

Operating Manual for the Vetronic Services Sapphire Plus ECG System



This manual contains important information on your Sapphire Plus ECG System. Please keep it in a safe place.

**- Sapphire Plus ECG Operators Manual-
Telemetric 6-lead ECG Monitoring for animals
The Sapphire Plus ECG System by Vetronic Services Ltd**

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Section 1

Using the Sapphire Plus ECG System: An Introduction



The Sapphire Plus ECG System is a single lead or 6-lead ECG system designed for use with domestic species. A single channel device looks exactly the same as a 6-channel device but is only manufactured to detect and transmit a Lead II trace. On the reverse of the transmitter unit is a number beginning with the letters VSL.

A Single lead device has the following number:

Single Lead device: VSL-3.00-19-19

And a 6-lead Device has the following number:

6 Lead device: VSL-3.00-19-(18/19)

To send and receive digital ECG information using the Sapphire Plus system you will need the following:

1. Sapphire Plus ECG Transmitter
2. 1 x AAA Battery
3. Sapphire Plus ECG Cable with sensor connectors – Sticky pads, crocodile clips or limb plate electrodes
4. VitalStore Telemetry receiver
5. VitalStore USB controller with USB cable
6. VitalMonitor Software installed on your PC or laptop
7. VitalStore Software installed on your PC or laptop

The VitalStore Telemetry receiver (1) fits into the connector on the top of the USB controller (2) as shown.



Fitting the battery to the Sapphire Plus Transmitter

A single AAA battery is fitted by unscrewing the brass cap from the battery compartment and inserting the battery, negative end first.



Secure the battery in place by replacing the brass cap. Do not over-tighten this cap

Operation of the Sapphire Plus Transmitter

The Sapphire Plus transmitter has a single ON/OFF button in the centre of the unit and a LED window at the top right of the unit. To turn the transmitter ON, press and hold the oval button for one second and then release the button. The LED window shows a RED LED then a GREEN LED flashing sequence that is repeated 3 times before the unit begins a rhythmic once per second flashing of the GREEN LED.

Low Battery Indicator

When using standard Alkaline batteries:

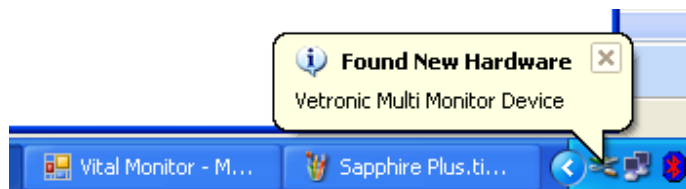
Once the battery voltage has fallen to the end-of-life value, the LED will flash alternately RED and then GREEN at twice the normal rate. This indicates that the battery needs to be replaced.

When using NiCad or NiMh rechargeable batteries:

The RED/GREEN flashing sequence will be seen much sooner than with Alkaline batteries because a re-chargeable battery voltage is only 1.2v when fully charged and an alkaline battery has a voltage of 1.5v when new. DO NOT replace the rechargeable battery at this stage as most rechargeable batteries will give 8-10 hours of use. When using rechargeable batteries we recommend that a freshly charged battery is inserted at the beginning of the recording session.

Connecting the VitalStore Telemetry receiver with Windows XP

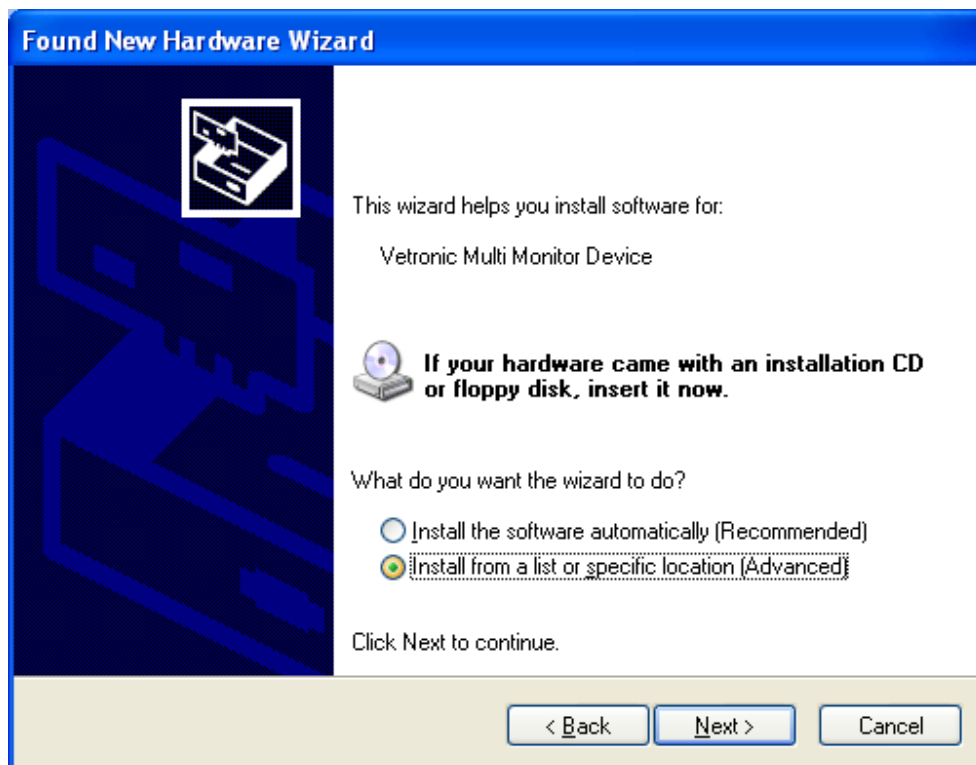
Push the VitalStore receiver into the D-Type connector on the USB Controller. Then connect the USB cable, which connects from the back of the USB Controller into a spare USB port on your PC or laptop. If this is the first time that the VitalStore USB controller has been connected to the PC then a “Found New Hardware” bubble will appear at the bottom right of the PC screen,



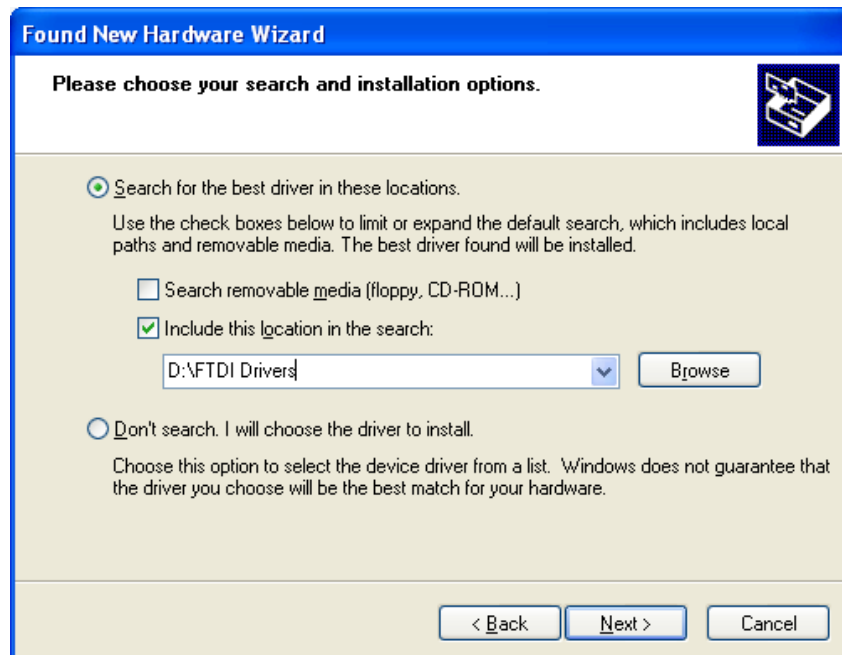
Followed by a “Found New Hardware” wizard.



Select “No, not this time” and press Next.

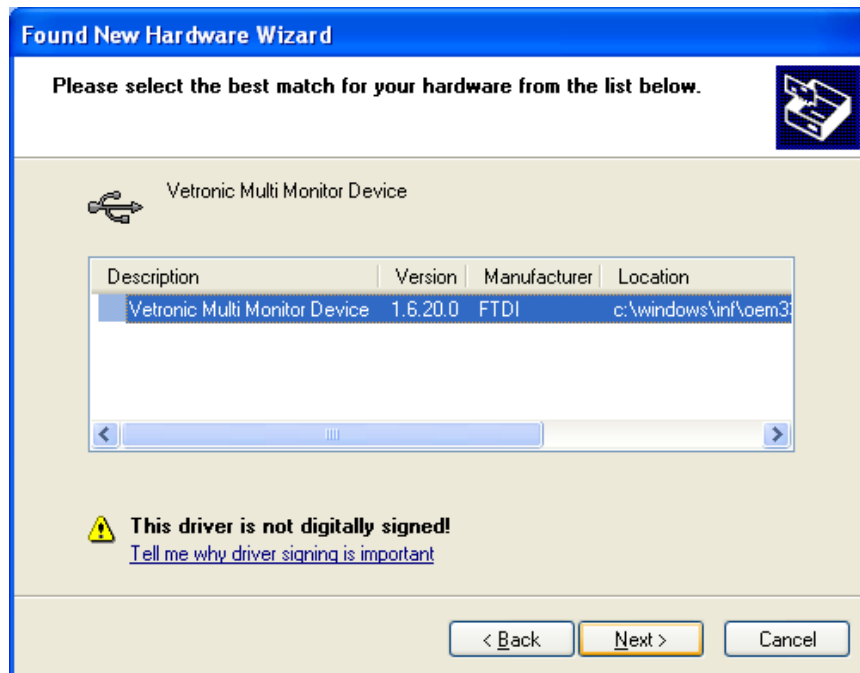


Choose to “install from a list or specific location (Advanced)” and then click “Next”



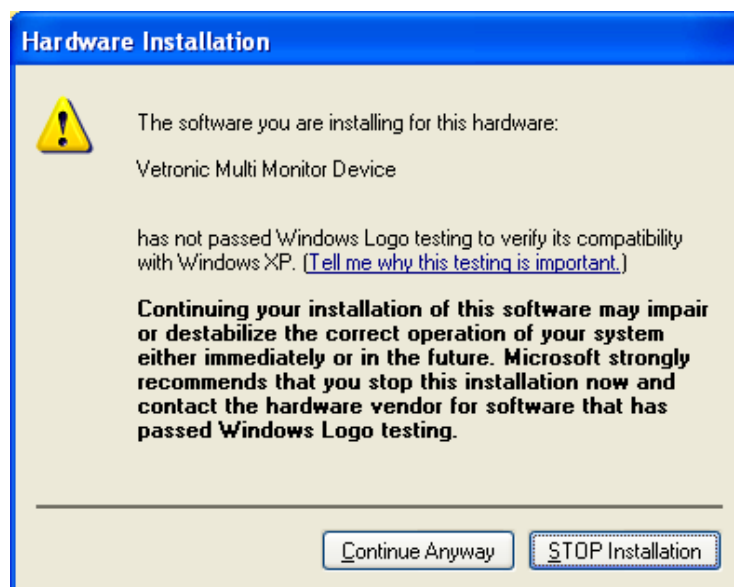
Use the Browse button to find the CD that came with your Sapphire ECG system and then navigate to the FTDI Drivers folder. Then when this is done click on “Next”

The PC will find a suitable driver and display it in the dialog box



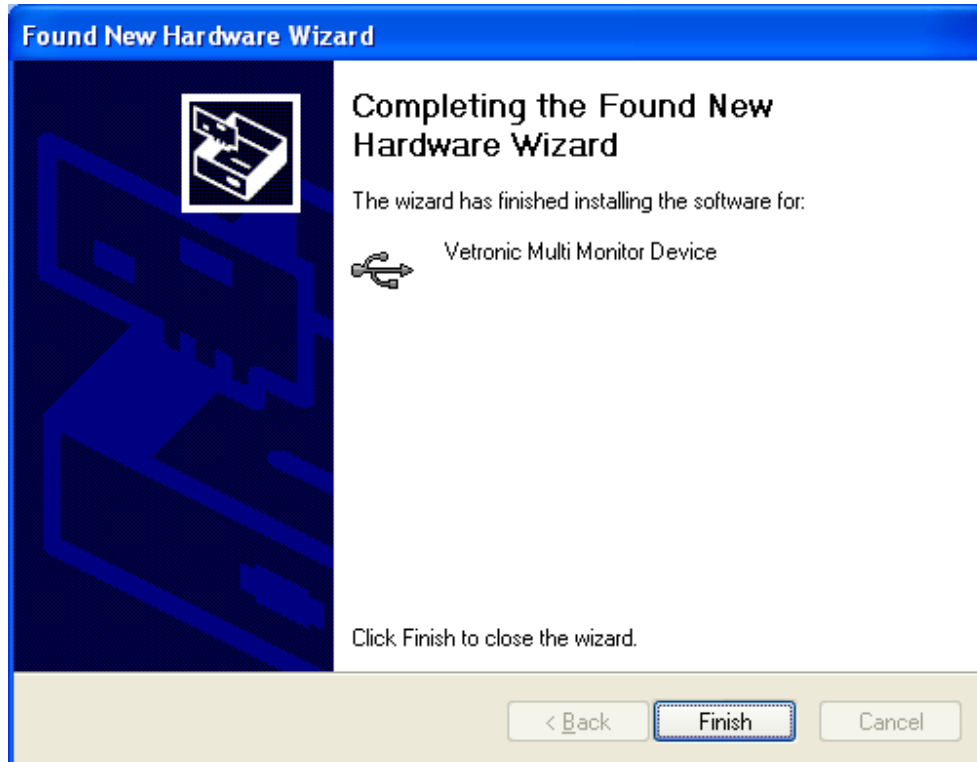
Note that the name of the driver may vary but will always reference a Vetronic Device.

Click "Next"



A Windows™ dialog box appears warning that this is not a digitally signed driver. This is OK as signed drivers are not yet available. Click "Continue Anyway"

The driver is then installed and the last dialog is a confirmation dialog that the installation is complete.



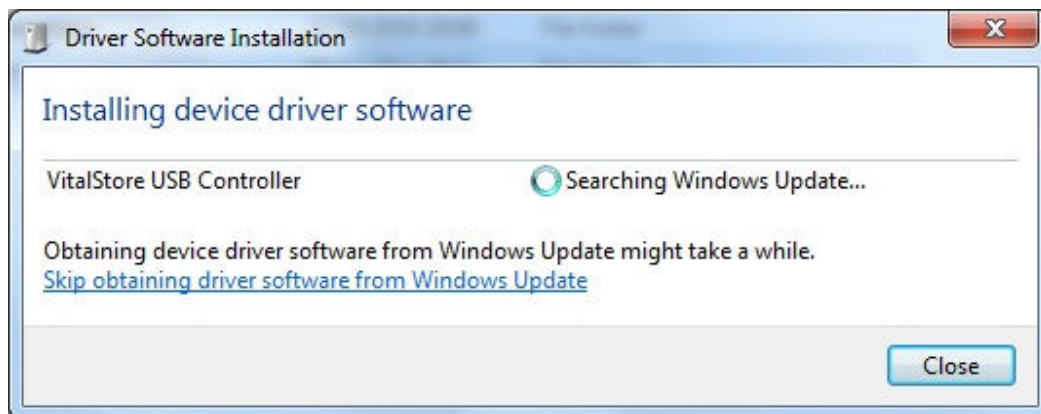
The hardware is now installed and ready for use.

At this point the blue LED on the top of the receiver will flash several times and then remain with a steady blue light. The receiver is now waiting to connect with the transmitter.

Once a connection is established, the blue LED will flash on and off at about once per second to indicate that data is being received.

Connecting the Hardware and installing the drivers for Windows 7 / 64-bit Windows systems

Plug in the USB cable between the VitalStore Receiver and your PC or Laptop. Windows will respond by displaying the following dialog box:



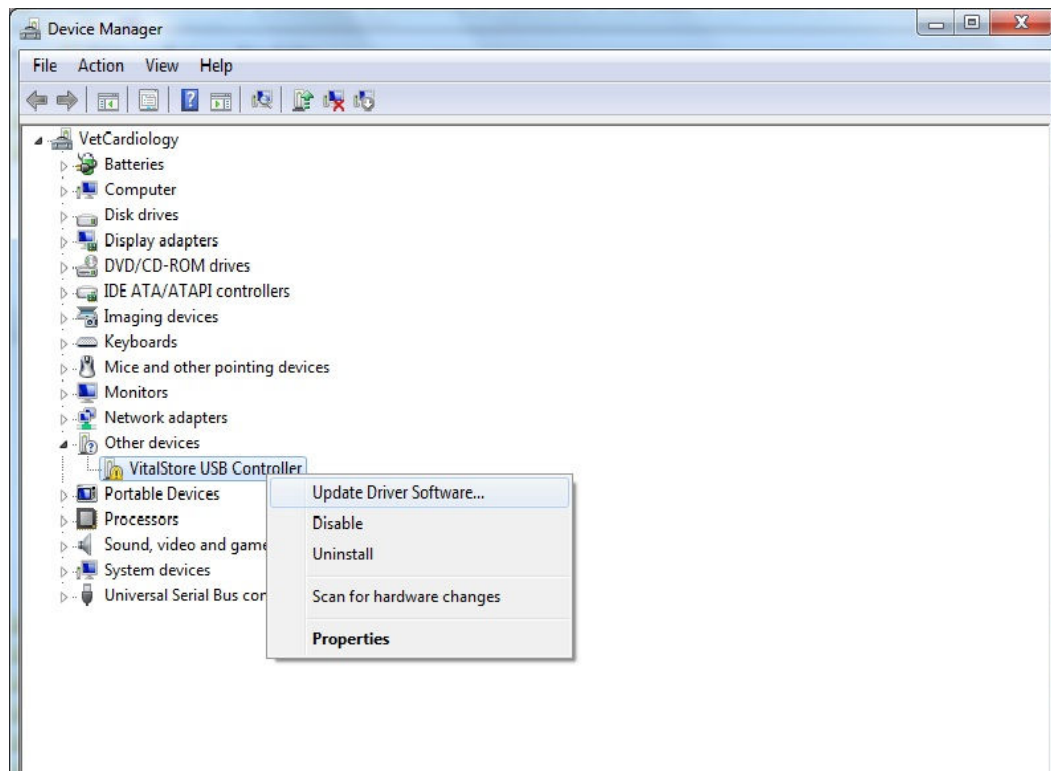
Do not allow Windows to search for and install the drivers as the correct ones will not be found. Instead click on the Close button to end this search.

A further dialog will appear:



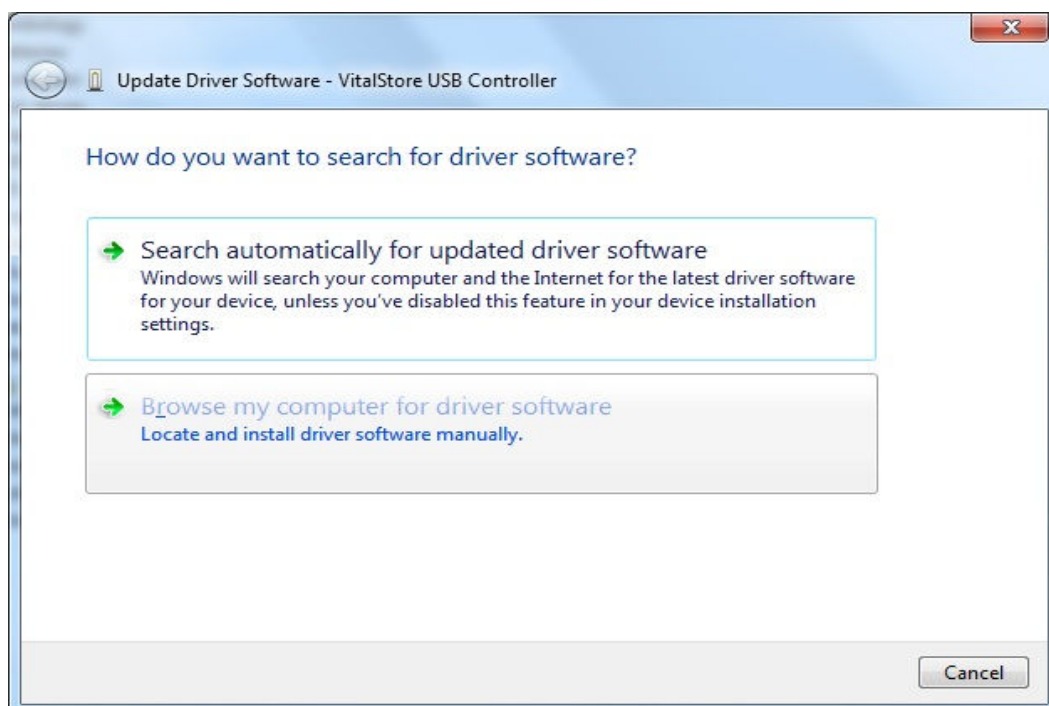
Click Yes.

Now go to Device manager by Clicking 'Start->Control Panel-> System & Security-> System'. Then select Device manager and when the list of devices appears on your screen, right click on the VitalStore USB Controller, which will be identified by an icon of a Yellow circle containing an exclamation mark.

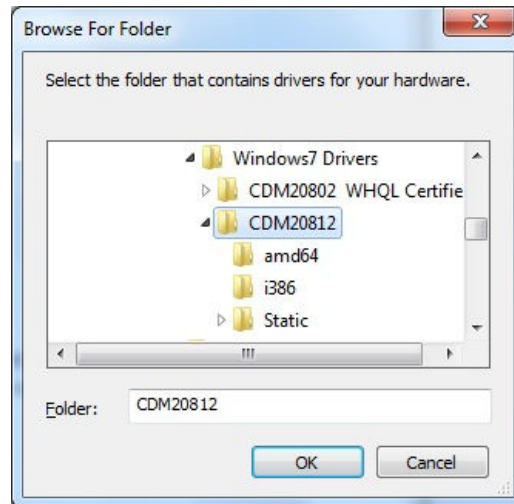


Click on Update Driver Software

Then when the following dialog box appears, select 'Browse my computer for driver software'

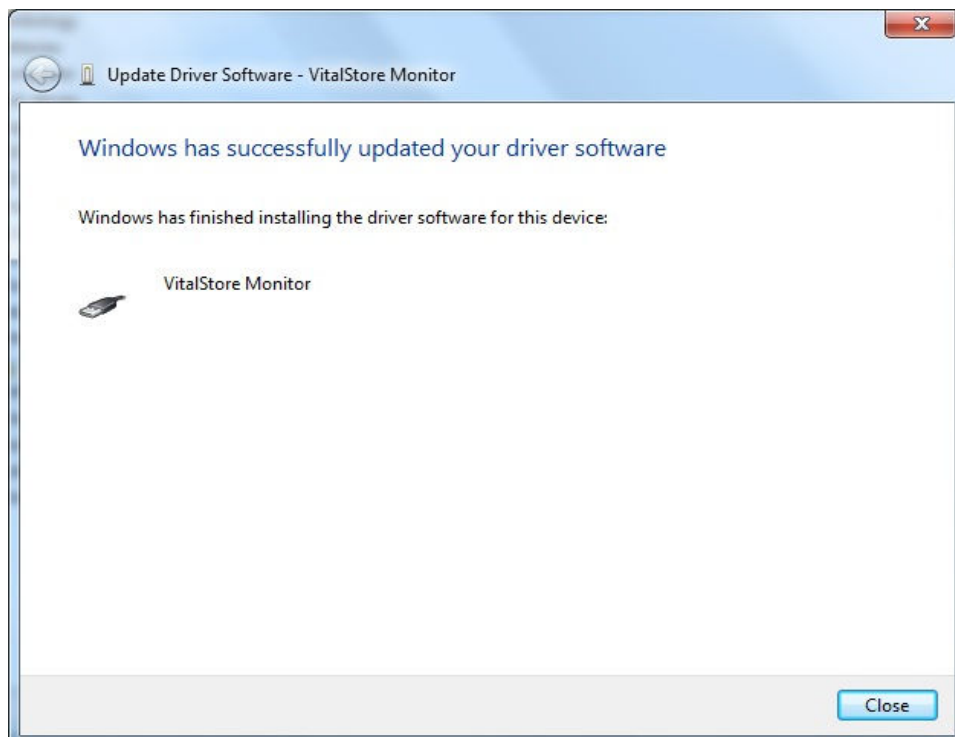


Then using the displayed dialog box, navigate to the folder containing the drivers. This can be found on your CD ROM that came with your hardware and will be in a folder called 'Windows 7 Drivers'



Choose the CDM20812 Directory and then click OK

Windows will then find the appropriate drivers and install them for you. These drivers are not digitally signed and if you are asked whether you wish to continue with the installation, choose "Continue Anyway". This completes the driver installation.



Recording an ECG using the Sapphire Plus ECG Transmitter

Insert a new battery as described in the previous section and turn the transmitter on. The transmitter indicates that it is working by flashing the LED in the LED window. Once the transmitter is turned on it immediately searches for the receiver in order to make a connection. The connection is indicated by the blue LED on the receiver flashing at a steady rate of once per second.

Sequence of initializing the transmitter and receiver

The transmitter is always looking to make a connection with the receiver, so the order in which devices are turned on or off does not matter.

If the transmitter is turned off and then back on again a connection will be established within a maximum of 20 seconds.

If the receiver is disconnected or connected after the transmitter starts then an automatic connection will be established within 20 seconds.

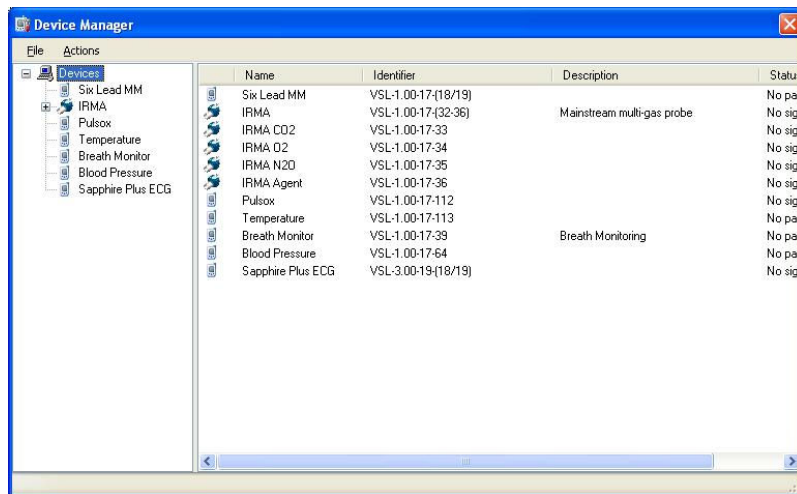
If a connection is not established then check the following:

- 1) The battery in the transmitter
- 2) A steady blue light is present on the receiver
- 3) Transmitter and receiver are in range – up to 200m in open air and up to 50m in buildings. Note that the range within buildings is governed by the thickness of walls and ceilings and may vary considerably within a building.

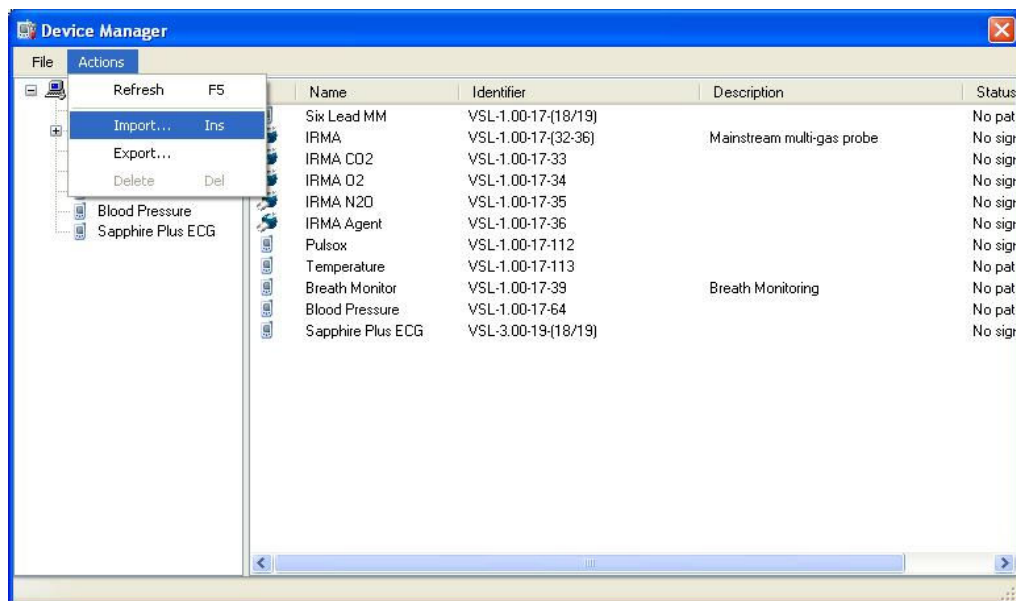
Once data is being received then this can be displayed on the VitalMonitor software. Begin the program by clicking on the VitalMonitor icon on the desktop or by selecting **Start>All Programs>Vetronic Services LTD>VitalMonitor 1.0.XX>VitalMonitor 1.0**, where XX indicates the version number of the software. The program starts and displays a time bar to indicate the time to completion of loading.

Adding New Monitoring Devices

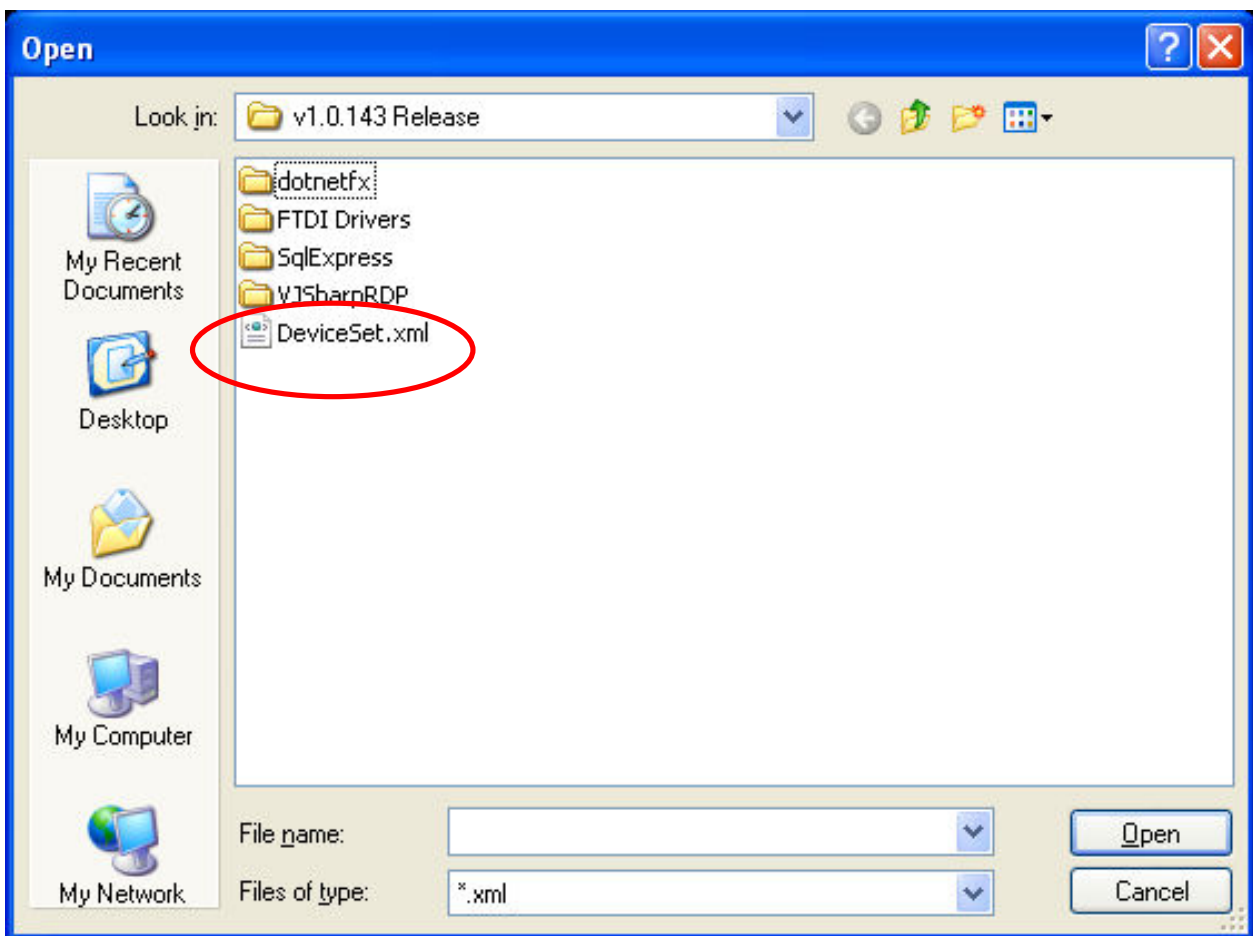
Before a patient can be monitored the new monitoring device needs to be registered with the software. This is a simple procedure required to be done once only per device. The devices that are available for your use can be installed from the CD ROM that came with your new hardware. Make sure this CD ROM is in the CD Drive to complete this procedure. In the VitalMonitor program click on “Tools” in the top menu and then choose “Device Manager”. A Device Manager dialog box appears.



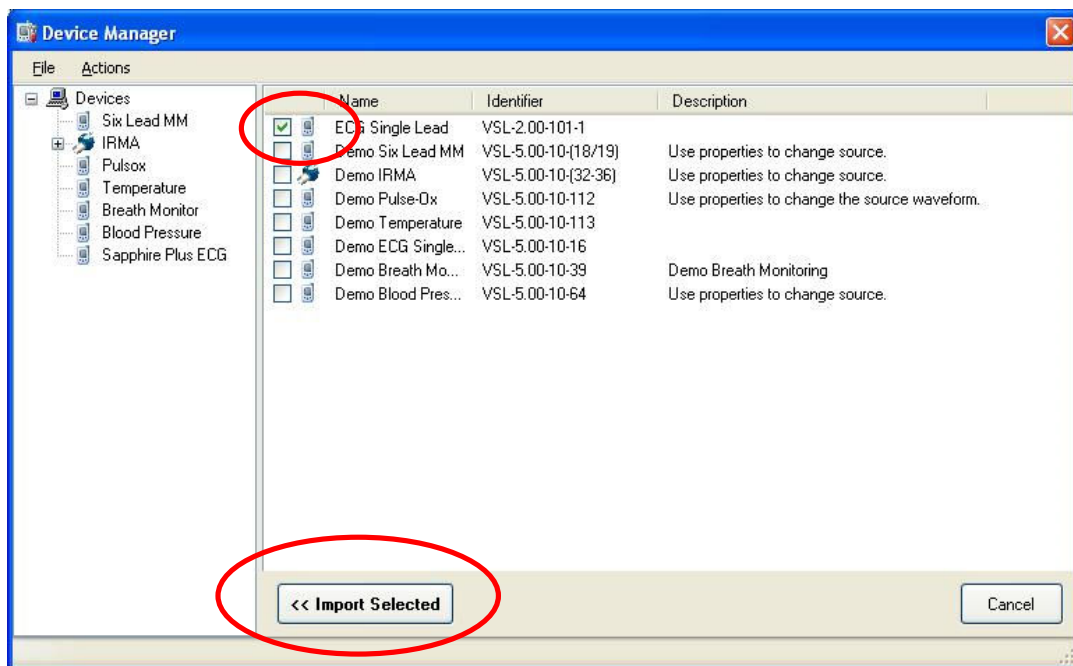
On the left hand side of this dialog box is a list of already installed devices. The information on the right hand side details the Devices listed. If the device you wish to use is not shown on the left hand panel then click on the Actions menu and then choose Import.



This opens another dialog box that requires you to find the Device Set information file on the CD ROM. The Device Set information is held in a file called DeviceSet.xml or similar and will be found in the root directory of the CD ROM.



When the DeviceSet.xml file is opened a list of available new devices appears



Select the device to import by placing a tick in the box next to the device description.

When all the required devices have been selected, click on the "Import Selected" button. The new devices are imported and installed. In this example a Single Lead ECG will be imported. The Identifier listed next to the name of the device will match the Identifier written on the back of the device you are trying to import.

Now the program has been loaded and all new devices added to the system, a patient needs to be selected before monitoring can begin. For more information on how to do this see the section entitled "The VitalMonitor and VitalStore programs".

Once a patient has been selected and the Sapphire Plus ECG device assigned to it, the ECG can be viewed on screen. This is covered fully in the section "Viewing 6-Lead ECG Data" where the 6-lead ECG data in the example is actually from the VitalStore MultiMonitor unit. Due to the modular nature of the software once the data has reached the PC, the way it is displayed and handled is the same whether it comes from a Sapphire Plus unit or a VitalStore MultiMonitor unit.

Extras for your Sapphire Plus ECG System

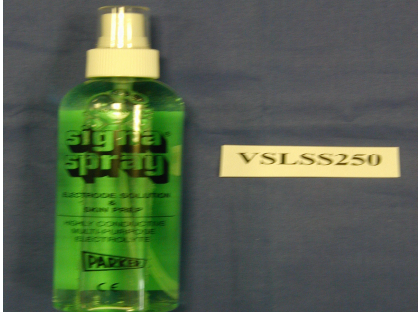
Consumables

Part Number: VSLC220 Description: ECG Electrode Pad 5cm Pack of 30 Price: £5.75	Part Number: VSLM00S50 Description: ECG Electrode Pad 3cm with popper connection Pack of 50 Price: £15.60	Part Number: VSLN00S25 Description: ECG Electrode Pad 3 x 2cm with popper connection Pack of 25 Price: £18.60
 VSLC220	 VSLM00S50	 VSLN00S25

Part Number: VSLM00A50 Description: ECG Electrode Pad 3cm with socket for 4mm Banana Plug. Pack of 50 Price: £19.95	Part Number: VSLSBPPSA Description: Banana Plug Popper Socket Adaptor. Price: £8.20 each	Part Number: VSLCCMOD Description: Crocodile Clip for 4mm Banana Plug Price: £0.50 each
 VSLM00A50	 VSLSBPPSA	 VSLCCMOD

For other products and consumables see our web page:
<http://www.vetronic.co.uk>

Consumables Cont ...

Part Number: VSLECGLPE4 Description: ECG Limb Plate Electrode with Velcro strap and a socket for 4mm banana plug lead connection. Price: £25.00 for a pack of 4	Part Number: VSLSS250 Description: ECG contact electrolyte spray 250ml bottle Price: £9.95 each	Part Number: VSLBPACC Description: 4mm Banana Plug to 2mm Atraumatic Crocodile Clip Adapter Price: £8.00 each
		

Part Number: VSLBPPOPA Description: 4mm Banana plug to Popper Male adaptor Price: £10.00 each


For other products and consumables see our web page:
<http://www.vetronic.co.uk>

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