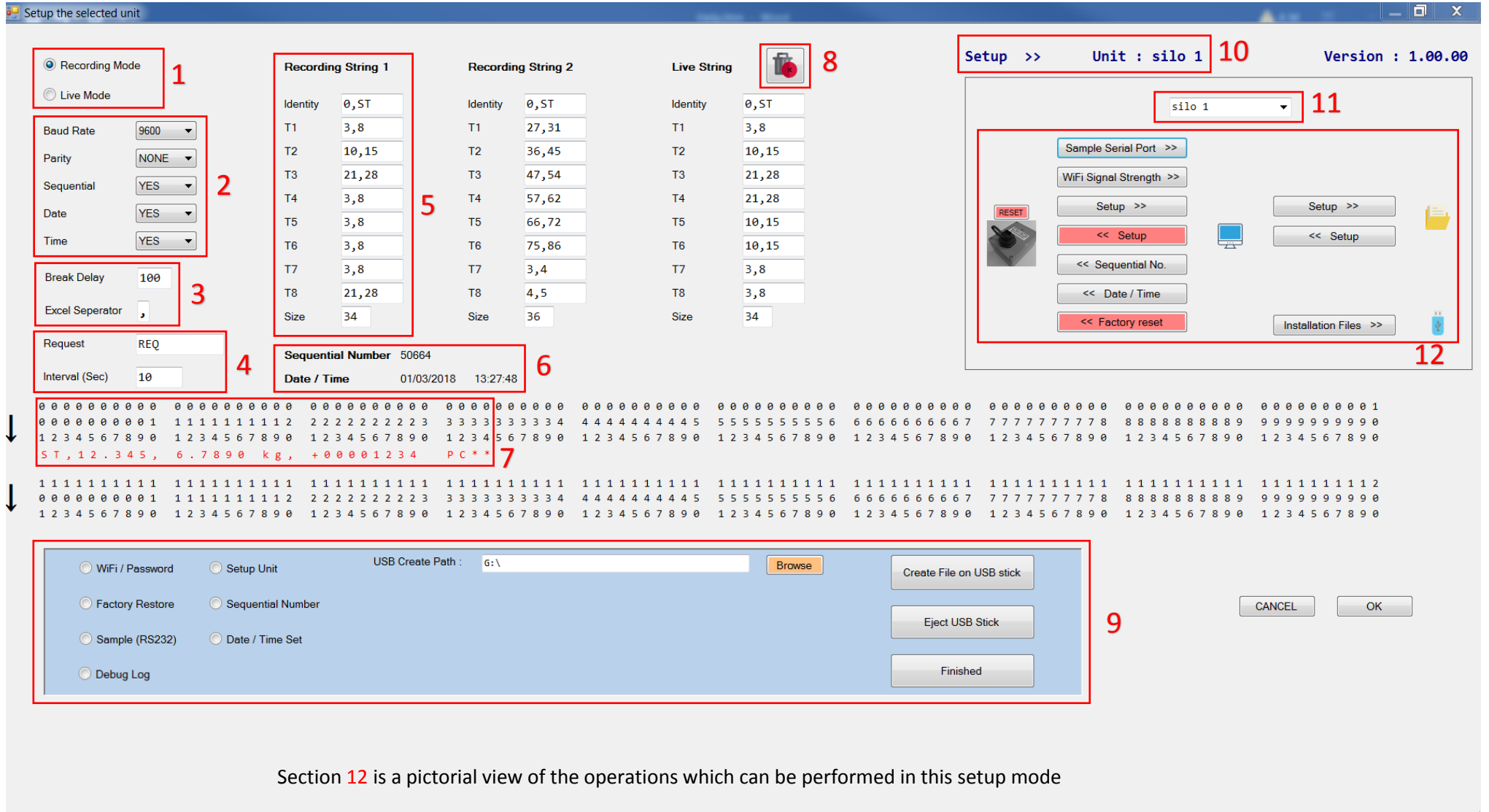
**File -> Exit**

This is the preferred way to exit the application.

**Setup -> Remote Units**

This provides the following features (Each sub - option is discussed in detail below).

This option allows an active unit to be configured on the network and is broken into sections as shown in the screen shot below:



Section 12 is a pictorial view of the operations which can be performed in this setup mode

The desired unit should first be selected from the drop box in Section 11 above, then the button will upload the setup from the unit.

Section 10 above, will now show the LAST unit which was uploaded.

1. This section allows the user to select the main mode of operation of the unit.

- Recording Mode is where Data is stored to the unit's internal memory and may be read via USB or Wi-Fi.
- Live Mode is where data is NOT stored in the unit's memory, but ONLY streamed to the PC Live display.

2. This section allows the baud rate and parity to be set to be compatible with the connected equipment.

Sequential, Date and Time can be optionally recorded in the unit, but may not be required if the connected equipment has these features.

3. The unit accepts serial data after there has been a delay as specified by break delay (in milliseconds). If the field is left blank then the default is 100mS.

A single character to separate the CSV file columns can be specified here. If the field is left blank then the default is , (comma) suitable for the UK.

4. A serial Request string can be transmitted every Interval seconds, typically used to request data from the connect equipment. If the Interval field is left blank or 0 then no serial request output will occur.
5. This section is where the user can specify exactly what parts of the incoming serial string should be recorded, where T1 3,8 means to pick out characters 3 to 8 in the incoming serial string.

It is possible to record up to eight parts of the incoming serial string (T1 – T8). Section 7 describes an easy way to determine these string part numbers.


The EXACT size of the incoming serial string is entered typically as

An optional feature is to specify data you would expect to always be in the serial string to Identify it as being correct. This is typically entered as

In this case only the start position and Identification string need to be entered. If this feature is not required, then this field should be left blank.

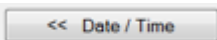
It is important to use this feature when serial data starts and stops (e.g. monitoring a Tally Roll printer) where 'String Stitching' may be active in the unit.

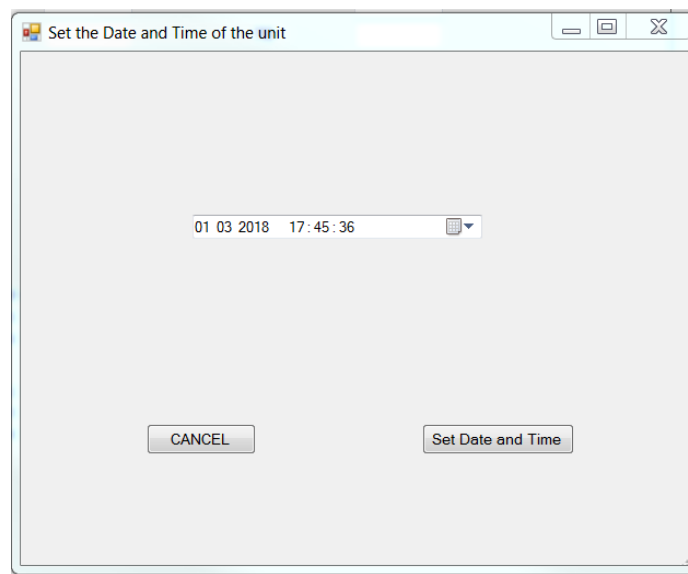
Two Recording strings and one Live string can be configured for the incoming serial data, so it is possible to detect different length serial strings and pick out different parts of each string.

6. This section displays the unit's sequential number and is set by selecting the  button and entering the desired value between 00001 and 99999.

This sequential number automatically increments every time data is stored to the units memory and will automatically roll over to 00001 when it reaches 99999.

It may be desirable to reset the sequential number at the start of a new year, or possibly every month.

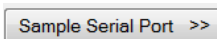
The unit Data and Time is also displayed and is set by selecting the  button. The current date and time is typically displayed as shown below:

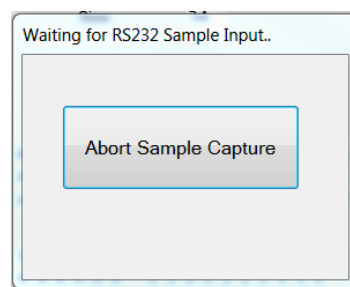


It is usually only necessary to select the  button, however a full calendar is available on the  icon.

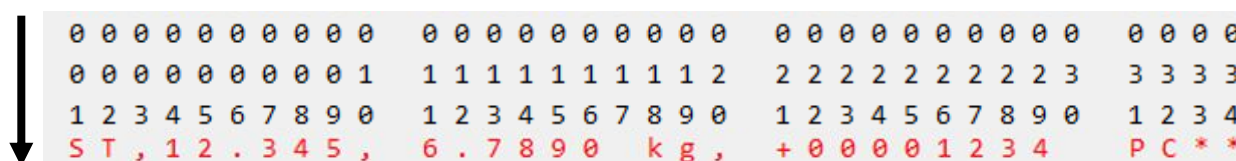
After both these options are set, they will only be visible when a setup is downloaded from the unit using the  button.

7. This section is used to determine the positions of the parts of the string to be entered in section 5 as described above.

This requires the recorded equipment to be connected and ready to output its serial data. The user then selects the  button and the display appears as follows:




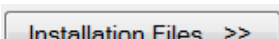
The user should now make the connected equipment output its serial data, which will be captured and displayed as shown below:



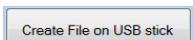
The red data is the serial string from the connected equipment. The numbers above it are each character position shown in a VERTICAL COLUMN i.e. the first character is position 001 and the second, position 002 etc.


This allows the user to notice the first information **12.345** lies between **004** and **009** so **T1** would be **4,9** in Recording String 1 above.

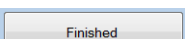
8. This is an icon  which will clear the uploaded setup, to allow a completely new one to be entered.

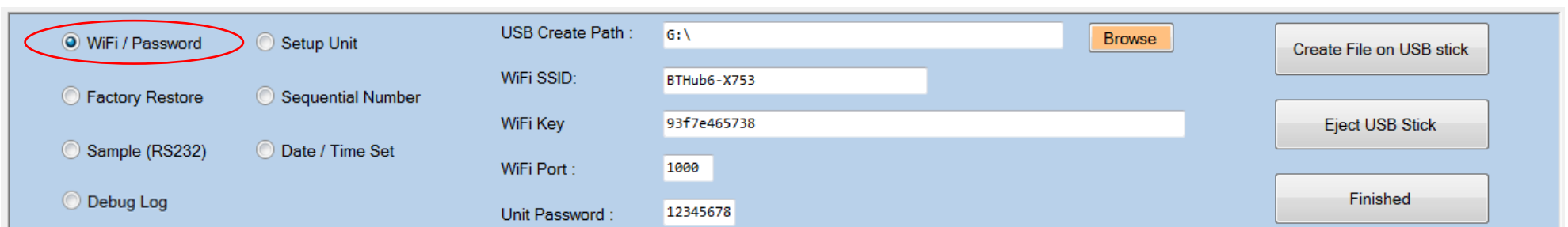
9. This section is only shown when the  button is selected. This allows the user to create files on the USB stick to perform a number of tasks.

Each option must be selected one at a time and the 8 options are shown in the blue boxes below, with typical data in any required fields.

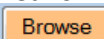
When the button  is pressed, a file named **COMMAND.TXT** is created on the USB stick.

When the file is created, the button  **MUST be used** before removing the USB stick.

The  button is used to close this part of the screen when all installation files have been generated.



This option creates a COMMAND.TXT file which allows the Wi-Fi to be installed on the user network.

The Path where the USB stick is located on the PC must be entered, or the user can use the  button to select the correct path.

The Wi-Fi SSID, Wi-Fi key and the FIRST Wi-Fi port that the unit should monitor must be entered.

The unit will AUTOMATICALLY use 5 ports to allow up to 5 PC's to connect simultaneously (i.e. 1000 – 1004) so the next unit can typically be from 1005 – 1009.

This option CANNOT be performed using Wi-Fi.

The screenshot shows a control panel with several radio button options. The 'Factory Restore' option is selected and circled in red. Other options include 'WiFi / Password', 'Setup Unit', 'Sequential Number', 'Sample (RS232)', 'Date / Time Set', and 'Debug Log'. On the right side, there is a text input field for 'USB Create Path' with 'G:\' entered, a 'Browse' button, and three buttons: 'Create File on USB stick', 'Eject USB Stick', and 'Finished'.

This option creates a COMMAND.TXT file which restores the unit back to FACTORY settings. It will erase ALL recorded data so should be used with care. This option can also be performed using Wi-Fi.

The screenshot shows the control panel with 'Sample (RS232)' selected and circled in red. A 'View Captured Sample' button is visible in the center. The 'USB Create Path' field contains 'G:\'. The 'Finished' button is highlighted.

This option creates a COMMAND.TXT file which will perform the RS232 sample routine as describe in the Wi-Fi section above. A file called SAMPLE.TXT containing the sampled data is created on the USB stick along with the vertical column headings (see Section 7 above). This file should be viewed with a text editor such as Notepad or WordPad. This option can also be performed using Wi-Fi.

The screenshot shows the control panel with 'Debug Log' selected and circled in red. The 'Finished' button is highlighted.

This option creates a COMMAND.TXT file which will allow the unit to write a debug log back to the USB stick. This debug log contains a list of error codes with associated Time and Date and is useful for tracking unit problems. This option CANNOT be performed using Wi-Fi.

The screenshot shows the control panel with 'Setup Unit' selected and circled in red. The 'Finished' button is highlighted.

This option creates a SETUP.TXT file which will configure the unit in exactly the same way as the Wi-Fi Setup Option. Before this file is created, the setup screen MUST be displayed exactly with the desired correct setup. This option can also be performed using Wi-Fi.

The screenshot shows the control panel with 'Sequential Number' selected and circled in red. The 'Sequential Number' field contains '12345'. The 'Finished' button is highlighted.

This option creates a COMMAND.TXT file which will allow the sequential number to be reset between 00001 and 99999. This option can also be performed using Wi-Fi.

The screenshot shows the control panel with 'Date / Time Set' selected and circled in red. The 'Date / Time' field contains '01/03/2018 19:30'. The 'Finished' button is highlighted.

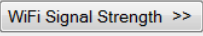
This option creates a COMMAND.TXT file which will allow the Time and Date to be set in the unit. It is advisable to advance the time to give time for the user to perform the operation. This option can also be performed using Wi-Fi.

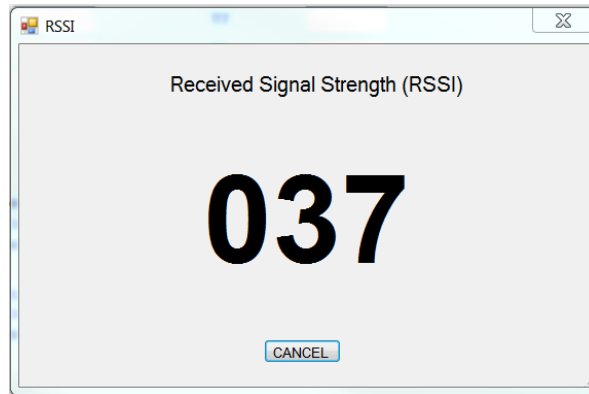
- 10. This section ONLY updates the unit name when a setup has been downloaded from the unit. This allows the user to be sure where the display setup came from.
- 11. This section allows a new unit to be selected for subsequent commands.

If a setup has be downloaded from say unit 1 (Section 10 shows unit 1) then unit 3 can be selected (in Section 11) and the same setup sent back to unit 3

(This is effectively a copy utility).

12. Only three other features have not been discussed in this group:

The  button shows the following display:

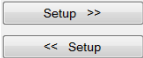


This display is the relative signal strength the unit is seeing in this installation.

**The unit should be in a location and orientated such that the display reads the highest possible signal.**

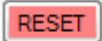
**The unit MUST be kept well away from all other electrical equipment.**

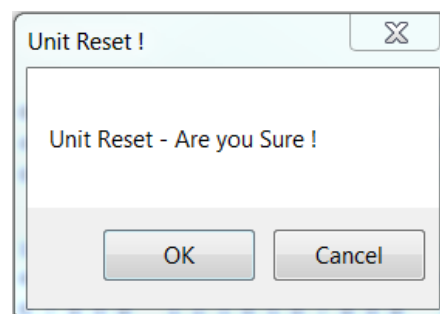
Usually an RSSI of less than 20 is too weak a signal and in this case a Wi-Fi booster may have to be installed.

The  to File buttons are use to Save and Restore individual setups from files.

**The user should backup the setup onto a file once the unit is fully installed. This ensures that in the event of a failure, a new unit can easily be reinstalled.**

The source unit number of the setup is intentionally NOT Saved to File with this option.

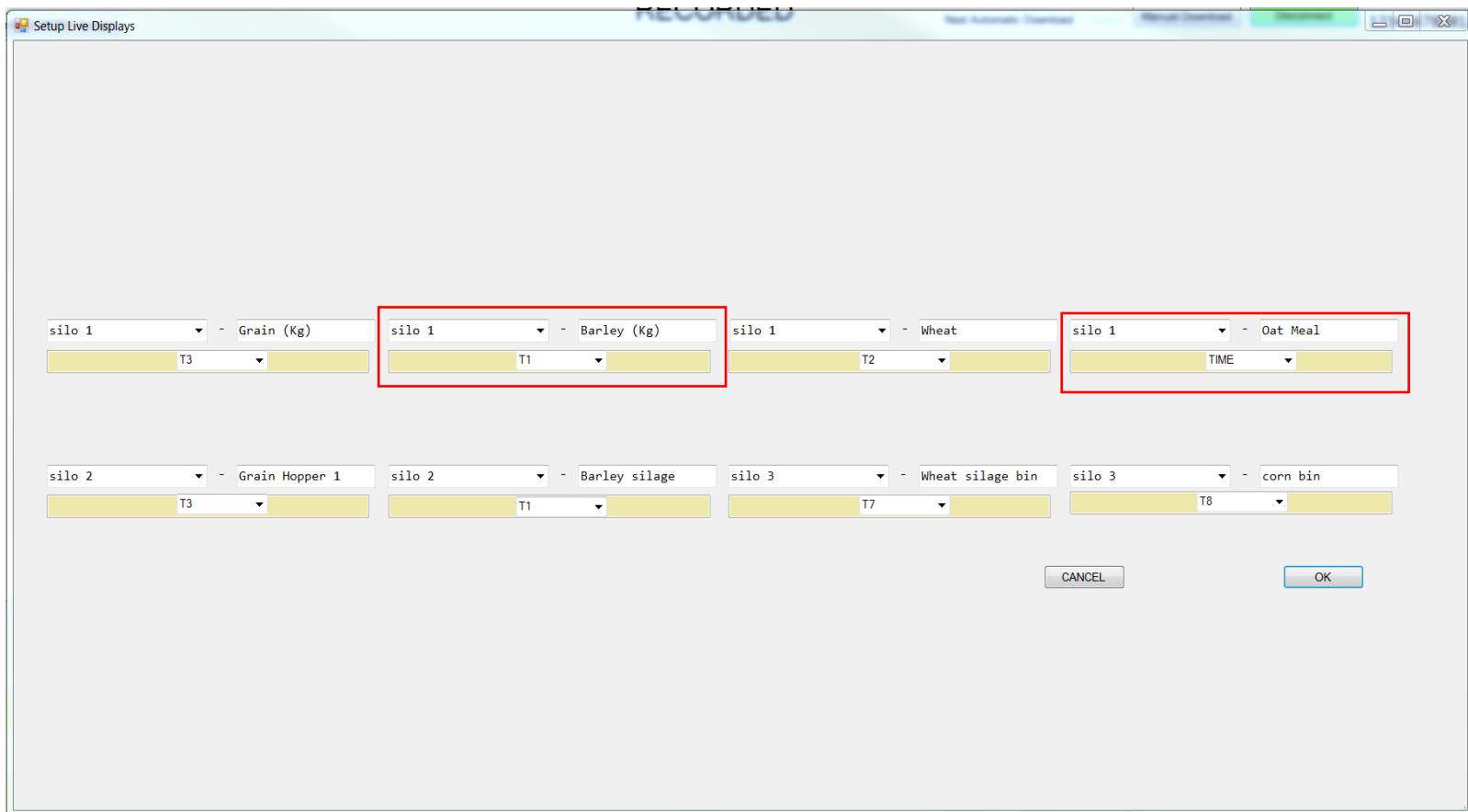
The  button will do a hardware reset on the unit remotely. The following screen is displayed.



When the OK button is selected, the unit will reset and there will be no response from it. It will be about 30 seconds before communications can be re-established.

## Setup -> Live Displays

This option allows the LIVE display format to be configured. A typical live format is shown below for an agricultural application.

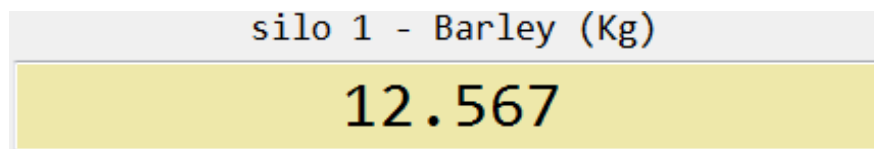


The first highlighted area requires this live display to use the unit name **silos 1** as selected by the drop box.

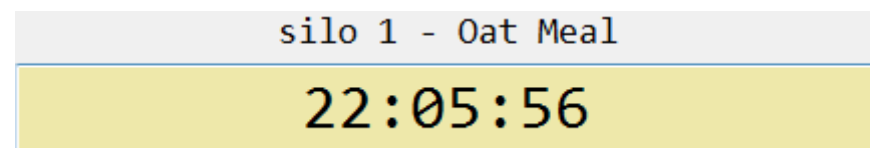
Any relevant title for this display can be given – in this case **Barley (Kg)**.

The part of the string from the **silos 1** unit to be displayed is **T1**, as defined in the Setup for the Live String above as **T1 3,8**.

In this case the **Live** Display on the main screen for this format would typically show:



The second highlighted area shows the item to be displayed as **TIME** and the main screen for this format would typically show:



There are a number of special items which can be displayed as follows:

DATE	-	Unit date
TIME	-	Unit Time
SEQUENTIAL	-	Unit Sequential number
BLANK	-	Blank display (nothing to be shown)

The first three items will update in real time with data from the unit. The **DATE** and **TIME** will run as a clock, and the **SEQUENTIAL** number will show the current value.

Up to eight items from any unit may be displayed. In this example, data from three units has been shown on the **Live** Displays.

The unit must be set for **LIVE** mode for the Live displays to be operational. **In LIVE display mode the unit will NOT record.**

## Setup -> Unit Password

Each unit in the network COULD have a different password, but when the user would Login with a password, only one unit could be accessed on the network.

It would be much more practical to have ALL units with the same password, or possibly have two groups of units where, for example, production could access one group of units and quality control could access a different group of units.

This option allows the password on any Wi-Fi connected unit to be changed. **The user MUST be Logged in with a password where the unit is currently accessible, to change the password.**





## Automatic

This provides Automatic download options. A typical screen is shown below:

Unit	Date	Time	Result
3	01/03/2018	11:51	Automatic Download & Delete OK
2	01/03/2018	11:51	Automatic Download & Delete OK
1	01/03/2018	11:51	Automatic Download & Delete OK
3	01/03/2018	11:50	Automatic Download & Delete OK
2	01/03/2018	11:50	Automatic Download & Delete OK
1	01/03/2018	11:50	Automatic Download & Delete OK
3	01/03/2018	11:48	Automatic Download & Delete OK
2	01/03/2018	11:48	Automatic Download & Delete OK
1	01/03/2018	11:48	Automatic Download & Delete OK
3	01/03/2018	11:46	Automatic Download & Delete OK
2	01/03/2018	11:46	Automatic Download & Delete OK
1	01/03/2018	11:46	Automatic Download & Delete OK
3	01/03/2018	11:45	Automatic Download & Delete OK
2	01/03/2018	11:45	Automatic Download & Delete OK
1	01/03/2018	11:45	Automatic Download & Delete OK
3	01/03/2018	11:44	Automatic Download & Delete OK
2	01/03/2018	11:44	Automatic Download & Delete OK
1	01/03/2018	11:44	Automatic Download & Delete OK
3	01/03/2018	11:42	Automatic Download & Delete OK
2	01/03/2018	11:42	Automatic Download & Delete OK
1	01/03/2018	11:42	Automatic Download & Delete OK

Download Time 1 – 4 allows up to four automatic downloads to be performed at the specified time every day.

ALL active units in the user's password group are automatically downloaded.

Download EVERY allows a download to be performed at a regular interval (e.g. every hour).

Unit data is automatically cleared when a successful automatic upload is achieved.

Each of these download times can be quickly Enabled / Disabled with a checkbox.

The **Data Download Path** for where the data will be stored may be entered manually, or the **Browse** button may be selected to navigate to the desired folder, or to create a folder if required.

(This folder path is used for both Automatic and Manual downloads).

The left-hand scrollable list shows the Date, Time and Result of each attempted download. Any errors in the download will be displayed in Red.

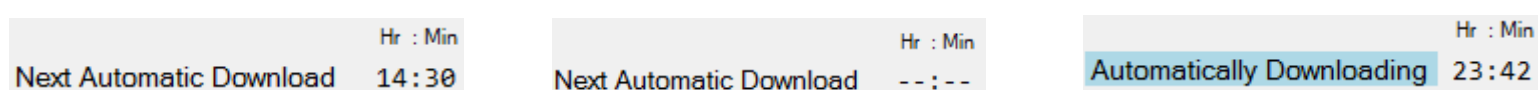
The unit number in the first column may be filtered by selecting the appropriate check box above the list. The filtered selection is remembered, but it is possible to select the **ALL** filter to quickly show all unit downloads. This filter selection is only a viewing option and performs NO other function.

The Results list may be cleared at any time by the **Clear Automatic Log** button.

Changes made to the Automatic Download Options can be applied using the **Apply Only** button, which remains on the same page, or the **Apply and Exit** button which returns to the main screen. The **Cancel** button discards all changes.

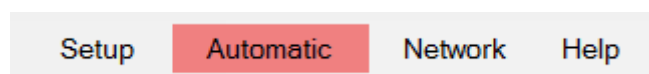
The **Next Automatic Download** time is always displayed at the top of the main screen and is updated when the **Apply Only** or **Apply and Exit** button is selected.

The display will be dashed if Automatic Download is disabled. Typical screen displays are shown below:



The Automatic Downloading background will turn **BLUE** when downloading is in progress. The PC application will pause for a few seconds, this is normal behaviour.

If an error occurs when automatically downloading, the Automatic option on the main menu will flag this error as shown below:

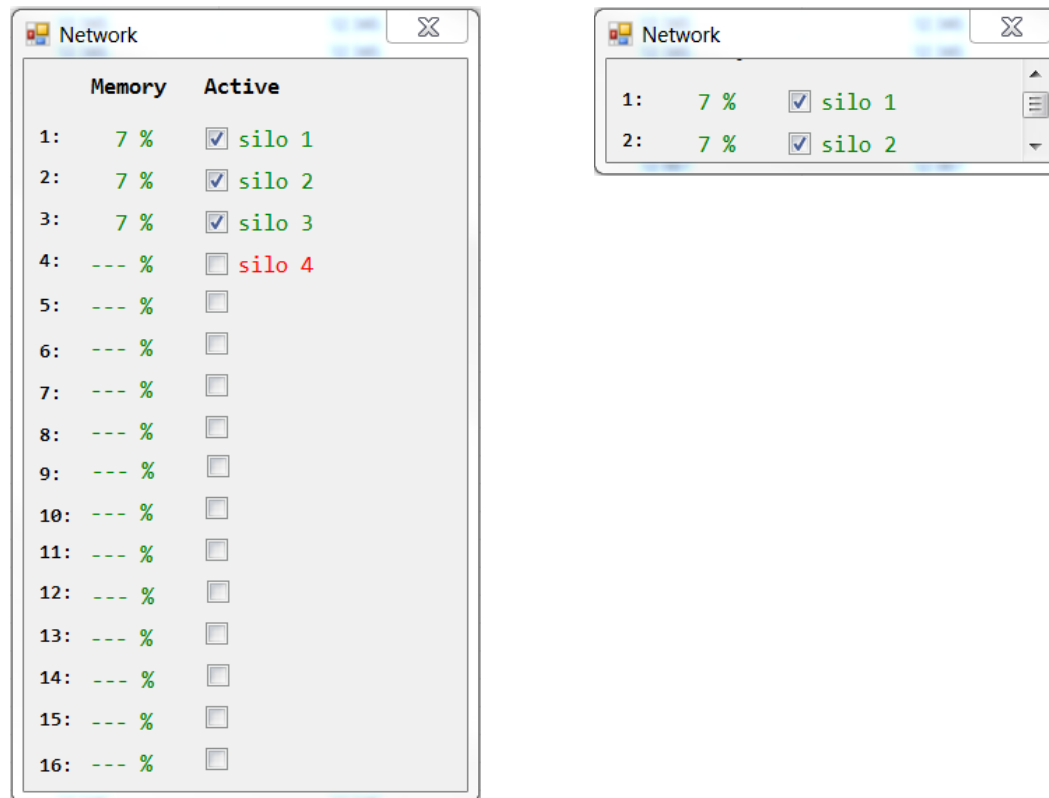


This error flag will be cleared once the Automatic Log option is re-entered.

Automatic downloads will ONLY be performed if the PC application is running (The application may be minimised if desired).

## Network

This Network display shows the status of all units on the network, and provides important information.



Up to the maximum 16 units in the network may be displayed, or the display may be minimised to show just the installed units. The size and position of this display is restored the next time used.

The memory percentage is a real time display. When the units are being polled, the user places a tick beside each unit which is installed on the network AND they are interested in.

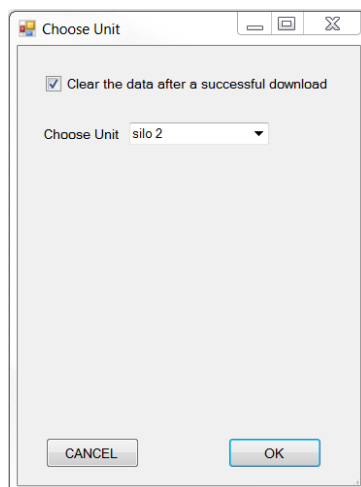
Units ticked will be attempted to be connected and if successful, coloured Green. If not connected they will be coloured Red.

## Help

This menu option displays this manual, **which is written for this EXACT version of software.**

**Manual Download**

The **Manual Download** button on the main screen allows immediate downloading of the data from any unit, the display is shown below:



The unit from which to download the data, is chosen from the drop - down menu.

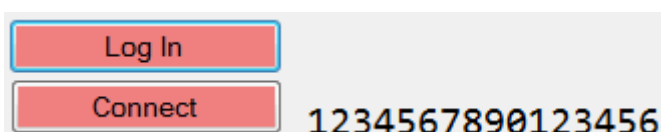
An option to clear the data from the unit (after a successful download) is also selectable. It is defaulted to not selected.

Data will only be cleared AFTER the PC has successfully downloaded the data and informed the unit it is ok to clear the memory.

Once data is cleared no other PC user can access the data from the unit.

**Log In / Out / Connect**

When the PC application starts up the buttons will be as shown below:

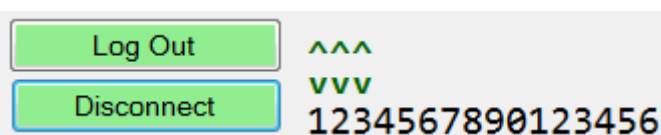


The user should select the Log In button and enter a valid password. The button will turn Green if the password matches at least one of the units in the network.

It may be useful to select the Network option to see what units are currently selected.

The user should now select the Red Connect button and all selected units in the Network option should connect.

The Connect button will go Green and the PC will start polling the units for data and typically display as follows (3 units):



The top arrow is a PC request and the bottom arrow is a unit reply.

**Main Running Screen**

The main screen layout for **recorded** and **live** data is shown below:

WiFi / FDI Data Recording System - Advanced Micropower Ltd - Version 1.00.00

File Setup Automatic Network Help

Clear RECORDED Screen  Show ALL

**RECORDED** Next Automatic Download Hr : Min -- : -- Manual Download Log Out ^^^ vvv Disconnect 1234567890123456

Unit	Seq	Date	Time	T1	T2	T3	T4	T5	T6	T7	T8
silos 3	03927	02/03/2018	16:09:46	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03928	02/03/2018	16:09:53	12.456	6.4675	00001245	12.456	12.456	12.456	12.456	00001245
silos 3	03929	02/03/2018	16:09:56	12.567	6.5671	00001256	12.567	12.567	12.567	12.567	00001256
silos 3	03930	02/03/2018	16:10:01	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03931	02/03/2018	16:10:01	12.456	6.4675	00001245	12.456	12.456	12.456	12.456	00001245
silos 3	03932	02/03/2018	16:10:02	12.567	6.5671	00001256	12.567	12.567	12.567	12.567	00001256
silos 3	03933	02/03/2018	16:10:03	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03934	02/03/2018	16:10:04	12.456	6.4675	00001245	12.456	12.456	12.456	12.456	00001245
silos 3	03935	02/03/2018	16:10:04	12.567	6.5671	00001256	12.567	12.567	12.567	12.567	00001256
silos 3	03936	02/03/2018	16:10:07	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03937	02/03/2018	16:10:08	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03938	02/03/2018	16:10:08	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03939	02/03/2018	16:10:10	12.567	6.5671	00001256	12.567	12.567	12.567	12.567	00001256
silos 3	03940	02/03/2018	16:10:11	12.456	6.4675	00001245	12.456	12.456	12.456	12.456	00001245
silos 3	03941	02/03/2018	16:10:24	12.456	6.4675	00001245	12.456	12.456	12.456	12.456	00001245
silos 3	03942	02/03/2018	16:10:40	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03943	02/03/2018	16:11:02	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03944	02/03/2018	16:11:19	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03945	02/03/2018	16:11:30	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03947	02/03/2018	16:13:18	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03948	02/03/2018	16:13:29	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234
silos 3	03949	02/03/2018	16:14:01	12.345	6.7890	00001234	12.345	12.345	12.345	12.345	00001234

**LIVE**

silos 1 - Grain (Kg)	silos 1 - Barley (Kg)	silos 1 - Wheat	silos 1 - Unit Time
6.7890	12.345	6.7890	16:14:29
silos 2 - Grain Hopper 1	silos 2 - Barley silage	silos 2 - Wheat silage bin	silos 2 - Seq Number
6.7890	6.7890	12.345	19379

The top line shows the version of this software. Ensure the software is the current version by checking the downloads section on <http://www.advancedmicropower.co.uk>

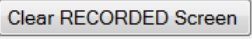
The screen is split into two main sections:

The top part is a **view** of the last 30 data records being **Recorded** in all PC connected units.

Units which are set to Recording mode will always record the data (the PC is NOT required to be connected). The RECORDED section on the PC software is for display purposes only.

All units display data in the Recorded section in 'real time' with the most recent being bottom of the list.

During downloads or internet dropouts, the unit may pause, sending data to the PC and a number of records may be updated quickly when the pause has finished.

The  button is used at any time to clear all the **Recorded** records from the viewing list.

The bottom part is the **Live** display information (**which is NEVER recorded**).

This live display simulates an instrument panel view of the connected equipment, as configured in the **Live** Setup section.

The data is continually streamed from multiple units and each panel display will blank within 5 seconds if it's data stops.

All other main screen features have already been described above.

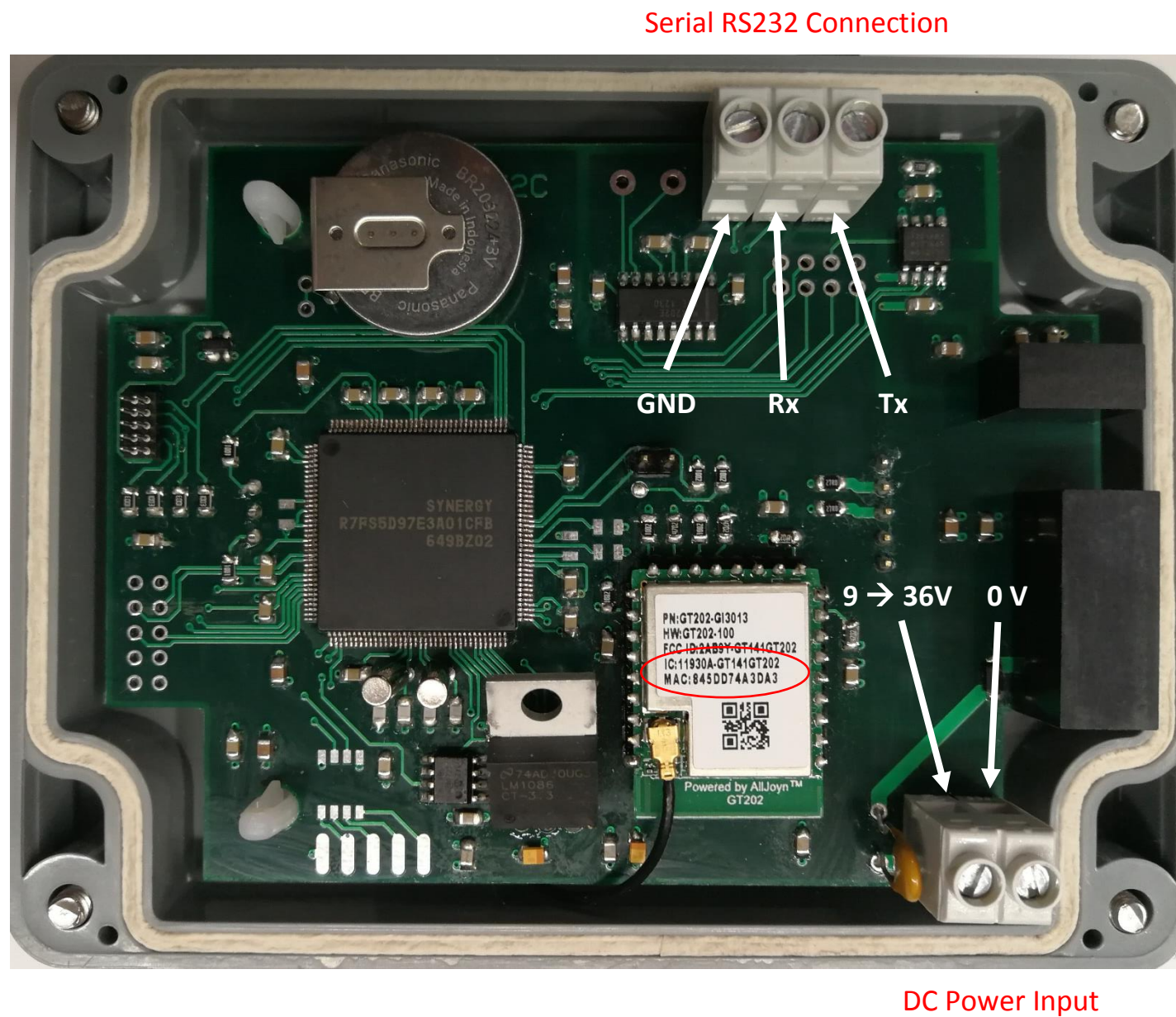
## Appendix A - Connections

The photo below shows an internal view of the Wi-Fi / FDI.

The power supplied to the board must be **in the range 9 Volts – 36 Volts DC. (The supply should NOT be capable of more than 300mA and fused accordingly).**

The Serial RS232 Connection requires the GND and Rx to be used. The Tx output from the unit provides confirmation of successful recording and memory status and is optional.

It is possible to have an optional RS422 / RS485 interface on the unit.



## Appendix B - Serial Format

The possible baud rate options are:

110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 5600, 57600, 115200, 12800, 153600, 230400, 256000, 460800, 921600

Parity options are:

NONE – 8 bits, ODD – 7 bits, EVEN – 7 bits

The Serial output has three possible single character replies to the incoming data:

<b>P</b>	-	Pass	-	Data is stored ok
<b>L</b>	-	Low Memory	-	Data is stored ok
<b>F</b>	-	Fail	-	Data is NOT stored

The Serial port can also output a string at a fixed interval time. Both can be defined by the user as detailed above.

The lamp on the unit has a number of different modes in response to incoming Serial data:

Long Green flash	-	Recording mode, Good data
Short Green flash	-	Live mode, good data
Long Red flash	-	Bad data
No flash	-	Data length shorter than expected – so it is held awaiting next sample (Stitch both strings together if possible)

Other possible lamp states:

Constant Red	-	Attempting to connect to the router
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**Appendix C - Port Forwarding**

The easiest Wi-Fi connection method is to install the unit on the local network, using port 80. This will be accessible throughout a factory complex and may be sufficient for most users.

To allow the unit to be accessible from anywhere in the world using a PC running this application, it is necessary to perform port forwarding on the router to which the unit is connected.

Port Forwarding is unique to each router type and it may be necessary to employ an IT / Network expert to perform the necessary changes to your particular router.

It is necessary to have a STATIC IP address. (This is a fixed address to allow the user to access the unit at the same point).

There are two options:

Check with your internet provider, most business already have a fixed address, or it may be easily provided.

Use a company such as **noip.com** to provide a dynamic DNS (They provide a fixed IP and monitor your changing IP) Two options are typically available:

Free package, but a reply to an automatic confirmation email each month is required for continued service.

Yearly subscription of £20, no monthly confirmation required.

Advanced Micropower currently use the free package and usually have a number of units connected to [www.ampwifi.ddns.net](http://www.ampwifi.ddns.net).

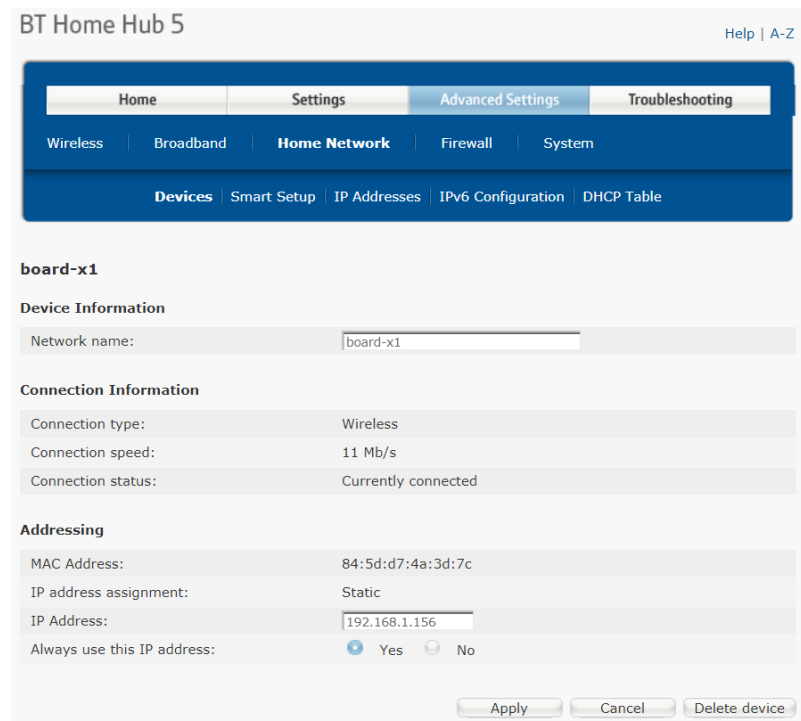
An example of Port Forwarding three units on a **BT Hub5 Router** is shown below:

The **unique** MAC address is shown circled in the photo [above](#), and also printed on the label on the units side.

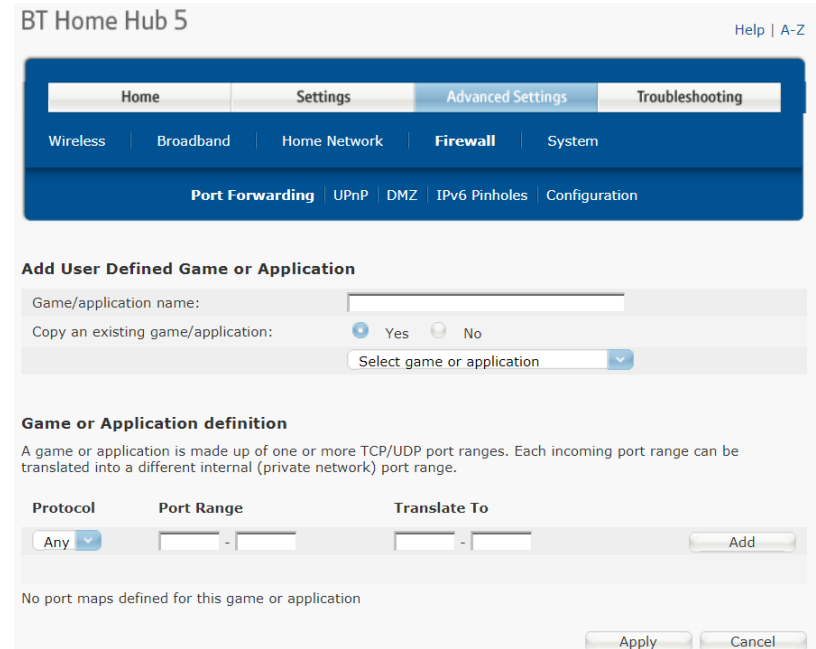
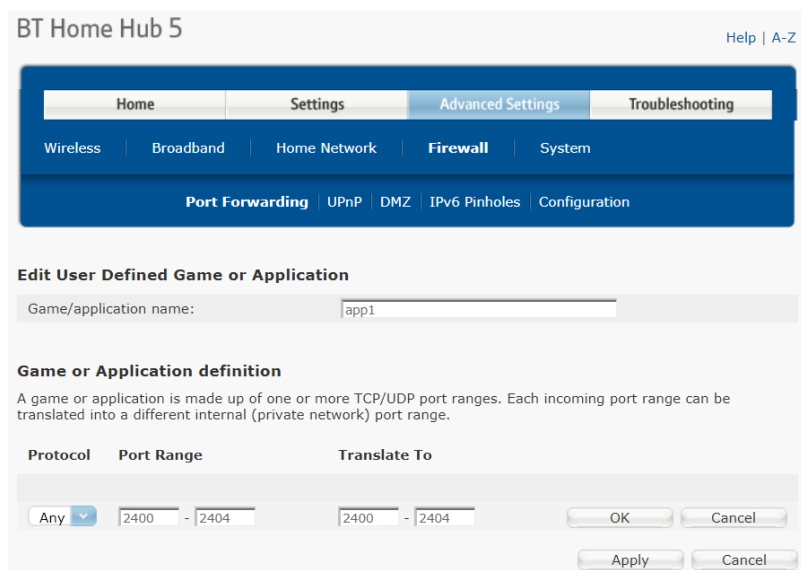
When power is applied to the units, they are discovered on the router. When you go to the **Advanced Settings -> Home Network** you should typically see:

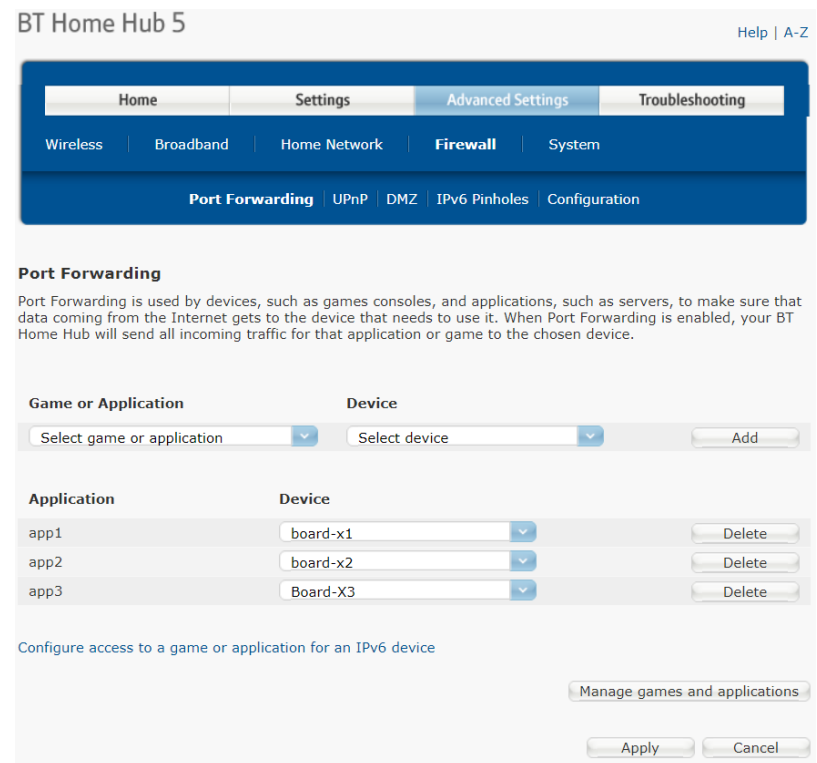
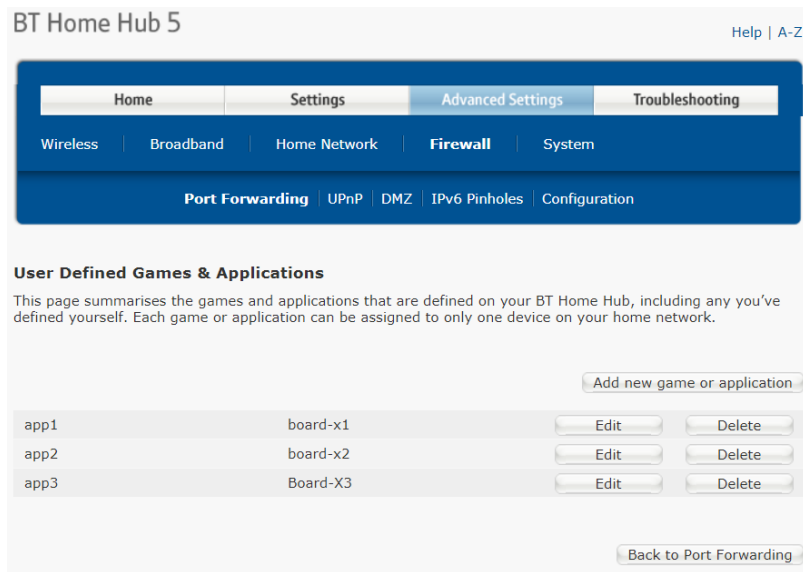


When the text is double clicked, the Network Name can be entered. This just a unique unit name - (board – x1) in our example, the screen is typically shown below:



Router screen shots of the setup for three units is shown below:





## Appendix D - New Firmware

Advanced Micropower's website should be periodically checked for software updates to the unit Firmware and the PC software.

To install new firmware, follow the procedure below:

Download the latest Firmware from the website (WIFI\_FDI\_X\_XX\_XX.bch), where X\_XX\_XX is the version number – **Read the release notes carefully.**

Copy the Firmware to a standard memory stick.

Plug it into the USB connector on the unit. The light will flash Red / Green. Wait till it has gone solid Green.

Remove the stick and the unit should automatically reboot.

Upload a Setup from this unit to the PC and check the new version number is correct (Top Right of Setup screen).

## Specifications

Enclosure	ABS Plastic Light Grey IP65 Rated
Size	115mm X 90mm X 55mm
USB Connector	IP68 rated with dust cap fitted
Connection Glands	IP68 rated
Power Input	9 – 36 Volts DC (Wide Input range)
Current consumption	Typically less than 150mA (Dependant on Flash memory stick)
Serial Interface	RS232C with various Baud rates and Parity (Optional RS422 / RS485 interface)
USB Interface	USB 1.1, 2.0 and 3.0 compatible
USB Flash Memory	Max size 32 GB
Internal data memory	132.768 KB
Firmware memory	2 MB
Ram memory	512 KB
Data flash	32 KB
Wi-Fi module	IEEE802.11b/g/n @2.4GHz (Up to 13 channels) <b>TCP only communications is used</b>
Temperature range	-10 to +65 Degrees Centigrade
Indicator Lamp	LED – 2 colour RED / GREEN
Real Time Clock	Internal – Backup by 3.0V Lithium Battery
Encryption	Advanced AES encryption on all Wi-Fi communications.