

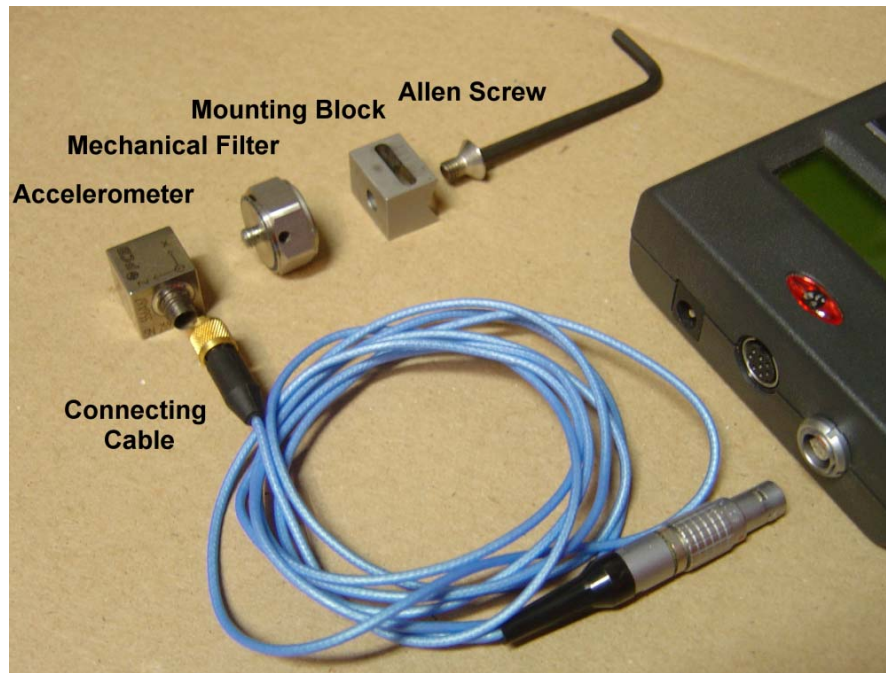


HAVPro QUICK START GUIDE (with QSPII)

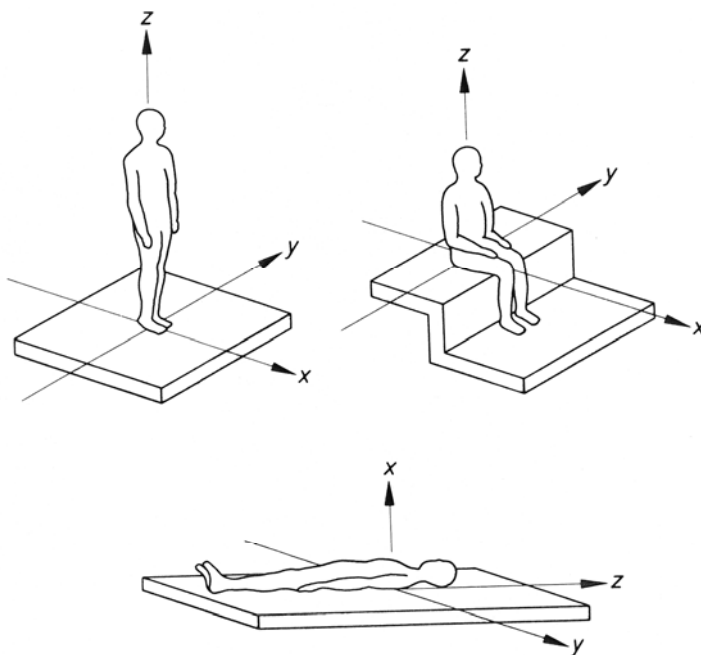
This guide is designed to enable you to quickly start logging vibration data.

1. Your instrument will arrive already set up for the accelerometer type(s) you are using and is ready to start logging data. At some stage it would be prudent to back up this setting to your PC once the QuestSuite software is installed in case of any mishap with the instrument settings. Please see APPENDIX A on Pages 14 - 17 onwards of this guide for how to do this and how to re-set up the instrument from the PC.
2. Firstly remove the instrument from its protective case and connect the tri-axial accelerometer to the HAVPro with the cable provided. The cable can be threaded through the cut-out in the top of the instrument case if you want to use the case to give the instrument additional protection in more hostile environments such as the cab of a forklift during whole body vibration testing.
3. If a Whole Body Accelerometer is to be used this has its own connecting cable fitted and just needs to be plugged into the HAVPro unit. The 4 pin connector fits the 4 pin socket on the top of the HAVPro (locate the red dot on the connector to the red mark at the front of the socket for correct orientation).
4. If a Hand Arm Accelerometer is to be used the larger of the two connectors on the cable fits the 4 pin socket on the top of the HAVPro (locate the red dot on the connector to the red mark at the front of the socket for correct orientation). The smaller (gold) connector fits to the accelerometer itself (locate the notch in the connector with the groove in the Accelerometer).
5. The accelerometer should then be fitted to its Mounting Block via the 10-32UNF Allen Screw provided. If you are using large percussive instruments (such as a Jack Hammer) you will have also been supplied with a mechanical filter which should be fitted between the Accelerometer and the Mounting Block. This filters out high frequency vibration which can cause resonance, known as DC Shift, in the accelerometer and prevents overload and mechanical failure in the accelerometer itself.

See the picture overleaf for an exploded view of the fitting arrangement.



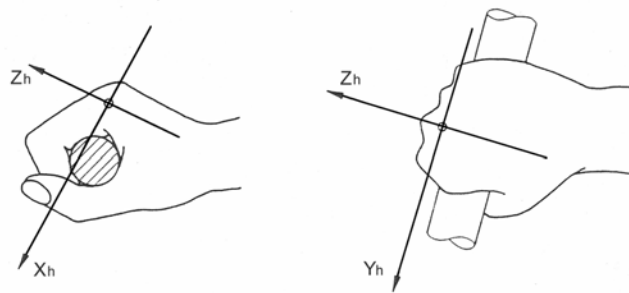
6. For Whole Body Vibration put the Whole Body Accelerometer Pad onto the driver's seat and, if possible, affix with tape to secure in position. Make sure the cable does not snag on the seat back etc and put the HAVPro in a suitable mounting position. There is a special protective case provided with an opening for the cable to thread through to give the unit additional protection.
- N. B. When fitting make sure the orientation of the pad is correct. There is a drawing on the pad to show the orientation of each axis of the tri-axial accelerometer embedded in the pad which should be fitted as per the directional drawing below.



7. For Hand Arm Vibration affix the Accelerometer Mounting Block tightly to the work piece as near as possible to the point of contact with the operator's hand. The mounting block is slotted and can be fixed with a suitable jubilee clip or strong ty-rop around the work piece. If this is not possible special adhesive fittings can be supplied.

NOTE: Caution should be used when utilising ty-raps to fix the accelerometer to any equipment to ensure that any tool vibration generated does not work them loose during testing.

N. B. When fitting make sure the orientation of the Accelerometer is correct. The unit can be swivelled on the Mounting Block to get into the correct orientation. The X axis should be pointing through the hand, the Y axis across the knuckles of the hand and the Z axis up the arm into the body. See the picture below for information.



8. You are now ready to conduct a test. Below is a picture of the HAVPro keyboard with all the key functions labelled.



9. Press the ON/OFF button to switch the unit on and look at the display. You will hear a double click which indicates the instrument is active. The unit display defaults to set-up S0 and should say HA 20 GAIN on the display. If you need to change to a different gain setting or you are using a Whole Body Accelerometer press the SETUP key and then the RECALL key which will then show the set ups available. These set ups will normally be:-

SET UP 0 – 20db Gain – Normal Hand Arm Vibration
e.g. Breakers / Impact Wrenches

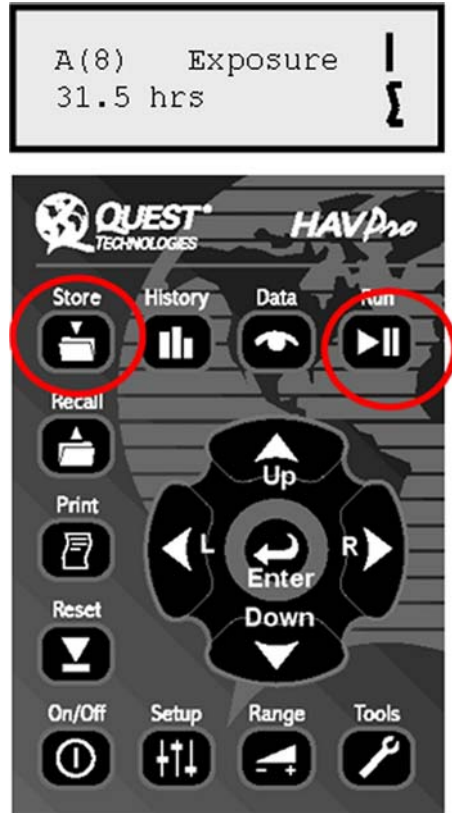
SET UP 1 – 0db Gain – High Hand Arm Vibration
e.g. Old Breakers / Rivet Hammers - Use if the **OVERRANGE (*)** symbol appears in the top right hand side of the display for prolonged periods of time when using standard SET UP 0

SET UP 2 – 40db Gain – Low Level Hand Arm Vibration
e.g. Small Rotary Tools - Use if the **UNDERRANGE (?)** symbol appears in the top right hand side of the display for prolonged periods of time when using standard SET UP 0

SET UP 3 - Whole Body Vibration - for use with the Whole Body Accelerometer supplied

Use the UP and DOWN arrows to move to the set up required and press ENTER to select.

10. To start a test press the RUN key, the unit is now data logging. Note the time and details down. HSE Guidance allows 20 seconds as the minimum time allowable for valid HAVS measurement. Allow 30 - 60 seconds then press the RUN key again to pause the unit and finish the test.



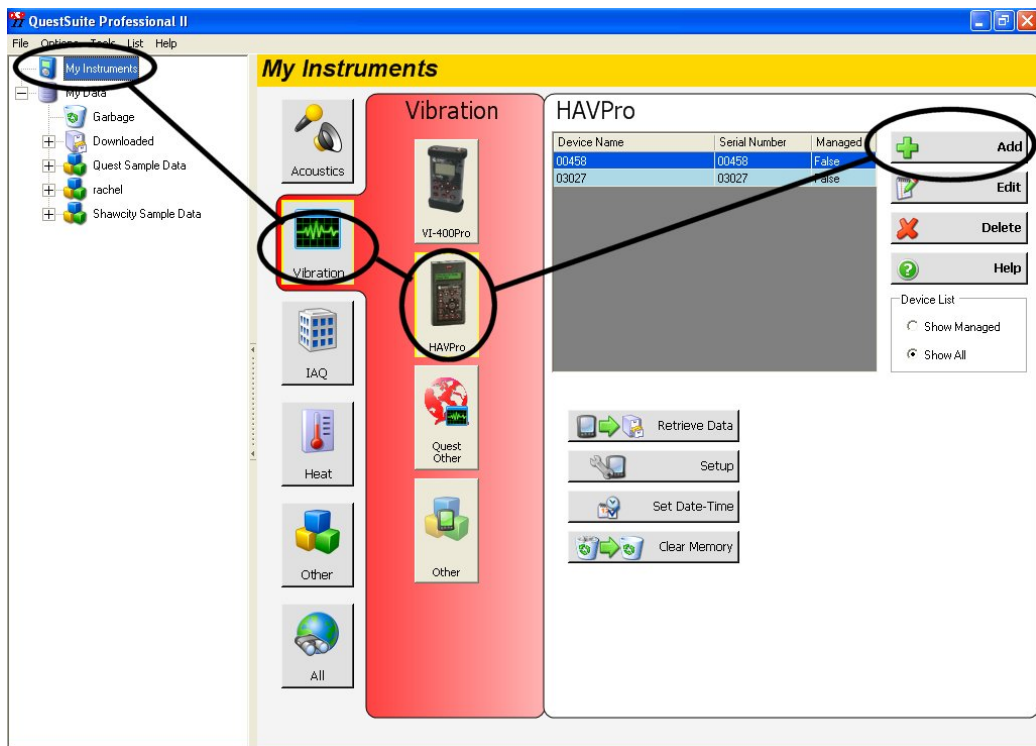
11. To store the test in the HAVPro memory press the STORE key. The display will show STORE FILE and the number 01. Press ENTER and this will store the test in file number 01. There are 99 file locations available in memory.
12. Press the RESET key to clear the data from the dynamic memory of the HAVPro and you are ready to conduct test number 2. Repeat step 10 and press the STORE key again. This time the display will show STORE FILE and the number 02 – the unit automatically defaults to the next storage location. Press ENTER to accept.
13. Once you have completed all your tests you can then download the results to your PC.
14. Install QuestSuite Pro II software onto your computer – this should be an automatic process once you put the supplied CD into the drive – just follow the defaults on screen – a QSP Pro II icon will be installed on the computers desktop. When asked for a serial number type in the word 'DEALER' to instigate a temporary install. If you have purchased the instrument you can register the software by calling 01367 246965. If you are hiring the instrument your free install will last for 60 days. N.B. Make sure you have exported any data you need before the software expiry period ends.

15. Connect the HAVPro via the RS232 lead from the round pin connector at the top of the unit via a 9 pin RS232 Port on the PC (You may need to utilise the USB to Serial converter if you do not have a 9 pin RS232 connector on your PC – you will normally need to install the drivers that come with the USB to Serial converter before you attach it to the PC).

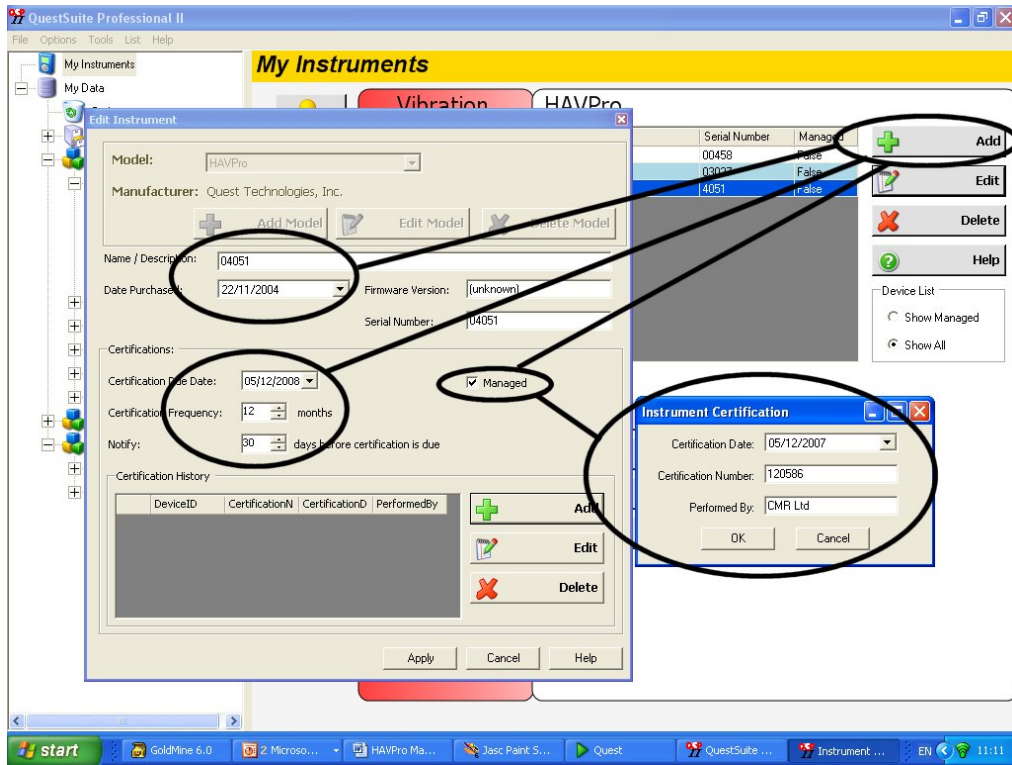
IMPORTANT

The QSP II Software only recognises the first 10 Serial Ports on your PC (COM 1 – COM10) for the HAVPro to use. It is quite possible, when using an RS232 to USB converter, that a COM port higher in number than COM 10 will be allocated for the unit as COM 1 – 10 are already in use. If this is the case you will need to re-allocate an existing port in the range 1-10 and assign this to QSP II and the HAVPro. See your IT Dept or contact Shawcity for advice.

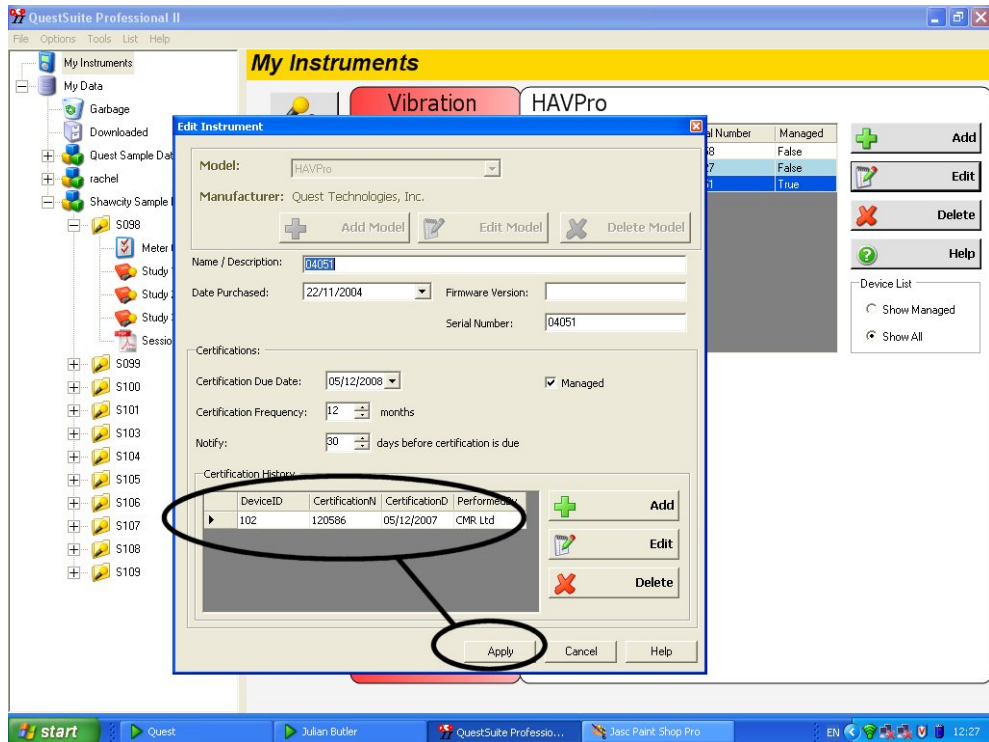
16. Open QSP II by 'double clicking' the QSP II icon placed on your computer desktop during the software installation process or in the Windows menu system go to START – ALL PROGRAMS – QUEST TECHNOLOGIES – QUESTSUITE PROFESSIONAL II.
17. In the menu on the left hand side of the screen click on 'My Instruments', then the Vibration icon, choose the HAVPro and then click on the 'Add' button at the top right hand side



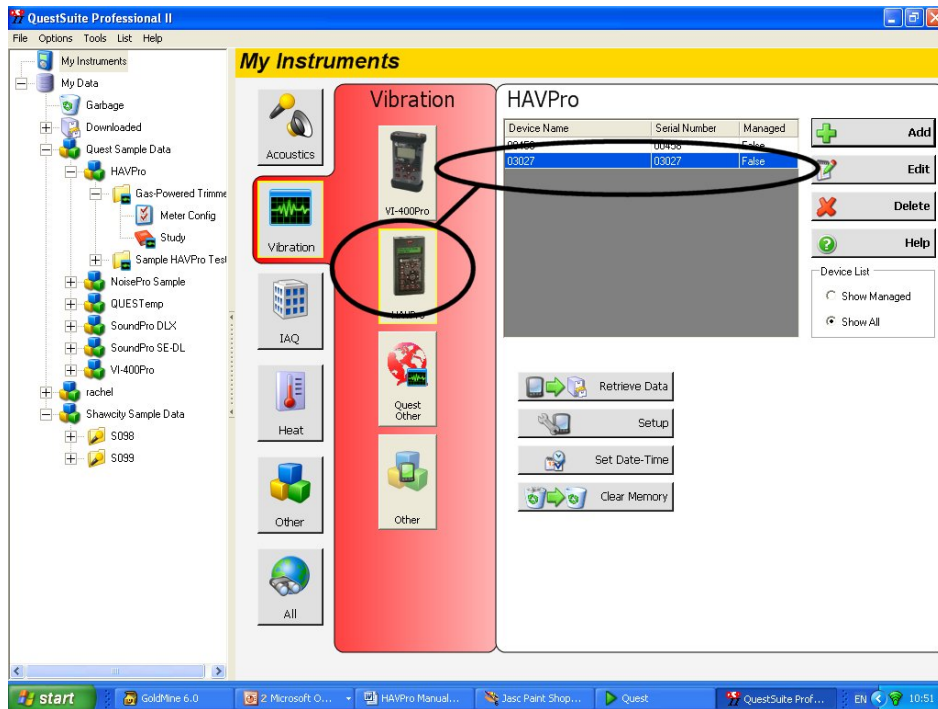
18. Then fill in the details to add the HAVPro to the instrument database.



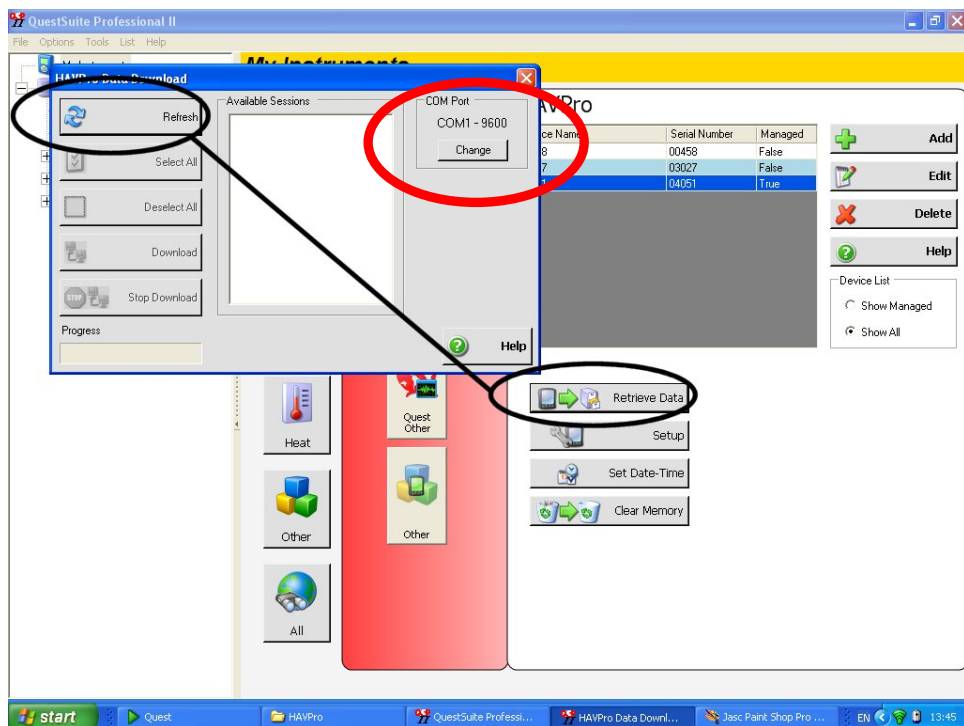
19. If you have purchased the instrument you can also add calibration details and set the software to prompt you when recalibration is needed.



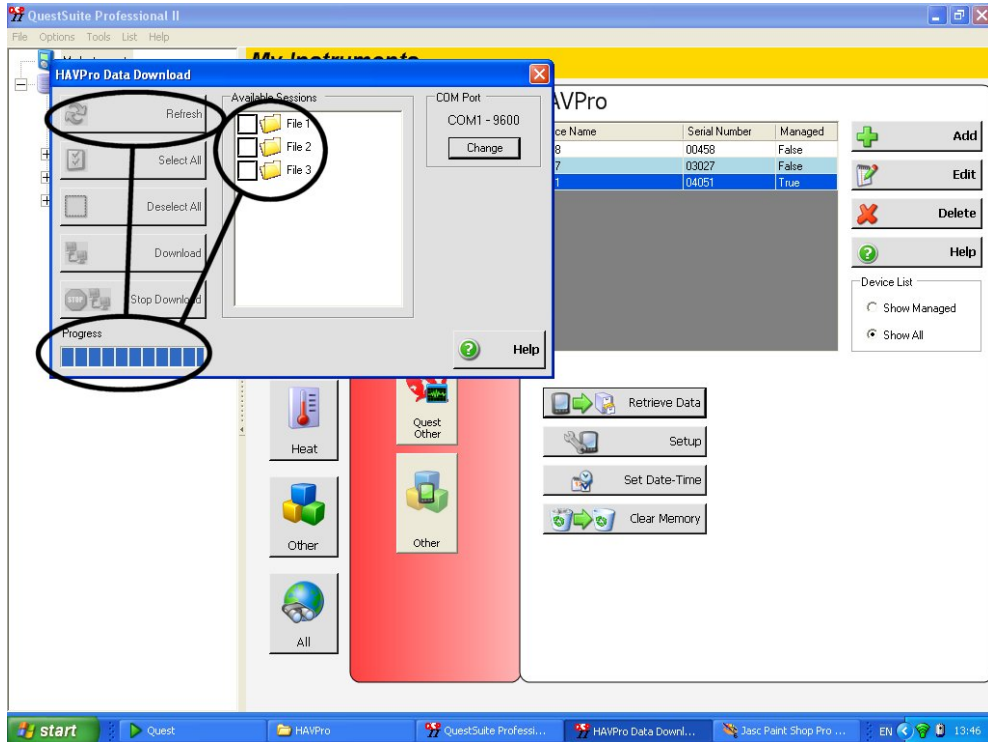
- The instrument details have now been added to the device list. Click on the instrument to highlight it.



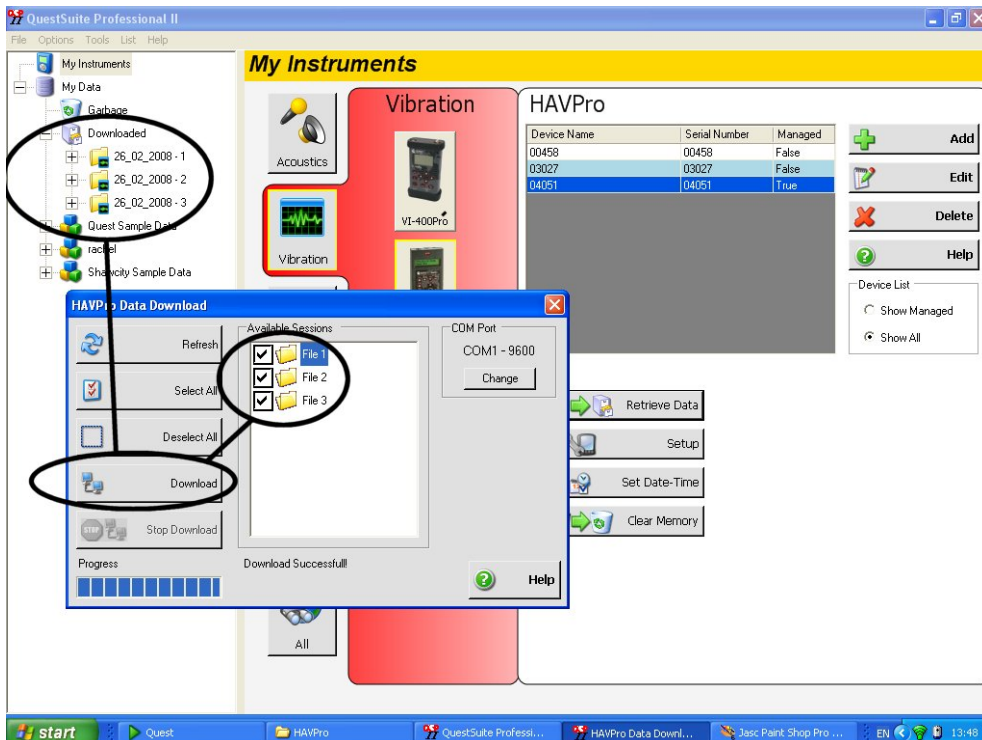
- Now select Retrieve Data from the main sub menu on the right hand side of the screen and click on the Refresh button. Ensure that the COM port settings match the set up to ensure correct communication with the instrument.



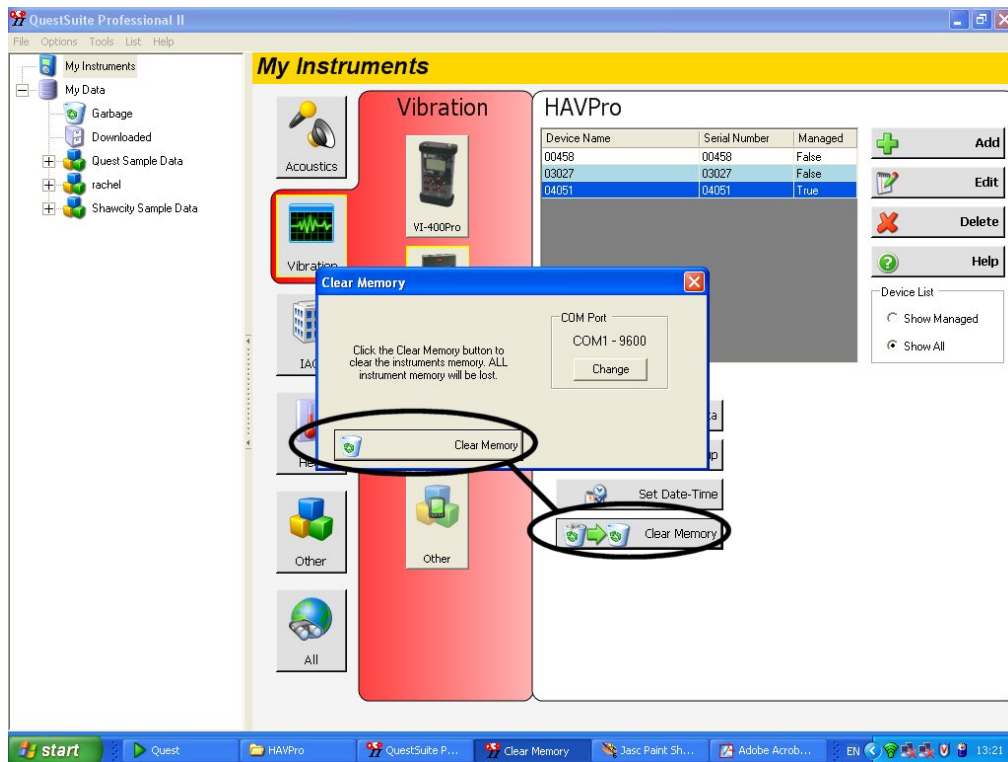
- 22 When you click on the Refresh button the screen will show another sub menu and go through the motions of looking for data. You will see a progress bar appear briefly at the bottom of the screen.



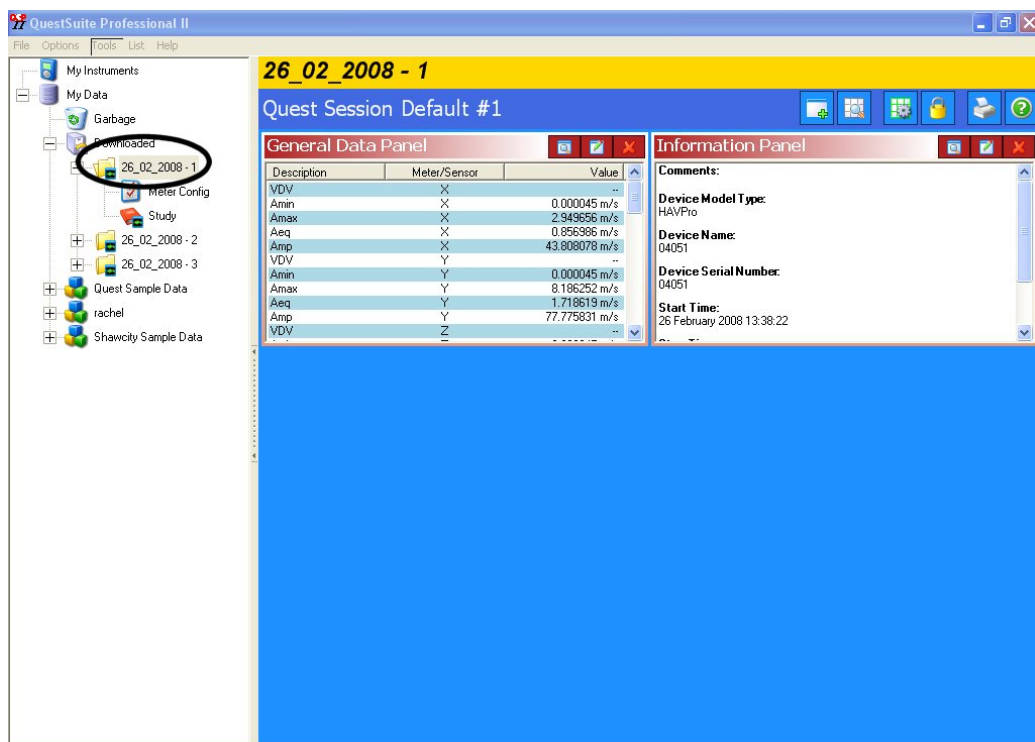
- 23 You can then highlight the files you wish to download or use the Select All button. The data will default to a file name of the date and numeric sequence and appear in the Downloaded directory on the left hand side of the screen. You can change this to something more descriptive at a later date.



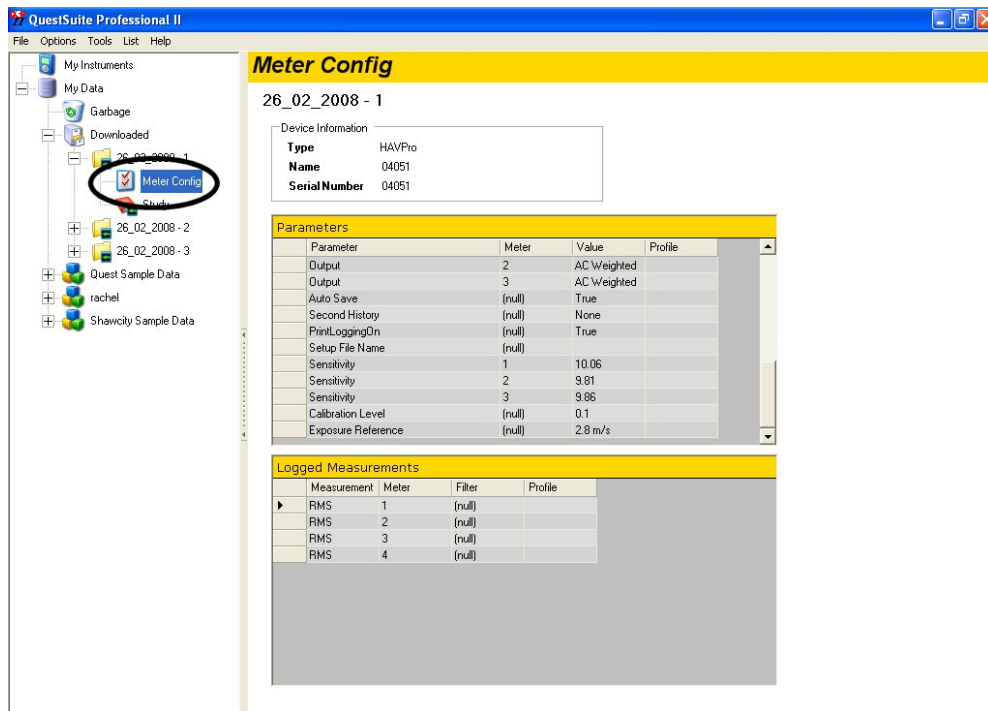
- 24 Once you are satisfied that all the data has been downloaded correctly you can clear the instruments memory using the Clear Memory button to make it ready for the next data logging session.



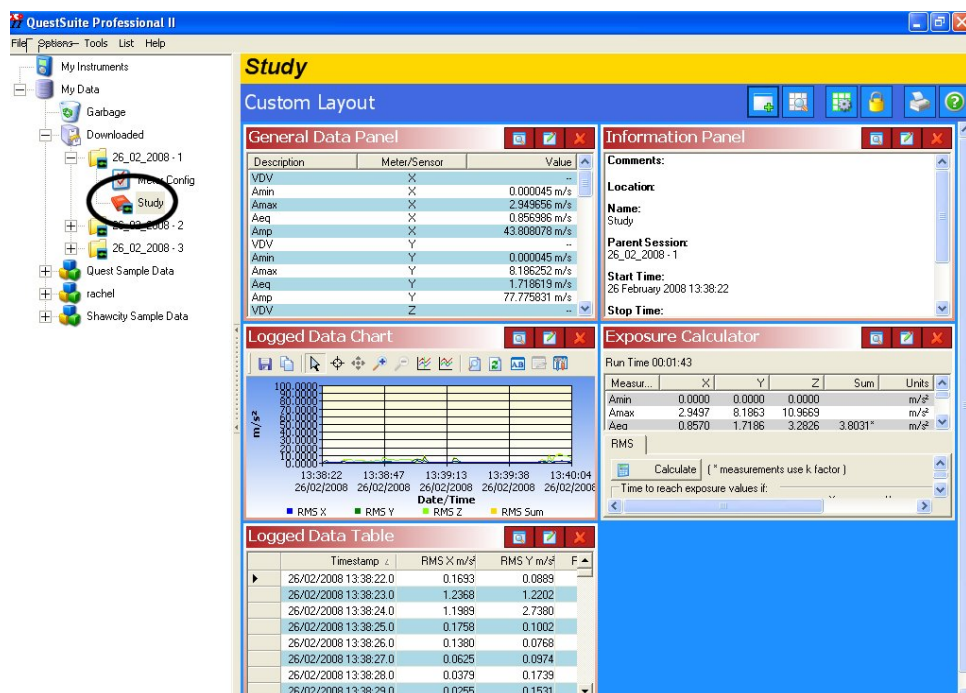
- 25 Each downloaded file consists of some basic session information. When you 'double click' on the file name two further session items appear. The first is the Meter Configuration information and the second is the Study details themselves.



26 The meter configuration file shows the set up details of the instrument

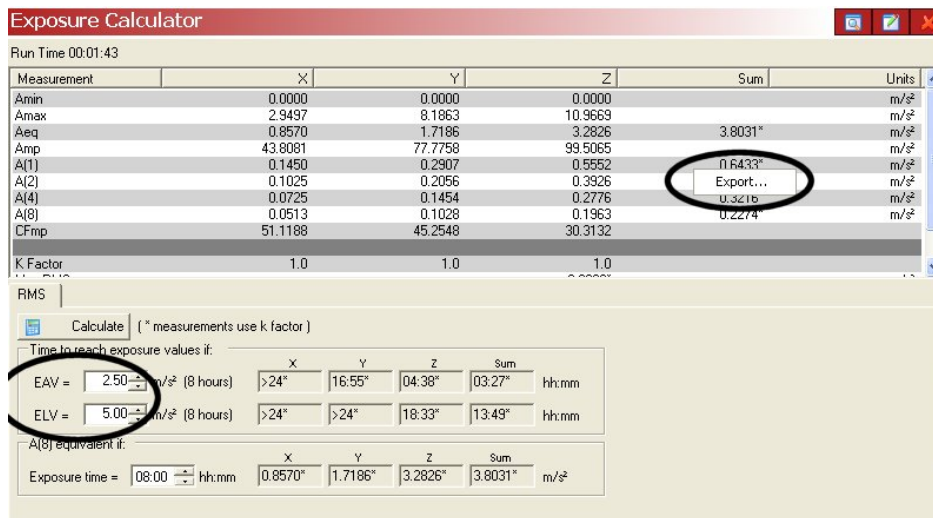


27 The Study files shows all the details of the current study being viewed. The data is downloaded into a standard template configuration with each data window in the layout screen showing information such as Logged Data, Exposure Calculator etc, etc. This layout can be changed, ordered and more or less information added to or removed from the individual information panels. For further information on data panels and template layout please refer to APPENDIX B – QSP II INTRODUCTION & QUICK TOUR on Pages 18 - 28 of this guide and the QSP II programs comprehensive Help files.

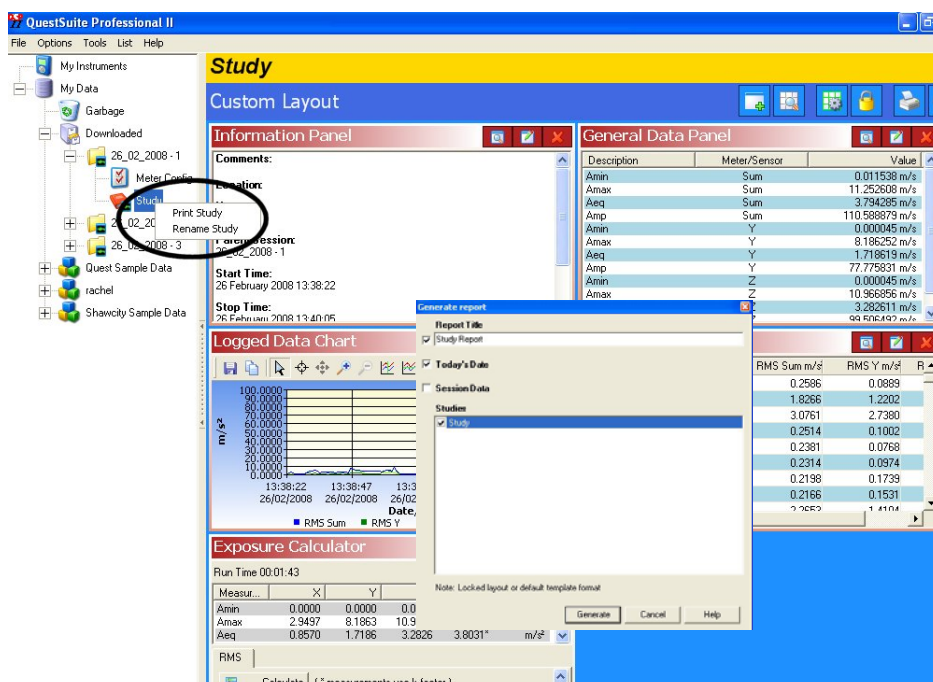


- 28 The software has the embedded formulae to work out an exposure time in hours for you from the data collected using the A8 (time weighted) value. Click on the Exposure Calculator data window to see this data for each test carried out. You input the correct Action and Criterion levels for either Hand Arm or Whole Body vibration and click on the Calculate button to review exposure times. For Whole Body vibration a VDV figure is also provided. For Hand Arm Vibration the Action Value is 2.5 m/s^2 (8 Hour) and the Limit Value is 5.0 m/s^2 (8 Hour). For Whole Body Vibration the Action Value is 0.5 m/s^2 (8 Hour) and the Limit Value is 1.15 m/s^2 (8 Hour). The VDV Action Value is $9.0 \text{ m/s}^{1.75}$ and the Limit Value is $21.0 \text{ m/s}^{1.75}$

In most of the data panels you can right mouse click and the Export box appears allowing the data to be exported in .CSV or .XML format.

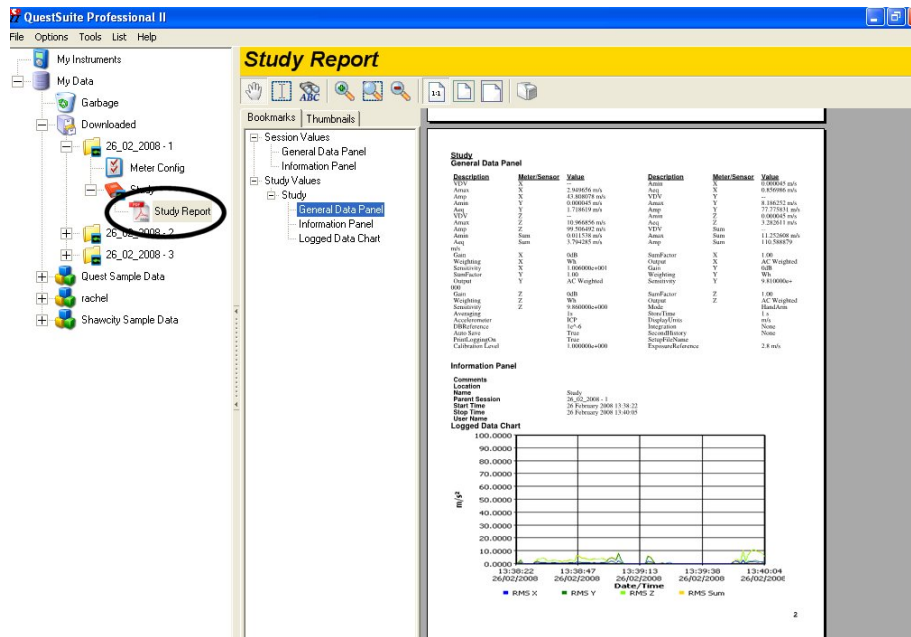


- 29 To print study or session data simply right mouse click on the study name in the left hand control panel. A sub menu will appear – select the whole session or individual study data as required.



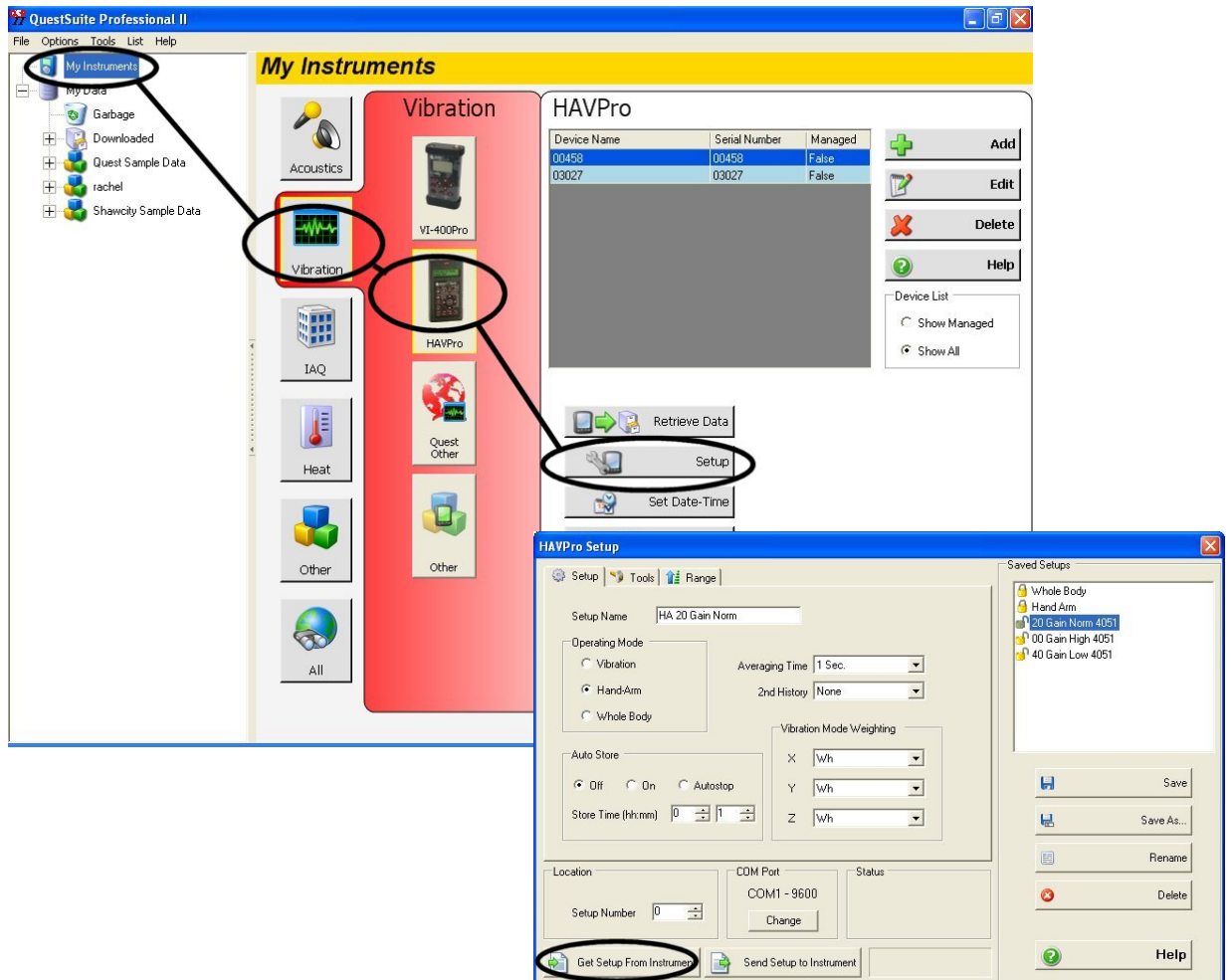
30 This will generate a report in .PDF file format which can then be printed.

NOTE: The order of the report is based on the layout of the individual data windows in the layout template being used. By changing the order of the windows on screen the order of the printing layout will also be changed.



APPENDIX A - RETRIEVING & DOWNLOADING SETUP FILES

To retrieve the set up file(s) from the unit make sure the HAVPro is connected to your PC in the usual way. Click on the Setup option on the menu and the HAVPro Setup pop-up appears. Select the Setup Number (by default if you are using only one set up this will normally be Setup Number 0. You may need to retrieve Setups Numbers 1 through 3 as well). You can have up to 10 different set ups (0 – 9) loaded into the HAVPro at any one time. Click on the Get Setup from Instrument button and the selected set up will then appear on screen. This set up can then be saved to file using the Save As button option.

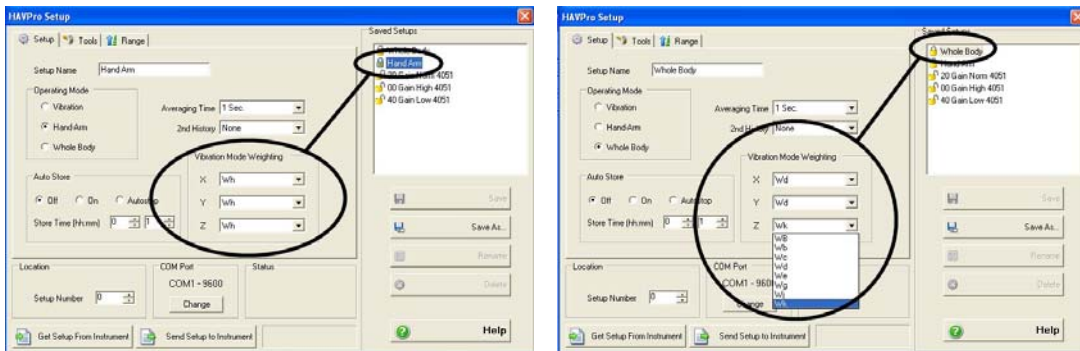


The HAVPro Setup Pop Up has three sub menus. To input and download a completely new set up to the instrument certain parameters need to be input into these sub menus.

The first sub menu is Setup.

Here you select the vibration type – Hand Arm or Whole Body, the Averaging Time, i.e. how often a sample is taken (normally every 5 seconds is sufficient) and the Weightings of each of the three axes of the accelerometer. The Weighting for Hand Arm vibration is Wh for all three axes. The Weighting for Whole Body vibration is Wd for axes X and Y and Wk for the Z axis.

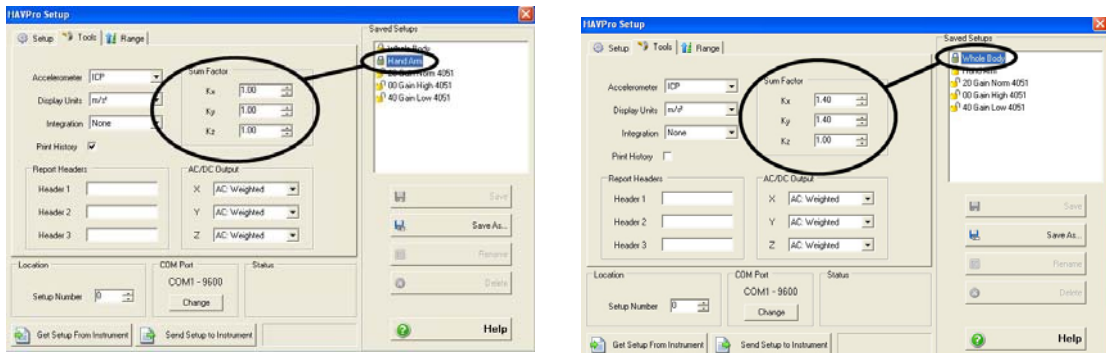
See the Screen pictures below for a typical set up for both Hand Arm and Whole Body Vibration



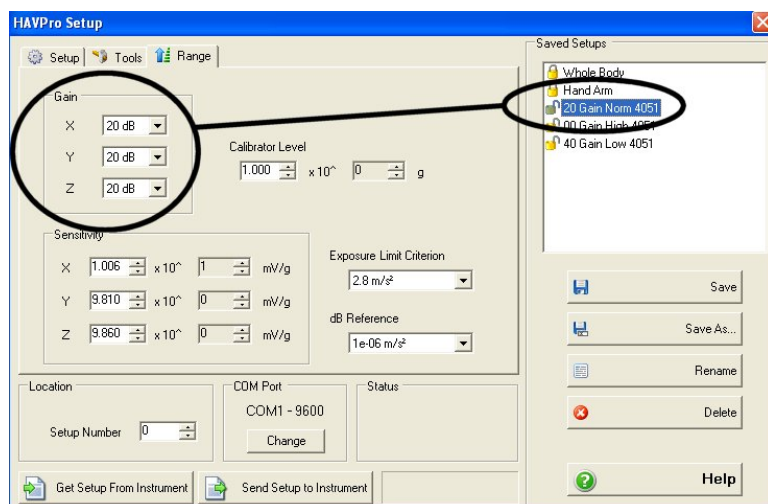
The second sub menu is the Tools screen.

Here you select the type of accelerometer being used. Normally ICP for both Hand Arm and Whole Body, the display units and also input the Sum Factor for each axis. The Sum Factor is a multiplier and is always 1 for Hand Arm vibration but both the X and Y axes in Whole Body vibration are weighted by a 1.4 multiplier.

See the Screen pictures below for a typical set up for both Hand Arm and Whole Body Vibration



The third sub menu is the Range Screen.



Here you can input a db gain value as required by the type of equipment you are testing . Your unit should be set up for Hand Arm Vibration as follows:-

Gain Settings for Hand Arm Vibration:

SET UP 0 – 20db Gain – Normal Vibration – Setup file called HA 20
e.g. Breakers / Impact Wrenches

SET UP 1 – 0db Gain – High Vibration – Setup called HA 00 Gain
e.g. Old Breakers / Rivet Hammers

SET UP 2 – 40db Gain – Low Vibration – Setup called HA 40 Gain
e.g. Rotary Tools

IMPORTANT

False readings can occur when the incorrect gain level is used.

Gain Settings for Whole Body Vibration:

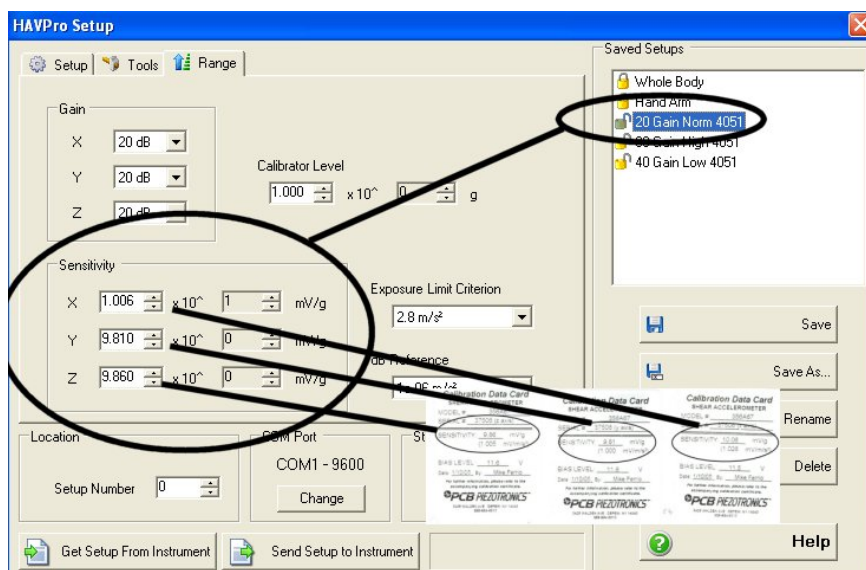
Gain settings for Whole Body Vibration should always be set to zero.

Sensitivity Settings:

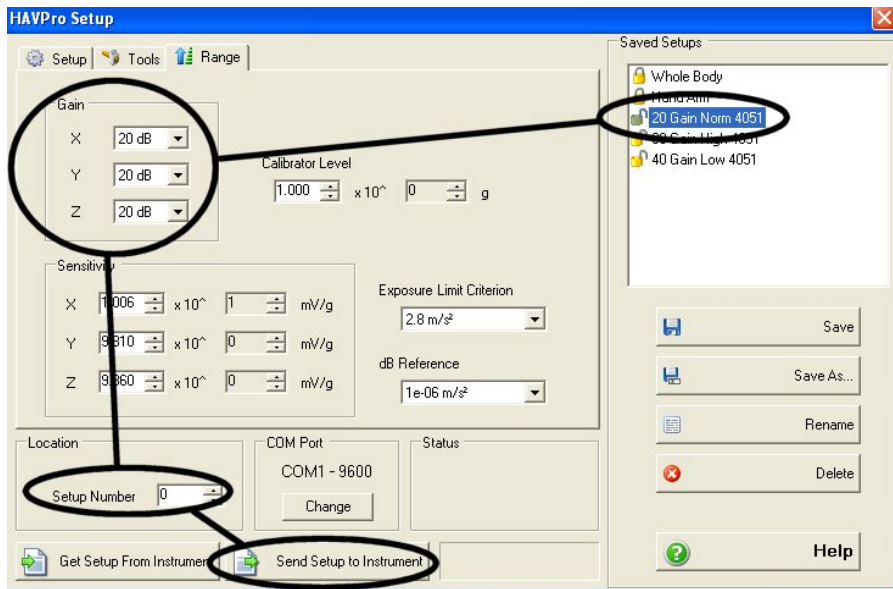
The important information input here are the Sensitivity values of each axis of the supplied accelerometer.

In the box or case with your accelerometer you will find manufacturers calibration data sheets (either large or in small card form). The sensitivity data in mV/g for the X, Y and Z axes is clearly marked on the individual axis calibration sheet and should be input in the decimal form as per the examples for both Hand Arm and Whole Body illustrated below.

e.g. the sensitivity of the X axis for the Whole Body example below is 102 mV/g this is input into the software screen as 1.02 x 10 to the power of (^) 2.



Once all these three screens have been completed the new set up can be saved to a file using the Save As button and then sent to the instrument by selecting a Setup Number and clicking on the Send Setup to Instrument button.



APPENDIX B – QSP II INTRODUCTION & QUICK TOUR



QuestSuite® Pro II

QuestSuite® Pro II (QSP II), is an extension of the original QuestSuite Professional software completely rewritten in Microsoft DOT.NET. To simplify your transition to QSP II, the user interface functions much like your file browser and email programs.



One of the key features in QSP II is the ability to manage your entire instrument inventory, including non-Quest instruments, from one application. Information such as purchase date, model and serial numbers, certification dates, etc. can be included for any instrument. Plus, you can program QSP II to automatically prompt you when calibrations are due for any of the instruments entered into inventory.

Minimum System Requirements to run QSP II:

- Windows 2000 with SP4 or Windows XP with SP2
- P3-500 or AMD Athlon 500MHZ
- 256MB of RAM
- 300MB free disk space
- 1024x768 16 bit color display
- Microsoft mouse or compatible pointing device
- Keyboard
- Internet Explorer 5.01

QuestSuite Professional II

Quick Tour Guide

How to create an "Organizer Node"  :	1
Why:	1
How:	1
Using Panels	2
General	2
The ToolBar:	2
Adding a Panel:	2
Panel Toolbar:	2
Templates:	2
General	2
How Does QSP-2 Decide to Show Data When I Click On A Session or Study Icon?	2
Locking A Layout: 	2
General	2
How do I do a complete backup my Database?	2
General	2
How to archive off parts of your database.	2
How to Combine Data	2

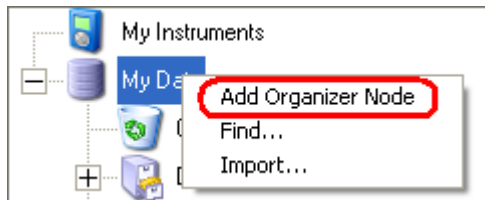
How to create an "Organizer Node" :


Why:

When you download sessions from an instrument, or Import Data, the data will first appear in the Download Node. This acts like an "Inbox" in an E-Mail Program. You should NOT leave data in the "Downloaded" node because after a few instrument downloads, it will get confusing as to what session is what, or where it came from, or what data it holds. Organize your data just as you would mail that comes into your "InBox" in MS Outlook, for example.

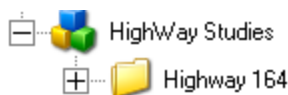
How

Right-Click on "My Data" and select "Add Organizer Node". Give it a name, and an Organizer Node will appear at the bottom of the tree.



Then, expand the "Downloaded" node  by clicking on the "+". Then, left click and hold on the session and drag it onto the newly created Organizer Node.

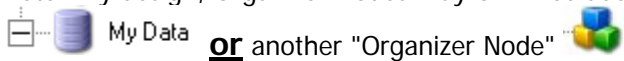
For Example.



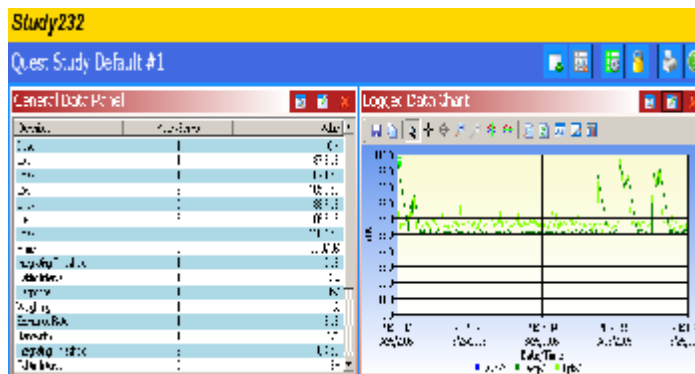
Organizer nodes can have child organizer nodes. In the above example, one could easily create a structure such as:



Note: By design, Organizer Nodes may ONLY be added to the "My Data" node



Using Panels

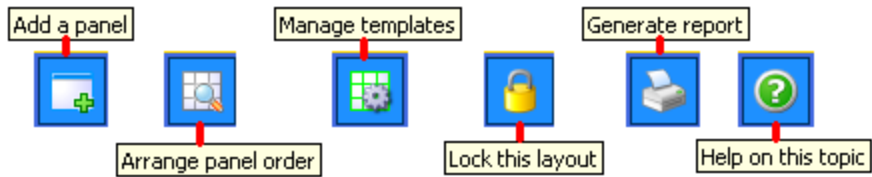


General

The concept behind the panels is that they allow the user to both select the *TYPE* of data that they want to see and also the *ORDER* in which they see it. They appear only when clicking on a Session or a Study.

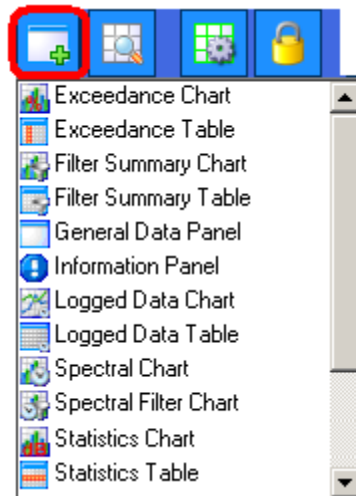
A "Layout" is comprised of at least one panel. In the above picture, the layout is comprised of 2 panels. Layouts can be customized. That is, you can add the panels that you want to the layout, select the data that they contain, and arrange them in the order you wish. Then, you can lock the layout such that the next time you open the app and click on the associated session or study, it will appear just as you left it. Or, if that layout is a layout that you frequently use, you can save it as a template. Then, when you open a different study or session, you can apply the template to it, and the layout will be regenerated, using the new data.

The ToolBar:



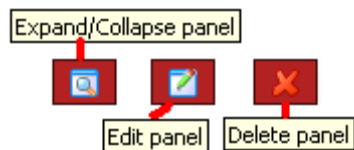
Adding a Panel

You must first select either a Session or Study. Then, click the "Add Panel" icon. Note, if you hover over the icons, a tooltip will appear. Click on the "Add a panel" icon. A drop-down list of selectable panels appears.



Panel Toolbar:

The following buttons are located on the top of each panel. "Expand/Collapse" and "Delete Panel" are obvious. The "Edit Panel" allows you to select the data that goes in to a panel. Note, if you have a panel that uses a chart, the chart itself has customizable features. Be sure to right click on the chart to change these, if necessary.




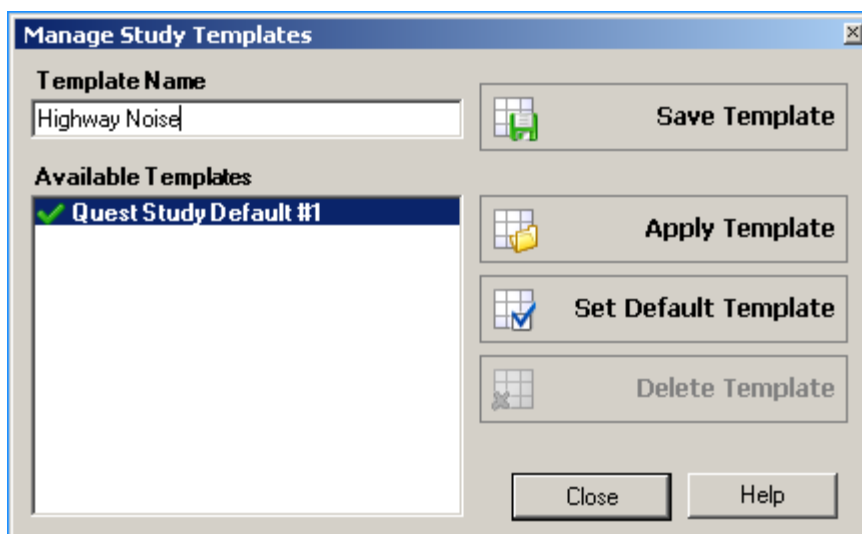
Templates:

General

Templates are just saved layout types. For example, if you arrange a layout (collection of panels) in a certain way and would like other layouts to look the same, then create a template based on the layout. Then when you select data to look at, you can apply that template to the layout. You can also set any template as a "Default View". Then when you click on a Session or Study icon, this Default View will be used (unless you explicitly tell QSP-2 to use a different view).

For example, suppose you open a session and create a layout with 3 panels. If you would like other sessions to be viewed this way, (to keep reporting consistent), then click on the "Manage

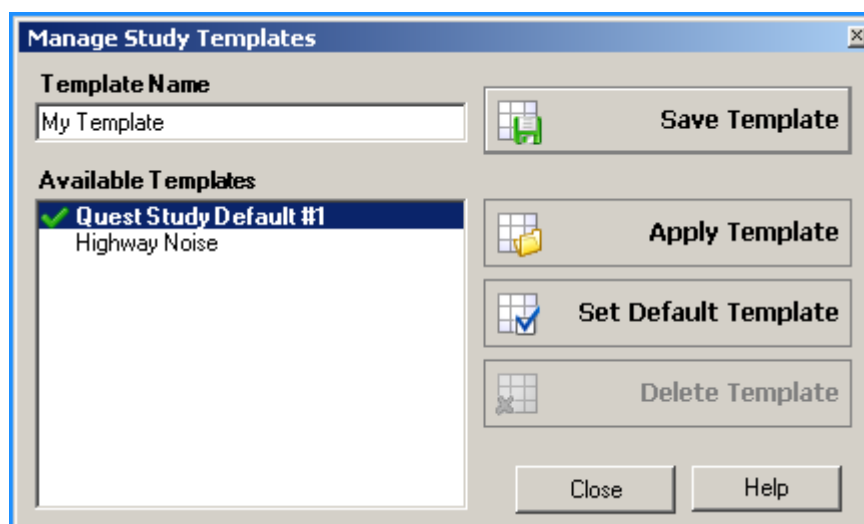
Templates"  button on the layout toolbar, and create a template.



Note the green check mark ✓ in the "Available Templates" list next to "Quest Study Default #1". This shows the template used to create the layout when you first clicked on the session icon.

Above, a name "Highway Noise" is typed into the "Template Name" field. Click the "Save Template" to save this template.

Note, below, "Highway Noise" is now in the list of "Available Templates".



Note, clicking "Save Template" does NOT associate a name with this session yet. You've merely created a template. To save a layout arrangement, click the "Lock this

Layout"  button.

If you would like the default view of a session to look like this layout, then click the "Set Default Template" button.

How Does QSP-2 Decide to Show Data When I Click On A Session or Study Icon?


First, QSP-2 looks to see if the user had ever saved or "Locked" the view for that Session or Study. If they have, that previous view is restored. If not, then the "Default View" template is used to generate the layout. The "Default View" is either the one supplied with QSP-2, or a modified template that the user created, described above.

Locking A Layout:



General

Once a layout is arranged the way you like it, if you want it to stay that way, click on the "Lock this Layout" button. This will ensure that the next time you click on this Session or Study, the layout will return as you left it. If you decide that you do not like the layout and wish to just go back to the default layout, then click the "Unlock

This Layout"  button . Note how the button toggles between "Locked" and "Unlocked".

How do I do a complete backup my Database?

General

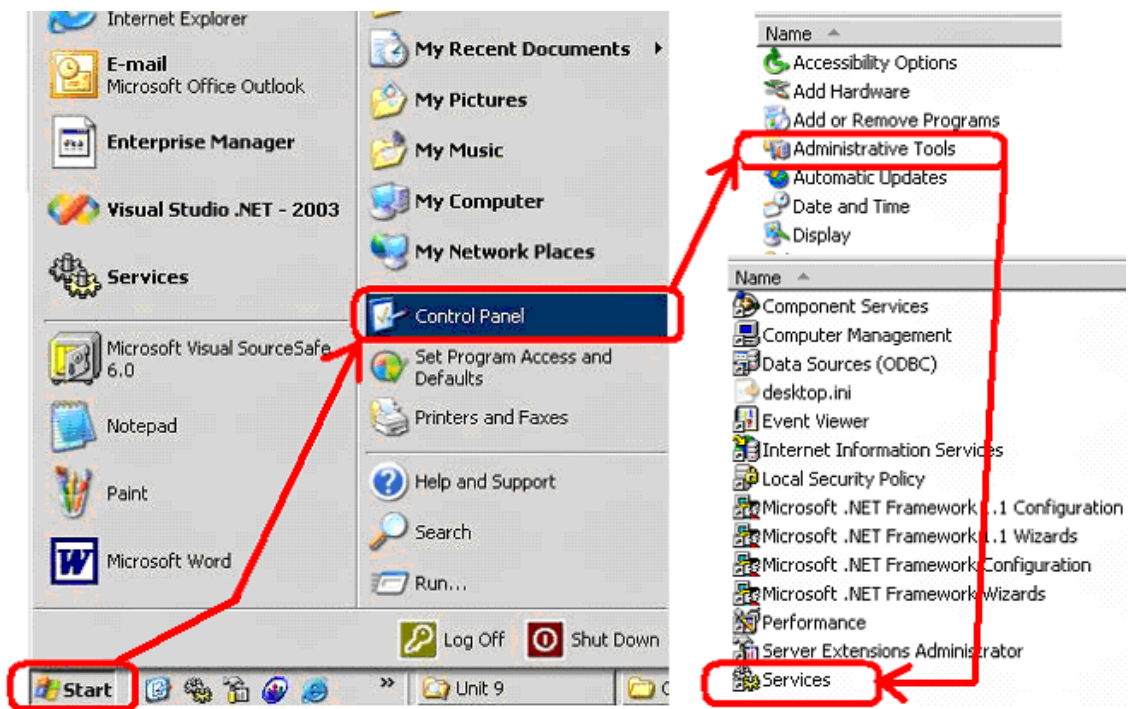
The data presented in QSP-2 is in a SQL (Sequel Server) database. It resides in the path:

C:\Program Files\Quest Technologies\QuestSuite Professional II\Data

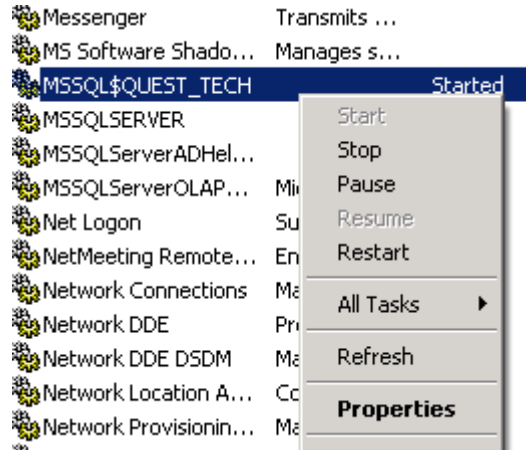
and is comprised of 2 files, QSP11_Data.MDF and QSP11_Log.LDF.

Note, these files can get rather large, up to a max of almost 2GB. That's 2,000 MB! Please do NOT allow your database to get larger than 900MB, you should start to archive off data when you reach that point. Allowing the database to get too large will result in poor performance of QSP-2. To archive off data, please see "6) How to archive off parts of your database."

To save these two files and thus completely backup the database, do the following

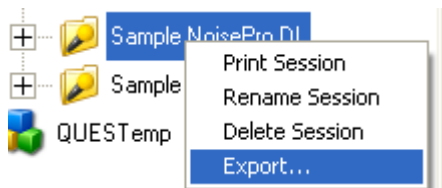


Select "Stop" in the above menu. SQL-Server/MSDE will now "let go" of these files so you may copy them using File Explorer. After copying and saving, then re-start the service by right-clicking again on "MSSQL\$QUEST_TECH", and selecting "Start".

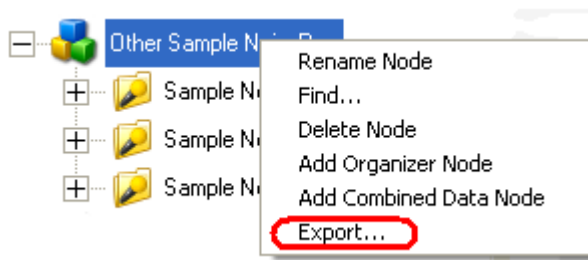


How to archive off parts of your database.

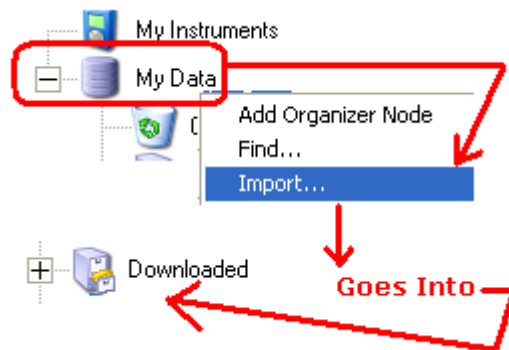
To archive off a portion of your database, select a Session or an Organizer Node, right click and select "Export"



Then save the data to a file. Be sure to remember where you saved your backup data! We suggest you create a directory structure that is easy to find. Once you have backed up the data, you can delete it from QSP-2. IMPORTANT: Although you may save off a single session as shown above, it is recommended that you organize your sessions using organizer nodes, as shown here, and *then* export off the data.



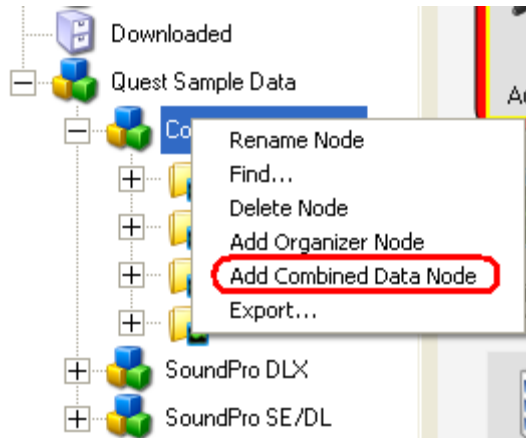
To later retrieve the data, right click on "My Data", and select "Import".



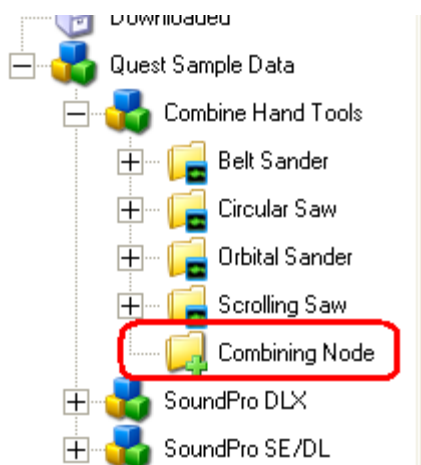
This will put the data into the "Downloaded" node, and will take about 2-5 minutes for large amounts of data. After restoring the data, be sure to drag the data to an organizer node.

How to Combine Data

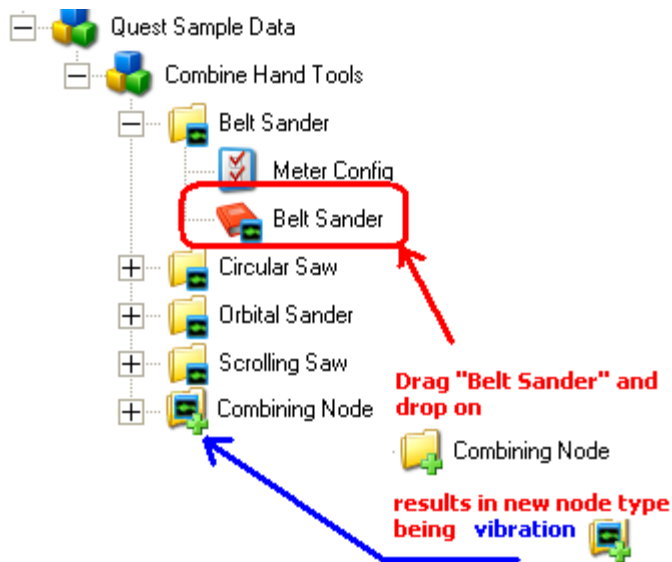
1. Below is an example using Quest Technologies Sample VI-400 Data Files.
2. Locate an Organizer Node, right click on it, and select "Add Combined Data Node" from the context menu. You will be prompted to provide a name for the combination node.






3. Note that the combination node is a child of the organizer node. Also note, at this point the node is not specific to any type of instrument. It will be when you drag a study to it.

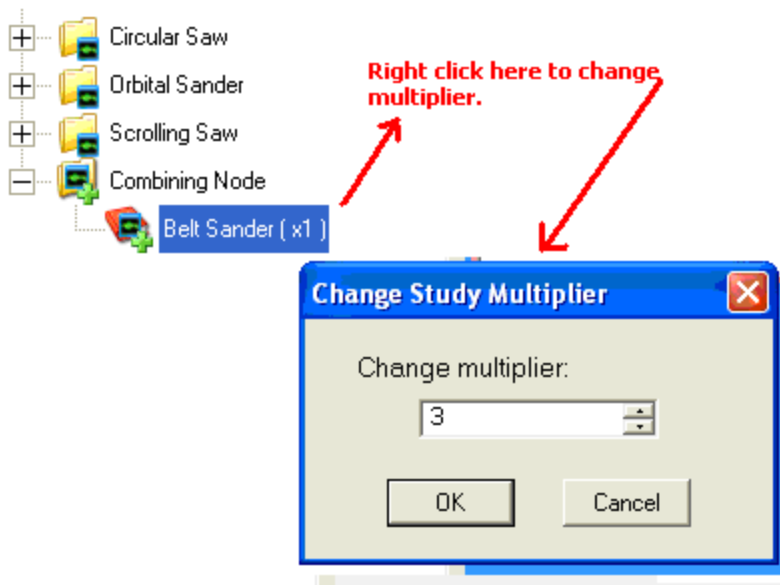


4. Drag a study to the node, in this case, the "Belt Sander" node. Note that the combination node now changes.

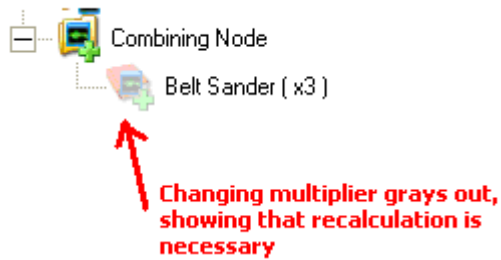


Note how the node changed from  to .

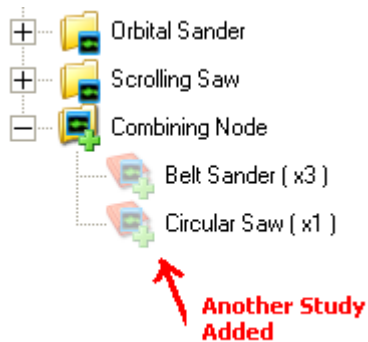
- Now, you are only allowed to drop studies on this node that are of vibration AND that have their instrument setup the same as the first study. Click the  to reveal the first study.



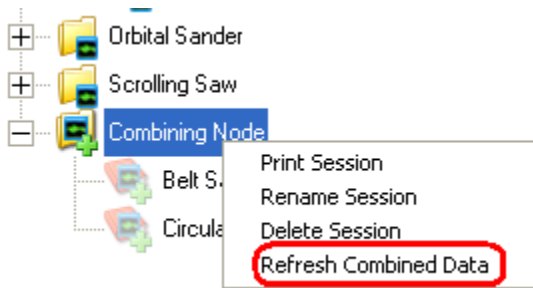
- Note the "(x1)". When building exposures, in the past if you had a 1 minute study and you wanted to create 20 minutes worth of exposure, you would have to drag the study to the node 20 times. That is no longer necessary. Now you can just change the multiplier.



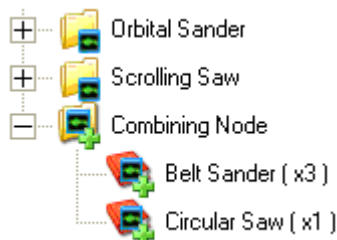
- Note the graying out. This is intentional. It would be rather annoying to have all the panels refresh and upgrade every time a new study is added or a multiplier changed (especially if there is a great amount of data to calculate). Thus, once a study is altered and ready to recalculate, the user needs to refresh the view. Here, a new study is also added.



- Now, click the "Refresh Combined Data", the combined session will



recalculate and the nodes will no longer be grayed out.



To remove any of the studies from the combination, one can right click on the node and select to remove the study.

Note – you CANNOT save combined nodes when archiving off of data, since they are interdependent upon other nodes in the database that may be or are subjected to being deleted individually.

PLEASE NOTE:-

This Quick Start Guide supplied by Shawcity is for information and training purposes only.

It is the responsibility of the End User of the HAVPro unit to ensure the data they are collecting is accurate.



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