

CtrlBuild program for building acoustics measurements

Type Nor-1028/3



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Introduction

Support

Support for International Users:

Please contact either the Agent from whom you purchased NorBuild, or Norsonic AS, Norway:

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Fax.: +47 32852208

E-Mail: support@norsonic.com

Web site:
www.norsonic.com

Norsonic AS, P.O. Box 24, N-342 Lierskogen, Norway

Installation & registration

The CtrlBuild program is a module of the NorBuild series. CtrlBuild is installed as an option of NorBuild. Please check the NorBuild manual for information on how to install the program and register additional options.

System requirements

Processor/memory

233 MHz Pentium-class processor with 128Mb RAM (minimum).

600 MHz Pentium III-class processor with 256Mb RAM (recommended).

Display

1024x720 or higher resolution display with 16-bit colours (minimum).

Operating system

Windows XP.

Windows 2000.

Windows Vista.

Windows 7/8/8.1.

It is possible that CtrlBuild also runs on older operating systems, however, Norsonic recommends using WinXP.

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Working in the workspace window

Overview

CtrlBuild is a module of the NorBuild series. Acoustic measurements in buildings can be made with CtrlBuild and the Norsonic real-time analyser types Nor843, Nor118 or Nor121. CtrlBuild enables the user to control the measurement in an interactive way and to get the results per drag and drop into the evaluation program.

CtrlBuild offers the mechanisms and features that the acoustic specialist needs for his daily work. CtrlBuild runs like NorBuild under Microsoft Windows. The handling follows the usual Windows principles.

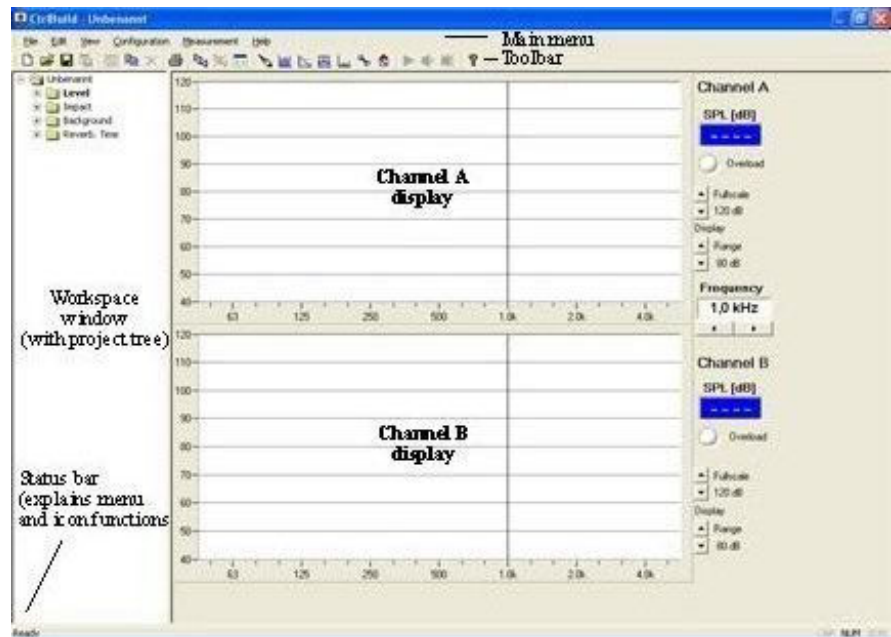
The section *Guidelines for system set-up and measurement control* in this manual will guide you through the steps involved in a complete building acoustic measurement with the Norsonic system.

Workspace window

CtrlBuild is launched like any other MS-Windows Program: *Start > Programs > Norsonic > CtrlBuild*. Alternatively it can be started from the *Tools* menu within NorBuild.

When CtrlBuild is started, a new project is created automatically. The workspace window is the place to do project administration. A CtrlBuild project is organised in a tree structure. The project tree holds folders for "Level", "Impact", "Background" and "Reverb. Time" measurements. Each folder corresponds to a measurement mode, always with the folder for the currently active mode being highlighted. All accepted measurements will be stored in the corresponding folder.

The windows and menus in CtrlBuild:



After having set the measurement parameters, the level of the actual sound pressure (SPL) for each activated channel is shown in form of a bar graph. The numeric values of the cursor frequency are shown on the right hand side of the bars. Overloaded values are marked with a leading asterisk (*). Any 1/3 octave bar can be selected by dragging and dropping the cursor. Alternatively the frequency up/down buttons, the frequency wheel or the left/right arrow keys can be used. Display Full-scale and Range can be modified by help of the corresponding control items.

The operation of CtrlBuild is either by keyboard or mouse. These may be used to access the main menu, dialog boxes and control buttons.

When the mouse pointer is located over a button, a description of its function will appear in the status bar at the bottom of the program window.

The operational procedures of CtrlBuild follow the general principles of MS-Windows programs. The project tree implements several *standard Windows commands*. The availability of commands depends on the actual item selected, but in general you can open items and delete unwanted items. You can double-click an item to open it. There is also a context menu (right mouse click) holding the menu commands which are available for the currently selected item.

Standard Windows commands

CtrlBuild behaves according to Windows guidelines and uses several standard Windows commands.

These commands are:

Navigating in a tree:

From the keyboard, use the up/down and left/right arrow keys.

Deleting elements in a tree

From the keyboard use the **Delete** key.

From the Edit/Context menu use **Delete item**.

Creating a project

A CtrlBuild project is organised in a tree structure. The project tree will be updated as you work with CtrlBuild.

When CtrlBuild is started, a new project is created automatically. The project tree holds folders for "Level", "Impact", "Background" and "Reverb. Time" measurements. All accepted measurements will be stored in the corresponding folder (see *Workspace window*).

A new project is created by the command *File > New*.

Shortcuts:

Toolbar: 

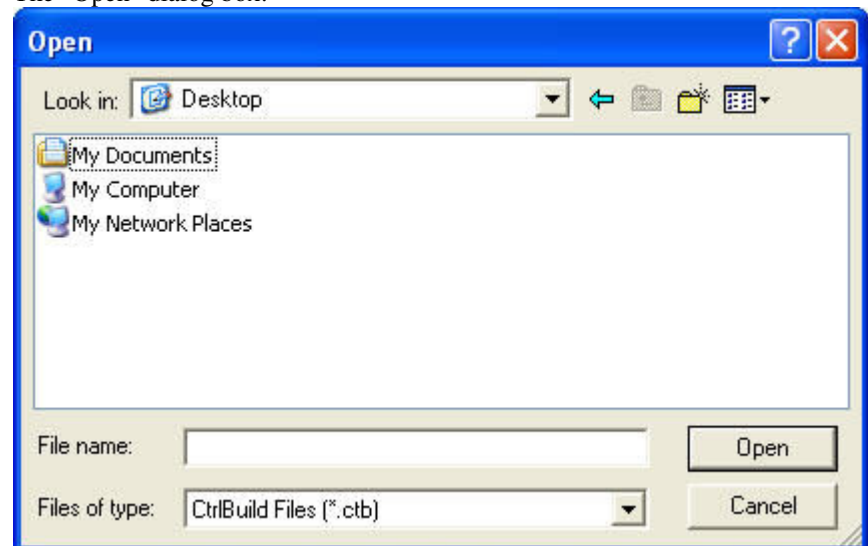
Keys: **Ctrl + N**

Opening an existing project

An existing CtrlBuild project can be opened in two ways:

- Double-clicking the project file in the Windows Explorer
- Using the *Open* command (*File > Open*):

The "Open" dialog box:



A CtrlBuild project has the file extension *.ctb.

Shortcuts:

Toolbar: 


Keys: **Ctrl+O**

Copy command

Use the command *Edit > Copy* to copy the selected data into the clipboard. To select an item to copy, click on it to activate it and then use this command. The contents of the clipboard can be pasted into NorBuild or any other text editing application.

Copying data to the clipboard replaces the contents previously stored there.

Shortcuts:

Toolbar: 

Keys: **Ctrl+C**

Delete item command

Use the command *Edit > Delete item* to delete the selection. This command is unavailable if the currently selected item cannot be deleted.

Shortcuts:

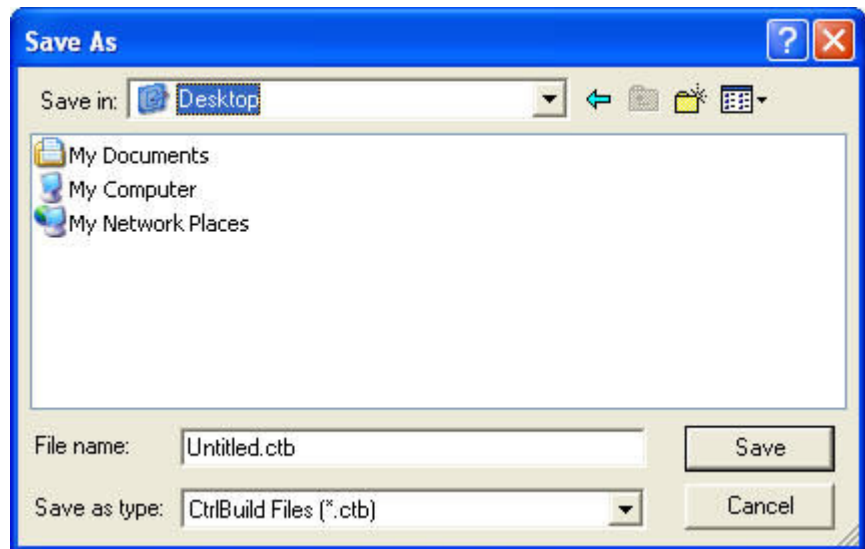
Toolbar: 

Keys: **DEL**

Saving project data

Use the command *File > Save* to save the active project to its current name and directory. When you save a project for the first time, CtrlBuild displays the "Save As" dialog box so you can name your project. If you want to change the name and directory of an existing project before you save it, choose the *Save As* command.

The "Save As" dialog box:



A CtrlBuild project has the file extension *.ctb.

Shortcuts:

Toolbar: 
Keys: **Ctrl+S**


Auto-Saving

Tick the option *Measurement > Auto Saving* if the project should be saved after each accepted measurement. The procedure is the same as calling *File > Save*. When a project is saved for the first time, CtrlBuild displays the "Save As" dialog box so a project can be named.

Auto-Transfer

Use *Measurement > Auto-Transfer* to transfer the actual measurement to the active NorBuild project automatically each time you accept the data. To use the Auto-Transfer function, NorBuild has to be started and a Project must have been created.

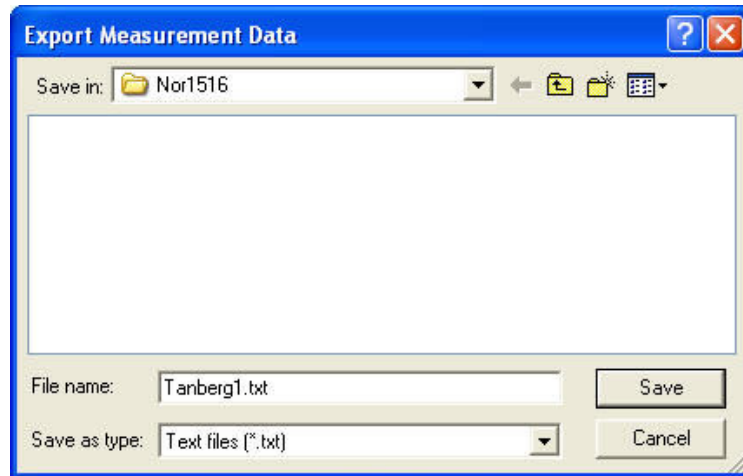
Shortcuts:

Toolbar: 

Send all measurements to the active NorBuild project.

Export command

Use the command *File > Export* to start the export of all present measurements. CtrlBuild creates a TAB delimited textfile which can be processed later by e.g. MS-Excel or Nor-Sic.



Shortcuts:

Toolbar: 

Exit command

Use the command *File > Exit* to end your CtrlBuild session. CtrlBuild prompts you to save projects with unsaved changes.

You can also use the Close command on the application Control menu or click the Close button on the application window title bar.

Shortcuts:

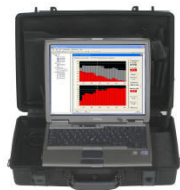
Mouse: Double-click the application's Control menu button.

System set-up and measurement control

Guidelines

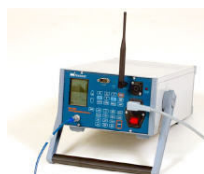
In general, the set-up of the measurement system Nor1516 and the control of a building acoustics measurement with CtrlBuild include the following steps. These steps are described in more detail in the appropriate section of this manual.

In the control room:



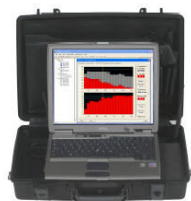
1. **Connect the control unit Nor514 to the laptop.**
2. **Define the connection settings.**
(only necessary once during first set-up)
3. **For wireless connection, start the Radio link test panel.**

In source/receiving room:



4. **Set up measurement unit A in the source room**
(for wireless connection, by help of the *Radio link test panel*), **and calibrate it at its final location.**
5. **Set up measurement unit B in the receiving room**
(for wireless connection, by help of the *Radio link test panel*), **and calibrate it at its final location.**

In the control room:



6. **Set the measurement configuration.**
7. **Start the measurement.**
8. **Save the project.**
9. **Get the direct evaluation in NorBuild.**

Connecting control unit Nor514 to the laptop

1. Boot up your laptop.
2. Connect the control station Nor514 to the USB port of your laptop and switch it on.

If it is the first time that the control unit Nor514 is connected to that specific laptop, make sure that the correct driver for the USB to Serial (RS232) conversion is installed.

You will find the driver in the directory "USBRS232" on the delivered "Driver CD-ROM". Follow the instructions given in the corresponding user manual.

Defining the connection settings

If it is the first time that a connection to the Norsonic measurement system Nor1516 shall be established, the connection settings in both the measurement units Nor118/843/121 and in CtrlBuild have to be made. This set-up needs to be done once and remains unchanged as long as your PC and instrument configuration is not changed.

1. Check the connection settings in the measurement units.

The ID and baud rate settings in the measurement units have to match the settings made in CtrlBuild later. First, check the settings on the instruments by pressing the following sequence of buttons.

Nor118/843:


- Setup > 1 (Instr.) > 9 (Misc. par) > 3 (Nor1516).
Set to 'ON' and assign the instrument identification 'A' or 'B'.
- Setup > 1 (Instr.) > 2 (IO/Print).
Make sure that the Port is set to 'On'. Set the desired baud rate for the data transfer (for wireless connection this has to be set to '57600').

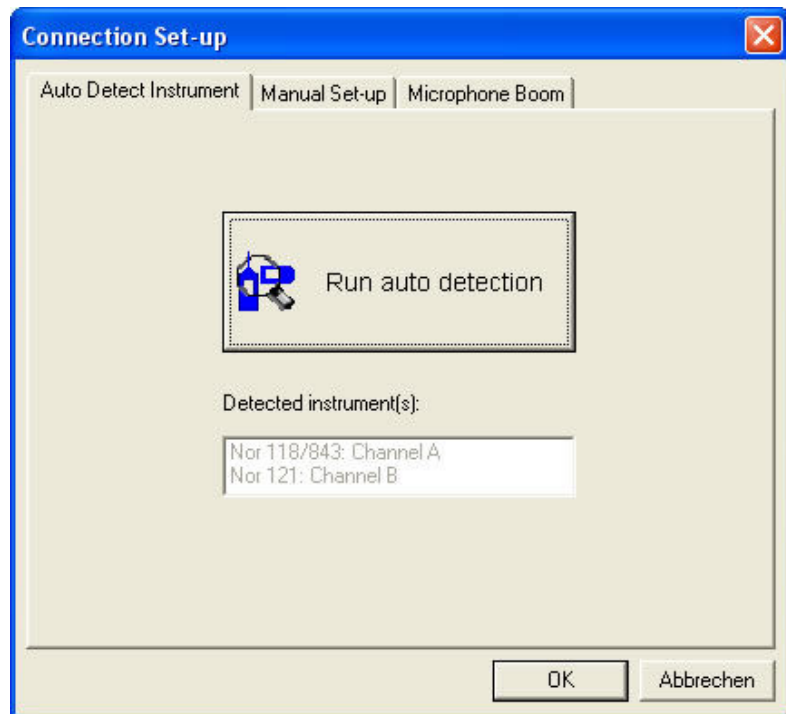
Nor121:

- Setup > Preference.
Assign the instrument identification 'A' or 'B'.
- Setup > I/O.
Set the desired baud rate for the data transfer (for wireless connection this has to be set to '57600').

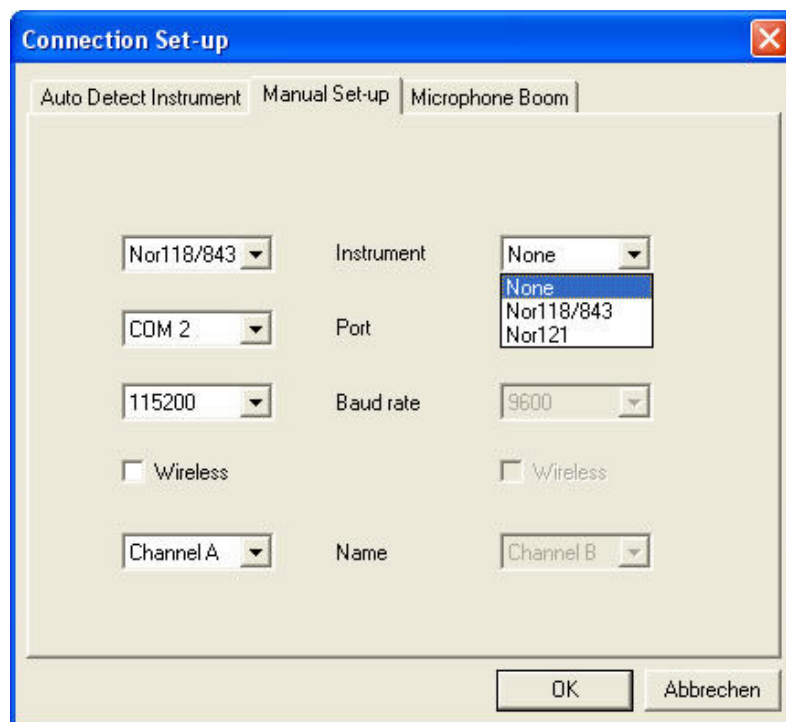
Leave the instruments switched on.

2. Check the connection settings in CtrlBuild.

In CtrlBuild, access the 'Connection Set-up' page using the menu *Configuration* > *Connection Set-up* or the symbol  on the toolbar:



When pressing the **Run auto detection** button CtrlBuild scans all serial ports COM1 .. COM20 to search for a connected Norsonic instrument. This procedure may take a little while. The ongoing process is indicated in an extra pop-up window. After the scan has finished all detected instruments are listed below the button together with the type and name of instrument. In addition the COM port number, baud rate and type of connection is set up according to the results of the auto detection. The detailed results of the auto detection can be seen on the *Manual Set-up* page.



This page either contains the results of the Auto Detection or the user's manual settings.

When using the manual Set-up page, check the device manager in your Windows system and check the *ports* section for available COM ports.

Instrument	Select type of instrument connected.
Port	COM port number where the instrument is connected.
Baud rate	Baud rate which is set-up on the instrument.
Wireless	Tick this box for a wireless connection via a radio link.
Name	Name of the instrument. Must be different in case of a dual instrument system.

Note: In case of using both channels of a 2-Channel Nor121 the Port number must be the same for Channel A and Channel B.

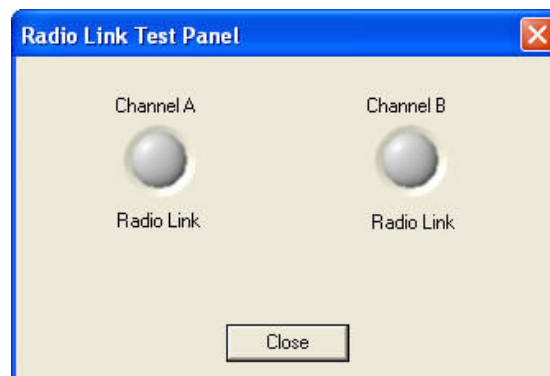
Setting up the instruments in source/receiving room

When using a wireless connection the radio link test panel is a very useful function for positioning the measurement units in source and receiving room. Being in the source or receiving room you will need to find a location with a stable radio link.

Once started, the radio link test panel repeats trying to build up a radio connection to the measurement units at a rate of one second. A successful connection causes the green LED on the measurement unit Nor118/843 to light up. While being at the chosen location in the source/receiving room you can then see immediately whether a radio link to the control unit can be established or not. That means that you do not have to go back to the control room to possibly find out that there is no radio connection for the chosen position of the measurement unit in the source/receiving room.

1. In the control room, start the radio link test panel

using the menu *Configuration > Radio Link Test Panel* or the symbol  on the toolbar:



At a rate of one second the radio link test panel repeats trying to establish a radio connection to the measurement units. Leave the test panel open while carrying the measurement units A and B to the source and receiving room, respectively.

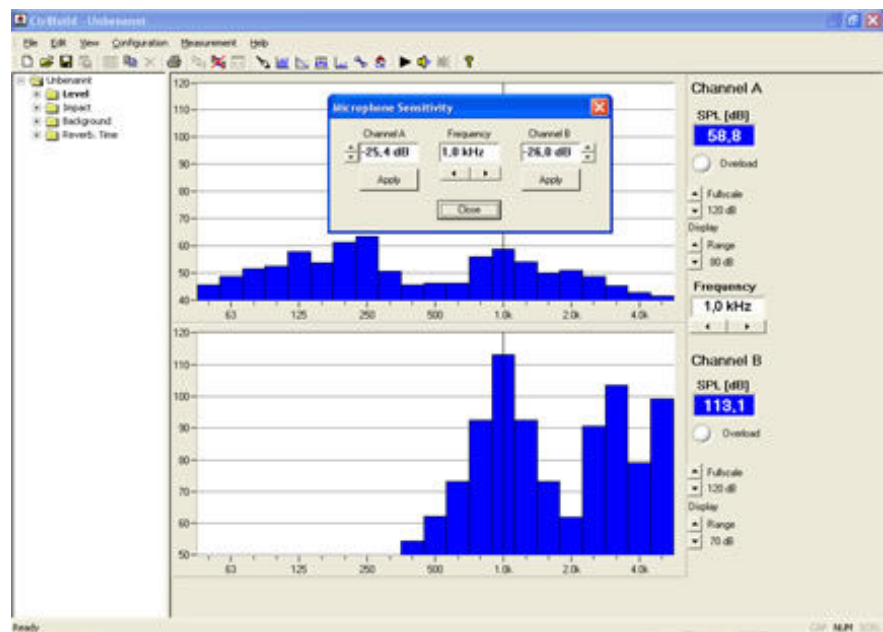
2. In the source/receiving room, switch on the measurement unit.

Position the measurement unit at the desired location in the source/receiving room and switch it on. The running radio link test panel is still trying to connect to the measurement unit. If a connection is possible, the green LED on the instrument will light up.

When using the building acoustic case Nor515 with the Nor118 SLM, you are independent of an external power supply. In that case you can leave the measurement unit switched on and just walk around in the room to see immediately where the green LED lights up and where it does not.

Calibration

Use the command *Measurement > Calibration* to start the calibration dialog box.



Note: You can use this function for calibration. However, it is recommended to calibrate the measurement instruments at their final location in the source/receiving room. Therefore it is more practical to use the calibration menu of the instrument itself.


If the microphone sensitivity is already known key in the respective value for each channel and click on *Apply*.


Prove with the calibrator that the corresponding frequency has the correct level. Use the left/right arrows to move the frequency cursor in the main window. Adjust the sensitivity if needed and press the *Apply* button. Verify the level again.


Setting the measurement configuration


When the entire measurement system has been set up and the radio connection has been established successfully, you can then set the measurement configuration and start the measurement.

From the *Configuration* menu, choose the desired measurement mode:

1. **Level Mode** (on the toolbar: )


2. **Reverb. Mode** (on the toolbar: )


3. **Background Mode** (on the toolbar: )

4. **Impact Mode** (on the toolbar: )

5. **Impact with Airborne Mode** (on the toolbar: No symbol)

An Impact with Airborne measurement is done like a Impact measurement. There is only one difference. In the Impact with Airborne Mode, by the description of the channels, you have the choice between sending and receiving room.

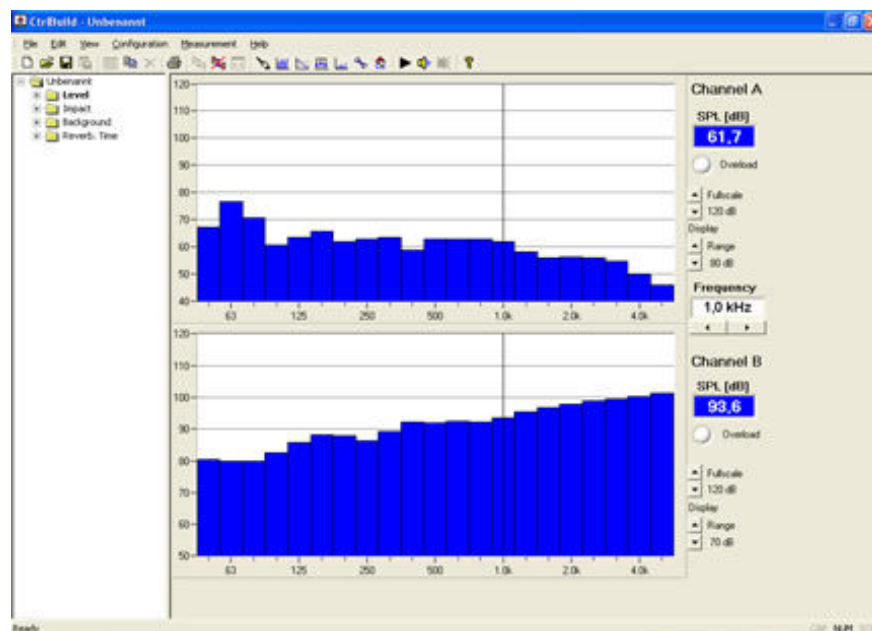
6. **Level SWEPT-SINE** (on the toolbar: )

7. **Reverberation SWEPT-SINE** (on the toolbar: )

8. **Reverberation Corner** (on the toolbar: )

The Reverberation Corner measurement for the low frequency procedure requires the 63 Hz in the octave band.

After having set the measurement parameters, the level of the actual sound pressure (SPL) for each activated channel is shown in form of a bar graph:



The numeric values of the cursor frequency are shown on the right hand side of the bars. Overloaded values are marked with a leading asterisk (*).

Any 1/3 octave bar can be selected by dragging and dropping the cursor.


Alternatively the frequency up/down buttons, the frequency wheel or the

left/right arrow keys can be used. Display Full-scale and Range can be modified

by help of the corresponding control items.

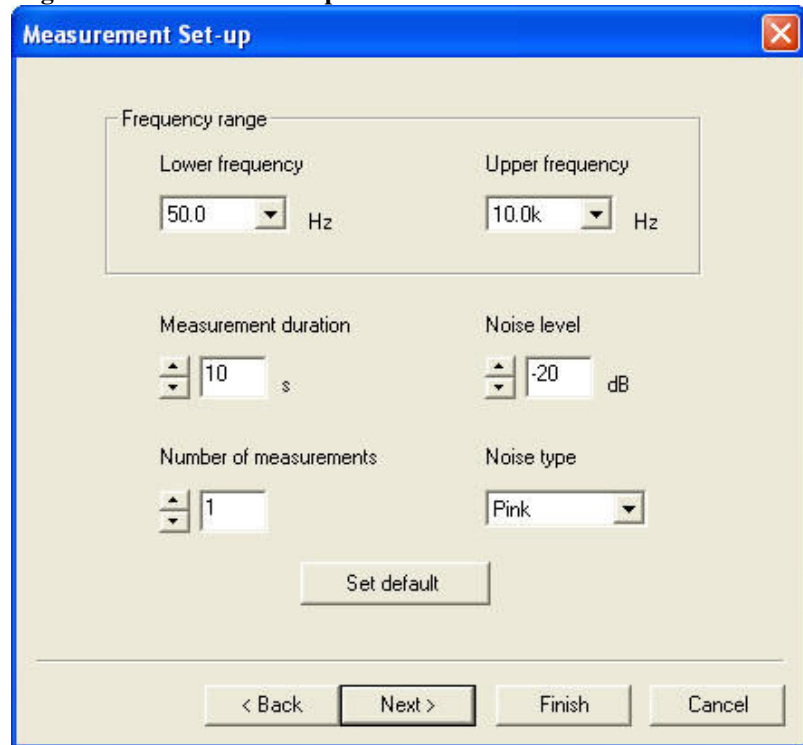
Level measurement configuration

Use the command *Configuration > Level Mode* if you want to do a level measurement.

Alternatively you can use the symbol  on the toolbar.

A wizard will start guiding you through the steps of setting the configuration for a level measurement.

Page 1: Measurement Set-up



Frequency range

The upper and lower frequency limits can be selected within the range of 50 Hz ... 10 kHz.

Note: The lower freq. cannot exceed the upper and vice versa.

Measurement duration

The measurement time can be defined in seconds from 0...600. If you set the measurement time to 0, CtrlBuild uses the frequency dependent duration that applies to the lower frequency.

50Hz – 80Hz → 15 seconds

100Hz – 315Hz → 6 seconds

400Hz and above → 4 seconds

Noise level	The level of the noise generator can be set within the range -40...0 dB.
Noise type	Selection of noise method. Pink noise, White noise or 1/3 octave band noise can be selected. By using "1/3 octave" a serial measurement is done within the limits. If you select Pink + "1/3 octave" CtrlBuild measures pink noise first and afterwards you can remeasure certain frequencies by using the Serial tick boxes.
Number of measurements	Select the number of individual measurements to be done in a series. Range: 1...99. Note: Switch off the <i>Display Accept/Discard Dialog</i> in the <i>Measurement</i> menu to avoid confirmation after each measurement.
Set default	All parameters revert back to the factory defaults.


Page 2: Channel Set-up

Activate Channel	Specify which channels (instruments) will be active for the next measurement.
Description channel x	This choice will determine into which table of NorBuild / Nor-Sic the values are stored. The choice is restricted to the selected measurement mode.
Fullscale channel x	Select full-scale deflection of the instrument.

The *Back* and *Next* buttons can be used to navigate through the different pages. The ***Finish*** button collects all parameters from all pages and sets-up the instrument. The configuration is transferred to the measurement unit.

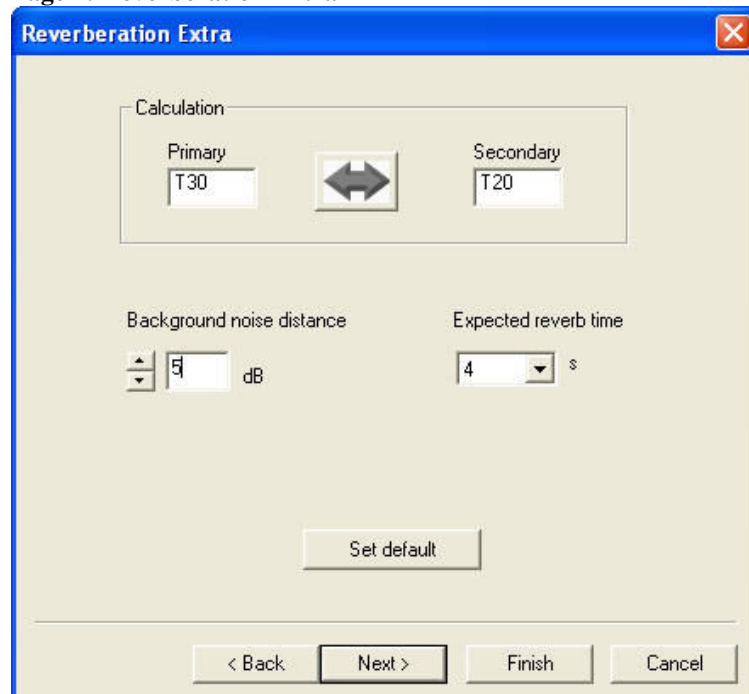
Reverberation time measurement configuration

Use the command *Configuration > Reverb. Mode* if you want to do a reverberation time measurement.

Alternatively you can use the symbol  on the toolbar.

A wizard will start guiding you through the steps of setting the configuration for a reverberation time measurement.

Page 1: Reverberation Extra



Calculation

Toggles between T30 and T20 as the main parameter (primary) for the decay curve.

Background noise distance

The background noise distance level can be set

within the range 0...30 dB.

Expected reverb time	Selection of expected reverberation time. 4, 8, 16 or 32 s can be selected.
Set default	All parameters revert back to the factory defaults.

Page 2: Measurement Set-up

Measurement Set-up

Frequency range

Lower frequency: 50.0 Hz

Upper frequency: 5.0k Hz

Excitation time: 5 s

Excitation type: Noise

Noise level: -12 dB

Number of measurements: 1

Noise type: Pink

Set default

< Zurück Weiter > Fertig stellen Abbrechen

Frequency range	The upper and lower frequency limits can be selected within the range of 50 Hz ... 10 kHz. Note: The lower freq. cannot exceed the upper and vice versa.
Measurement duration	The measurement time can be defined in seconds from 0...600. If you set the measurement time to 0, CtrlBuild uses the frequency dependent duration that applies to the lower frequency. 50Hz – 80Hz → 15 seconds 100Hz – 315Hz → 6 seconds 400Hz and above → 4 seconds
Noise level	The level of the noise generator can be set within the range -40...0 dB.

Excitation type	Nor140/118/843: Select between “Noise” and “Impulse”.
Noise type	Nor121: “Noise” is preset. Selection of noise method. Pink noise, White noise or 1/3 octave band noise can be selected. By using "1/3 octave" a serial measurement is done within the limits. If you select Pink + "1/3 octave" CtrlBuild measures pink noise first and afterwards you can remeasure certain frequencies by using the Serial tick boxes.
Number of measurements	Select the number of individual measurements to be done in a series. Range: 1...99. Note: Switch off the <i>Display Accept/Discard Dialog</i> in the <i>Measurement</i> menu to avoid confirmation after each measurement.
Set default	All parameters revert back to the factory defaults.

Page 3: Channel Set-up

Activate Channel	Specify which channel (instrument) will be active for the next measurement. Note: The choice ‘Channel A + Channel B’ is not available for reverberation time measurements, it is therefore greyed out.
Description channel x	This choice will determine into which table of NorBuild / Nor-Sic the values are stored. The choice is restricted to the selected measurement mode.
Fullscale channel x	Select full-scale deflection of the instrument.

The *Back* and *Next* buttons can be used to navigate through the different pages. The **Finish** button collects all parameters from all pages and sets-up the


instrument. The configuration is transferred to the measurement unit.

Note: *L/t Display for reverberation time measurements*

Enable the function *Measurement > Display Accept/Discard Dialog* if you want the reverberation curve data to be transferred after a completed measurement (see *Starting and Stopping a measurement*).

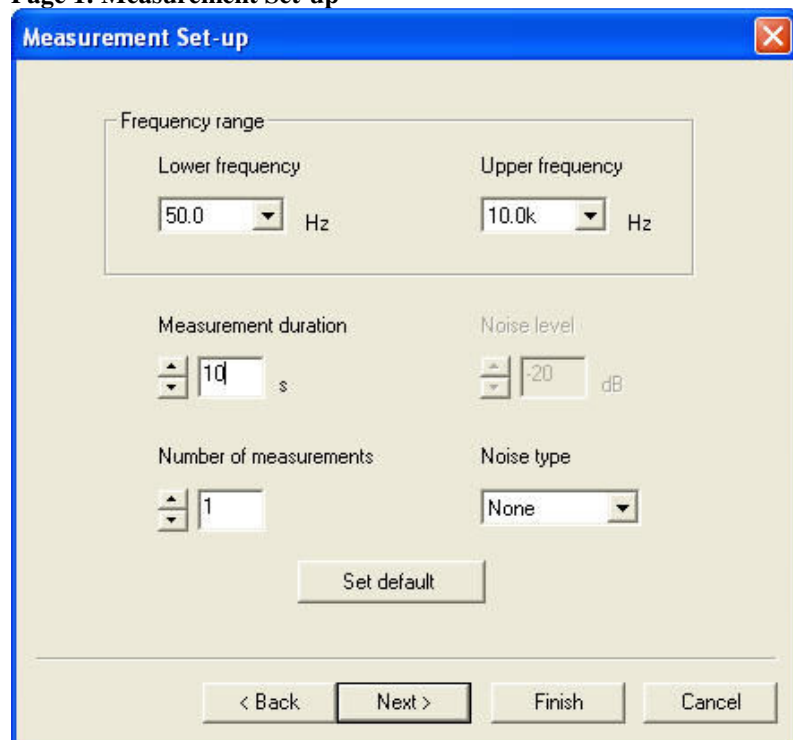
Background noise measurement configuration

Use the command *Configuration > Background Mode* if you want to do a background noise measurement.

Alternatively you can use the symbol  on the toolbar.

A wizard will start guiding you through the steps of setting the configuration for a background noise measurement.

Page 1: Measurement Set-up



Frequency range

The upper and lower frequency limits can be selected within the range of 50 Hz ... 10 kHz.

Note: The lower freq. cannot exceed the upper and vice versa.

Measurement duration

The measurement time can be defined in seconds from 0...600. If you set the measurement time to 0, CtrlBuild uses the frequency dependent duration that applies to the lower frequency.

50Hz – 80Hz → 15 seconds

100Hz – 315Hz → 6 seconds

400Hz and above → 4 seconds

Noise level	Not available in "Background" mode.
Noise type	Not available in "Background" mode.
Number of measurements	Select the number of individual measurements to be done in a series. Range: 1...99. Note: Switch off the <i>Display Accept/Discard Dialog</i> in the <i>Measurement</i> menu to avoid confirmation after each measurement.
Set default	All parameters revert back to the factory defaults.

Page 2: Channel Set-up

Activate Channel	Specify which channels (instruments) will be active for the next measurement.
Description channel x	This choice will determine into which table of NorBuild / Nor-Sic the values are stored. The choice is restricted to the selected measurement

mode.


Fullscale channel x

Select full-scale deflection of the instrument.

The *Back* and *Next* buttons can be used to navigate through the different pages. The *Finish* button collects all parameters from all pages and sets-up the instrument. The configuration is transferred to the measurement unit.

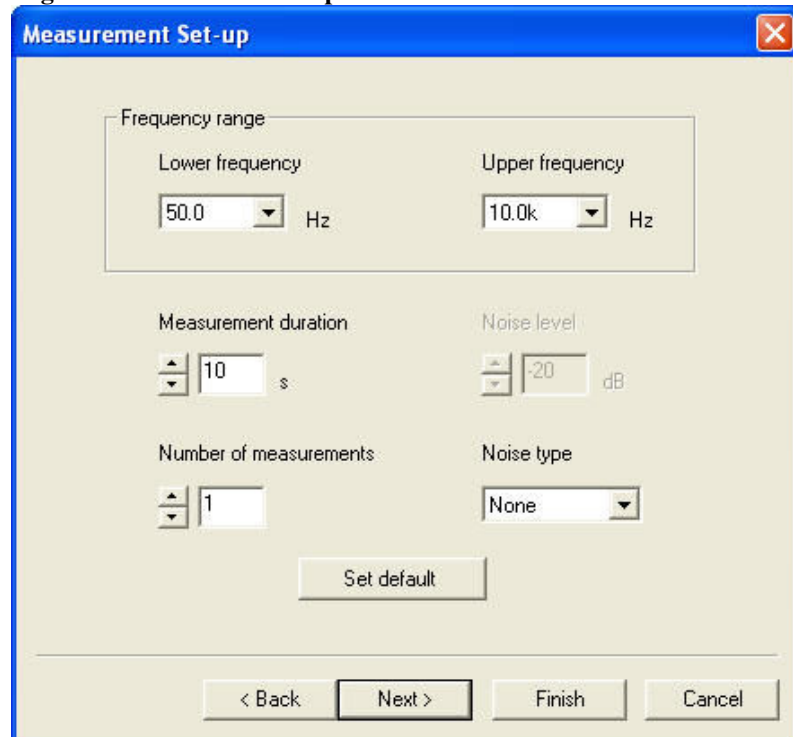
Impact measurement configuration

Use the command *Configuration > Impact Mode* if you want to do an impact noise measurement.

Alternatively you can use the symbol  on the toolbar.

A wizard will start guiding you through the steps of setting the configuration for an impact noise measurement.

Page 1: Measurement Set-up



Frequency range

The upper and lower frequency limits can be selected within the range of 50 Hz ... 10 kHz.

Note: The lower freq. cannot exceed the upper and vice versa.

Measurement duration

The measurement time can be defined in seconds from 0...600. If you set the measurement time to 0, CtrlBuild uses the frequency dependent duration

that applies to the lower frequency.

50Hz – 80Hz → 15 seconds

100Hz – 315Hz → 6 seconds

400Hz and above → 4 seconds

Noise level

Not available in "Impact" mode.

Noise type

Not available in "Impact" mode.

Number of
measurements

Select the number of individual measurements to be done in a series. Range: 1...99.

Note: Switch off the *Display Accept/Discard Dialog* in the *Measurement* menu to avoid confirmation after each measurement.

Set default

All parameters revert back to the factory defaults.

Page 2: Channel Set-up

Channel Set-up

Activate channel

☐ Channel A

☒ Channel B

☐ Channel A + Channel B

Description channel A:

Description channel B:

Fullscale channel A:

Fullscale channel B:

< Back Next > Finish Cancel

Activate Channel

Specify which channels (instruments) will be active for the next measurement.

Description channel x	This choice will determine into which table of NorBuild / Nor-Sic the values are stored. The choice is restricted to the selected measurement mode.
Fullscale channel x	Select full-scale deflection of the instrument.

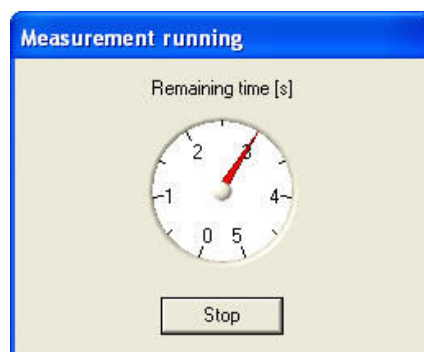
The *Back* and *Next* buttons can be used to navigate through the different pages. The ***Finish*** button collects all parameters from all pages and sets-up the instrument. The configuration is transferred to the measurement unit.

Starting and Stopping the measurement

Start of measurement

When the measurement parameters are set and the SPL is displayed on the screen, the measurement can be started by using the command *Start* from the *Measurement* menu or the symbol ► on the toolbar.

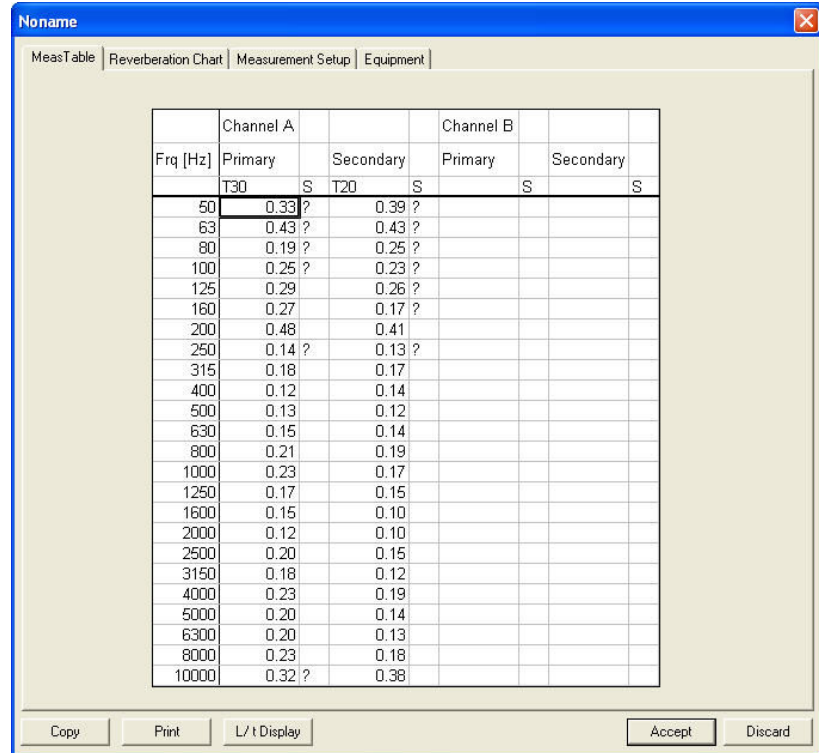
CtrlBuild turns on the noise generator (except impact and background noise mode) and starts the measurement. A menu informs about the time of the measurement. With Stop the measurement can be halted.



Stop of measurement

After the measurement is finished, the results are placed into the folder of the respective measurement mode (Level / Impact / Background / Reverb.) within the tree structure.

If you have enabled the function *Measurement > Display Accept/Discard Dialog*, the table of measurement results is displayed and CtrlBuild prompts you to either accept or discard the completed measurement.



Frq [Hz]	Channel A		Channel B	
	Primary	Secondary	Primary	Secondary
	T30	S	T20	S
50	0.33 ?	0.39 ?		
63	0.43 ?	0.43 ?		
80	0.19 ?	0.25 ?		
100	0.25 ?	0.23 ?		
125	0.29	0.26 ?		
160	0.27	0.17 ?		
200	0.48	0.41		
250	0.14 ?	0.13 ?		
315	0.18	0.17		
400	0.12	0.14		
500	0.13	0.12		
630	0.15	0.14		
800	0.21	0.19		
1000	0.23	0.17		
1250	0.17	0.15		
1600	0.15	0.10		
2000	0.12	0.10		
2500	0.20	0.15		
3150	0.18	0.12		
4000	0.23	0.19		
5000	0.20	0.14		
6300	0.20	0.13		
8000	0.23	0.18		
10000	0.32 ?	0.38		

L/t Display for reverberation time measurements:

Reverberation curve data (L/t Display) is not transferred automatically after a measurement since this can take quite a while. If decay curves are wanted the "L/t Display" button has to be pressed when the Accept/Discard window appears on the screen (on completion of a measurement).

This choice will not be available if the function *Measurement > Display Accept/Discard Dialog* is disabled (so that the data is accepted by default).

Once the L/t data is transferred and the measurement is accepted reverberation curves for this measurement are available whenever needed (see *Measurement results*). But there is no way to get decay curves once a measurement is accepted without manually starting the transfer for the L/t data.

Tips:

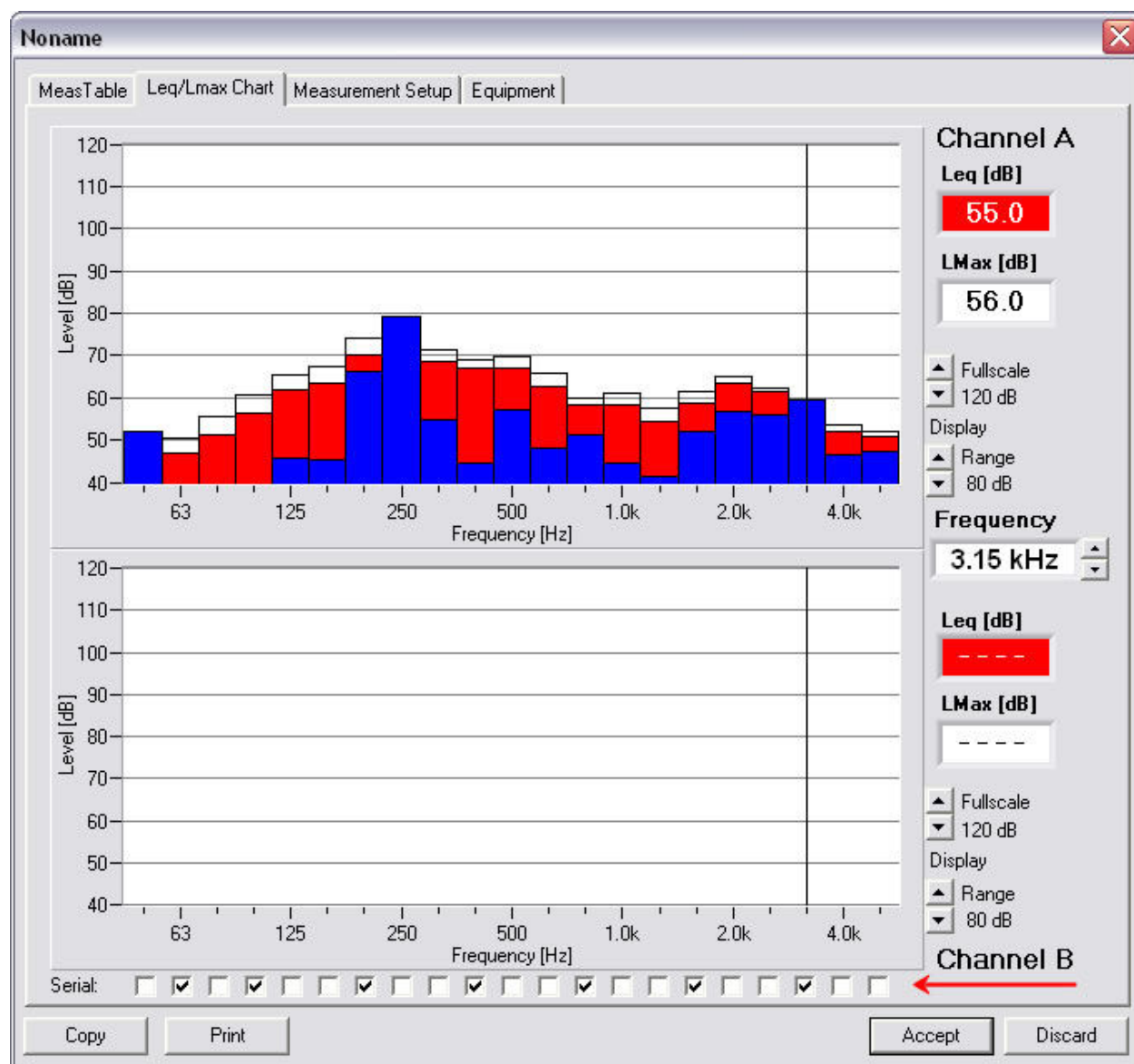
- When measuring reverberation or sound insulation, make sure that the full-scale deflection is set correctly before starting the measurement. This can be tested by switching on and off the noise generator (*Measurement > Noise on* (🔊), *Measurement > Noise off* (🔇)).
- In case of a serial measurement (1/3 octave band noise): The measurement starts at the 1/3 octave band of the actual cursor position. All lines to the right hand side of the cursor are measured up to the upper frequency limit (see *Measurement Set-up*). Clicking the Stop button does not only stop the ongoing measurement but also the serial process. The title bar informs about the current frequency band being measured.
- In case of a multiple measurement the title bar informs about the current measurement number compared to the total number.

Do serial measurements

If you choose Pink+1/3 Octave as your noise type within the configuration wizard, CtrlBuild will measure pink noise first, if there are certain frequencies that aren't measured well enough, you can put a tick at the frequency that has to be measured again. (Serial row, see printscreen). The frequency will be measured according to the frequency dependent duration.


Frequency dependent duration:

50 – 80 Hz:	15 seconds
100 – 315 Hz:	6 seconds
400 Hz and higher:	4 seconds



Disconnecting the current connection

Use the command *Configuration > Disconnect* to disconnect the current connection.

Alternatively you can use the symbol  on the toolbar.

This function is useful when an instrument needs to be relocated. Use *Disconnect* before switching off the instrument.

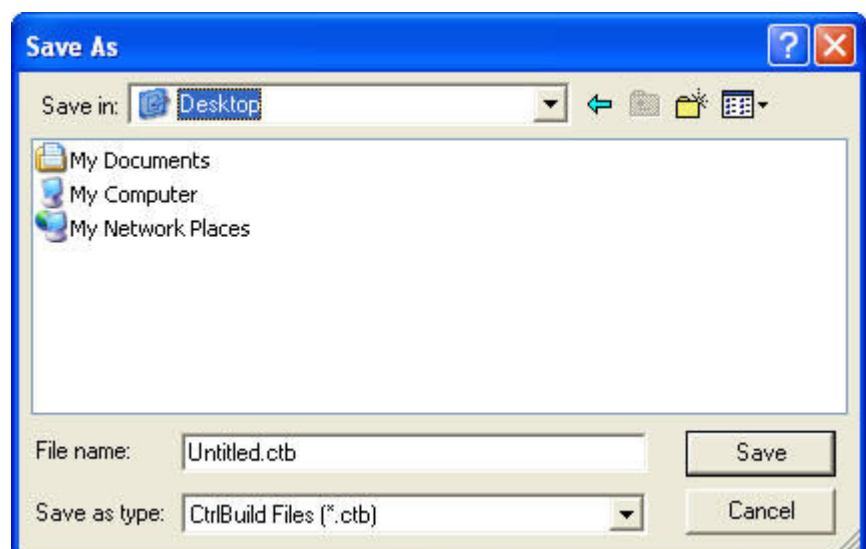
Saving project data

Use the command *File > Save* to save the active project to its current name and directory. When you save a project for the first time, CtrlBuild displays the "Save As" dialog box so you can name your project. If you want to change the name and directory of an existing project before you save it, choose the *Save As* command.

Auto Saving


Tick the option *Measurement > Auto-Saving* if the project should be saved after each accepted measurement. The procedure is the same as calling *File > Save*.

The "Save As" dialog box:



A CtrlBuild project has the file extension *.ctb.

Shortcuts:

Toolbar: 
Keys: **Ctrl+S**

Direct evaluation in NorBuild

Building acoustics evaluation

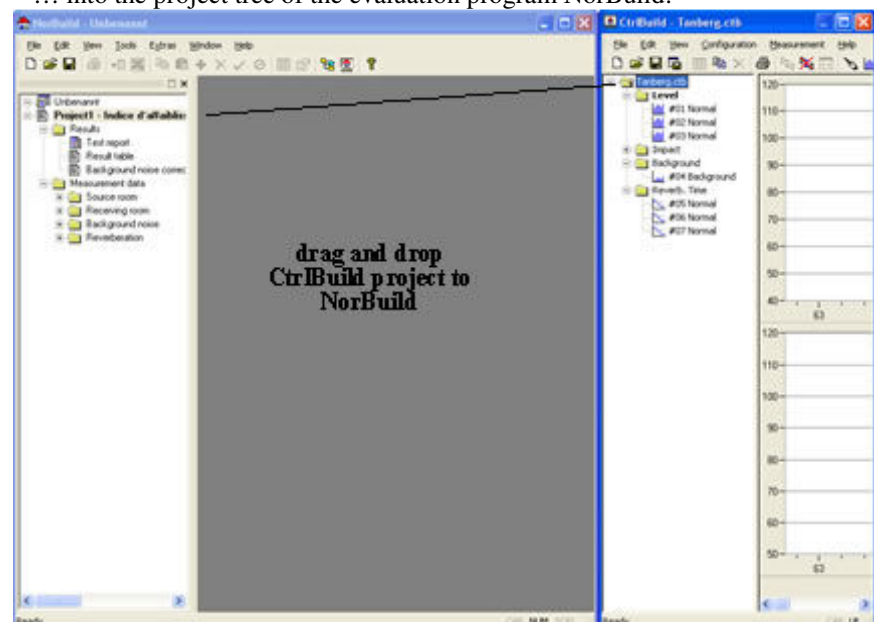
When all the needed measurements are finished, the results can be easily transferred from CtrlBuild into the evaluation program NorBuild. Simply drag and drop the entire CtrlBuild project (or individual measurements) into the NorBuild project tree (or use Copy/Paste: *Ctrl+C* and *Ctrl+V*). If the same measurement is transferred more than once, NorBuild will automatically ignore all such measurements.

1. Start NorBuild and create a new project

... by selecting the standard according to which the analysis shall be conducted.

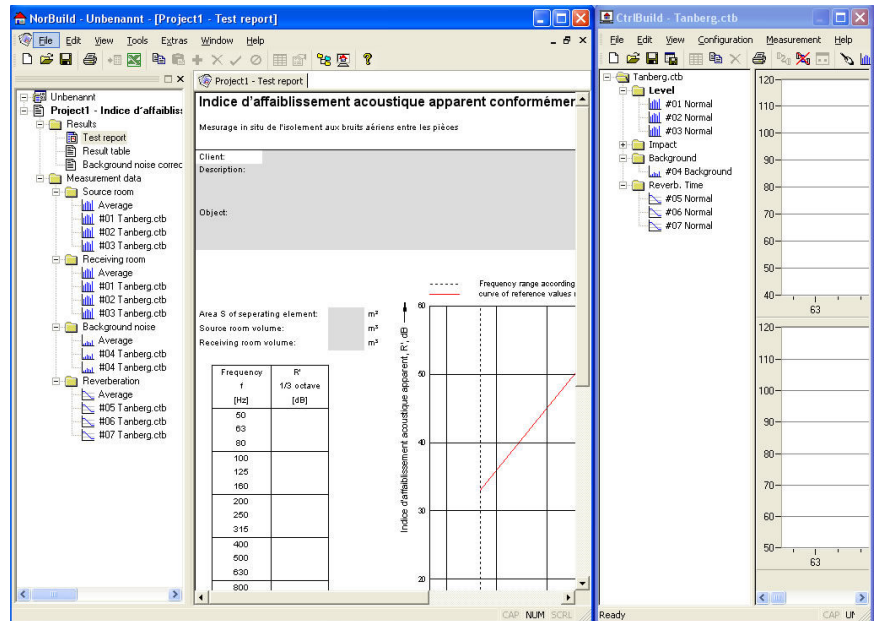
2. Drag and drop the desired CtrlBuild project

... into the project tree of the evaluation program NorBuild:



The individual measurements of the CtrlBuild project will then automatically be allocated to the correct folders of the NorBuild project.

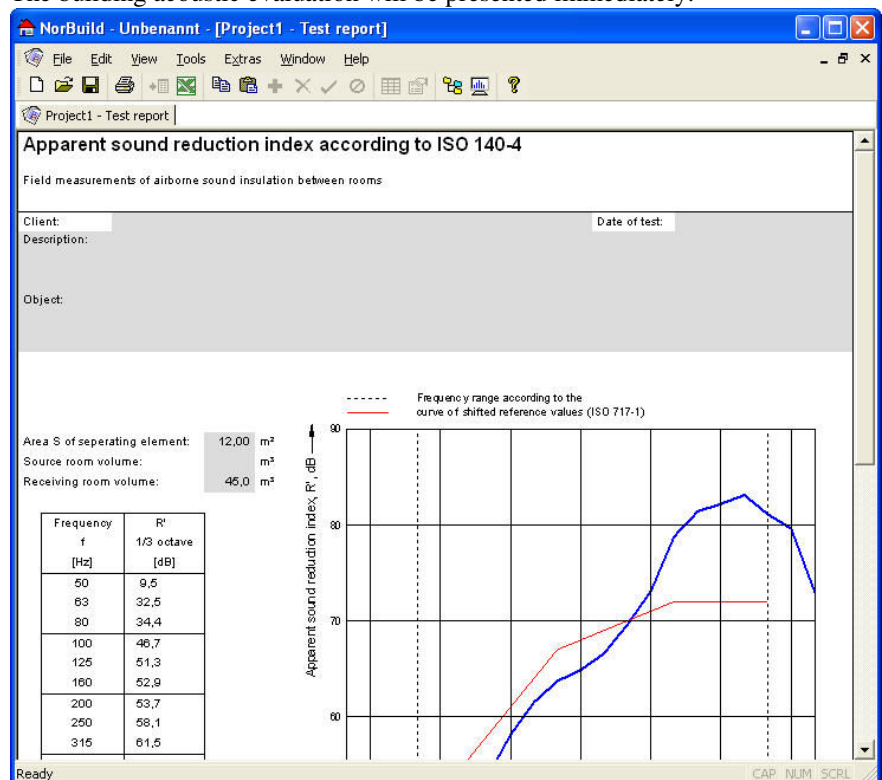
Based on the measurement parameters, NorBuild will know in which table the results are to be placed. As an example, the results of the channel which is assigned to the receiving room will be saved in the table for the receiving room. When transferring reverberation measurements, T20, T30 or the best possible value is used according to the import settings made under *Extras > Options* in NorBuild.



3. Enter the room and element data

... on the test report in NorBuild.

The building acoustic evaluation will be presented immediately:




Evaluation in Nor-Sic

If you want to use Nor-Sic for the evaluation, use the Export function (*File > Export*) to create a CtrlBuild export (text) file. This file can be imported from Nor-Sic (look at Nor-Sic handbook, chapter "Importing data from other projects").

Measurement results

Displaying the measurement results

There are three ways to display the results of a particular measurement:

- Double-click on the respective measurement in the project tree.
- Select the respective measurement in the project tree and click  (Show Meas. Data) in the tool bar.
- Select the respective measurement in the project tree and select *View > Meas. Data* from the menu.

MeasTable for level measurement

Project 1 Level Normal #03

MeasTable | Leq/Lmax Chart | Leq Diff Chart | Measurement Setup | Equipment

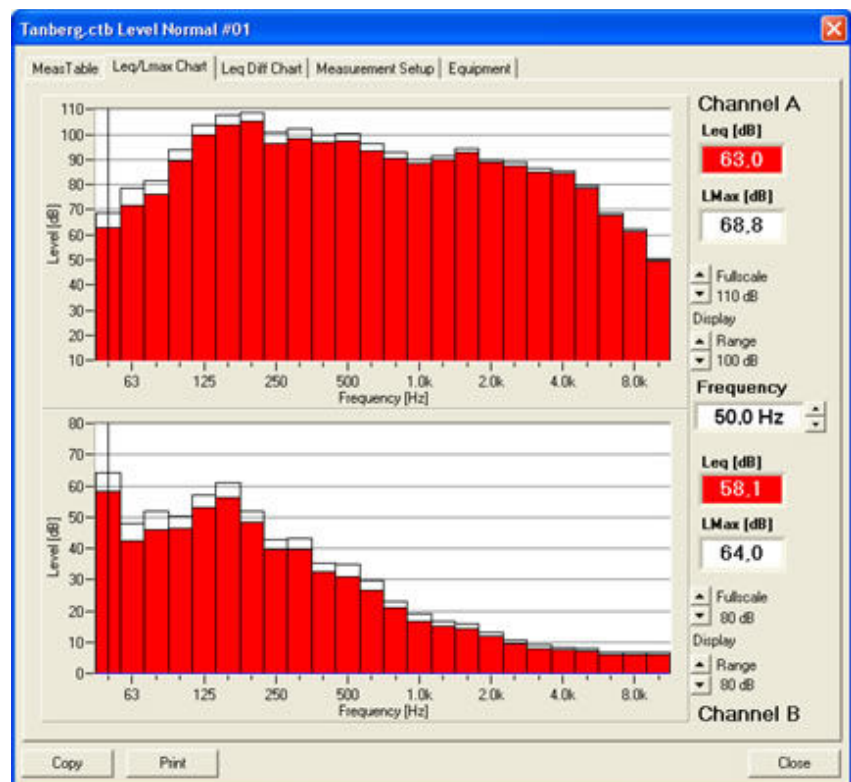
	Channel A		Channel B			Channel A		Channel B	
Frq [Hz]	Leq [dB]	S	Leq [dB]	S	Diff [dB]	Max-Leq [dB]		Max-Leq [dB]	
50	72,1		57,6		14,5	5,3		5,5	
63	70,3		38,3		32,0	5,8		4,7	
80	78,2		42,8		35,4	4,6		4,2	
100	86,4		48,2		38,2	4,8		5,0	
125	95,4		50,1		45,3	5,0		3,5	
160	103,6		56,8		46,8	4,1		4,0	
200	102,8		52,8		50,0	3,8		3,5	
250	98,1		40,3		57,8	2,8		3,5	
315	99,1		37,8		61,3	3,0		3,3	
400	93,0		31,6		61,4	2,1		4,1	
500	92,2		29,3		62,9	2,3		2,2	
630	94,0		27,7		66,3	3,0		3,0	
800	87,6		17,3		70,3	2,7		1,8	
1000	87,9		14,0		73,9	2,8		2,7	
1250	91,2		12,0		79,2	2,6		2,9	
1600	91,7		10,9		80,8	1,9		1,5	
2000	89,8		8,7		81,1	1,7		1,9	
2500	88,6		7,2		81,4	1,3		1,4	
3150	85,9		6,4		79,5	1,7		0,9	
4000	84,9		6,4		78,5	1,4		0,8	
5000	78,9		6,6		72,3	1,0		1,0	
6300	69,0		6,0		63,0	1,1		0,7	
8000	61,8		6,0		55,8	1,7		0,5	
10000	50,2		6,0		44,2	0,8		0,6	

CopyPrintClose

The numeric table of all activated channels (Leq) and their difference is shown. Additionally the difference of the Max value and the Leq is shown, too. If the difference is not steady, it is likely that the measurement was disturbed. Overloaded values are marked with a '*' in the status field. Problematic reverberation values are marked with a '?'. To edit the Leq values simply key in the new value. The status then changes to 'H' (Hand) to indicate the manual input.

Copy: Copies the selection to the clipboard.
Print: Prints out the numeric table.

Leq/Lmax Chart



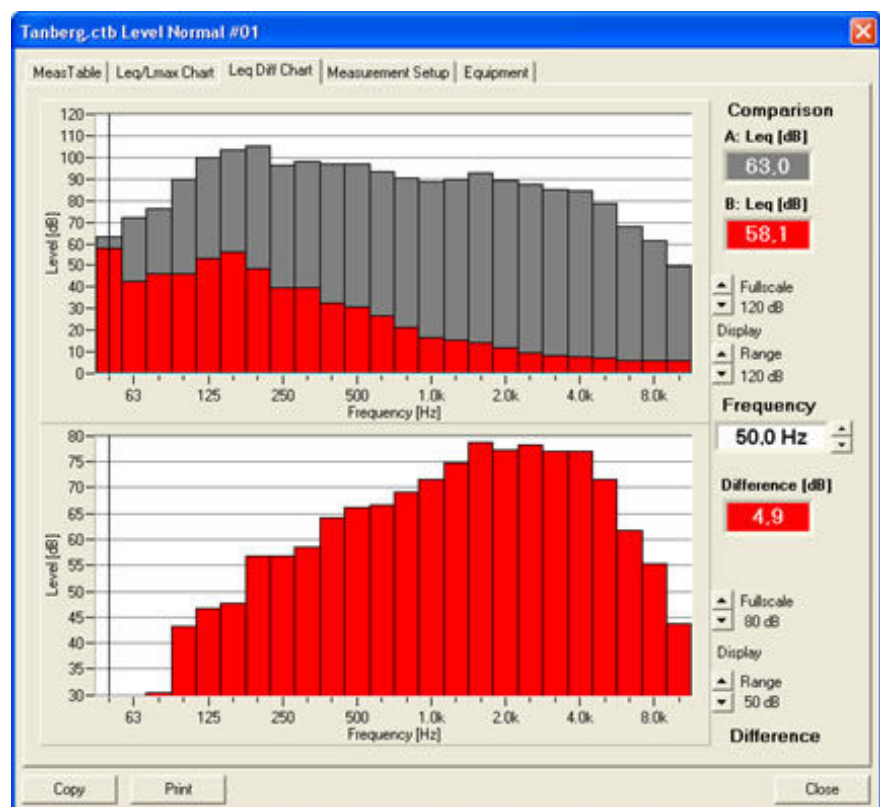
The level of the sound pressure of all activated channels is shown in form of a bar graph in the frequency range from 50 Hz to 10 kHz. The average Leq in every 1/3 octave band is shown as a red bar. The Lmax of each 1/3 octave band is represented by a grey bar. The numeric values at the cursor frequency are shown on the right hand side of the bars.

Any 1/3 octave bar can be selected by dragging and dropping the cursor. Alternatively the frequency up/down buttons, the frequency wheel or the left/right arrow keys can be used. Display Fullscale and Range can be modified by help of the corresponding control items.

Copy: Copies active chart to the clipboard. Click into the chart to make it active for the copy function.

Print: Prints out both charts.

Leq Diff Chart



This page is only available if two channels are activated.

The upper chart compares the Leq values of both channels while the lower chart shows the calculated (linear) difference of both channels. The numeric values at the cursor frequency are shown on the right hand side of the bars.

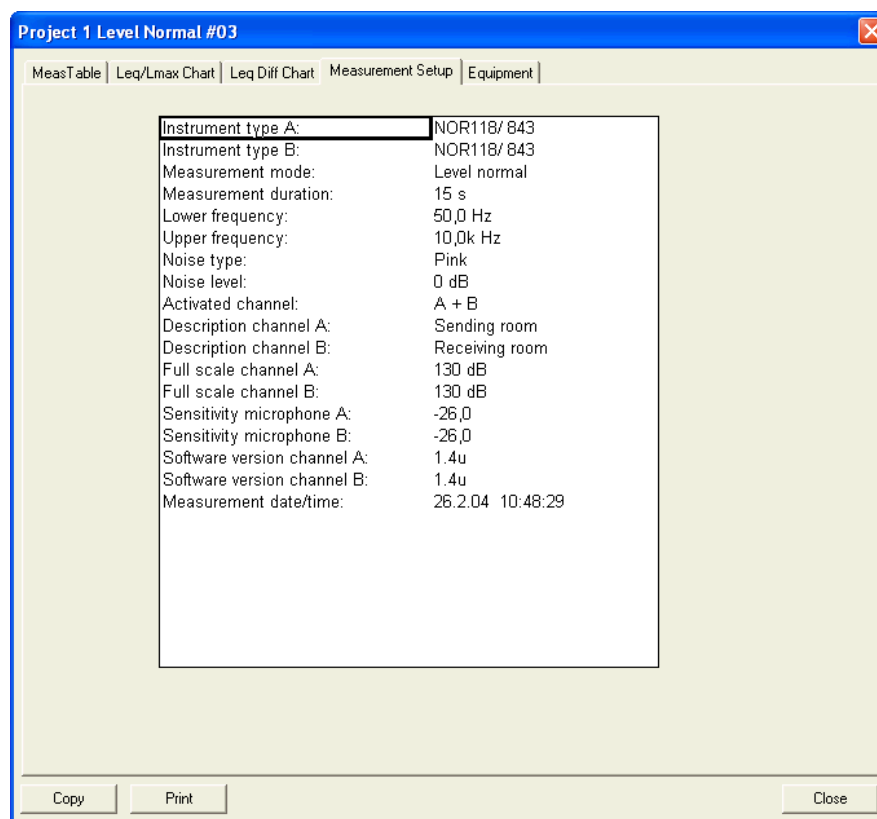
Any 1/3 octave bar can be selected by dragging and dropping the cursor.

Alternatively the frequency up/down buttons, the frequency wheel or the left/right arrow keys can be used. Display Fullscale and Range can be modified by help of the corresponding control items.

Copy: Copies active chart to the Clipboard. Click into the chart to make it active for the copy function.

Print: Prints out both charts.

Measurement Setup page



Project 1 Level Normal #03

MeasTable | Leq/Lmax Chart | Leq Diff Chart | Measurement Setup | Equipment

Instrument type A:	NOR118/ 843
Instrument type B:	NOR118/ 843
Measurement mode:	Level normal
Measurement duration:	15 s
Lower frequency:	50,0 Hz
Upper frequency:	10,0k Hz
Noise type:	Pink
Noise level:	0 dB
Activated channel:	A + B
Description channel A:	Sending room
Description channel B:	Receiving room
Full scale channel A:	130 dB
Full scale channel B:	130 dB
Sensitivity microphone A:	-26,0
Sensitivity microphone B:	-26,0
Software version channel A:	1.4u
Software version channel B:	1.4u
Measurement date/time:	26.2.04 10:48:29

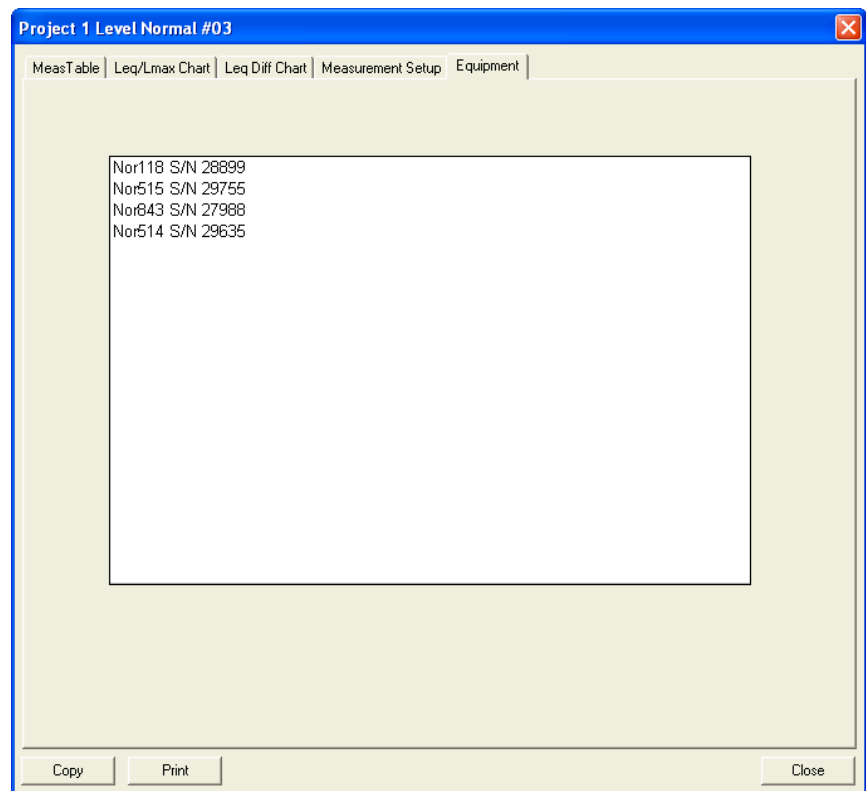
Copy Print Close

This page displays all relevant settings used for the corresponding measurement.

Copy: Copies the selection to the Clipboard.

Print: Prints out the table.

Equipment page



List of equipment used. The list can be modified simply by entering text. All information within this list will be remembered and used as default for the next measurement.

Copy: Copies the selection to the Clipboard.

Print: Prints out the list.

MeasTable for reverberation time measurement

Project 1 Reverb. Time Normal #05

MeasTable | Reverberation Chart | Measurement Setup | Equipment

	Channel A			Channel B		
Frq [Hz]	Primary	Secondary		Primary	Secondary	
	S	S	T30	S	T20	S
50						
63			1,06		1,10	
80			1,04		1,04	
100			1,41		1,18	
125			1,75		1,83	
160			0,79		0,67	
200			0,53		0,47	
250			0,76		0,62	
315			0,66		0,61	
400			0,80		0,66	
500			0,83		0,78	
630			0,62		0,55	
800			0,62		0,57	
1000			0,71		0,73	
1250			1,09		1,13	
1600			1,05		1,11	
2000			1,36		1,29	
2500			1,38		1,33	
3150			1,20		1,16	
4000			0,97		1,04	
5000			0,90		0,90	
6300			0,78		0,86	
8000			0,85		0,78	
10000			0,72 ?		1,57	

Copy Print L/t Display Close

The numeric table shows the T20 and T30 of all activated channels.

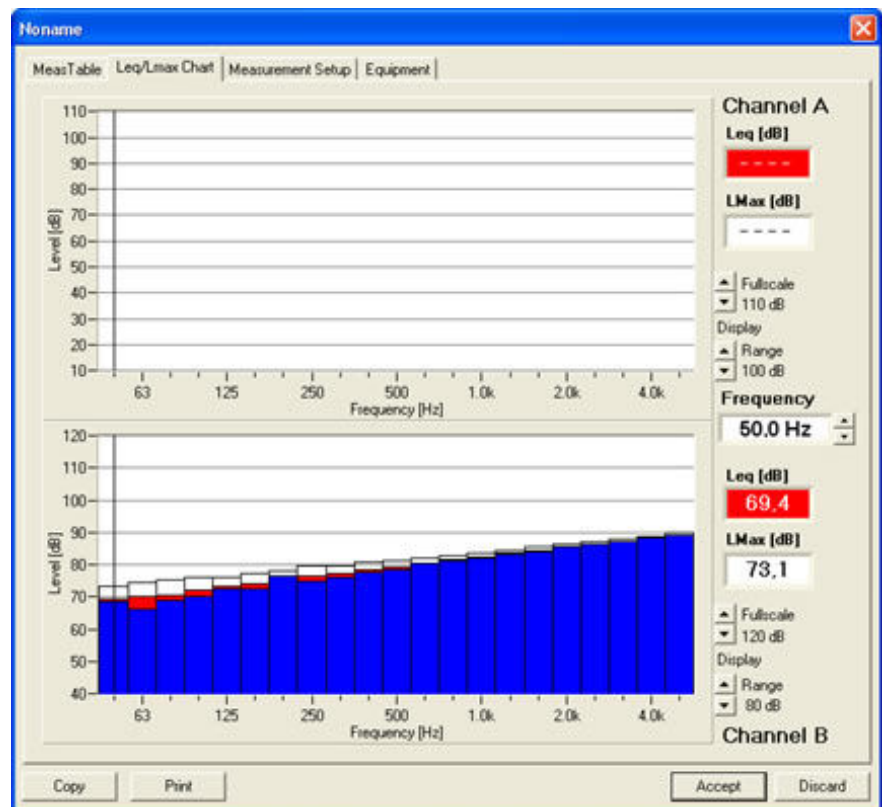
Overloaded values are marked with a '*' in the status field. Problematic reverberation values are marked with a '?'.

To edit the reverberation time values simply key in the new value. The status then changes to 'H' (Hand) to indicate the manual input.

Copy: Copies the selection to the Clipboard.

Print: Prints out the numeric table.

Reverberation Chart



After a reverberation time measurement the T30 and T20 values are shown as bars in the graphical display. The numerical values at the cursor frequency are shown on the right hand side of the bars.

Any 1/3 octave bar can be selected by dragging and dropping the cursor.

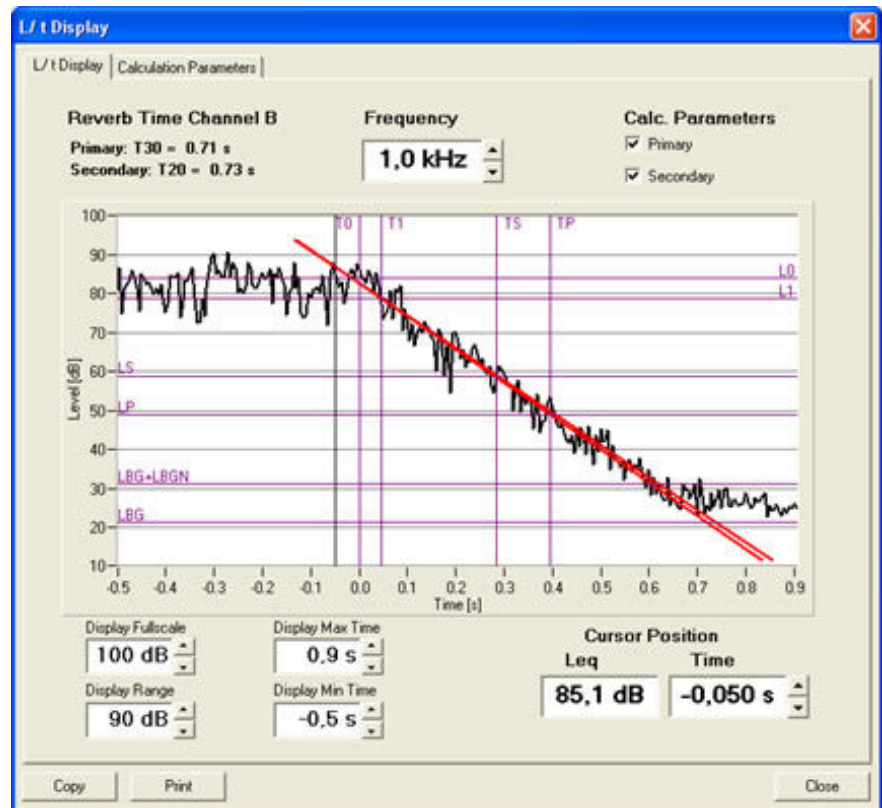
Alternatively the frequency up/down buttons, the frequency wheel or the left/right arrow keys can be used. Display Fullscale and Range can be modified by help of the corresponding control items.

Copy: Copies active chart to the Clipboard. Click into the chart to make it active for the copy function.

Print: Prints out both charts.

L/t Display: Shows the graphical decay curve in a new window. Click on the graphical window of the desired channel, then the L/t Display button. CtrlBuild loads the Reverberation curve into a new window.

L/t Display



Note: reverberation curve data is not transferred automatically after a measurement since this can take quite a while. If decay curves are wanted the "L/t Display" button has to be pressed when the Accept/Discard window appears on the screen (on completion of a measurement).

This choice will not be available if the function *Measurement > Display Accept/Discard Dialog* is disabled (so that the data is accepted by default). A pop-up window will inform about the ongoing data transfer process.


Once the data is transferred and the measurement is accepted reverberation curves for this measurement are available whenever needed. But there is no way to get decay curves once a measurement is accepted without asking for that sort of data (by pressing L/t Display button).

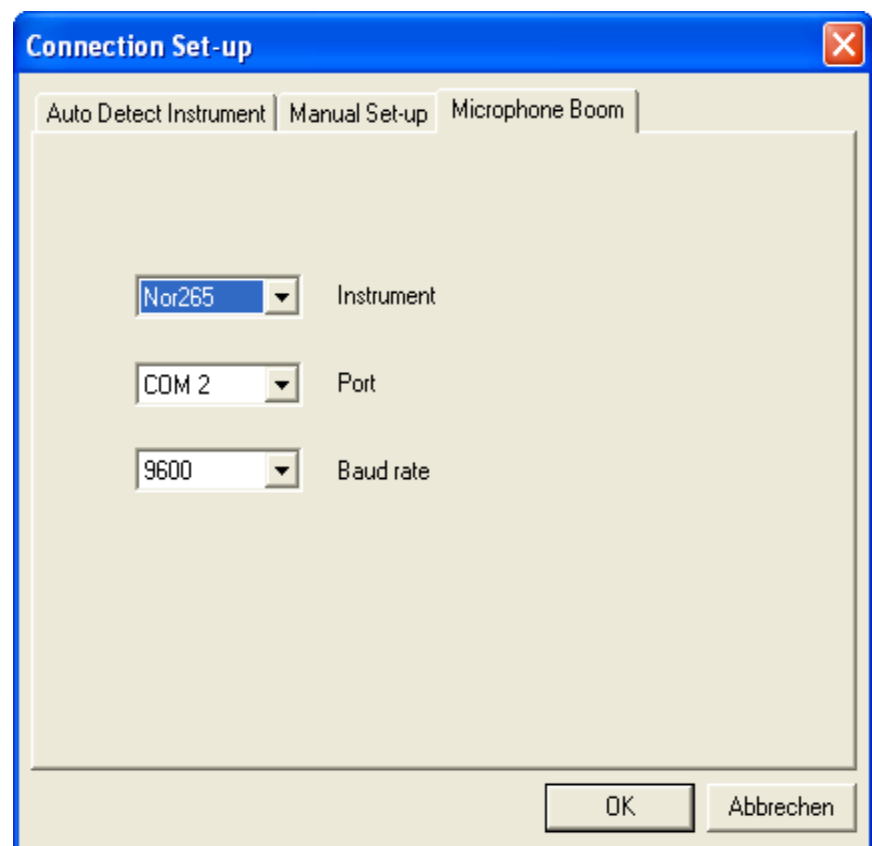
Microphone Boom

Connection settings

If it is the first time that a connection to the Norsonic microphone boom Nor265 shall be established, the connection settings have to be made. This set-up needs to be done once and remains unchanged as long as your PC and instrument configuration is not changed

In CtrlBuild, access the 'Microphone Boom' page using the menu:

Configuration > Connection Set-up or the symbol  on the toolbar:

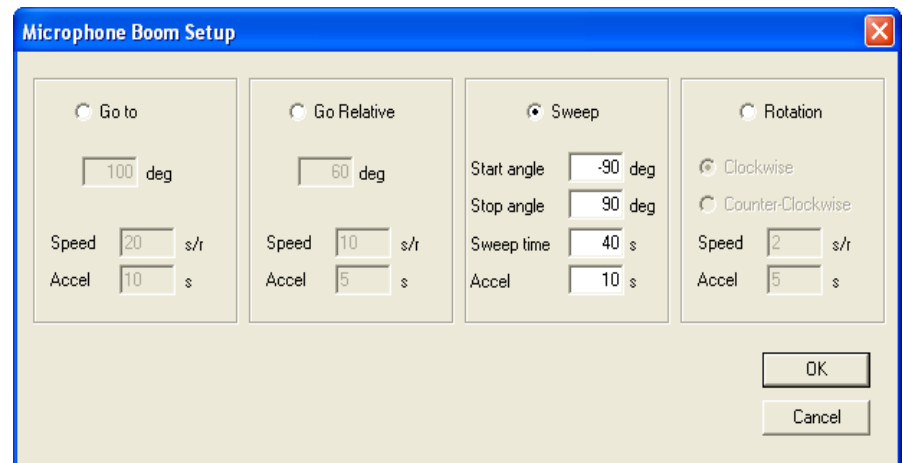


Before setting-up , check the device manager in your Windows system and check the *ports* section for available COM ports.

Instrument	Select the type of microphone boom connected. Select 'None' if there is no such device.
Port	COM port number where the device is connected.
Baud rate	Baud rate which is set-up on the boom.

Rotation settings

There are four possibilities to move the Nor265 microphone boom.



The image shows a Windows-style dialog box titled "Microphone Boom Setup". It contains four main sections, each with a radio button for selection:

- Go to:** Includes a text box with "100" and "deg", and input fields for "Speed" (20 s/r) and "Accel" (10 s).
- Go Relative:** Includes a text box with "60" and "deg", and input fields for "Speed" (10 s/r) and "Accel" (5 s).
- Sweep:** Includes radio buttons for "Start angle" (-90 deg) and "Stop angle" (90 deg), a "Sweep time" input (40 s), and an "Accel" input (10 s).
- Rotation:** Includes radio buttons for "Clockwise" and "Counter-Clockwise", and input fields for "Speed" (2 s/r) and "Accel" (5 s).

At the bottom right are "OK" and "Cancel" buttons.

Go To:	Movement to a absolute position which needs a calibration beforehand (starts automatically before the first "Go To" command)
Go Relative:	Movement to a defined position, starting at the actual position, without calibration
Sweep:	Movement between the start and stop angle with a defined time
Rotation:	Continuous rotation, starting at the actual position

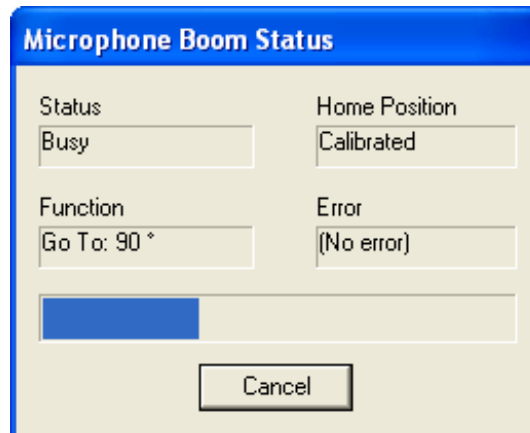
The "Speed" in seconds per rotation is like the inverse of a real speed in meter per seconds.

The Acceleration is applied for starting and stopping the boom

Start

As soon as a measurement is started by the user first the boom will be positioned and afterwards the measurement will be started

The status display appears in case of a positioning command ("Go To", "Go Relative") and it shows the progress of the movement.



The image shows a software dialog box titled "Microphone Boom Status". It has a blue title bar and a light beige background. The dialog is divided into four sections by labels: "Status", "Home Position", "Function", and "Error". Each section contains a text box. The "Status" box shows "Busy", "Home Position" shows "Calibrated", "Function" shows "Go To: 90 °", and "Error" shows "(No error)". Below these sections is a horizontal progress bar with a blue fill indicating the current progress. At the bottom center is a "Cancel" button.

Status	Home Position
Busy	Calibrated

Function	Error
Go To: 90 °	(No error)

Cancel

You can't abort the boom during the "Go Home" Process. The Home position is the calibrated position 0°.

Help

Contents command

Use the command *Help > Contents* to display the online Help.

About command

Use the command *Help > About CtrlBuild* to display the "About CtrlBuild" dialog box:



The dialog box displays the program information, version number, copyright and license information.

Details

Click this button to get detailed version information.

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