

# QDSP2

iSTAT Configuration and Analysis Software

## Manual

QDSP2

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Publication Reference: QDSP2/EN/M/E



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## 1. INTRODUCTION

### 1.1 General

This manual describes the **QDSP2** setting and analysis software. It does not describe the original QDSP software which it replaces. The original QDSP 1.0 software is detailed in manual QDSP\_EN\_M\_C.

The **QDSP2** software can be used to program all communicating products in the iSTAT Transducer, Measurement Centre and Power Quality product families.

It is simple to set-up and use, allowing fast configuration of the measurement devices.

This manual describes how to install the software, configure communications channels on the PC and describes the features of the software. For details of how to program a specific product refer to the technical manual for the product.

The **QDSP2** software includes detailed help files, therefore this manual is only intended to get the user started with the software and familiarise them with the main features.

### 1.2 Products

**QDSP2** is used for device configuration, browsing online measurements, Trend recorder and Power Quality configuration, record download and analysis.

The **QDSP2** software is available to download free of charge.

The **QDSP2** software runs under Microsoft Windows on a PC.

Minimum system Requirements

- Windows XP / Vista / 7
- 1 GHz Processor
- 512 MB RAM
- Available disk space 1GB (32-bit) or 2GB (64-bit)
- Monitor with VGA resolution
- RS232, USB or Ethernet communication port

### 1.3 Features

The following features are included:

- Standard type Microsoft interface, which is easy to read and navigate.
- The same programming interface for all product families, only the quantity of programming options changes depending on the features available in the product.
- Sample configuration files for each product which allows the setting options to be investigated offline without a product connected to the PC.
- Saving of a modified configuration file for later editing or download to the product.
- Upload of the entire product configuration and the relevant setting data (Modbus Holding Registers) from individual devices and presentation of the data.
- Changing the values of settings in the product using Modbus protocol.
- A communication browse function is included so that the communication parameters of all iSTAT products connected to the PC can be identified.
- Real time monitoring of the attached product allows periodic reading and displaying of the measurement data.
- Comprehensive Help files are available within the software.

## 1.4 Communications

The iSTAT products can be fitted with a range of communications options, RS232, RS485, Ethernet and USB. Some products can also communicate using a memory card or Infra-red link. The **QDSP2** software can support communication via all of these options depending on what the PC has fitted.

## 1.5 QDSP2 Software Functions

The **QDSP2** has 5 main functions which are described in detail in later sections.

### 1.5.1 Devices Management

The communications parameters for any connected device can be modified. Also included are browsers which scan the communications networks attached to the PC and identify all of the devices connected with their addresses and communications parameters. This can be done on RS232, RS485, USB and Ethernet connections.

### 1.5.2 Instrument settings

The instrument settings are organized in a tree structure and they can be modified simply as required. In addition to transferring settings to the instrument, **QDSP2** can also store the data to settings files and read it back when required.

### 1.5.3 Real time measurements

All measurements can be displayed in real time in tabular or graphical form. Harmonics and their time-reconstruct signals are displayed graphically.

If further processing of the measurement data is required it can be copied via a clipboard and inserted into standard Windows formats.

### 1.5.4 Data Analysis

Analysis can be performed on the recorded data from those products with Trend recorders or Power Quality function. Recorded values can be displayed in a tabular or graphical form. The events that triggered alarms can be analysed or a report on supply voltage quality can be made. All data can be exported to an Access database, Excel worksheet or a text file.

### 1.5.5 Software upgrading

It is suggested that the latest version of **QDSP2** should always be used and if the system is also connected to the internet it will define if an upgrade is available for download.

## 2. INSTALLING QDSP2

### 2.1 Obtaining the software

The **QDSP2** software is available free-of-charge. Unlike the original QDSP 1.0 there is only one version of **QDSP2** and all features are available without requiring a license code.

The software can be downloaded from the Internet at:

<http://www.alstom.com/grid/products-and-services/Substation-automation-system/measurement-merging-gps/QDSP-setting-monitoring-and-analysis-software/>

Or can be downloaded as an upgrade from within **QDSP2** when connected to the Internet. It can be copied from a CD or other storage media and it is small enough to be emailed.

**QDSP2** is supplied as a zipped file, which after being downloaded must be unzipped into a temporary directory. The executable file will have a name similar to 'QDSP 2.1.0.01.exe'. All of the following instructions will be the same however the software is obtained.

### 2.2 Compatibility with 'Windows' versions

The **QDSP2** software has been designed to work with 'Windows XP' and 'Windows 7'.

The instructions in this manual which rely on the operating system are written using Windows XP; similar actions will be required if using Windows 7.

### 2.3 Installing the software

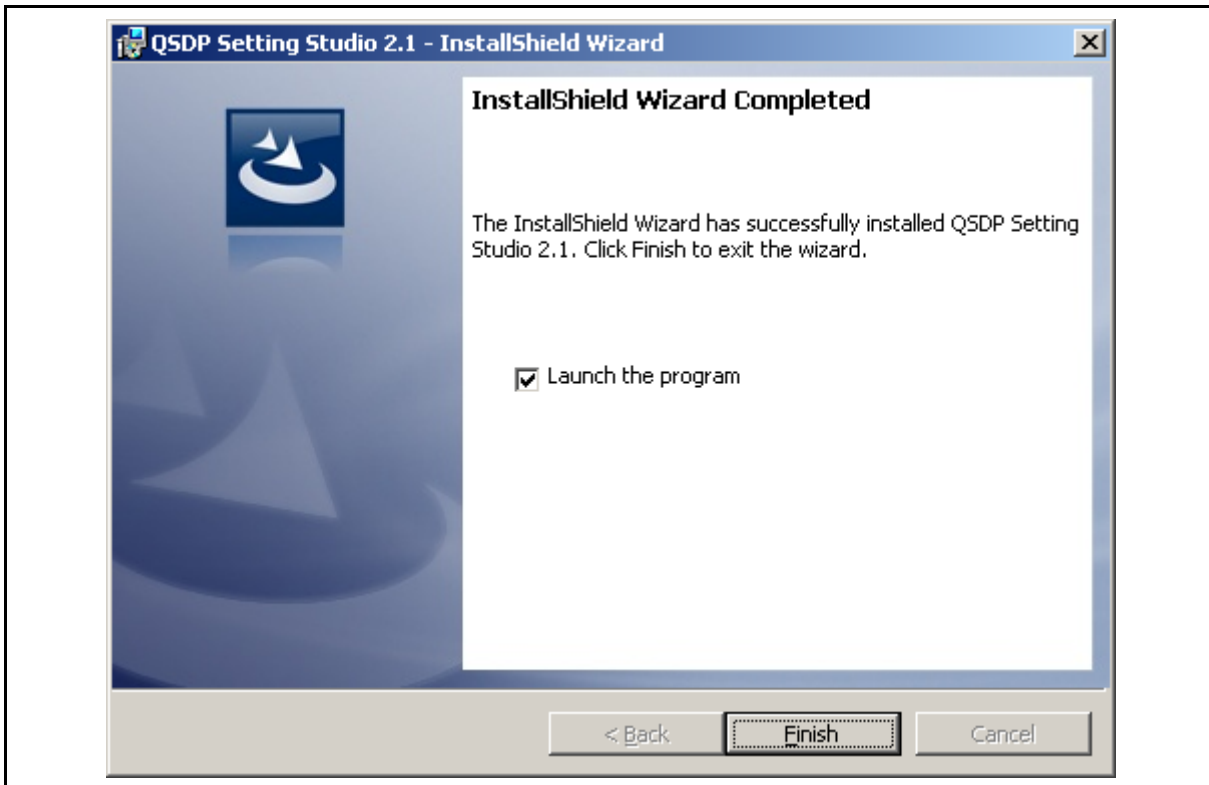
Before installing a new version of **QDSP2** any existing version of **QDSP2** (described as QDSP Setting studio 2.x) must be un-installed from the computer. It is not necessary to remove the original version of QDSP 1.0 which is installed in a different directory (by default) and which can coexist with **QDSP2**.

**QDSP2** is available in multiple languages, but the installation process is the same. The required language is selected from within the program after installation, see section 9.1.

To install the software double-click on the 'QDSP'....exe' file name, and the software will decompress itself and start the installation process by displaying the following screen.



Continue with the installation following the on screen instructions until the 'following screen is displayed. Click Finish to complete.



The installation program loads a shortcut for the **QDSP2** program on to the Desktop of the PC which can be used to launch the program when required.



### 3. COMMUNICATIONS SETUP

The **QDSP2** software can communicate with the iSTAT products via IR, RS232, RS485, USB and Ethernet. The option used will depend on which communication port is fitted to the product.

The **QDSP2** software always uses Modbus protocol to communicate with the product.

#### 3.1 Serial Communications

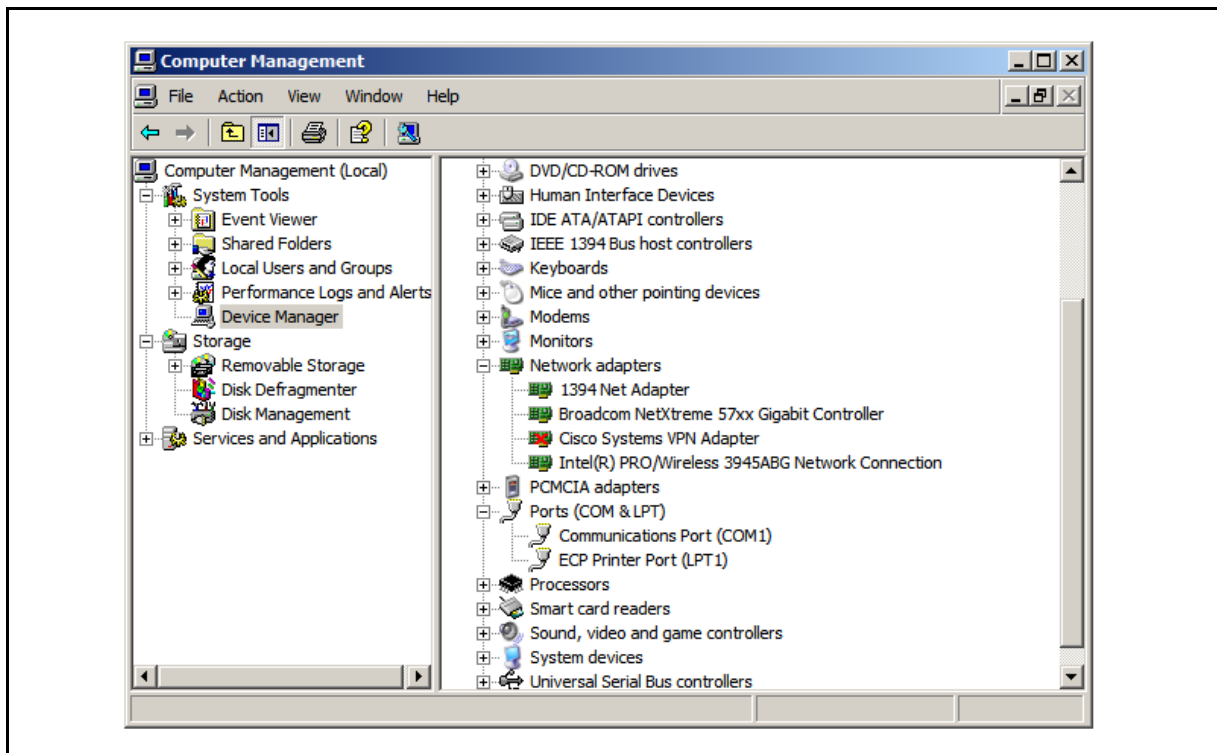
RS232 and RS485 communications are grouped in the **QDSP2** software as Serial Communications. The **QDSP2** interface is the same, but the hardware interface on the PC could be different.

##### 3.1.1 RS232

The PC that is running **QDSP2** can either be fitted with a dedicated RS232 port or it may have to use a USB to RS232 converter.

If a USB to RS232 converter is being used then it needs to be installed as defined in its instructions using the installation files supplied with the converter. The converter will be installed on a 'COM' port on the PC and the COM port number needs to be known to set up the link within **QDSP2**. It is important that the converter is always plugged into the same USB port that it has been installed in or it may not work.

If the COM port number on the PC is not known this can be identified, but if a USB to RS232 converter is to be used it must be plugged in. To find the COM port being used right click with the mouse on the 'My Computer' ICON on the Desktop and select <Manage> to get the 'Computer Management' screen. Select <Device Manager> and 'Ports (COM & LPT)



A RS232 port will show as 'Communications Port' and the USB to RS232 converter will be identified along with its installation COM port.

### 3.1.2 RS485

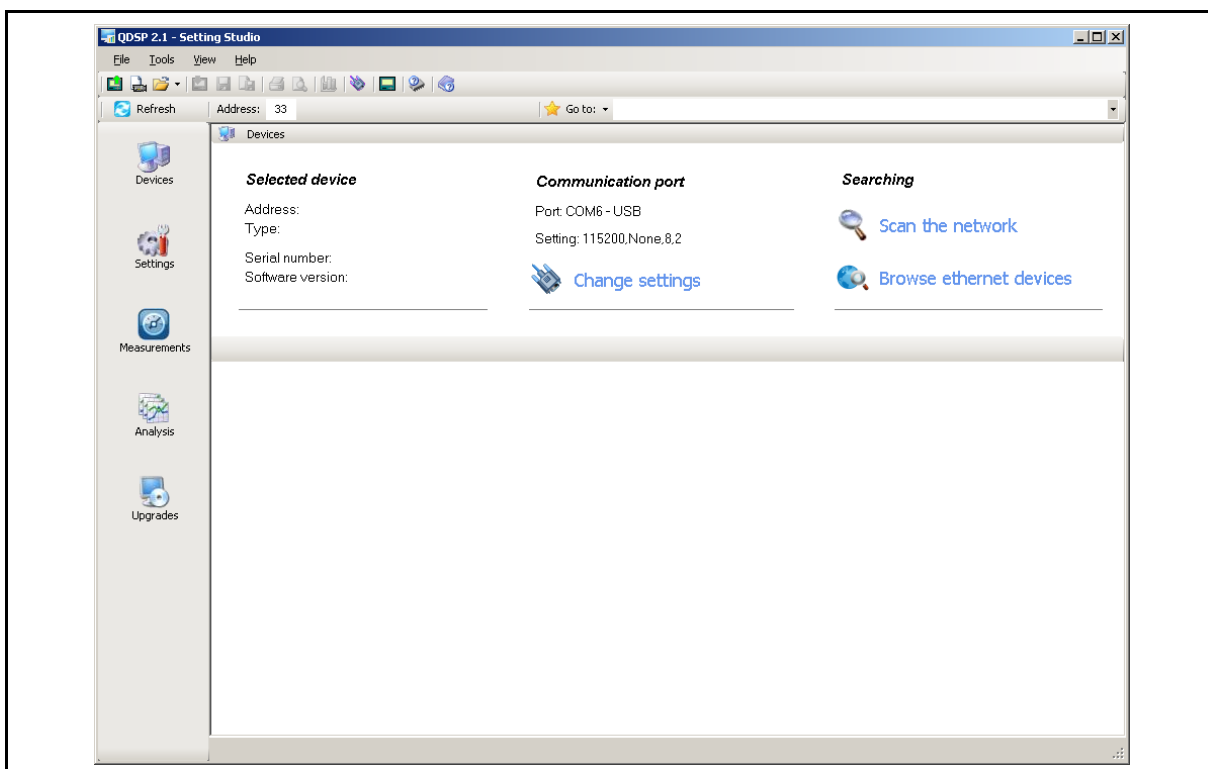
Portable PC's usually cannot be fitted with RS485 ports; therefore an interface converter is required. This can be either an external RS232 to RS485 converter or a plug in USB to RS485 converter. It is suggested that a USB to RS485 converter is used as this can power itself from the USB port.

If an external RS232 to RS485 converter is used, there will be no installation required and the operation will be the same as for a RS232 port.

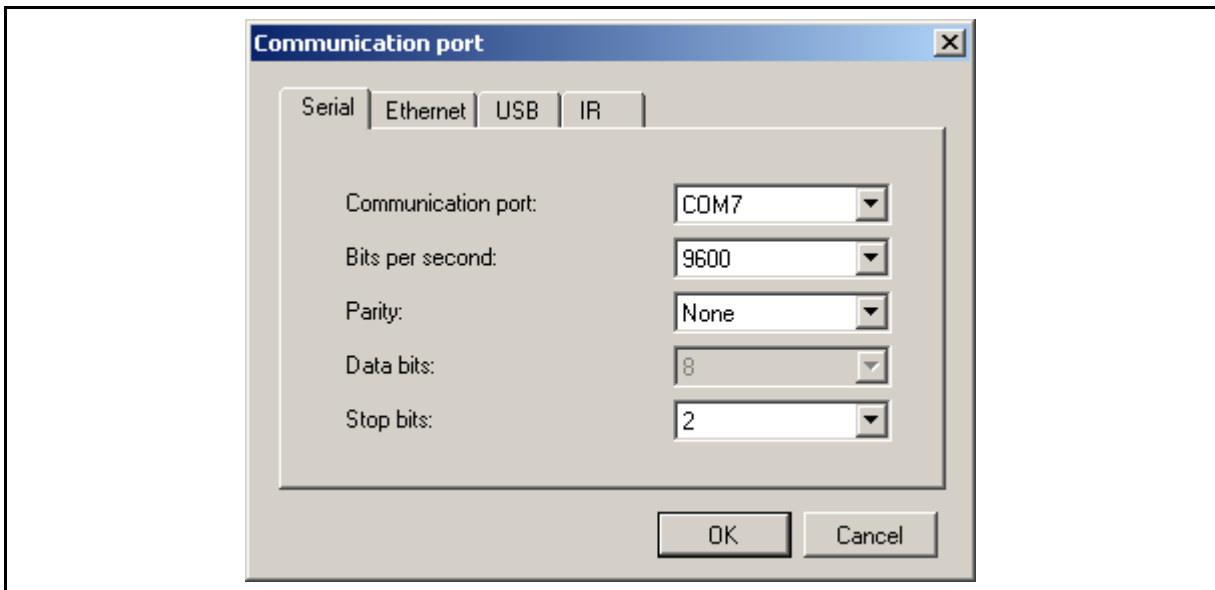
If a USB to RS485 converter is used, it is installed in the same way as for the USB to RS232 converter and the COM port number is obtained in the same way.

### 3.1.3 Communications port setup

When the **QDSP2** software is loaded the 'Devices' page is displayed, this can also be selected by clicking on the 'Devices' icon.



The Communications port setup is accessed by selecting 'Change settings' from the 'Devices' page and the following window is opened.



#### 3.1.4 Serial Port Setup

The Serial Port setup is accessed by selecting 'Change settings' from the 'Devices' page and then selecting 'Serial' as shown above.

**Note: If a USB to RS232 or RS485 converter is used the communication port settings for Serial must be configured; QDSP2 is communicating serially. The USB configuration must not be used; this should only be used for a direct USB connection when the product is fitted with a USB port**

The COM port number being used should be defined along with the communications port settings for the iSTAT product connected. It is necessary that the communications settings of the PC match those of the product attached, if they are not known then they can be found using 'Scan the Network' (section 9.2).

**Note: QDSP2 can only operate with COM1 – COM32, if the computer assigns a COM number outside this range to the communications link then it will have to be re-assigned to a COM number in the range via Device Manager.**

#### 3.2 USB

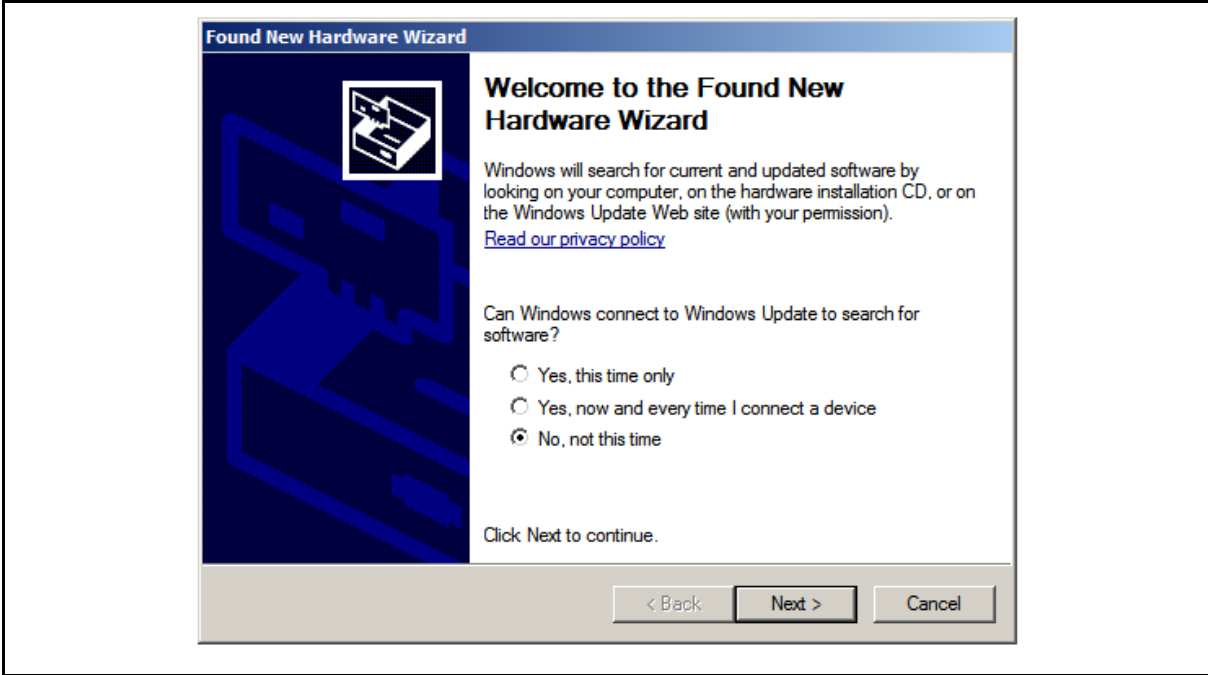
For those products that are supplied with a USB interface, direct communications via USB can be used. Before communications can be started the iSTAT product needs to be installed on the PC as a USB device. This installation is done for a specific USB port and the product must be connected to this port each time it is connected. If it is required that the product should communicate via any available USB port it needs to be installed on all of them.

The products in the iSTAT range use more than one type of USB connector, for details of the connector type, and therefore USB cable type, see the product or its documentation.

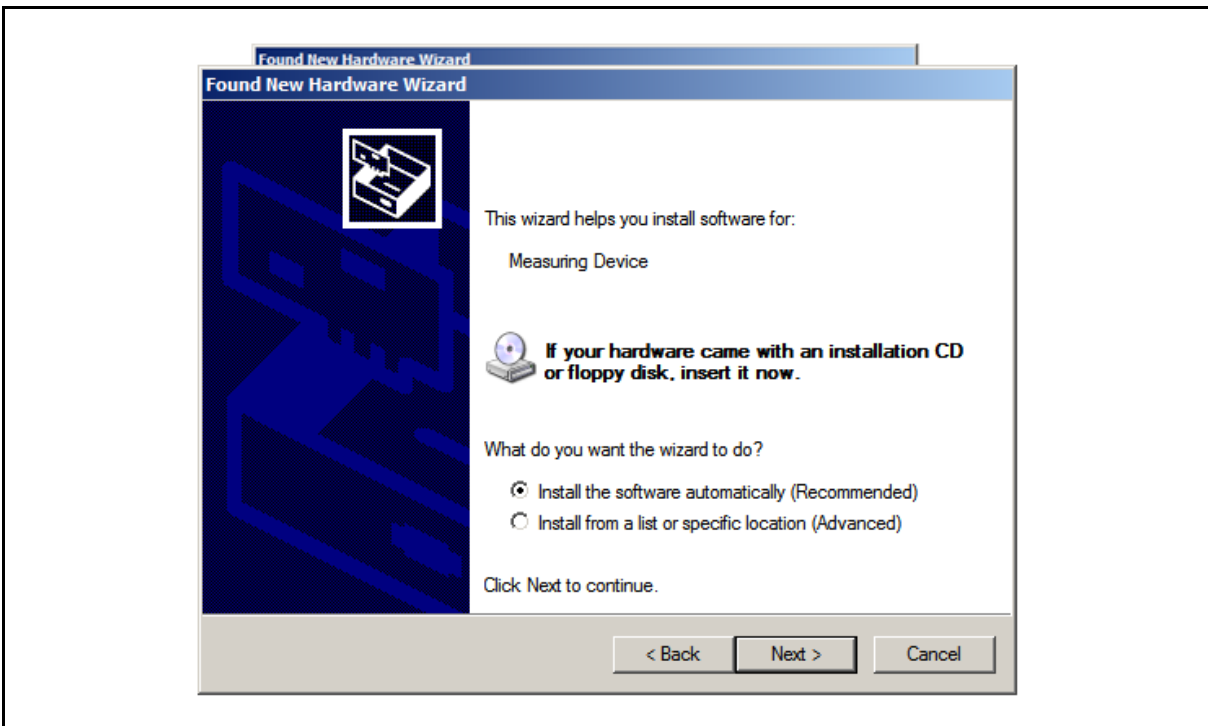
3.2.1 Installing the USB driver

The **QDSP2** software must be installed on the PC as the USB driver required is included. The following installation is described for Windows XP; the equivalent installation process should be followed for other operating systems.

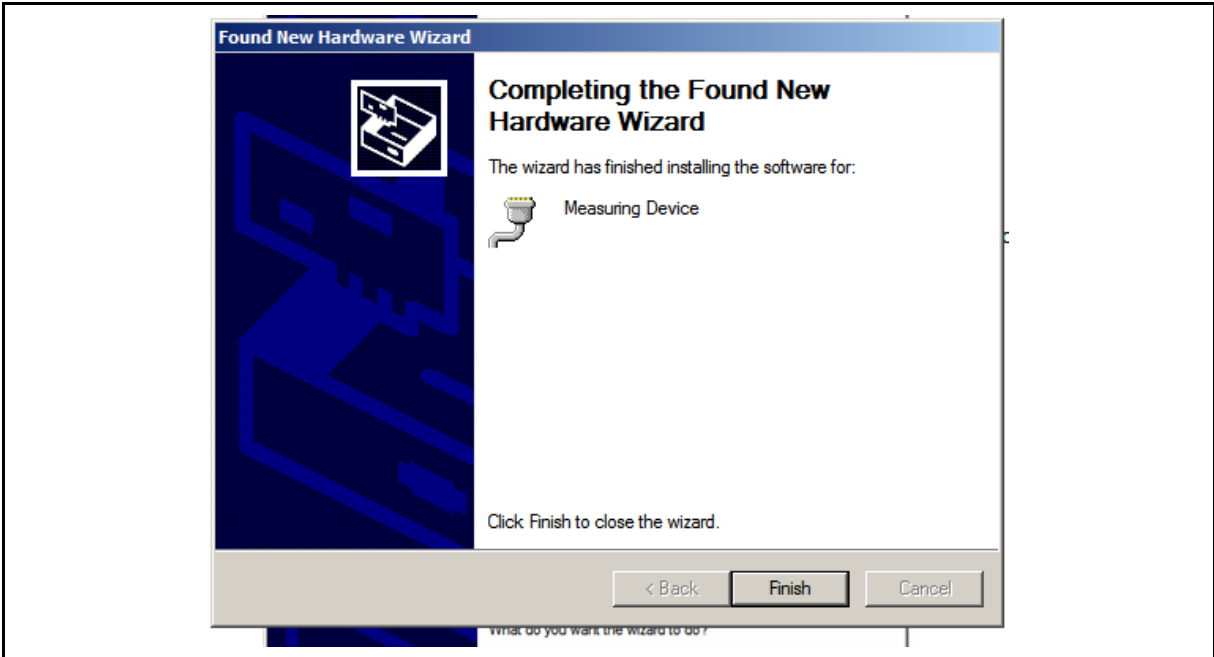
Plug in the product to the required USB port and the PC should report that it has found a new USB device which is defined as 'Measuring Device'. The 'Found New Hardware' wizard will appear and 'No, not this time' should be selected.



Then the following screen is shown and the 'Install the software automatically' option should be selected.

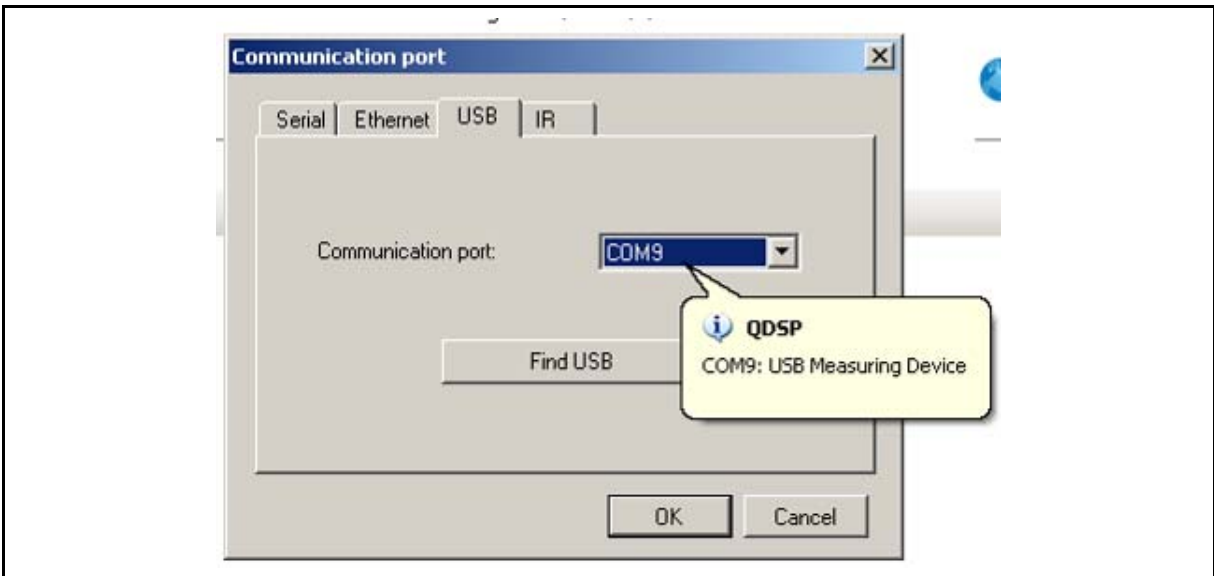


The software will now be installed which could take some time and then the completion screen will be displayed.



### 3.2.2 USB Port setup

The USB Port setup is accessed by selecting 'Change settings' from the 'Devices' page and then selecting 'USB' as shown below.



When 'Find USB' is selected the software will report which USB COM port is connected to an iSTAT product, as shown above. The balloon message will only remain for a few seconds. The USB COM port reported as connected to the iSTAT product will be loaded as 'Communication port', press 'OK' to continue.

**Note: QDSP2 can only operate with COM1 – COM32, if the computer assigns a COM number outside this range to the communications link then it will have to be re-assigned to a COM number in the range via Device Manager.**

### 3.3 Ethernet

When using the **QDSP2** over Ethernet the set-up will depend on how the PC and the product are connected. The Communication interface must have a unique IP address in the Ethernet network. Two modes for assigning IP are available:

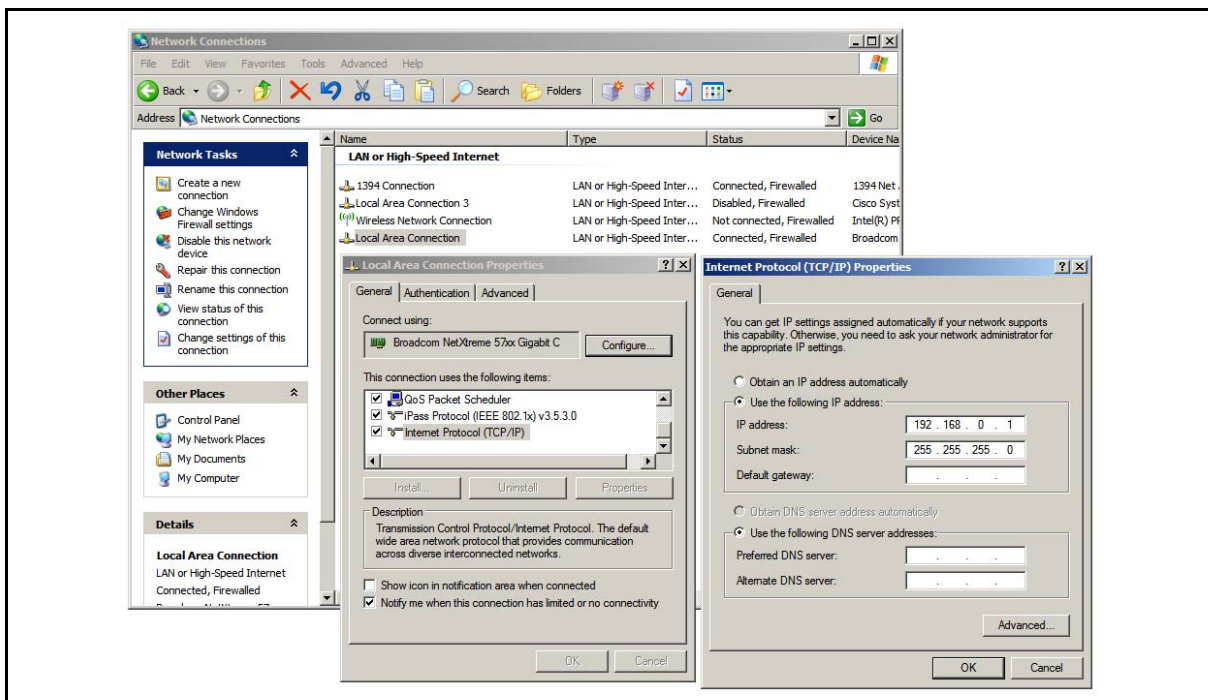
**Fixed IP address:** In most installations a fixed IP address is required. A system provider usually defines IP addresses. An IP address should be within a valid IP range, unique for your network and in the same Subnet mask as your PC.

**DHCP:** Automatic method of assigning IP addressed (DHCP) is used in most networks. If you are not sure if DHPC is used in your network, check it with your system provider.

#### 3.3.1 Using Fixed IP address

When the PC is directly connected to the Instrument a Fixed IP address will have to be used with the PC configured in the local area connection. If the connection is made without a Hub or Switch, the connection has to be made with a Crossover Ethernet cable.

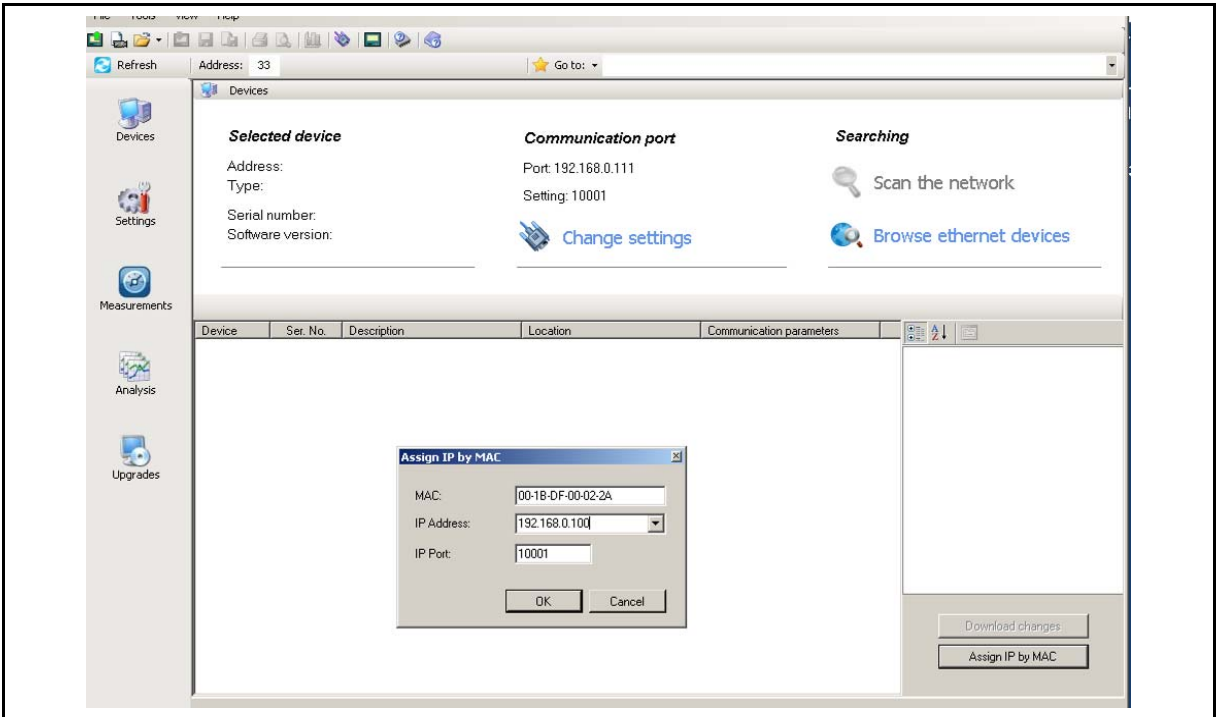
To set the PC for local area connection, go to <Settings><Network Connections> then highlight the Local Area Connection, select 'Internet Protocol (TCP/IP)', right click and select 'Properties'. Select 'Use the following IP address' and define an IP address, it is suggested that it is set to 192.168.0.1., the Subnet mask will be set automatically. Click 'OK' to close the windows and setup the PC.



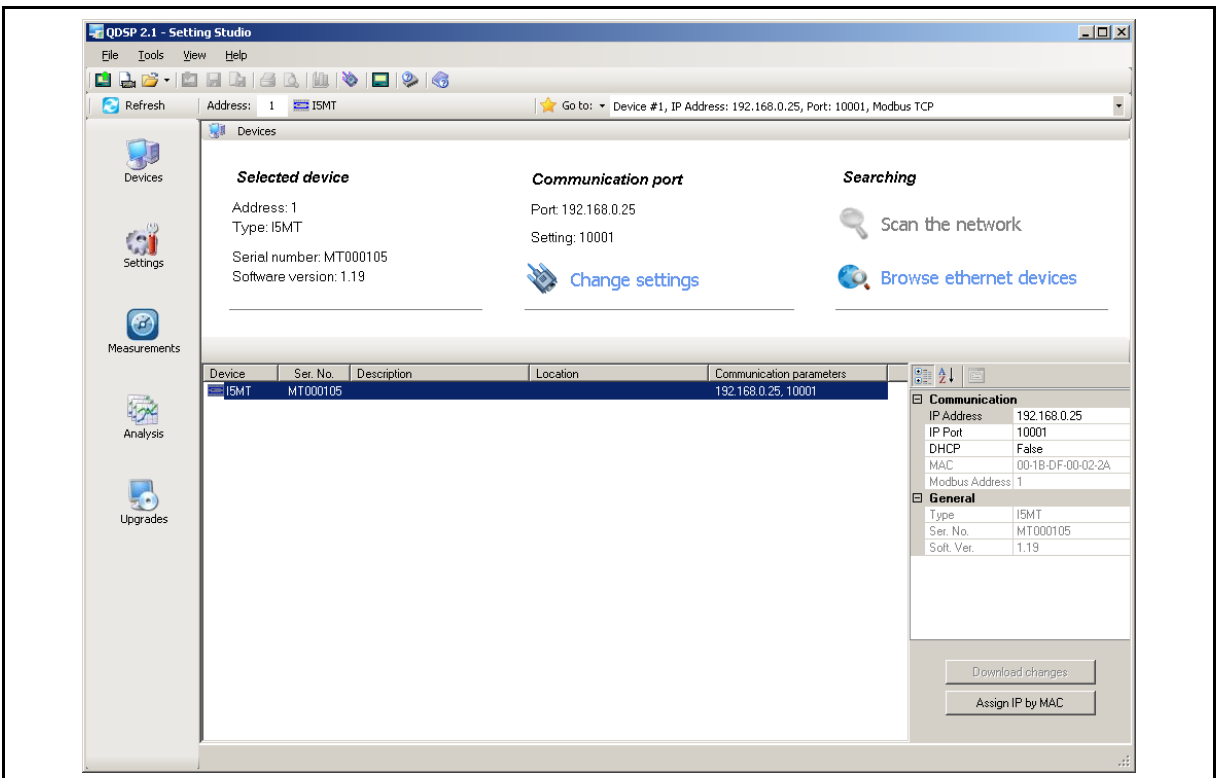
With the PC set to Local Area Connection and the device connected it is necessary to set an IP address in the device. Using the 'Browse Ethernet Devices' function (section 9.4) the product will not be found unless it has been previously assigned an IP address in the required range.

On most iSTAT products fitted with an Ethernet port a USB port is also provided. The USB port should be used to set up the Ethernet communications parameters. Also the IP address can be set manually on products with a keypad and display.

Where it is not possible to set up the Ethernet via a USB connection or using a keypad, the required IP address can be set by selecting 'Assign IP' and enter the unique MAC address of the product, this will be found on the connection label on the side of the product. Then select 'IP address' and input an IP address in the same range as the PC, e.g. 192.168.0.10. After clicking 'OK' the product must be powered down and then restarted to complete the change of the IP address



Once the IP address has been set-up in the required range, 'Browse Ethernet devices' can be used to find the product.



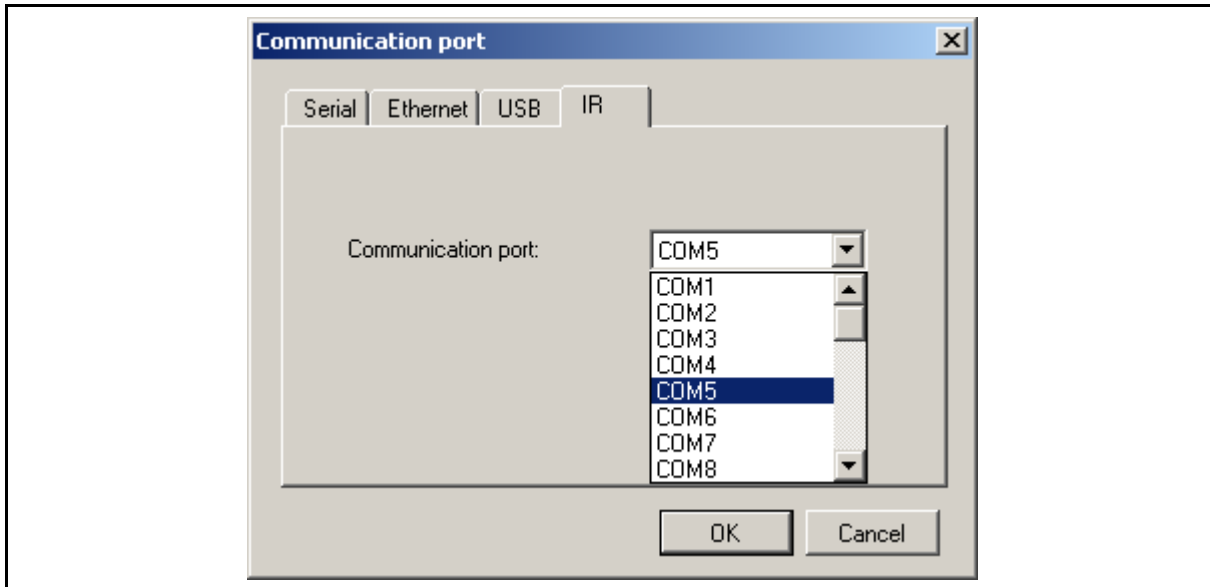
By double clicking on the device identification for the product of interest the product identification and communication settings will be shown on the right hand side. The communication settings should also have been loaded in to QDSP2 ready to set up direct communication with the device.

### 3.4 IR – Infra-Red

The Infra-Red (IR) communications device can be used with the M241 Measurement Centre with logger and requires the IR interface to be ordered separately.

The IR interface is connected to a RS232 port; see section 8.1.1 to find how the COM port number is identified.

The IR Port setup is accessed by clicking <Devices><Communication port setting><Change Settings> or <Tools><Communication port setting> and selecting the required COM port.



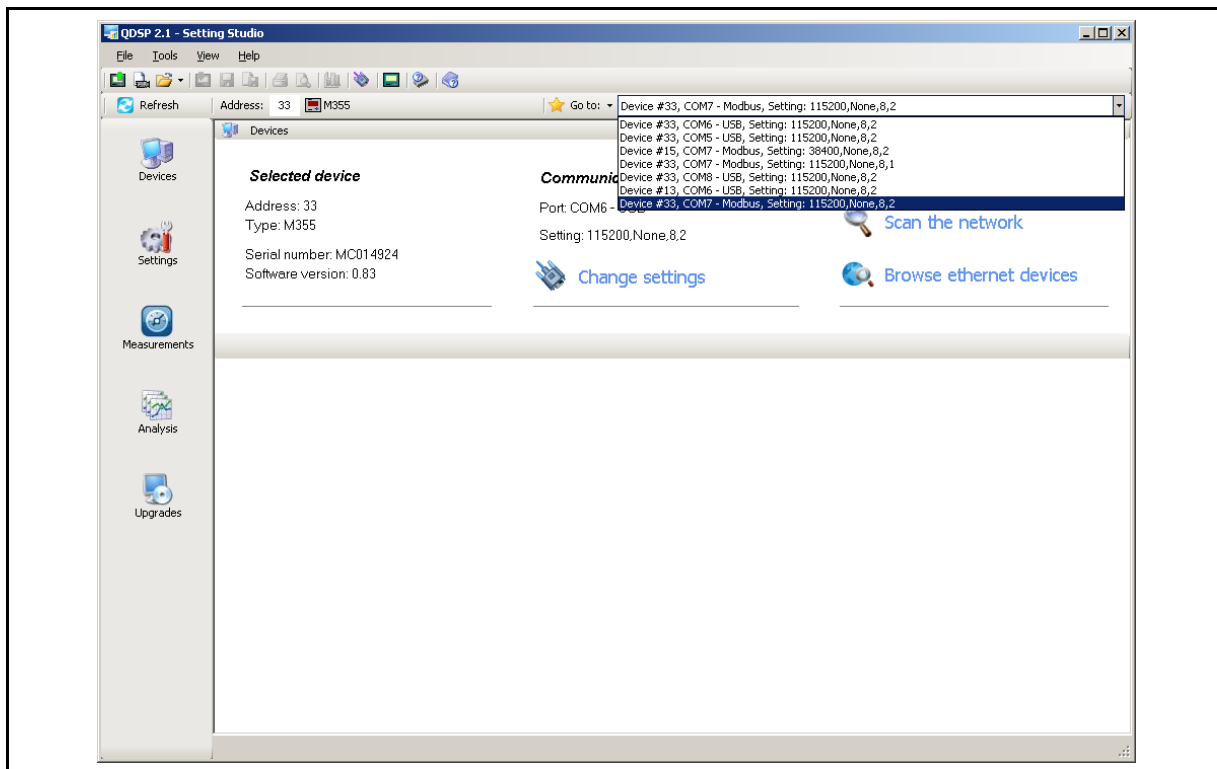
No other communications settings need to be defined.

**Note:** QDSP2 can only operate with COM1 – COM32, if the computer assigns a COM number outside this range to the communications link then it will have to be re-assigned to a COM number in the range via Device Manager.



## 4. DEVICES MANAGEMENT

When the 'Devices' icon is clicked the following screen is seen.



The Selected device is shown that is currently being communicated with. Details of devices in the Favourite devices list are shown in the drop down menu to the right of the 'Go to' button. They are obtained by clicking on the down arrow symbol at the right of the selected device details. From the list quick changes can be made between devices.

In addition are options to change the Communication port settings and to Search for connected devices by either Scanning or Browsing.

### 4.1 Favourite devices

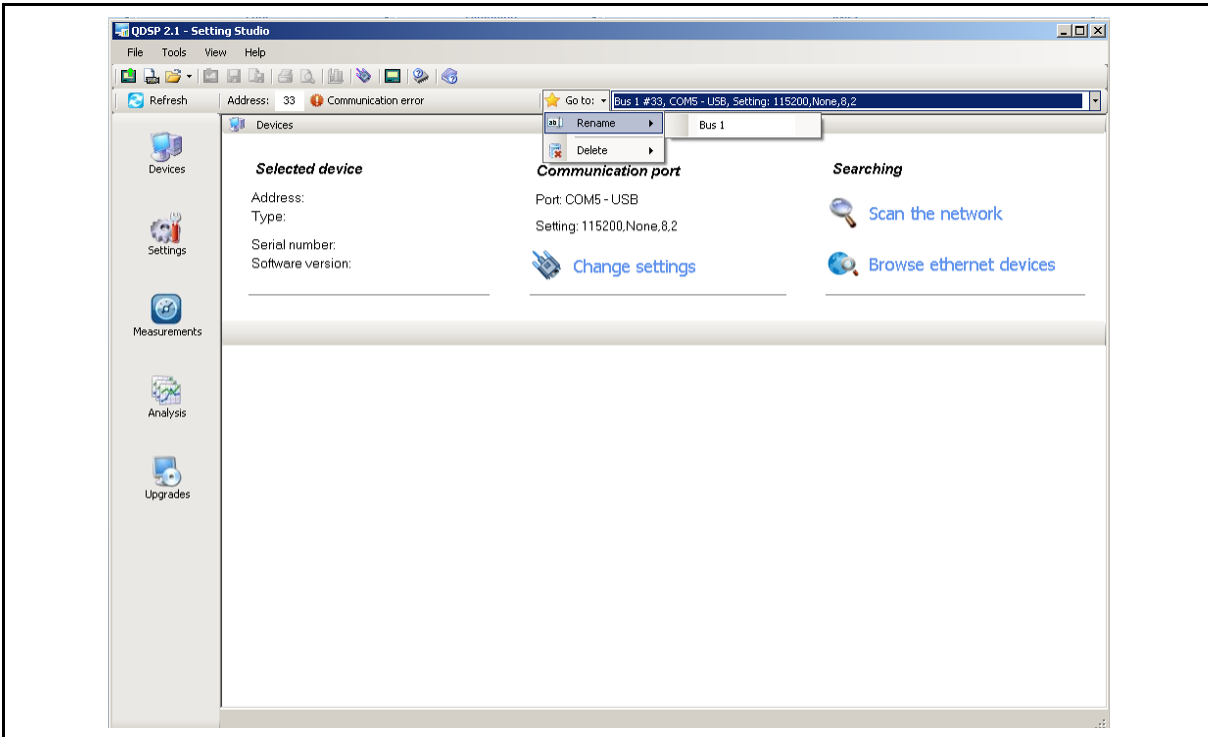
It is possible to record the communication settings for any of the instruments that are commonly connected to. These are shown in the drop down list above.

All connections where the communications have been successful are stored in the list, but those that are no longer required can be removed. To make the settings meaningful, they can be edited to give a Connection name that relates to the application, see below.

To edit a 'Favourite' select the required entry so that it is in the window, highlighted as shown below. Then click the down arrow to the right of 'Go to' to get the options to rename or delete the entry.

When the required renaming or deletion is complete click anywhere on the screen or use the 'Esc' key to return to the main screen.

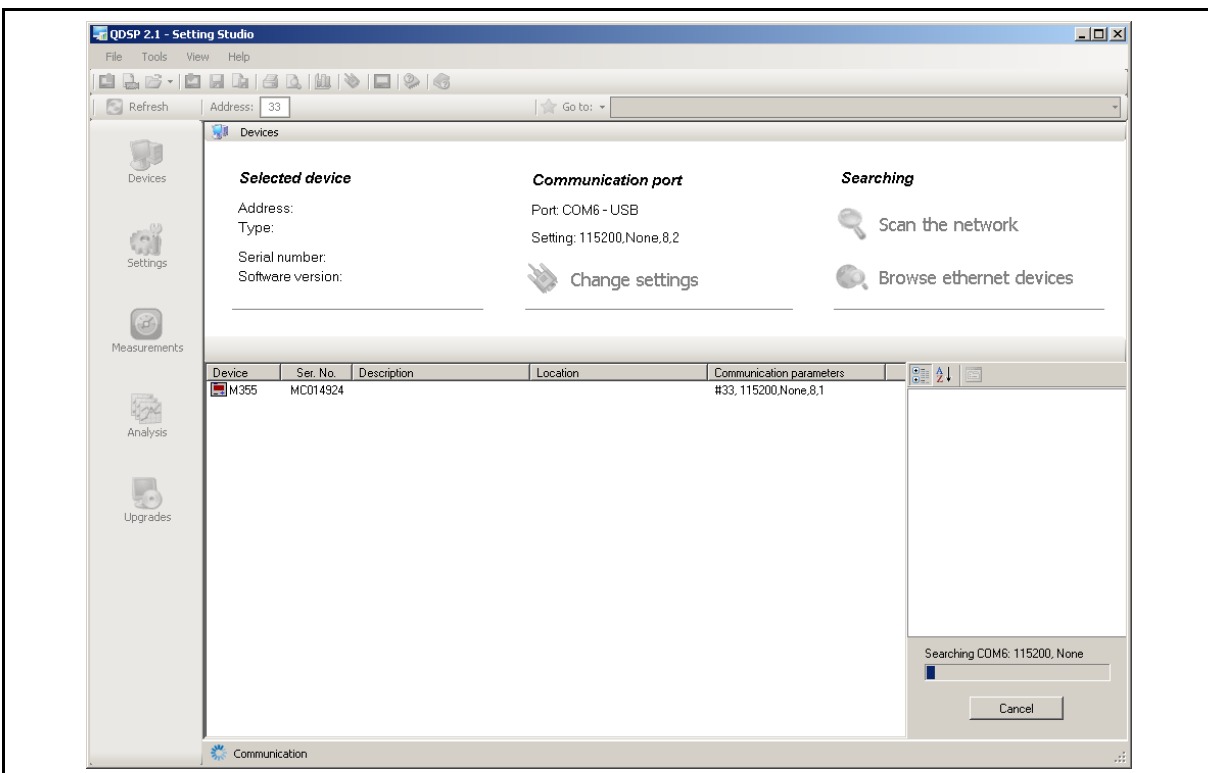
The renamed 'Favourites' will appear in the 'Go to:' list to allow different devices to be selected quickly by name.



### 4.2 Scan the Network

When **QDSP2** is first connected to an instrument or a network of instruments the communications settings and device addresses will probably not be known. By using 'Scan the network' from 'Devices' the information for all connected devices can be obtained.

For 'Scan the Network' to operate the communications port type, Serial or USB (not Ethernet) and COM port number must be selected using 'Change settings' before attempting the scan. The Scan will find the device addresses and detailed port settings.



For serially connected devices the scanner will interrogate all combinations of communications setting to identify what devices are connected. If nothing is found on the first attempt check to ensure that the correct COM port number is defined and then click on the 'Scan the network' icon as shown.

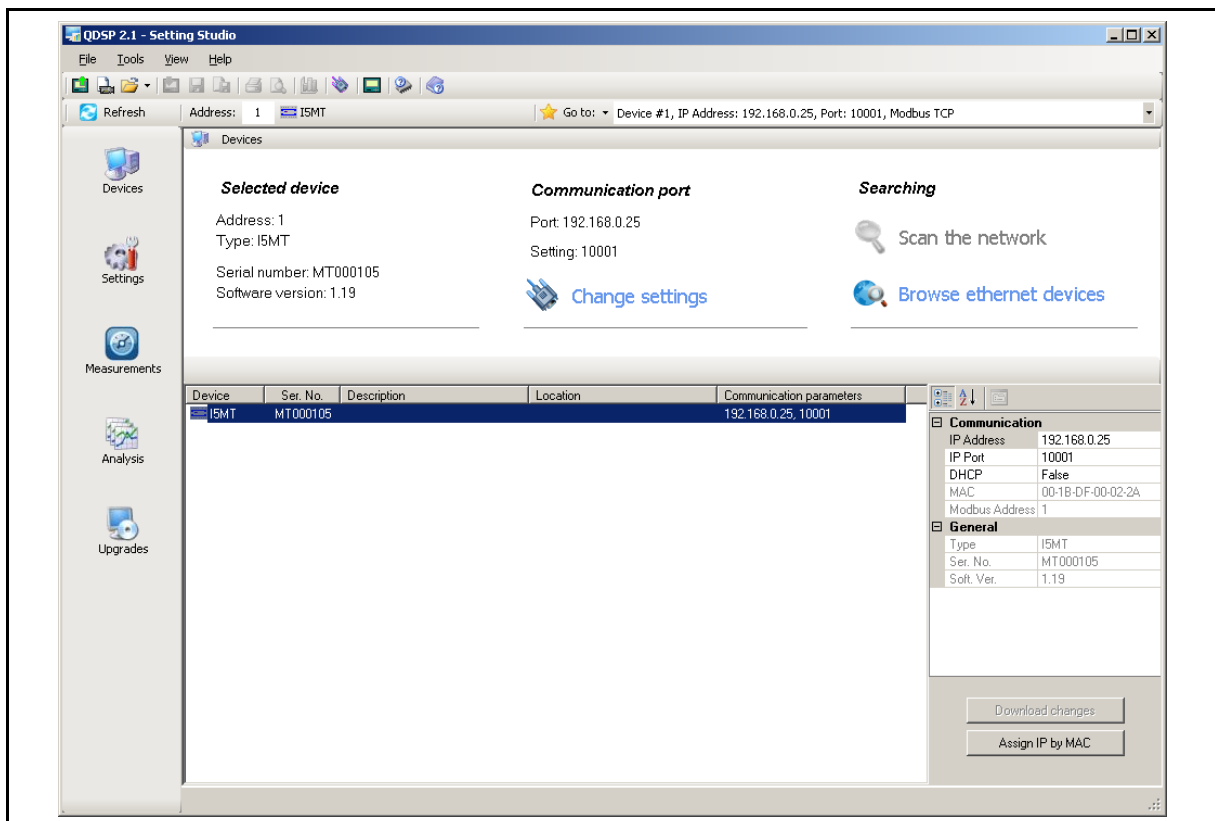
**Note: If a USB to RS232 or RS485 converter is being used then the communication type must be selected as 'Serial'. 'USB' should only be selected when a direct USB connection is being used to a USB port on the product connected.**

For a product connected directly using USB the scan is done in a similar way as for serially connected devices with 'Port' set to the COM port number of the USB connected instrument.

By double clicking on the device identification for the product of interest the product identification and communication settings will be shown on the right hand side. The communication settings should also have been loaded in to **QDSP2** ready to set up direct communication with the device.

### 4.3 Browse Ethernet devices

When working with Ethernet connected devices 'Browse Ethernet devices' can be used to find all those devices connected which have a valid IP address. If a device is not found then its IP address may be outside the valid range.



By double clicking on the device identification for the product of interest the product identification and communication settings will be shown on the right hand side. The communication settings should also have been loaded in to **QDSP2** ready to set up direct communication with the device.

## 5. SETTINGS

### 5.1 Introduction

In order to modify the settings with **QDSP2** the current parameters must be loaded first. Instrument settings can be acquired via a communications link or they can be loaded off-line from a file on a local disk.

The **QDSP2** contains sample settings files for each product variant that can be downloaded to show the range of settings available for the specific product. Being able to modify the sample setting file is a very powerful tool as it allows configuration options to be checked without a product being purchased. Any combination of settings and their values that the software allows should be reproducible in a product ordered with the same hardware configuration.

These files can be modified and then stored under a different name allowing an instrument configuration to be generated off-line without an instrument attached, and downloaded at a later date.

The list of settings can be printed if required.

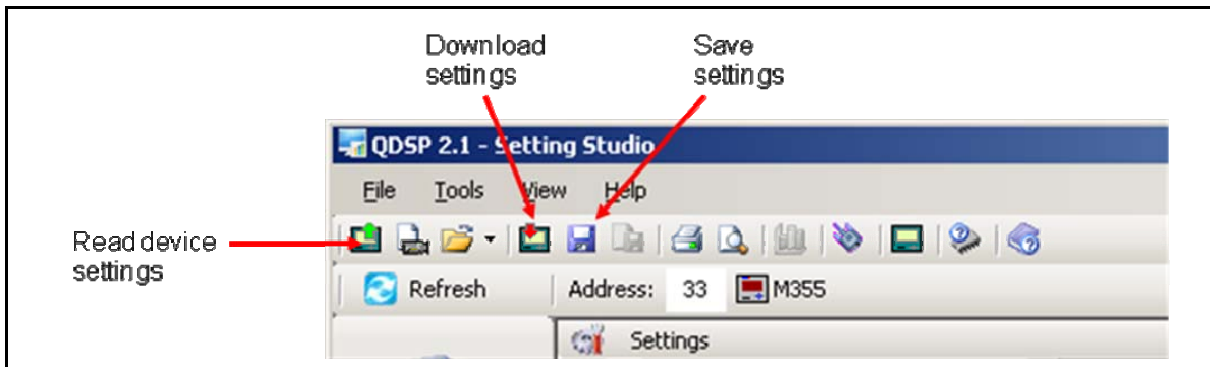
#### 5.1.1 Working On-line

When the communication links with the products have been established the settings for any of the products can be downloaded by changing the address and pressing 'Read device settings'.

The complete hardware configuration of the device is uploaded along with the current settings for all parameters. The hardware configuration of the product is fixed and if changed in **QDSP2** it can not be downloaded to the product (see Working Off-line).

The parameters can be changed on the screen and when required these are downloaded to the product by pressing the 'Download settings'.

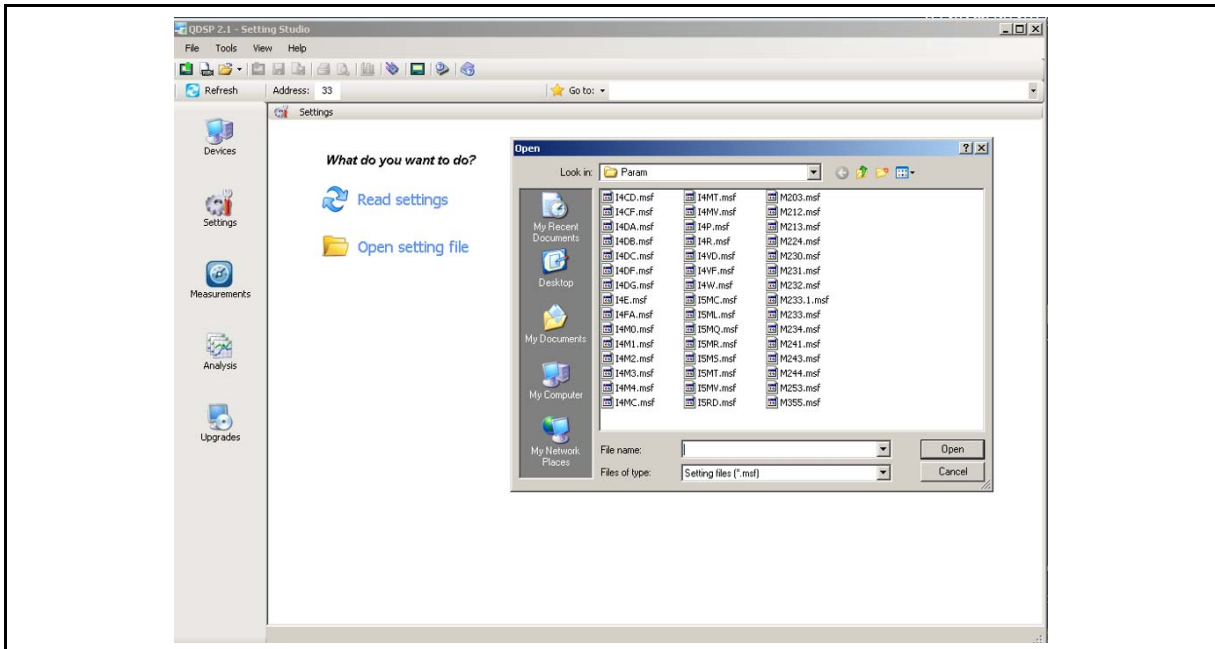
The settings can be saved to a file using 'Save settings'.



### 5.1.2 Working Off-line

To work Off-line no product needs to be attached to the PC; instead a stored configuration file can be used.

To load a standard sample configuration, select 'Settings' in the left hand ICONS, then 'Open setting file' to get the list of product files from which the required file can be selected.

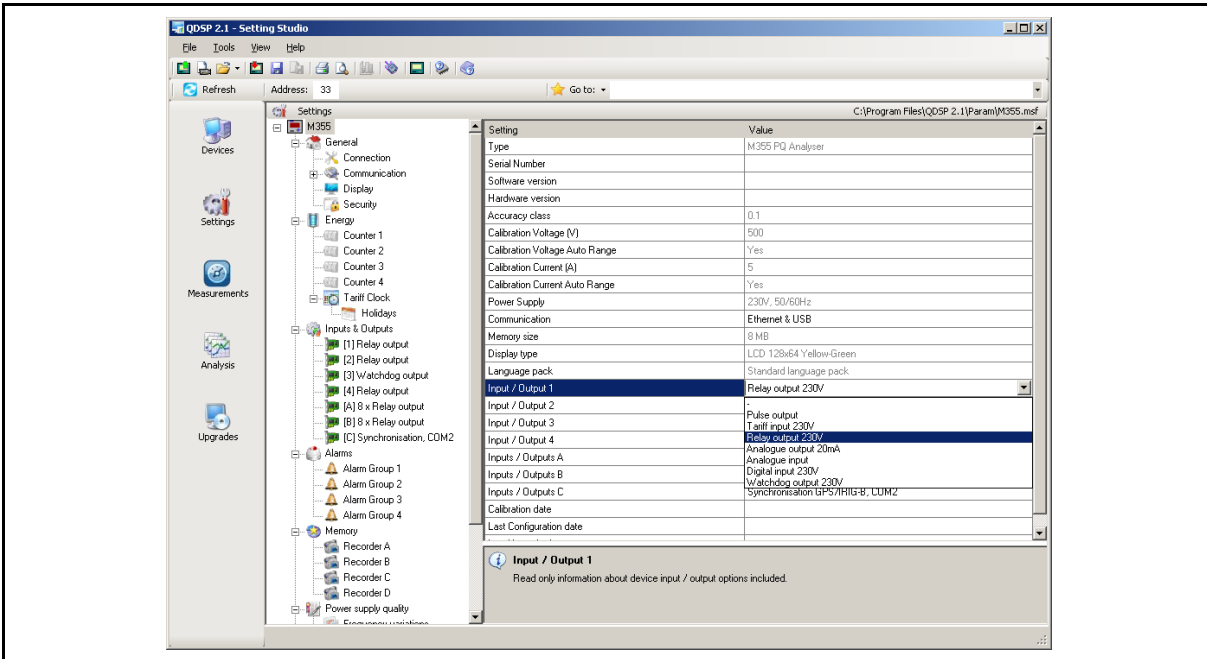


If a configuration file specific to an application has been stored previously it can be accessed in the same way, but the directory to be looked into may have to be changed.

To change the settings file that is being looked at Off-line without shutting **QDSP2** down then go to <File ><Open>.

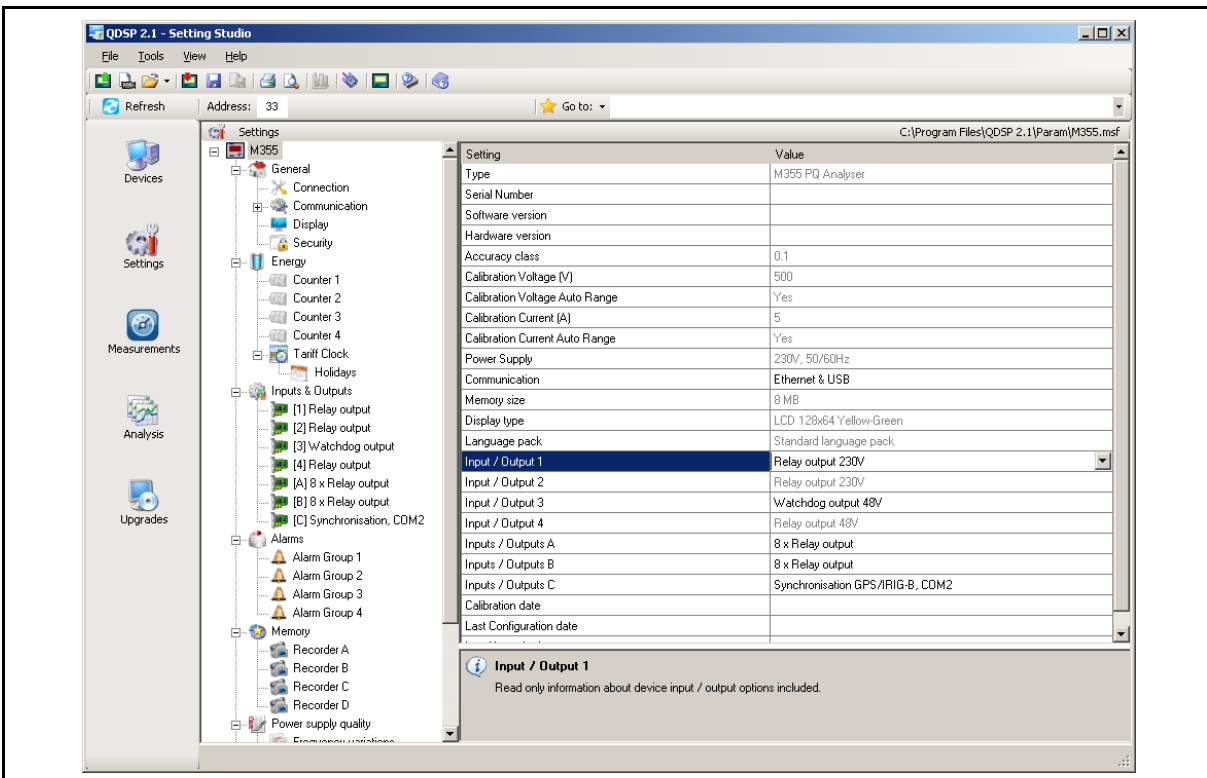
The configuration file will define a set of communications and I/O modules fitted to the device. If the hardware I/O modules shown do not meet the requirements and it is necessary to look at their configuration then they can be changed. To be able to modify the hardware configuration defined in the file it is necessary that the configuration file has a file name different to that of the default file for the product.

The hardware configuration for the device is shown on the settings page obtained when the product identification, i.e. M355, is highlighted. To change the hardware setting for the communications or I/O modules select the required option from the drop down menus, as shown below.



### 5.2 QDSP2 Interface

Product configurations and settings are displayed in the QDSP2 setting window.



The left part displays a hierarchical tree structure of setting sections available for the product and can vary in length from three sections to a list that more than fills the window. For the same product type the length of the tree can vary due to the hardware build options selected.

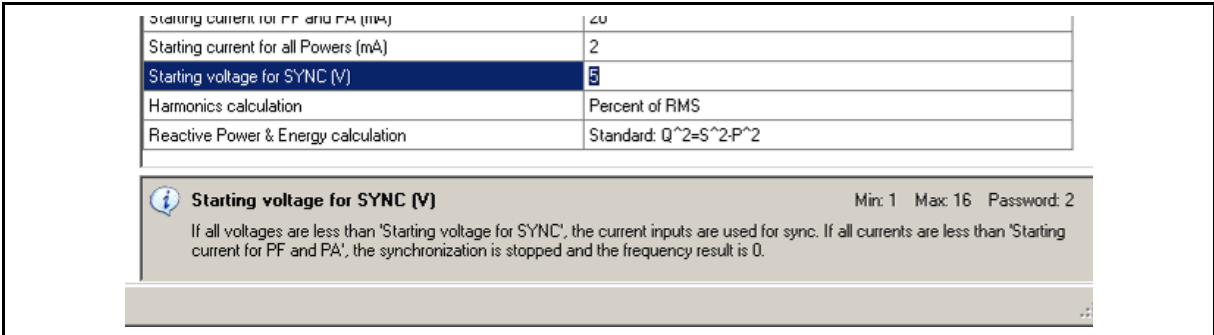
The right hand part displays parameter values of the chosen setting group.

Parameter values which are shown in grey text cannot be modified; those in black text can be modified.

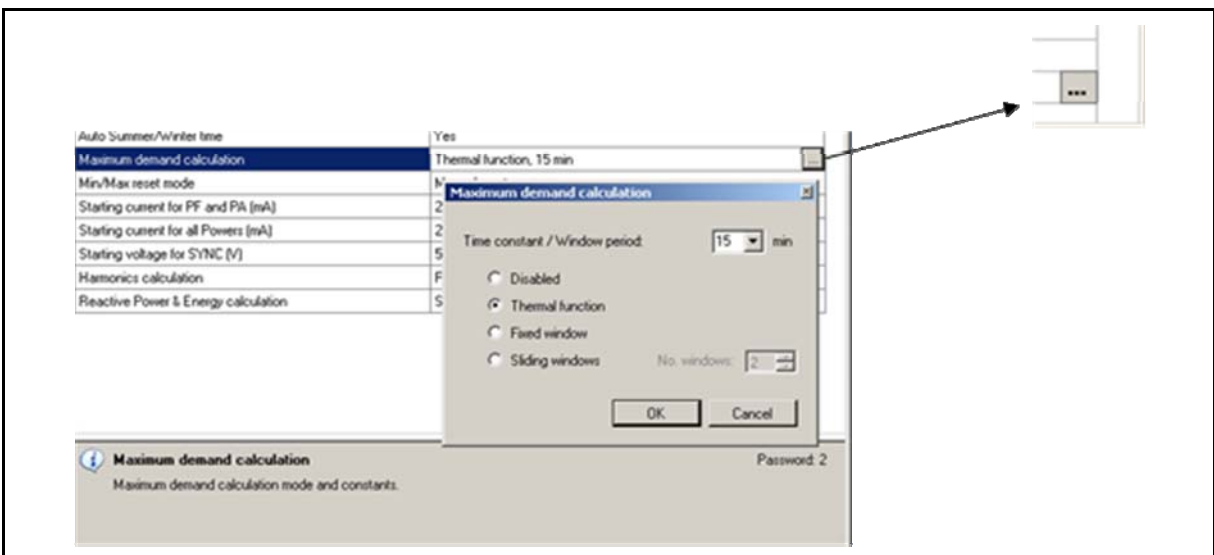
Parameter values are changed in one of three ways, which are indicated when the parameter setting description or value are clicked. The setting name will be high-light and if

the value can be changed, either the value will be highlighted or a symbol will be displayed at the right of the value display.

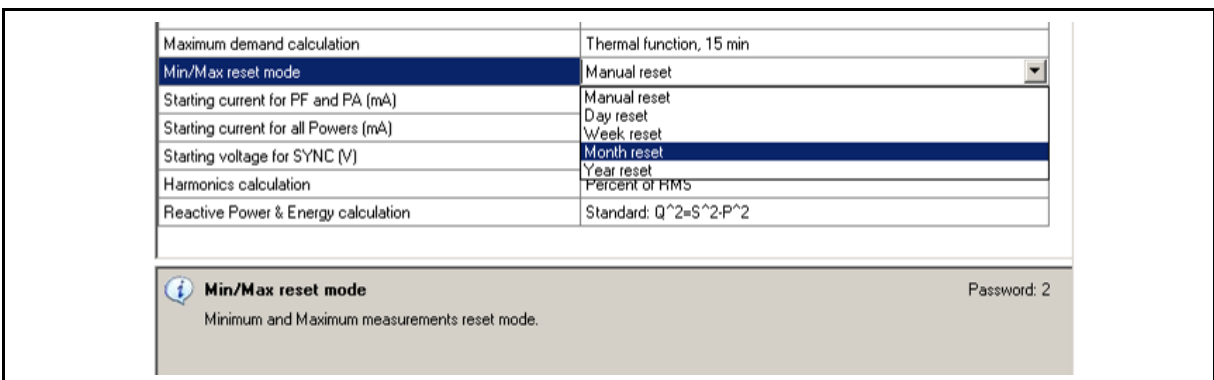
If the value is highlighted the new value can be directly typed in for the parameter. The allowable range of values is shown in the 'help' text at the bottom of the window, as shown below.



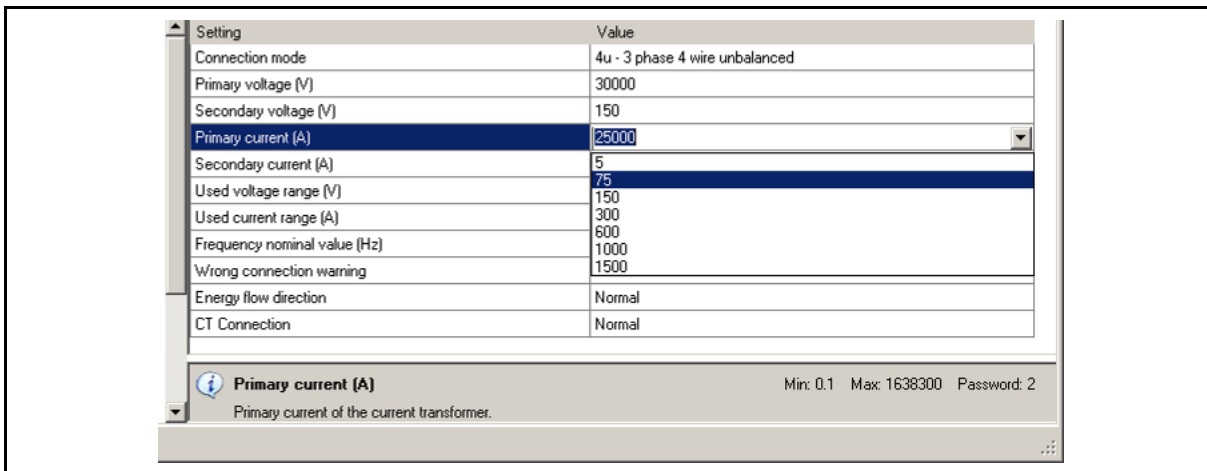
If a grey square with 3 dots appears at the right hand side of the value. Click on the grey square and the settings window will open for the parameter



If a 'down arrow' appears at the right hand side of the value, click on the arrow and the options available will be displayed, as below. Click on the required option to select.



It is also possible to have a combination of a drop down menu and a highlighted value. In this instance one of the displayed options can be selected or an alternative value can be directly typed in. The allowable range of values is shown in the 'help' text at the bottom of the window, as shown below.



Any value that has been modified will be shown in blue text, this will be cleared after the settings are downloaded to a product or the settings are stored to a file.

### 5.3 Product details

By clicking on the product name at the top of the hierarchical tree all of the details for the product will be displayed. If the data is for an actual product the manufacturing configuration is displayed allowing the product details and hardware option list to be read.

### 5.4 General Settings

General Settings are essential for the operation of the measuring transducer. The settings are divided between the General section and four additional sublevels, Connection, Communication, Display and Security.

For different products some of the sub-levels will be omitted, i.e. for transducers, Display will be omitted as no display is fitted as standard.

#### 5.4.1 Connection

The settings for the connection mode, CT, VT etc are defined. The setting of the connection parameters must reflect the actual application or the measurements will not be valid.

#### 5.4.2 Communication

The settings displayed depend on the hardware options on the specific instrument connected or the settings in the specific settings file that is being worked on off-line.

For some of the products with simple communications capability the communication settings are displayed in the General section.

#### 5.4.3 Display

The settings allow the display visibility and parameter display sequence to be defined.

#### 5.4.4 Security

The settings for the password system can be accessed.

### 5.5 Energy

The parameters defining the energy measurement and totalising can be modified. After modifications have been done the energy meters must be reset or all subsequent energy measurements will be incorrect.

### 5.6 Inputs and Outputs

The number of I/O modules shown depends on the product and how many of the optional modules have been selected. The settings displayed will depend on the type of I/O module built in to the instrument or defined in the settings file if working off-line.

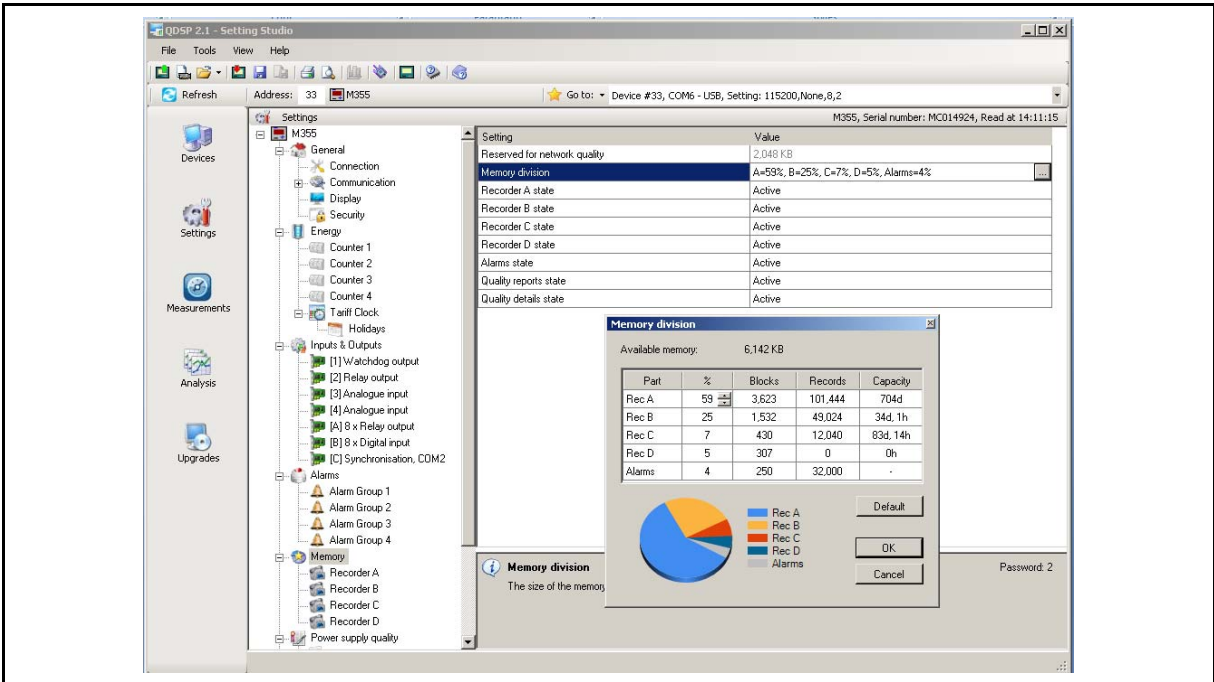


### 5.7 Alarms

The Alarms section will only be displayed if the product has alarm capability. Specific products can have software alarm capability without having hardware output alarms fitted.

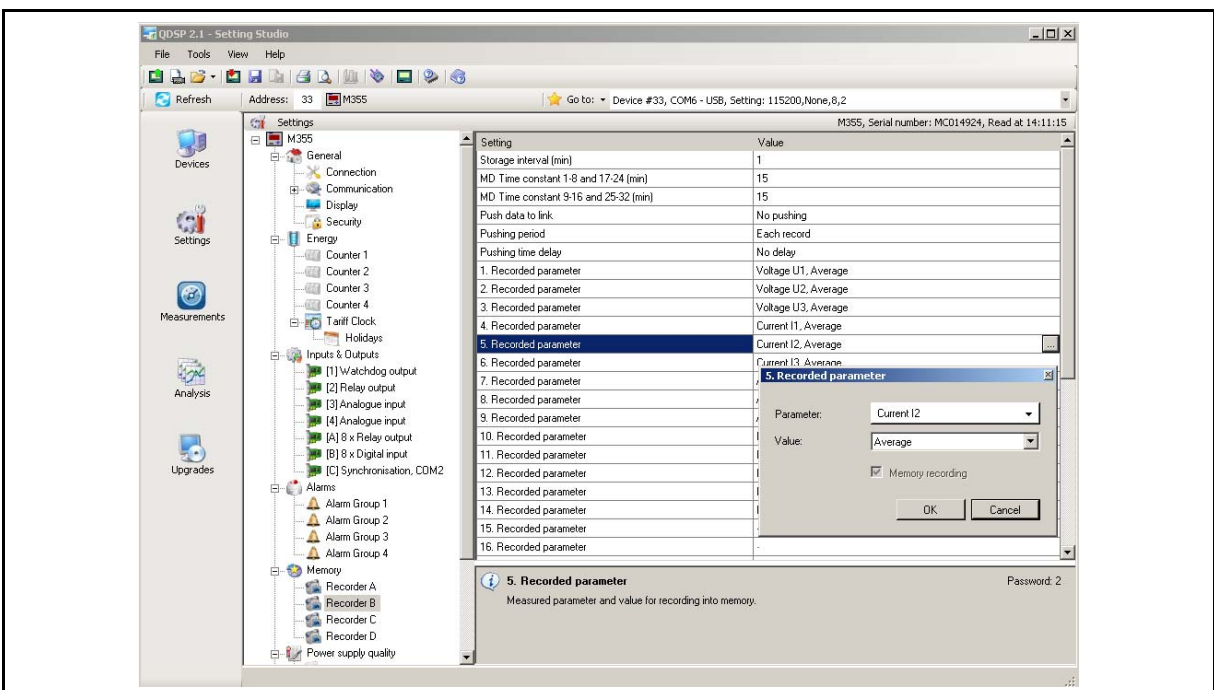
### 5.8 Memory

Measurements, alarms, reports and details of supply voltage quality can be stored in the internal memory on certain products with data logging or power quality capability. All records stored in the memory are accessible using QDSP2.



The individual data recorders can be made active or stopped and the amount of memory assigned to each recorder can be defined.

The data that is to be stored on each channel of each logger can be defined.



## **5.9 Power Supply Quality**

The settings for the Power Quality Analyser can be set.

## **5.10 Reset Operations**

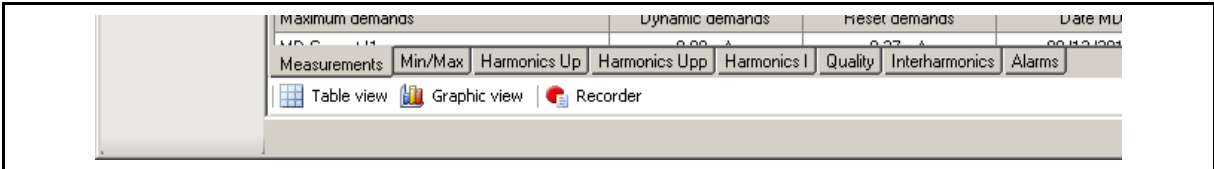
This allows the reset of certain values, i.e. Counters.

## 6. MEASUREMENTS

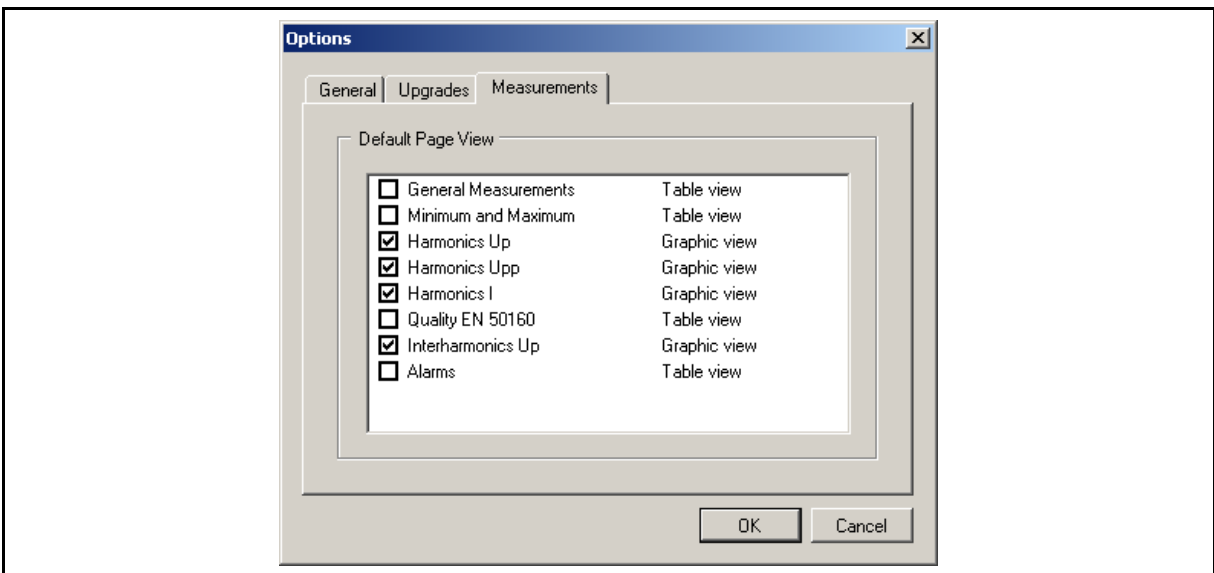
When the Measurements ICON is selected the option to display values from a connected product or from a simulation is given. The simulation option shows how the values would be displayed if a product was attached, and is useful for demonstration purposes.

### 6.1 Online measurement display

The values from the connected product or simulation can be displayed in real time in tabular or graphical form, selection buttons as shown below. The values are divided into a number of sections which are selected using the tabs at the bottom of the screen, shown below

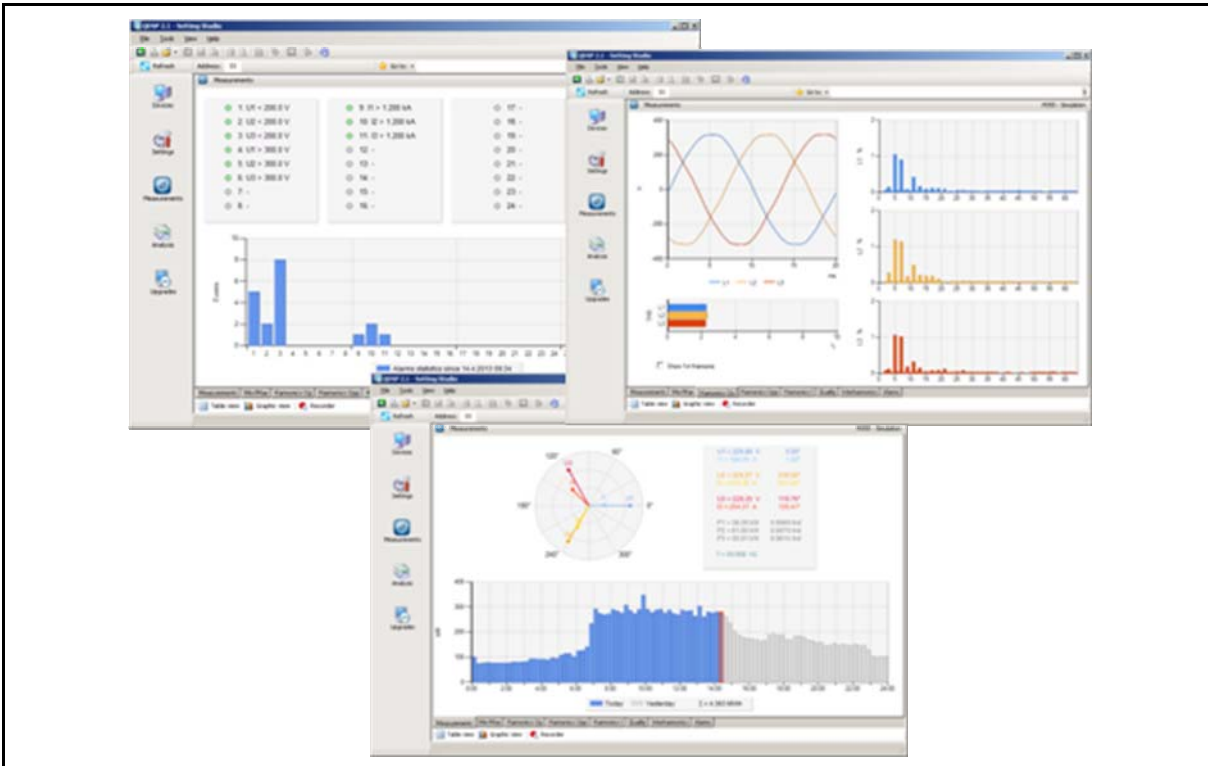


It is also possible to set a default preference for each of the value sections to be displayed in either tabular or graphical form. By selecting <Tools><Options><Measurements> the following screen is displayed on which the preferences can be defined.



To view the real time measurements, the communications link to the product must be established. The data will be refreshed approximately every 2 seconds.

Below are samples of the graphical displays.



The measurements can appear on more than one measuring sheet in the tabular form, depending on the number of measurements supported by the specific product.

The screenshot shows the 'Measurements' tab in the QDSP 2.1 - Setting Studio software. The table below represents the data displayed in the interface.

Measurements						M355 - Simulation
<b>Phase measurements</b>						
Voltage	L1	L2	L3	Total	Others	
	229.88 V	229.27 V	228.25 V		U <sub>~</sub> = 229.14 V	
Current	166.99 A	270.35 A	254.37 A	691.72 A	I <sub>~</sub> = 230.57 A	
Real Power	38.26 kW	61.80 kW	55.81 kW	155.88 kW		
Reactive Power	1.95 kvar	4.31 kvar	15.91 kvar	22.18 kvar		
Apparent Power	38.38 kVA	61.98 kVA	58.06 kVA	158.44 kVA		
Power Factor	0.9969 Ind	0.9970 Ind	0.9614 Ind	0.9839 Ind		
Power Angle	1.80 °	2.06 °	15.65 °	8.09 °		
THD-Up	2.25 %	2.32 %	2.22 %			
THD-I	7.11 %	5.95 %	4.93 %			
<b>Phase to phase measurements</b>						
L1 - L2      L2 - L3      L3 - L1      Total      Others						
Phase to phase voltage	398.49 V	395.85 V	396.31 V		U <sub>pp</sub> = 396.88 V	
Angle	120.41 °	119.81 °	119.76 °			
THD-Upp	2.31 %	2.20 %	2.21 %			
<b>Neutral line</b>						
Measured      Angle      Calculated      Error						
Current	2.81 A	-81.59 °	2.85 A		120.05 mA	
Voltage	0.48 V	101.81 °				
<b>Energy counters</b>						
Counter E1 (Exp)      Counter E2 (Exp)      Counter E3 (Imp)      Counter E4 (Imp)      Active tariff						
Total	23,347.16 kWh	1,441.18 kvarh	995.33 kWh	28,481.27 kvarh	1	
Tariff 1	23,347.16 kWh	1,441.18 kvarh	995.33 kWh	28,481.27 kvarh		
Tariff 2	0.00 kWh	0.00 kvarh	0.00 kWh	0.00 kvarh		
Tariff 3	0.00 kWh	0.00 kvarh	0.00 kWh	0.00 kvarh		
Tariff 4	0.00 kWh	0.00 kvarh	0.00 kWh	0.00 kvarh		
<b>Energy cost</b>						
Counter E1, Cost      Counter E2, Cost      Counter E3, Cost      Counter E4, Cost						
Energy cost in EUR	2,230.13	142.13	99.47	2,735.61		
<b>Maximum demands</b>						
Dynamic demands      Reset demands      Date MD      Time MD      Time into period						
MD Current I1	168.06 A	687.62 A	11/04/2013	15:27:41	10_min	

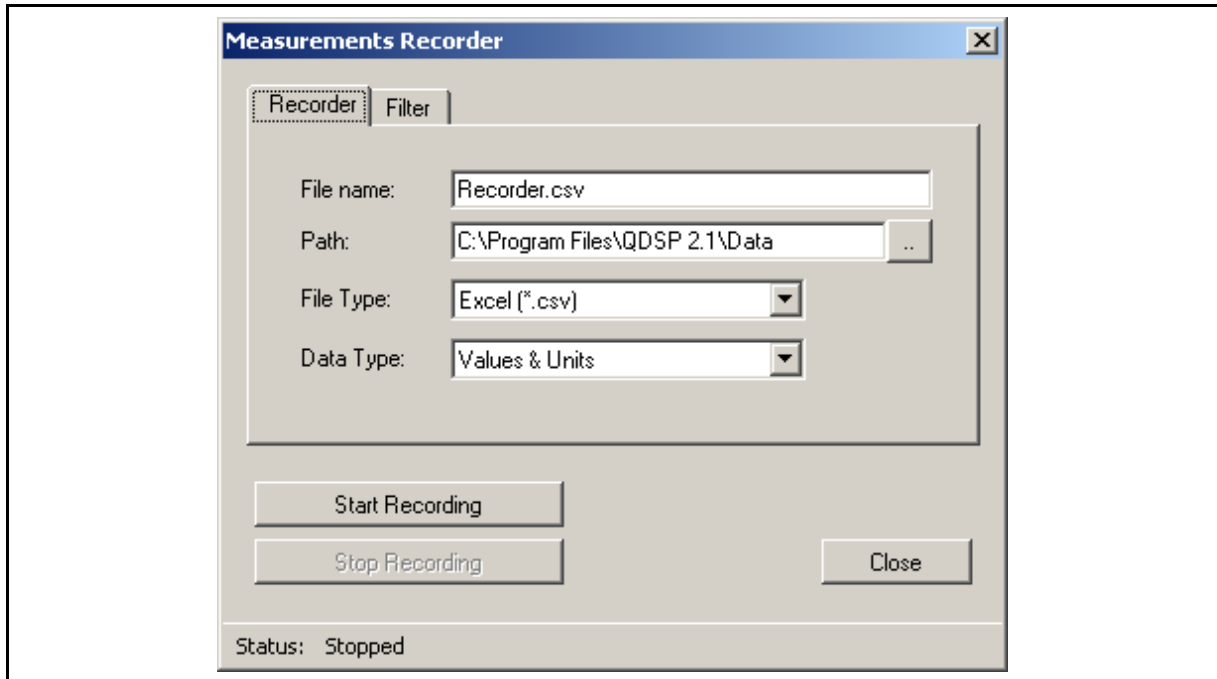
To stop the measurements and hold the data, right click on the data display table and select 'Hold Measurements'. When the Measurement data is 'Held' it can be copied for inclusion in a document.

To restart the real time measurements press 'Refresh'.

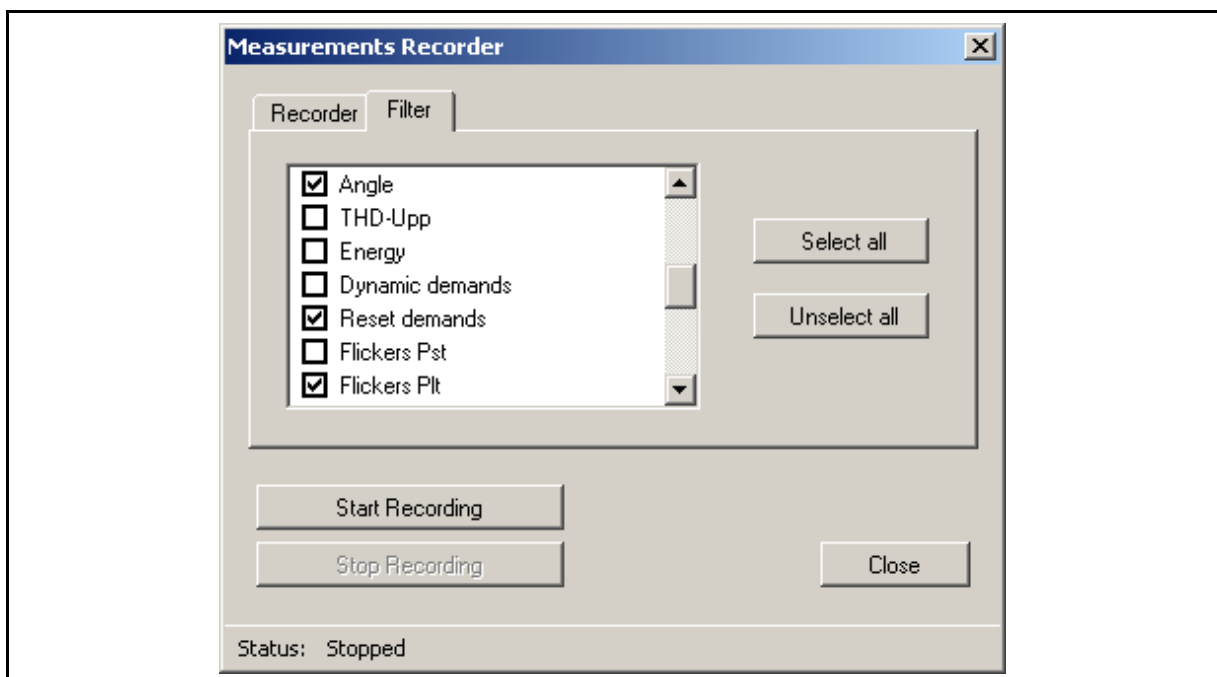
## 6.2 Online measurements recorder

In addition to defining the online measurement displays as tabular or graphical, it is possible to record all or part of the online data received into a '.csv' file on the PC. The '.csv' file can be loaded into Excel or an equivalent program and converted to a standard spreadsheet for analysis.

When the online measurements are operating press the 'Recorder' button to display the following screen. This defines where the data is to be stored and in what form.



The 'Filter' tab can be used to define which values are to be included in the recorder file.



When the setup is complete, the recording can be started by clicking 'Start Recording' and it will continue until it is stopped by clicking on 'Stop Recording'. The data will be stored at the rate of the data refresh on the communications.

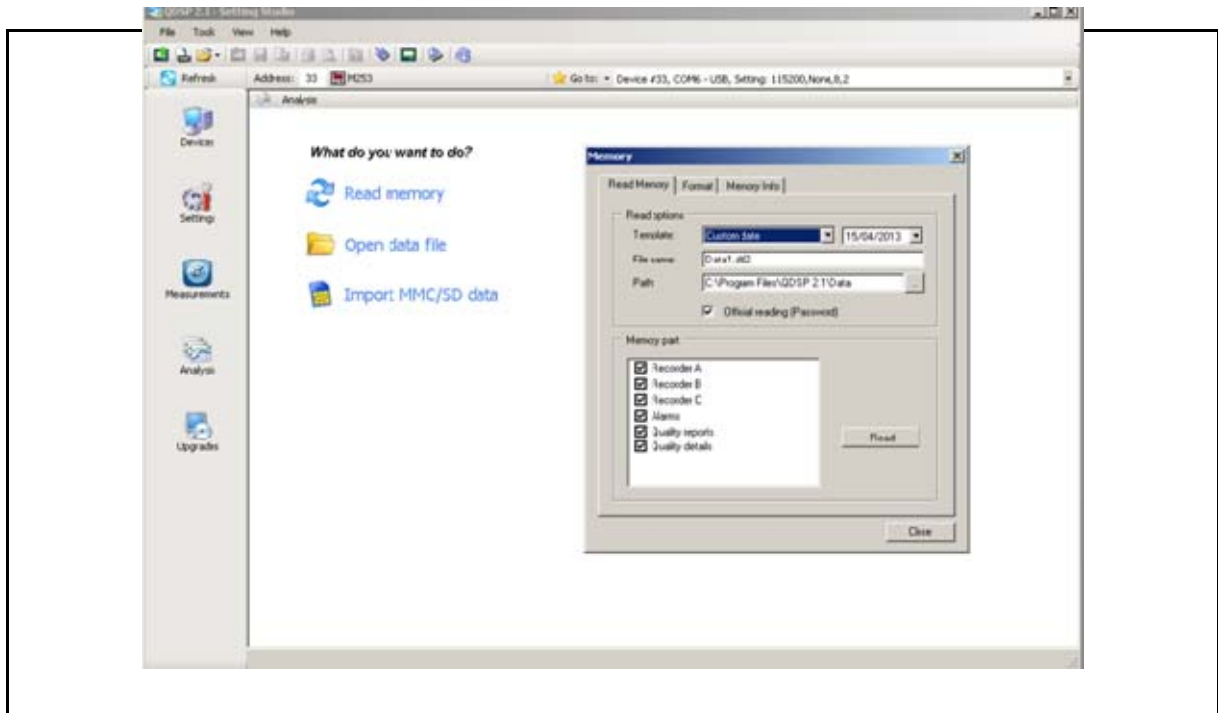


## 7. DATA ANALYSIS

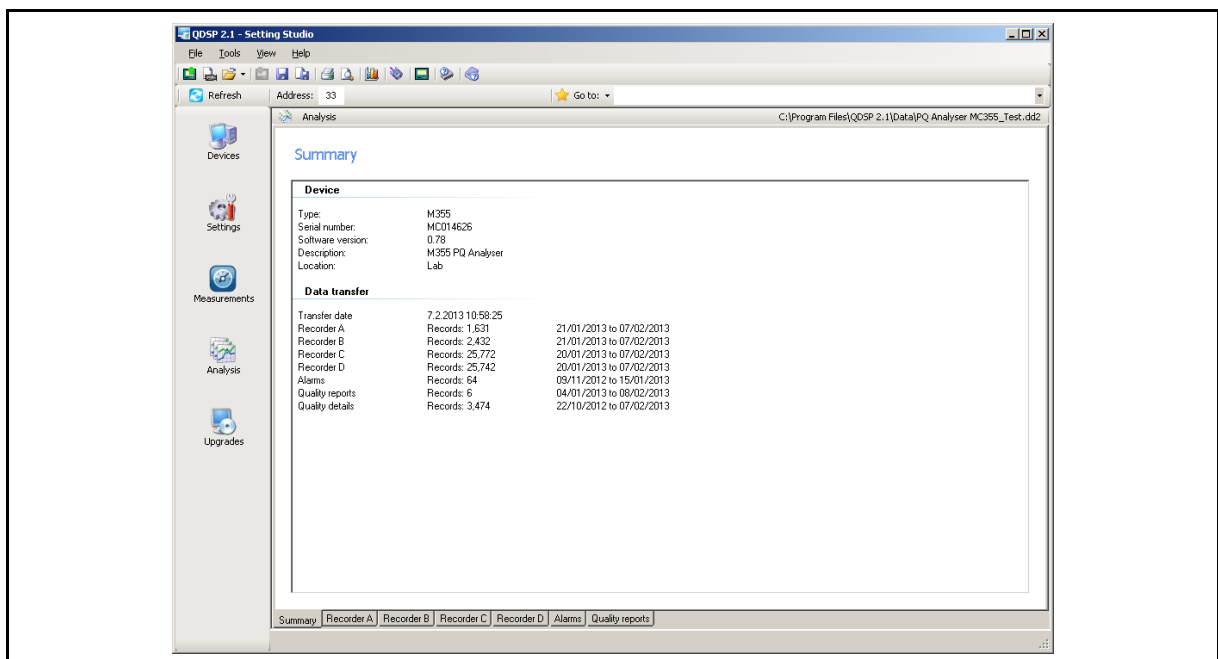
The Data Analysis section downloads and displays the data from products that have internal memory for logging data and power quality events. When Analysis is selected there are three options of where the data can be obtained for analysis, from a connected device, a previously stored file or a SD/MMC card data file.

### 7.1 Read Instrument Data

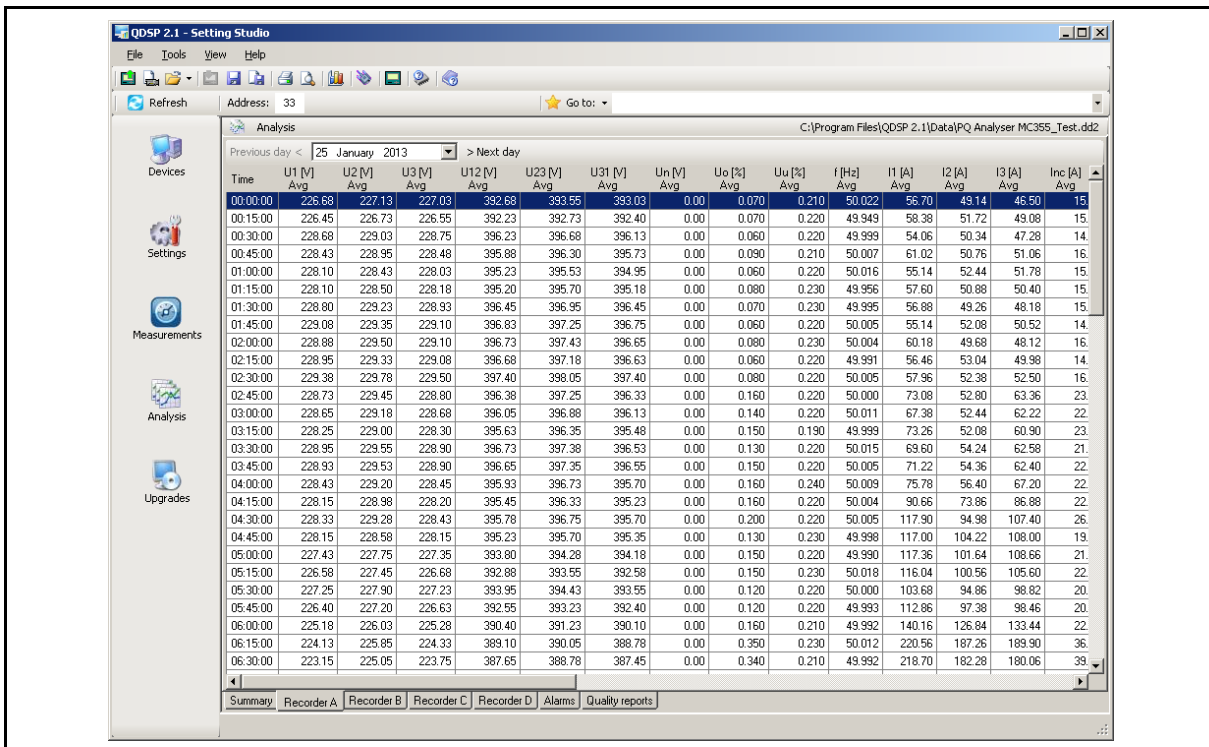
If 'Read instrument data' is selected the following screen is seen that defines which memory sections are available and allows definition of the data that is to be downloaded.



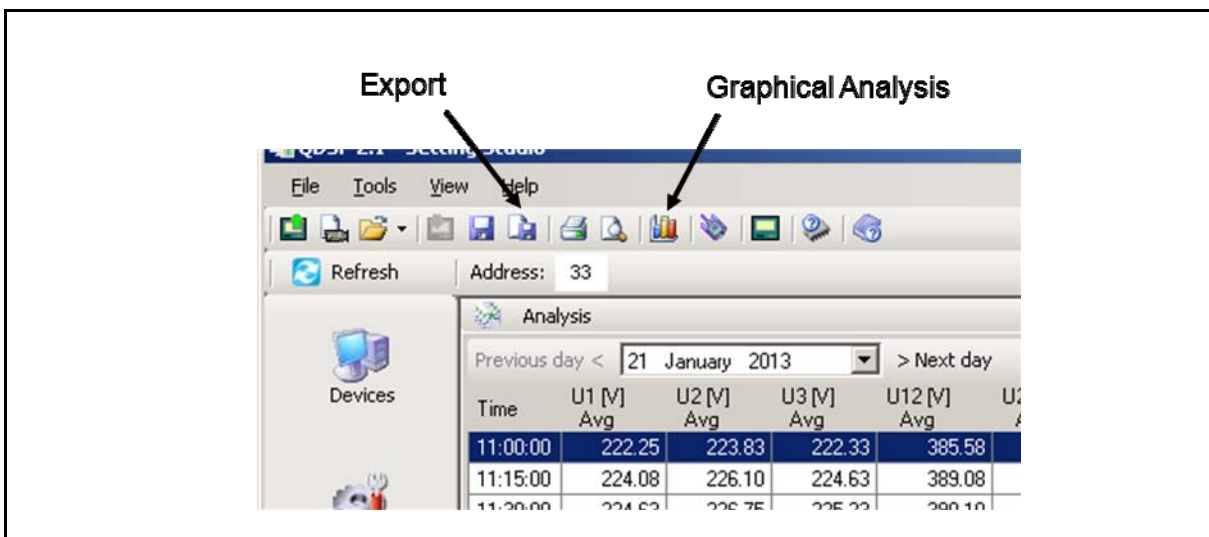
The data will then be downloaded and a summary of the data transferred is displayed.



The 'tabs' along the bottom allow the required recorder to be selected and the recorder data is displayed in a table.

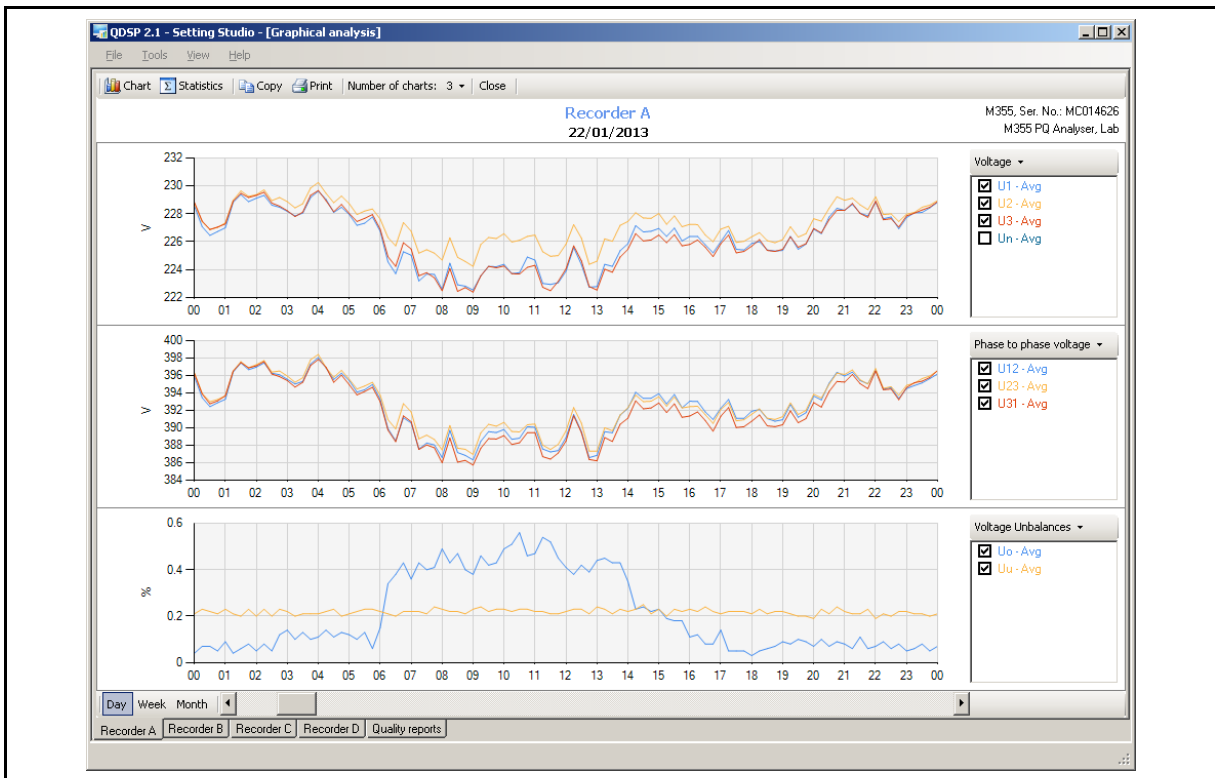


The start date for the data displayed can be selected.



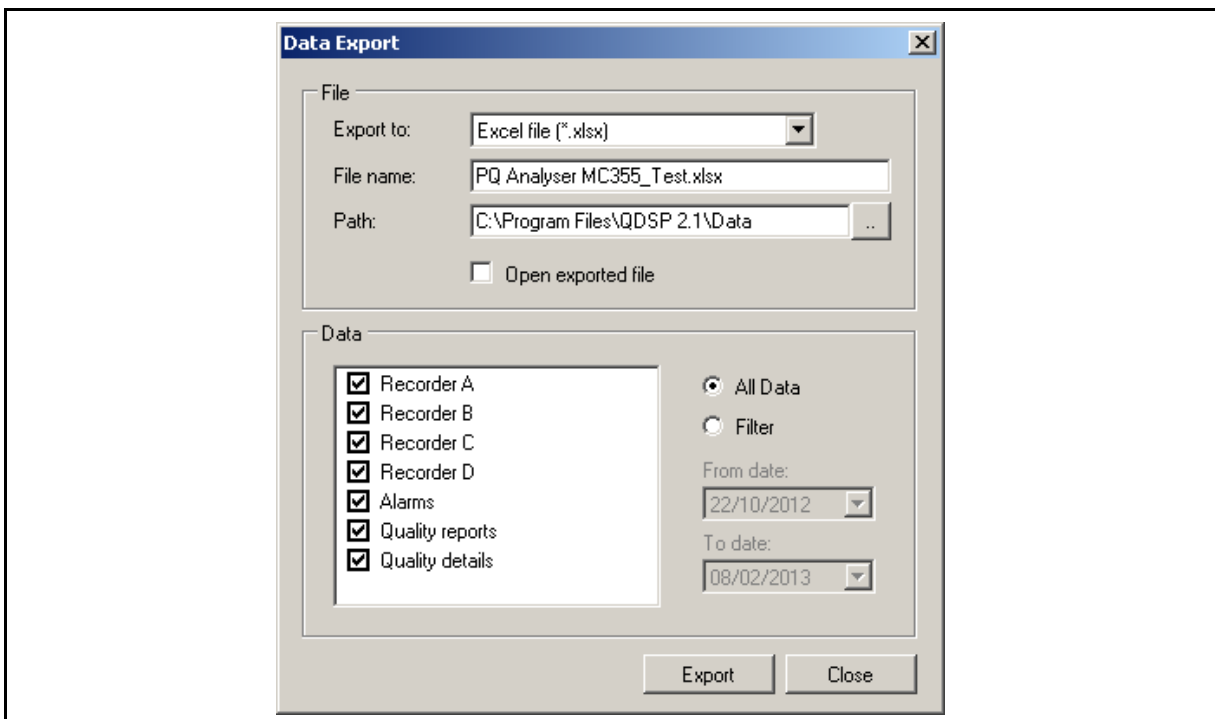
There is a 'Graphical Analysis' function that displays the required data graphically.



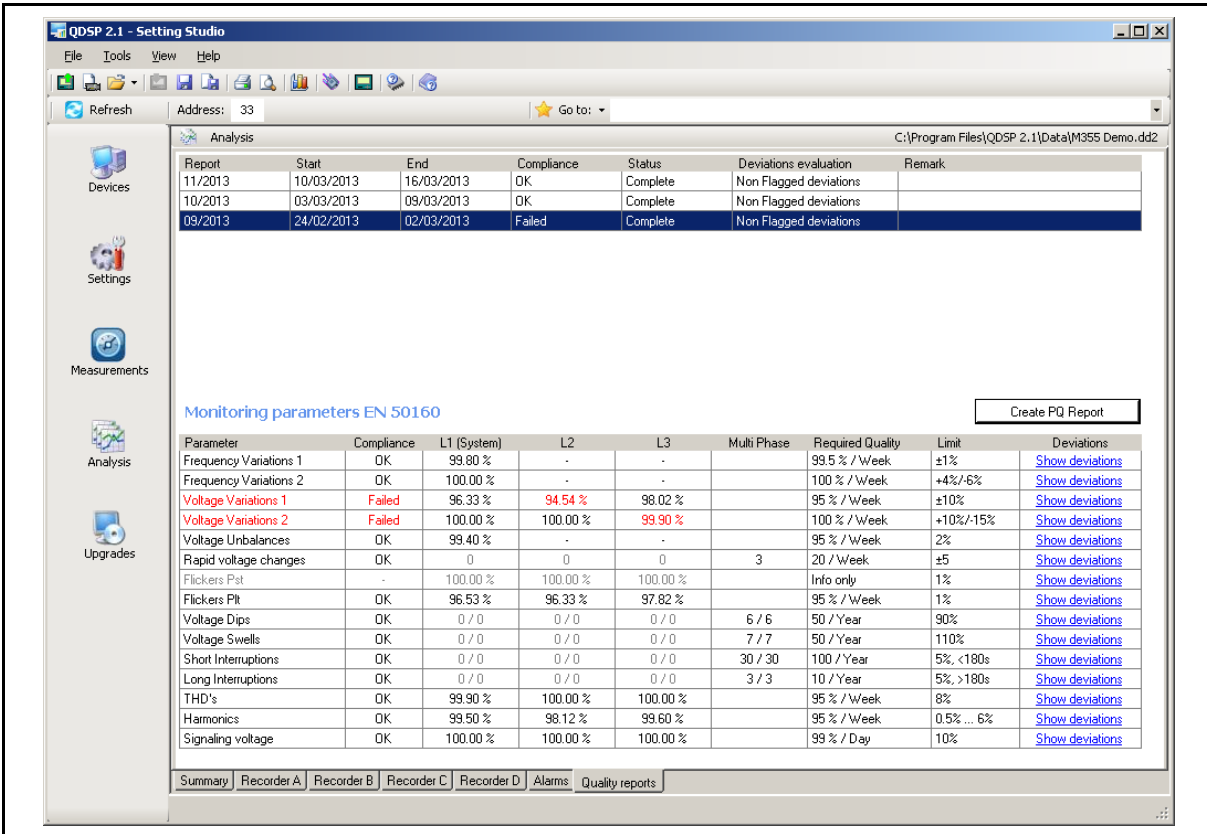


The data that is displayed on each chart can be modified for type of measurement parameters and timescale. The number of charts per page can also be modified.

There is also an Export function which can export all or a part of the data to a **QDSP2** data file or to an excel file (.xlsx).

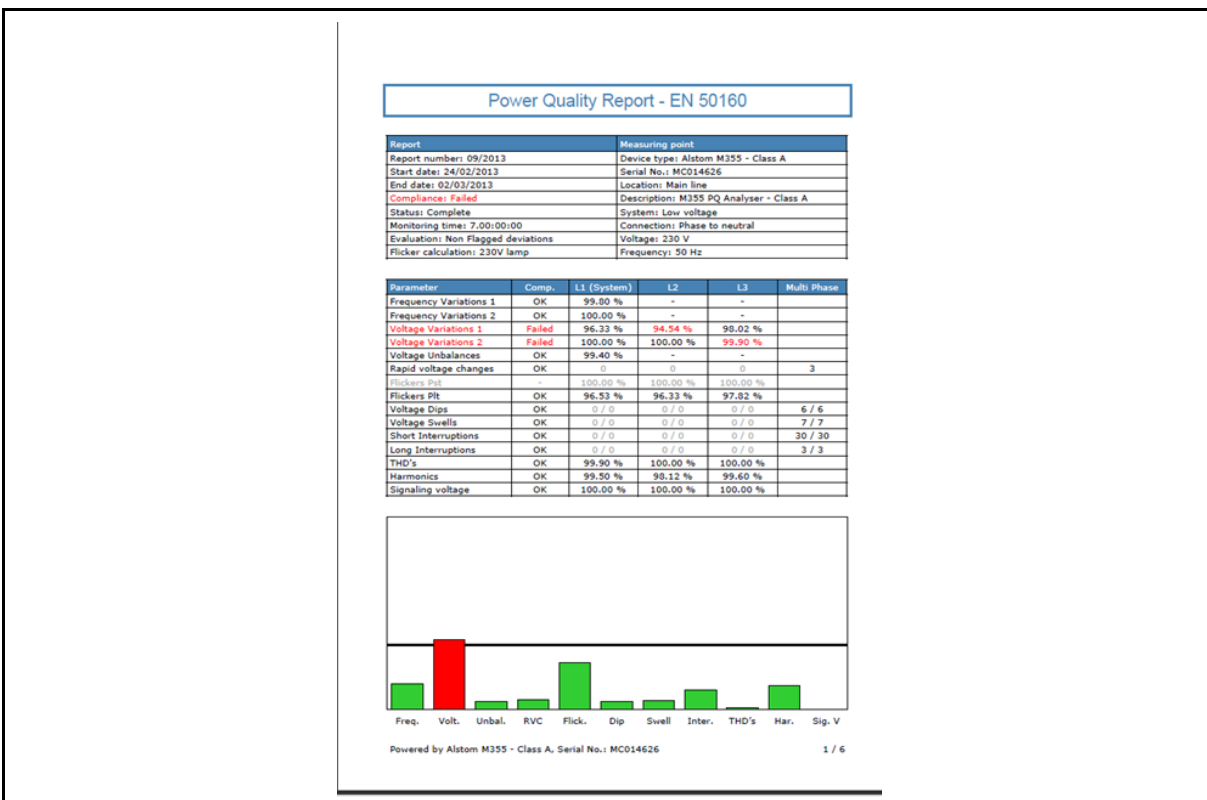


The EN50160 Quality report periods are displayed in tabular form, when individual Power quality report periods are high lighted the quality data for the report period is displayed. This report summary can be printed out.



For each report period the deviations can also be detailed and can be displayed for a specific parameter by clicking on ‘Show deviations’.

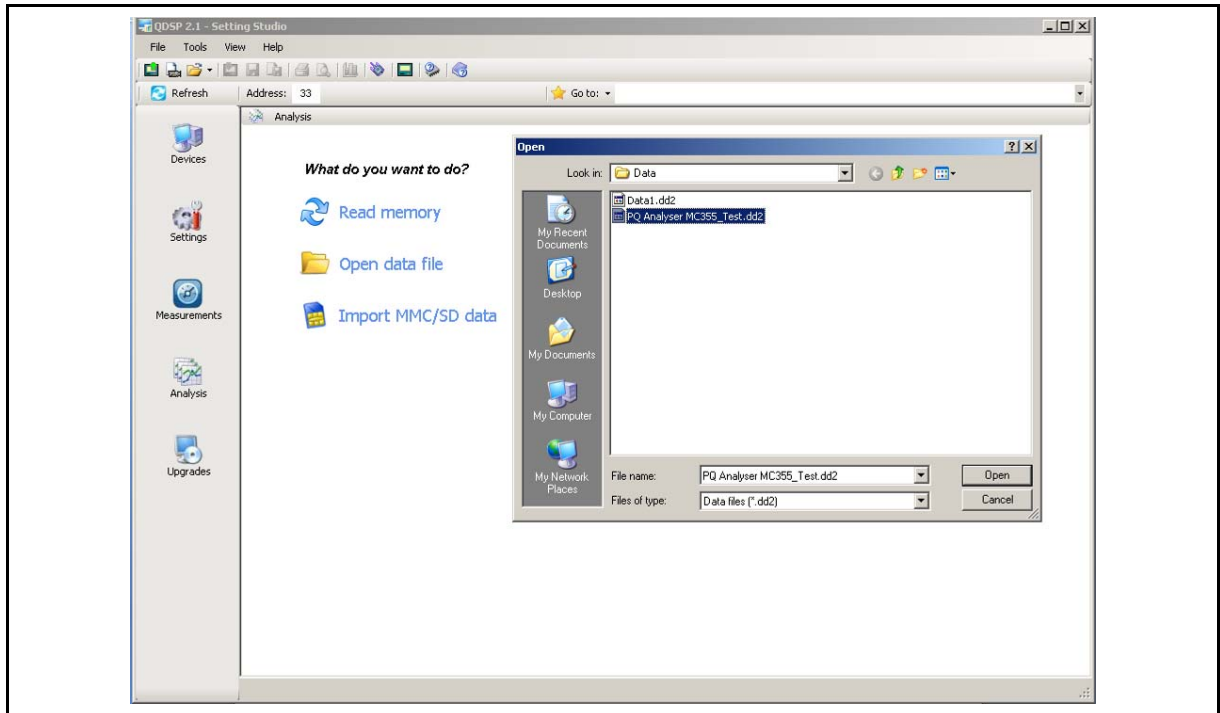
By clicking ‘Create PQ Report’ a full EN50160 report can be generated, including full details for all parameters, as a pdf file.



The Power Quality data can also be exported as an ‘.xlsx’ file for reading in Excel.

## 7.2 Open data File

When 'Open data File' is selected any previously stored, downloaded data file can be accessed. In addition a demonstration data file is provided allowing the analysis software to be tried without having a product connected or previously downloaded data available.

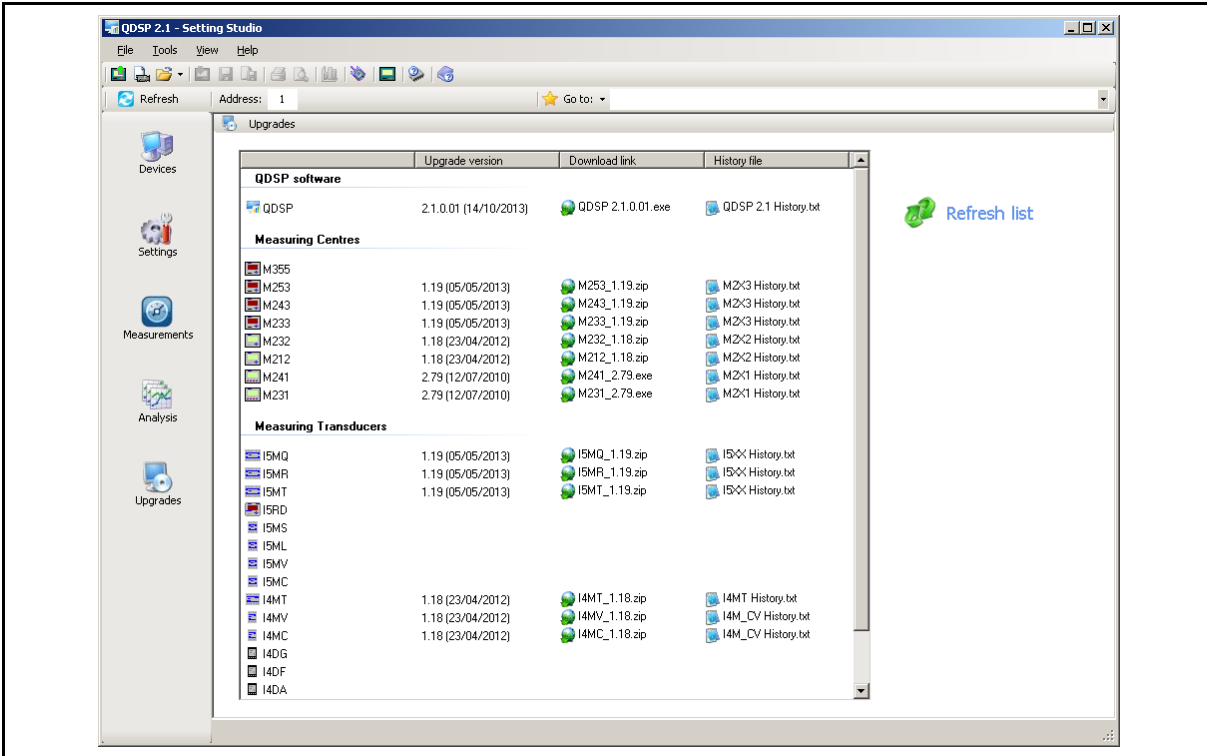


## 7.3 Import SD/MMC data

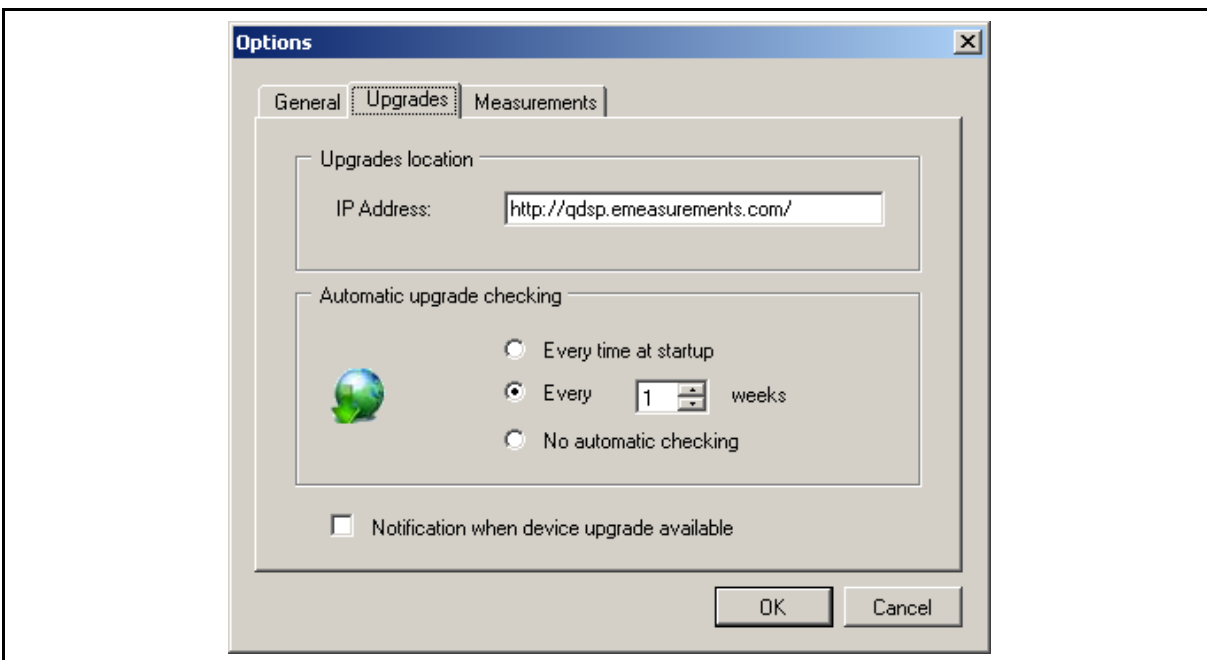
If a data file has been copied from a SD or MMC card this can be accessed as the source of the data for analysis. See section 14 for details of the memory card operation.

## 8. UPGRADES

It is possible to check for the availability of a newer version of the **QDSP2** software if the PC is connected to the Internet. Click 'Upgrades' and the latest version of the **QDSP2** software will be shown. It is suggested that 'Refresh list' is used to ensure that the screen displayed is not a cached copy.



**QDSP2** can also be configured to automatically check for **QDSP2** updates by clicking <Tools><Options><Upgrades> and selecting the required option as shown below.



If the latest version is not being used an upgrade can be downloaded. Also the change history file for **QDSP2** can be downloaded.

## **8.1 Device Upgrade**

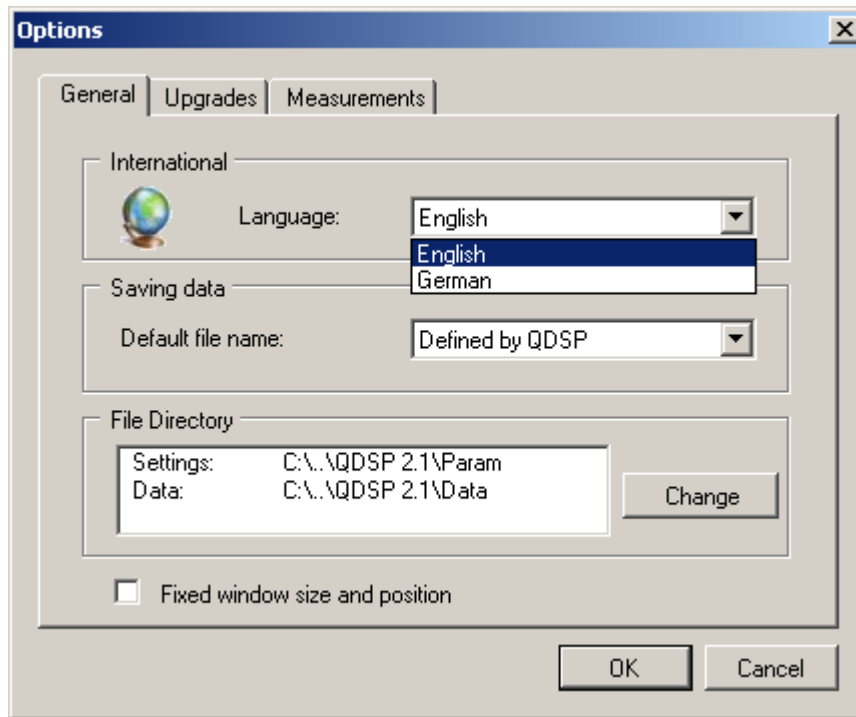
The 'Upgrades' screen above also defines the latest firmware version issued for each of the products. The modification history file can also be downloaded for each product family to identify what modifications have been done.

If necessary a new version of product firmware can be downloaded and this includes full details of how to upgrade the iSTAT product. Upgrading an iSTAT product should only be done if a 'bug fix' or new feature is required, as any interruption during the upgrade process can damage the product such that it may not be economical to repair.

## 9. OTHER FEATURES

### 9.1 Change QDSP2 language

The **QDSP2** screens can be displayed in multiple languages which are selected after the software has been installed. To select the required language click <Tools><Options><General> and select the language from the defined list, as below.



After selecting the language the **QDSP2** software has to be restarted to operate in the selected language.

### 9.2 Memory card operation

The M2x3 and M3x5 ranges of products are fitted with a memory card interface for data transfer without needing to have a PC on site. The card can be used to transfer device settings and the contents of the data logger and power quality memory storage if fitted. To use the memory card the PC being used will have to be fitted with a memory card reader.

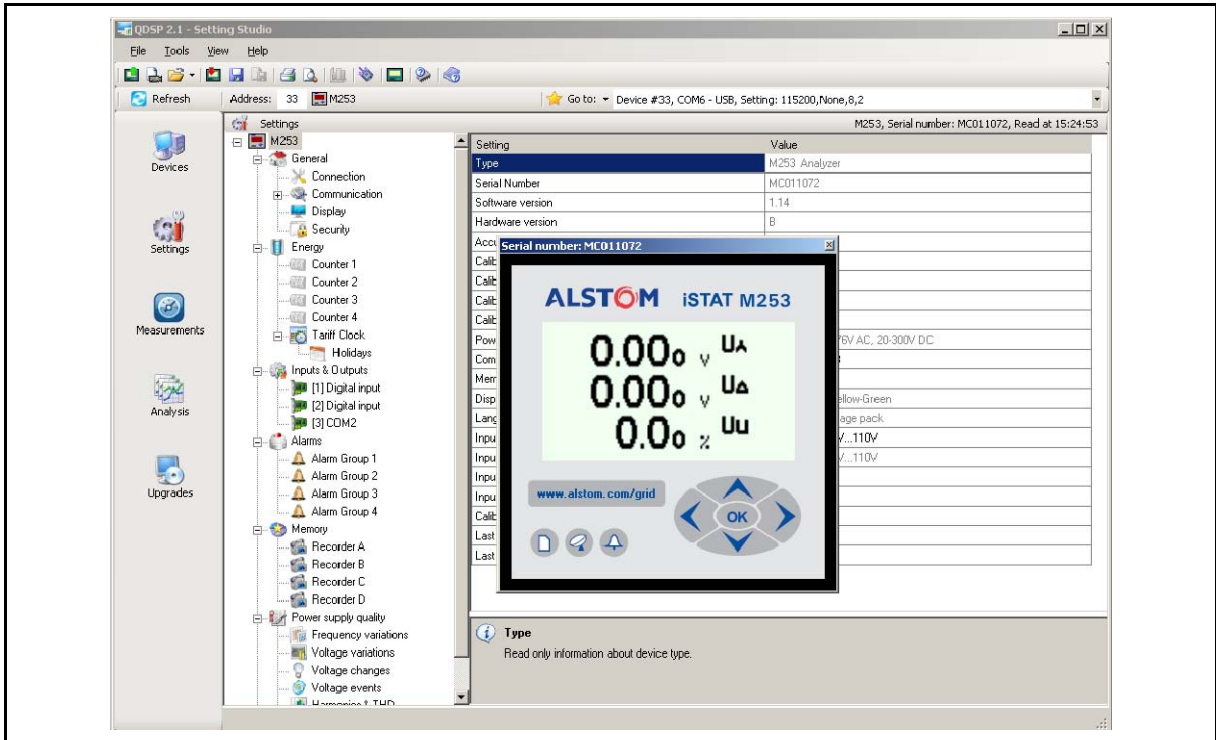
For details on importing and exporting data to the memory card please see the **QDSP2** help files. For details of using the memory card with the product see the applicable technical manual.

### 9.3 Interactive Instrument

The Interactive instrument operates with all instruments that are fitted with an integral display, allowing a representation of the instrument front panel to be controlled from the **QDSP2** software.

When communications have been established with the instrument the Interactive instrument is started by clicking on the icon. The icon will not be active for instruments without an integral display or when **QDSP2** is in the Measurements mode.

The display currently on the instrument is displayed and by clicking on the arrow keys and OK the operation of the instrument can be controlled from **QDSP2**. This allows the display of measurements and settings, and the changing of any settings in the same way as if the instrument front panel was being used. Also if the display is controlled from the product's front panel any changes will be shown on the Interactive instrument on **QDSP2**.



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