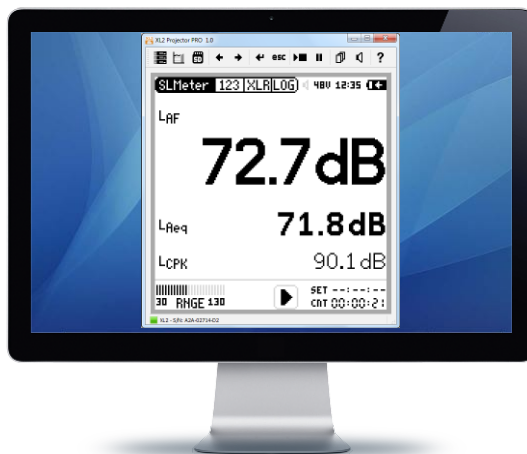


User Manual

XL2 Projector PRO

Display & Remote Control Tool for the XL2 Analyzer



Doc version 1.2.1/2e
Refers to SW v1.50 or higher
and XL2 firmware v4.20 or higher



NTi Audio AG is
an ISO9000:2015
certified company

Table of Contents

1	Introduction	3
1.1	System requirements.....	3
1.2	License agreement.....	4
1.3	Installation	6
2	Operation	7
2.1	XL View	8
2.2	Sound Level Predictor.....	10
	Repeated timer (example)	13
	Continuous timer (example)	16
2.3	Internal File Viewer.....	19
2.4	Virtual XL2 Keypad.....	19
2.5	Preferences	20
2.6	Profiles	22
3	Auxiliary features	24
3.1	Electronic Data Sheet.....	24
3.2	Command line options.....	26

1 Introduction

The Projector PRO displays the XL2 screen in real-time via USB on the connected Windows or Mac computer. The software toolbar enables control of the XL2 with the mouse and keyboard. The background color turns from green to red synchronized with the XL2 limit button color according to the user-defined limits.

The “XL View” and the “Sound Level Predictor” display extend the XL2 Projector PRO for live sound monitoring applications.

- The “XL View” window presents sound levels in large size on the connected computer screen. Users may select to view one, two or three sound pressure levels. Exceeding levels are presented with a pre-warning amber or alarming red color.
- The “Sound Level Predictor” visualizes the level history of the current measurement interval and indicates the headroom for the actual measurement period or the next few minutes. Green bars confirm that the present level is well below limits. Red bars are a call to action to reduce the sound level at the mixing desk. This allows the FOH engineer to optimize dynamic passages of the band for maximum audience satisfaction while still remaining within the legal limits.

Additionally the Projector PRO software offers the ability to retrieve measurement data from the XL2 without interruption to the measurement process. The entire file system of the XL2 is available while the XL2 is measuring.

The “XL View” and the “Sound Level Predictor” require that the Projector PRO Option or the Remote Measurement Option be installed on the XL2.

Projector PRO software is a free download for all registered XL2 customers on the support website <https://my.nti-audio.com>.

1.1 System requirements

- XL2 Firmware requirements

	XL View, Virtual XL2 Keypad	Sound Level Predictor	Internal File Viewer	Profiles
v2.30 or higher	x	–	–	-
v3.10 or higher	x	x	–	-
v3.22 or higher	x	x	x	-
v4.00 or higher	x	x	x	x

- 'Projector PRO Option' or 'Remote Measurement Option' for the XL2
(only required for the features [XL View](#) and [Sound Level Predictor](#))
- Personal computer with
 - Windows: 7, 8, 10 or higher (32/64 Bit)
 - Mac OS: 10.8 or higher

1.2 License agreement

Scope

This End-User License Agreement (“EULA”) is a legal agreement between you (either an individual or a single entity) and NTi Audio AG (“NTi Audio”). By installing or using the NTi Audio software, content or documentation (collectively the “NTi Audio software”) accompanying this EULA, you accept these terms and are consequently bound to them. If you do not agree to the terms of this EULA, do not install or use the NTi Audio software.

The NTi Audio software is licensed, not sold, to you by NTi Audio for use only under the terms of this license agreement. This EULA only gives you some rights to use the software. You may use the software only as expressly permitted in this EULA.

This EULA also applies for all upgrades or updates to the NTi Audio software (if any), supplements, internet-based services, and support services for this NTi Audio software, unless other terms accompany those items. If so, those terms will govern.

License Uses and Restrictions

- A. **Software Installation:** Subject to the terms and conditions of this license agreement, you are granted a limited, non-exclusive license to use and run the NTi Audio software. Data transfer from an XL2 Audio & Acoustic Analyzer to the NTi Audio software is only enabled if the corresponding license is installed on the analyzer.
- B. **No Reverse Engineering:** You may not and you agree not to, or to enable others to, copy (except as expressly permitted by this license agreement or by the usage rules if they are applicable to you), publish, distribute, decompile, reverse engineer, disassemble, attempt to derive the source code of, decrypt, modify, or create derivative works of the NTi Audio software or any services provided by the NTi Audio software, or any part thereof.
- C. **Termination:** This license is effective until terminated. Your rights under this license agreement will terminate automatically or otherwise cease to be effective without notice from NTi Audio if you fail to comply with any term(s) of this license agreement. Upon the termination of this license, you must cease all use of the NTi Audio software and destroy all copies, full or partial, of the NTi Audio software.

Services

The NTi Audio software may enable access to NTi Audio and third party services and websites (collectively and individually, “NTi Audio services”). Such NTi Audio services may not be available in all languages or in all countries. Use of these NTi Audio services requires internet access and use of certain NTi Audio services may require an NTi Audio ID, may require you to accept additional terms and may be subject to additional fees. By using this software in connection with an NTi Audio ID or other NTi Audio account, you agree to the applicable terms of service for that account.

Disclaimer

- A. NTi Audio and all our affiliates do not give any warranty, guarantee or conditions for this software, i.e. you bear the sole risk of using it. This limitation applies to anything related to this software, including breach of contract, warranty, guarantee or condition, strict liability, negligence or other torts to the extent permitted by applicable law. It also applies if NTi Audio knew or should have known about the possibility of the damages.
- B. The NTi Audio software and services are provided “as-is”, i.e. with all faults. You bear the sole risk of using it. NTi Audio gives no express warranties, guarantees or conditions. NTi Audio excludes the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

- C. You acknowledge that the NTi Audio software and services are not intended or suitable for use in situations or environments where the failure or time delays of, or errors or inaccuracies in the content, data or information provided by the NTi Audio software or services could lead to death, personal injury, or severe physical or environmental damage, including without limitation the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, life support or weapons systems.
- D. No oral or written information or advice given by NTi Audio or an NTi Audio authorized representative shall create a warranty. Should the NTi Audio software or services prove defective, you assume the entire costs of all necessary servicing, repair or correction.
- E. In no event shall NTi Audio be liable for personal injury, or any incidental, special, indirect or consequential damages whatsoever, including, without limitation, damages for loss of profits, loss of data or information, business interruption or any other commercial damages or losses, arising out of or related to your use or inability to use the NTi Audio software or services or any third party software or applications in conjunction with the NTi Audio software or services, however caused, regardless of the theory of liability (contract, tort or otherwise) and even if NTi Audio has been advised of the possibility of such damages. In no event shall NTi Audio's total liability to you for all damages exceed the amount of ten US dollars (USD 10.00). The foregoing limitations will apply even if the above-stated remedy fails in its essential purpose.

Separate Provisions

If any provision of this EULA shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall in no way be affected or impaired thereby.

Privacy

At all times your information will be treated in accordance with NTi Audio's privacy policy, which is incorporated by reference into this license agreement and can be viewed at

<http://www.nti-audio.com/privacy-statement>


Controlling Law


This license agreement will be governed and construed in accordance with the laws of Liechtenstein, Europe, excluding its conflict of law principles. No amendment to or modification of this EULA will be binding unless in writing and signed by NTi Audio. The English version of this EULA shall govern, to the extent not prohibited by local law in your jurisdiction.


1.3 Installation

1. Install the XL2 Projector PRO software on your computer
2. Connect the XL2 Analyzer to your computer via USB
3. Power ON the XL2 Analyzer → the XL2 shows the pop-up window "USB Mode"
4. Select "COM port". After installing the driver, the XL2 Projector software shows the [screen contents](#) of the connected XL2 Analyzer in real time

⇒ The communication status between the XL2 Analyzer and the Projector PRO software, as well as the XL2 serial number are shown in the status bar of the projector window.

 XL2 Analyzer is connected with online communication

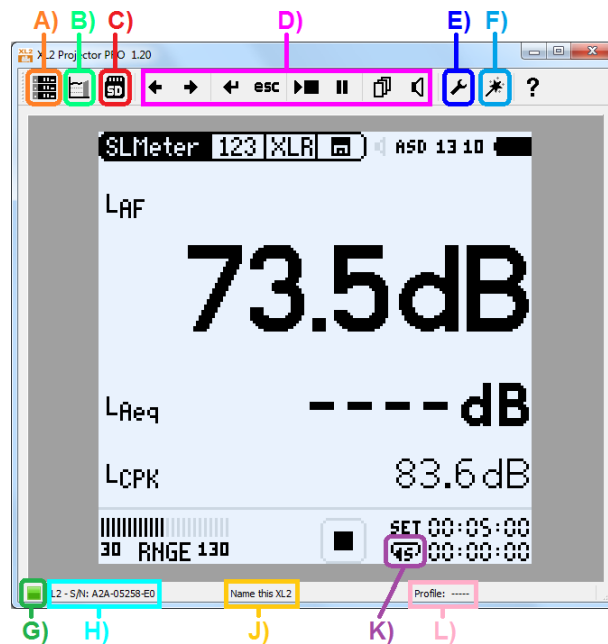
 No XL2 Analyzer found

 XL2 Analyzer is connected, but no communication ⇒ restart the software

2 Operation

The main panel shows the actual screen contents of the connected XL2, and provides a couple of control elements and status indicators:

- A) [Large display](#) of three selected sound levels and limits
- B) [Sound Level Predictor](#)
- C) [Direct access](#) to SD-card
- D) [Virtual XL2 keypad](#)
- E) [Preferences](#)
- F) [Profile settings](#)
- G) [Connection status](#)
- H) Serial number of the connected XL2
- J) Click on this entry to customize the name of the connected XL2
- K) [Timer mode](#)
- L) Selected [profile](#)



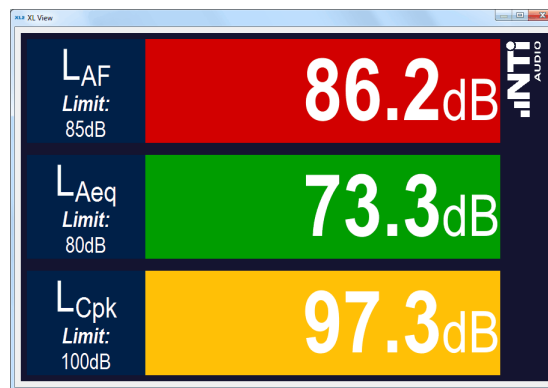
Main panel

2.1 XL View

NOTE The XL View is only available with the XL2 'Remote Measurement Option' or the 'XL2 Projector PRO Option'

The XL View provides the following, easy-readable information.

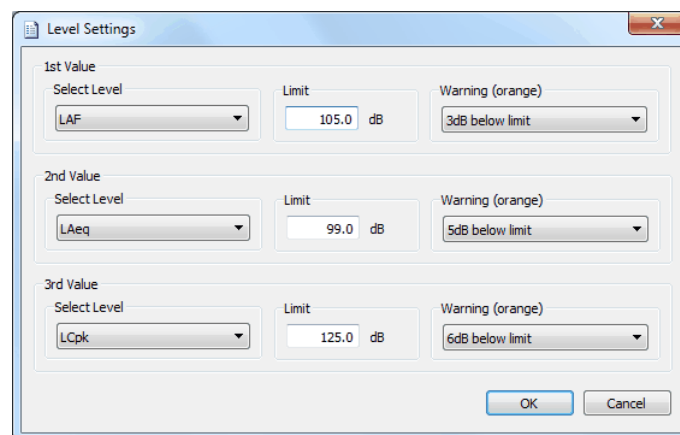
- Numerical display of up to three sound level results
- User-defined limit values
- Adaptive background color that shows the status of the actual level:
 - **Green** → level clearly below limit
 - **Amber** → level close to limit (pre-warning)
 - **Red** → level exceeds the limit



XL View

Display customization

Double click on any parameter to edit the XL View level settings.



XL View level settings

1. Select the level(s) that shall be displayed
2. Enter the applicable limit for each level (**red** alert)
3. Select the applicable warning limit for each level (**amber** alert)
4. Click OK to confirm

Hint The size of the top level display can be amended in the [Preferences](#).

2.2 Sound Level Predictor

The Sound Level Predictor is a powerful tool that assists the front-of-house (FoH) technician to control and optimize the sound level at a live event. Based on the monitored sound level, the software calculates and visualizes a forecast for the next few minutes. Thus it optically informs the operator via a big colored bar, whether the volume may remain as it is, or must be reduced to keep the future level(s) below the limits.

NOTE The Sound Level Predictor is only supported by XL2 with firmware 3.10 or higher and with the XL2 'Remote Measurement Option' or the 'XL2 Projector PRO Option'

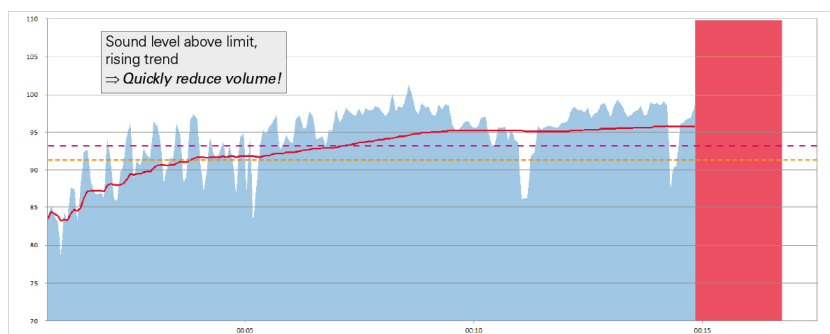
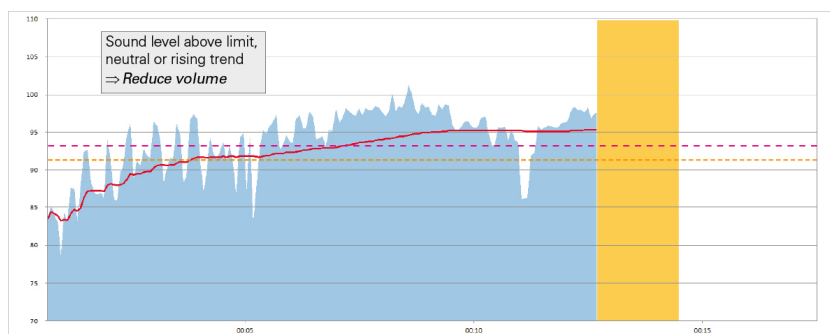
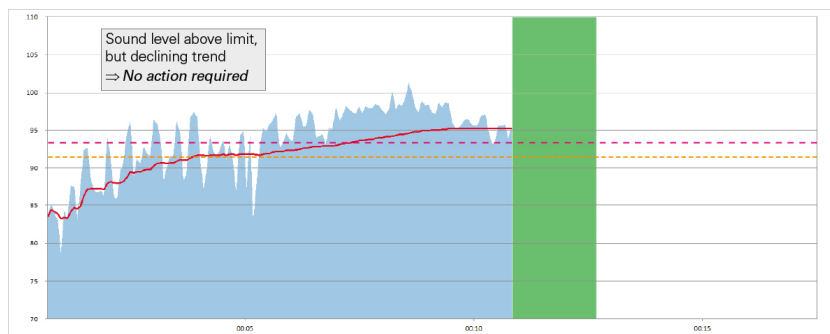
Basic functionality

In practice, the Predictor uses two values for the calculation:

- i. the *overall* sound level energy LAeq up to the present point
- ii. the sound level energy LAeq60" of the *last 60 seconds*

⇒ The Sound Level Predictor compares these two data sets and formulates its recommendation.

The following sketches visualize this process:



Feedback indicator

The Sound Level Predictor indicates its forecast via a large colored bar on the right-hand side of the sound level history.

Depending on the operating mode – [Repeat](#) or [Continuous](#) – it changes its color and shape.

A) Color

- **Green** ⇒ Level OK - volume may even be increased
- **Amber** ⇒ Attention! Sound level close to the limit
- **Red** ⇒ Action required: reduce volume!

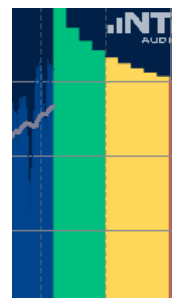
B) Shape

Repeat mode



- The feedback bar is always rectangular
- The height of the bar indicates the recommended LAeq upper limit for the remaining time of the current interval.

Continuous mode



- The feedback indicator is split into 10 vertical bars, each with a width of 1 minute
- The 1st bar indicates the sound level that would push the LAeq to the allowed limit within the next minute. The 2nd bar indicates the sound level that would push the LAeq to the allowed limit within the next 2 minutes, and so on.

Recommended workflow

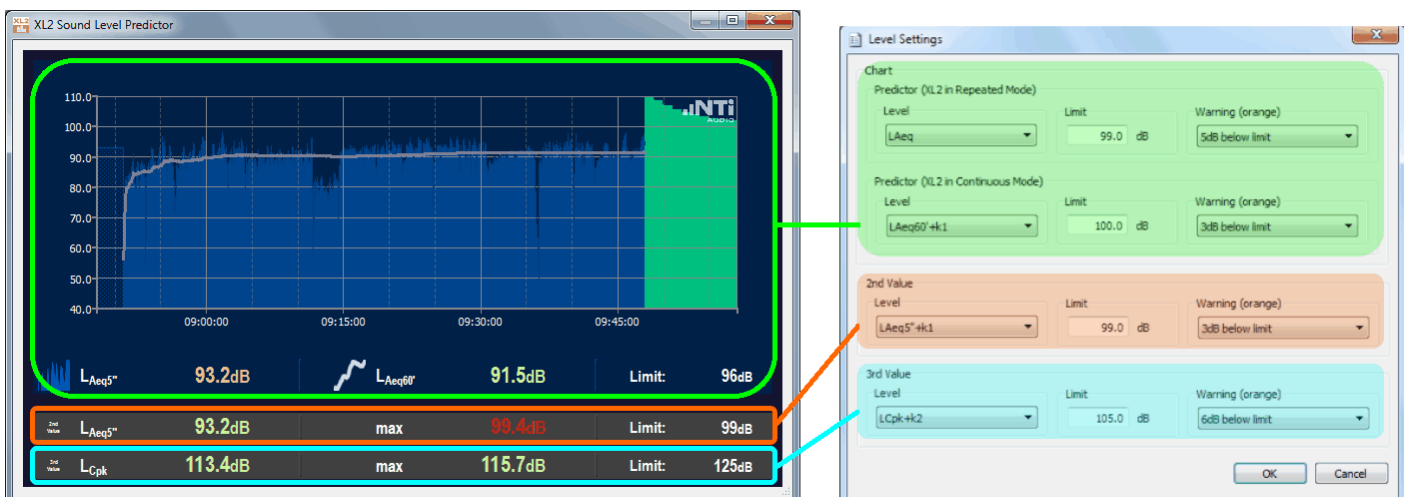
1. Power ON the XL2 and adjust the settings, i.e.
 - a. the measurement results that shall be displayed
 - b. the input range and the timer mode ([continuous](#) or [repeated](#))
 - c. the logging settings
 - d. *Optional*: edit the limit settings for the LED or the digital I/O interface

Hint It is recommended that you use one of the predefined [profiles](#)

NOTE The limits of the Sound Level Predictor software are **independent** of the XL2 limit settings.

NOTE The XL2 recording mode ([continuous](#) or [repeated](#)) as well as the [reference time](#) also apply for the Sound Level Predictor.

2. Run the XL2 Projector and click on to open the Sound Level Predictor
3. Right click on the Sound Level Predictor window to edit the Level Settings:
 - a. Chart Level with its limit and warning offset
 - b. 2nd Level (displayed only as numerical value) with its limit and warning offset
 - c. 3rd Level (displayed only as numerical value) with its limit and warning offset



4. Press the 'Start' button on the XL2 to start the level recording. The Sound Level Predictor will begin to display data.

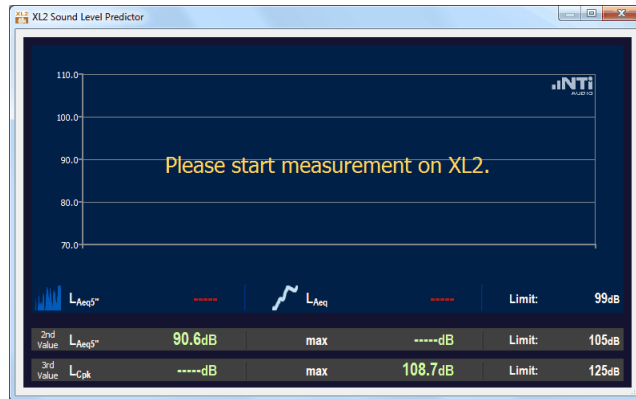
2.2.1 Repeated timer (example)

To activate the synchronized repeat mode, select on your XL2 instrument. This mode is required by various standards, which state that e.g. the LAeq per half hour must not exceed the limits.

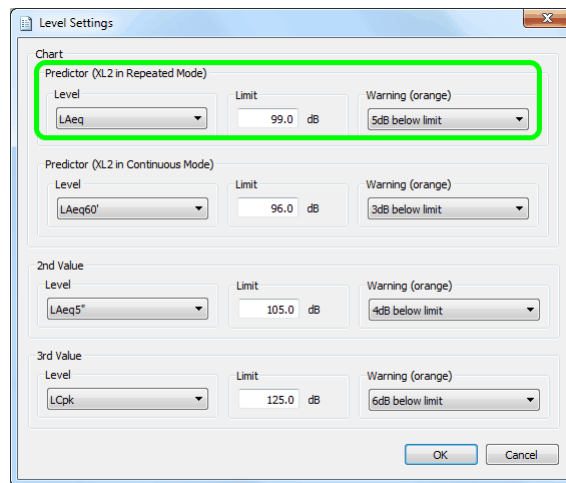
NOTE If the XL2 is operated in the repeat mode, the [reference time](#) also applies for the Sound Level Predictor.

The following examples show a typical setup and states of the Sound Level Predictor in repeat mode.

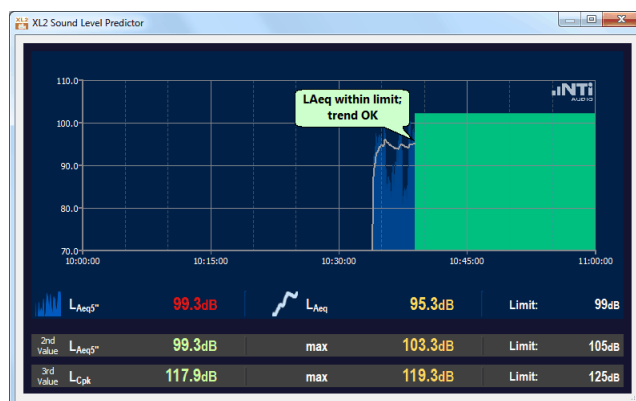
- 1) Sound level recording has not yet started \Rightarrow press the 'Play' button on the XL2.



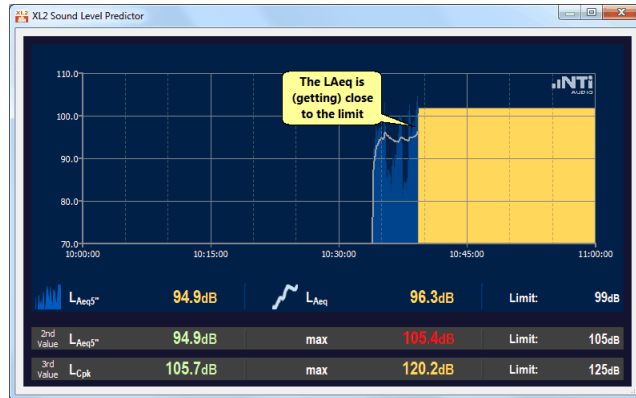
- 2) Right click on the graph to adjust the level settings.



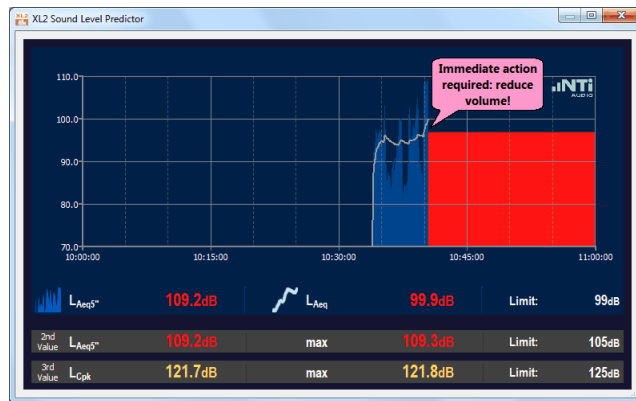
- 3) The sound level recording started at 10:34, and the LAeq is within the limit.



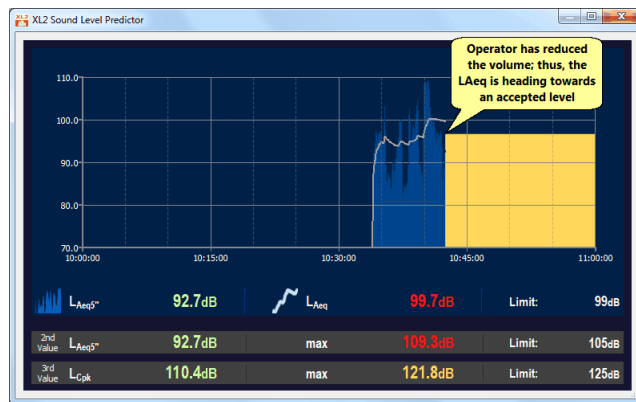
4) LAeq is still OK, but the software alerts a trend towards exceeding the limit.



5) LAeq beyond limit & trend rising ⇒ immediate action required: reduce volume!



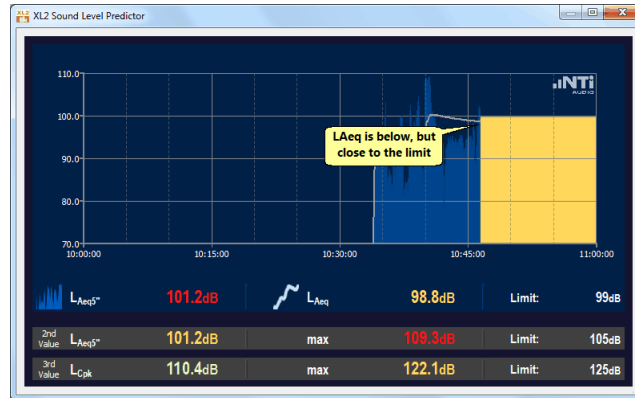
6) Operator has reduced the volume ⇒ LAeq still above the limit, but with declining trend.



7) LAeq back within the limit, declining trend.



8) LAeq within the limit, but rising trend.



9) Operator has failed to reduce volume in time ⇒ recording period will end with LAeq beyond the limit, regardless of any further action by the operator.



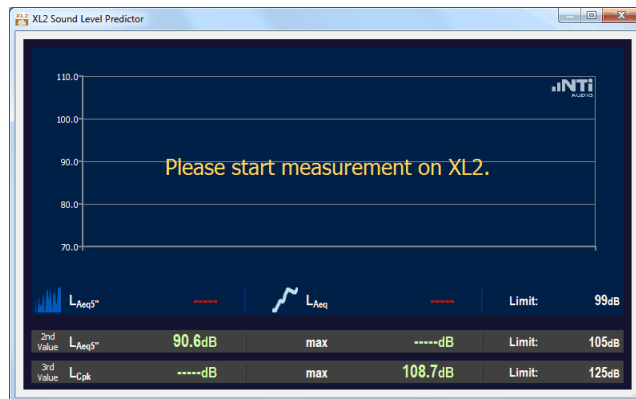
2.2.2 Continuous timer (example)

To activate the continuous mode, select **CONT** on your XL2 instrument. This mode is required by various standards, which state that the gliding LAeq over a defined period must not exceed the limits.

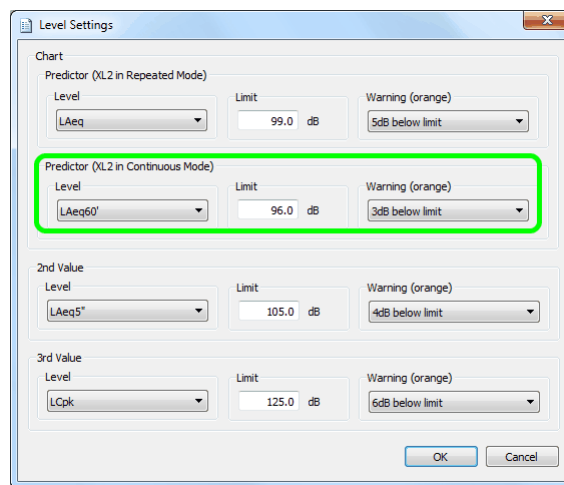
NOTE If the XL2 is operated in the continuous mode, its real-time clock also applies for the Sound Level Predictor.

The following examples show a typical setup and states of the Sound Level Predictor in continuous mode.

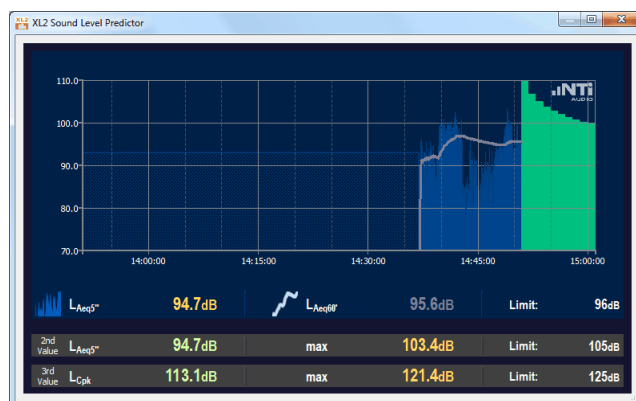
- 1) The sound level recording has not yet started \Rightarrow press the 'Play' button on the XL2.



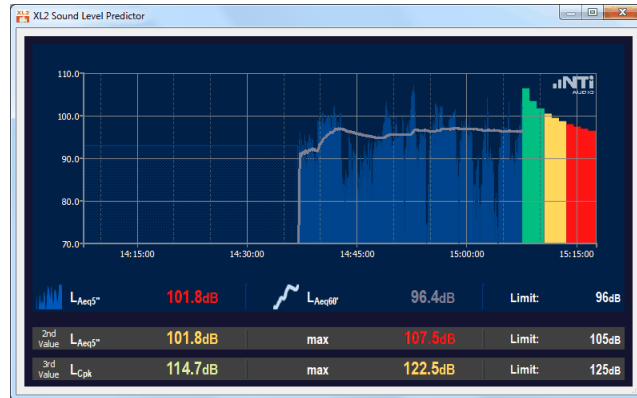
- 2) Right click on the graph to adjust the level settings.



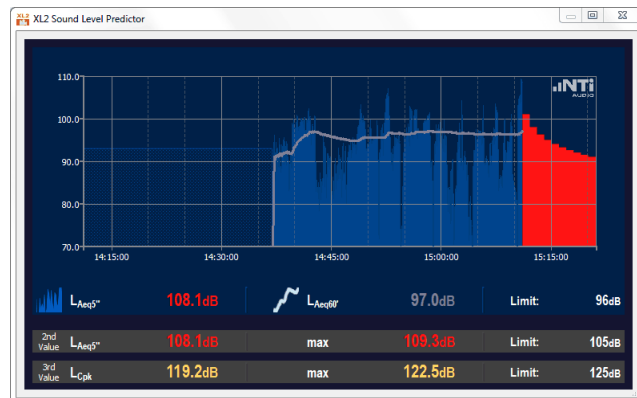
- 3) The sound level recording started at 14:37, and the LAeq is within the limit.



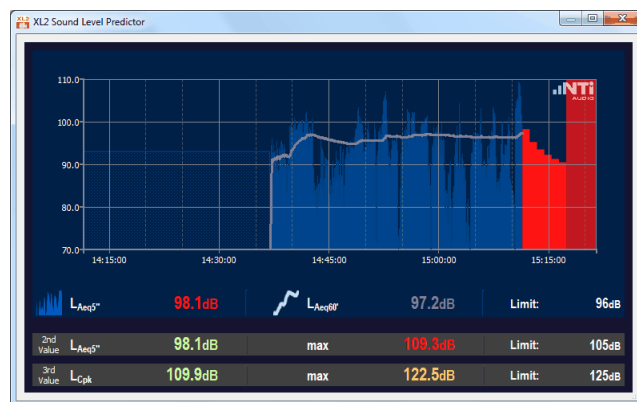
4) LAeq is beyond the limit and shows rising trend \Rightarrow the software alerts the operator to take action (there are max. 6 minutes left to reduce the sound level).



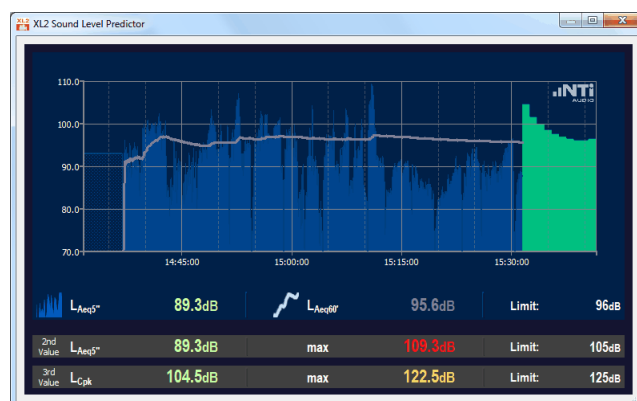
5) Operator has not sufficiently reduced the volume \Rightarrow the software calls for immediate action.



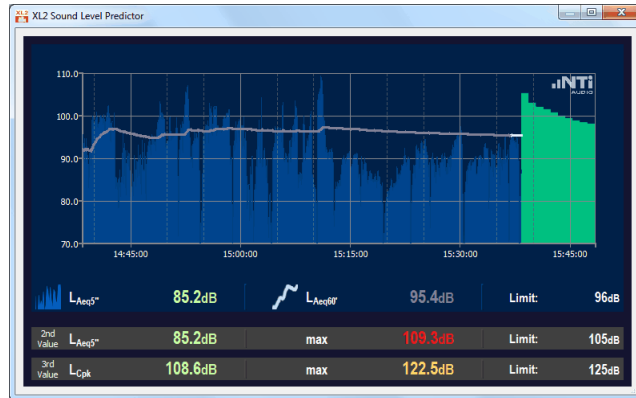
6) Operator has still not sufficiently reduced the volume \Rightarrow the software alerts huge consequences if no immediate and drastic action is taken!



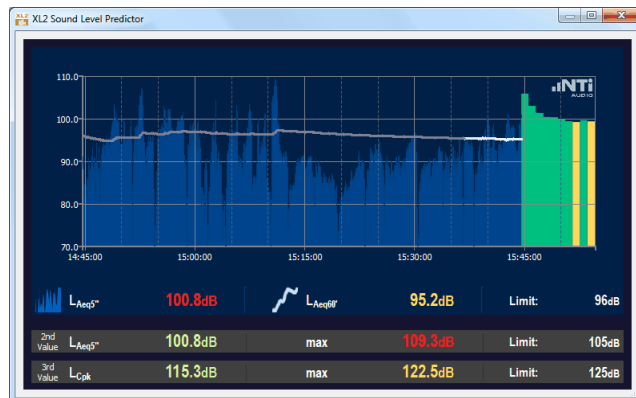
7) The operator has drastically reduced the volume \Rightarrow the LAeq has eventually dropped below the limit.



8) More than 60 minutes have passed \Rightarrow the LAeq60' is plotted by a solid white line.



9) Depending on the level profile at the far left end of the graph, bars with various colors may show up in the forecast.



2.3 Internal File Viewer

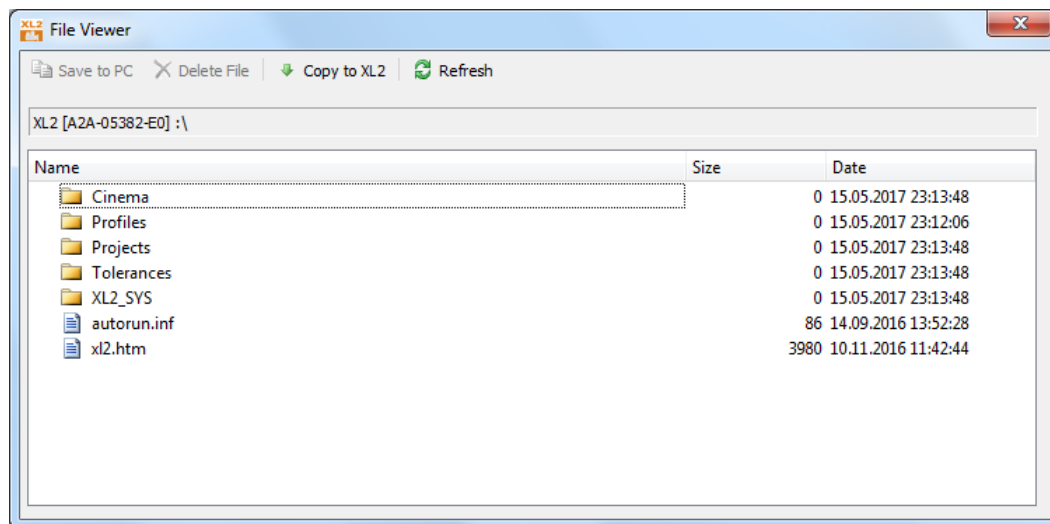
Note The Internal File Viewer is only supported by XL2 with firmware v3.22 or higher.

Click on to open the Internal File Viewer. This proprietary viewer allows you to

- Copy files from the XL2 memory to your PC
- Delete files from the XL2 memory

Hints The Internal File Viewer requires XL2 firmware v 3.22 or higher.

It provides only access to those actions that are allowed in the current state of the instrument.



Example of Internal File Viewer contents

2.4 Virtual XL2 Keypad

The Virtual XL2 Keypad allows you to remotely control the connected XL2 analyzer. It directly represents the buttons on the XL2 keypad (except for the 'Limit' and On/Off button).

Furthermore, you may also use the Esc, Enter and arrow keys (←↑↓→) of your PC keyboard.



Virtual and physical XL2 keypad

2.5 Preferences

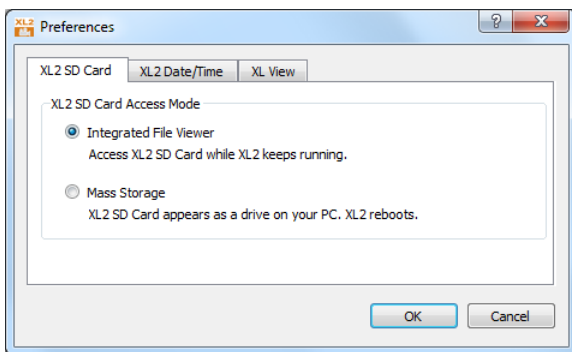
Click on to open the 'Preferences' panel that allows to select

- a) the default action for the feature
- b) the date & time setting
- c) the default size of the top display in the [XL View](#)

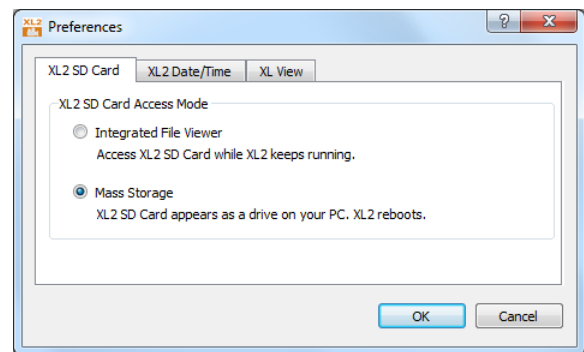
a) XL2 SD card access mode

- Use File Viewer → the software will automatically open the integrated [Internal File Viewer](#) (recommended)
- Switch to Mass Storage → the XL2 unit will be switched to mass storage mode, in which you may access the SD-card with your own file explorer

Hint The available File Viewer selection depends on the firmware version of the connected XL2.

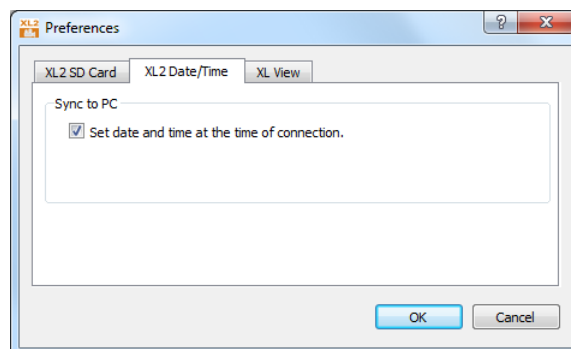


XL2 firmware v3.22 or higher



XL2 firmware v2.30 to v3.12

b) Set date & time

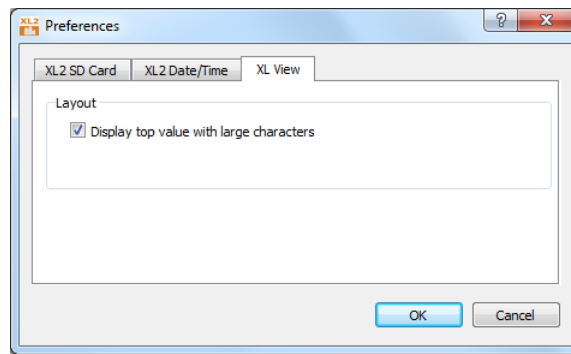


XL2 Date and Time setting

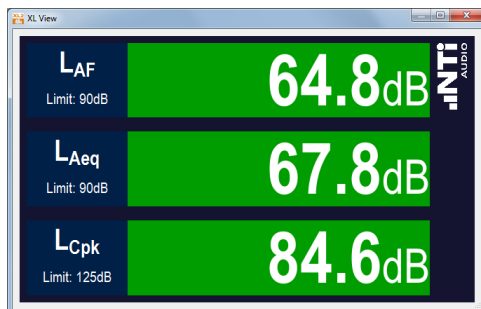
Tick the checkbox to let the XL2 (slave) automatically synchronize its internal date & time to the connected PC (master).

Hint If the automated synchronization is active, the XL2 shows the 'Time Zone' as difference to the UTC (e.g. +01:00)

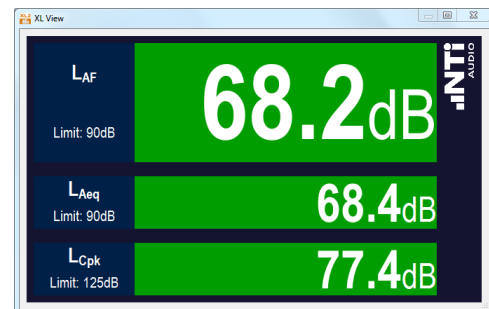
c) XL View top display size



XL View display size preferences



XL View with default display



XL View with large size top display

2.6 Profiles

Note The Profile feature is only supported by XL2 firmware v4.00 or higher.



A Profile represents a set of user-defined XL2 & Projector PRO settings, such as

- XL2 SLMeter settings
- Level selections and limits in Projector PRO
- Show XL View or Sound level Predictor at startup
- Autostart measurement at software start

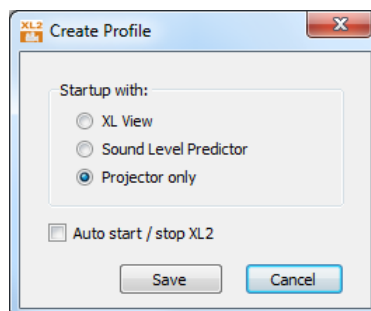
Profiles are typically used to make sure that a measurement is executed according to the given specifications. They can be created, selected and deleted.

a) Create a Profile

Hint A Profile can only be created if the Projector PRO is connected to an XL2.

Clicking on  and then on  **Create Profile...** creates a new Profile. This Profile comprises all current XL2 & Projector PRO settings. Consequently, you first have to configure the instrument and the software according to your demands, before saving these settings on a Profile. In addition, you may




1. Select the Startup window, i.e. either
 - [XL View](#)
 - [Sound Level Predictor](#)
 - default [Projector](#)
2. Tick the checkbox **Auto start / stop XL2** if the XL2 shall automatically start the measurement as soon as the Profile is activated.



Adjustable Profile settings

Hint Do not begin the name of your Profile with a '#' - this character is reserved for the factory-defined default Profiles.

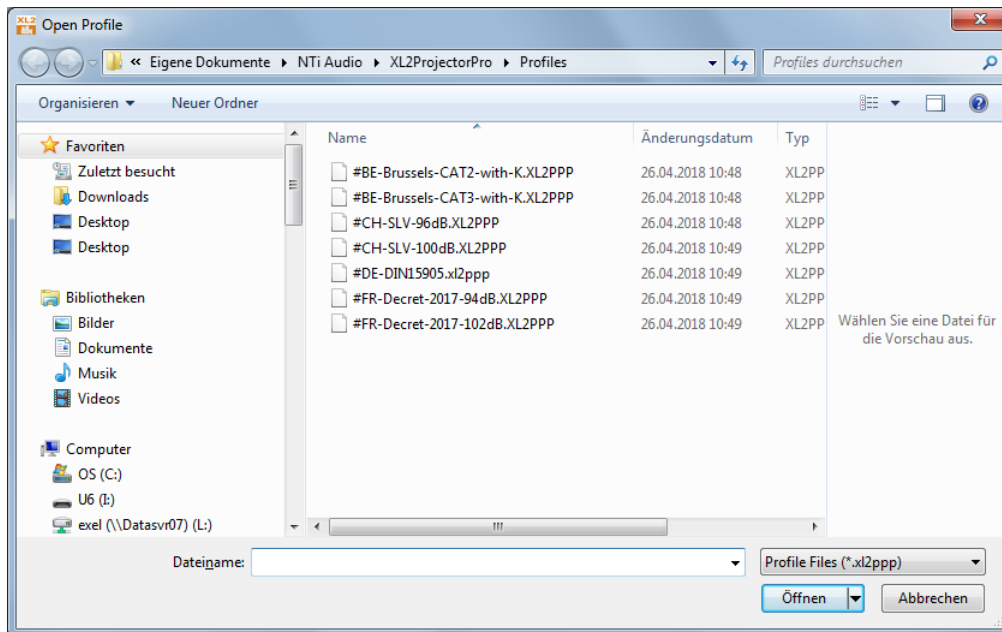
b) Select a Profile

Click on  and then on  **More Profiles...** or  **MyProfile** to select a Profile.

Hints Profiles that start with a '#' are factory-defined.



As soon as a Profile has been selected, it is displayed in the bottom line of the [Projector PRO window](#).

As long as the Profile is active, you may neither amend the XL2, nor any Projector PRO settings.





Default Profiles

c) Exit Profile

Click on  and then on  **Exit Profile** to exit the currently active Profile.

Hint The settings are now editable.

d) Delete a Profile

1. Click on  and then on  **More Profiles...**
2. Right click on the Profile and select 'Delete'

3 Auxiliary features

- i. Reprogramming of the [Electronic Data Sheet](#)
- ii. [Command line options](#)

3.1 Electronic Data Sheet

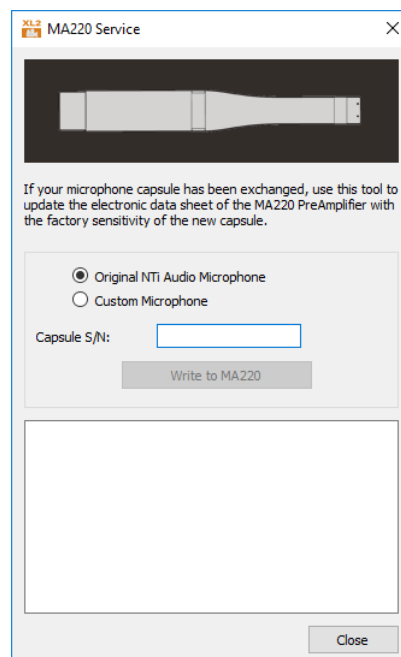
The XL2 Projector PRO allows to reprogram the Electronic Data Sheet of the

- M2230, M2211, M2215 and M2210 microphone
- ICP Adapter ASD and XLR Adapter ASD

For example, after changing a microphone capsule, you may reprogram the Electronic Data Sheet with the new S/N and sensitivity.

A) Procedure for microphones

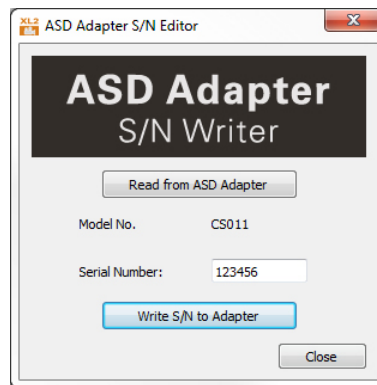
- Install the new capsule on the microphone preamplifier.
- Plug the measurement microphone directly into the XL2.
- Install the latest firmware in the XL2, available under <http://my.nti-audio.com/support/xl2>
- Start the XL2 Projector PRO Software. The computer requires online connection to the web.
- Connect the XL2 with the USB cable to the Projector PRO software, thus you see the XL2 display live on the computer monitor (if prompted select "COM port" on the XL2).
- Press the computer keyboard keys "Ctrl + Shift + F5" at the same time (alternatively "Ctrl + Alt + F5")
- Select the radio button "Original NTi Audio Microphone"
- Enter the serial number of the new capsule.
- Now the XL2 reads the factory sensitivity of the new capsule from the NTi Audio server and stores the new data into the electronic data sheet of the preamplifier. You will be prompted if all is in good order.
- Verify the setting in the "CALIBRATE" screen of the XL2 and execute a user calibration to verify if the new capsule works in good order.



Microphone reprogramming

B) Procedure for ICP / XLR Adapter ASD

- Connect the XL2 with the adapter to the PC and start the XL2 Projector PRO software. You will see the XL2 screen live on the PC monitor.
- Press "F4" on the keyboard to open the ASD Adapter S/N Writer.
- Click "Read from ASD Adapter".
- Enter the sensor's serial number.
- Click "Write S/N to Adapter".



Reprogramming of ICP / XLR Adapter ASD

3.2 Command line options

How to edit the Command Line?

- Search for the program "XL2ProjectorPro.exe" in the program folder.
- Create a shortcut on the desktop
- Click on the shortcut with the right-hand mouse button and select Properties.
- "Target" reads the program command line for adjustment

Example

"C:\Program Files (x86)\NTi Audio\XL2Projector\XL2ProjectorPro.exe" -p 1000

- | | |
|-----------------|---|
| Adding "-sk" | Disables any operation of the XL2 through the XL2 Projector PRO ("View Only" mode).
Use the command line "... \NTi Audio\XL2ProjectorPro -sk".
Application: Ensuring fixed parameter settings in quality control by preventing any XL2 setting changes e.g. in service or production environment. |
| Adding "-xk" | Disables buttons and wheel on the XL2.
Use the command line "... \NTi Audio\XL2ProjectorPro -xk".
Application: Ensuring fixed parameter settings in quality control by preventing any XL2 setting changes e.g. in service or production environment. |
| Adding "-p xxx" | xxx = number from 100 to 1000.
Selects the update period of the XL2 Projector PRO screen in [ms], e.g. "-p 300" updates the software screen every 300 ms.
The default update period is 100 ms.
Application: A short update rate may cause a high CPU load on older PCs. A longer update rate provides more resources for other PC operations carried out simultaneously. |

Notes