Rhinomanometer NR6



Rhinomanometer NR6

User Software Manual

and Installation Notes V13



TABLE OF CONTENTS

SOFTWARE INSTALLATION		
HOW TO CONFIGURE THE SOFTWARE	PAGE 6	
STARTING A TEST		
TO PREPARE FOR A MEASUREMENT ON A NEW SUBJECT	PAGE 20	
TO PREPARE FOR A MEASUREMENT ON A REPEAT SUBJECT	PAGE 21	
TO MAKE A NEW RECORD	PAGE 22	
INTERPRETING RESULTS	PAGE 25	
TO COMPARE ANY TWO TEST RECORDS	PAGE 26	
TO DELETE A TEST RESULT	PAGE 27	
BATCH TEST FACILITY (CLINICAL/RESEARCH VERSION ONLY)	PAGE 28	
DATA EXPORT FACILITY (CLINICAL/RESEARCH VERSION ONLY)	PAGE 30	

SOFTWARE INSTALLATION

COMPUTERS SUPPORTED

NR6 will work on any PC which uses a windows operating system and which has a free USB socket.

N.B. Only units which comply with EN60950 should be used.

PRINTERS SUPPORTED

As these instruments operate in a Windows environment, print capability depends on you having installed a printer under Windows. Virtually any printer which works under the version of Windows you have will be suitable.

INTERFACE BOARD SOFTWARE (Measurement Computing) Ensure the USB cable is <u>NOT</u> connected to the NR6 unit.

If you have an MCC DAQ disk, put it in your drive and allow it to auto run, or open it and click on Install. You only need to install InstaCal/Universal Library software from this disk. Other options such as Tracer and manuals are not required.

If you have a Thumb Drive put it in a free USB socket and navigate to it. Open the MC folder, and click on icalsetup.exe. Accept the defaults offered.

The program InstaCal and other driver software will be loaded to a folder called Measurement Computing.

INTERFACE BOARD HARDWARE

The next installation operation is to have your PC identify the USB A/D converter, which is built into the NR6 unit. To do this, connect the NR6 to your PC using the cable supplied.

Click on the **Start button** and scroll down to **Measurement Computing**, select it and scroll down to **InstaCal** and click on it. **InstaCal** will show no boards installed as shown below.

🗱 InstaCal	
File Install Calibrate Test Help	
RC Board List	
Ready	

Wait for a few seconds as the USB interface is recognised and the drivers are loaded. If this doesn't happen, click on **Install**, then Refresh. Once completed, the InstaCal screen will offer the opportunity to accept your USB board.

N.B. the serial number for the USB in each NR6 is unique. The most recent units are for type 201, while older NR6 units will have a 1208 USB module installed.



Click on **OK**



When InstaCal shows the screen above, (shown for a 201 module) USB installation is complete and InstaCal can be closed.

GMI SOFTWARE

Put the GMI CD in your drive or open the folder NR6 on your Thumb Drive. Navigate to the file Setup-NR6Rhino_V3_X_X_XXXX.exe and click on it. Accept the defaults offered at each stage, until you are asked for the desired location for the .ini file – you will be offered the choice of the shared folder or the application folder. Unless you plan on using the system on a network, the application folder should be selected.

OPENING THE SOFTWARE

Start the program by clicking on its desktop icon or by clicking on:

Start -> Programs -> Rhinomanometer NR6 -> Rhinomanometer NR6

The opening window is as shown below.

₽ <mark>Ŀ_ NR</mark>	ōRhino -	New file							
File	View A	Acquisition	Calib	ration	Hel	р			
<u>N</u> ew	≧ <u>0</u> pen	- [] <u>S</u> ave	De NR6	<i>e</i> Print	-	这 E <u>x</u> it			
E F	'atient re	cord 🔀 -	「ests é	🗃 Rep	ort				
Nam	e 🗌				_				
ID no).			-					
	,								

If you wish to change the fields listed in the **Patient Record** screen, this should be done at the beginning, before starting to save records. To do this, click on File, click on Close, click on File, click on Settings, select the Patient Record Tab and make the alterations you want, as described in the following pages.

If you wish to make measurements on a New subject, click on File, click on Close, then click on New.

If you wish to bring back a record of a Patient previously tested, click on Open.

N.B. For full information on the alterations possible, and how to make them, see pages 6-19.

HOW TO CONFIGURE THE SOFTWARE

All changes are made by clicking on **File** -> **Settings**. A new window named **Settings** is then displayed which shows two main tabs, each of which contains sub tabs with user-configurable items. The two main tabs are labelled **General** and **Rhinomanometry**.

Settings		
General Patient record Styles Report Gevices Sampling Acquisition Results Plot Report	General > User interface Main window Show toolbar button captions Show system time in statusbar Middle mouse button action Misc Auto size test results table Localization Language	 Rhinomanometry acquisition Rhinomanometry acquisition Auto determine Please restart to make setting effective
		OK Cancel Apply

GENERAL > USER INTERFACE TAB

The **General > User interface** tab allows you to:

- Show captions on the toolbar buttons
- Show the PC system time in the status bar
- Enable the middle mouse button, or a GMI USB footswitch, to open the acquisition window and begin capture of test results.
- Make the system adjust the graphics display, following a test, to allow space for the table of results appropriate to that test.
- Make the system match the language set on the PC to any of the options supplied with the NR6 software, when possible.

GENERAL > PATIENT RECORD TAB

			×
Settings			
	General > Patient record		
- Patient record	List of fields	Field properties	
Styles 	Name	Caption	ID No.
	IU NO.	Maximum length	15
Devices Sampling		Input mask (format)	F
Acquisition		Default value	
Plot		Position on same	e line as previous field
En Report		Hide on printouts	3
		🔽 Use for suggesti	on of filename
	<u>N</u> ew <u>D</u> elete	<u></u>	
		ОК	Cancel Apply

The **General** > **Patient record** information window can contain many fields. You can however include as many or as few as you want, put them in any order, define what kind of data is acceptable for entry in any field and specify the size of field.

List of Fields is a window which shows the current "labels" already selected for inclusion. If you click on one of these it can be edited or deleted or its position moved within the group. When highlighted, the information relating to its structure is shown on the right-hand side of the window under the headings of:

Caption the current label selected for editing.

Maximum length - the number of character spaces allocated in the **Patient Information** window against that name.

Input mask (format) - the conditions applied to character entry in the associated **Caption** field.

In the above example **ID No.** is highlighted in the **Lists of fields** window. The label **ID No.** is shown in the **Caption** field and it can be seen that currently space is allowed for 15 characters. The applied mask is one which only allows valid filename characters for entry in that field, with no spaces. **Masks** can be selected or changed by clicking on the button on the extreme right of the **Input mask (format)** field.

Input masks			
First letter uppercase Everything in uppercase Only numbers Only alphabetic characters			
Only alphanumeric characters Only filename characters Phone number			
Mask F			
Test			
OK Cance			

The **Input masks** window offers a selection of conditions you can apply, and has space below for you to **Test** the restrictions. If you wish to keep the currently selected mask, click on **OK**, and then on **Apply**.

Default Value - the value that will appear in this field before it is changed

If you wish to discard any field click on **Delete** while that field is highlighted. If you want to add a new field click **New**.

If you want to change the order in which they appear, highlight the one you want to move and then use the **Up** and **Down** arrow buttons to the right of the **Delete** button.

You can place more than one item on a line by placing it below the item you want it lined up with and clicking on **Position on same line as previous field**.

You can also hide a field from printout by highlighting it and clicking on **Hide on** printouts.

A field can be used for the test file name by highlighting it and then clicking on **Use** for suggestion of filename.

When the software is opened it will open in a blank patient record. If you wish to add or remove any fields from the Patient record screen or make changes to them you must first close the current record by selecting **File** from the main toolbar and then selecting **Close** part way down the list. Once you have made any changes, you can then open a new patient record.

This software enhancement has been made to stop patient files being accidentally corrupted – a side-effect of changing the format of a patient record while a patient record is open.

GENERAL > STYLES TAB

Settings	
General Gen	General > Styles Target Application user interface (screen) Plot item Color Style NR6 Threshold Arial 10 Axis labels Arial 8 Matrix Arial 8 Curve 1 Curve 1 Curve 2 Arial 8 Curve 3 Arial 4 Curve 4 Arial 4 Curve 5 Arial 4
	Color Pen style Preview Font Ihickness Image: Color State Stat
	OK Cancel Apply

The **General** > **Styles** tab allows you to set up colours and line styles for either the screen or the printout.

Target - Here you can select **Application user interface (screen)** or **Report (printer)** for alteration

Item - Scrolling window which contains a list of the screen or printout elements whose colour, line style or font can be changed

Colour - Colour palate, from which you choose the colour you want applied to any element selected in the item window

Style - Displays the colour, line style or font currently set for the element shown in the item window

Pen Style - Allows you to set different types of lines for the element selected, i.e. dots, dashes, dots and dashes, solid.

Thickness - Allows you to apply different line thicknesses to any line drawing element selected from the item window

Preview - Window which lets you see the effect of a change

To make a change to the default settings select **Application user interface (screen)** or **Report (printer)**, select an **Item** from the list, select your chosen pen **Color** and, if appropriate, **Pen style** or **Thickness.** You will immediately see the effect of that change in the **Preview** window.

If you click on **Apply** the change will be recorded and you can move to another element. If you click on **OK** instead of **Apply**, the change will be made and recorded, but you will close the **Setup** window and return to the main screen.

Application User Interface (screen) & Report (printer)					
Item Name	Item Description				
NR6 Threshold	The lines that mark the minimum pressure magnitude required to initiate capture during an NR6 test				
Labels	Graph annotations for the NR6				
Axis Labels	Numbers marking the axes on the A1 graphs				
Matrix	The non-zero grid lines for each graph				
Curve 1 – Curve 10	Each of the captured curves shown on a graph at any given time				
NR6 Acquire Pen	Dot which draws the graph as the subject breathes				
Rohrer Curve	Curve relating to linear and non-linear resistance (NR6)				
Graph Border / Area	Colour of graph borders and background areas				
Axes	Zero lines on the graphs				
Results Values Text	All text in the tables				
Subgraph Caption	Text in the "Remarks" box in the bottom right corner of the screen				
Legend: Item Text/Box Frame/ Box Background	Colour of the frame, background within the frame and the text within the frame of a legend describing the information contained within a graph				
Patient Record Background	Background of the main screen where patient details are entered				
Individual Base/Comp P/L/R	Colour of the baseline and comparison curves when comparing the whole nose (usually taken before and after a procedure)				
Averaged Base/Comp P/L/R	Colour of the baseline and comparison curves when using averaged data (see Rhinomanometry Report tab, below)				
Flow/Pressure Base/Comp P/L/R	Baseline and comparison graphs using NR6 results				
Severe Resistance	Colour of appropriate markings on the 150 Pa line				
Moderate Resistance	Colour of appropriate markings on the 150 Pa line				
Mild Resistance	Colour of appropriate markings on the 150 Pa line				
Low Resistance	Colour of appropriate markings on the 150 Pa line				

GENERAL > REPORT TAB

	ĺ	×
Settings		
General General General Styles Report Report Construction Constru	General > Report Report header Custom text Rhinomanometer NR6 Page margins Top 5 * mm Left 5 * mm	
	OK Cancel Apply]

The **General** > **Report** tab allows the setting of a title which will appear on printouts and the alteration of printer margins. More detailed control of printer options is available in the normal Windows print driver dialogue box.

RHINOMANOMETRY > DEVICES TAB

	2	3
Settings		
General User interface Patient record Styles Report Bhinomanometry Cevices Sampling Acquisition Results Plot Report	Acquisition devices Index Name 0 NR6 Rhinomanometer 0 NR6 Rhinomanometer Add Remove Configure Calibrate	
	OK Cancel Apply	I

The **Rhinomanometry** > **Devices** screen shown above displays the USB device number assigned to the instrument. If you then click on the device (NR6 Rhinomanometer) the buttons at the bottom of the window become active.

		×
Settings		
General User interface Patient record Styles Report Periods Sampling Acquisition Results Plot Report	Acquisition devices Index Name NR6 Rhinomanometer	
	OK Cancel Apply	

If you click on **Configure**, you will see:

the interface type (**USB-201**), Board number [0], the channels used for the flow transducer (1) and pressure transducer (2), and the gain setting which has been selected (**+/- 10 Volts**).

Also displayed are the flow and pressure limits (1600 units for each).

N.B. These are all default settings and should not be changed.

Configure	device
NR6 Rhinoman	ometer
Flow input	Channel 1 @ USB-201 [0] INSTACAL ± 10 Volts
Pressure input	Channel 2 @ USB-201 [0]
Serial number	± 10 Volts
Flow limit	1600 cc/s
Pressure limit	1600 Pa
<u>D</u> efaults	Cancel OK

If you click on **Calibrate**, digital meters displaying the current flow and pressure signals will show.

If you have known sources of flow and pressure to apply to the NR6 and compare with the meter readings this will allow you to check the calibration, as explained in the maintenance section of the user manual.

Viewing this screen allows you to check the calibration, it does not alter the calibration in any way.

	×
Calibration	
NR6 Rhinomanometer	
Pressure Pa -800 800	
Flow Absolute -800 800	
Calibration interval	S
Ø Zero OK Cano	el

The **Add** and **Remove** buttons allow the interface to be changed if, for instance, you have an NV1 Rhinospirometer, which you want to install on the same PC. Each interface will be assigned a different number by InstaCal, and since the default setting for both instruments is board 0, one or other must be changed in the software to allow both to work. There is normally no need to alter these settings.

Settings		
General	Rhinomanometry > Samplin	g
- Patient record	Classic	
Report	Flow threshold	30 cc/s
	Pressure threshold	30 Pa
Sampling	Flow difference	30 cc/s
- Acquisition	Pressure difference	30 Pa
Plot	Four Phase	
····· Report	Sampling frequency	100 Hz
	Minimal respiration length	0.5 s
		OK Canad Arabi
		Cancer Apply

RHINOMANOMETRY > SAMPLING TAB

These settings relate to data sampling and should not normally be altered.

		×
Settings		
General	Rhinomanometry > Acquisiti	on
Patient record Styles Report Devices Sampling Acquisition Results Plot Report	Test defaults Recording mode Reference Side Number of respirations Display Update frequency Buffer length Show signal marker Anterior recording Auto switch to opposite side Automatically create L/B test	Classic Standard 150 Pa Anterior Left 25 Hz 25 K Ask V
		OK Cancel Apply

RHINOMANOMETRY > ACQUISITION TAB

The **Rhinomanometry** > **Acquisition** tab contains the default settings for:

Recording mode - Where you can elect to use **Classic** Rhinomanometry or **Four Phase** rhinomanometry.

Reference - Defines whether you will be offered a **Broms** or **Standard** fixed-point resistance test. You can always change at the time of testing but this facility allows a standard protocol to be offered.

Side - Gives the option of Posterior or Anterior Right or Anterior Left testing as the default test starting point.

Number of Respirations - Allows you to set the number of breathing cycles required to complete a test - the default is four breathing cycles.

Update frequency - Affects the rate at which the screen displays are updated without affecting the acquisition rate.

Buffer length - Specifies how many seconds of pressure/flow meter samples are retained.

Show Signal Marker - Allows you to switch on or off the circle which surrounds the **Acquisition Spot** during an acquisition.

Auto switch to opposite side

Ask - Having performed a measurement on one side ask if you want to measure the other side.

Always - Having performed a measurement on one side, set up the acquisition screen to measure the other side.

Never - Having performed a measurement on one side, close the acquisition window.

Automatically create L/R test - When using Anterior Rhinomanometry, having performed left and then right-side tests, if this box is ticked a new combined Left/Right test result will be added to the test list for the subject.

RHINOMANOMETRY > RESULTS TAB

Settings		
General G	Rhinomanometry > Results Miscellaneous Show angles for tests using Broms reference	
	OK Cancel Apply	

If a **Broms** test is to be done, the angles, with reference to the horizontal axis can be shown in the results table when this box is ticked.

RHINOMANOMETRY > PLOT TAB

Settings		
General User interface Patient record Styles Report Reinomanometry Oevices Sampling Acquisition Results Report Report	Range Flow 800 cc/s Pressure 800 Pa Miscellaneous Show Rohrer curve when applicable Force square pressure-flow plot	
	OK Cancel Apply	

Range - The Flow and Pressure scales can be lowered if a smaller range is required; the default for both is 800 units. Normally, both parameters should be set to the same value.

Miscellaneous - Tick boxes are provided to display the Rohrer curve if selected and to maintain the display of the **pressure-flow** plot in a square (equal dimension) format.

RHINOMANOMETRY > REPORT TAB

			×
Settings			
General	Rhinomanometry > Repo	ıt	
Patient record Styles Report Devices Sampling Acquisition	Secondary results Single test Left / Right test Comparison tests	Classic None 💌 Diagnostic 💌 None 💌	Four phase Classic Diagnostic Classic
 Results Plot Acoustic Acoustic Acquisition Acquisition (adv) Results Plot Reference data 	Plot averaged curve Single test L/R comparison test Other comparison tests	Classic	Four phase
		ОК	Cancel Apply

Secondary results

A number of formatting options exist when you come to generating a printed report, and these can be set here for both standard and enhanced (four phase) tests.

Graph options

Most test results are generated by averaging a number of breathing cycles. If this box is ticked, an average of whatever number of cycles have been measured is generated and displayed on the printout.

STARTING A TEST

TO PREPARE FOR MEASUREMENTS ON A NEW SUBJECT

- 1. All current patient information and test results are cleared when the program is started or if having performed other measurements, you click on the **New** button.
- 2. In either event the cursor is set to the first field in the **Patient record** window.
- 3. You can then enter all patient details. Pressing the tab key after entering information in each field will take the cursor to the next one.

	To start the Acquisition procedule	ure. click on the NR6 icon.	
New Patient			The NR6 icon which is used to call the acquire screen
New Patient	🔁 NR6Rhino - New file		
Button	File View Acquisition Calibration Larp		
	New Open Save NR6 Print Exit		GM INSTRUMENTS
	Patient record I Tests		
	Name		
Patient details	City		
entry fields	Hospital		
	Test		
	ID no.		
	<u>2</u>		
	USB20ED (E:)	r NR6	EN 🔿 🗞 💷 🖼 16:07

TO PREPARE FOR MEASUREMENTS ON A REPEAT SUBJECT

1) Click on the button marked Open and then, using the dialog box offered, go to the folder in which you store your results and select the file you want to open.

2) You can check the details in the Patient Information tab to confirm that you have the correct subject. Clicking on the Results tab will show you all previous test dates and results for that patient.

Open					2 🛛	Open provieus
Look jn:	🚞 NR6rhino		•	+ 🗈 💣 🎟]+	results dialog box
My Recent Documents Desktop My Documents My Computer	Eric Greig.RHD Mon.RHD Sanitised.RHD test2.RHD test3.RHD test24.RHD test24.RHD tursday.RHD wed2.RHD wed3.RHD wed5.RHD wed5.RHD wed6.RHD wed8.RHD wed8.RHD	Wed22nd.RHD wed.RHD				
My Network Places	File <u>n</u> ame: Files of <u>ty</u> pe:	wed6.RHD Rhino data files ([*] .rhd)		•	<u>O</u> pen Cancel	

TO MAKE A NEW RECORD

1) Click on the icon marked NR6 on the top bar. The Acquisition dialog box will show, as below.

Acquisition			
🎉 Rhinomanometry			Classic recording 💌 🛛 Batch mode
	PRESS RECORD BUTT	ON TO START RECORDING	
Test	Expiration	Flow 800 cc/s	Inspiration
C Std 75 Pa	Left		Right F
C Std <u>1</u> 00 Pa			
Std 1 <u>5</u> 0 Pa			P
C Std <u>3</u> 00 Pa			
Side			
Anterior Left			
C Anterior <u>B</u> ight			Dragouro
			Pressure
			800 Pa
	Right		Left
	Expiration		Inspiration
NR6 Rhinomanometer 🔻 C	alibrate		
O Zero			Close

2) The **Clinical/Research** version of the software offers a number of options, selectable from the top bar:

- Perform a **Classic recording** i.e. make standard resistance measurements.
- Perform a **Four Phase recording** i.e. add Vertex and Effective resistance measurements.

You can also carry out either of the above in conjunction with the Batch Testing facility. This is described in detail later in this manual, but is essentially a way of validating results and of printing them off without the possibility of modifying data. This feature is of particular interest to those involved in clinical trials.

The **Clinical** version of the software offers **Classic recording** only.

Select the options above as appropriate.

3) Check that the spot is zeroed on the origin of the graph. If not click on the button marked **Zero**.

Connect the subject to the mask and mouth tube for Posterior or Anterior testing and ask them to breathe in a normal relaxed way – details of this can be found in the NR6 User Manual.

You should see the trace being drawn across the screen and once that shows in a consistent fashion, click on the red button to begin recording data

(a USB footswitch is also available as an additional optional extra to begin the recording cycle).

4) Once four complete respiratory cycles have been taken in the system will stop taking in data, will show you the resultant curves, each of which is drawn in a different colour and will add the test to the test list for that subject.

5) If any curve is obviously bad it can be de-selected by clicking in the appropriate check box in the **Respirations** section on the right of the screen.



6) The **Clinical/Research** version of the software allows display of Flow/Time and Pressure/Time traces as shown below.



A row of buttons just below the graph allows you to select the **Standard** (X/Y display) or **Flow/Pressure-Time** display, and if **Standard**, you can display the traces as **Individual**, **Averaged** or **Both** (**Individual** and **Average** superimposed)

A further row of buttons on the bottom bar allows the calculated values of **Standard Resistance**, **Rohrer Coefficients**, **Four Phase** (Log Vertex & Log Effective Resistance) and for L/R comparison traces, Diagnostic values to be displayed.

Remarks can be added in the box found on the bottom right of the screen.

- 7) If required, additional testing can be done or the current test printed by clicking on **Print**, or saved by clicking on **Save**.
- 8) The **Output** tab can be used to create a printout consisting of any number curves by clicking in the check box on the left of the test list.
- 9) Additional facilities available from the screen includes:

Import --- This allows you to merge data from 2 saved files
 Export --- This allows the raw data to be sent to a text file
 Copy --- This allows the calculated values to be put on the clipboard, ready to be pasted into a spreadsheet

INTERPRETING RESULTS

Recorded curves in a patient's file will show a series of coloured sections on the vertical lines either side of the y-axis. These lines are designed to aid in categorisation of the results of any given patient using a 'traffic light' system:

i.e. light green is normal resistance, dark green is mild resistance, orange is moderate resistance, and red shows severe resistance.

These colours are provided for guidance only.



TO COMPARE ANY TWO TEST RESULTS

Any two (same type) test results can be compared, i.e. two left side records or two right side records or two left/right records.

- 1) Select the **Tests** tab
- 2) Click on what is to be the baseline test using the left mouse button, hold down the ctrl key and click on the test you want to compare with the baseline test using the left mouse button. You should now have two tests highlighted.
- 3) Click on one of the selected tests using the right mouse button, and from the drop-down menu, click on:

Comparison to generate a record **COMP L** or **COMP R** if comparing 2 same side records, or

Create Left/Right to generate a **L/R** record, which shows the whole nose, or **Create Comparison Test** to generate a **COMP L/R** record to compare a pre and post result for the whole nose.



4) A new test entry is created with each of these operations.

TO DELETE A TEST RESULT

Select the test result to be deleted from the test list using the left mouse button. Then click on the test result again, this time using the right mouse button, and, from the list which appears, select **Delete**.

BATCH TEST FACILITY (CLINICAL/RESEARCH VERSION ONLY)

Validation of test results is a facility which has proved to be invaluable in many situations.

In rhinomanometry, result variation is normally caused by distortion of the nose or leakage in the connections to it. **Batch mode** has been incorporated into the Clinical/Research version of the program in order to allow users to check for these sources of result variation.

The program offers the possibility of switching on **Batch mode** when you go in to the **Acquisition** screen, by clicking on the small toggle box in the top right-hand corner window is then added to the acquire screen in which extra information will be added as test results are taken in. Batch selection



At the end of the first test the words **Start batch** will be shown in the progress dialog box.

At this point the subject should be disconnected from the equipment, and then reconnected.

The test start red button should be clicked on again to start part two.

Once completed, a coefficient of variance figure will be shown in the progress box, while additional information such as the mean resistance, standard deviation between values and the **CV** figure are shown in the results section.

If the **CV** figure is low then the tests can be considered accurate, as the chance of creating the same distortion or leakage twice in succession is remote. However, additional tests can be added to the batch (with the subject disconnected between them each time) if you want further re-assurance.

The batch values can be printed directly without any possibility of modifying the data by clicking on the batch print button and when you click on close, the batch tests are transferred to the normal test list for further examination and permanent storage.

DATA EXPORT FACILITY (CLINICAL/RESEARCH VERSION ONLY)

The NR6 conversion facility has been designed to allow the extraction, display, and manipulation of data contained within an NR6 data file.

TO EXTRACT A FILE

Extraction and conversion of a patient's data requires that their file be currently active in the program.

1) Click on the icon to start the NR6 program

2) Select the file to be converted by clicking on the **Open** button and then clicking on the appropriate file. Confirm this is the file you want to extract by checking the patient details, then click on **File** and **Export**

<u>م</u>			
Export data			
Filename TESTING12_04_12.exp Output Patient information Options Preview	ireate .DEF file	🔲 Column hea	aders
Test selection [4 tests apply]	Format option	าร	
NR6 Sides	Tests □ □ Samples □	Include standard Include Rohrer m Include Four Pha Include patient m Include samples	l results esults ase results ecord <u>specify</u> (at end)
Field separator , Line separator #13	3#10 Dat	Prefix with patier	nt record <u>specify</u>
Settings: <u>load save</u>	Export	Close	Cancel

- 3) The file name for the exported file will be offered by default
- 4) If you want to have the patient details listed at the top of the exported file click on the tick box named **Patient information**

- 5) If you want to be able to view a list of field names, which correspond with the data you select for export, and print this as a separate file for reference, click on **Create.DEF file**
- 6) Next, click on options a) to d) (listed below) and choose from the following to select which type or part of the file should be extracted. Having made a selection you can view both the data you will get in the .exp file and the fields these values represent in the .def file by clicking on the **Preview** tab

Elie Edit Format Yiew Help P4/04/2003 15:47:31,0,1,75, 0.263, 0.314, 0.037, 0.036, 4.000, 3.000 34/04/2003 15:48:44,2,1,75, 0.321, 0.335, 0.011, 0.021, 3.000 34/04/2003 15:48:44,2,1,75, 0.271, 0.338, 0.012, 0.022, 4.000 3000 24/04/2003 15:49:50,21,75, 0.346, 0.042, 0.022, 4.000 4.000 4.000 34/04/2003 15:50:03,1,1,75, 0.366, 0.042, 0.022, 0.022, 4.000 4.000 24/04/2003 15:50:03,1,1,75, 0.366, 0.043, 0.012, 0.022, 4.000, 4.000 24/04/2003 15:50:03,1,1,75, 0.464, 0.475, 0.022, 0.023, 4.000 4.000 24/04/2003 15:50:03,1,1,75, 0.464, 0.434, 0.012, 0.015, 4.000, 4.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75, 0.000, 0.000, 0.000, 0.000, 0.000 15/02/2006 11:29:53,0,1,75,0,0,00, 0.000, 0.000, 0.000, 0.0
P4/04/2003 15:47:31,0,1,75,0.263,0.314,0.037,0.036,4.000 4.000 24/04/2003 15:48:44,21,75,0.321,0.332,0.010,0.021,3.000 3.000 24/04/2003 15:39:12,21,75,0.271,0.333,0.010,0.022,4.000,4.000 24/04/2003 24/04/2003 15:50:21,21,75,0.343,0.046,0.022,4.000,4.000 24/04/2003 24/04/2003 15:50:21,1,75,0.362,0.444,0.022,4.000,4.000 24/04/2003 24/04/2003 15:50:51,31,1,75,0.404,0.475,0.022,4.000,4.000 24/04/2003 24/04/2003 15:50:53,1,1,75,0.404,0.475,0.022,0.017,4.000,4.000 24/04/2003 24/04/2003 15:50:53,1,1,75,0.404,0.475,0.022,0.017,4.000,4.000 24/04/2003 25/02/2006 11:29:33,0,1,75,0.000,0.000,0.000,0.000,0.000 0.000,0.000 15/02/2006 11:29:33,0,1,75,0.000,0.000,0.000,0.000 0.000

- a) **(Sides)** posterior and/or anterior left and/or anterior right test results can be extracted, provided they are in the patients test list
- b) (References) select records created with Broms and/or pressure and/or flow reference settings
- c) **(Tests)** show standard and/or Rohrer calculated results for the sides selected above, and, if ticked, repeat selected patient information at the beginning of each line
- d) (Samples) list the raw pressure and flow data values for the above records by clicking on Include samples (at end) and put selected items of patient information at the beginning of each sample line by clicking on Prefix with patient record (you can define which fields you want present by clicking on specify and selecting appropriate fields). If you select the samples option, two vertical columns are produced containing a list of pressure and corresponding flow values. If you then select Prefix with patient record a third column is generated which shows the patient details selected. The number of full tests included is shown before the first column of values
- 7) Once the elements required for extraction have been selected click **OK**

8) A file name suggestion should already be present in the space in the dialog box - it will have the suffix .EXP - click on **Export** to begin the conversion

9) The .EXP file (and, if selected, the .DEF file) created will be saved to the folder in which the software is contained, unless you have altered the standard setup (if you want to check you can right click on the desktop icon and click on **Open file location**). The .DEF file will show the meaning of values shown in each position except for the following:

Side0 = posterior1 = left 2 = rightRef0 = Broms1 = pressure2 = flowCountInsp = The number of inspiratory curves used in the calculation of the mean
valuesValuesCountExp = The number of expiratory curves used in the calculation of the mean
valuesDevInsp = Maximum deviation from the mean for any single inspiratory resistance
value

DevExp = Maximum deviation from the mean for any single expiratory resistance value

The sample below shows the corresponding .EXP and .DEF files.

123,,,,,,,,,,,456

29/08/2001 14:42:29,0,1,75, 0.692, 0.806, 0.056, 0.050, 4.000, 4.000 29/08/2001 14:42:46,1,1,75, 0.769, 0.926, 0.081, 0.091, 4.000, 4.000 29/08/2001 14:42:55,2,1,75, 0.813, 0.977, 0.108, 0.032, 4.000, 4.000

Experiment no,Name,Street,Zip,City,State,Nationality,Hospital,Ward No,Lab No,Physician,Test,ID no.

Date

Time,Side,Ref,Threshold,MeanInsp,MeanExp,DevInsp,DevExp,CountInsp,CountExp Date

Time,Side,Ref,Threshold,MeanInsp,MeanExp,DevInsp,DevExp,CountInsp,CountExp Date

Time,Side,Ref,Threshold,MeanInsp,MeanExp,DevInsp,DevExp,CountInsp,CountExp

N.B. All combined tests (i.e. left and right comparison tests) are not included in the output file. In the above example only the experiment No. and Test ID No. had values in them in the original patient information screen. All other fields were blank.

The example below shows corresponding .EXP and .DEF files, with samples additionally selected.

123,,,,,,,456 29/08/2001 14:42:29,0,1,75, 0.692, 0.806, 0.056, 0.050, 4.000, 4.000 29/08/2001 14:42:46,1,1,75, 0.769, 0.926, 0.081, 0.091, 4.000, 4.000 29/08/2001 14:42:55,2,1,75, 0.813, 0.977, 0.108, 0.032, 4.000, 4.000 3 49 -66 66 -98

92	-130
123	-157
154	-180
185	-200
217	-216
248	-230
279	-249
310	-262
341	-269
309	-258
277	-243
246	-231
215	-212
184	-194
153	-178
122	-154
91	-129
58	-95

TO CLOSE THE SOFTWARE

The software can be terminated by clicking on **File** and selecting **Exit** from the dropdown menu, or by left-clicking on the cross in the top right-hand corner of the main software window.

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