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## 13 Communications – Connect to the Instrument

Start the software by double clicking the PSY icon on the desk top of your PC.

### 13.1.1 The opening Splash Screen displays the following:

1. Type of instrument being operated – Stem Psychrometer
2. The connection Status – Not Connected
3. Product Version – 2.0.1.7
4. Release Date – 20/11/2010
5. File Menu along the top of the Window
6. Function buttons
  - a. Connect to PSY
  - b. Disconnect from PSY



Figure 8: PSY1 Software Splash Screen.

**NOTE 19:** the “Disconnect from PSY” icon is greyed out as the instrument is not connected

### 13.1.2 A status bar along the bottom of the window

A status bar along the bottom of the window

- a. Not Connected to ICT PSY
- b. Battery Voltage

**NOTE 20:** The Battery Voltage of the internal battery of the PSY1 will be displayed upon initiation of the connection. The integrated voltmeter measures the internal battery voltage as soon as a connection is initiated and displays it in the status bar. This provides a diagnostic check during the connection process and prevents frustration that would otherwise occur should the instrument not be able to connect due to a flat battery.

- c. Please Select Device

**NOTE 21:** The PSY1 is a Plug & Play USB device. Once connected to a USB port Windows automatically detects it and allocates it a COM port. You do not need to select or configure the COM port. Once connected the allocated COM port will be displayed here.

### 13.1.3 Connect to PSY

To establish a connection click **“Connect to PSY”** There are two ways of connecting to the PSY1 either via direct USB connection or via wireless RF Modem.

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## 13.2 USB Connection:

### 13.2.1 USB Connection Type

Drop down the **“Connection Type”** box (located in the bottom left hand corner of the screen) and select USB.

If the message **“No compatible devices found”** is displayed before proceeding to click the **“Find Devices”** icon please check the following:



**Figure 9: Device Selection Window.**

- (a) The Instrument is turned on – (see section [Turn the PSY1 ON](#))
- (b) You are connected to a device – A USB cable must be connected between the PC and the USB port of the instrument.
- (c) You are connected to the correct device that is compatible with the Utility software you are using e.g., PSY software will only connect to a PSY1 Stem Psychrometer not an SFM1 Sap Flow Meter. The software automatically recognizes the type of device and will not connect to instruments that operate on different principles of operation.

### 13.2.2 USB Find Devices

Now, click the **“Find Devices”** icon.



**Figure 10 Device Selection Window searching for the connected device**

**NOTE 22:** To eliminate the need to conduct the **“Find Devices”** routine each time you run the software you can tick the **“Remember Devices”** check box. Next time you click on **“Connect to PSY”** the last instrument connected will already be displayed in the list and you can connect to it either by highlighting the device and clicking on **“Select Device”** or double clicking on the device name.

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After polling all compatible devices the compatible device that is connected is displayed.



**Figure 11: Device Selection Window reporting the device that was found connected.**

### 13.2.3 USB Select Device

You can now select the device by clicking on it with the mouse to highlight the device and then clicking on **“Select Device”**. Alternatively, you can simply double click on the device name.

After selecting the device the following screen will appear.



**Figure 12: PSY1 connecting.**

It states the following:

- (1) that the software is “connecting to the PSY”
- (2) Battery Voltage is 3.89 V prior to the software actually connecting
- (3) And the device is located on COM 4.

You are now connected to the PSY1 Stem Psychrometer. You will see the Instrument Information Section filled with the configuration data of the instrument you are connected to. This data is read directly from the instruments configuration held in non-volatile RAM.

The instrument is now ready to be used. The configuration can be modified, logging interval set, Data downloaded or readings performed manually.

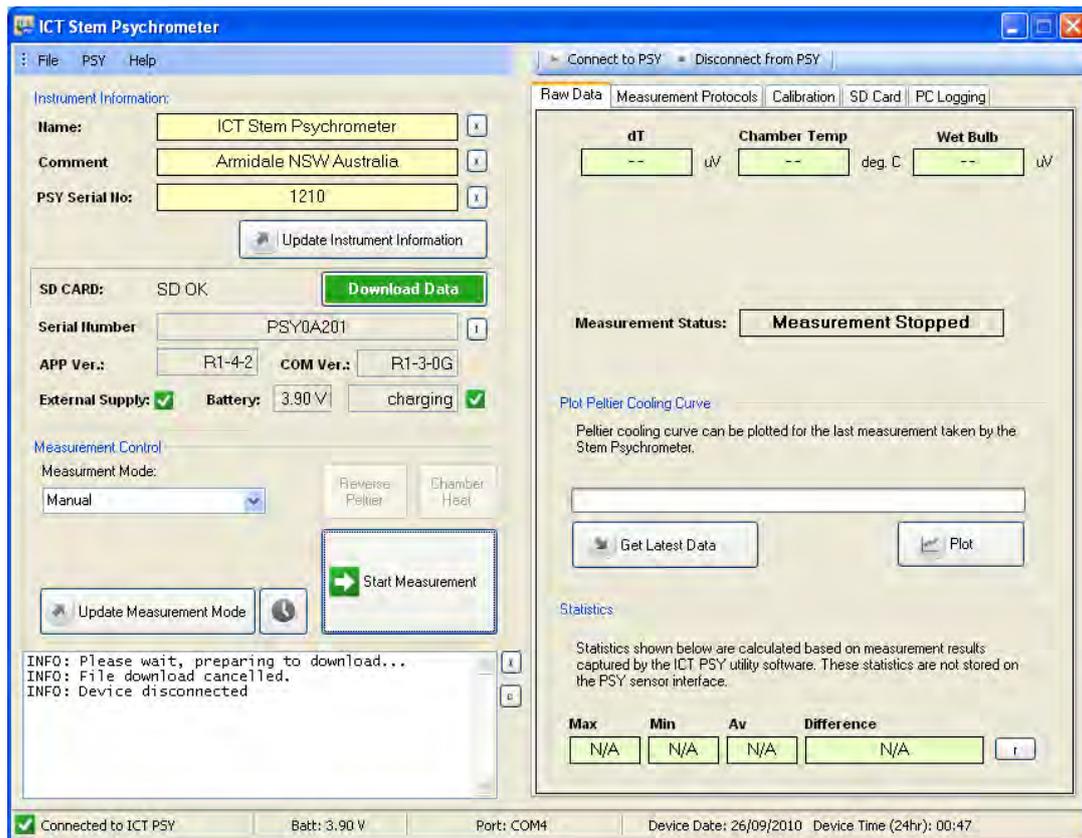


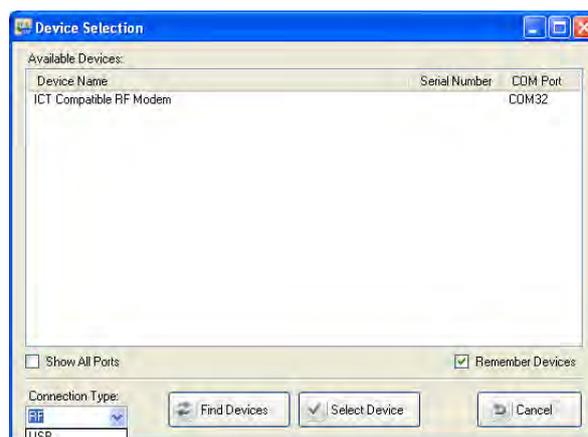
Figure 13: The PSY1 Graphical User Interface connected to an instrument.

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## 13.3 MCC1 - RF Modem:

### 13.3.1 RF Connection Type

Drop down the **“Connection Type”** box (located in the bottom left hand corner of the screen) and select RF (Radio Frequency).



**Figure 14: Device Selection Window – Connection Type RF**

If an MCC – Multi-Converter RF Modem is connected to the PC it will automatically be displayed in the list of “Available Devices” showing the COM port it has been automatically allocated by the Windows OS.

### 13.3.2 RF Find Devices

If the message **“No compatible devices found”** is displayed before proceeding to click the **“Find Devices”** icon please check the following:

- (a) The MCC is connected via a USB cable to the PC
- (b) The LED of the MCC is lit up to confirm the MCC is functioning.
- (c) The **“Connection Type”** has been changed from USB to RF
- (d) Then click the **“Find Devices”** icon



**Figure 15: Device Selection Window.**

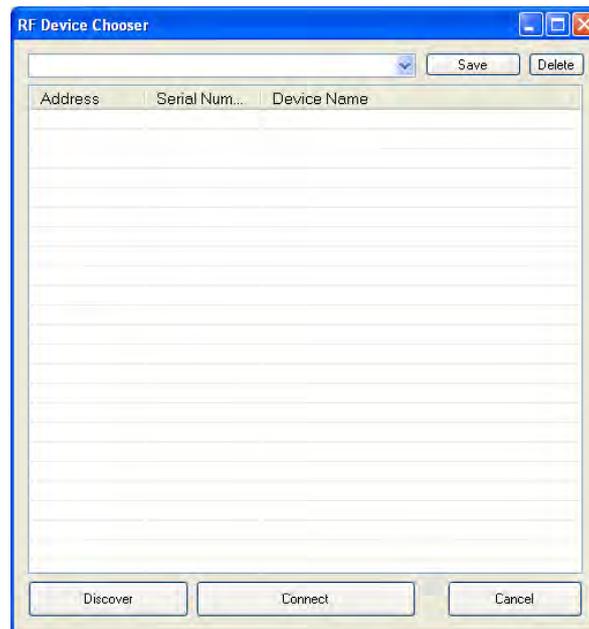
### 13.3.3 RF Select Device

You can now select the device “ICT Compatible RF Modem” by clicking on it with the mouse to highlight the device then click, on the **“Select Device”** icon. Alternatively, you can simply double click on the device name.

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### 13.3.4 RF Device Chooser

Clicking on the **“Select Device”** icon will open the **“RF Device Chooser”** List



**Figure 16: RF Device Chooser Window.**

The list will initially be blank until a search has been performed for instruments within range (approx. 250m).

**NOTE 23** Range is strictly line of sight and will vary depending up ambient conditions that affect signal strength such as atmospheric moisture and density of foliage.

### 13.3.5 RF Discover

Click on the **“Discover”** icon to begin the **“Device Wake Up Routine”**



**Figure 17: RF Device Chooser Window – attempting to wake up devices within range.**

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Each PSY1 instrument has an integrated radio transceiver and antenna. They are configured to wake up every 10 seconds for a millisecond to send a short signal.

### 13.3.6 RF Device Wake Up Routine

During the **“Device Wake Up Routine”**, the RF Modem scans the 2.4 GHz frequency for a period of 20 seconds, “listening” for a signal from any PSY1 Stem Psychrometers that may be within range. As each unit only emits a signal every 10 seconds an initial wait time of 20 seconds is required to ensure all instruments within the area have had time to respond within the discovery window.



Figure 18: RF Device Chooser Window – Discovering devices within range.

### 13.3.7 RF Search for more Devices

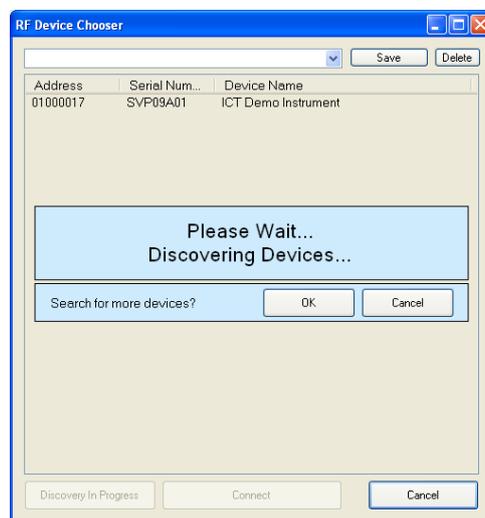
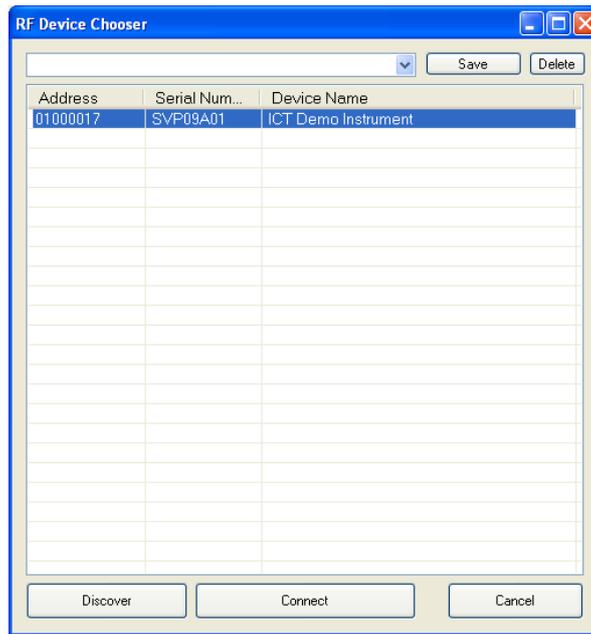


Figure 19: RF Device Chooser Window – Search for more Devices?

If a known instrument has not been discovered during the initial 20 second polling routine the GUI software allows you to continue to search for more devices, to do so click the “OK” icon when asked, **“Search for more Devices?”**

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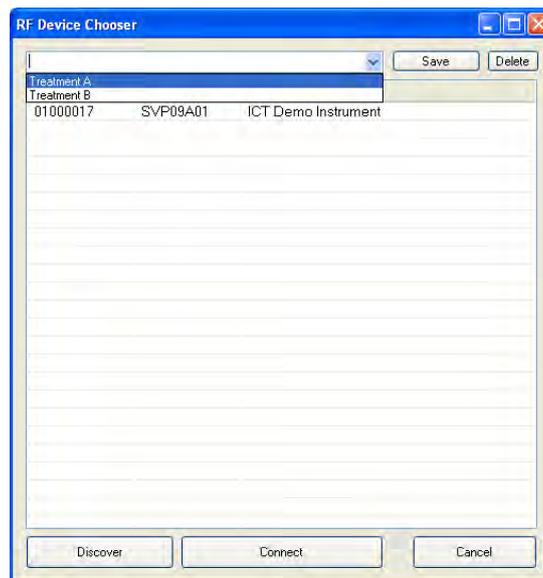
If all devices have been discovered click the “Cancel” icon to gain access to the list of devices found.



**Figure 20: RF Device Chooser Window – displaying the devices within range that have been discovered.**

### 13.3.8 Saving discovered devices as a group

Once the discovery routine has finished polling all compatible devices, a list of all compatible devices found will be displayed. Each instrument displayed in the list can be individually selected and you can connect to it either by highlighting the device and clicking on “**Connect**” or double clicking on the device name itself.

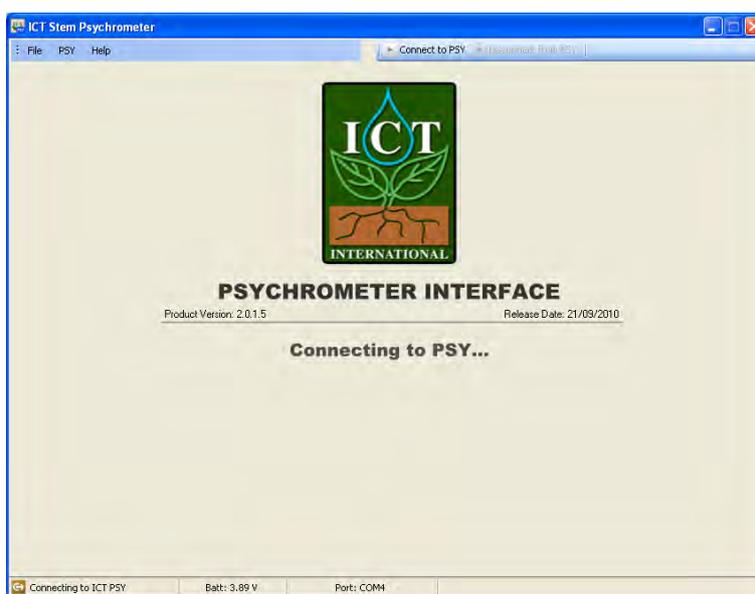


**Figure 21: RF Device Chooser Window – Save Groups Option.**

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To eliminate the need to find devices each time you run the software you can create groups of instruments. Once a group of instruments are discovered allocate them a name such as “Treatment A” and click on the “Save” Icon. Next time you click on “ICT Compatible Modem” you can choose to drop down the group of sensors you wish to download as the discovery routine has already been done and remembered by the GUI Software. Each instrument displayed in the list can be individually selected and you can connect to it either by highlighting the device and clicking on “Connect” or double clicking on the device name itself.

After selecting an instrument or, an individual instrument from within a saved group, the following screen will appear.



**Figure 22: Connecting wirelessly through the MCC1 Radio Frequency modem to a PSY1.**

It states the following:

- (1) That the software is Establishing RF Link
- (2) Then “connecting to the PSY”
- (3) Battery Voltage is 3.89V prior to the software actually connecting
- (4) The device is located on COM 32.

You are now connected to the PSY1 Stem Psychrometer wirelessly through the MCC1 Multi-Converter RF Modem. You have all the same functionality and speed of a direct physical connection via a USB cable, plus the freedom to move around the area beyond the physical reach of the instrument.

You will see the Instrument Information Section filled with the configuration data of the instrument you are connected to. This data is read directly from the instruments configuration held in non-volatile RAM.

The instrument is now ready to be used. The configuration can be modified, logging interval set, Data downloaded or readings performed manually.