Networking Audio Systems

mxGUI

User Guide for Nova73

Version: **V4.14/3**

Edition: 11-08-09

Table of Contents

About This Manual

How to Use This Manual

This manual describes the operation of mxGUI for Nova73 users.

Use the Table of Contents at the beginning of the manual or Index Directory (Page 220) to locate help on a particular topic. An Index Directory is provided at the end of the manual.

You can access more information by registering on the Lawo website at http://www.lawo.de. By registering you will be kept up to date with the latest news and releases for your product. You can also download software updates and documentation.

Marginal notes

The following marginal symbols are used to draw your attention to:


Tip

User Tips – useful tips and short cuts.

Notes - useful points or cross references which apply to an operation.


Note

Warning


Warning

Warnings – alert you when an action should always be observed.

Chapter 1: Overview

mxGUI (Matrix GUI)

Lawo's **mxGUI** (Matrix GUI) is a software programme which can run the mc^2 graphical user interface on an external computer. The programme may be run either on or offline with any mc^2 system (**mc^{2}56**, **mc^{2}66**, **mc^{2}90**) or with a **Nova73**. This user guide describes the operation of mxGUI for **Nova73** users. Its applications include:

- **Offline Setup** - to prepare and save settings ahead of an event.
- **Remote Operation** - mxGUI can run online by connecting to the Nova73 Control System via its control network (Ethernet).

When you start the mxGUI programme, you are asked to choose which system you wish to emulate. In Nova73 mode, mxGUI accesses only the displays which are relevant to a Nova73 routing matrix. These are:

Display	Description
Signal List	control signal routing and user labels. See Page 46.
Signal Settings	adjust I/O parameters and check the system status. See Page 76.
mx Routing	crosspoint control of signal routing. See Page 62.
mxDSP Settings	control DSP settings on the optional mxDSP cards. See Page 101.
Downmix	control downmix matrix parameters. See Page 114.
Signal Container	organise and control multi-channel connections using signal containers. See Page 142.
System Settings	set system options. See Page 186.
Custom Functions	configure user buttons for custom functions. See Page 196.
Snapshots	load, save and manage snapshots for recall of: • User Labels and Routing – made from the **Signal List** display. • Signal Routing – made from the **Matrix** display. • IO parameters – made from the **Signal Settings** display. See Page 132.
Production List	load, save and manage productions. Productions store and recall everything listed above for a snapshot plus options set within the **System Settings** display. See Page 119.
File Transfer	transfer files between the mxGUI computer and a Nova73 Control System. See Page 34.

Chapter 2: Installation

mxGUI Compatibility

mxGUI may connect to any mc² system or **Nova73** running Version 4.6 software or later according to the following table.

Note that all systems are supported except a stand alone **Nova73**:

System	Router Version	Control System	Control System Location	mxGUI with RIs ≥ 4.6	mxGUI with RIs < 4.6
Nova73 Standalone	980/31 or 980/32	Motorola	HD Core Board	no	no
Nova 73 Ripper	980/31 or 980/32	Intel	1HE Ripper	yes	no
Nova73 DSHS	980/32	Intel	1HE Ripper	yes	no
Nova73 MKII	980/33	Intel	HD Core Board	yes	no
mc² 56	980/33	Intel	HD Core Board	yes	no
mc² 66 classic	980/31 or 980/32	Intel	inside console	yes	no
mc² 66 top1	980/31 or 980/32	Intel	inside console	yes	no
mc² 66 MKII	980/33	Intel	HD Core Board	yes	no
mc² 90	980/31 or 980/32	Intel	inside console	yes	no
mc² 90	980/33	Intel	HD Core Board	yes	no
mc² 90 star²	980/33	Intel	HD Core Board	yes	no

System Requirements

Warning

Please observe the following system requirements:

To install and run the software, your computer must meet or exceed the following requirements:

- Hardware: 1.5 GHz (required for VirtualBox)
- Operating System: Windows XP/Vista/Windows7 or MAC OS X Snow Leopard
- RAM: for XP, 1.5GB RAM
  for Vista/Windows 7, 2GB RAM
  for OS X, 2GB RAM
  (512 MB for mxGUI; rest for OS)
- Hard Disc: minimum 200 MB free space
- Operation: Keyboard and mouse
- Interface: Ethernet 10/100Mbit

Software

Lawo's mxGUI software runs on a "virtual Linux machine" inside your computer. This provides the same operating platform as on the Nova73 Control System. To achieve this, three separate programmes are installed by the mxGUI installer:

- **mxGUI** – Lawo's application software.
- **Oracle VM VirtualBox** – this programme creates the "virtual machine" which runs the Linux operating system.
- **Xming X Server** – this programme deals with the management of TCP/IP ports within the mxGUI computer.

Warning

Having completed the installation process you should not need to open or modify the Oracle VirtualBox or Xming programmes, as all settings are automatically dealt with by the mxGUI installer.

Software Licence

From Version 4.14 onwards, Lawo's mxGUI application is free of charge and does not require a software licence.

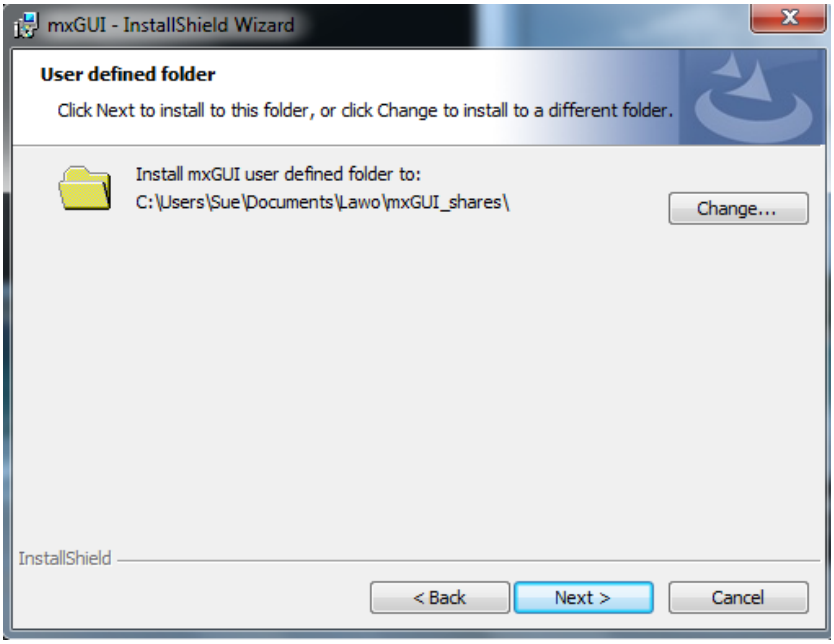
Installation

Please refer to the “mxGUI Installation Manual” for details on how to install the software. When installing the mxGUI software, please note:

User defined Folder

Note

The location of the user defined folder is where the **config** and **shared_folder** will be stored. You will need to access these folders if you wish to copy files via your host operating system (e.g. to USB, email, etc.). The default location is shown below:



Depending on your computer’s configuration, this location may be hidden to normal users. Therefore, you may wish to change the folder location so that it can be easily accessed.

Uninstalling the Software

To uninstall mxGUI, use the “Add or Remove Programs” option within the Control Panel of your operating system. Remember to remove all three programmes for a complete uninstall:

- mxGUI
- Oracle VM VirtualBox
- Xming X Server

Updating mxGUI

If you wish to install a new release of mxGUI software, then proceed as follows.

1. Use the “Add or Remove Programs” option within the Control Panel of your operating system to remove mxGUI.

Note that it is not necessary to remove the VirtualBox or Xming X Server programmes.

2. Run the new mxGUI installer to re-install mxGUI.

At the end of the install, the Oracle VirtualBox installer automatically opens - cancel the VirtualBox installer as it is not necessary to re-install this programme.

3. Following the installation or re-installation of mxGUI, a restart of the computer is advised.

Chapter 3: Getting Started

Starting mxGUI

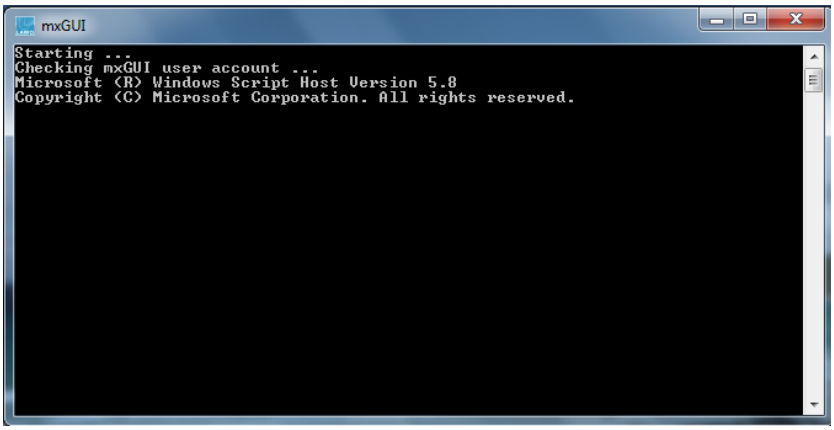
1. Start the programme, by selecting **mxGUI** from the START menu or clicking on the shortcut icon.

Note that this is the default file path created during a standard install. If you chose a different file path, then proceed accordingly.

Note

The programme automatically launches the Xming X server and the Oracle VirtualBox to provide the “virtual Linux machine” which will be the platform for the mxGUI application.

The following window appears while these programmes start up; this may take a few seconds:



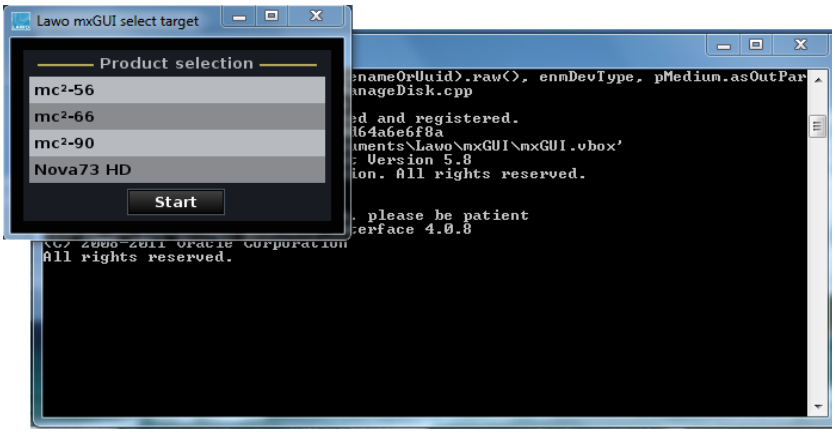
Note that if you have a firewall installed on your computer, you will need to unblock the firewall access for the Xming X Server programme. Once you have authorised the firewall access, you shouldn’t need to deal with this security alert again.

Note

If you running Windows 7, then you may also be prompted to allow changes to your User Account.

2. Select **Yes** on any pop-up windows to authorise these changes and continue.

Once the VirtualBox and Xming have booted, you will see the mxGUI launch window, a small window offering system options:



From here you can choose which system you wish to emulate – mc²56, mc²66, mc²90 or Nova73. This ensures that only the features relevant to your product are available from the mxGUI displays. You will only see the options selected during the installation process. In our example, all four mc² systems are available.

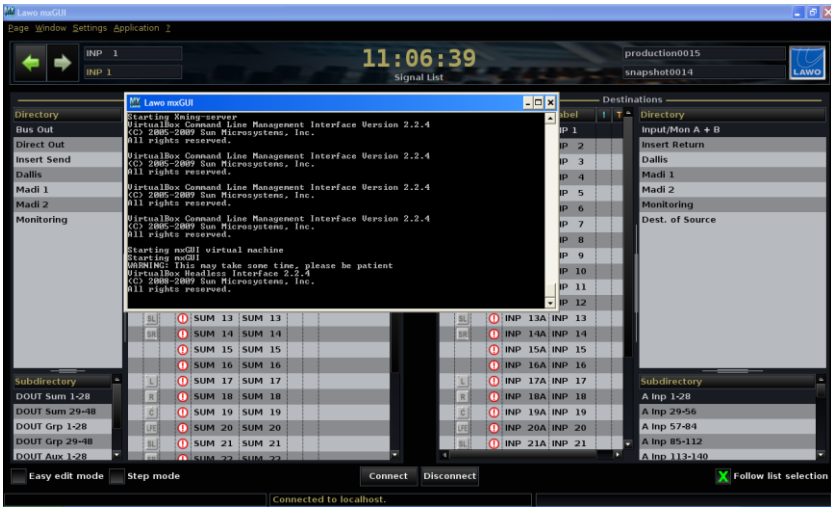
3. Select the **Nova73HD** option - and click **Start** to launch mxGUI.

mxGUI boots up and, unless you prepared a cold start (see Page 41), will load its warm start data. This returns the system to the settings saved when mxGUI was last shutdown.

The programme is ready to use once you see the **Lawo mxGUI** operating window:

Closing mxGUI

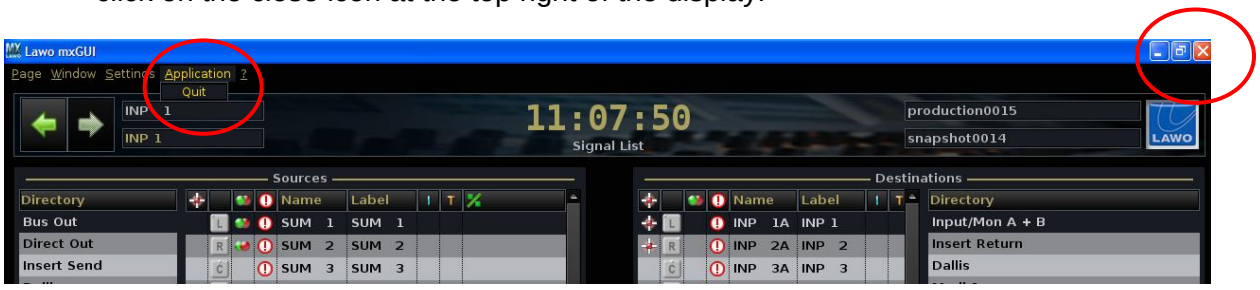
Remember that mxGUI runs on a virtual Linux machine inside your computer. Therefore, when running the software, you will notice that two windows are open: the mxGUI operating window and the virtual machine:



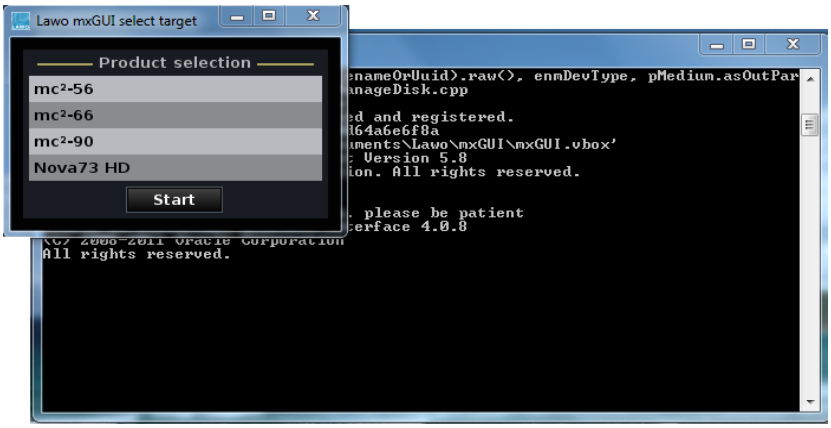
You can maximise or minimise these windows in the usual manner. So, for normal operation, maximise the mxGUI operating window to hide the virtual machine.

To close the mxGUI programme so that the current settings are stored as warm start data:

1. Select **Application** -> **Quit** from the main menu bar, or click on the close icon at the top right of the display:



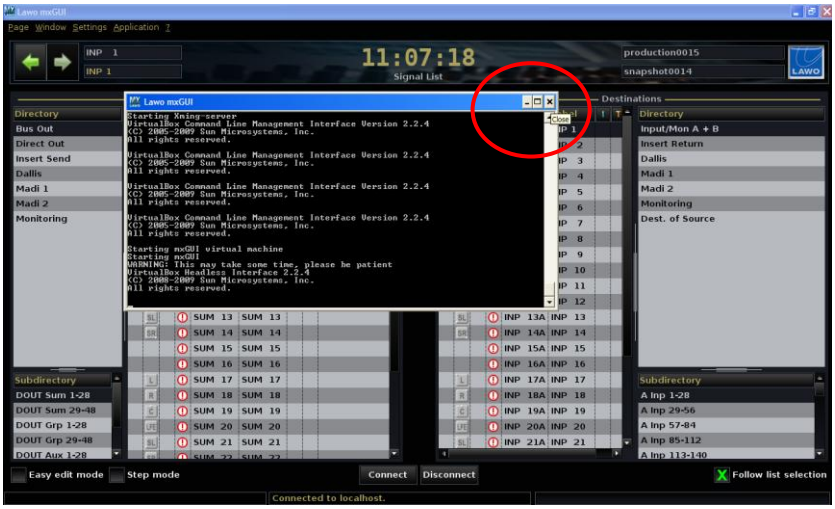
Either operation quits the mxGUI operating window, and exits back to the launch options:



If you wish you can now restart mxGUI for a different mc^2 system.

2. Or, click on the VirtualBox close icon to quit the virtual machine.

Note that if you close the Virtual Box window *BEFORE* closing mxGUI, then the system shuts down without storing any warm start data:



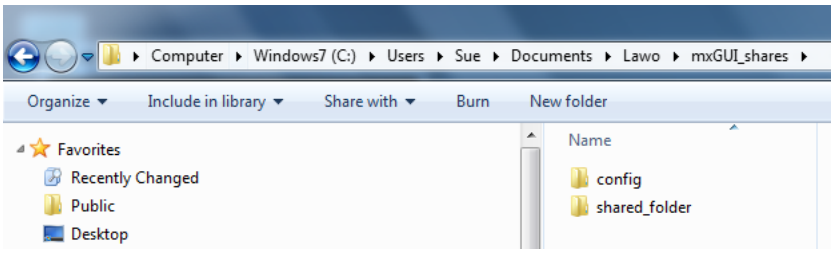
Warm Start and Cold Start Data

Note

Provided you close mxGUI from the main programme window, your latest settings are saved into the warm start data. This means that when you restart mxGUI you will get back to exactly where you were when you last closed the application (just like on a real mc^2 or Nova73 system).

If you wish to cold start mxGUI (to clear out any warm start changes) then follow the procedure described on Page 41, or close the Virtual Box window as shown above.

Note also that the complete “Local Control System”, including productions, warm start data, cold start data and so on, is stored within the **config** folder on the mxGUI computer:

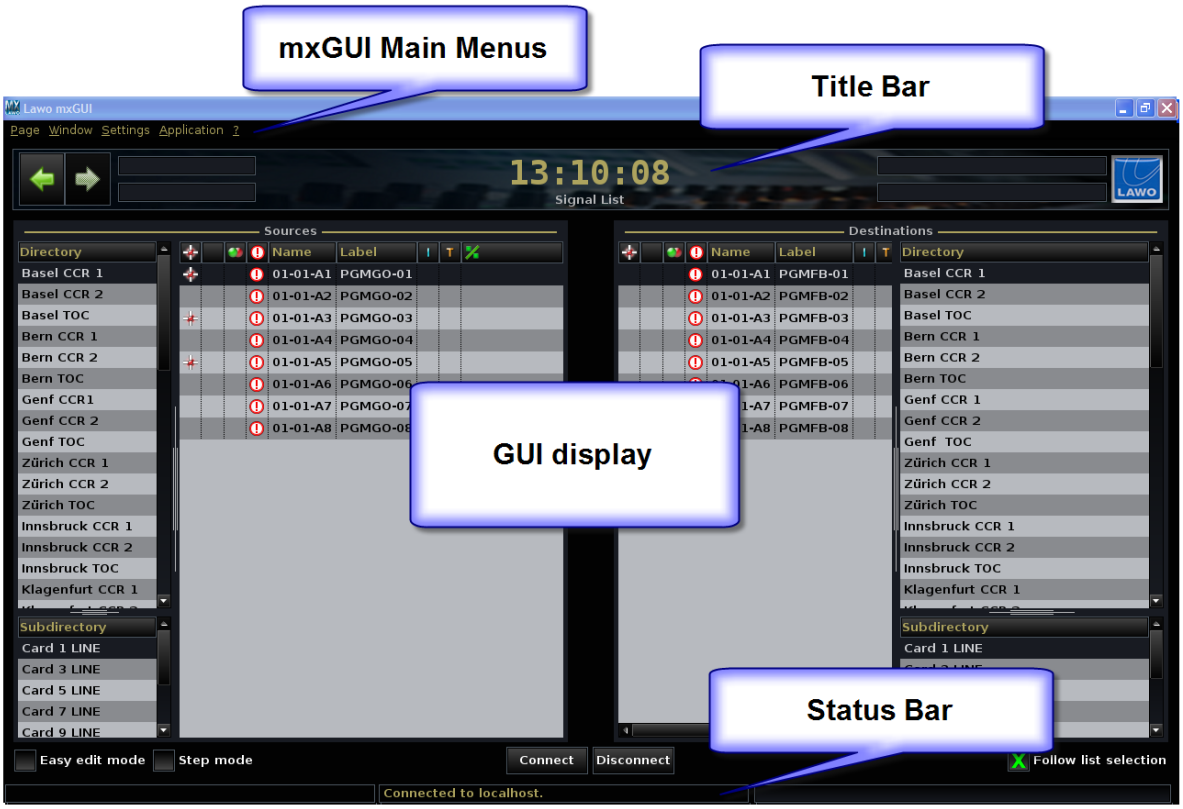


You should not need to access this folder, as all files can be transferred using the **File Transfer** display. However, make sure you don’t edit or delete the **config** folder contents, otherwise you may edit or delete the mxGUI control system!

The mxGUI Operating Window

The mxGUI operating window looks identical to the console GUI on mc^2 consoles. When operating in Nova73 mode, only displays and features relevant to a stand-alone Nova matrix are supported.

The operating window is divided into four distinct areas:



Main Menus

- **Page** – access to the mxGUI displays.
- **Window -> Signal Container Parameters and Signal Container Presets** - opens pop-up windows for defining signal container parameters and presets, see Page 142.
- **Settings -> Connection** - opens the Connection pop-up which is used to connect to a real Nova73 system in order to work online. See Page 30.
- **Application -> Quit** – quits the mxGUI application.
- **? -> Info** – opens the info pop-up window opposite and shows the release version of the mxGUI software and Lawo service contact details.

Title Bar

The title bar contains elements which are always visible:

Next/Previous Page buttons

These buttons work just like the Forward and Back buttons on a web browser.

For example, if you have viewed the **DSP Configuration**, then the **Snapshots** list, and then the **Main** display, you can use the previous Page button to step backwards through this sequence of displays. This can be much quicker than reselecting each display from the **Page** menu.

The last 16 pages viewed are stored. If you reach the first or last page in the sequence, then the button turns grey indicating no further selections are available.

The Time / Integrated Loudness Display

The middle of the title bar can show one of the following:

- **Timecode** – either **Local Time** (**15:09:04**), **Timecode** or **Offset Timecode**.
- **Integrated Loudness** – of a particular summing channel (in LUFS). Not relevant to the Nova73.

Click to select an option, and the relevant sub options appear.

Information

- The title of the selected display – **Signal List**.
- The name of the active production – **production0004** - and the current snapshot if loaded – **snapshot0001**.
- The LAWO logo.

Warnings

You may also see the following:

- A yellow hazard warning flag, if there is a problem with any aspect of the system status - see Page 76 for details.

GUI Displays

The main part of the operating window is used to open different displays for signal routing, production management, snapshots, system settings, etc.

Status Bar

The status bar provides feedback on the progress of operations like loading or saving a production. In addition, it shows the connection status of mxGUI:

Online/Offline Status

mxGUI normally opens in offline mode:

When offline, mxGUI is connected to the “local host”. This means that data is being stored within the “Local Control System”, i.e. on your computer.

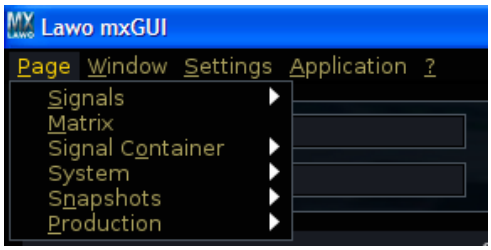
When mxGUI operates online, the status bar shows the IP address of the connected host:

Operating Principles

Whether you are using mxGUI to prepare an offline setup or control functions online, you need to know how to control settings using the mouse and keyboard on your computer.

Changing Display

1. Select the **Page** main menu to access all of the available mxGUI displays:



A brief description of each display appears when you hover over its title. This can be a good way of finding the right display when you are new to the system.

You can also click on the next and previous Page buttons to quickly step through the last few pages viewed (up to 16):

As an alternative to mouse operation, you can use your keyboard to open a particular display or menu:

2. Press **ALT** + **P** to open the **Page** menu.
3. Then press an underlined letter to select a display – for example, **S** to open **Signals**, **M** to open **Matrix**, etc.

Dedicated Screen Buttons

For many functions, you will find dedicated screen buttons:

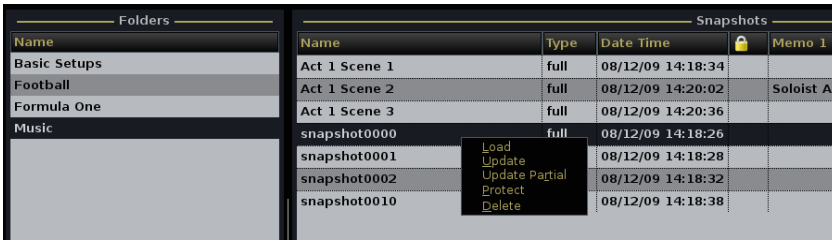
1. Screen buttons are always beveled with white text – for example, **New, Save** and **Save Partial** within the **Snapshots** display:

Right-click Operations

Other operations may be 'hidden' and become available once you right-click on a selection:

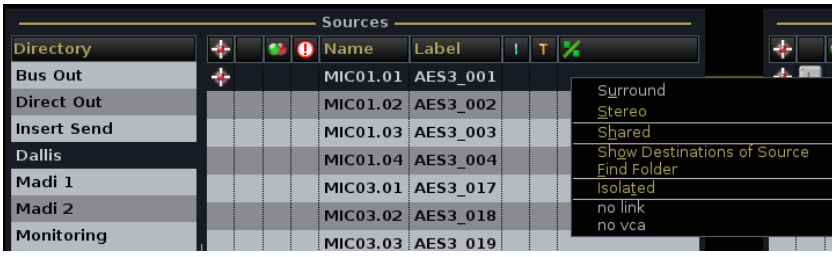
1. For example, right-click on a snapshot in the **Snapshots** display:

You can now **Load**, **Update**, **Protect** or **Delete** the snapshot:



2. Right-click on a source in the **Signal List**:

You now have access to a variety of source options:

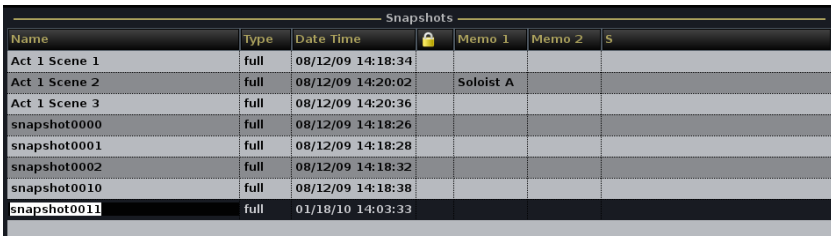


Naming Operations

Use your keyboard to name display entries, such as a snapshot, production or signal label:

1. Make your selection – e.g. select a snapshot.
2. And do one of the following:

- Click once on the snapshot name – *all* the existing text is selected (white) so that when you type you will automatically overwrite the existing name:

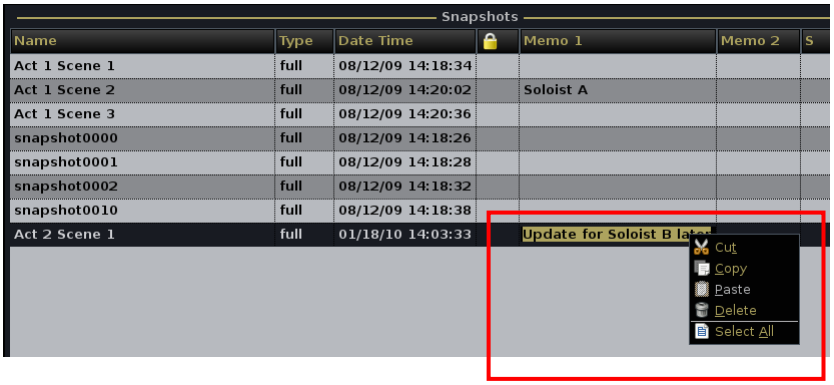


- Or, click twice to edit the existing name – a cursor appears at the end of the text (black) allowing you to easily append or modify the old name.

3. When you have finished, press Enter to confirm the new name.
4. Or, if you make a mistake and want to exit without making any changes, press **Esc**.

Note that if you right-select a text field, you will access **Cut**, **Copy**, **Paste**, **Delete** and **Select All**:

Note



Use these options to copy and paste text from one field to another – for example, to copy and paste snapshot memo text.

You can also use **CTRL+C** or **CTRL+V** on the keyboard to copy and paste selections.

Changing Focus

If you like working with keyboard shortcuts, then you can also use the keyboard to change the focus of the display:

1. Press **TAB** or **Shift**+**TAB** to change the focus area – for example, to move from the list of **Snapshots** to **Folders** on the **Snapshots** display:

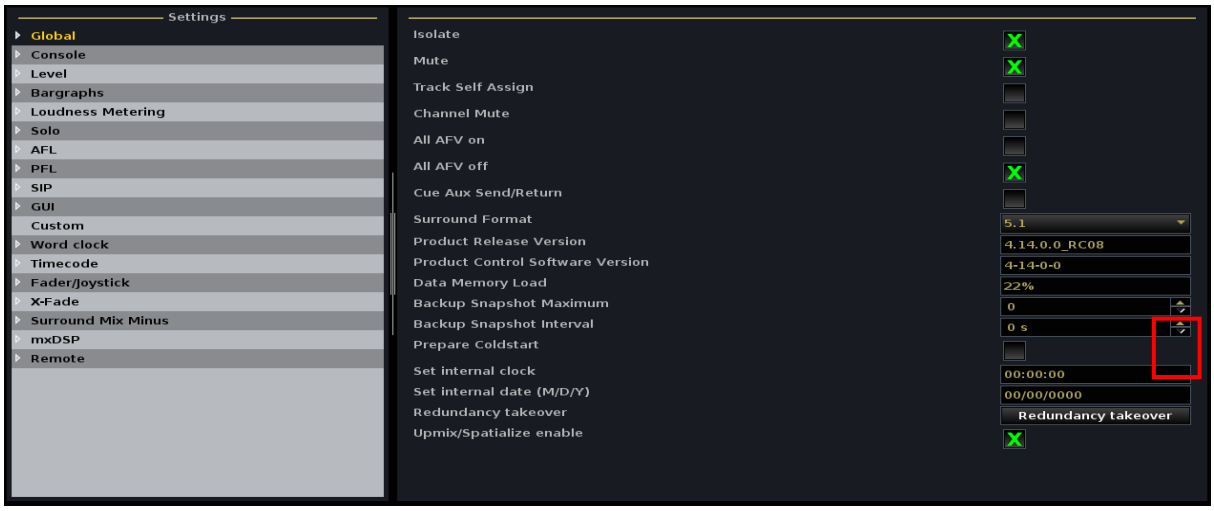
Note that **TAB** cycles around the display in a clockwise manner, and **Shift**+**TAB** in an anti-clockwise manner.

2. Then use the Up and Down keyboard buttons to step through the entries in the list.

Adjusting Parameter Values

In displays such as the **System Settings** display, you can adjust parameter values as follows. For example, to adjust the Backup Snapshots:

1. Click on the arrows beside the value:



2. Or, focus on a value – either click on it, or press **TAB** or **Shift**+**TAB** on the keyboard – and:

- Press the Up and Down keyboard arrow buttons.
- Type in a new value.
- Use the mouse wheel to increment or decrement the value.

Resizing, Reordering, etc.

You can resize a display area by clicking and dragging the grey separator bar – for example, to widen the **Folders** list in the **Snapshots** display, position the cursor above the grey separator bar, then click and hold while dragging to the right; the **Folders** and **Snapshots** windows resize accordingly. Note that if there is no grey separator bar, then resizing is not possible.

You can also change the order of columns within a list – for example, to move the padlock (protection) column, position the cursor above the column title, then click and hold while dragging the column to the left or to the right. Release the mouse button when you are happy with the new position of the column.

Note that any changes you make to window sizes and list orders will be reset after a restart.

If information within a window is hidden, then left/right or up/down scroll bars will automatically appear. Select a scroll bar at the bottom to scroll left/right or up/down.

The AdminHD Configuration

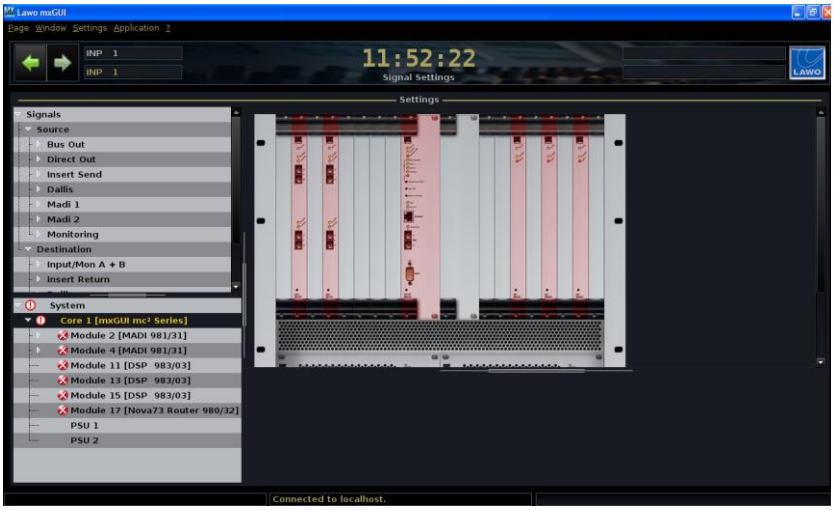
If this is the first time you have started the mxGUI programme, then mxGUI is running a default AdminHD configuration installed by the mxGUI installer.

The configuration is an essential part of any mc^2 and Nova73 system, and configures the system's hardware and settings such as the sampling frequency of the HD Core and organisation of signals within the **Signal List** display. This configuration can only be adjusted from a programme called AdminHD; mxGUI cannot change the configuration.

Note that the default configuration is very basic and is provided so that you can play around with the mxGUI interface without requiring access to a real Nova73 system.

Note

You can view the default hardware configuration by selecting the **Signal Settings** display from the **Page** menu:



The System and its sub components are marked with red attention flags because we are running mxGUI offline.

If you wish to prepare settings for a real system, then it is important that the AdminHD configuration running on mxGUI matches that of the final Nova73 system. So first transfer the configuration from the Nova73 you wish to configure. See Page 38 for details.

Chapter 4: Online Operation

Overview

When operating online, the mxGUI computer talks to a real Nova73 Control System via its control network (Ethernet). In this mode, mxGUI is simply acting as a remote control. All data (productions, snapshots, configuration files, etc.) is being read from and stored to the Nova73's Control System.

Network Connection

The mxGUI computer must be connected to the **ETHERNET** port of the control system. The control system location varies depending on your product (see the table below).

Note that all systems are supported except a stand alone **Nova73**:

System	Router Version	Control System	Control System Location	mxGUI with RIs ≥ 4.6	mxGUI with RIs < 4.6
Nova73 Standalone	980/31 or 980/32	Motorola	HD Core Board	no	no
Nova 73 Ripper	980/31 or 980/32	Intel	1HE Ripper	yes	no
Nova73 DSHS	980/32	Intel	1HE Ripper	yes	no
Nova73 MKII	980/33	Intel	HD Core Board	yes	no
mc² 56	980/33	Intel	HD Core Board	yes	no
mc² 66 classic	980/31 or 980/32	Intel	inside console	yes	no
mc² 66 top1	980/31 or 980/32	Intel	inside console	yes	no
mc² 66 MKII	980/33	Intel	HD Core Board	yes	no
mc² 90	980/31 or 980/32	Intel	inside console	yes	no
mc² 90	980/33	Intel	HD Core Board	yes	no
mc² 90 star²	980/33	Intel	HD Core Board	yes	no

For a direct connection to a single computer, you will need a crossed network cable (STP-CAT 5 with RJ45 connectors on both sides).

For connection to multiple computers via a network switch, use a straight (1:1) network cable.


Note

Note that you must use a network switch (included with the system) and NOT a Hub.

Depending on the number of network connections, one mc^2/Nova73 system is able to support up to 16 mxGUI clients simultaneously.

TCP/IP Configuration

To establish communication between the devices, you will need to configure the TCP/IP settings for your computer's Network Interface card.

You can find information on configuring TCP/IP settings within Windows from www.microsoft.com.

For a direct connection, set the IP Address and Subnet Mask as follows:

IP Address

The IP Address of your computer's Network Interface card must be unique, and set within the same range as that of the system.

Note that depending on your Lawo product, the default TCP/IP address of the system will vary:


Note

- **Nova73** – HD Core Router Module = 192.168.102.1
- **Nova73 DSHS** - matrix control server = 192.168.102.1
- **mc²56** – the console's control system = 192.168.102.56
- **mc²66** – the console's control system = 192.168.102.65
- **mc²90** – the console's control system = 192.168.102.90

So, for example, if connecting to a mc²66 control system set your computer's IP Address to say 192.168.102.69.

Take care when setting the IP address of the system. If there is an IP conflict within the network, then the Nova73 or mc² system may not operate correctly.


Note

Note that the Local Host IP address of the mxGUI control system is always 192.168.56.101. You will need to know this address if you wish to restart the mxGUI Local Host or transfer configuration files using AdminHD.

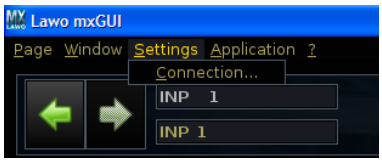
Subnet Mask

The Subnet Mask of your computer's Network Interface card should be identical to that of the system. For all products, the default Subnet Mask is 255.255.255.0.

In a networked installation, it is likely that you will be connecting via an Ethernet switch, so please consult your network administrator for further details.

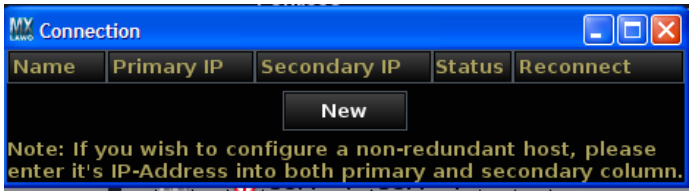
Getting Online

To test the connection and put mxGUI online:



1. Select **Settings** -> **Connection** from the main menus.

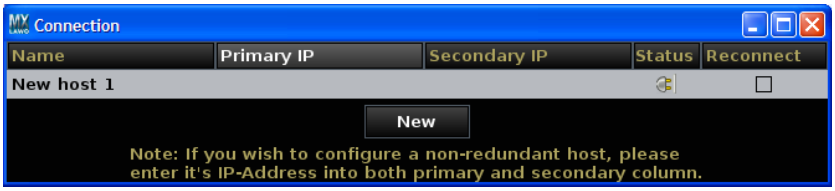
The Connection pop-up window appears:



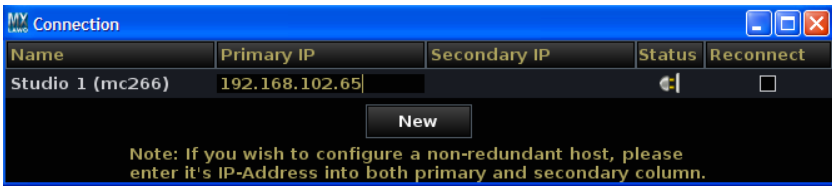
If this is the first time you have used the **Connection** window, then it will be blank. This window will eventually list all the systems which mxGUI can connect to, each with a **Name**, **Primary IP** address (main control system), **Secondary IP** address (redundant control system) and connection **Status**.

2. Click on **New** to create a new connection.

A generic host control system is added to the connections list:

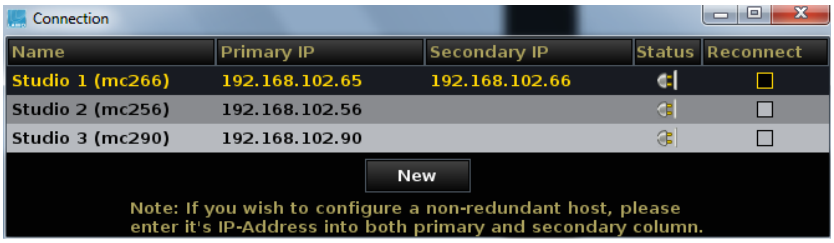


3. Click on **New host 1** to enter a name for this system – in our example, we have chosen **Studio 1 (mc²66)**.
4. Then enter the **Primary IP** address of the main control system – for example:



The connection is now prepared and you are ready to go online.

Note that you can prepare several connections for systems which you may wish to connect to at a later date. Our example below shows three different mc² connections, all currently offline:

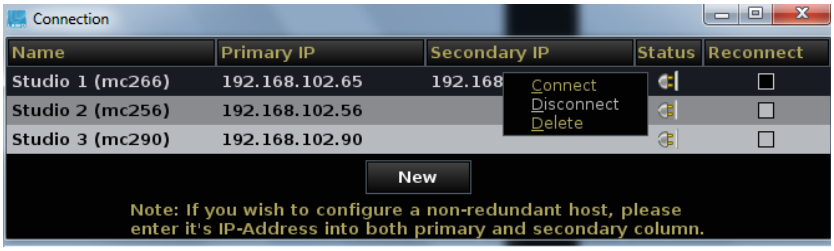


If the console does NOT have a redundant control system, then you only need enter the **Primary IP** address.

Note

If there is a redundant control system, then the **Secondary IP** address must also be entered. This is always 1 above the **Primary IP**. So, for example, if the **Primary IP** address is 192.168.102.65, enter 102.168.102.66 for the **Secondary IP**.

5. To connect to one of the systems in the list, right-click on its entry and select **Connect**:



The mxGUI computer will now attempt to connect to the selected mc² system.

- If the connection is successful, then the Status column updates to show the “plugged in” icon.
- If the connection fails, then the Status remains as “unplugged”. Check your network connections and TCP/IP settings.

6. Having connected to the mc² system you can minimise the **Connection** window.

Note

Notice that the status bar at the bottom of all mxGUI displays now shows the IP address of the connected host:

Remote Operation

You can now use the mxGUI displays to view or change settings on the online system. Please refer to Chapter 6 onwards for details on each display.

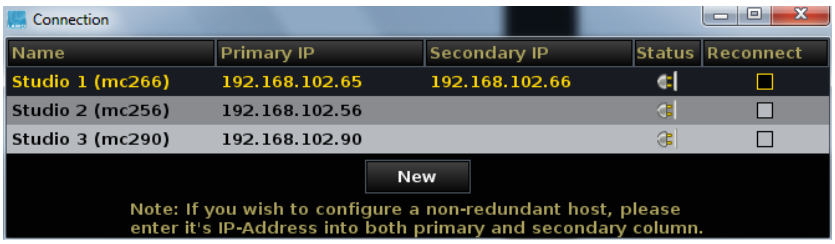
Remember that while operating online, mxGUI is changing, saving and updating data on the active Control System. So, make sure any other operators are aware you are online!

Disconnecting mxGUI

To disconnect mxGUI from the mc^2/Nova73 system:

1. Maximise or open the **Settings** -> **Connection** window.
2. Select the online system, right-click and choose **Disconnect**.

mxGUI is disconnected from the mc^2 control system and the **Status** of the **Connection** returns to is “unplugged” state:



Note that connecting mxGUI to a different system automatically cancels any existing online connections.

Chapter 5: Offline Setup

Overview

When running offline, the mxGUI computer acts as just another mc²/Nova73 system – called the "Local Control System". Settings are stored on the mxGUI computer by saving productions from the **Productions** display. Once saved, files can be transferred back to an online mc²/Nova73 system using the **File Transfer** display.

What Can be Prepared Offline?

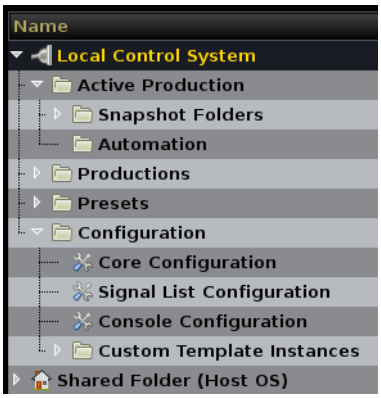
The mxGUI Local Control System can save:

- **Productions** and **Snapshots** - from the **Snapshots** and **Productions** displays.
- **Custom Function Assignments** – the mapping of user buttons and other custom function assignments can be edited from the **Custom Functions** display.

Remember to save or update a production to store new snapshots or folders. See Chapter 7 for details.

Where are these Files Stored?

Open the **File Transfer** display to locate these files:



- **Active Production** – the active production can be opened to access individual snapshot folders and snapshots. (Automation is not relevant for Nova73).
- **Productions** – contains all zipped productions; these can be transferred as a complete file.
- **Presets** – not relevant for Nova73

(on mc² consoles, presets are used to store console channel settings such as EQ, Dynamics, etc.).

- **Configuration** – contains all configuration data.

The **Custom Template Instances** folder stores assignments made from the **Custom Functions** display.

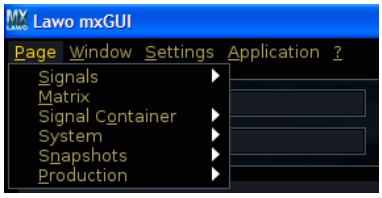
Note that mxGUI cannot edit the **Core Configuration** or **Signal List Configuration**. You must use AdminHD for this purpose.

The File Transfer Display

The **File Transfer** display allows you to transfer Productions, Snapshots and Configuration files between the Local Control System (your mxGUI computer) and an online Control System (Nova73). You might use this display to:

- Transfer a configuration to mxGUI. This allows you to prepare settings offline knowing that the configuration data matches that of the final system.
- Transfer offline setups (productions, snapshots) back to a Nova73 system.
- Transfer files to the mxGUI **shared_folder** – files stored here can be accessed by your host operating system and therefore copied to USB, emailed to another user, etc.

1. Select **Page** -> **Production** -> **File Transfer** to open the display:



The display is divided into two halves:

- **Local Control System** - on the left you are always viewing files or directories on the mxGUI computer.
- **Online Control System** - on the right you can view files or directories on any online system plus the shared folder (host operating system shared folder).

Note that the **Shared Folder (Host OS)** is represented on both sides of the display so that it can accept files from the Local Control System (your offline mxGUI) or an online system.

In the example above we are connected to a mc^{2}66 Control System (online). Note that if you open the display offline, the only folder on the right of the display is the **Shared Folder**.

The method of operation is very similar to the **File** display on the mc^2 consoles:

2. Open or close directories by double-clicking on the directory name (or click on the arrow beside the directory name).

Within the Local or online Control System, data is structured as follows:

- **Active Production** – contains all data in the active production. The active production can be transferred in full, or opened in order to select individual elements such as a folder or snapshot.
- **Productions** – contains all other productions. These are zipped files which cannot be opened. They can be transferred as a complete file, and then unzipped by loading the production to access their individual elements.
- **Presets** – contains presets (not relevant on Nova73).
- **Configuration** – contains all configuration data (Core Configuration, Signal List Configuration and Custom Template Instances).

3. Having selected a source and a valid destination, right-click on the source file to select **Transfer**:

Note that files can be transferred from left to right or right to left.

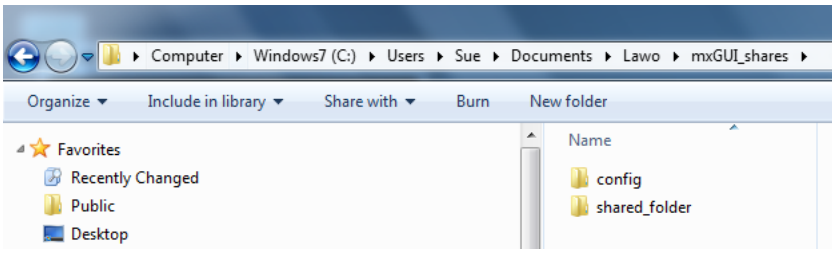
Also note that each file or folder is clearly marked with its **Type** – e.g. production, snapshot, etc. This is important as files can only be transferred to a valid destination. For example, you cannot transfer a snapshot into the Preset directory!


Note

The Shared Folder

The contents of the **Shared Folder** can be accessed from the **File Transfer** display, and outside **mxGUI** from your host operating system. You should use the **Shared Folder** to organise files or transfer files externally (e.g. to USB or email).

Within your host operating system, the default location for the **Shared_Folder** is shown below:

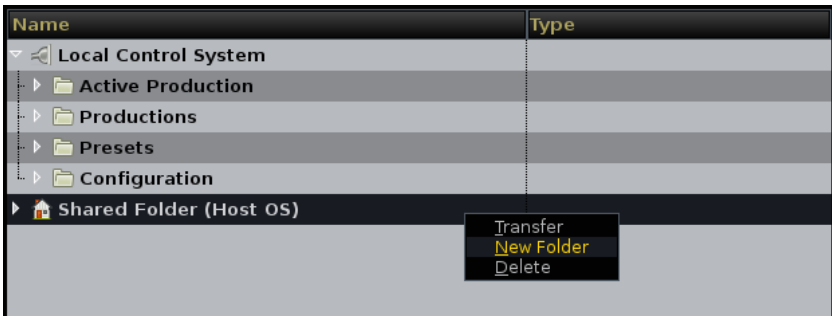


Note that depending on your computer's configuration, this location may be hidden. If you have trouble locating the **mxGUI_shares** folder, then please contact your system administrator.

You can create sub folders and manage files from your host operating system. Alternatively, you can use the **File Transfer** display within mxGUI as follows:

Creating Sub Folders

1. Right-click on the **Shared Folder** and select **New Folder**:



A new folder is added with a generic name.

2. Type to rename the folder.

Note that you can create folders within folders simply by right-clicking on the sub folder name.

Deleting Files or Folders

Note that for safety you cannot delete productions, snapshots, configuration files, etc. from the **File Transfer** display. However, you can delete files or folder from the **Shared Folder**:

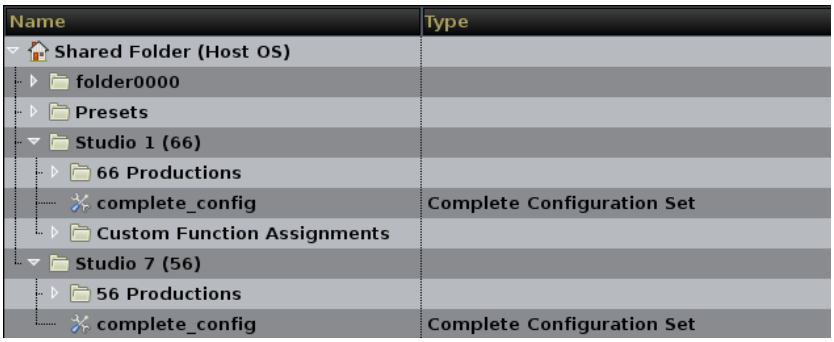
1. Right-click on the file or sub folder and select **Delete**.
2. Select **OK** to confirm.

The file or folder is deleted from the Shared Folder.

For more examples of using the **File Transfer** display to create an offline setup, see Page 38.

Organising Your Files

If you are going to use mxGUI to prepare settings for a range of different Nova73 systems, then it is important to organise your mxGUI files carefully. The best approach is to create folders within the **Shared Folder**:



In this example, we have created a folder for a number of mc^2 studios. Each folder stores all the productions and the configuration (complete_config) for the system. This keeps all relevant files together making it easy to reset mxGUI for each studio's configuration/productions.

Preparing a Production Offline

In order to prepare a production offline, it is important that the configuration stored on the Local Control System matches that of the final Nova73 system.

The best way to achieve this is to import the configuration from the system you are going to work on. Once imported, you can be sure that the productions you create will load in full on the Nova73 system.

For a fail safe approach these are the steps you should follow:

- Transfer the Nova73 configuration to the mxGUI Shared Folder.
- Change the configuration of the Local Control System. This ensures that the configuration data running on mxGUI matches that of the actual Nova73 system.
- Prepare your settings offline.
- Save settings by saving a production and/or snapshots.
- Transfer the production back to the Nova73.

Transferring the Configuration

The complete configuration set for a Nova73 system contains two individual components:

- **Core Configuration** – this file defines the HD Core/DALLIS System and its signal parameters (config.tcl).
- **Signal List Configuration** – this file defines the Directories, Subdirectories, Signal Names and Labels of the Signal List (gui_config.tcl).

For simplicity, all components can be zipped and transferred as a single file - called the **complete_config** – using the **File Transfer** display.

1. Make sure mxGUI is running the Nova73 emulation, and open an online connection as described on Page 30.
2. Select **Page** -> **Production** -> **File Transfer** to open the **File Transfer** display.
3. Select a location within the **Shared Folder** (on the left) as your destination.
4. Then right-click on the system's **Configuration** directory (on the right) and choose **Transfer**:

All the configuration files are zipped and transferred to the mxGUI Shared Folder as a single file - **complete_config**.

Note that you can transfer the configuration directly into the Local Control System's **Configuration** folder. However, this will overwrite the existing mxGUI configuration without any backup.

Note

We recommend copying the **complete_config** to the **Shared Folder** first so that you have a copy of the file. By storing the **complete_config** in a folder, you can keep the configuration and productions together.

While you are connected to the online system, you may wish to copy any useful productions to the Shared Folder. By loading an existing production, you can tweak existing settings rather than having to build your offline setup from scratch.

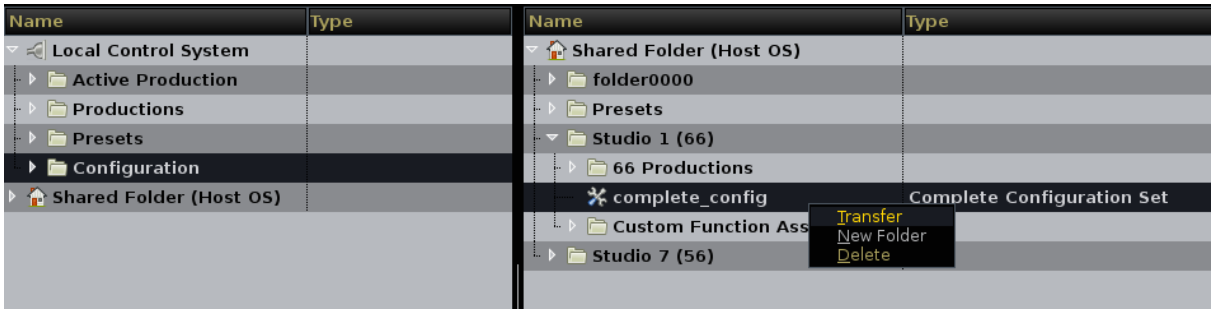
Tip

If you do not have network access to the system you wish to configure, then ask for the **complete_config** and any default productions to be sent to you (e.g. via email). Copy these into the **Shared Folder** using your host operating system.

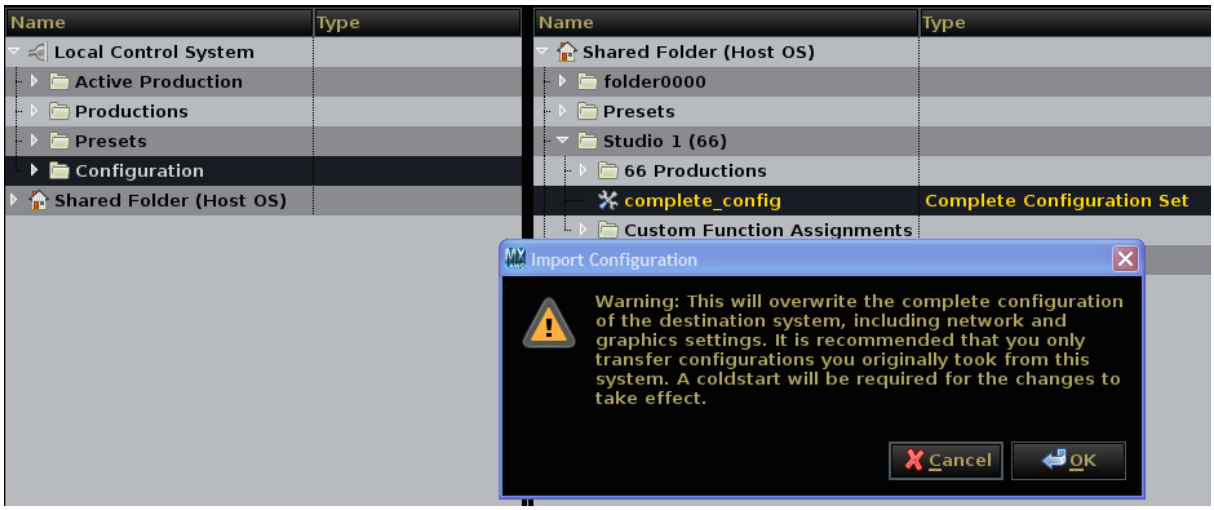
Changing the mxGUI Configuration

Having copied the configuration from the online system, you can now disconnect and import the **complete_config** to the Local Control System.

1. Disconnect the online system from the **Settings** -> **Connection** window.
2. From the **File Transfer** display, select the Local Control System's **Configuration** folder (on the left).
3. Locate the **complete_config** file you wish to import (on the right), right-click and choose **Transfer**:



A Warning pop-up appears:



Warning

Warning

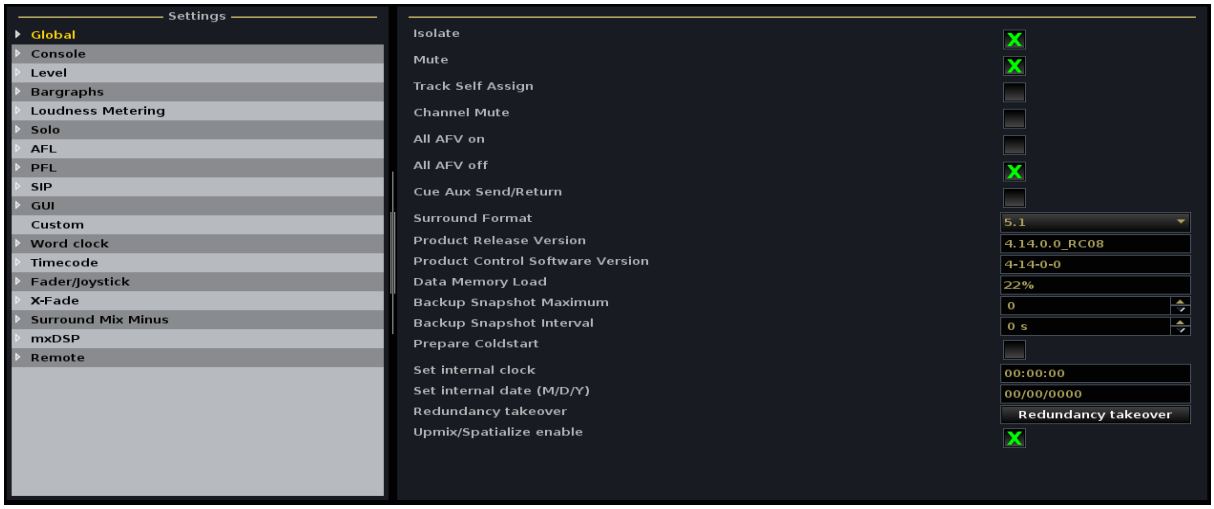
Selecting **OK** will overwrite the configuration of the mxGUI control system. If you wish to backup the existing configuration, do this first by transferring Configuration to the Shared Folder.

4. Select **OK** to continue.

The configuration is transferred.

You now need to cold start mxGUI before the new configuration data takes affect. To do this:

1. Select the **System** -> **System Settings** display.
2. And select the **Global** topic:



3. Enable the **Prepare Coldstart** option.

This prepares mxGUI so that on the next restart it will perform a cold start rather than warm starting from the current configuration.

4. Close mxGUI: select **Application** -> **Quit**:
5. Then restart in Nova73HD mode.

When mxGUI starts up, you will be running the new configuration. You can check this by looking at the Directories and Subdirectories within the **Signal List** and/or the HD Core configuration in the **Signal Settings** display.

Preparing Settings

You can now use the mxGUI displays to view or change settings offline. Please refer to Chapter 6 onwards for details on each display.

If you imported some productions from the online system, then copy these into the **Productions** folder of the Local Control System using the **File Transfer** display. You can then load a production, from the **Productions** display, and use this as the starting point for your offline setup.

Saving Settings

Settings must be saved into a production from the **Productions** display.

Tip

To create multiple setups within one production, use snapshots.

For details on snapshots or productions, see Chapter 7.

Transferring the Production to the Nova73

Having saved the production, it can be transferred back to the Nova73 using the **File Transfer** display.

1. Make sure mxGUI is running the Nova73HD emulation, and open an online connection as described on Page 30.
2. Select Page -> Production -> File Transfer to open the File Transfer display.
3. Select the online system's **Productions** folder as the destination (on the right).
4. Then on the left, right-click on the production you wish to import and choose **Transfer**.

The production is copied to the online Control System:

Note that you can transfer any type of file: productions, folders or snapshots to the online control system. Each file or folder is clearly marked with its **Type** – e.g. production, snapshot, etc. This is important as files can only be transferred to a valid destination. For example, you cannot transfer a snapshot into the Production directory!

Note

Now load the imported production:

1. Select Page -> Production -> Productions List to open the Productions display.
2. Select the production, right-click and select **Load**.

The production is loaded, and the title bar shows the name of the active production – e.g. Football:

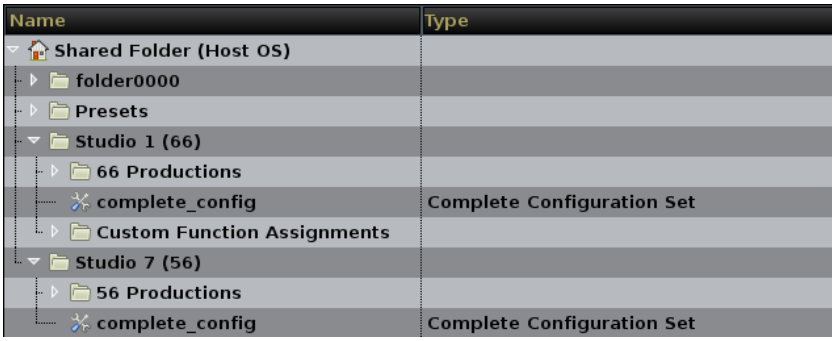
For additional confirmation, watch the status bar and you will see a **loading…** message indicating that production data is being loaded.

Your setup is recalled!

Backing up Your Offline Setups

Tip

It is a good idea to keep a copy of the production in the mxGUI **Shared Folder**. This ensures that you keep a backup of everything needed for this offline setup: the **complete_config**, production, etc:



Important Notes

Note

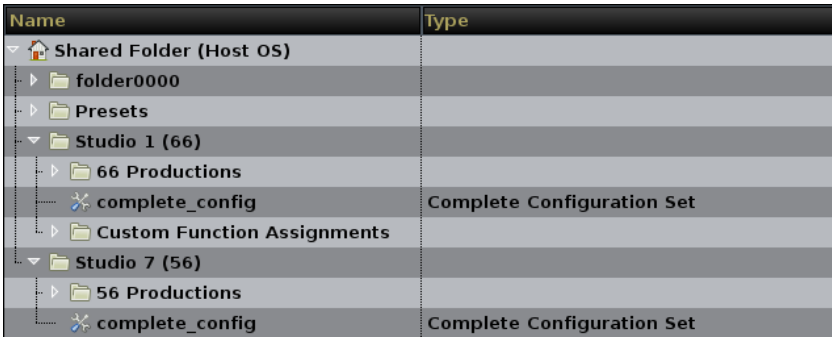
A production created offline will only load completely if:

- The configuration running on mxGUI matches that of the online system. Always check that you have the latest configuration from the control system.
- mxGUI is running the correct mc^2/Nova73 emulation.

Also note:

When you change the configuration of mxGUI, all other folders – **Active Production**, **Productions** and **Presets** – remain intact. This means that you will end up with a mixture of productions on the mxGUI Local Control System.

We recommend keeping a backup of all files within the shared folder. Create a sub folder for each mc^2 system so that you can store all configuration data and productions together:



This way you will know which productions match which configuration in a few weeks time!

Chapter 6: Signal Routing/Settings

Introduction

In this chapter we will cover the operation of the **Signal List**, **mx Routing**, **Signal Settings**, **mxDSP Settings** and **Downmix** displays.

Input and Output routing can be handled from either the **Signal List** or **mx Routing** (Matrix) displays. The **Signal List** presents lists of Sources and Destinations, whereas the **mx Routing** display provides a crosspoint overview. You can use either display to view or change signal routing. In addition, the **mx Routing** display can be used to create partial snapshots for recalling selective routes.

Input and output parameters such as gain, sample rate conversion, etc. are handled from the **Signal Settings** display. In addition, the **Signal Settings** display provides graphical feedback on system components, and serves as a system diagnostics tool.

If your system is fitted with one or more mxDSP cards (optional), then settings within each DSP chain can be controlled from the **mxDSP Settings** display.

If your system is configured with downmix DSP resources (optional), then the matrix can be controlled from the **Downmix** display.

Note that these displays are identical to those found on a mc^2 console GUI. Therefore, not all features on every display are relevant to a stand-alone Nova73. For more information on mc^2 console features, please refer to the $mc^2$66 Operators Manual.

The Signal List Display

1. Select **Page** -> **Signals** -> **Lists** to view this display:

The **Signal List** is used to view and make connections from **Sources** on the left to **Destinations** on the right. In order to keep the list manageable, sources and destinations are divided into Directories and Subdirectories**.**

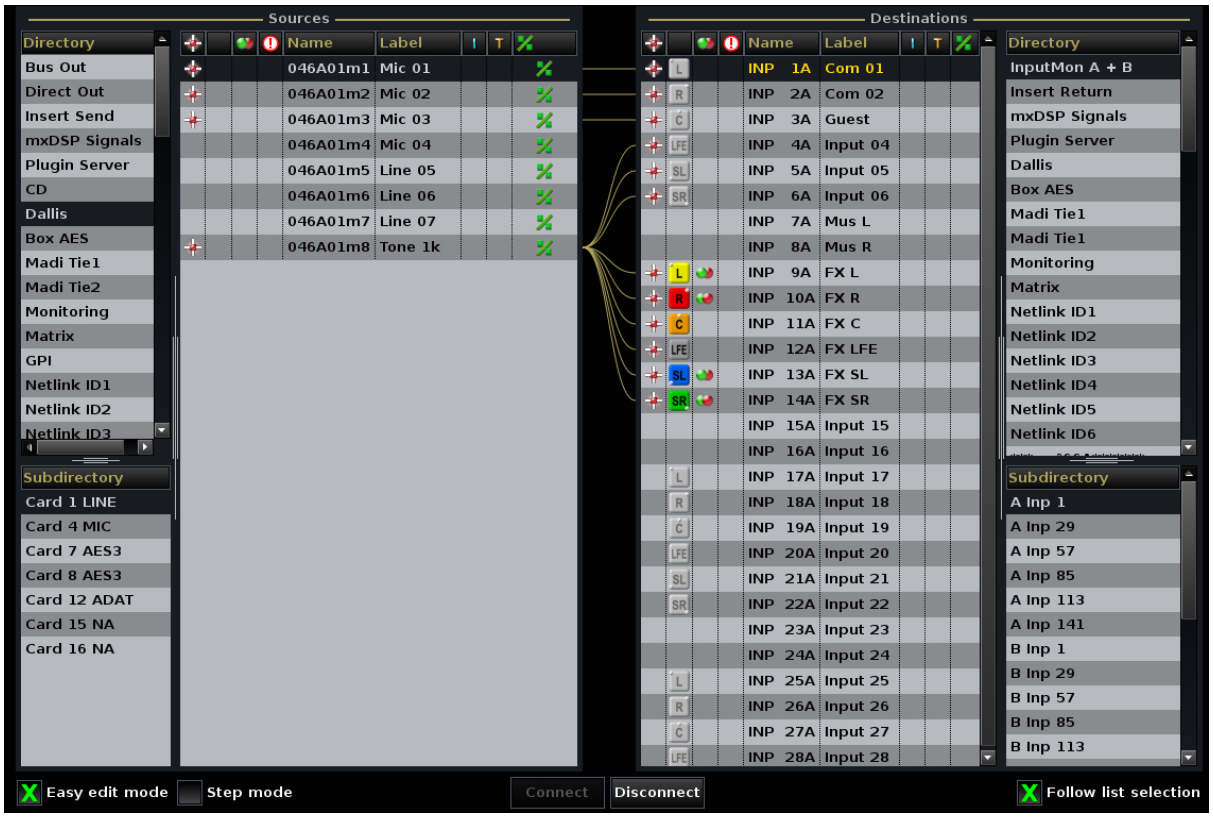
Depending on the AdminHD configuration of your system, you may have different directory and subdirectory names from our example.

If a source or destination is connected, then you will see a red and white cross in the connection column. In addition, if the source and destination are both in view, then a link appears to show the connection.

Tip

You can interrogate all the routes to or from a particular source or destination using the **Locate source** or **Show destinations of source** functions, see Page 51.

The columns beside each signal display the following information:



- **Connection** – a red and white cross appears when a source or destination is connected. If a destination is protected, then you will see a padlock icon, see Page 59.
- **Surround** – not relevant for Nova73.
- **Stereo** – interlocking red and green circles appear when a source or destination is stereo.
- **Unavailable** – a warning symbol appears beside signals which are not available, see Page 57.
- **Name** – this is the system name for the signal (defined by the AdminHD configuration).
- **Label** – this is the user label for the signal. You can rename signal labels from this column, see Page 54.
- **I** – indicates if a signal is Isolated from snapshot recall, see Page 58.
- **T** – not relevant for Nova73.
- **S/I** - indicates ‘Shared’ or ‘Imported’ sources within a networked installation.

If information within a window is hidden, then left/right or up/down scroll bars will automatically appear. Note that you can resize the **Directory**, **Subdirectory** and **Signal List** windows or exchange columns to help view important columns.

Routing a Source to a Destination

To make a route using the **Signal List** display:

1. Select the source you wish to connect – select a directory, subdirectory and then a signal.
2. Next, select the destination in a similar fashion:
3. Then select **Connect** to make the route.

*The **Signal List** updates with a line between the source and destination showing the connection:*

If you want to undo an existing route:

4. Select the destination and then **Disconnect**.

*The line between the source and destination disappears from the **Signal List** display.*

Note

Note that if you route a source to a connected destination, then the previous source assignment is replaced; you don't have to disconnect the destination to assign a new source.

Routing to Multiple Destinations

To route a range of sources to a range of destinations, use the 'step forward' mode as follows:

1. Select the first source you wish to assign – for example, **Mic 1** – and the first destination.

Your selected source and destination are highlighted in black:

2. *BEFORE* you select **CONNECT**, select the **Step mode** option.
3. Now select **CONNECT**.

The first route is made and the source and destination selections automatically step down to the next entries in the list:

4. Continue selecting **CONNECT** until all of your sources are connected to your destinations.

As you step down through the list, note the red and white crosses which appear in the Connection column. The cross indicates a connection to or from the source or destination.

If the list of sources is shorter than the list of destinations, then when you reach the last source in the list, the step mode automatically scrolls back up to the first source in the list.


Tip

The step function can be used with an offset between the starting source and destination.

At any time you can remove a series of routes by selecting the first destination and selecting **DISCONNECT**. If **Step mode** is active, then the list will step down to the next entry allowing you to disconnect a range of destinations quickly and easily.

Reverse Interrogation of Signal Routing

Reverse interrogation provides a quick way of viewing all the sources feeding a particular destination, or all destinations routed from a particular source.

To view all the destinations fed from a source:

1. Select the source you wish to interrogate – e.g. **Tone1** – on the left hand side of the **Signal List** display:

The selected source is highlighted in black.

2. Then right-click and select **Show Destinations of source**:

*A list of all current destinations for the selected source appears in the **Destinations** list:*

To find the source which feeds a destination, reverse the procedure:

1. Select the destination you wish to interrogate on the right hand side of the **Signal List** display:

The selected destination is highlighted in black.

2. Then right-click and select **Show Source of Destination**.

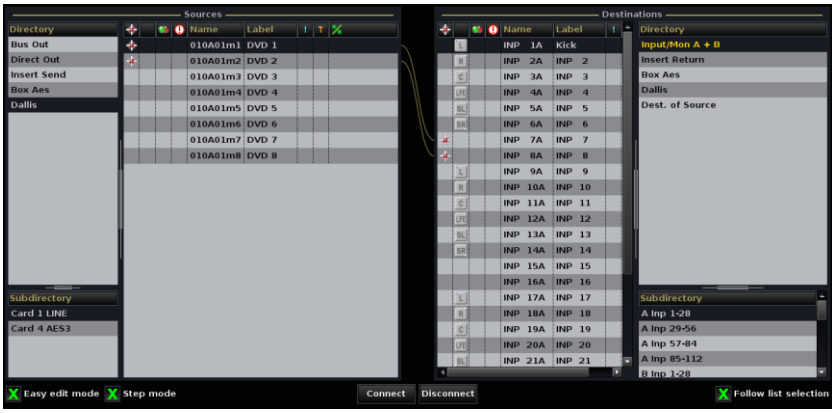
*The source assigned to the selected destination appears in the **Sources** list.*

Find Folder

If you are unsure which directory or sub directory this source (or destination) belongs to, then you can use **Find folder** as follows:

1. Right-click on the source (or destination) and select **Find folder**.

The Directory and Subdirectory update to reveal the correct folder for the selected source:



Linking Stereo Signals

You can link any consecutive pair of source or destination signals as stereo.

This does not affect how the signals are routed, but affects the behavior of the signal's IO DSP, see Page 97.


Note

1. Select the odd numbered source or destination.

Your selection is highlighted in black.

2. Right-click and select the **stereo** option.

The Stereo column reflects the status of any stereo signals:

Editing Source and Destination User Labels

Single Label Edit

Every individual source and destination is displayed with a fixed channel name and a user programmable label. You can edit user labels as follows:

1. Select the source or destination label you wish to edit using the trackball:

Click once to select all the existing text (white) or twice (black cursor) to modify the existing name.

2. Enter a new name from the keyboard.
3. When you have finished, press the Enter button on the keyboard to confirm the new name.
4. Or, if you make a mistake or want to exit the naming mode without making any changes, press the **Esc** button on the keyboard.


Note

Note that user labels are stored in snapshots so that you can easily recall new labels for a different part of a show.

5. Remember to save your snapshot and/or production after editing user labels.


Tip

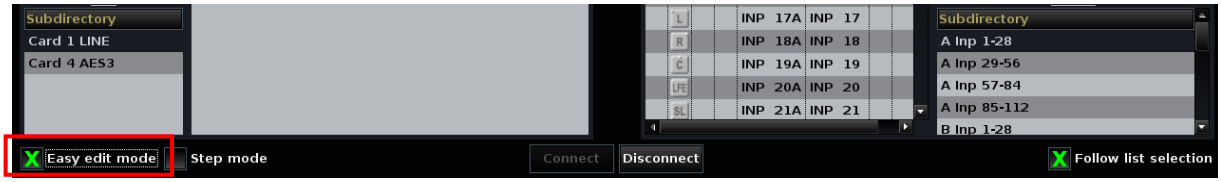
While editing a label, you can right-click using the mouse and right select button, and then **Copy** and **Paste** text to another signal.

See the next page for a quick way to edit consecutive signal labels.

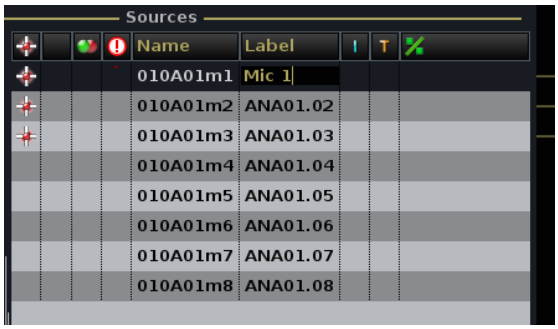
Easy Edit Mode

This mode edits user labels for consecutive signals:

1. Enable the **Easy edit mode** at the bottom left of the **Signal List** display:

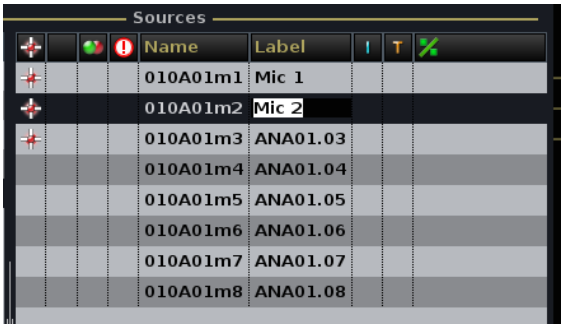


2. Select the first source or destination label you wish to edit and enter a label in the usual manner.

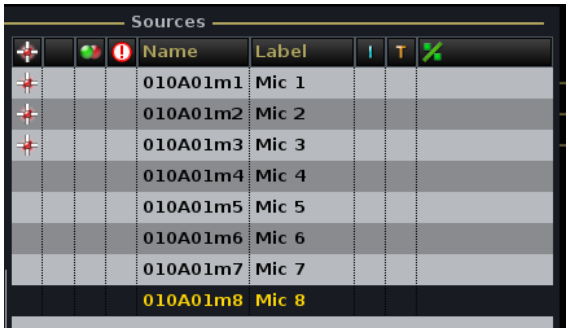


3. Press **Enter** to confirm.

*With **Easy edit mode** enabled, the system automatically steps down to the next signal in the list. The text label is copied, and if the text ends with a number, then the number increments:*



4. Keep pressing Enter to label all the signals in the list:

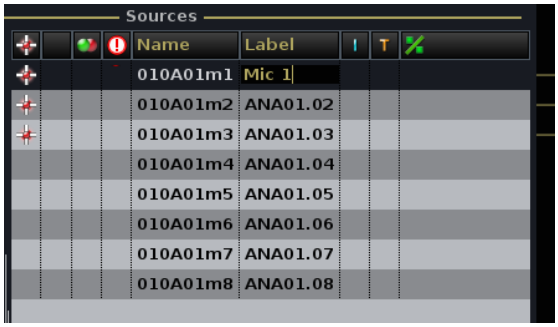


5. Press **Esc** to exit the naming mode.

Note that you can also enable Easy edit mode temporarily by using the **SHIFT** button on the console keyboard.

With the **Easy edit mode** option unchecked:

1. Select the first signal label you wish to edit and enter a label in the usual manner.



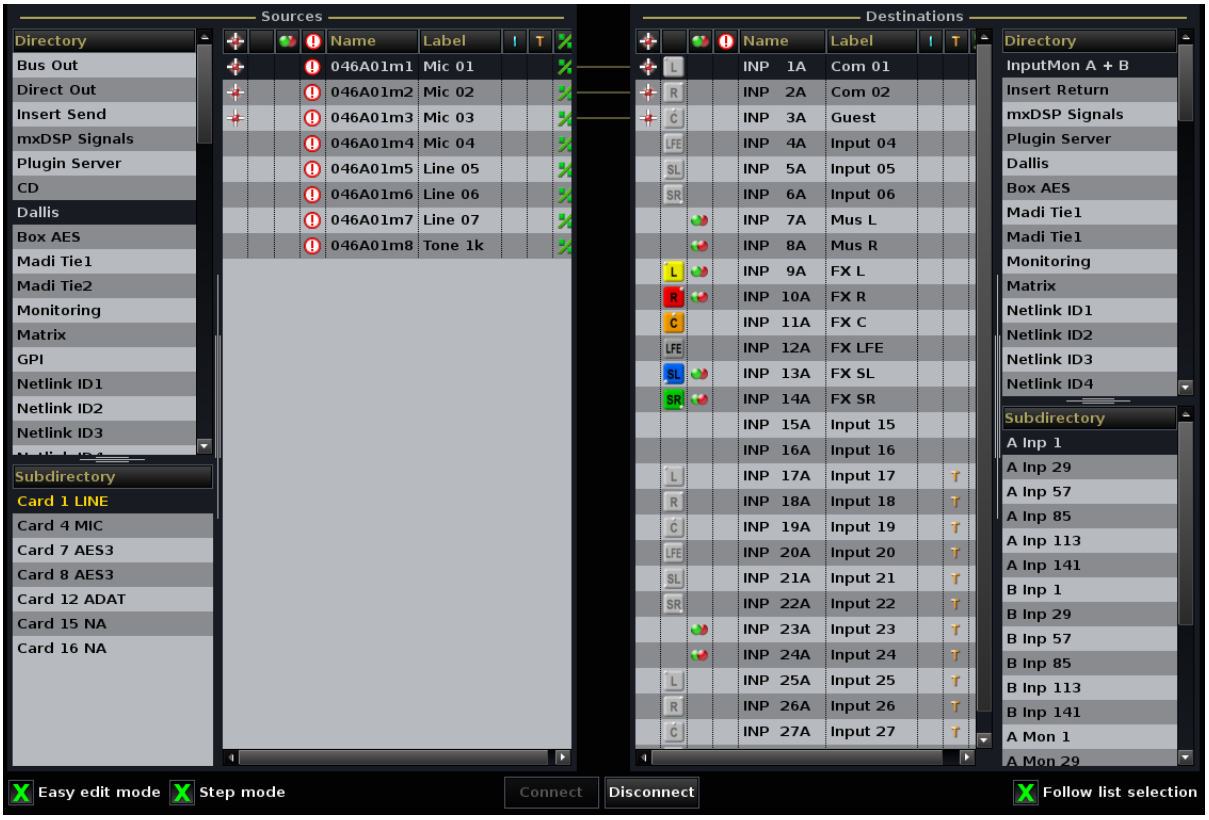
2. Press and hold **SHIFT** and then press **Enter**.

*Holding down **SHIFT** temporarily enables **Easy edit mode**, so the system automatically steps down to the next signal in the list. The text label is copied, and if the text ends with a number, then the number increments.*

3. Press **Esc** to exit the naming mode.

Not Available Signals

If a warning flag is present within the unavailable column, then a signal which should be present in the system is currently unavailable. This can be useful for fault finding and reassurance.



For example, in an outside broadcast vehicle, you may have a number of remote Stageboxes. During the setup for the broadcast, you can make routes from microphone sources which connect to these Stageboxes, even if the Stagebox is not yet connected.

The warning flag indicates that the signal is currently unavailable. However, you can continue to label the signal and make routes to/from it as normal. When the Stagebox is connected to the system this column updates accordingly and the warning flag disappears.

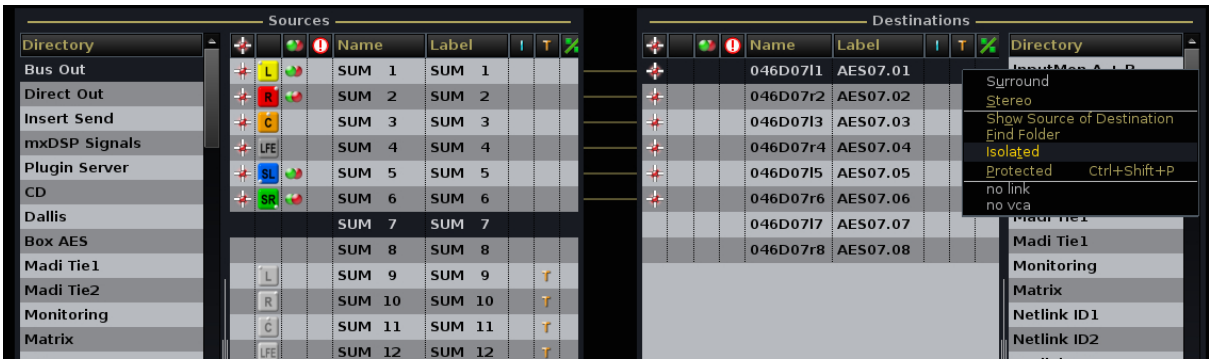
If you need further help diagnosing system connections, see Page 76 for details.

Isolated Signals

The **I** column indicates if a signal is isolated from a snapshot recall. For example, you may wish to protect important signals from accidental reset.

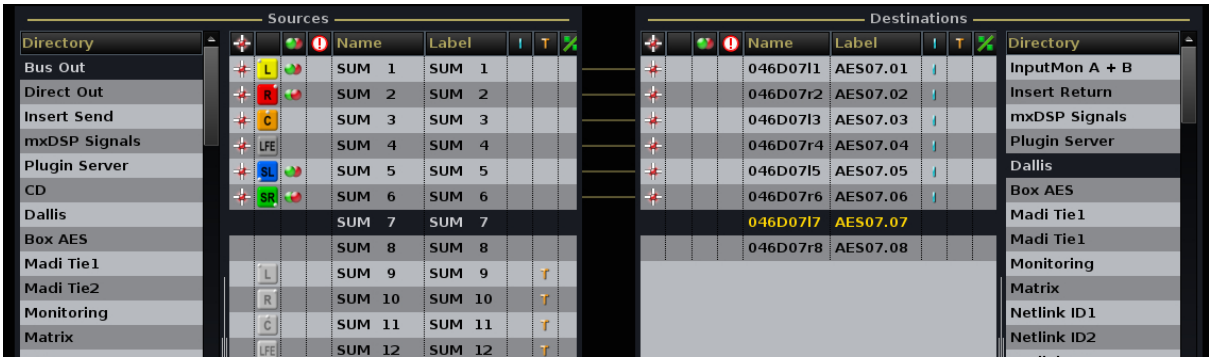
To isolate a signal:

1. Select the source or destination you wish to isolate, and right-click:



2. Select the **Isolated** option.

*The **I** column updates to show the isolated signal status:*



When a snapshot is loaded, any routes made from an isolated source or to an isolated destination are not loaded.

Note

Note that the Isolate function does not prevent routes from being stored when a snapshot is saved or updated; Isolate only applies when settings are loaded back from a snapshot.

Protected Signals

If you wish to apply more comprehensive protection to a matrix destination, then it can be protected so that nothing can alter its connection.

To protect a signal:

1. Select the destination you wish to protect, and right-click using the trackball and right select button:

2. Select the **Protected** option.

Protected destinations are displayed with a padlock icon in the connection column.

From hereon, nothing can alter the connection – not the **Signal List** or **mx Routing** displays, not snapshots, productions, mxGUI or remote MNOPL. This is ideal for critical signals, such as mains distribution.

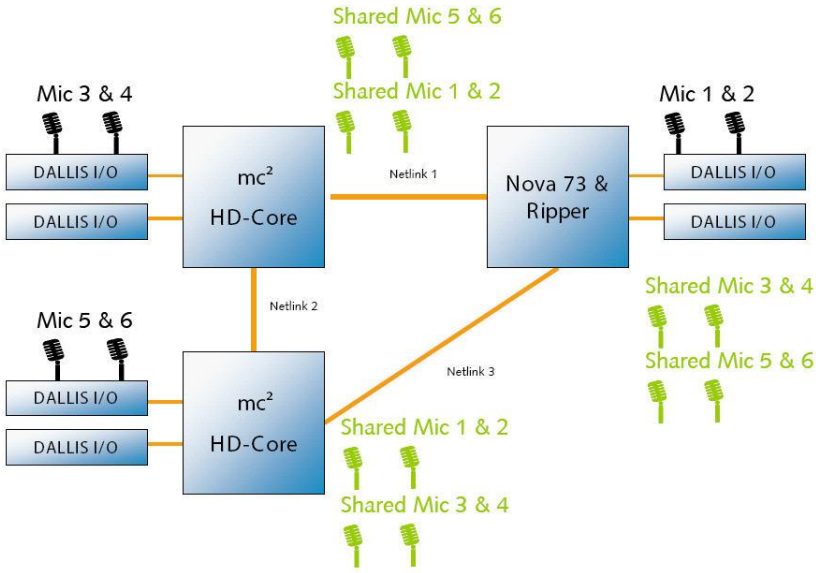
3. To change the route to a protected destination, you must first turn off the **Protected** option.

Note that only destinations can be protected.

The state of protected signals is not saved or loaded by productions, snapshots or automation. Therefore, any changes are permanent and will affect all users.

Networking I/O Resources

Two or more **mc²/Nova73** systems may be networked to distribute I/O resources. For example, to share the same microphone source between two systems:



In the above example, mics are physically connected, via a DALLIS I/O unit, to each system. Signals are transferred between systems via 'Netlinks', providing the ability to route any mic to console A and/or console B.

Each 'Netlink' is an audio connection which may be MADI, ATM, AES or Analogue audio, and signals are dynamically allocated as each operator makes routes from the **Signal List** display.

Any number of sources may be distributed depending on the physical limitations of your network. Please consult your technical representative for further details on your installation's configuration.

On any system within the network, you can view which sources are distributed from the **S/I** column on the **Signal List** display:

- An **S** indicates that a source is connected locally, and is 'Shared' (made available) to other systems within the network.
- An **I** indicates that a source is 'Imported'. In other words, it is not connected locally to this system.

On the system which is distributing the signals – in our example, console A - you can select which sources are shared from the **Signal List** display:

1. Select the source you wish to share (e.g. **Mic1**).

Your selection is highlighted in black.

2. Right-click and select the **share** option.

*The **S/I** column updates to show that the source is now shared.*

3. Select **SHARE** again to unshare the source.

Note that you cannot unshare a source if it has been routed as an imported source within another system. For example, if console B has made a route using the Mic 1 signal, then console A cannot unshare the Mic 1 source until console B's route is removed. This protects one console from removing routes which are in use by another within the network.

If you wish to share a number of sources, then you can use the **STEP** function to step through and **SHARE** a number of sources.

Once the source has been shared from console A, then other consoles within the network may access this source (shown as imported) from the **Signal List** display.

Note

Note that console B will only be able to access the source if its I/O configuration has been programmed to do so – i.e. a location for the imported source must have been created within an I/O directory and subdirectory. Please consult your technical representative for further details.

Once console B can 'see' the imported source, then making a route or changing parameters is done in exactly the same way as if the source were local to the console.

Note

Note that all consoles within the network have access to the source parameters, and the last console to make a change wins. In our example, consoles A and B both have access to mic pre-amp control for mics 1 and 2. Similarly for a shared digital destination, both consoles may change parameters like SRC, etc. In addition, SDI card parameters may be adjusted for a remote system. For more details on signal parameters, see Page 81.

This operation extends to snapshots. So if both console A and B are using the Mic 1 signal, parameter settings like mic gain, etc. can be reset from snapshots from either console. To control which console resets the mic parameters, use the I/O snapshot filter to prevent recall of I/O settings, see Page 135.

The mx Routing Display

The **mx Routing** display provides a crosspoint overview of signal routing, ideal if you want to make a large number of routes very quickly. Any routing changes made by the **mx Routing** display are reflected in the **Signal List** and vice versa.

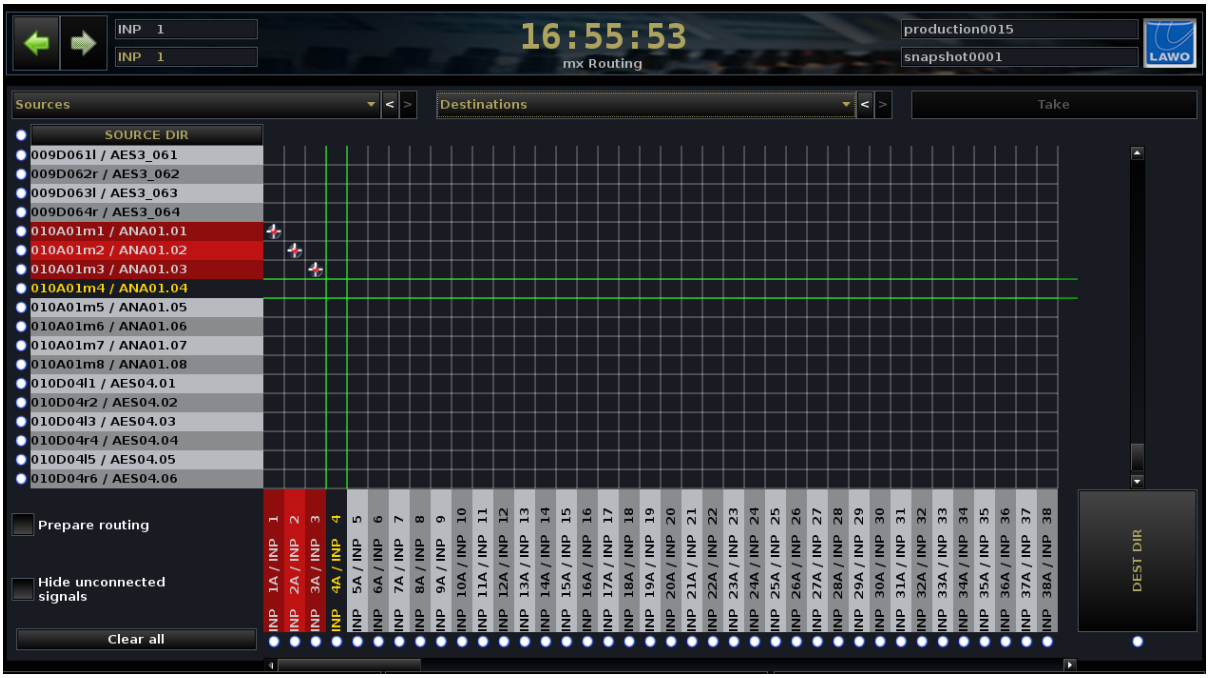
The display can be used to view or change signal routing, adjust signal settings or create partial snapshots.

A “partial snapshot” is designed to store selected routing crosspoints. For example, you could use a partial snapshot to route tone to all transmission feeds for a line check.

In addition, the **mx Routing** display allows you to prepare a set of connections and then action them simultaneously.

Signal Routing from the mx Routing Display

1. Select **Page** -> **Matrix** -> **mx Routing** to view this display:



The display shows a grid with sources running down the left hand side, and destinations running across the bottom. The names of the source and destination directories are shown at the top of the display – in our example, all **Sources** and all **Destinations**.

If a source or destination is connected, then it is highlighted in red. In addition, if the source and destination are both in view, you will see a red and white cross on the grid to show the crosspoint connection.

2. Position the cursor to select a source and a destination.

The selections are highlighted in green.

3. Now left-click to make (or unmake) the connection.

The route is made as indicated by a red and white cross.

4. You can choose to display only connected signals by selecting the **Hide Unconnected Signals** checkbox.

Tip

Selecting Directories and Subdirectories

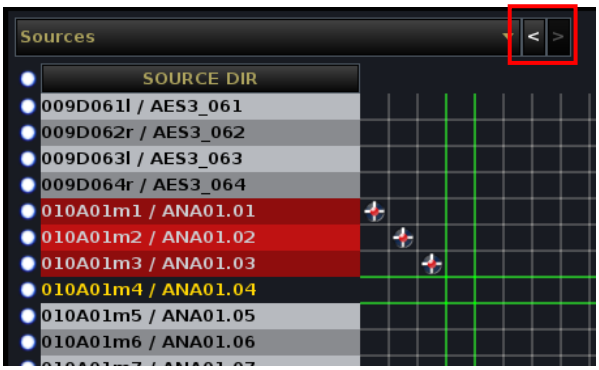
Just as on the **Signal List** display, signals are divided into Directories and Subdirectories. You can choose to view all Sources and all Destinations as in our previous example. Or, you can select a particular directory as follows:

1. Select a directory and subdirectory from the drop-down **Sources** (or **Destinations**) list:

The organisation of signals into directories and subdirectories is defined by the AdminHD configuration of your system. In our example, we have selected **DALLIS** -> **Card 4 AES3**:

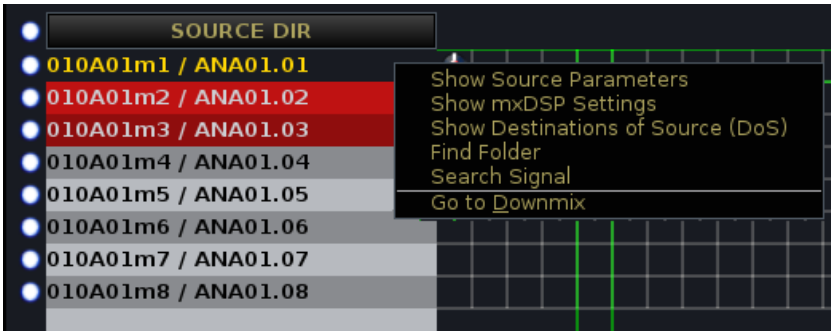
Tip

You can use the on-screen next and previous directory buttons to quickly navigate through recent selections – in our example, selecting the back button takes the view back to all **Sources**:



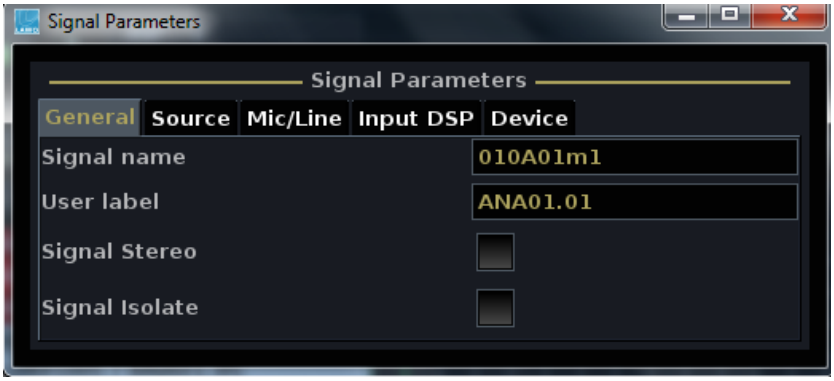
Right-click Operations

1. Right-click on a signal to reveal a number of additional operations:



Signal Parameters

Select the **Show Source Parameters** (or **Show Destination Parameters**) option to access a pop-up window where you can adjust parameters for the selected signal. In our example, we can adjust the user label and other input parameters for an analogue source:



These signal options are identical to those found on the **Signal Settings** display, so please refer to Page 81 for more details.

Show mxDSP Parameters

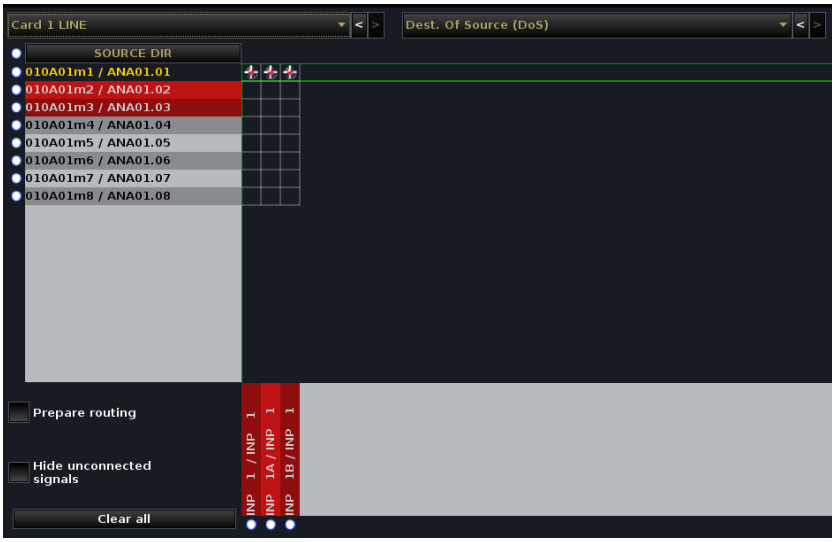
For a source from an mxDSP card, select **Show mxDSP Parameters**. The options are identical to those found on the **mxDSP Settings** display, so please refer to Page 101 for more details.

⏩ Show Destinations of Source (DoS) or Show Source of Destination (SoD)

This option can be used to reverse interrogate the connections made from the selected source or to the selected destination. It works in the same way as on the **Signal List** display.

1. Select the source you wish to interrogate.
2. Then right-click and choose **Show Destinations of Source**.

The destinations update to show only those routed from the selected source – in our example, the A and B inputs of INP 1:



Note that the destination directory has updated to **Dest. Of Source (DoS)**. This means that if you now select another source, the display will show its destinations.

3. To cancel the Destinations of Source view, either click on the previous directory button or select a different Destinations directory.

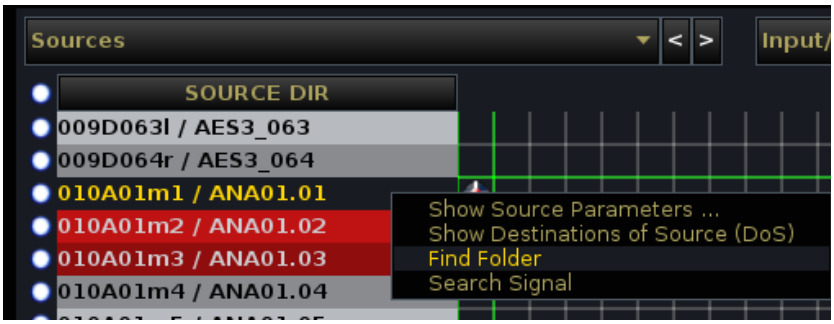
Tip

You can also double-click on a source, or a destination, to activate the Destinations of Source or Sources of Destination function.

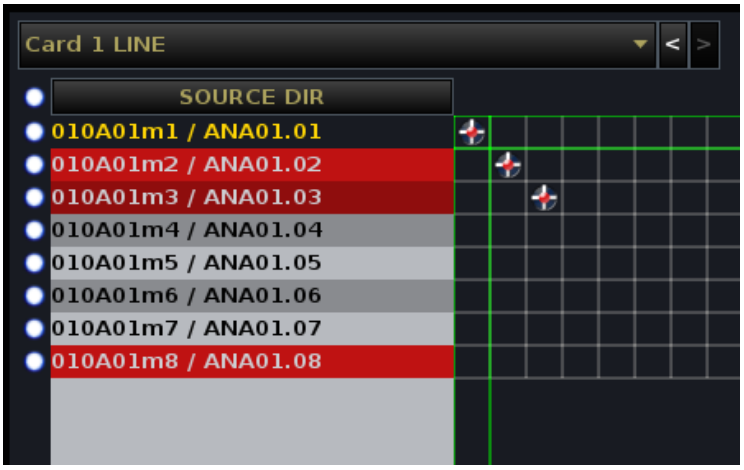
Find Folder

If you are unsure which directory or sub directory a source (or destination) belongs to, then you can use **Find folder** to locate it. This feature works in the same way as on the **Signal List** display.

1. Select the source (or destination).
2. Then right-click and choose **Find Folder**:



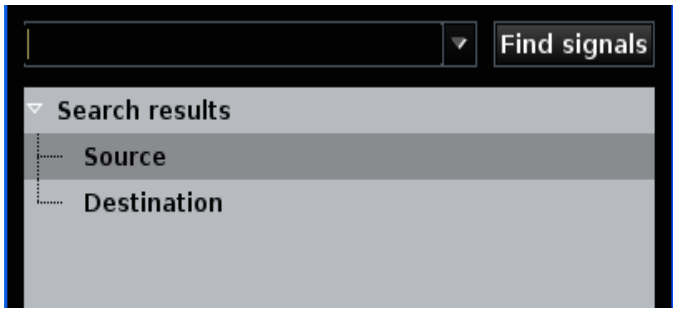
The Source (or Destination) directory updates to reveal the location of the source folder:



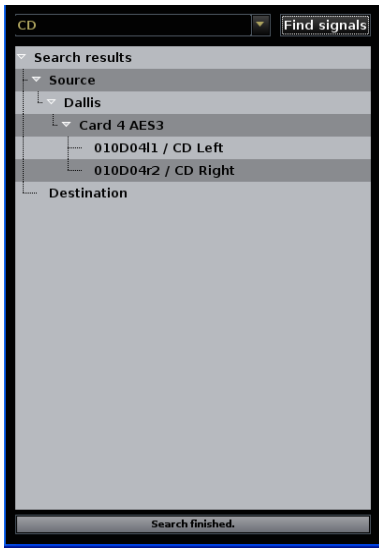
Search Signal

This option is only available from the **mx Routing** display (it is not available from the **Signal List**) and allows you to search for a signal. For example, you may suspect that a CD player is defined within the signals list but do not know its directory:

1. Right-click and select **Search Signal** to open the **Signal find** pop-up window:



2. Type in the name or user label of the source (or destination) you wish to locate – in our example, **CD**.
3. Then select **find signals**.



The system searches the system name and user label for all matching text strings – in our example two sources named CD Left and CD Right have been found.

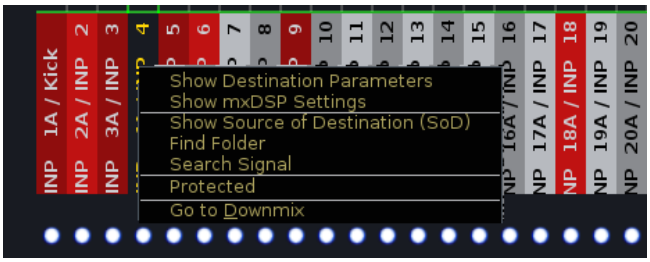
4. Now select one of the results and right-click:

- Use **Show Destinations of Source (DoS)** to view all connections made from the source.
- Or, **Show Folder in Matrix** to open the source directory.

Protected Signals (Destinations only)

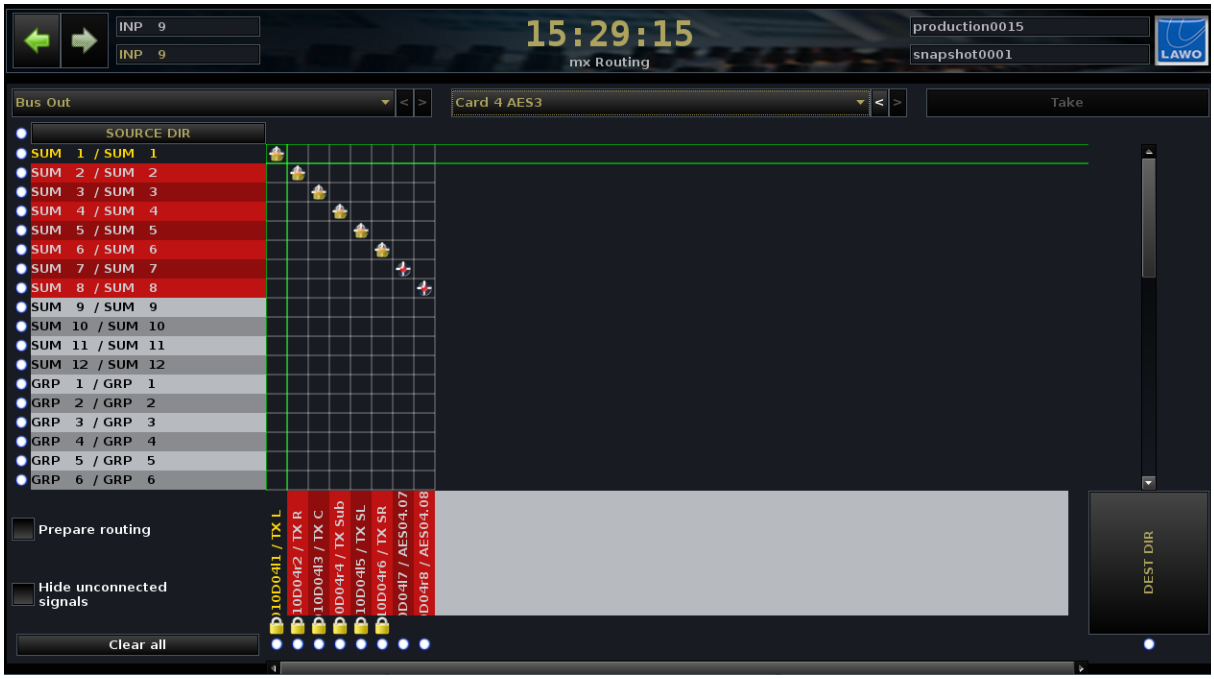
This option can be used to protect a destination. It works in the same way as on the **Signal List** display.

1. Select the destination you wish to protect, and right-click:



2. Select the **Protected** option.

Protected destinations are displayed with a padlock icon:



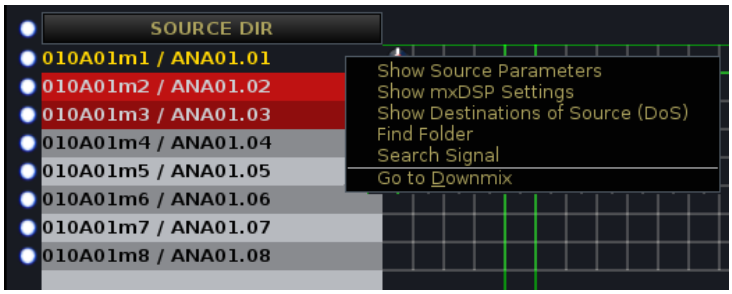
From hereon, nothing can alter the connection – not the **Signal List** or **mx Routing** displays, not snapshots, productions, mxGUI or remote MNOPL. This is ideal for critical signals, such as mains distribution.

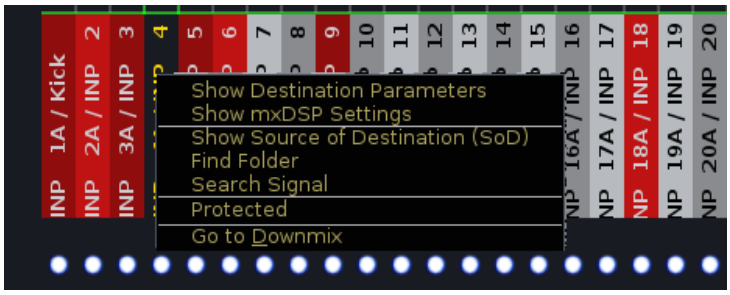
3. To change the route to a protected destination, you must first turn off the **Protected** option.

Note that only destinations can be protected.

The state of protected signals is not saved or loaded by productions, snapshots or automation. Therefore, any changes are permanent and will affect all users.

Go to Downmix





If the selected source or destination is an input or output to a downmix matrix, then this option automatically opens the **Downmix** display. This allows you to control the downmix parameters. See Page **Error! Bookmark not defined.** for details.

Preparing Signal Routing (the Take Button)

In addition to making routes one by one, the **mx Routing** display allows you to prepare a set of connections and then action them simultaneously.

1. BEFORE you make or unmake any connections, select the **Prepare Routing** checkbox on the left of the display.

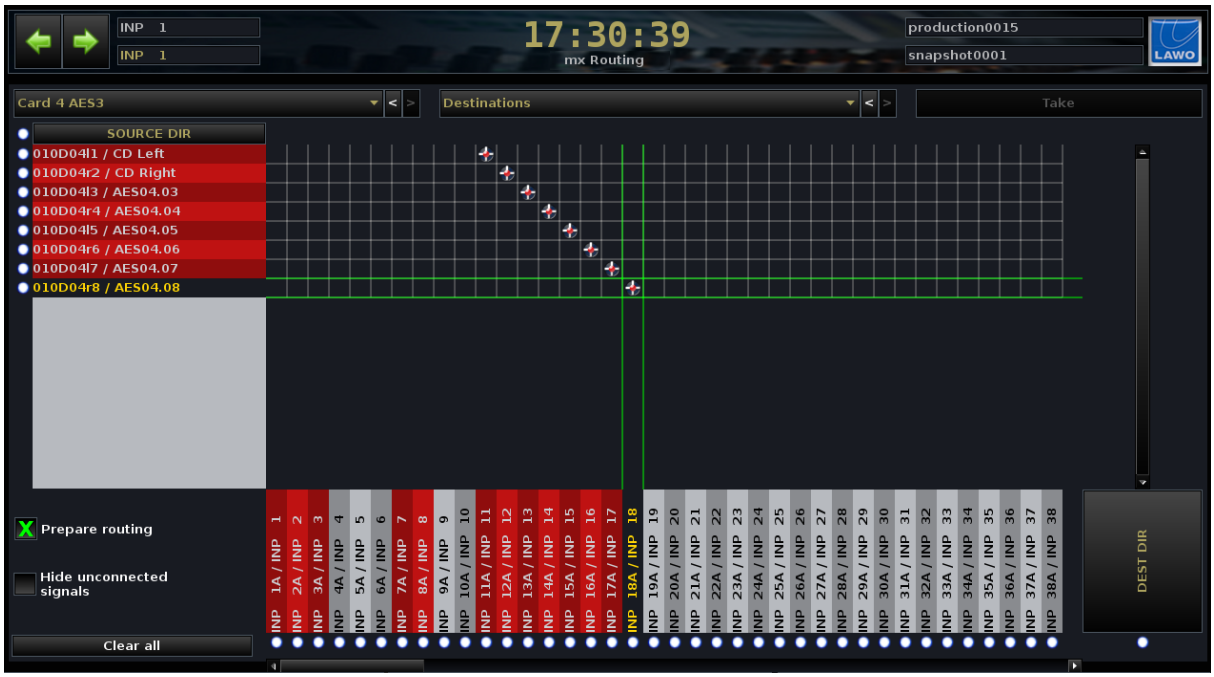
This puts the display into 'prepare' mode.

2. Now make (or unmake) the connections.

At this stage, the connections have only been prepared and are not yet active; therefore they are displayed with a different icon:

3. When you have completed the prepared routes, select the **Take** button at the top right of the display.

All prepared connections (and disconnections) are actioned, and the icons change state to reflect the routes made:



4. You can now prepare another set of connections and action them from the **Take** button.
5. When you are finished, remember to deselect the **Prepare Routing** checkbox to return the display to its normal mode of operation.

Partial Snapshots

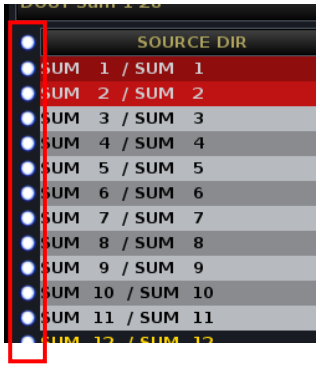
A “partial snapshot” is designed to store selected routing crosspoints. For example, you could use a partial snapshot to route tone to all transmission feeds for a line check without affecting other aspects of the mix.

Note that a partial snapshot also stores and recalls signal parameters such as mic pre-amp gain and SRC on/off for the selected sources and destinations.

Note

Partial snapshots are prepared from the **mx Routing** display, and saved and loaded from the **Snapshots** display.

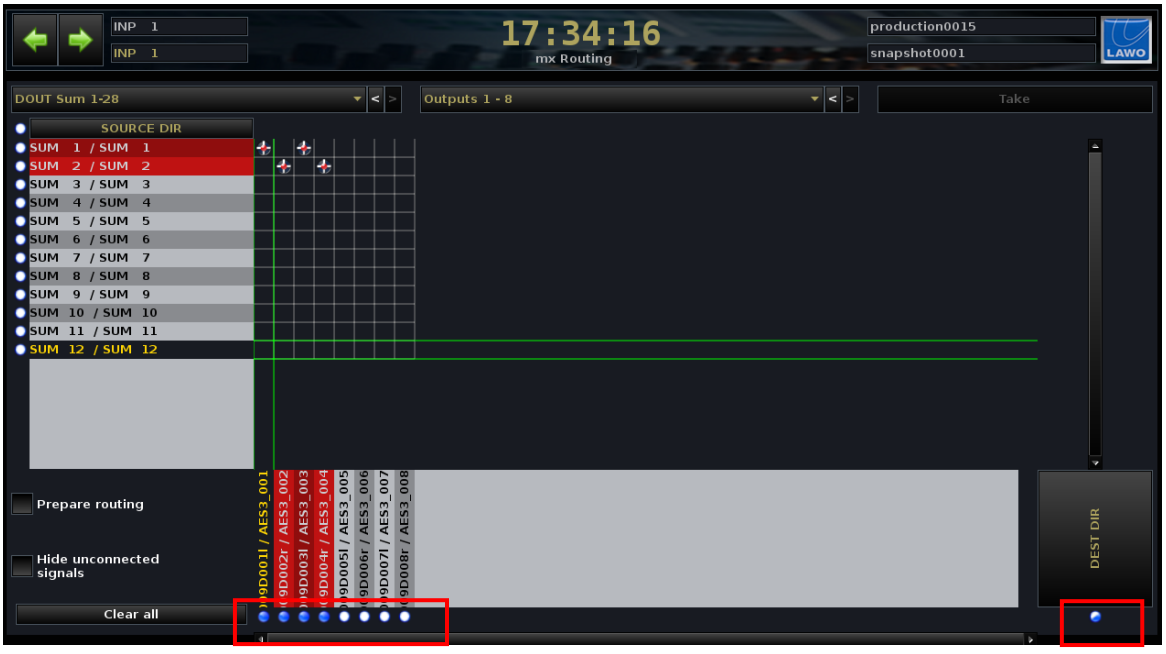
1. Open the **mx Routing** display.
2. Use circles beside each source and destination to select which will be stored within the partial snapshot:



When a source or destination is selected, its circle turns blue.

- If you select a destination, the partial snapshot stores the route made to the destination and the destination’s I/O parameters.
- If you select a source, the partial snapshot stores only the source I/O parameters.

Therefore, to store crosspoints in a partial snapshot, always select the destinations. In our example, we want to store routes to the AES feeds and so have selected these destinations:



The half blue circle beside **DEST DIR** indicates that some signals within the directory are selected. To select all sources or destinations within a directory, select this circle (full blue).

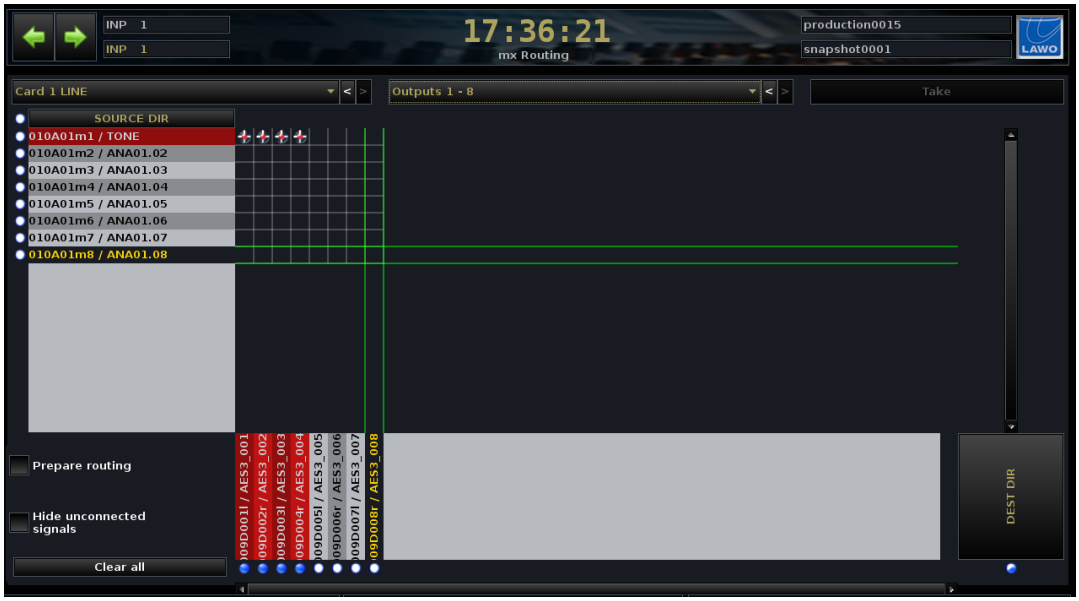
Clear All clears all partial snapshot selections made throughout the entire routing matrix. Use this when you wish to clear down any active selections in preparation for a new partial snapshot.

3. Now go to the **Snapshots** display and select **Save Partial** at the bottom of the display.

The system saves the routes made to the selected destinations in a new partial snapshot:

Note that the type of snapshot is marked in the **Type** column to distinguish partial snapshots from full snapshots.

4. Return to the **mx Routing** display and make the new routes to your selected destinations – in our example, Tone to the transmission feeds:



5. And save another partial snapshot from the **Snapshots** display:

6. At any time you can now load the partial snapshots to recall routes made only to the transmission feed destinations.

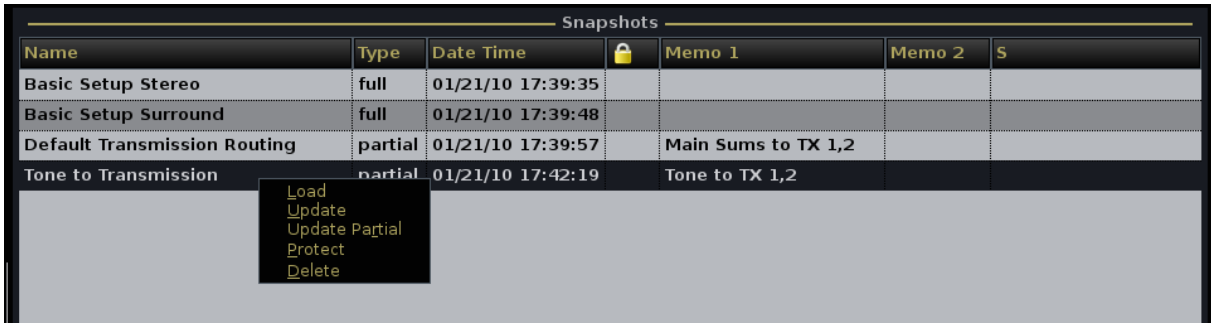
Note that it is the blue circle selections when the partial snapshot is saved which defines which routes and I/O settings are stored. This allows you to save partial snapshots for different subsets of signals.

Note

Note that you can use Isolate to isolate a source or destination from the partial snapshot recall. So, if you do not wish to reset one of the stored destinations, then Isolate it from the **Signal List** display.

Partial snapshots are treated in exactly the same way as full snapshots, so you can load, update, protect or delete them from the **Snapshots** display, see Chapter 7 for details.

7. To update an existing partial snapshot, be sure to select **Update Partial**:

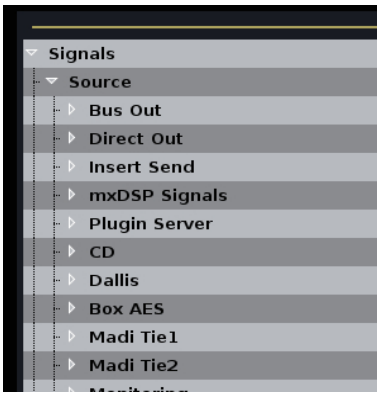


8. Remember to save or update the production in order to save snapshots permanently.

The Signal Settings Display

The **Signal Settings** display has two functions: to monitor the status of system hardware, and to set parameters for individual input and output signals.

1. Select **Page** -> **Signals** -> **Settings** to view this display:



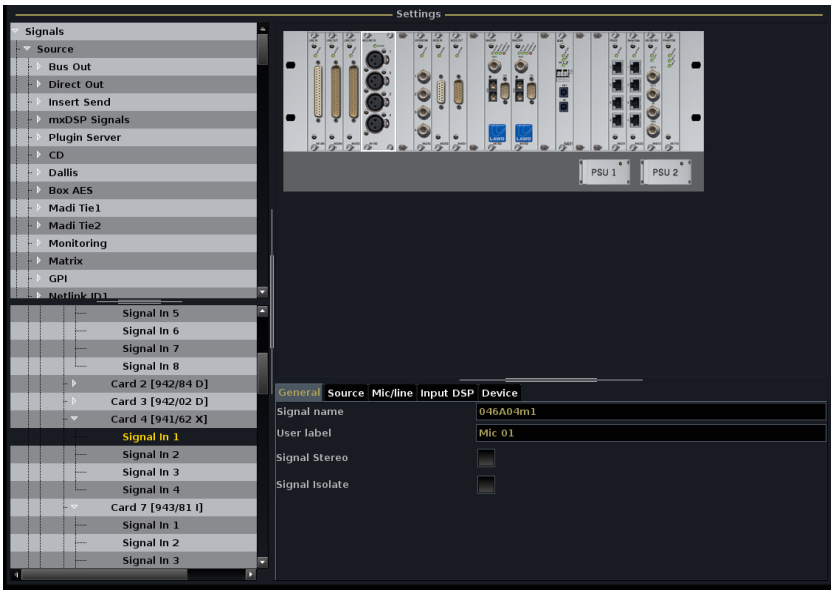
The two “trees” on the left of the display show the location of a signal within the **Signal List** (top) and its physical location in the **System** (bottom). Whenever a signal is selected from the **Signal List**, the **System** tree follows, and vice versa.

You can open or close branches of the **Signal List** or **System** tree by clicking on the arrows or double-clicking on a directory/component name.

As you select signals, a graphical representation appears in the middle of the display – in our example, we can see the DALLIS where our mic signal is connected.

If all is well with the system hardware, then the components are coloured grey. However, if there is a problem, the component will be highlighted in red, and you will see a red/white cross next to the component name in the system tree.

When you select an individual signal, a number of parameter tabs appear at the bottom of the display – in our example, **General**, **Source**, **Mic/Line**, **Input DSP** and **Device**:



Note that the parameter tabs depend on the type of signal selected.

Note

2. Select a tab to access I/O parameters for the selected signal.

When working with the **Signal Settings** display you can resize the different areas by clicking and dragging the grey separator bars - for example, during normal operation you might hide the **System** tree until it is needed. If information within an area is hidden, then left/right or up/down scroll bars will automatically appear.

Tip

Follow list selection

You can link the **Signal List** and **Signal Settings** displays so that when you select a signal from the **Signal List** display, and switch to **System Settings**, the selected signal follows. For example:

1. Go back to the **Signal List** display and select a source – in our example, the source named **Mic 01**:

2. Make sure that the **follow list selection** option is checked at the bottom of the display.
3. Then page back to the **Signal Settings** display:

The **Signals** and **System** trees should have automatically opened to reveal your selected source.

Diagnosing System Errors

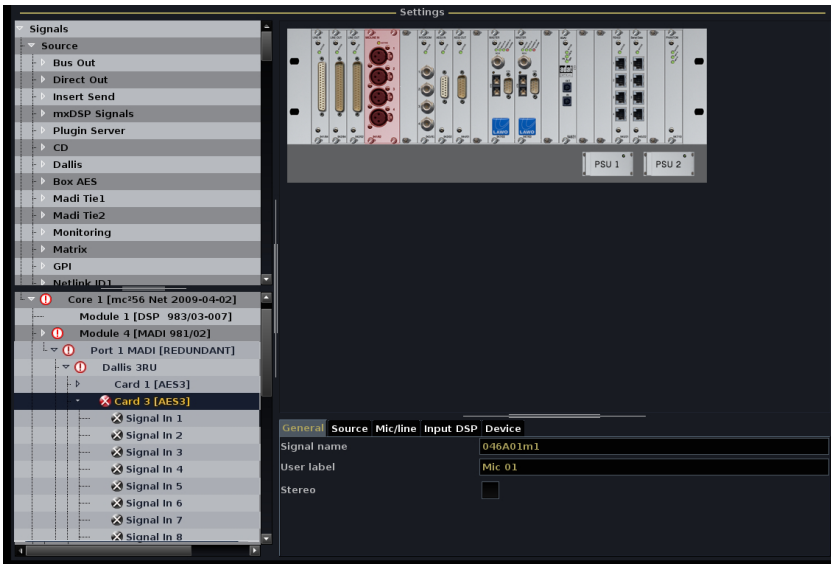
When running mxGUI online, you can use the **Signal Settings** display to monitor your system hardware.

In the unlikely event of a component failure, a hazard warning flag appears in the title bar of the screen. Note that this flag will appear at the top of any mxGUI display, so you don't need to be viewing the **Signal Settings** to monitor your hardware:

1. Select the **Signal Settings** display:

A red/white cross and highlighted card reveal the problem.

2. If the fault is hidden within the **System** tree, follow the red warning flags and open each branch of the tree to find the problem – in our example, a DALLIS card:



If you open the DALLIS card further, you will see grey/white crosses beside **Signal In 1**, **Signal In 2**, etc. These show that the AES signals are no longer available:

3. Check and replace the card if necessary.

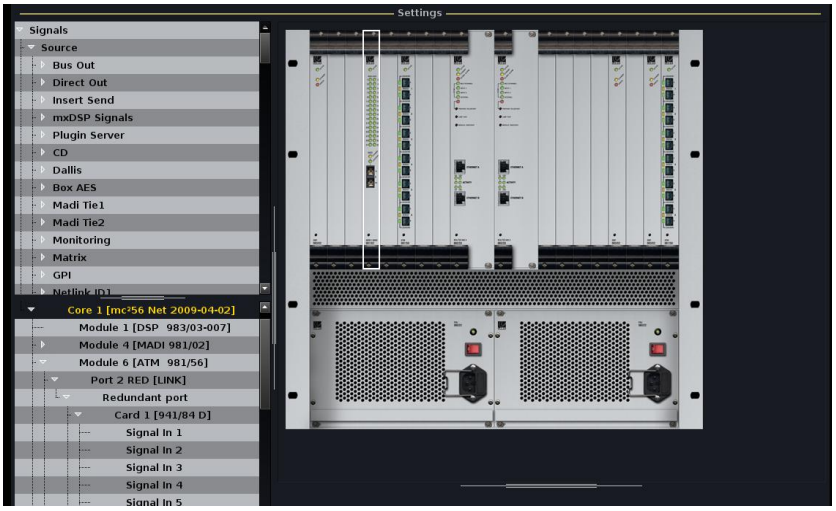
Once all components are connected and working correctly, the red/white crosses disappear from the **System Settings** display and the hazard warning flag is cleared.

The System Tree

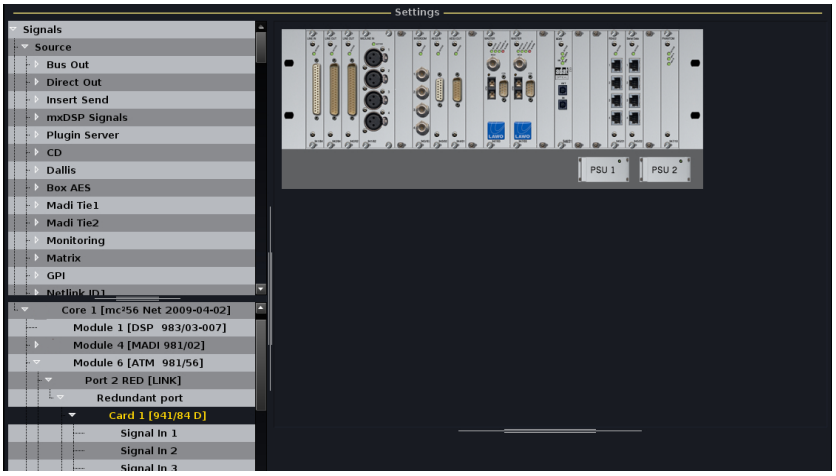
The **System** tree can be opened as follows:

1. Close and then reopen the **System** to see all the **Cores** contained within your system network – e.g. **Core 1**:

2. Open **Core 1** to see all the **Modules** fitted to the core, and its power supplies – **PSU 1** and **PSU 2**:



3. And open a **Module** to view its ports and then any DALLIS units connected to those ports:



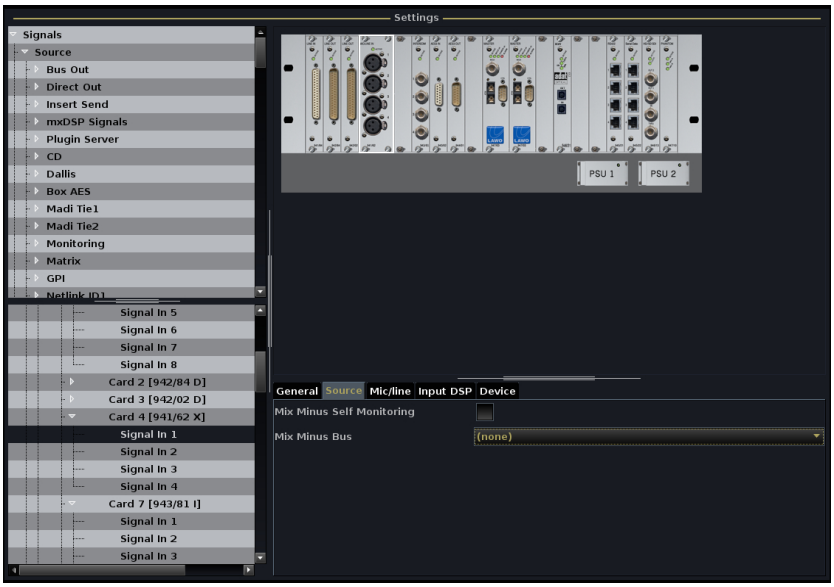
Setting I/O Parameters

Each time you select an individual signal within the **Signal Settings** display, you can adjust its I/O parameters from the bottom of the display.

1. Open up the system tree until you find the signal you wish to adjust – in our example, **Mic 01**.

*A number of parameter tabs appear at the bottom of the display – in our example, **General**, **Source**, **Mic/Line**, **Input DSP** and **Device**.*

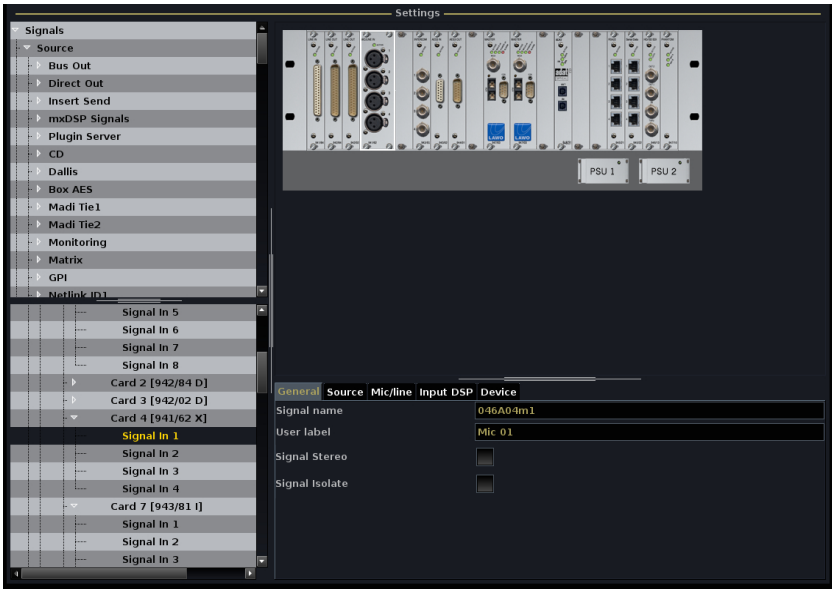
2. Select a tab to access the I/O parameters for the selected signal:



Note that the parameters vary depending on the type of signal – Mic, Line, AES, SDI, etc. – and whether you have selected an input or output. You can find details for all parameters by referring to the datasheet for the card available from the Lawo website. Here we will cover the most common i/o cards.


Note

General Parameters



Signal name

This field displays the signal name as defined by the AdminHD configuration. Note that you cannot edit this name from mxGUI.

User label

This field can be used to edit the user label for the selected signal.

This is the same as the **Source Label** (input signals) or **Destination Label** (output signals) on the **Signal List** display:

1. Click on the existing label to enter a new name.

A cursor appears within the label field.

2. Enter your new name.

For more details on names and labels, see Page 54.

Signal Stereo

Check this option to link an odd/even pair of signals for stereo. The stereo linking affects the behavior of the IO DSP, see Page 97 for details.

Note that signals can also be stereo linked from the **Signal List** display, see Page 53.

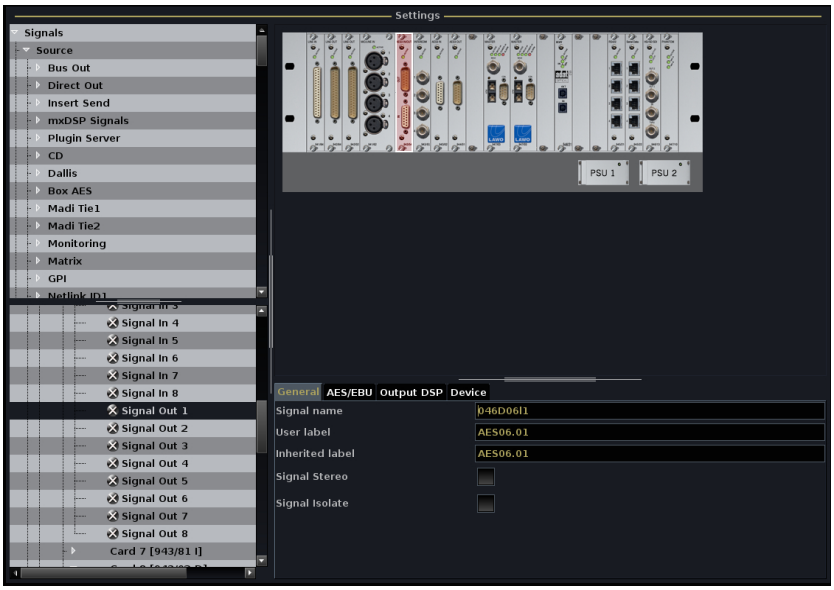
Signal Isolate

Check this option to isolate a signal from a snapshot recall.

Note that signals can also be snapshot isolated from the **Signal List** display, see Page 58.

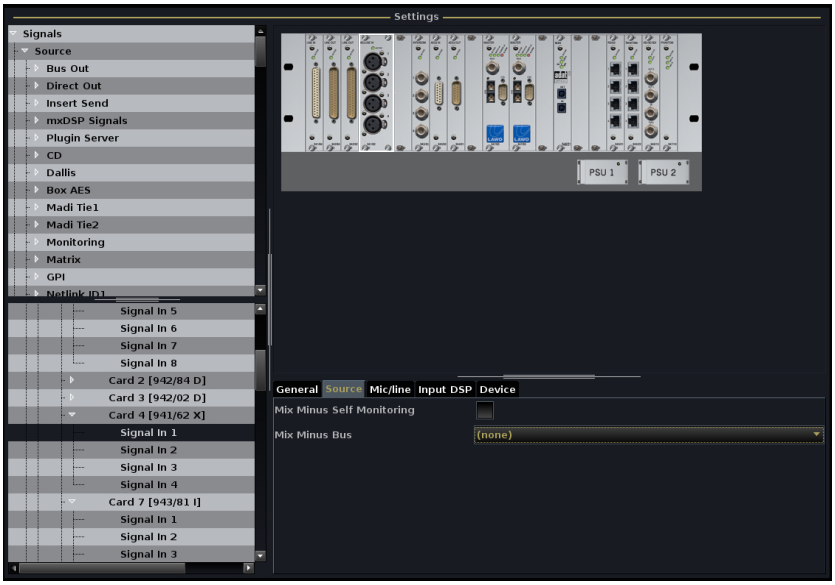
Inherited Label (Output Signals only)

This field only appears when an output signal is selected:



If the selected output is routed from a source, then this field displays the inherited user label and is for information purposes only.

Source Parameters (Input Signals Only)



These parameters only appear when an input signal is selected.

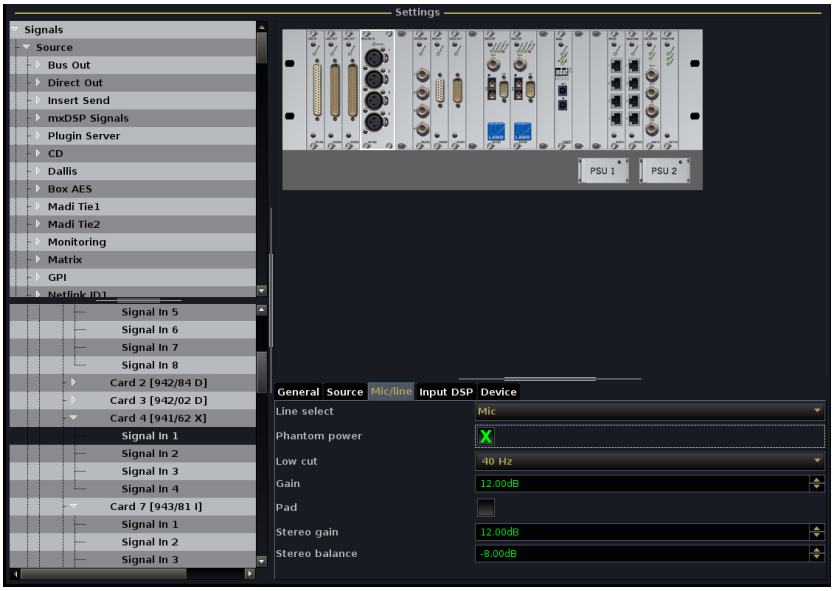
Mix minus Self Monitoring

This feature is not relevant for Nova73.

Mix minus Bus

This feature is not relevant for Nova73.

Mic/Line Parameters (Mic/Line Signals Only)



These parameters only appear when an input signal from a Mic/Line card is selected, and duplicate the parameters available from the Central Control section:

Line select

Click on the drop-down menu to switch the input between mic or line.

Phantom power

Check this option to enable phantom power. Phantom power can only be enable when the input is switched to Mic.

Low cut

Click on the drop-down menu to select a cut-off frequency for the high pass (low cut) filter prior to analogue-to-digital conversion. You may select: off, 40Hz, 80Hz or 140Hz.

Gain

Use this field to adjust the input gain of the signal.

You can either click on the existing entry and type in a value, or click on the up/down arrows beside the field to increment or decrement the value in 1dB steps.

Pad

Check this option to enable the 20dB Pad prior to analogue-to-digital conversion.

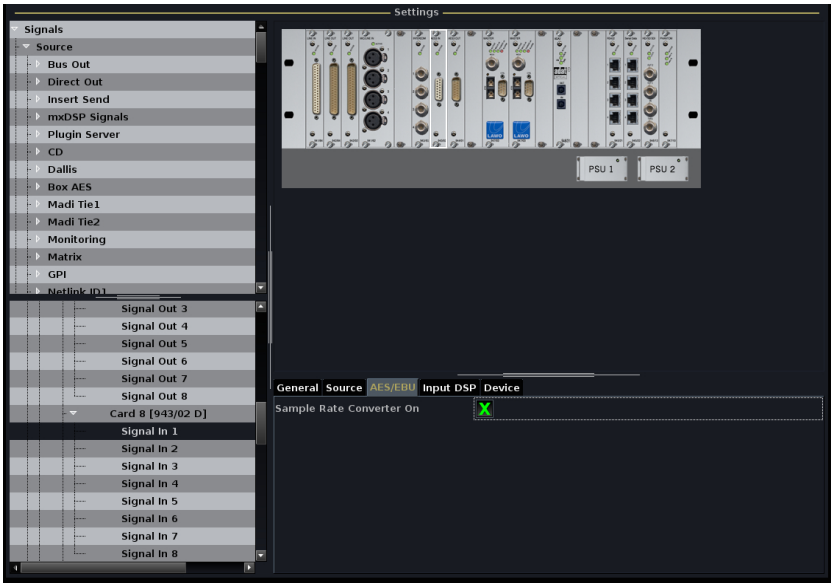
Stereo Gain and Balance

If a signal is designated as a stereo source within the **Signal List**, then you may use these fields to adjust the gain and balance of the left and right signals.

Either click on the existing entry and type in a value, or click on the up/down arrows beside the field to increment or decrement the value in 1dB steps.

See Page 53 for more details on configuring a stereo source.

AES/EBU Inputs (AES/EBU Signals Only)



For an AES/EBU input signal, you can turn sample rate conversion on or off.

Note that not all AES/EBU cards support sample rate conversion so this option may not be available for all signals.

Also note that to make a digital path suitable for Dolby E operation, you should disable any sample rate conversion and I/O DSP.

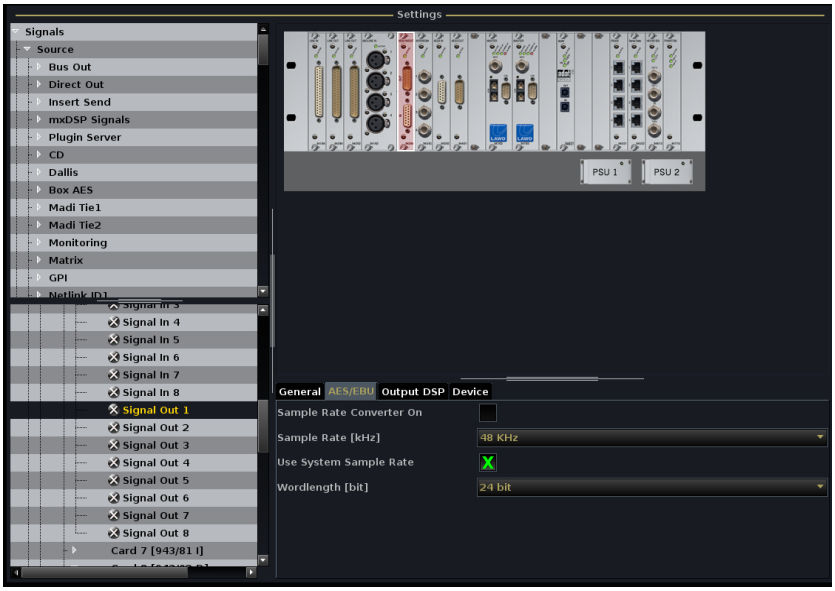
Note

⏩ Sample Rate Converter On/Off (Sample Rate Conversion)

As a default, this parameter is enabled (checked).

Uncheck this option to disable the sample rate converter for the selected source.

AES/EBU Outputs (AES/EBU Signals Only)



These parameters only appear when an output signal from an AES/EBU card is selected.

For an AES/EBU output signal, you can adjust the sample rate and the wordlength.

Note

Note that both options affect the status of the sample rate converter. Therefore, to disable the SRC to make the output path suitable for Dolby E operation, set these options according to the table in Appendix A.

⏩ Sample Rate and Use System Sample Rate

The default state for digital outputs is that they are referenced to the system clock – in other words, the **Use System Sample Rate** option is checked, and the **Sample Rate** field is set accordingly.

Note that the **SRC** flag is for display purposes only and when unchecked (as above) shows the sample rate conversion is out of circuit.

On digital outputs with sample rate conversion (SRC), you may alter the clock selection of each output. For example, you may wish to send a 44.1kHz feed to a CDR. Note that, depending on your hardware specification, sample rate conversion may be unavailable on some digital outputs.

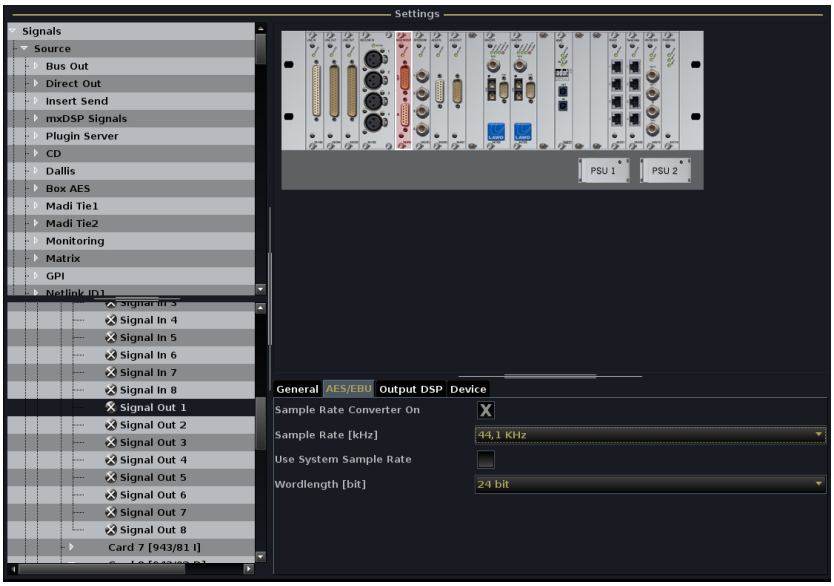
1. To change the sample rate of the digital output, select the **Sample Rate** parameter and choose from the drop-down menu options:

- **follow** – sets the output sample rate to follow the input sample rate from which it is routed.
- **44.1 KHZ** – 44.1kHz.
- **48 KHZ** – 48kHz.

On systems running at higher sample rates, you can also select:

- **88.2 KHZ** – 88.2kHz.
- **96 KHZ** – 96kHz.

Selecting a different sample rate will automatically uncheck the **Use System Sample Rate** option and check the **SRC** status flag:



2. To reset the digital output so that it is referenced to system clock, reselect **Use System Sample Rate**.

For details on setting the system sample rate, see Page 191.

Word Length

The word length for each digital output defaults to 24-bit unless you select otherwise.

Note that dither is automatically applied to signals reduced to 20- or 16-bits. In addition, your wordlength selection may change the status of output sample rate conversion; see the table in Appendix A for details.

1. To change the wordlength for a digital output, select the **Wordlength** parameter and choose from the available drop-down menu options:

- **24 bit**
- **20 bit**
- **16 bit**

Note that when 16 or 20-bit are selected, dither is automatically applied.

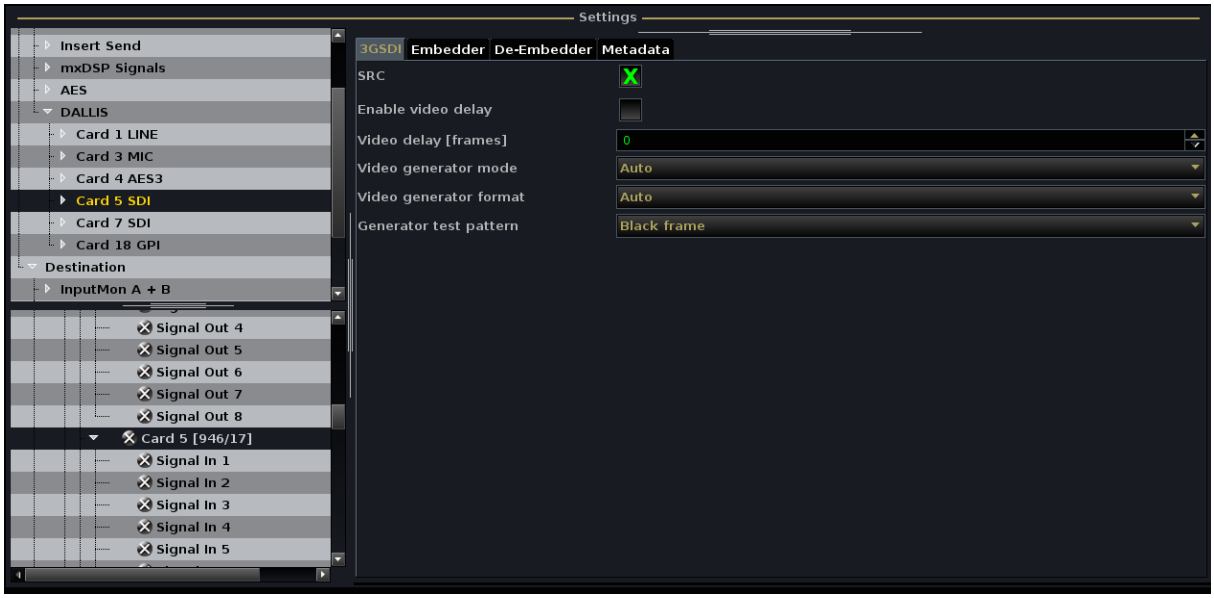
SDI Parameters (DALLIS 3G/HD/SD SDI Card)

The DALLIS 3G/HD/SD SDI card (946/17) is a multi-rate SDI card with BNC input, thru and two outputs. It contains an audio embedder and de-embedder for up to 16 audio channels, and a VANC embedder and de-embedder for two independent Dolby E Metadata streams. There is onboard video and audio delay, and an integrated sample rate converter. It occupies two DALLIS card slots and may be configured to run in a number of different modes using Admin HD.

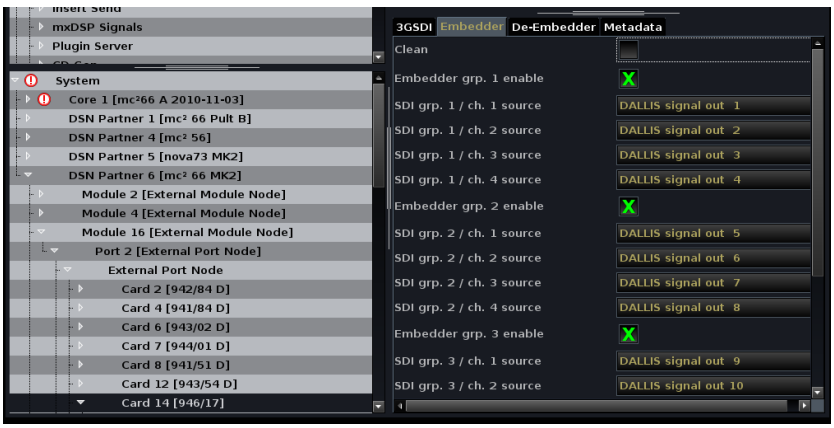
For more details and block diagrams, please refer to the relevant data sheet available at http://www.lawo.de

Note that SDI signals have parameters for both the signal and the card. The SDI parameters are adjusted by selecting the card:

1. Select the **946/17** card from the **System** tree.
2. Then select one of the four tabs:

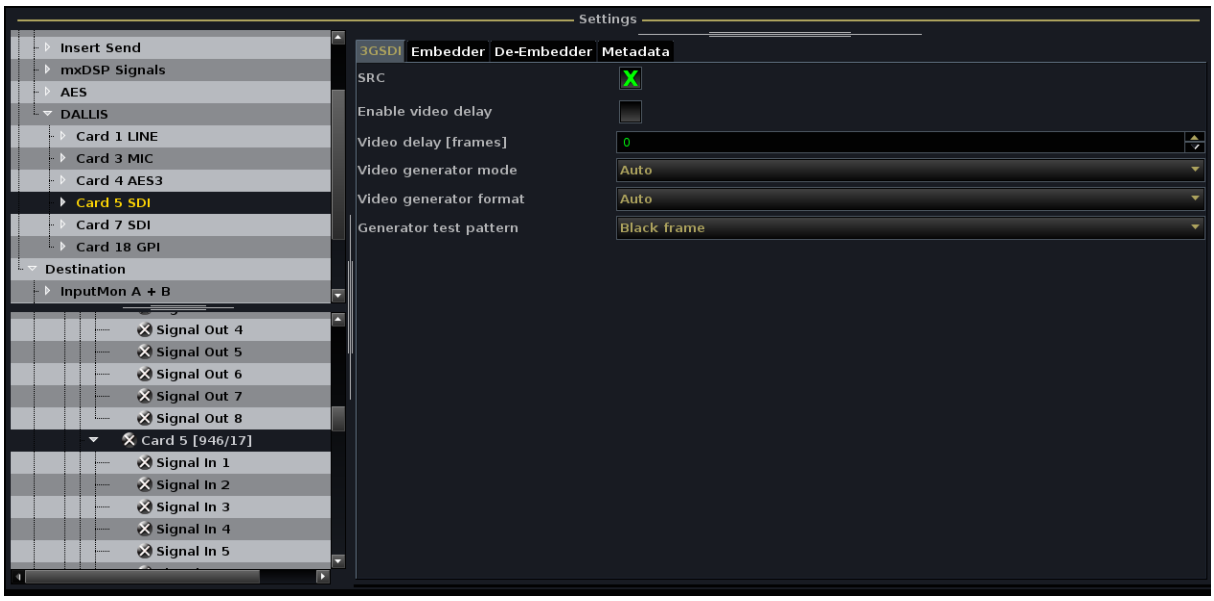


Note that SDI card parameters may be adjusted whether the card is local to the system, or fitted to a remote network partner:



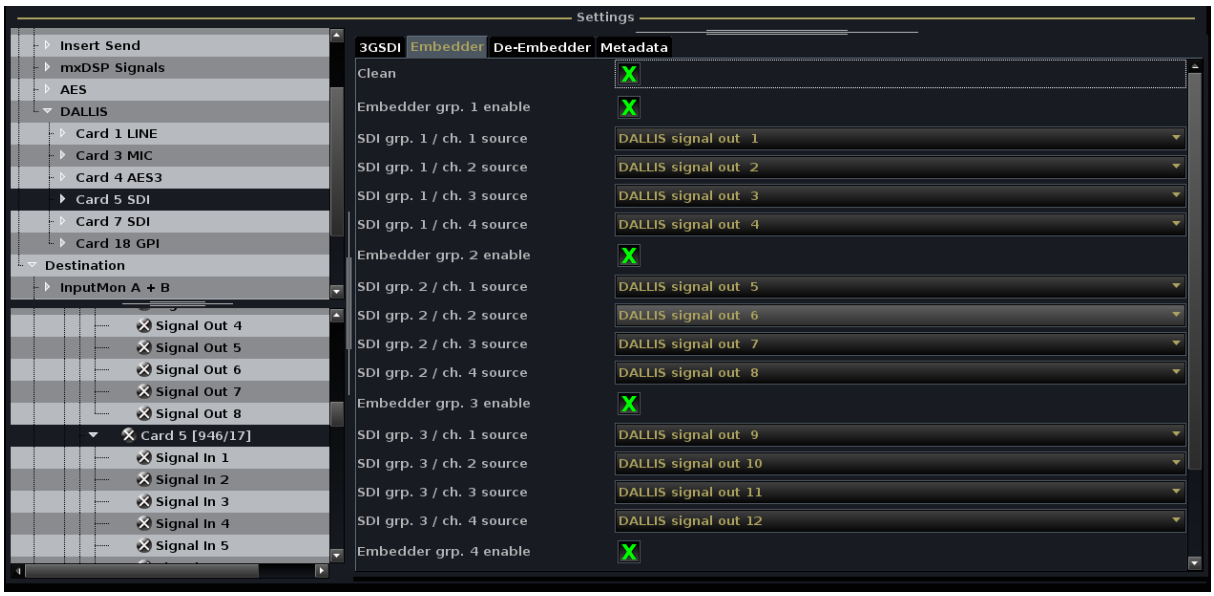
Note

3GSDI



- **SRC** – check this option to enable sample rate conversion. Note that SRC is applied to all channels on the card. Normally, SRC should be enabled. If **SRC** is off (unchecked), then the system *must* be clocked to the same reference as the sending device.
- **Enable video delay** & **Video delay (frames)** – this option applies a delay to the SDI data from the de-embedder to embedder. Video and audio containted in the stream are delayed by the same amount. Set the amount of Video delay in steps of 1 video frame.
- **Video generator mode, format** & **test pattern** – the SDI card is equipped with a free-running video test pattern generator. Set the mode to either:
  - **Auto** – if the input is locked to an incoming video signal, then the output will automatically track the format of the input. If the input fails, then the video test pattern generator transmits the last received video format. When the SDI module is part of a SDI chain, this option is recommended.
  - **Force On** – in this mode it is assumed that the card is used as a video master and that no SDI input signal is applied. The test pattern generator is forced on all the time. Use the **Video generator format** and **Generator test pattern** options to define the video signal. In this mode the embedder sample rate is derived from the generator, and the SDI receiver is switched off. Note that the de-embedder cannot be used.

Embedder



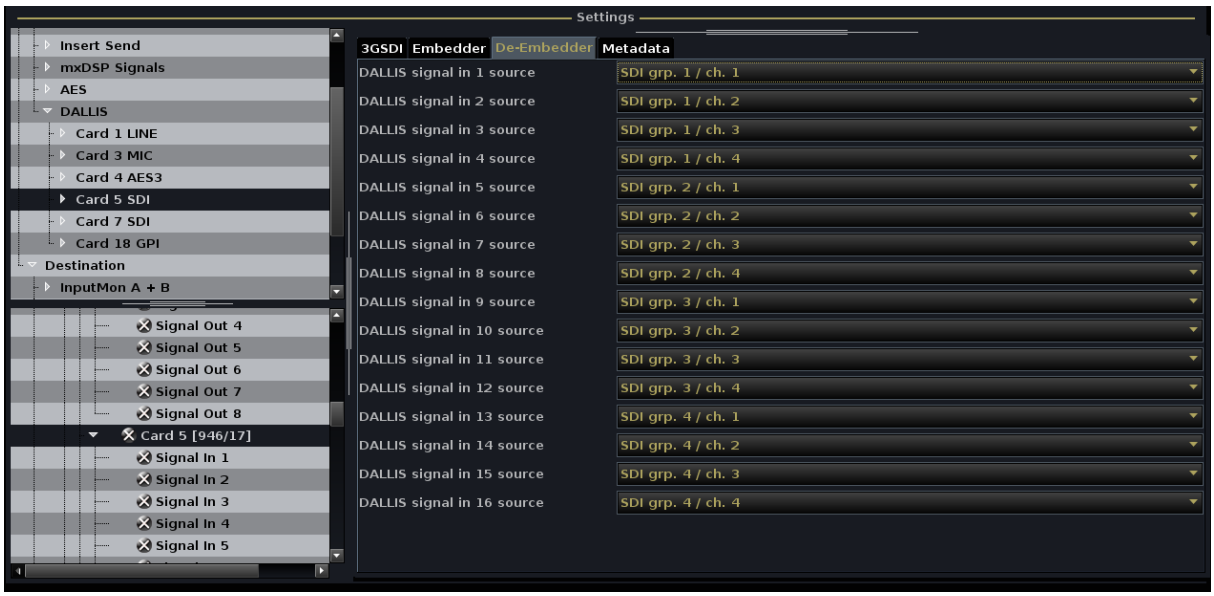
- **Clean** – check this option to set the embedder mode to “Clean”. In this mode the incoming audio stream is deleted and a new data structure generated according to your embedder settings. Note that if you select this mode any existing audio data will be lost.
- **Embedder Group Enable** – audio is embedded in groups of four channels into SDI. There is a total of four groups per SDI, resulting in 16 audio channels. For each group, this checkbox determines whether the incoming SDI stream is replaced:
  - Enable the checkbox to replace the audio group content.
  - Disable the checkbox to leave the audio group untouched.

If there is no audio at the SDI input, then a new audio group will be generated.

Note that in Admin HD modes 16/0 and 8/0, all embedder group enables are turned off as the whole embedder section is bypassed.

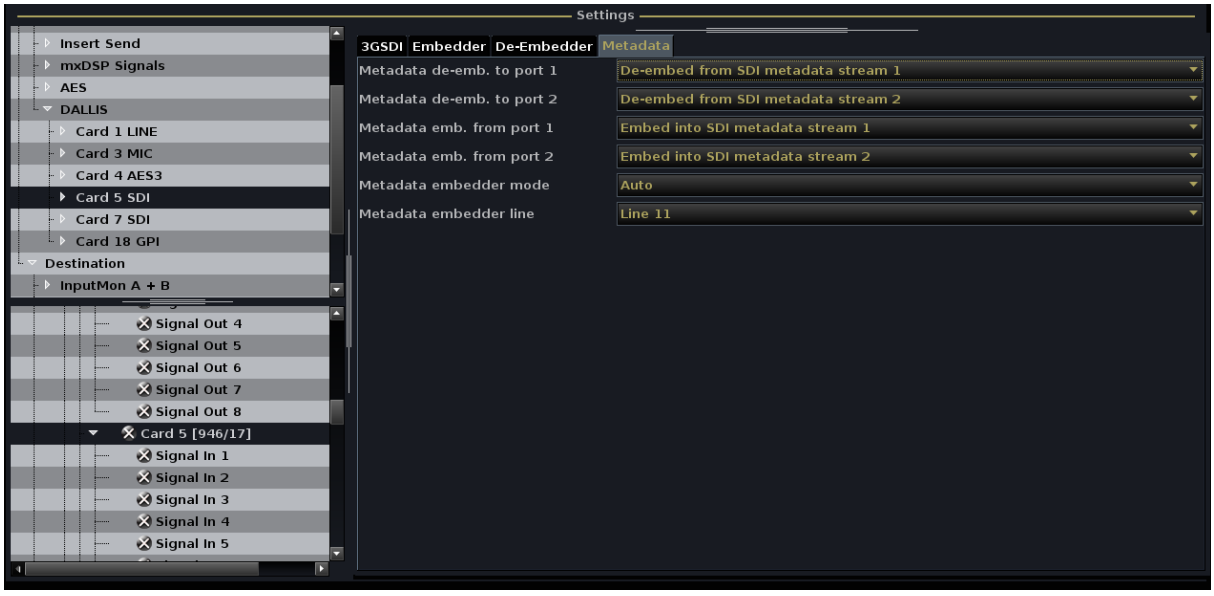
- **Embedder source 1** to **16** – use these options to define the source for each embedder.

De-Embedder



- **DALLIS signal in source 1** to **16** – use these options to define the source for each de-embedder.

Metadata



The SDI module offers 2 metadata ports according to SMPTE RDD-2008. This allows embedding, de-embedding and transport of two independent Dolby metadata streams alongside with the video. The streams can be accessed via two D-Sub connectors at the front panel.

- **Metadata de-emb.** & **emb. to port 1, 2** - use these options to define the streams for the Metadata ports.
- **Metadata embedder mode** & **line** – set the mode to **Auto** to track the input, or select **Pre-selected line** and define a **Metdata embedder line**.

SDI Parameters (DALLIS non 3G SDI Cards)

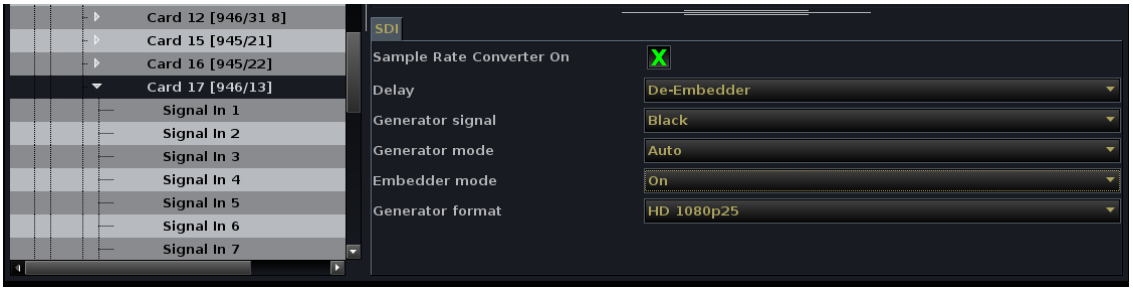
The DALLIS HD or SD SDI cards (946/13, 09, 05, 01) provide the ability to route a maximum of 8 channels to/from the SDI stream. Sample rate conversion may be applied to the whole card (all 8 channels), and delay may be applied to either the embedded or de-embedded signals.

You can find specific details on each card by referring to the datasheet available from the Lawo website.

SDI parameters can be adjusted for the card and for individual signals as follows:

SDI Card

1. Select an SDI card from the **System** tree, and click on **SDI** to adjust the following card parameters:



- **SRC** – check this option to enable sample rate conversion. Note that SRC is applied to all 8 channels on the card. Normally, SRC should be enabled. If **SRC** is off (unchecked), then the system *must* be clocked to the same reference as the sending device.
- **Delay** – select whether delay is enabled for the **Embedded** (SDI output) or **De-embedded** (SDI input) signals; delay cannot be applied to both.
- **Generator signal**, **mode** and **format** – defines the output generator signal for the SDI stream.
- **Embedder mode** – select from:
  - **On** – audio channels will be replaced within the existing SDI data structure according to your SDI output group selections.
  - **Off** – no audio replacement; the SDI stream remains unaltered.
  - **Clean** – deletes the incoming audio stream and generates a new data structure according to your embedder settings. Note that if you select this mode any existing audio data will be lost.

SDI Inputs

Select an SDI input signal from the **System** tree, and click on **SDI** to adjust the following signal parameters:

- **Group select** – this field defines which pair of SDI channels will map to the selected SDI card input. In our example, **Group 2 Channels 3&4** from the SDI stream will be de-embedded to **SDI Signal In 1** and **2**.
- **Delay time** and **Delay** – check the **Delay** option to enable delay for the stereo input, and set the delay time in ms. Delay time can be adjusted from 0 to 240ms.

Note that the delay will only be applied to SDI inputs if the SDI card **Delay** parameter is set to **De-embedder**.

SDI Outputs

Select an SDI output signal from the **System** tree, and click on **SDI** to adjust the following parameters:

- **Group select** – this field defines which pair of SDI channels will map to the selected SDI card output. In our example, **Group 1 Channels 1&2** from the SDI stream will be embedded to **SDI Signal Out 1** and **2**.

Note that the assignment will only be active if the SDI card **Embedder mode** is set to **On** or **Clean**.

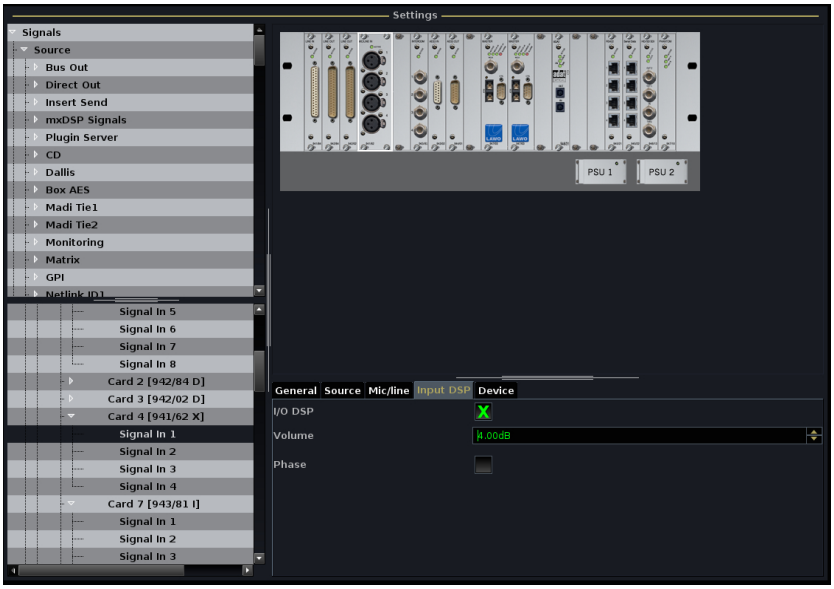
- **Delay time** and **Delay** – check the **Delay** option to enable delay for the stereo output, and set the delay time in ms.

Note that the delay will only be applied to SDI outputs if the SDI card **Delay** parameter is set to **Embedder**.

- **Wordlength** – choose from the available drop-down menu options.

Note that when 16 or 20-bit are selected, dither is automatically applied.

I/O DSP



For any type of input or output signal, a DSP module on the I/O card allows adjustment of the signal gain (volume) and phase.

Note that to make a digital path suitable for Dolby E operation, you should turn off the I/O DSP for both the input and output, and disable any sample rate conversion.

Note

I/O DSP On/Off

As a default, I/O DSP is turned on (checked). I/O DSP must be turned on for Volume and Phase to be active.

Disable this parameter to switch the I/O DSP module out of circuit – for example, for Dolby E operation.

Volume (Level Control)

The **Volume** field allows you to set an offset level within the router for the selected source or destination.

For example, if you are providing feeds to broadcast stations requiring different line-up levels, you may apply this level compensation within the router rather than at the main sum or group output.

1. Click to enter a value from the keyboard or click on the up/down arrows to increment or decrement the level in 0.5dB steps.

Levels may be adjusted from -128dB to +15dB.

Phase

1. Tick the **Phase** box to reverse the phase of the signal.

Note

Note that **Volume** and **Phase** are only applied if **I/O DSP** is switched on.

Device Parameters

HLSD

This field describes the HLSD address which is used to identify the signal within the system. This is a unique address which cannot be modified by the user, but may be useful for diagnosing errors within your system or AdminHD configuration.

Please consult the “Nova73 Technical Manual” for further details.

Tone Generator Control (Internal Tone only)

Depending on the hardware specification of your system, the system may have access to one or more internal tone generators. Each tone generator is located on the DALLIS DSP card 947/42, and in a system with multiple DALLIS cards, settings may be adjusted independently for each generator.

When a tone signal is selected, the **Signal Generator** tab appears in the i/o parameter area:

Frequency

Click on the up/down arrows beside the frequency to change the sine wave generator signal. Each time you click you will step through the following options:

20, **49.9**, **100**, **200**, **400**, **440**, 1000, 2000, 2998, 3999, 4987, 6997 Hz and 10.0, **15.0, 20.0 kHz**

Level

This field adjusts the level of the generator signal.

You can either click on the existing entry and type in a value, or click on the up/down arrows beside the field to increment or decrement the value in 1dB steps.

The level may be adjusted from 0dB to -128 dB.

Type

Select the type of generator signal from:

- **sinewave** – sine wave.
- **whtnoise** – white noise.
- **pnknoise** – pink noise.

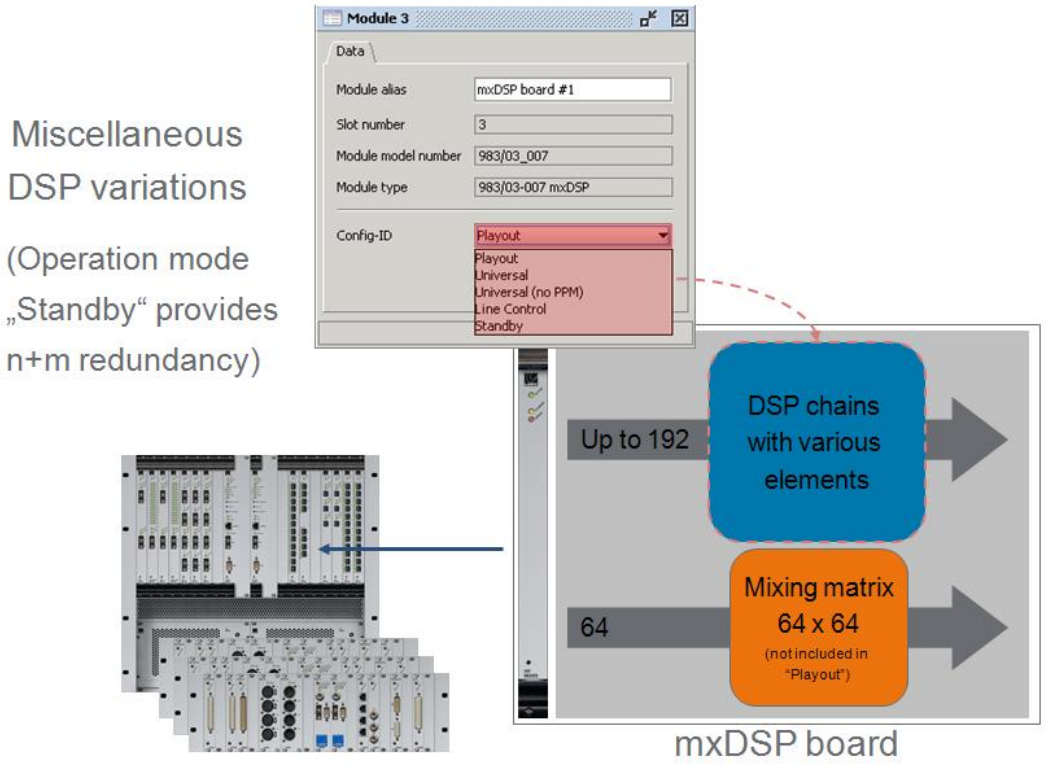
The mxDSP Settings Display

This display can be used to control the DSP settings of any mxDSP cards fitted to your system.

A mxDSP card provides a pool of DSP resource which can be applied to signal paths within the routing matrix. For example, to apply fixed DSP settings to line arrays.

Each mxDSP card occupies one slot within the HD Core and provides DSP “chains” which can be viewed and controlled from the **mxDSP Settings** display.

Several configuration options are supported, providing up to 192 DSP chains plus a 64 x 64 mixing matrix per card. The DSP chains are configured from various elements including level, mute, delay, EQ, etc. The number of DSP chains, and their signal flow, is determined by the AdminHD configuration:



Note that a 983/03-007 mxDSP must be configured using AdminHD, and new software loaded to the card, before the following features become available. Please refer to the Nova73 Technical Manual.

Note

The **Config-ID** can be changed, using AdminHD, while running online.

Controlling DSP Parameters

1. Select **Page** -> **Matrix**-> **mxDSP Settings** to view this display:

On the left of the display you will see:

- **DSP Chain Type** – this lists all the DSP chain types offered by the card. The types are pre-defined by the card configuration (defined within AdminHD). Types in grey are not supported by the current configuration.
- **DSP Chain** – this lists the individual DSP chains. Here you can name and label each chain and view its source and mono/stereo configuration.

2. Select a DSP Chain from the list to view its signal flow.

3. Then click on one of the signal flow blocks – e.g. **Par-EQ** – to display the current parameters:

4. Adjust parameters using the mouse buttons in the usual manner.

See Page 25 for tips on using the GUI to adjust parameters values.

You can adjust parameter values for any DSP block within any DSP chain.

Note that you cannot change the **Stereo** configuration of a DSP Chain from the **mxDSP Settings** display. This operation must be performed from the **Signal List** display (see next page).

Note

Controlling the 64x64 Summing Matrix

Depending on the Admin HD configuration, each mxDSP card may support a 64 x 64 summing matrix.

You can control routing to and from the matrix crosspoints using either the **Signal List** or **mx Routing** displays, see Page 111.

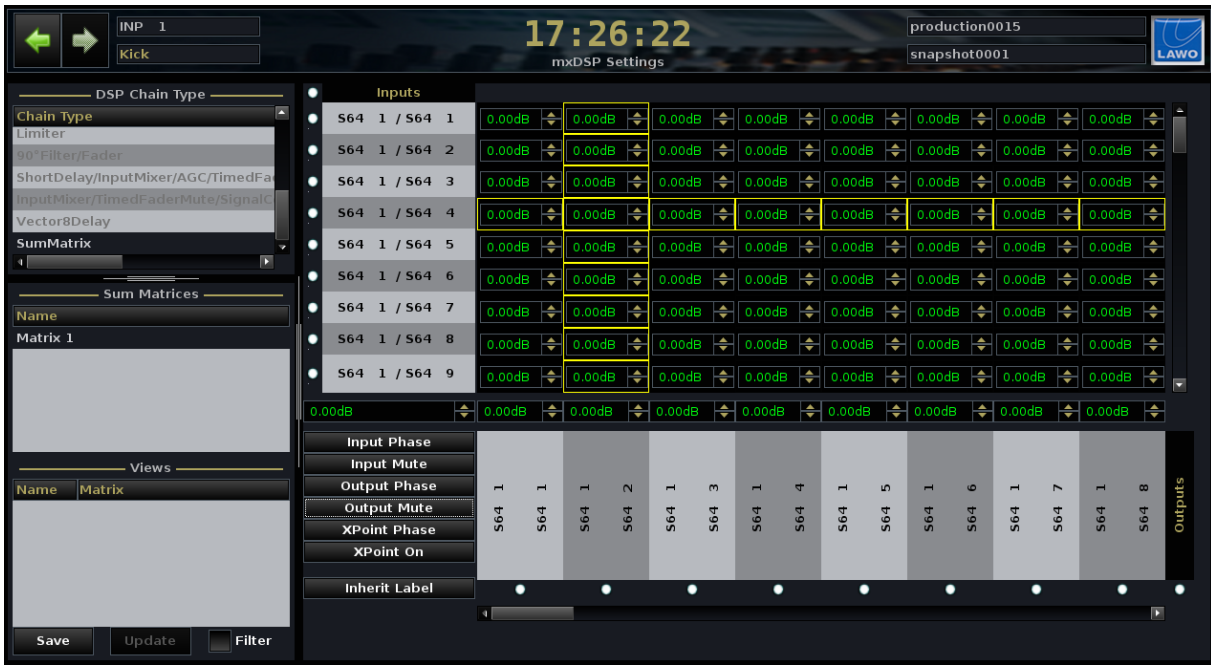
For each of the 64 summing matrix inputs and outputs, you may adjust the following settings from the **mxDSP Settings** display:

- **Input level, phase and mute.**
- **Output level, phase and mute.**
- **Crosspoint level and on/off status.**

Note that the summing matrix defaults to all levels at 0dB, all phase, mutes and crosspoints off.

1. Select **Page** -> **Matrix**-> **mxDSP Settings**.
2. Scroll through the entries in the **DSP Chain Type** list, on the left, and select **Sum Matrix**.

*The display shows settings for the selected summing matrix – in our example, **Matrix 1**:*



On the left of the display, the **Sum Matrices** area lists all matrices configured within the system. For example, if you have several mxDSP cards, configured with a summing matrix, then you will see Matrix 1, Matrix 2, etc.

The **Views** list can be used to filter the number of signals in view, see Page 109.

Controlling the Matrix Settings

The main area of the display shows the crosspoint on/off status and levels for the signals in view:

In our example, inputs 1 to 64 run down the left hand side, and outputs 1 to 64 across the bottom.

1. Use the scroll bars to access all 64 signals.
2. Select **Inherit Label** (bottom left) to view the source and destination labels, from the **Signal List**, rather than the default labels shown above.

In the main grid, each box shows the matrix crosspoint level in dB. If a crosspoint is active, then its box has a heavy green outline.

The yellow outlines provide a reference to show which input, output and crosspoint will be affected by the DSP buttons on the left of the display (**Input Phase**, **Input Mute**, etc.)

The circles beside each input and output signal are used to create views, see Page 109.

To Adjust a Matrix Crosspoint

1. Click on the crosspoint you wish to adjust.

The yellow outline updates.

2. Click on the up and down arrows or type in a new level.

The crosspoint level may be adjusted from -128dB to +15dB.

3. Select **XPoint On** to turn the crosspoint on or off.

When active, the crosspoint box has a heavy green outline.

4. Select **XPoint Phase** to reverse the phase of the crosspoint.

When active, the button turns blue.

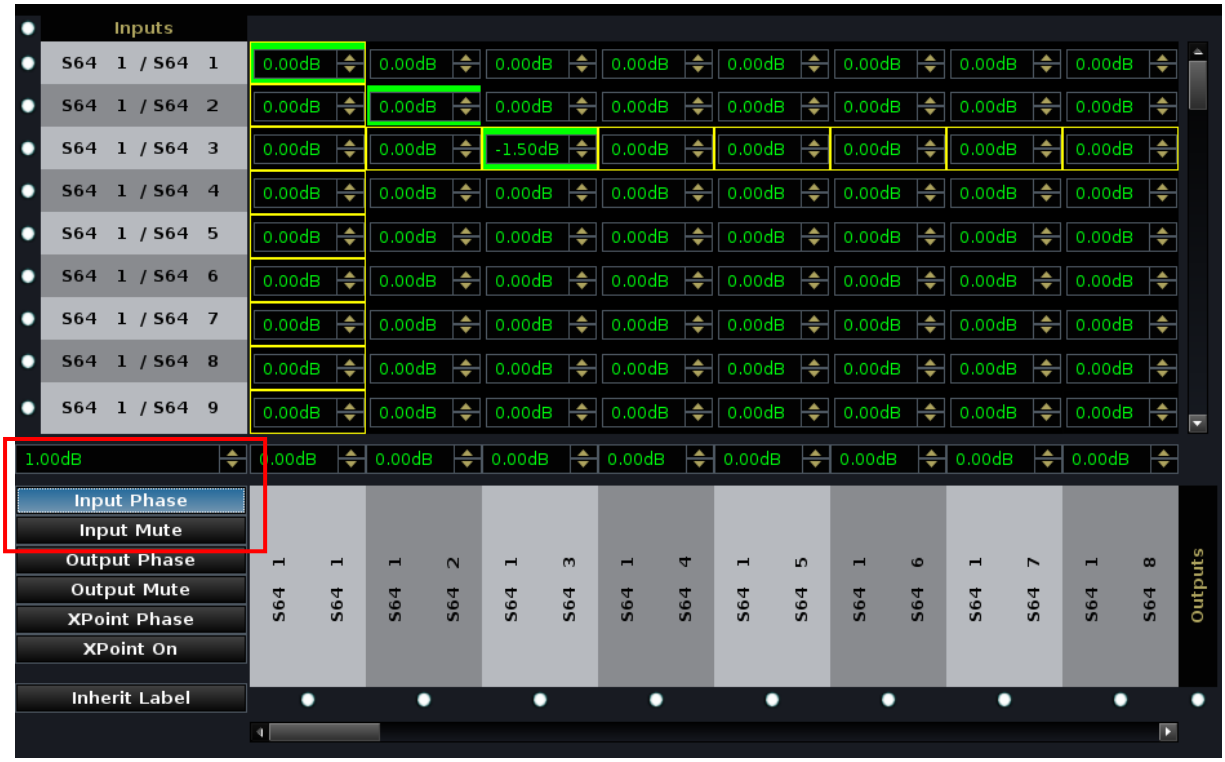
To Adjust a Matrix Input

1. Click on any crosspoint within the input row you wish to adjust – for example, input 3.
2. Use the level box below the **Inputs** list to adjust the input level.

The input level may be adjusted from -128dB to +15dB.

3. Select **Input Phase** to reverse the phase of the summing matrix input.
4. Select **Input Mute** to mute the input.

The input level box turns red if the input is muted.



To Adjust a Matrix Output

1. Click on any crosspoint within the output column you wish to adjust – for example, output 5.
2. Use the level box at the bottom of the column to adjust the output level.

Output level may be adjusted from -128dB to +15dB.

3. Select **Output Phase** to reverse the phase of the summing matrix output.
4. Select **Output Mute** to mute the output.

The output level box turns red if the output is muted.

Views

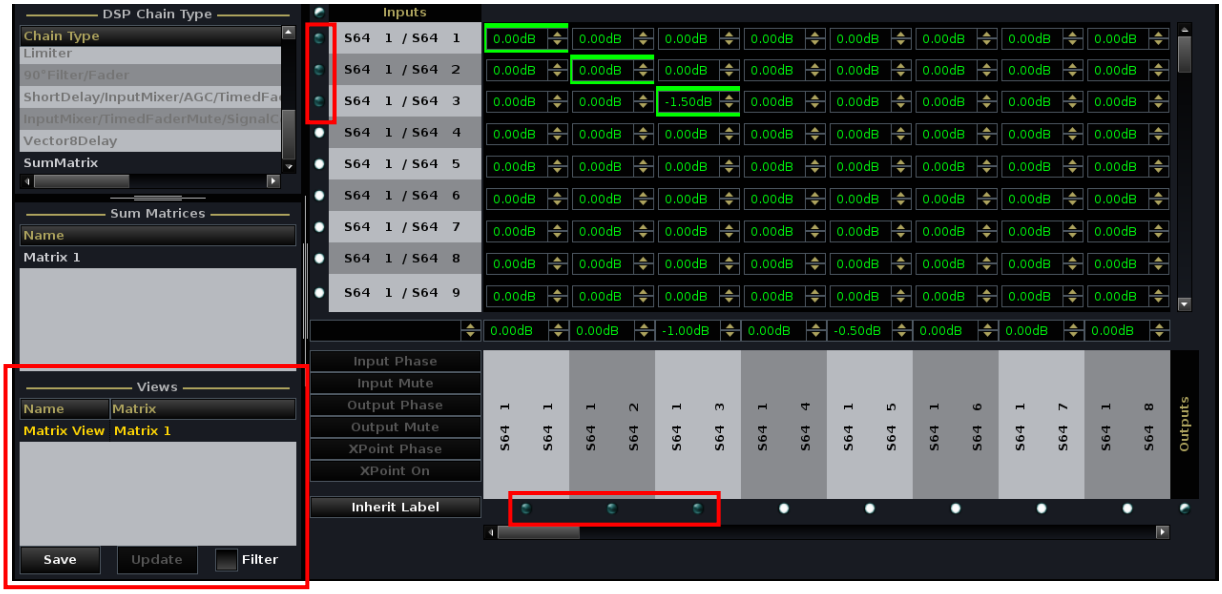
To reduce the number of signals in view to a more manageable number you can use **Views**.

1. Select the circles beside each input and output signal you wish to include within the matrix View:

When a signal is selected, its circle turns blue:

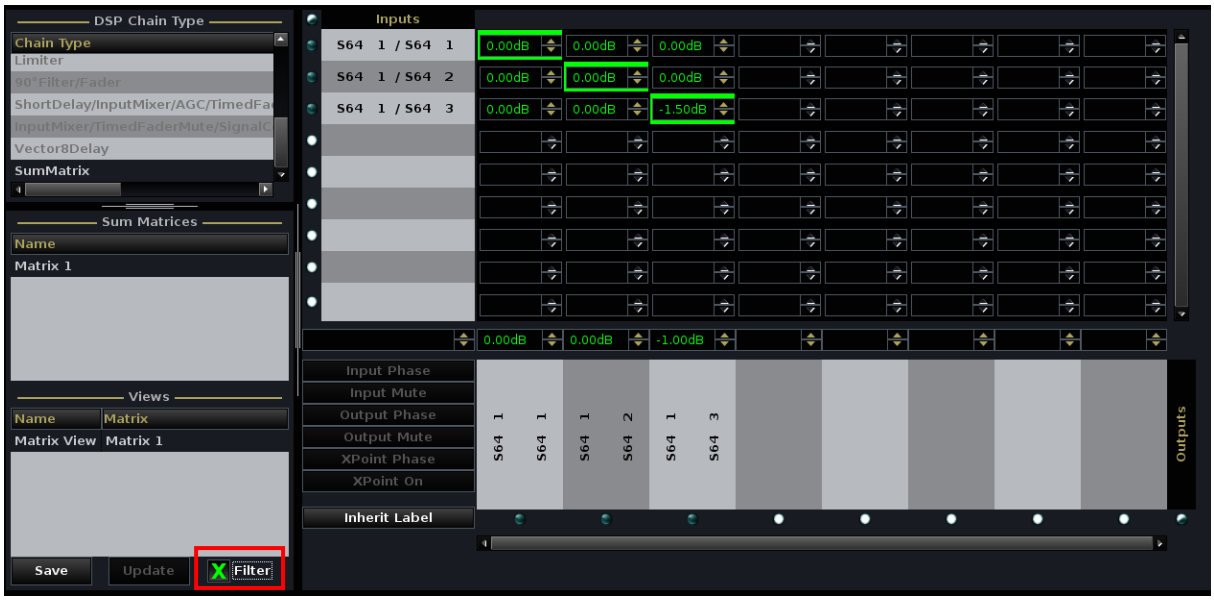
2. Now select **Save** at the bottom of the **Views** area.

*The **Views** list updates accordingly:*

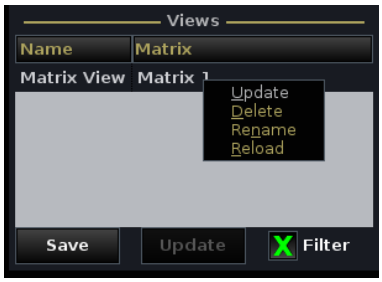


3. To apply the View, select the checkbox beside **Filter**.

*When the **Filter** checkbox is active, the crosspoint grid only shows signals stored within the selected **View**:*



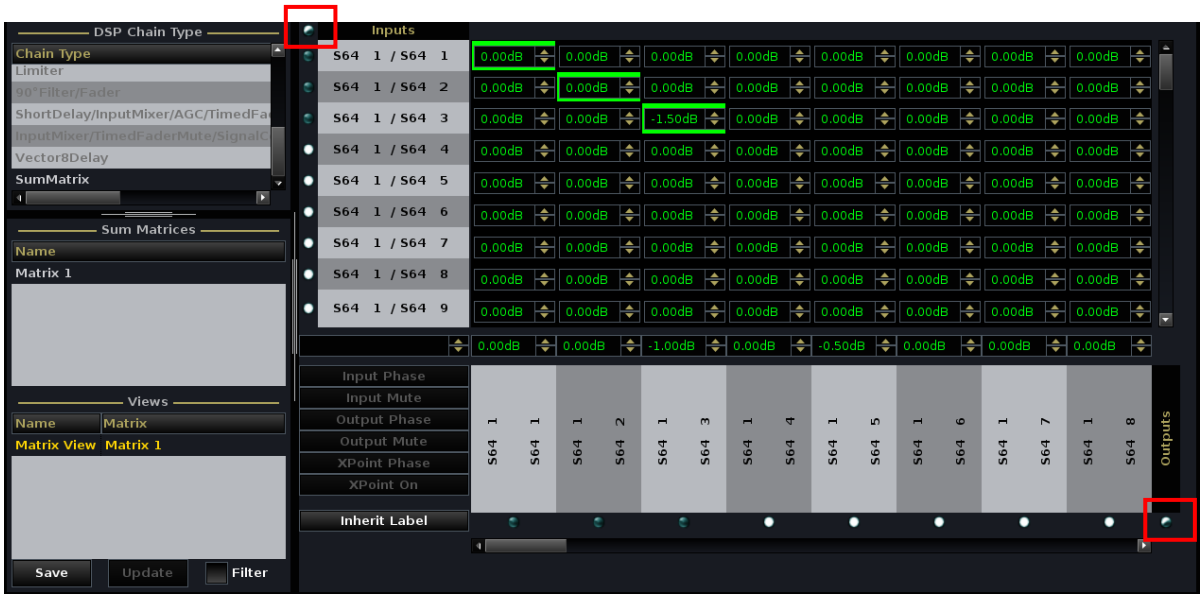
4. To return to all signals, deselect the **Filter** checkbox.



You can store as many Views as you wish, and perform the following operations by right-clicking on a **View**:

- **Update** – select a different set of signals and click on **Update** to update an existing View.
- **Delete** – deletes the selected View.
- **Rename** – renames the selected View.
- **Reload** – reloads the selected View.

Note that the half blue circle beside **Inputs** and **Outputs** indicates that some but not all signals are selected:



- To select all signals, select this circle to make it full blue.
- To deselect all signals, select it again to make it full white.

Routing Signals to/from the mxDSP Card

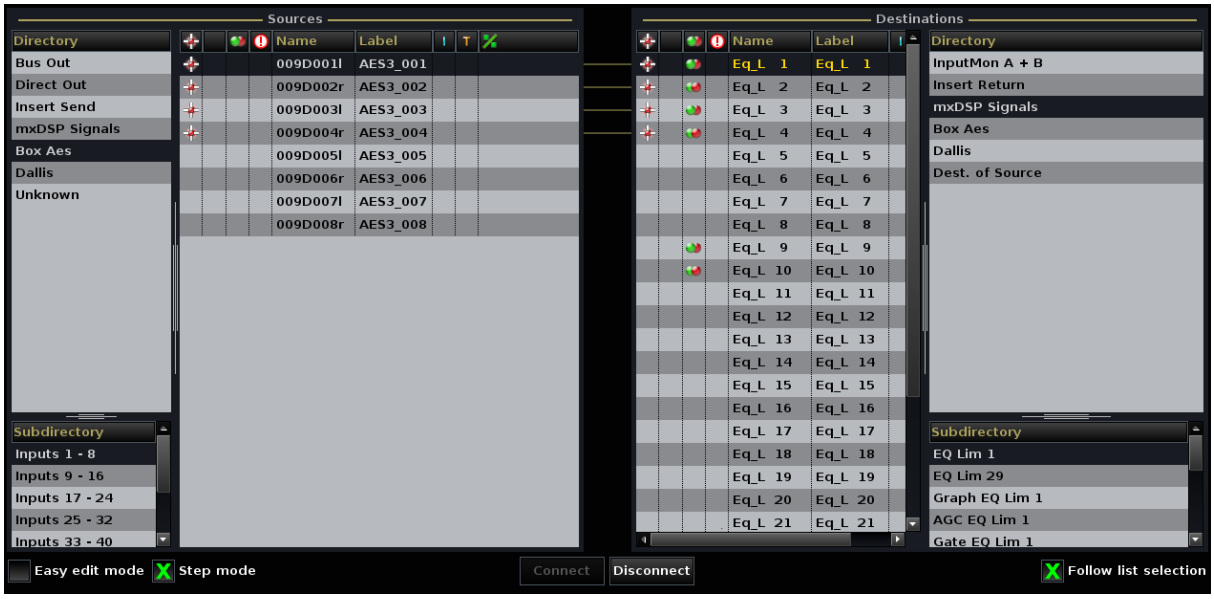
Each DSP Chain can be routed from any source and to one or more destinations using either the **Signal List** or **mx Routing** displays. See Pages 46 and 62 respectively.

The exact location of the mxDSP signals depends on the configuration of your system's Signal List. In our example, **mxDSP Signals** appear within the main Directories.

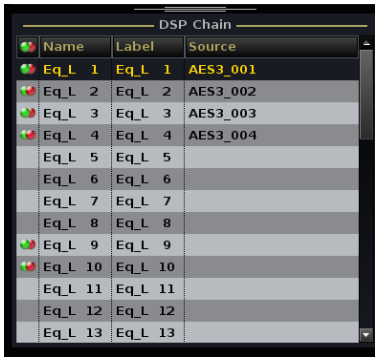
To route a source to a DSP chain:

1. Select your source in the usual manner.
2. Then select the destination:

- Select **mxDSP Signals** from the **Directory** list.
- Select the DSP Chain type from the Subdirectories – e.g. **EQ Lim 1**.
- Select the DSP Chain from the Destinations list – e.g. **EQ_L 1**:



3. Press **CONNECT** to make the route.
4. Return to the **mxDSP Settings** display, you will see the Label of the assigned source beside the DSP Chain.



Stereo Configuration

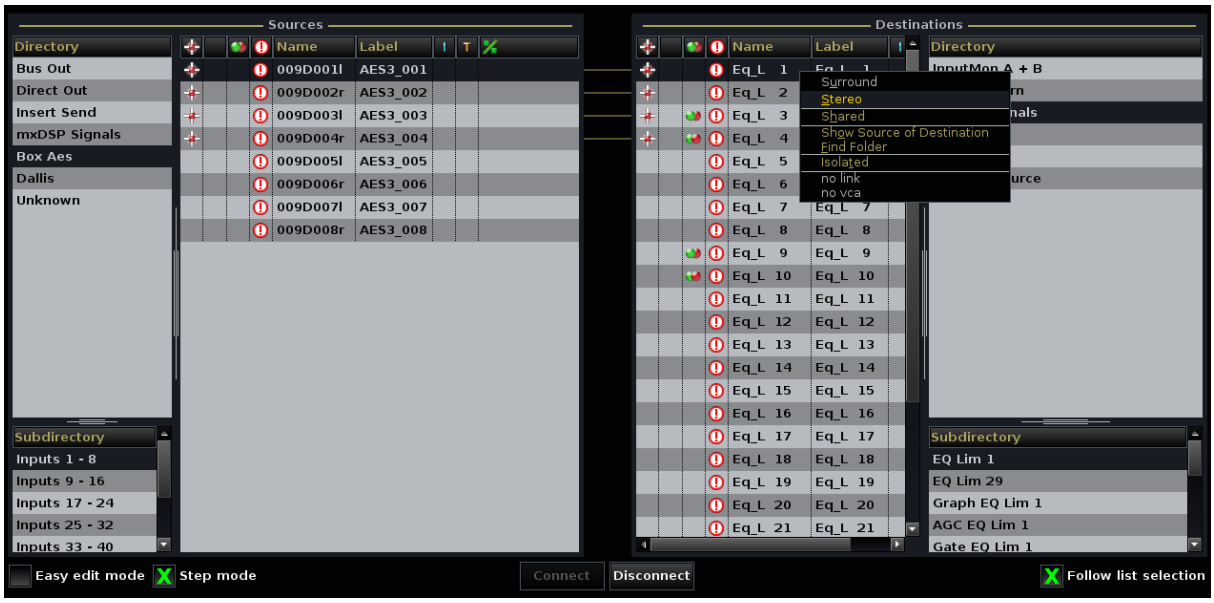
An odd/even pair of DSP Chains can be configured for stereo operation.

Note that surround configuration is not supported.

Note

This operation is performed from the **Signal List** display:

1. Select the DSP chain you wish to make stereo and right-click:



2. Select the **Stereo** option.

Green/red circles appear beside the DSP chains to indicate that they are now linked for stereo.

3. Return to the **mxDSP Settings** display and you will see the stereo status indicated beside the DSP Chain and within the main **Settings** area:

Saving and Loading mxDSP Settings

The settings for each mxDSP card are stored within snapshots and productions, so remember to update a production to save any changes.


Tip

You can isolate all mxDSP signals so that they will not be affected by a snapshot load from the **System Settings** or **Snapshots** display, see Page 194 or 135.

The Downmix Display

The **Downmix** display provides on-screen control of any downmix matrices supported by your system. For example, if you have a 5.1 surround to stereo downmix, then you may adjust how much level from the front LR, Centre, LFE and rear LR channels feed the stereo output.

Note

Note that to support downmix matrices, the required DSP resources must be fitted to your system's hardware and configured using AdminHD. Please refer to the mc^{2}66 Technical Manual for details.

Controlling Downmix Parameters

1. Select **Page** -> **Matrix**-> **Downmix** to view this display:

In the top half of the display you will see a list of all available downmixes for your system. In our example, we have one downmix named **5.1 Mains**.

The downmix matrices, and their names, are defined by the console configuration, which can be modified using AdminHD. Please see the Nova73 Technical Manual for details.

2. Enter a name in the **Label** field to apply a user name to the downmix.

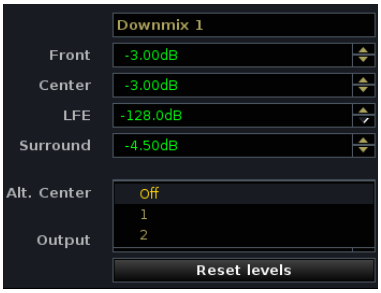
*User labels are inherited into the **Signal List** and other routing displays.*

3. Select a downmix from the list to view its parameters.

Our example shows an 8 x 8 matrix which is configured to produce 4 stereo outputs (Downmix 1 to 4) from a 5.1 input:

4. You can adjust the following parameters for Downmix 1 to 4:

- **Front** level – from inputs 1 (Left) and 2 (Right).
- **Center** level – from input 3 (Centre), unless **Alt Center** is active, see below.
- **LFE** level – from input 4 (LFE).
- **Surround** level – from inputs 5 (Surround Left) and 6 (Surround Right).
- **Alt Center** – use this option to replace the Center input with an alternate centre channel:
    - **Off** = no alternate centre is used. Input 3 feeds the Centre channel.
    - **1** = input 7 replaces input 3.
    - **2** – input 8 replaces input 3.

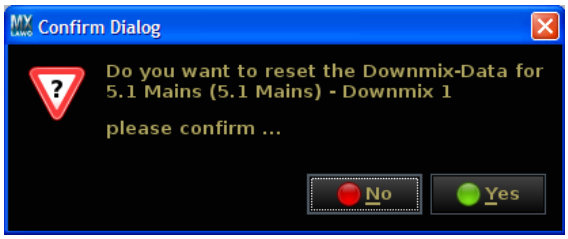


You can use this option to generate a clean feed or alternate language downmix. For example, Downmix 1 might be your main programme, Downmix 2 the clean feed, and Downmix 3 an alternate language version.

- **Output** level – adjusts the output level for the stereo downmix.

5. Select **Reset levels** to reset the downmix to its default parameters:

You will be presented with a confirmation pop-up:



6. Select **Yes** to confirm.

All parameters are reset to the default values stored in the console's configuration.

Saving and Loading Downmix Settings

The settings for each Downmix matrix are stored within snapshots and productions, so remember to update a production to save any changes.

Tip

By default each matrix is isolated so that it will not be affected by a snapshot load. You can adjust this by selecting the **Isolate** box beside the matrix name in the **Downmix** display:

Chapter 7: Productions and Snapshots

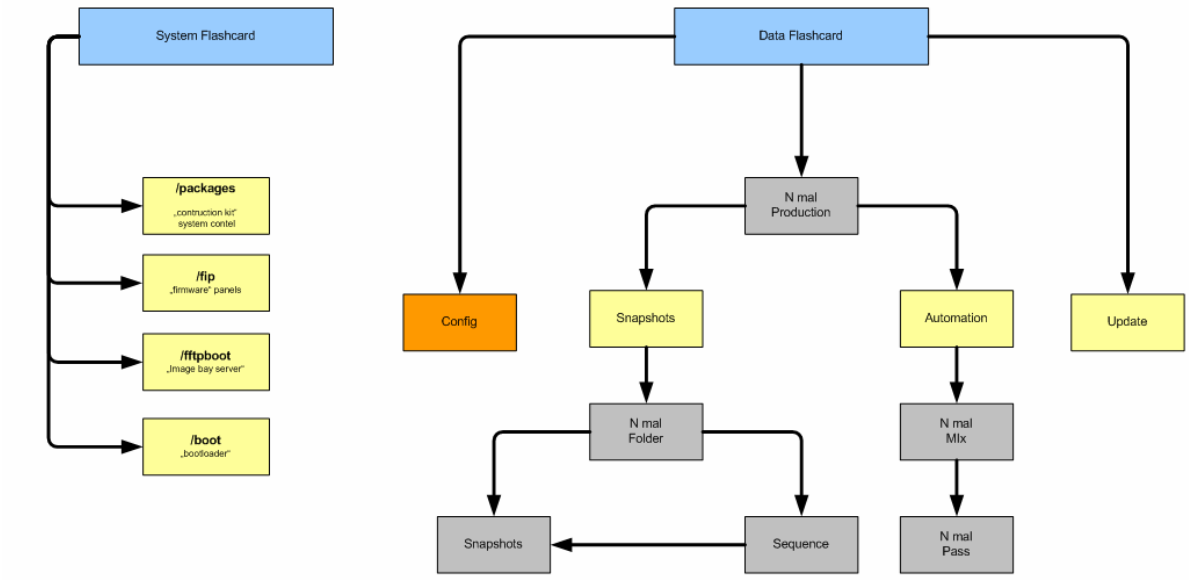
Introduction

This chapter explains the operation of the **Productions List** and **Snapshots** displays.

Productions form the top level for user data storage and store *all* the settings required for a production or type of job. Productions store low level settings such as SRC settings and **System Settings** display options, in addition to snapshots.

Within each production, folders may be created to store multiple snapshots. Snapshots provide the ability to recall different setups during a show.

What's Stored in a Production?



Each production holds multiple folders to store snapshots and sequences. (Automation is not relevant to Nova73).

In addition, the production snapshot stores everything included in a snapshot plus the following low level user settings:

- Input and Output sample rate converter settings
- **System Settings** display options.

This means that you can store the current settings of the system simply by updating or creating a new production. You only need to create folders and snapshots if you wish to store and recall different setups within the same production.

As productions store and recall low level settings which may cause a brief interruption to audio, they should not be loaded during a live show. Instead, use snapshots to recall settings while live on-air.

What's Stored in a Snapshot?

The system offers two types of snapshot:

Full Snapshots

These are one-shot memories which may be used to recall settings during a live show. Every full snapshot stores *all* of the following settings:

- **CONN**: signal routing connections for all sources and destinations using the **Signal List** display.
- **I/O**: remote mic preamp and router I/O settings such as router level and word length.
- **LABEL**: User Labels; the source and destination labels as made from the **Signal List** display.
- **MXDSP**: all settings for the optional mxDSP cards.

Partial Snapshots

A "partial snapshot" stores selected routing crosspoints only. For example, you could use a partial snapshot to route tone to all transmission feeds for a line check without affecting other aspects of the mix.

In this chapter we will deal with full snapshots. For more details on partial snapshots, see Page 73.

Using Productions and Snapshots

You should create a production for each client or type of work. For example, a production named 'Olympic Games' may store the low level settings (reference levels, and SRC settings) for a series of broadcasts. Within this production, you may then create a number of folders to store and recall snapshots to bring back different signal routing for each show transmission.


Tip

Remember to save settings regularly, either by saving a new production or updating the current one. Even if you have saved several snapshots, they are not stored until you update the production.

The Productions Display

Productions are managed from the **Production** display.

1. Select **Page** -> **Production** -> **Production List** to view this display:

The display is divided into two halves:

- **Productions** – lists all the productions stored on the Control System. This is where you can load, save, update rename, protect or delete a production.
- **Backups** – lists any backup productions stored in temporary memory. Backup productions provide a level of undo in case you update or delete your production accidentally, see Page 127 for details.

Note that the active production is shown in the title bar of the display – in our example, **Olympic Games**. You will *always* see the active production name across all displays.

Note

To the right of each production name you will see the date and time when the production was last saved or updated, and the size of the production file. You may also see a padlock icon indicating that the production is protected.

Loading a Production

You can load stored settings at any time by loading a production.

Note

Note that when you load a production you will lose the current settings of the system, so make sure that you have saved these settings if you wish to retrieve them at a later date.

If you do make a mistake, don't panic! Every time a production is loaded, a backup of the current settings is created in the **Backups** list. See Page 127 for more details.

1. Select the production you wish to load from **Productions** list (e.g. **Football**).

The selected production is highlighted in black:

2. Right-click and select **LOAD** to complete the operation.

*The system status will update, and the title bar shows that **Football** is now the active production:*

For additional confirmation, watch the status bar and you will see a **loading…** message indicating that production data is being loaded.

Saving a New Production

You can save the current settings of the Nova73 system, including any snapshot folders, into a new production using the **SAVE** function.

If you want to clear out any existing snapshot folders in the memory, then create a new production using the **NEW** function, see Page 124.

Tip

To save a new production:

1. Select the **SAVE** button to save the current settings into a new production:

*A new entry appears in the **Productions** list with a default name (e.g. **production 0012**).*

This entry is time and date stamped. The new production automatically becomes the active production as indicated in the title bar.

For additional confirmation, watch the status bar and you will see a **saving…** message indicating that production data is being saved.

Renaming a Production

To rename the production:

1. Click on the production name from the **Productions** list:

Tip

Click once to select all the existing text (white) or twice (black cursor) to modify the existing name.

2. Type in a new name.
3. Press Enter on the keyboard to confirm the new name (e.g. **Formula One**):

4. Or, if you make a mistake or want to exit the naming mode without making any changes, press the **Esc** button on the keyboard.

Updating a Production

Having saved your settings in a new production, and renamed it, you should continue to save your settings regularly as you work by updating the active production.

Note

Note that updating overwrites the settings on the Control System. Therefore, make sure that you have selected the correct production to update. To avoid accidental updates to important productions, always protect them using the Protect function, see Page 123.

If you do make a mistake, don't panic! Every time a production is updated, a backup of the current system settings is created in the **Backups** list. See Page 127 for more details.

1. Select the production you wish to update from the **Productions** list.

*The selected production is highlighted in black (e.g. **Formula One**):*

Note that you can choose to update any production, not just the active one, so take care NOT to overwrite someone else's settings!

2. Now right-click and choose **Update** from the drop-down menu options.
3. Select **OK** to confirm the Update.

The selected production is overwritten with the current settings as indicated by the new date and time stamp.

For additional confirmation, watch the status bar and you will see a red **saving…** message indicating that the production data is being saved.

Remember that a protected production cannot be updated.

New Production

The **NEW** function creates a new production with an empty set of snapshot folders. Use this before saving a production when you wish to clear out any existing snapshots from the current memory.

To create a new production:

1. Select the **NEW** button.

A new empty production is created – this is indicated by the empty active production name in the title bar at the top of the display:

If you now change displays to view **Snapshots** you will find that all folders have been emptied from the memory.

2. To save the current settings into the new empty production and give it a name, right-click and select **UPDATE**.

*All current settings are saved into the production which is given a default name (e.g. **production 0011**):*

The production is time and date stamped and may be renamed or protected in the usual manner.

Deleting a Production

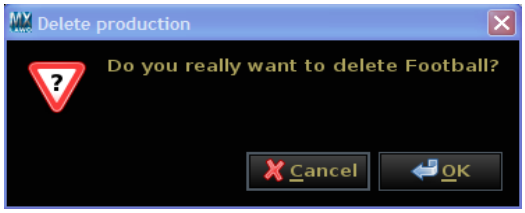
Deleting a production removes the production and all of its contents – snapshots - from the Control System.

To prevent accidental deletion, protected productions may not be deleted.

1. Select the production you wish to delete from the **Productions** list (e.g. **Football**).

The selected production is highlighted in black:

2. Right-click and choose **Delete** from the drop-down menu options.
3. Select **OK** to confirm the Delete.



Note that a protected production cannot be deleted.

Protecting a Production

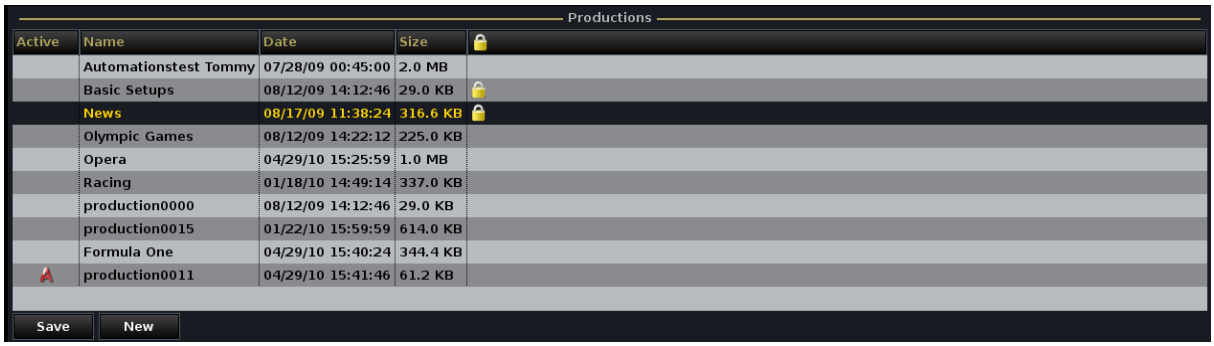
Tip

A protected production cannot be updated or deleted. Always protect important productions as this will prevent accidental changes from using **UPDATE** or **DELETE**.

1. Select the production you wish to protect from the **Productions** list (e.g. **News**).

The selected production is highlighted in black.

2. Right-click and select **PROTECT**:



A padlock icon appears to show that the production is now protected.

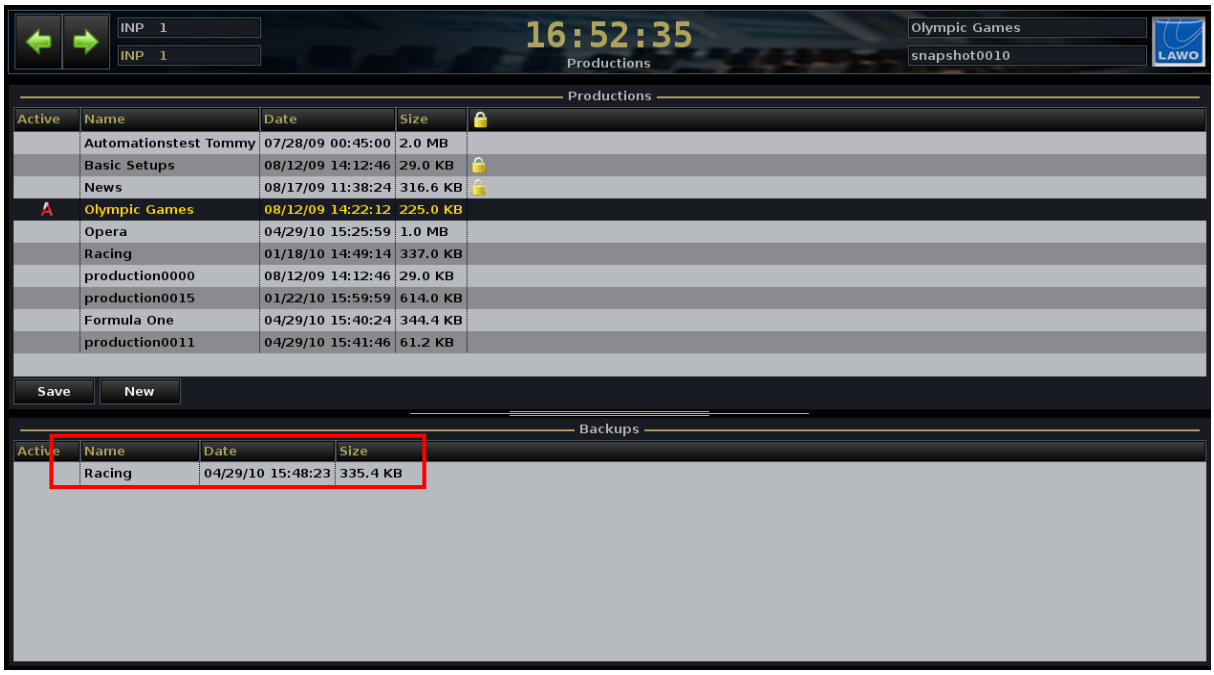
Importing and Exporting Productions

A complete production, or elements of a production (such as a folder or snapshot) can be transferred between the mxGUI computer and an online Nova73 system using the **File Transfer** display. See Page 34 for details.

Backup Productions

When a production is loaded, updated, deleted or cleared (using **NEW** production), a temporary backup of the current settings is created in the backup productions memory. Five backup productions are stored providing five levels of undo if you perform an operation accidentally without first saving your settings.

For example, whilst setting up for **Racing**, the operator forgets to update the production. He/she decides to load a different production to check the settings for **Olympic Games**. In the background, the system automatically creates a backup production of **Racing**:



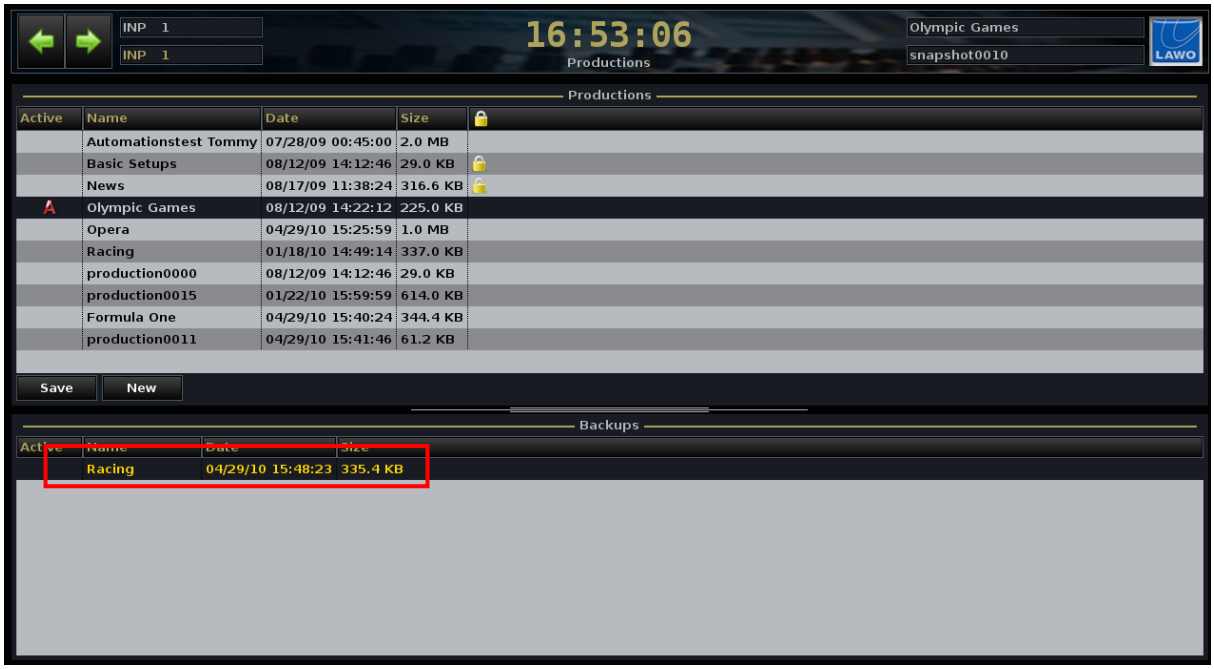
Note that the name of the backup production is taken from the active production, in our example **Racing**. However, the backup is not a copy of the active production but a backup of the settings before the load operation was performed. This means that the settings stored within the backup production are the settings which the operator forgot to save before changing. You can see this by the different time and date stamp date for the Backup called **Racing**.

The operator then loads back the production for **Racing** and realises their mistake.

To recover the unsaved settings:

1. Select the entry named **Racing** from the **Backups** list.

The backup production is highlighted in black.



2. Right-click and select **LOAD** to load the backup production.

The backup production settings are loaded.

3. To save these settings permanently, you must now use **SAVE** to save the settings in a new production with a new name, or **UPDATE** to update the original Racing production.

In our example, we have saved a new production and named it **Racing New**:

Warning

If you do not save or update the settings to a permanent production, then they may be lost forever. The backup productions memory is a first-in first-out memory holding a maximum of 5 backup productions.


Warning

Note a backup production is created each time a production is loaded, updated, deleted or when **NEW** production is used to clear any existing folders.


Note

For example, it may be used if you update a production with the wrong settings, or if you press **NEW** instead of **SAVE** and accidentally clear some snapshot folders by accident. To recover your settings, load the backup production with the same name as the active production which you accidentally updated or cleared. This will contain all the settings before you pressed **NEW** or **UPDATE**.

Folders

Folders are used to organise snapshots within a production. Each production may contain any number of folders, and within each folder you may store multiple snapshots.

For example, you may use folders to organise the snapshots required for different live broadcast events within a single production.

Note that the **BACKUP** Folder is a special folder used to store backup snapshots. This Folder cannot be deleted. See Page 141 for details.

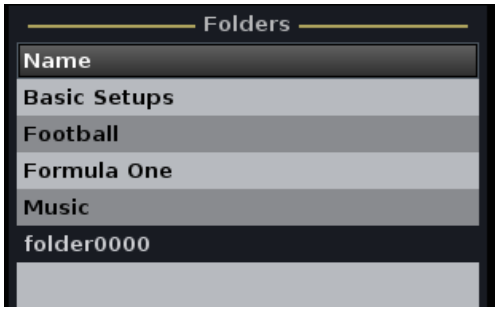
Creating a New Folder

You can create a new folder from the **Snapshots** display.

1. Select **Page** -> **Snapshots** -> **Snapshot Lists** to view this display:

2. Select **NEW** to create a new folder.

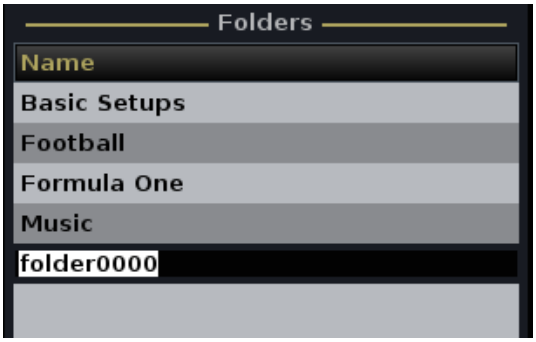
*A new folder appears in the **Folders** column with a default name (e.g. **Folder 0000**):*



Renaming a Folder

To rename the folder:

1. Select the folder name:



Click once to select all the existing text (white) or twice (black cursor) to modify the existing name.

2. Enter a new name from the keyboard.
3. When you have finished, press the Enter button on the keyboard to confirm the new name.
4. Or, if you make a mistake or want to exit the naming mode without making any changes, press the **Esc** button on the keyboard.

Tip

Deleting a Folder

To prevent accidental deletion of snapshots only empty folders may be deleted. Therefore, first delete any snapshots contained within the folder before attempting this operation.

1. Select the folder you wish to delete from the **Folders** list:
2. Right-click and select **DELETE**.

The folder is deleted. Note that only empty folders may be deleted.

Importing and Exporting Folders

A complete folder can be transferred between the mxGUI computer and an online Nova73 system using the **File Transfer** display. See Page 34 for details.

Snapshots

Snapshots provide the ability to store different setups within a singe production.


Note

Note that the system offers two types of snapshot:

- **Full snapshots** – one-shot memories which store all matrix settings (see Page 118).
- **Partial snapshots** – store selected routing crosspoints.

In this section we will be dealing with full snapshots. However, the same principles of load, save, delete, etc. may be applied to partial snapshots. For more details on partial snapshots, see Page 73.


Note

Snapshots are organised within Folders within a production. If you save or update snapshots, remember to also update your production to save the new folders and snapshots to the Control System.

The Snapshots Display

Snapshots are managed from the **Snapshots** display.

1. Select **Page** -> **Snapshots** -> **Snapshot Lists** to view this display.
2. Select a folder from the **Folders** list (e.g. **Music**).

*The **Snapshots** list displays all snapshots contained with the selected folder:*

When snapshots are first saved, they are given a default name which gives the snapshot a unique number. You may then rename the snapshots at any time.

The snapshot **type** indicates whether it is a full or partial snapshot, see Page 118.

Every snapshot also has a date and time stamp as shown in the **Date Time** column. The padlock icon column is used to identify any snapshots which have been write-protected. This prevents snapshots from being updated or deleted accidentally during operation. At the bottom of the display, the **Snapshot Memo** box may be used to make notes for a particular snapshot.

Remember that you will *always* see the name of the last snapshot saved or loaded in the title bar across all displays – in our example, **Act 1 Scene 2**.

Loading a Snapshot

1. Select a folder from the **Folders** list.
2. Then select a snapshot from the **Snapshots** list.

The selected snapshot is highlighted in black.

3. Right-click and select **LOAD** to complete the operation.

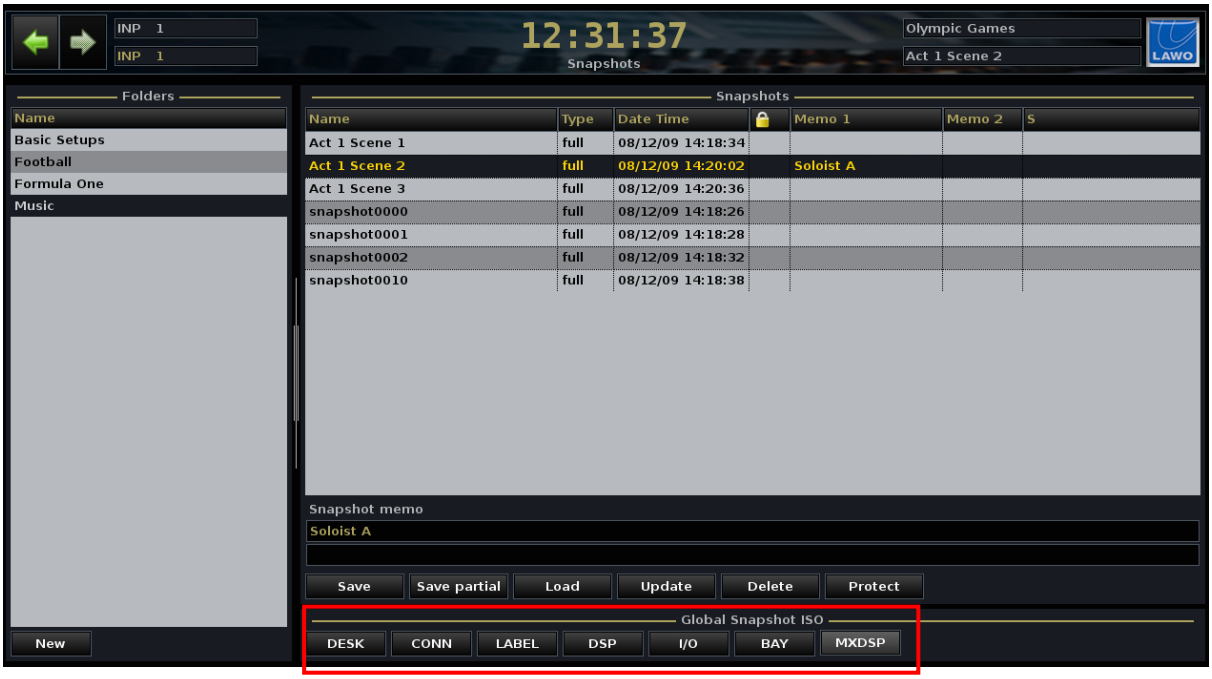
The system instantly updates to the loaded snapshot settings; the name of the loaded snapshot appears in the title bar of the display:

Isolating Sources and Destinations from a Snapshot Load

Note that you may isolate particular sources and destinations from a snapshot recall by selecting the **Isolate** function from the **Signal List** display. For example, you may wish to protect important signals. See Page 58 for details.

Global Snapshot ISO

In addition, the Global Snapshot buttons on the **Snapshots** display allow you to isolate different console elements from a snapshot recall:



Select these buttons before you load a snapshot to isolate the following elements:

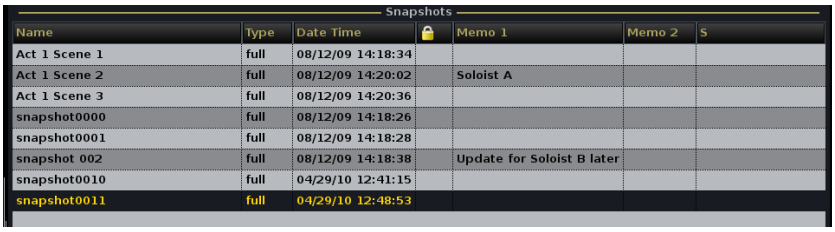
- **DESK**: not applicable to Nova73.
- **DSP**: not applicable to Nova73.
- **CONN**: signal routing connections for all sources and destinations using the **Signal List** display.
- **I/O**: remote mic preamp and router I/O settings such as router level and word length.
- **LABEL**: User Labels; the source and destination labels as made from the **Signal List** display.
- **BAY**: not applicable to Nova73.
- **MXDSP**: all settings for all mxDSP card signals.

Select the button or buttons for the elements you do *NOT* want to recall and then load the snapshot. Note that you may select all buttons except one to load only a single element, for example signal routing.

Saving a Snapshot

1. Select the folder you wish to save into on the left of the display.
2. Then focus on the **Snapshots** list on the right of the display.
3. Select the **SAVE** button to save all the current settings into a new snapshot (full snapshot).

*A new snapshot appears at the bottom of the list. It is given a default name (e.g. **snapshot0011**), and date and time stamped:*



Note that *all* settings are always saved into a snapshot regardless of **SNAP ISO** selections.

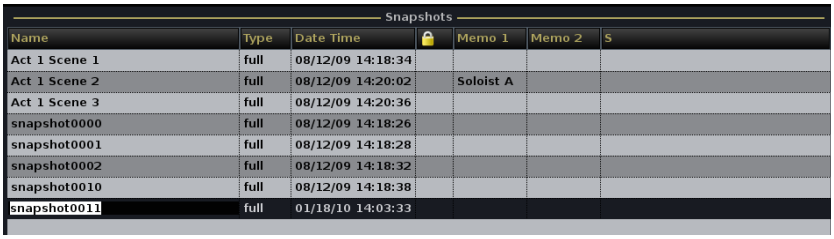
Note

Note that the **SAVE PARTIAL** button saves a partial snapshot. Partial snapshots store selected routing crosspoints which are prepared from the **Matrix** display. See Page 73 for more details on partial snapshots.

Renaming a Snapshot

To rename the snapshot:

1. Select the snapshot to rename from the **Snapshots** list using the trackball:

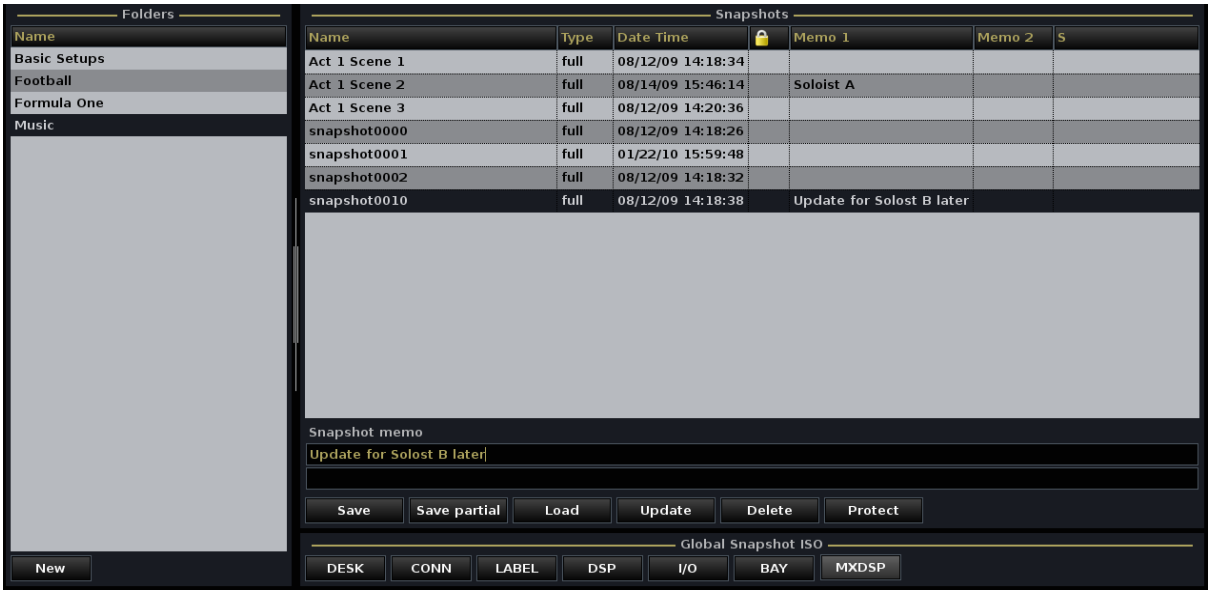


Click once to select all the existing text (white) or twice (black cursor) to modify the existing name.

2. Enter a new name from the keyboard.
3. When you have finished, press the Enter button on the keyboard to confirm the new name.
4. Or, if you make a mistake or want to exit the naming mode without making any changes, press the **Esc** button on the keyboard.

Adding a Memo

You may use the two **Snapshot Memo** lines to add memo information.



1. Select the snapshot and then select a line in the **Snapshot Memo** box.

A black cursor appears.

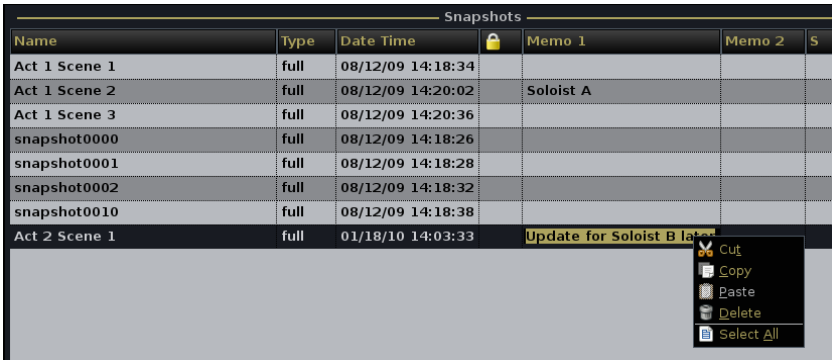
2. You may now type to enter your information from the keyboard.

The first and second memo lines appear beside the snapshot name in the **Snapshots** list. You can enter as many characters as you wish in each line; the list will automatically resize to fit.

If you cannot enter any memo text, check that the snapshot is not protected.


Tip

If you right-click the snapshot memo, then you can use the **Copy** and **Paste** options to copy memo text to another snapshot:



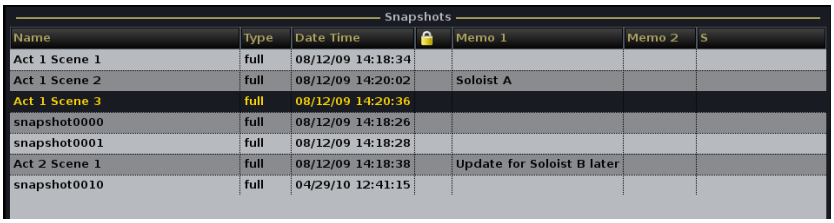
You can also drag and drop the Memo columns using the mouse to change their position on the display.

Updating an Existing Snapshot

Updating a snapshot overwrites the settings within the snapshot memory, so take care to select the correct snapshot when using this function.

1. Select the folder and snapshot you wish to update

The selected snapshot is highlighted in black:



2. Right-click and select **UPDATE** to update the snapshot with the current settings.

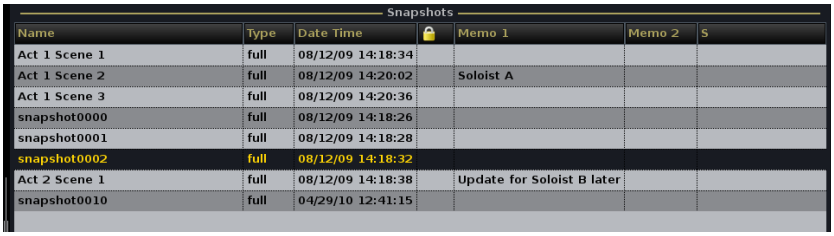
*Selecting **UPDATE** overwrites the selected snapshot as indicated by the new date and time stamp.*

Deleting a Snapshot

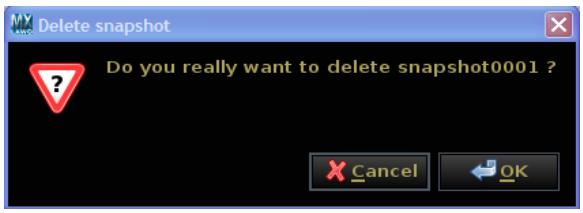
Deleting a snapshot removes the snapshot from the Control System, so take care to select the correct snapshot when using this function.

1. Select the folder and snapshot you wish to delete.

The selected snapshot is highlighted in black:



2. Right-click and select **DELETE**.
3. Select **OK** to confirm the operation:



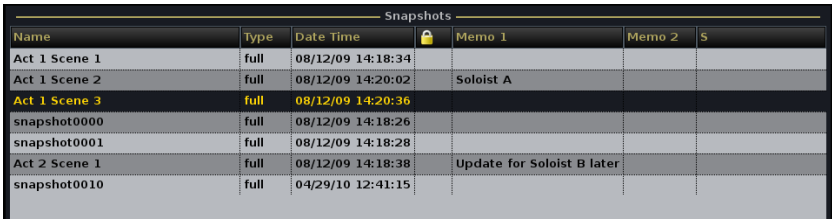
Protecting a Snapshot

Tip

A protected snapshot cannot be updated or deleted. Always protect important snapshots as this will prevent accidentally overwriting a snapshot using **UPDATE** or deleting the snapshot using **DELETE**.

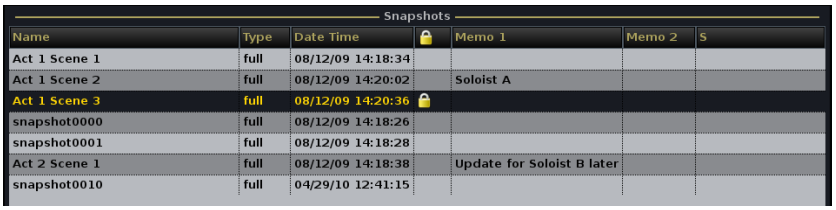
1. Select the snapshot you wish to protect.

The selected snapshot is highlighted in black:



2. Right-click and select **PROTECT**.

A padlock icon appears to show that the snapshot is now write protected:



Importing and Exporting Snapshots

Individual snapshots can be transferred between the mxGUI computer and an online Nova73 system using the **File Transfer** display. See Page 34 for details.

Backup Snapshots

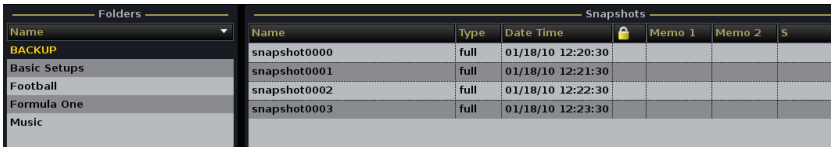
Backup snapshots may be used to provide levels of undo when running mxGUI.

When active, a backup snapshot is automatically stored by the system every n seconds. You can set how often the backup snapshots are stored from the **System Settings** display, see Page 189. For example, you may set the backup snapshot interval to every 5 minutes. You can also set how many backup snapshots are stored before the first is overwritten. For example, you might limit the number to 12 backup snapshots giving yourself a 1 hour 'undo' window.

All the backup snapshots for a particular production are stored within a special folder named 'BACKUP FOLDER'; this Folder cannot be deleted. However, you can rename the folder if you wish to keep the last set of backup snapshots. After the next backup snapshot interval, a new BACKUP FOLDER will be created.

To revert to the latest backup snapshot:

1. Select the **BACKUP** folder on the left of the display either using the trackball or navigation controls:



*The **Snapshots** list now shows all the backup snapshots, each one time and date stamped.*

2. Select the latest backup snapshot from the list.
3. Right-click and select **LOAD** to complete the operation.

The system updates to the backup snapshot settings.

If your mistake was made longer than 5 minutes ago, then you may need to load an earlier backup snapshot to undo your error.

Note

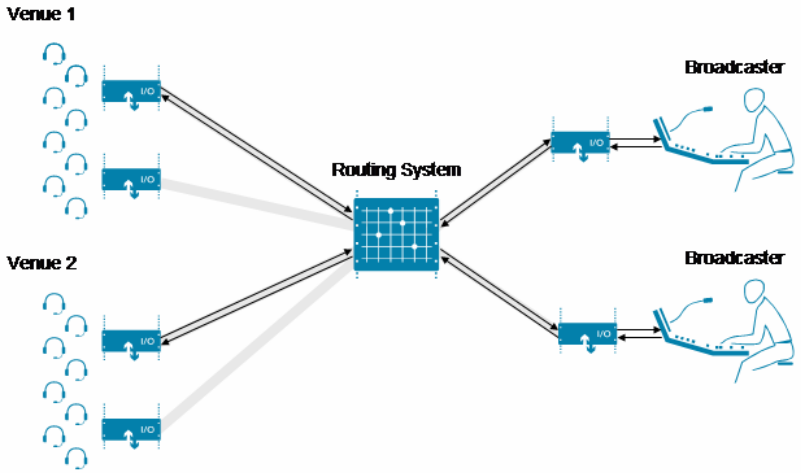
Note that the backup snapshot time interval and the number of backup snapshots are set from the **System Settings** display, see page 189 for details. To disable the backup snapshot system, set the number of backup snapshots to 0. You may wish to do this during a live show as each automatic save causes a brief interruption to the system.

Chapter 8: Signal Containers

Introduction

The **Signal Container** displays can be used to handle multi-channel connections within any HD Core system, including the **Nova73** routing matrix and **mc²** mixing consoles.

For example, at the Football World Cup a central Nova73 matrix may be used to handle the connections between each commentator location and the broadcaster's studio at the IBC. Each 'link' requires both incoming and outgoing connections such as the commentators microphone, earpiece feed, guide commentary, etc. And, the routing of these 'links' will vary day by day as different games are broadcast from different venue locations. mxGUI's signal containers provide an elegant way of managing these related connections:



Signal containers are configured and controlled from mxGUI. Note that the **Signal Container** displays are not available from the mc² console GUI.

A unique feature is that multi-user feedback is provided to and from the routing matrix. For example, a connection updated from one **mxGUI** will be visible to other **mxGUI** users allowing everyone connected to the same control system to access and view routing changes:

In addition, each **mxGUI** workstation may be configured with monitoring, metering and a talkback microphone so that users can line check individual sources and destinations.

Concepts

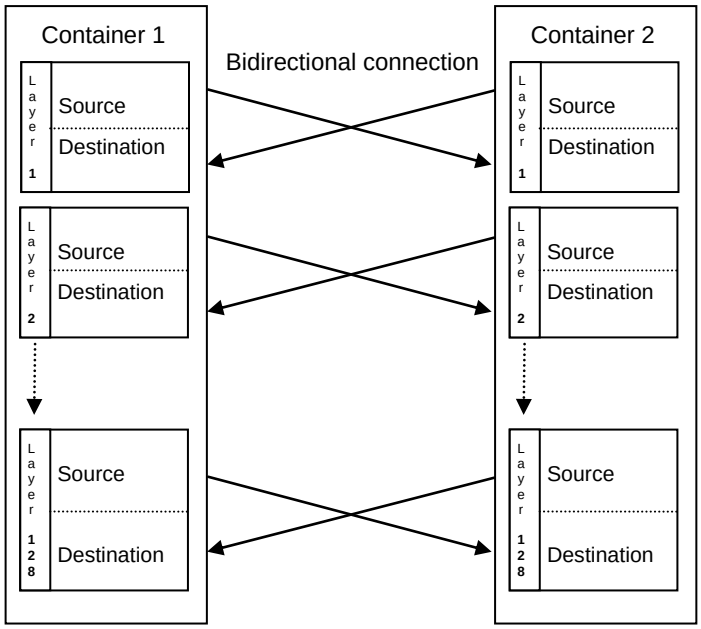
Containers

Signal containers are used to group signals, so that multi-channel crosspoint connections can be made in one operation.

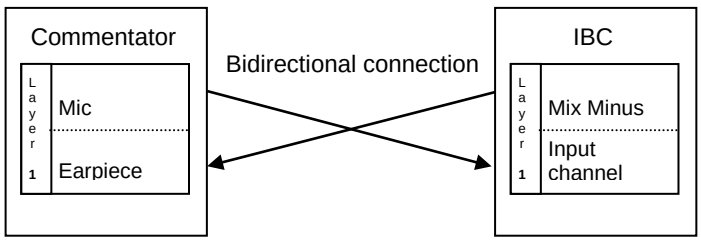
For example, in our Football World Cup model, we would create containers for each commentator location and for the corresponding feeds at the broadcaster's studio. Each container may hold a mixture of sources and destinations, such that the operator can make multiple connections simply by routing one container to another – e.g. "Commentator Munich" to "IBC".

Layers

Within each container, sources and destinations are organised into layers. When a connection is made, the corresponding layers are routed to each other:



Up to 128 layers may be defined, and each layer may hold a source and/or a destination. For example, the microphone of our commentator and his return feed could be designated as the source and destination within the same layer:



Source and Destination Containers

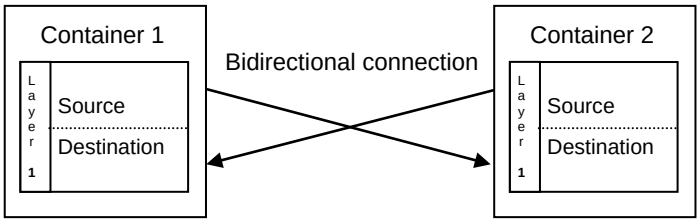
A container can hold both sources and destinations. However, you must define whether a container is itself a source or destination. Think of this as the group of signals which you are connecting to and from. In our example, the “Commentator Munich” is a source container, and the “IBC” is a destination container.

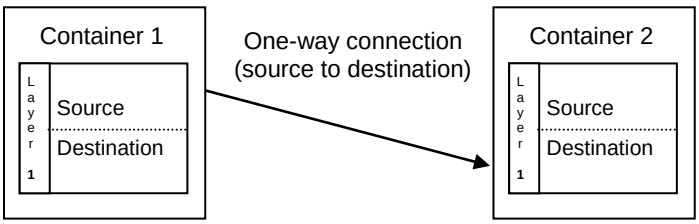
You can connect any source container to any destination container. However, you cannot connect containers of the same type – for example, a source container to another source container.

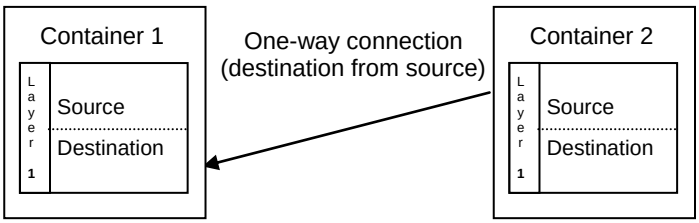
Connection Types

When you connect a source and destination container, you can also choose one of three connection types:

- Bidirectional connection.
- One-way connection (sources to destinations)
- One-way connection (destinations from sources)



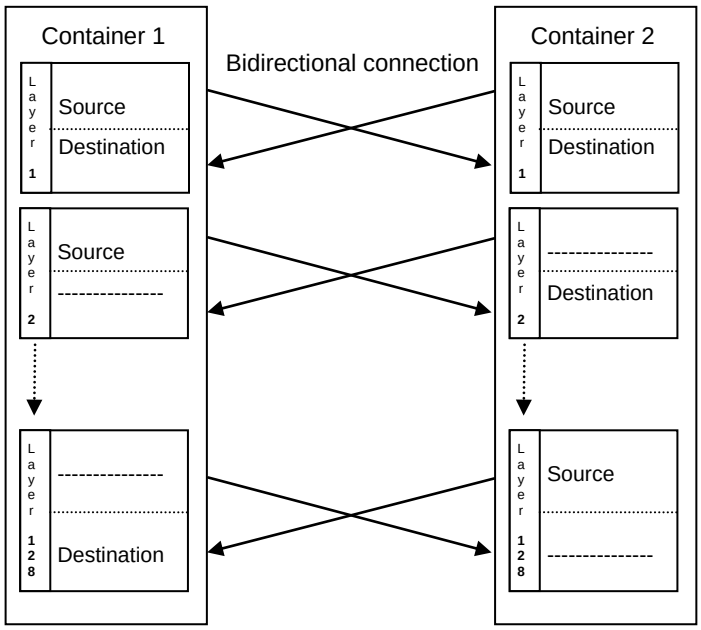




Note

Note that the connection type is applied to *ALL* layers within the container. You cannot apply a bidirectional connection to some layers and a one-way connection to others.

However, not all layers contain both a source and a destination. For example, if layer 2 of Container 1 has no destination, then the outcome will result in a one-way connection even if a bidirectional connection type is applied:



Pending and Active Connections

When you make a connection, first you prepare it and then make it active. This allows you to prepare several container connections in advance, and then action them all in one operation. It also provides a level of confirmation before routes are changed to safeguard against operator error.

Prepared connections are shown as “Pending”. They are actioned using the **Take** button, and once the routes are made, the connection state updates to “Active”:

The Signal Container Configuration

Signal containers are stored as part of the system configuration.

Online Operation

When running online, all data is being read from and stored to the Nova73's Control System.

If a number of mxGUI computers are connected to the same control system, then changes made by one user will update the configuration and be broadcast to other users. This enables full control of the signal container configuration from any network location.

Offline Operation

When running offline all data is stored on the local mxGUI control system.

In order to prepare signal containers offline, it is important that the configuration stored on the Local Control System matches that of the final Nova73 system.

The best way to achieve this is to import the configuration from the system you are going to work on. Once imported, you can be sure that the containers you create will load in full on the Nova73 system.

For a fail safe approach these are the steps you should follow:

- Transfer the Nova73 configuration to the mxGUI Shared Folder.
- Change the configuration of the Local Control System.

This ensures that the configuration data running on mxGUI matches that of the actual Nova73 system. You will need to cold start mxGUI for the new configuration to take affect.

- Prepare the new settings offline and save any changes.
- Transfer the configuration back to the Nova73.
- Cold start the Nova73 control system.

This is a similar procedure to preparing a production offline, see Page 38.

Local Options

Although the signal container configuration is stored on the control system, there are a number of local options which allow mxGUI to be customised for each user. Please contact your local Lawo representative or email service@Lawo.de for more information. The main options include:

Signal Parameter Control

Each **mxGUI** workstation may be configured with monitoring, metering and a talkback feed so that users can line check individual sources and destinations.

The access to this option, and the audio sources and/or destinations for the monitoring, metering and talkback must be configured within local configuration files.

Once configured, each operator can monitor any individual signal and send talkback to any destination. They can also adjust the level (the digital I/O matrix gain) of any signal.

Scopes

A scope can be used to filter the container groups accessible from each **mxGUI** workstation. This enables the workstation to be customised for its application.

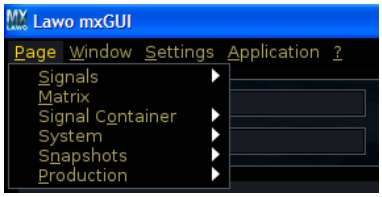
Using our World Cup Football mode, a scope could be used so that a workstation located in Venue 1 can only see and edit container definitions and connections between Venue 1 and the IBC. In addition, a number of different scopes may be defined within the IBC workstation so that the user can filter out unwanted venues for a particular transmission.

Once configured, users can change between the scopes from the Scope menu. See Page 185 for more details.

Suppressed Pages

To customise each workstation for different applications, certain features of the programme may be disabled by suppressing pages within the GUI. As a result you may find that you do not have access to all the features or pages covered in this user guide. For more details, please contact your system administrator.

The Signal Container Displays



Three displays are available from the **Page** menu:

- **Signal Container Configuration** – defines source and destination containers from signals within the routing matrix.
- **Signal Container Live** – view and make connections between source and destination containers.
- **Signal Container Presets** – defines presets which can be used to save and recall groups of container connections.

At the top of each display, a drop-down menu provides access to **Container scope** settings. A scope can be used to filter the container groups accessible from each mxGUI workstation. This enables the workstation to be customised for its application.

Tip

Within each display, you can resize the operating areas by clicking and dragging on the grey separator bars. Some areas may be larger than the available window space. If this is the case, then use the left/right or up/down scroll bars to view all the information.

In addition, two pop-up windows can be opened from the **Window** menu:

- **Signal Container Parameters** – access to monitoring, level control and talkback for each signal assigned to the selected source and destination container.
- **Signal Container Presets List** – lists all presets defined within the **Presets** display.

These pop-up windows can be positioned anywhere, resized or minimised when not needed. This allows them to be opened within any mxGUI display.

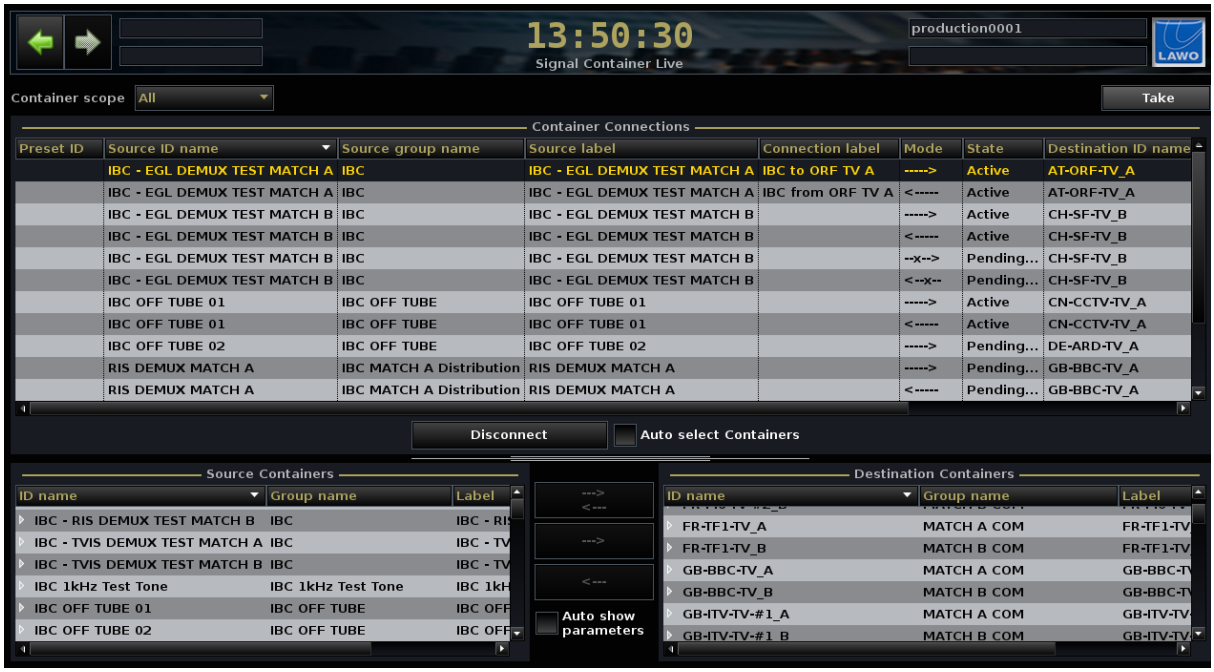
The Signal Container Configuration Display

The **Configuration** display contains four areas which are used to define source and destination containers:

- **Container List** – a list of all signal containers defined within the configuration.
- **Container Details** – the properties of the selected container.
- **Source Signals/Destination Signals** – the available router signals. Any of these signals may be assigned to a container layer. This list is determined by the Signal List configuration (defined by AdminHD).
- **Contained Sources/Container Destinations** – the sources and destinations which have been assigned to each layer of the selected container.

The Signal Container Live Display

The **Live** display is used to make connections between source and destination containers.



- **Container Connections** – a list of all the container connections made by mxGUI. Each connection may be either bidirectional or one-way, and its state will be either **Active** (the connection is live within the router) or **Pending**.
- **Source Containers/Destination Containers** – the available source and destination containers as defined within the **Configuration** display.

Connections are prepared by selecting a source and destination container, and then clicking on one of the Connection Type Buttons in the middle of the display – the connection state is shown as **Pending**.

You may prepare a number of connections and disconnections by adding each one to the **Container Connections** list.

To action the pending connections, click on the **Take** button at the top right of the display – the connection states update to **Active**.

The Signal Container Presets Display

In order to save and recall groups of container connections, a third display may be used to define presets. For example, a preset could store all the container connections you require to transmit a particular programme or configure a particular setup.

The **Presets** display is divided into four main areas:

- **Preset List** – a list of all presets defined within the configuration.
- **Preset Details** – the properties of the selected preset.
- **Connections** – a list of the connections stored within the selected preset.
- **Source Containers/Destination Containers** – the available source and destination containers.

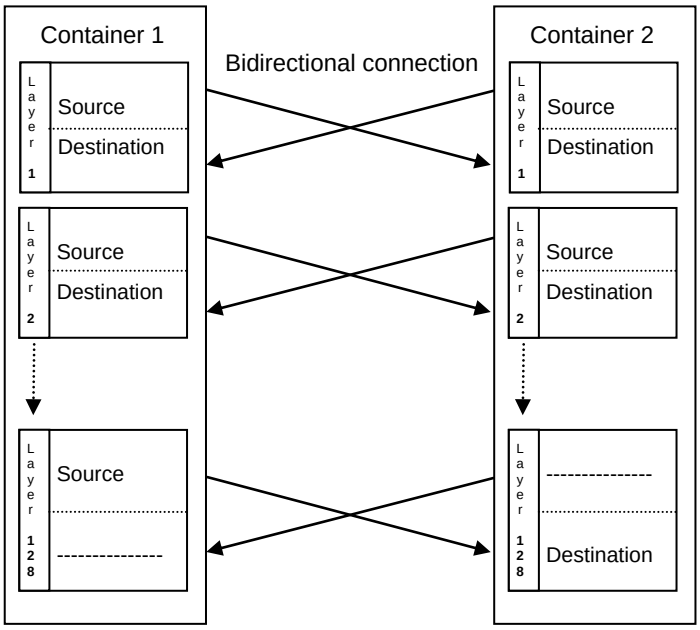
You can add connections into a preset by preparing the connection or disconnection as you would on the **Live** display, and then saving the preset.

Signal Container Configuration

This section deals with the **Signal Container Configuration display** in more detail:

The **Configuration** display is used to define the source and destination containers. Each container is given a unique ID name and designated to be either a source or destination container. Signals may then be added to each container layer from the Source and Destination Signal lists.

Remember that when a connection between containers is made, the corresponding source and destination layers will be routed to each other:



Using our World Cup Football model we are going to build a simple example, where we define a source container and a destination container. In our example, the source container represents a commentator position and the destination container represents the broadcaster station at the IBC.

Defining a New Signal Container

To define a new container:

1. Select "**Page** -> **Signal Container** -> **Signal Container Configuration**" to open the configuration display:

2. Click on the **New** button below the **Container List**.

*A new empty container is created with a default ID Name - in our example, **Container_1784**:*

The new container has 128 empty source and destination layers.

3. Edit the **Container Details** by clicking and typing within each field:

Source/Destination Container – select Source or Destination Container from the drop-down menu. In our example, the commentator position is a source container and the broadcaster station is a destination container.

ID Name – this is the reference name for the container. The ID Name *MUST* be unique. In our example, we will keep the default name of **Container_1784**.

Group Name – use this name to help identify related containers. For example, you could enter **Venue 1** for all containers relating to a particular location.

Note that the group name can be used to filter containers via the Scope functionality described on Page 185.

Label – this is the user label for the container. In our example, we will label the source container as **Comm Pos1** and the destination container as **Broadcaster1**.

Description – enter a description of the container here.

Info – enter any additional notes here.

Note

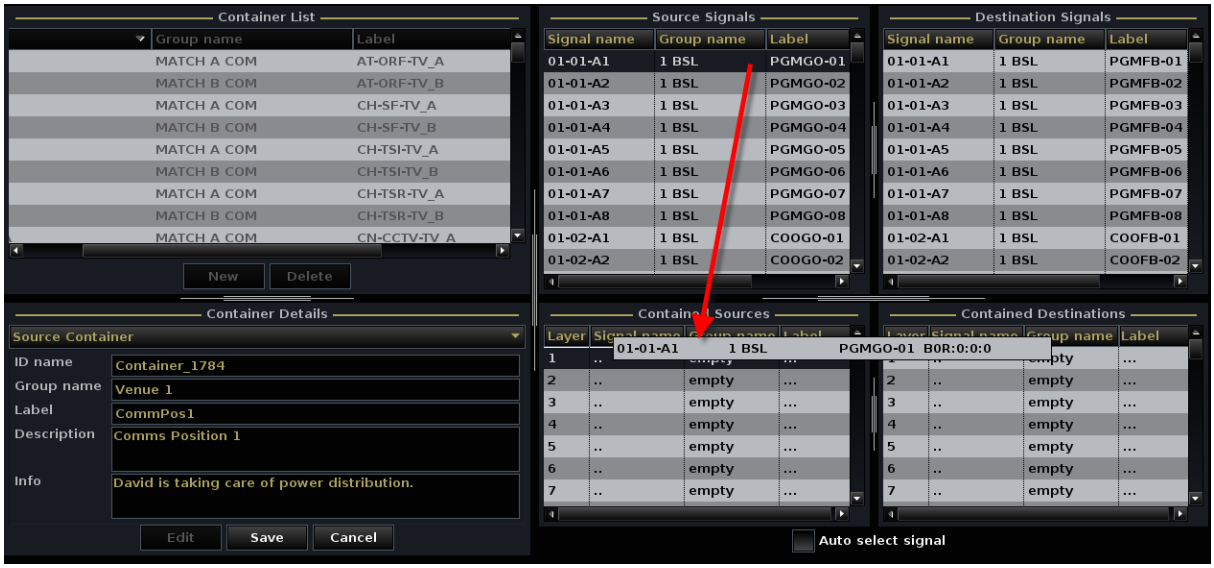
Note that you *MUST* enter a valid ID Name for each container. All other fields are optional. However we strongly recommend that you enter a Group Name and Label as these fields will help identify the containers on the **Live** and **Presets** displays.

When viewing containers within other pages, you can choose to sort them by ID name, Group name or Label.

4. Next, assign the individual source and destination signals to each layer of the container as follows:

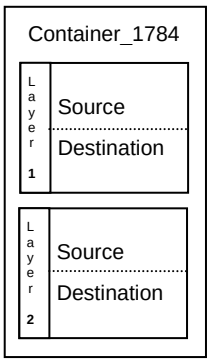
First click to select the source you wish to assign from the **Source Signals** list at the top of the display.

Then drag and drop the source onto a container layer within the **Contained Sources** area:



5. Repeat for each source and destination you wish to assign:

In our example, we have assigned sources and destinations to container layers 1 and 2. This will result in the container definition shown below:



Tip

You can drag and drop consecutive signals in one operation as follows:

- Click to select the first signal of the group.
- Hold down **SHIFT** on your keyboard and select the last signal of the group.

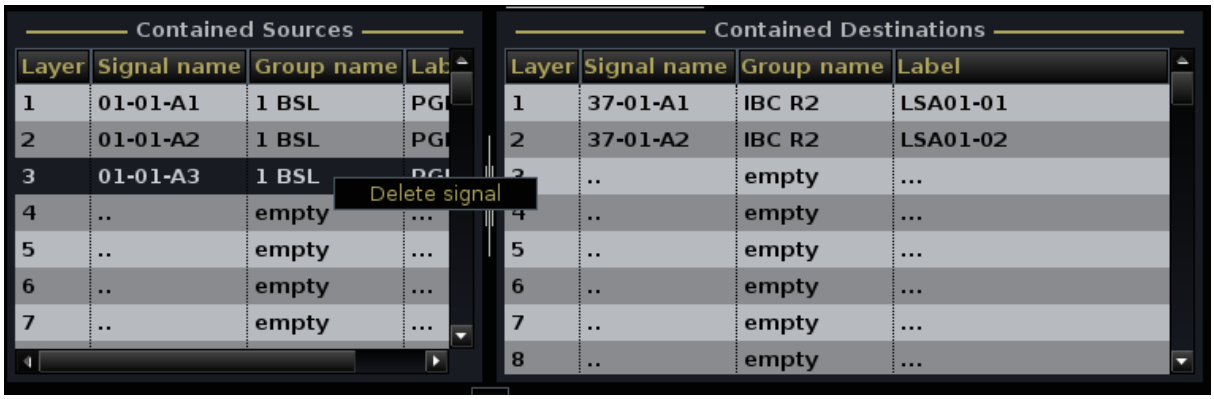
A group of signals is selected (highlighted in black).

- Release the **SHIFT** button but WITHOUT releasing the mouse button, drag the signals onto the first container layer:

- Then release the mouse button to drop the signals.

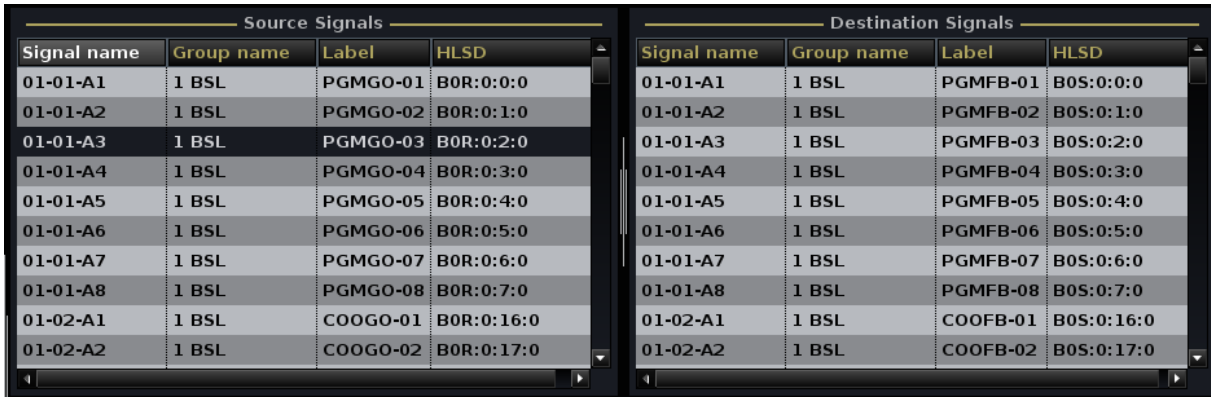
The selected signals are assigned to consecutive container layers.

6. If you wish to remove an assignment, then right-click on the container layer and select **Delete signal**:



7. If you wish to replace an assignment, then drag and drop the new signal on top of the existing assignment.

Note that each router signal is displayed with the following information:



Signal name - this is the system name, set by the AdminHD configuration, and normally used to describe the physical location.

Group name - this is the group name, set by AdminHD.

Label – this is the user label which can be modified from the **Signal List** display or from AdminHD's Connect Manager.

HLSD (High Level Signal Definition) – this is the system address set by AdminHD.

8. Once you have assigned your container layers, save the container definition by clicking on the **Save** button.

*The container is added to the **Container List** and the **Edit** mode cancels. In addition, you will see the text "New container successfully created" in the status bar at the bottom of the display:*

The container has now been saved to the system configuration.

If you are running online, then this container will be visible to all users. (Note that if a workstation has been configured with scopes, then the scope may filter out some containers. See Page 185 for details.)

9. Repeat to define each container for the configuration.

Each time you save the container definition, the container is added to the system configuration.

Interrogating a Signal Container

Below is a typical example of a “real world” configuration with multiple containers.

1. At any time, you can interrogate a container by selecting it from the **Container List** on the left of the display.

The Details and Layer definitions for the selected container are displayed accordingly:

Auto Select Signal

Tip

To help locate signals within a complex configuration, you can enable the **Auto select signal** option at the bottom of the display:

1. Enable the **Auto select signal** checkbox.
2. Select an assigned Layer from either the **Contained Sources** or **Contained Destinations** lists.

*The **Source Signals** or **Destination Signals** list automatically scrolls to reveal the selected source or destination.*

Editing a Signal Container

1. Select the container from the **Container List**.
2. Click on the **Edit** button.

*The **Edit** button turns dark grey showing that it is enabled:*

3. You can now update any of the details, or drag and drop new sources or destinations into the container layers.
4. To save your changes, click on the **Save** button. Or to cancel without saving, click on **Cancel**.

If the save is successful, then you will see the text "Container successfully edited" appear in the status bar.

Note that you cannot save a container with the same ID Name as an existing container. If you attempt to do so, then the save will fail and an error message will appear in the status bar. Make sure you enter a unique ID name and then save the container definition.


Note

Deleting a Signal Container

1. Select the container from the **Container List**.
2. Click on **Delete**.

A confirmation pop-up will ask you to confirm the delete.

Note that when you delete a container, it is deleted from the system configuration. If there are other users connected to the same control system, then the deletion will affect all users.


Note

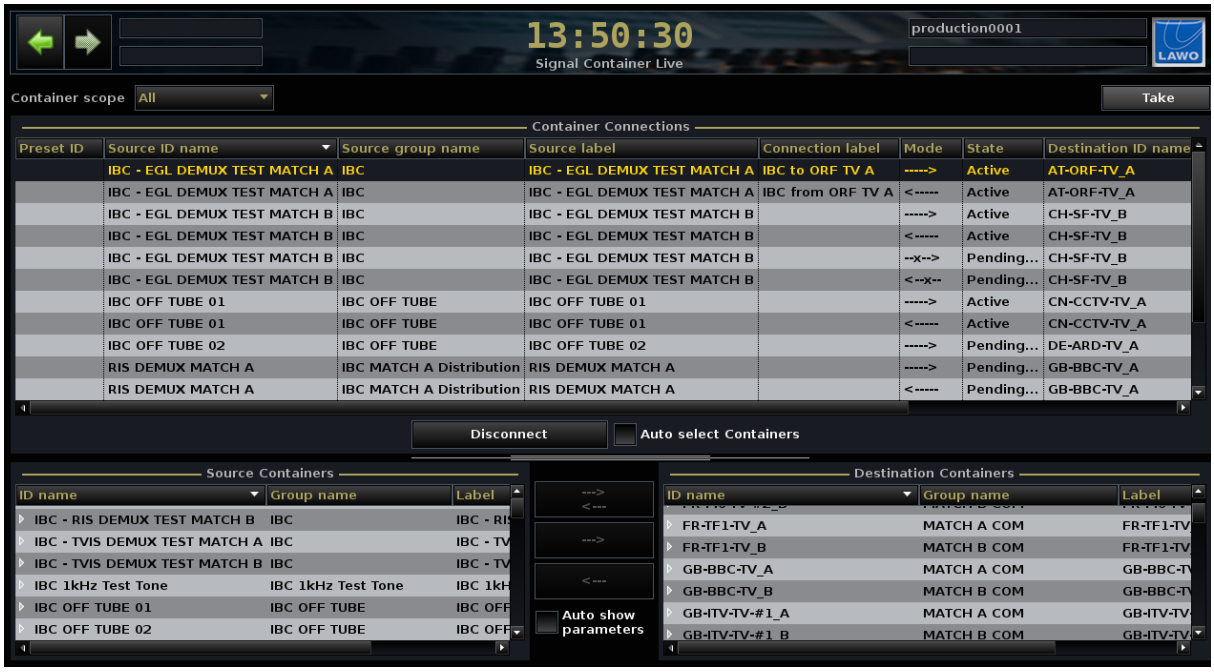
3. If you are sure you want to delete the selected container, click on **OK**.

The container definition is removed from the configuration.

Signal Container Live

The **Signal Container Live** display is used to make connections between source and destination containers. It can also be used to access the signal parameters sub window.

1. Select “Page -> Signal Container -> Signal Container Live” to open the display:



If you have already made some connections, they will be shown within the **Container Connections** area.

Note

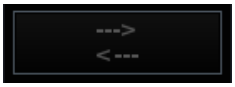
Note that this area *always* displays all active container connections made within the routing matrix. Therefore, any active container connections made by other mxGUI users will be displayed. And, if scope is enabled, the scope is not applied to the **Container Connections** list. See Page 185 for more details on scope.

Making a Connection

When using signal containers, first you prepare the connection and then make it active. This allows you to prepare several container connections in advance, and then action them all in one operation.

To prepare a new connection:

1. Select the source and the destination container you wish to connect from the lower half of the display.
2. Then select the type of connection you want to make by clicking on one of the Connection Type Buttons in the centre of the display. For our example, click on the bidirectional button.



*The connection is added to the **Connections List** in the upper half of the display:*

Note that a bidirectional connection is shown as two separate one-way connections. This allows you to remove one of the directions if you wish.

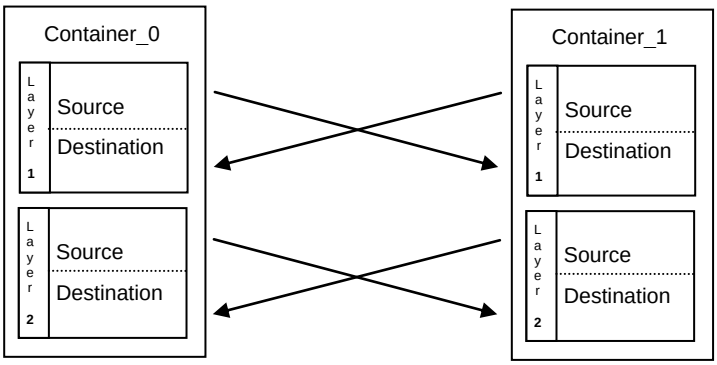
Note also that the state of the connections is shown as **Pending**. A Pending connection is prepared but is NOT yet live within the routing matrix.

To make the **Pending** connections active:

3. Click on the **Take** button at the top right of the display.

*The container connections are now made within the routing matrix, and the state updates to **Active**:*

If each container is defined with two source and two destination layers, then the diagram below illustrates the connections made:



Removing a Connection (Disconnect)

To remove a connection, first prepare the disconnect and then make it active as follows:

1. Select the connection(s) you wish to remove.

Use the **SHIFT** or **CTRL** buttons on your keyboard to select multiple connections.

Tip

2. Click on the **Disconnect** button.

*The disconnections are added to the **Connections List** as **Pending**:*

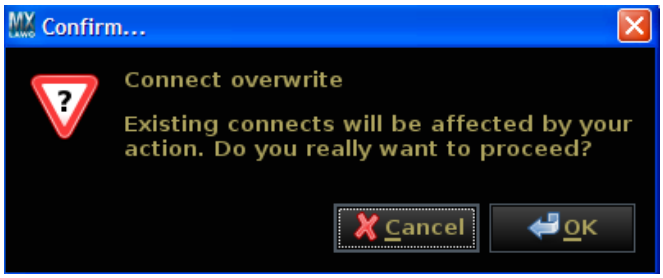
The original connections remain in the list as **Active**, as we have not yet actioned the disconnect within the matrix. The GUI displays disconnections as **----X--->**

Note

To complete the disconnection:

3. Click on the **Take** button at the top right of the display.

A confirmation pop-up appears warning that existing connects will be affected by the Take operation:



4. Click on **OK** to confirm.

*The pending disconnections are actioned within the routing matrix, and the **Active** connections are removed from the list.*

Note that you can only disconnect container connections if both sides of the connection are within your scope. See Page 185 for details on using scopes.

Note

Removing a Pending Connection

If there is pending connection (or disconnection) which you don't wish to make active, then you will need to remove it from the **Connection List** before you click on the **Take** button.

To remove a pending connection:

1. Select the connections (or disconnections) you wish to remove:

2. And click on the **Disconnect** button.

*The **Pending** connections (or disconnections) are removed from the **Container Connections** list.*

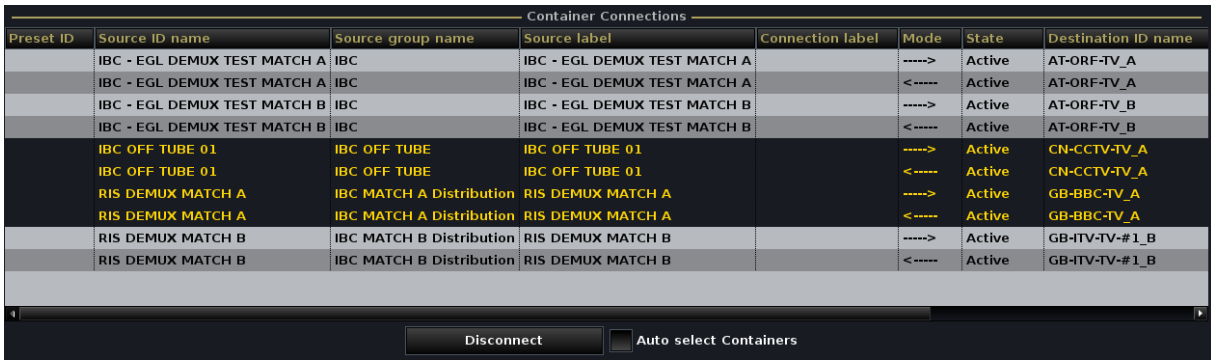
Selecting Multiple Connections

To help deal with multiple connections you can select a range as follows:

Tip

1. Click on the first connection.
2. Press and hold the **SHIFT** button on your keyboard.
3. Click on the last connection.

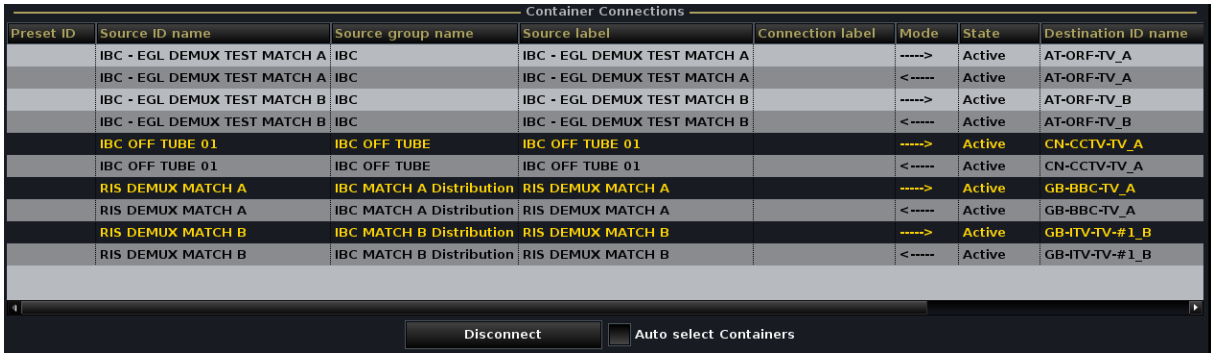
All connections within the range are selected:



To select non-consecutive connections:

1. Click on a connection.
2. Press and hold the **CTRL** button on your keyboard.
3. Click on the other connections you wish to select.

*All connections selected while **CTRL** is active are selected:*

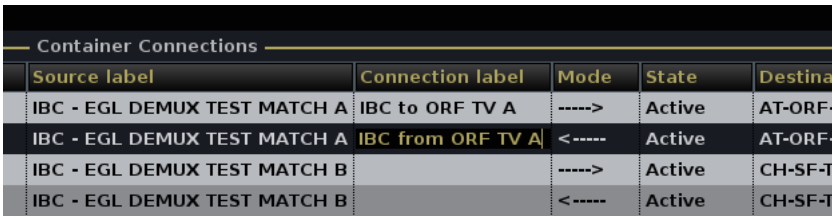


The Container Connections List

This list shows the following information for each connection:

- **Preset ID** – the **ID name** of a preset if a preset has been used to recall the connection.
- **Source ID name** – the **ID Name** of the source container as defined within the Container Details on the **Configuration** display.
- **Source group name** – the **Group Name** of the source container as defined on the **Configuration** display.
- **Source label** – the **Label** of the source container as defined on the **Configuration** display.
- **Connection label** – here you can enter a label to help identify connections:

1. Click on the connection anywhere within the Connection label field – a cursor will appear.
2. Type in the connection label:



Tip

If you right-click while editing the Connection label you will find a number of tools to help copy and paste the text elsewhere.

- **Mode** - this field describes the direction of the connection, and whether it is a connect or disconnect:
  - ---------> **Connect**
  - ----X---> **Disconnect**

- **State** – this field describes the state of each connection:
  - Active **– the connection is live within the router.**
  - Pending **– the connection or disconnection has been prepared but is not yet live.**
- **Destination ID name** – the **ID Name** of the destination container as defined on the **Configuration** display.
- **Destination group name** – the **Group Name** of the destination container as defined on the **Configuration** display.
- **Destination label** – the **Label** of the destination container as defined on the **Configuration** display.

The Source and Destination Containers List

Here you will see the **ID Name, Group Name** and **Label** for each container defined within the configuration:

Interrogating Signals

You can check which individual signals are assigned to a container as follows:

1. Click on the arrow beside the container **ID name**.

You will see two subdirectories containing source and destination signals.

If the container only holds source signals then the Destination signals subdirectory does not appear, and vice versa.

2. Click on the arrow to open each subdirectory.

A list of individual signals appears:

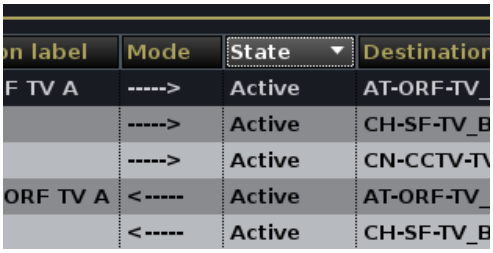
Sorting the Lists

Tip

You can reorder the Connections, Sources or Destinations lists by clicking on a field title.

1. For example, to sort the Connections list by direction, click on **Mode**.
2. Or, to separate Active and Pending connections, click on **State**.

An arrow beside the field title indicates the current selection:



Note

Note that if you sort the Source or Destination Container lists while the individual signal layers are visible, then the layers are not sorted and always appear in the order: layer 1, layer 2, etc:

Auto Select Containers

When this option is enabled, the selected source and destination container automatically follows the selected connection. For example:

1. Enable the Auto select containers checkbox.
2. Select a connection – in our example, **IBC** to **ORF TV A**.

The Source and Destination containers are automatically highlighted within the container lists:

Signal Parameters

In addition to making connections, the **Signal Container** displays can also be used to line check and adjust the matrix level of individual signals.

To make full use of this facility, a stereo monitor output, meter feed and talkback mic return must be configured within the local configuration files on your mxGUI workstation. You can find more information in the “mxGUI Workstation – Local Configuration” guide or contact your system administrator.

Once configured, each operator can monitor any individual signal and send talkback to any destination to help line check connections within a container. In addition, mxGUI can adjust the level (the digital I/O matrix gain) of any signal.

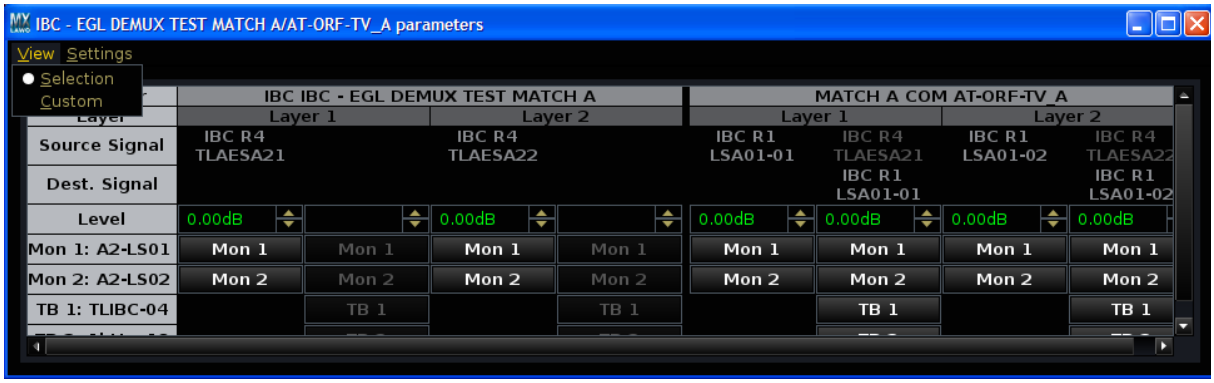
The Signal Parameters Window

To access the signal parameters for a connection:

1. Select either a connection, or a Source and Destination Container, from the **Signal Containers Live** display.
2. Right-click and select the **Show parameters** option.

A pop-up window appears.

3. At the top of the pop-up window make sure that the “**View** -> **Selection**” option is selected:



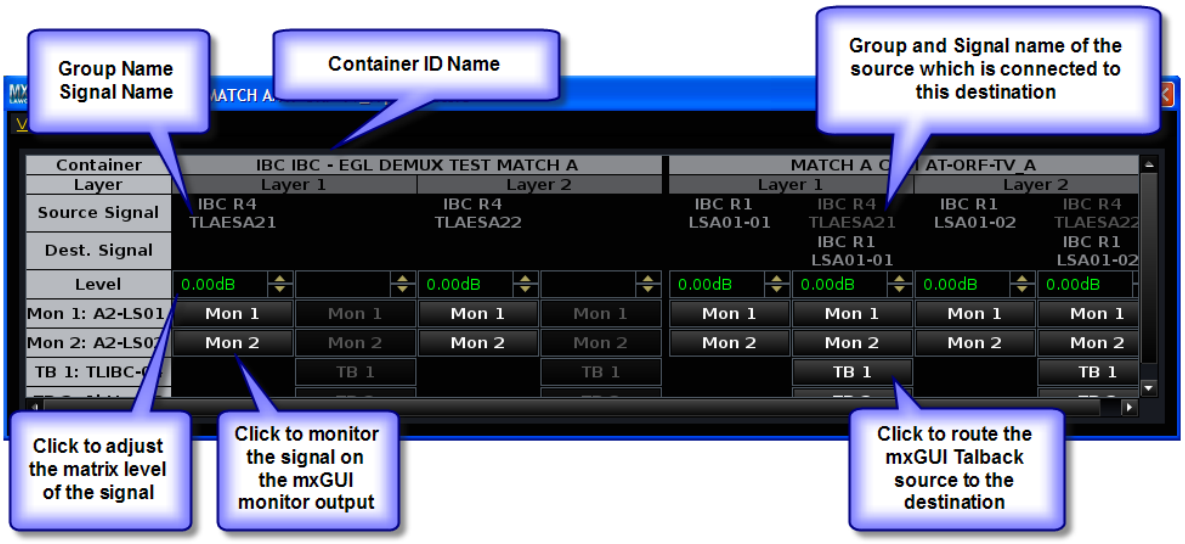
In this mode, the pop-up shows signal parameters for the selected source container (on the left) and destination container (on the right).

Note that you can also access the signal parameters pop-up from any display, by selecting “**Window** -> **Signal Container Parameters**” from the mxGUI main menus.

The appearance of the signal parameters window is defined by your local mxGUI configuration options. You may be able to view all 128 container layers by scrolling the window, or you may be limited to a certain view. Another option is to only view container layers which have a signal assigned.

Irrespective of your ‘view’, you can resize and position the signal parameters window in the usual manner.

Adjusting Signal Parameters



The upper fields are for information purposes only and show:

- **Container** – displays the **ID Name** of the container.
- **Layer** – displays the layer number.
- **Source Signal** – displays the **Group Name** and **Signal Name** of the assigned source or destination.

Note that for destinations, the name of the connected source is also displayed (in grey). As sources may be connected to several destinations, the **dest. Signal** field below each source is left blank.

Note

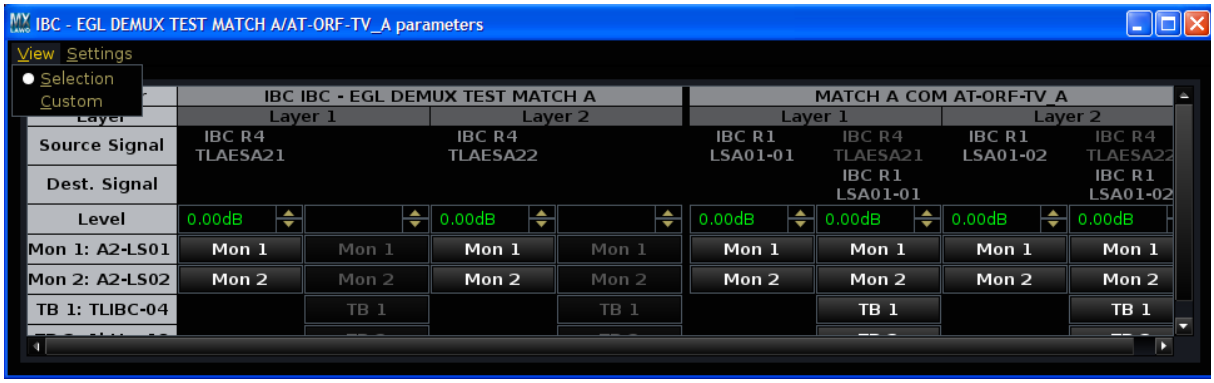
The lower fields are active and may be used as follows:

1. Click on the **Mon 1** or **Mon 2** buttons to route the source or destination signal to the left or right mxGUI monitor outputs. This stereo output is configured within the local mxGUI configuration.
2. Adjust the **Level** field to adjust the signal level within the matrix.
3. For a destination, click on the **TB** button to route the mxGUI talkback source to the destination. This mono talkback source is configured within the local mxGUI configuration.
4. When you have finished, click on the red circle, at the top right, to close the signal parameters window.

The Custom Container

At the top of the signal parameters window, the **View** menu provides access to two options:

- "**View** -> **Selection**" - shows signal parameters for the selected source and destination containers:

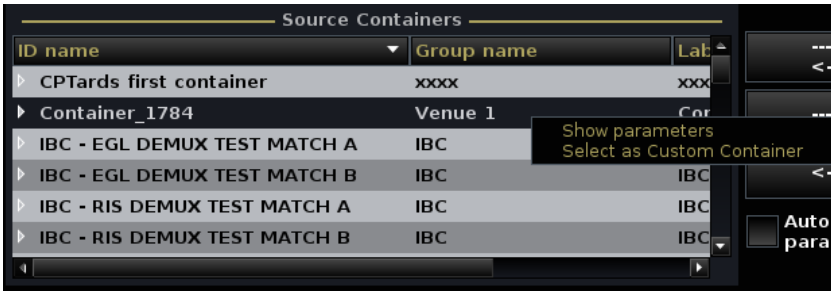


- "**View** -> **Custom**" - shows signal parameters for a custom container:

The Custom container can be used to quickly access problem signals during a live broadcast. For example, create a source and/or destination container for any problem signals, and define these as your custom container (see next page). By changing view, as shown above, you can quickly access their signal parameters.

To assign the custom source and destination container:

1. Return to the **Signal Containers Live** display and select a Source Container from the lower half of the display.
2. Right-click and choose the **Select as Custom Container** option:



3. Repeat to select a custom Destination Container.

Signal Containers Presets

Presets may be used to save and recall groups of container connections. For example, a preset could store all the container connections you require to transmit a particular programme or configure a particular setup.

Presets are defined from the **Presets** display and recalled using the **Presets List** pop-up window. This allows presets to be recalled from any mxGUI display.

1. Select “Page -> Signal Container -> Signal Container Presets”:

If you have already defined some presets, they will be shown within the **Preset List** on the left of the display.

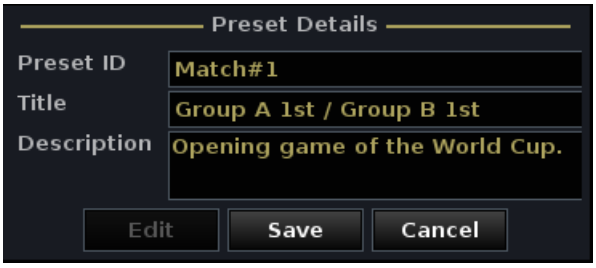
2. Select a preset and the connections stored within it are displayed in the **Connections** area:

Defining a New Preset

1. Click on the **New** button below the **Preset List**.

A new empty preset appears with a default ID – in our example, ***Preset_76****:*

2. Edit the **Preset Details** by clicking and typing within each field:



- **Preset ID** – this is the reference name for the preset. The Preset ID *MUST* be unique. In our example, we have named the preset **Match #1**.
- **Title** – this is the user title for the preset. In our example, we have entered **Group A 1st / Group B 1st** - this preset will store all the connections required for the first game of the World Cup tournament!
- **Description** – enter a description of the preset here.

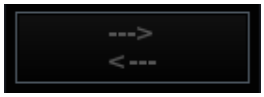
Note that you *MUST* enter a valid Preset ID. All other fields are optional. However we strongly recommend that you enter a Title as this will help identify the preset later.

Note

3. Next, add the container connections which you wish to store within the preset.

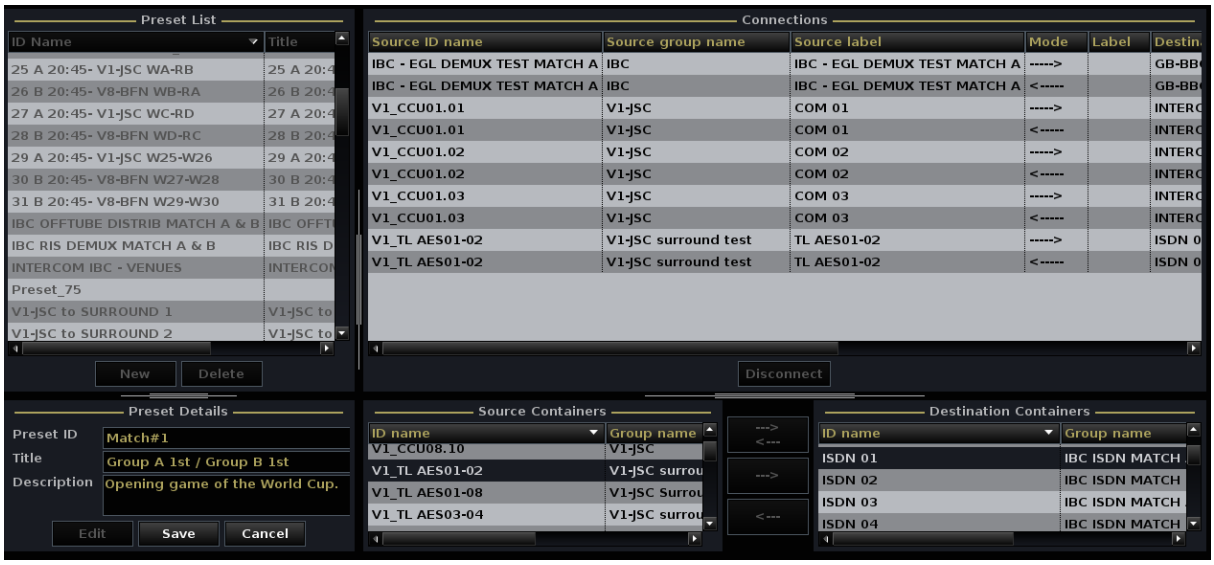
Follow the same method you used earlier on the **Live** display:

- First select the source and the destination container you wish to connect from the lower half of the display.
- Then select the type of connection you want to make by clicking on one of the Connection Type Buttons.



*The connection is added to the **Connections** list.*

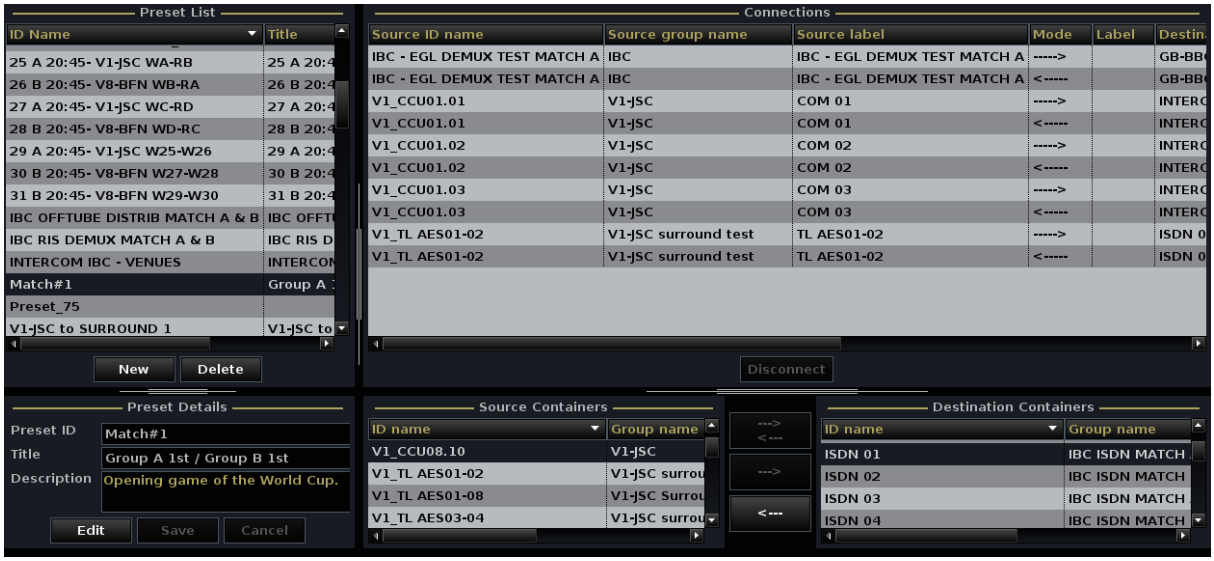
4. Repeat for each connection you wish to store:



5. If you wish to remove a connection before saving the preset, then select the connection and click on **Disconnect**.

6. Once you have added all the connections you wish to store, save the preset by clicking on **Save**.

*The preset is added to the **Preset List** on the left of the display and the **Edit** mode cancels:*



The preset has now been saved to the system configuration.

If you are running online, then this preset will be visible to all users. (Note that if a workstation has been configured with scopes, then the scope may filter out some containers. See Page 185 for details.)

7. Repeat to define each preset for the configuration.

Each time you save the preset definition, the preset is added to the system configuration.

Interrogating and Editing a Preset

You can interrogate or edit an existing preset in the same way you dealt with containers earlier from the **Configuration** display:

To interrogate the contents of a preset:

1. Select the preset from the **Preset List**.

*A list of all the connections stored appears, and the **Preset Details** update accordingly.*

To edit the preset:

2. Click on the **Edit** button:

*The **Edit** button turns dark grey.*

3. You can now update any of the **Preset Details**, or add or remove connections from the **Connections** list.
4. To save your changes, click on the **Save** button. Or to cancel without saving, click on **Cancel**.


Note

Note that you cannot save a preset with the same ID as an existing preset. If you attempt to do so, then the save will fail and an error message will appear in the status bar. Make sure you enter a unique ID name and then save the preset.

Deleting a Preset

1. To delete a preset from the configuration, select it from the **Presets List** on the left of the display.
2. Then click on **Delete**.

A confirmation pop-up will appear asking you to confirm the delete.


Note

Note that when you delete a preset, it is deleted from the system configuration. If there are other users connected to the same control system, then the deletion will affect all users.

3. If you are sure you want to delete the selected preset, click on **OK**.

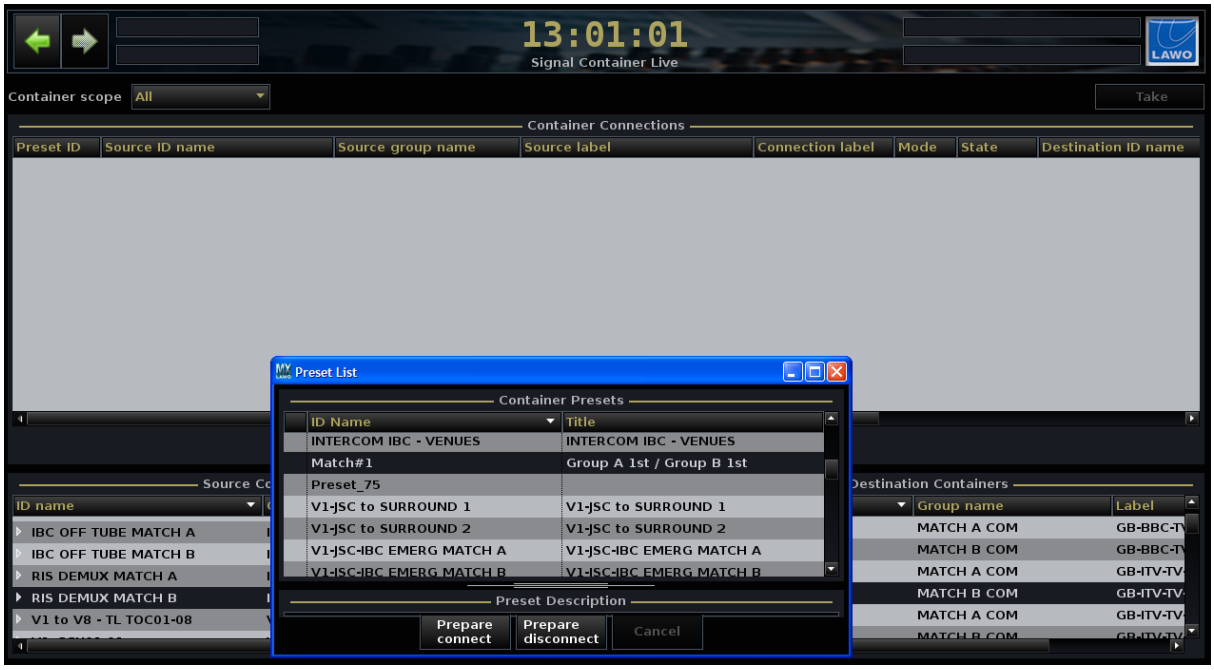
The preset is removed from the configuration.

Recalling a Preset

Having defined a preset it can be recalled from the **Presets List** pop-up window while viewing the **Signal Containers Live** display:

1. Select “Page -> Signal Container -> Signal Container Live”.
2. Then select “**Window** -> **Signal Containers Presets List**” from the mxGUI main menus.

*The **Presets List** pop-up appears on top of the **Live** display and lists all presets saved within the system configuration:*



You can resize and position the **Preset List** window in the usual manner.

3. To recall a preset, select it and click on **Prepare connect**.

*A **C** is added beside the preset ID in the pop-up window, and all connections stored within the preset are added to the **Connections List** of the **Live** display:*

Note

Note that the connections recalled from a preset are always added as **Pending**.

4. Make the connections live by clicking on the **Take** button at the top right of the **Live** display:

Whenever connections are recalled using a preset, you will see the preset ID name appear in the **Preset ID** column – in our example, **Match #1**.

Note that you can prepare several presets, and combine them with manual connections, before making all **Pending** connections **Active** in one operation from the **Take** button.

5. When you have finished, click on the red circle, at the top right, to close the **Presets List** window.

Disconnecting a Preset

A preset may only store connections. Therefore, to disconnect the active connections stored within a preset, use the **Prepare Disconnect** function as follows:

1. Open the **Presets List** pop-up window as before.
2. Select the preset and click on **Prepare Disconnect**.

*A **D** is added beside the preset ID in the pop-up window, and the disconnections are added to the **Connections List** as **Pending**:*

3. Click on the **Take** button to action the disconnects.

Cancelling a Preset

You can remove any **Pending** connections (or disconnections) recalled by a preset as follows:

1. Open the **Presets List** pop-up window as before.
2. Select the preset and click on **Cancel.**

*Any pending connections which had been recalled from the preset are removed from the **Live** display.*

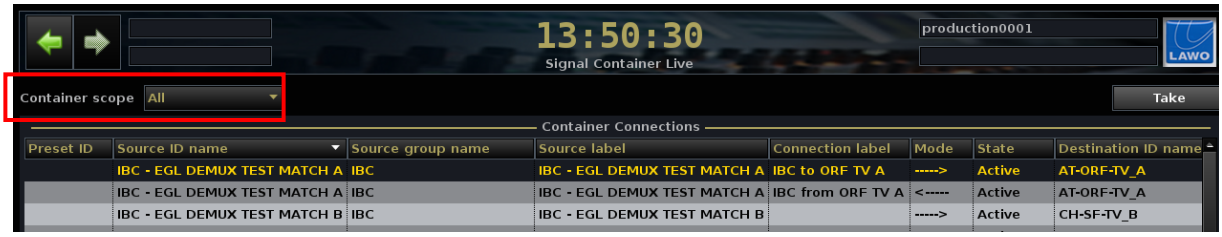
Scopes

A scope can be used to filter the container groups accessible from each mxGUI workstation. This enables the workstation to be customised for its application.

Using our World Cup Football mode, a scope could be used so that a workstation located in Venue 1 can only see and edit container definitions and connections between Venue 1 and the IBC. In addition, a number of different scopes may be defined within the IBC workstation so that the user can filter out unwanted venues for a particular transmission.

Scopes must be pre-configured within the local configuration files of the mxGUI workstation. For details please refer to the "**mxGUI** Workstation – Local Configuration" guide.

If scopes are configured on your mxGUI, then you will be able to select a Container scope from a drop-down menu at the top of each **Signal Containers** display:



Having made your selection, any container groups filtered by the scope will be removed from all three operational displays – **Configuration**, **Live** and **Presets** – depending on the scope's particular definition.

Note that if scopes are not defined within your configuration, then the only available mode of operation is **No Scope**.

Note

Chapter 9: System Configuration

Introduction

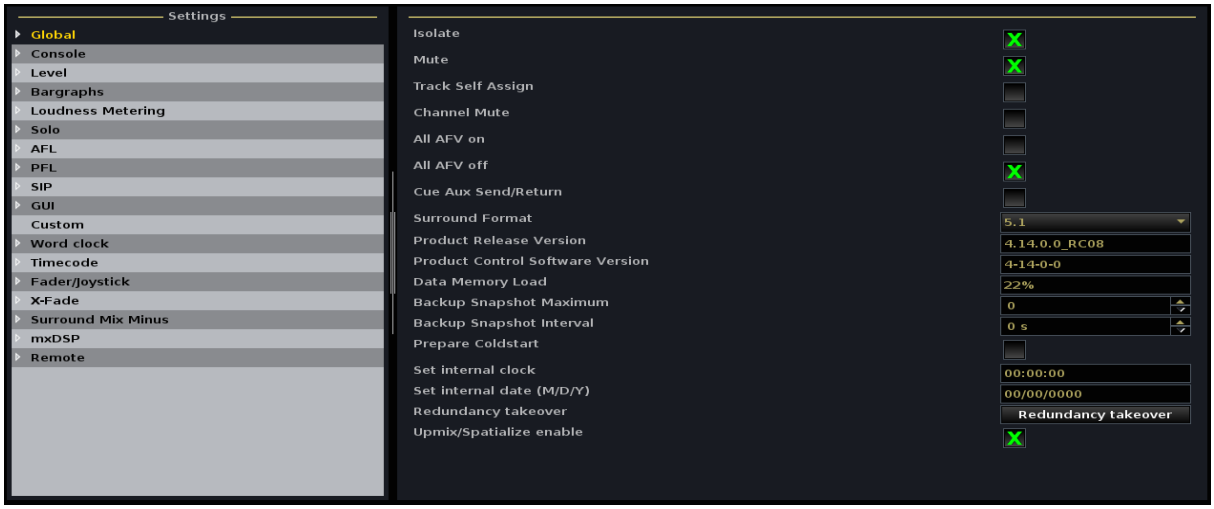
This chapter deals with the user options provided by the **System Settings** and **Custom Functions** displays.

Note that the **System Settings** display contains all settings for any mc^2 system. The result is that many settings are not relevant for stand-alone Nova73 systems. For more information on mc^2 console features, please refer to the mc^{2}66 Operators Manual.

The System Settings Display

The **System Settings** display configures a number of user options:

1. Select **Page** -> **System** -> **System Settings** to view this display:



On the left you will see a list of topics.

2. Select a topic – for example, **Global**.

The right hand side of the display updates to show a list of options within the selected topic – for example, **Isolate**, **Mute**, **Track self assign**, etc.

3. Depending on the option it can be modified as follows:

- **Checkbox on/off** (e.g. **Isolate**) - select the checkbox beside the option.

A green cross appears when the option is enabled – for example, **Isolate** is **ON**.

- **Drop-down selections** (e.g. **Surround format**) – select an option from the drop-down list.
- **Numeric Entries** (e.g. **Backup snap max**.) – some options require a number to be entered. You can click on the existing entry and type in a value; or click on the up/down arrows beside the number to increment or decrement its value.

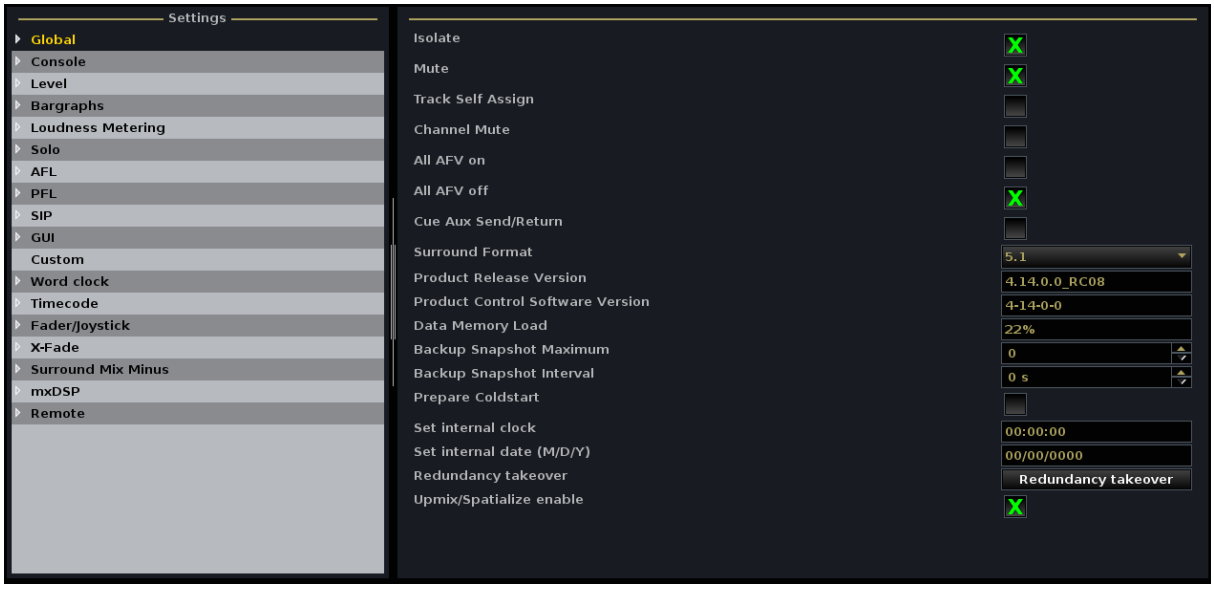
Note that if you hover the trackball above each option name, you will see a 'Tool Tip'. This is a helpful description which acts as a brief reminder of the option's function.


Note

Not all topics or options are relevant for a Nova73 system. Relevant options exist within the **Global**, **Gui**, **Wordclock** and **mxDSP** topics.

Global Options

Select the **Global** Topic:



The following options can be applied as follows:

Product Release and Control Software Versions

The next fields are for display purposes only, and tell you the software versions running on your system. Note that there are two different releases, both important when reporting software versions to a service engineer:

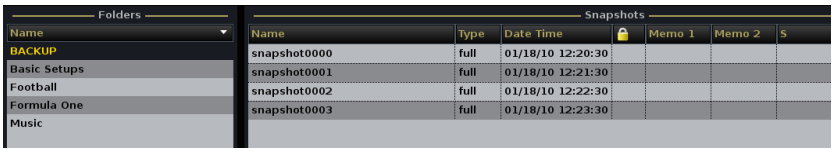
- **Product Release Version** – this is the release version of your product software.
- **Product Control Software Version** – this is the release version of the control system software.

Data Memory Load

This field is for display purposes only, and indicates the amount of used space on the user data card.

Backup Snapshot Maximum

This option sets the number of backup snapshots which will be automatically stored before the first backup snapshot is overwritten. The number may be adjusted from 0 to 1000. Enter 0 to turn off the backup snapshots function.



Backup Snapshot Interval

This option sets the time interval between backup snapshots, and may be adjusted from 60 seconds to 24 hours (86400s).

Prepare Cold Start

This option sets whether the system will cold or warm start on the next power-on:

- **Prepare Coldstart** (on) - the system will cold start. This means that no user data is loaded. Use this option if you wish to clear all user settings from the system.
- **Prepare Coldstart** (off) - the system will warm start. This means that the system is restored with same settings as before the power off.

Note that following a restart this option is always reset to off. This ensures that by default, warm start data is loaded at the end of every power-on or restart.

Set Internal Clock and Set Internal Date

The next two options set the internal clock and date.

Type in the time or date wish to set and then press Enter.

A confirmation pop-up appears.

Select **OK** to confirm.

The new time or date is set.

Redundancy Takeover

Use this option to force a manual takeover from the redundant control system (if fitted).

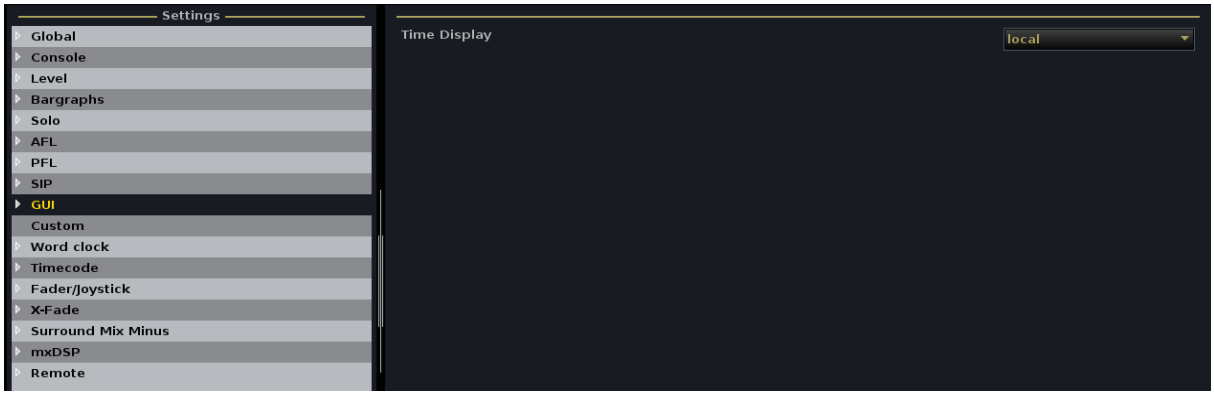
A confirmation dialogue box appears:

Select **Yes** to confirm or **No** to cancel the operation.

Selecting **Yes** switches to the redundant Control System.

GUI Options

Select the **GUI** Topic to set the following Graphical User Interface options:



Time Display

At the top of every display a time is displayed. This may be the local time, in 24 hour clock, or timecode:

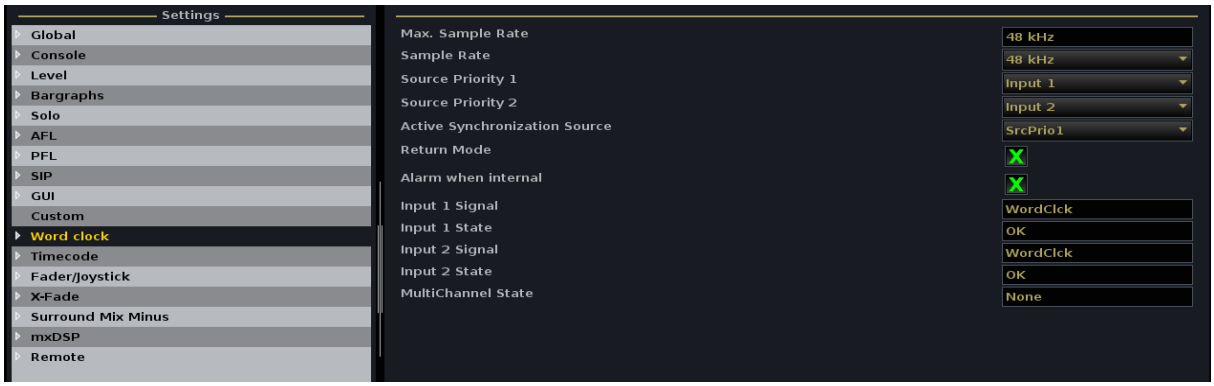
- **Local** – displays the control system time in 24 hour clock.
- **Timecode** - displays SMPTE timecode from your selected timecode reference.
- **Offset TC** - displays SMPTE timecode + the Midnight offset.

Note that only the **Local** setting applies to Nova73 systems.

Wordclock Options

The Wordclock topic covers a range of options for selecting the internal operating frequency of the system and source priorities for incoming sync signals.

Select the **Word clock** topic to set the following options:



Max Sample Rate

This field displays the maximum internal sample rate as set by the system configuration.

The maximum rate cannot be changed by the user but can be set to either 48kHz or 96kHz by the AdminHD configuration. Please refer to the “Nova73 Technical Manual” for details on AdminHD.

Note that if the maximum sample rate is 96kHz, then the system may still operate at 48kHz by changing the **Sample Rate** option below.

Note

Sample Rate

This option selects the internal sample rate of the system. Make sure that your clock source matches this selection.

When running at lower sample rates, you may select either 48kHz or 44.1kHz operation; when running at higher sample rates, you may select 96kHz, 88.2kHz, 48kHz or 44.1kHz operation.

Note that the option to run at higher or lower sample rates is made within the AdminHD configuration, and is displayed in the Max Sample Rate field described above.

Source Priority 1 and 2

These two options allow you to select the main and redundant clock source for the system. If sync is lost or a signal of an incorrect frequency appears on Source Priority 1, the system automatically switches to Source Priority 2. Similarly, if sync is lost on Source 2, the system automatically switches to internal sync.

You can set each of the options to:

- **Input 1 –** from the HD Core rear panel.
- **Input 2 –** from the HD Core rear panel.
- **MultiCh -** Multichannel Sync (this option depends on your system configuration)

Active Synchronization Source

This option displays and sets the active sync source for the system:

- **Src Prio 1** – the input selected as Source Priority 1.
- **Src Prio 2** – the input selected as Source Priority 2.
- Internal.

If sync is lost or a signal of an incorrect frequency appears on Source Priority 1, the system automatically switches to Source Priority 2. Similarly, if sync is lost on Source 2, the system automatically switches to internal sync.

Return Mode

This option activates a return mode so that the system will switch back to Source Priority 1 (or 2) when it returns. The system even checks whether the return sync is valid and will not switch until the sync source matches the chosen operating frequency.

- **Return Mode** (On) - activates the return mode.
- **Return Mode** (Off) - deactivates the return mode.


Note

To force the system to run on internal sync, deactivate the return mode and set the **Active Source** to Internal.

Alarm when internal

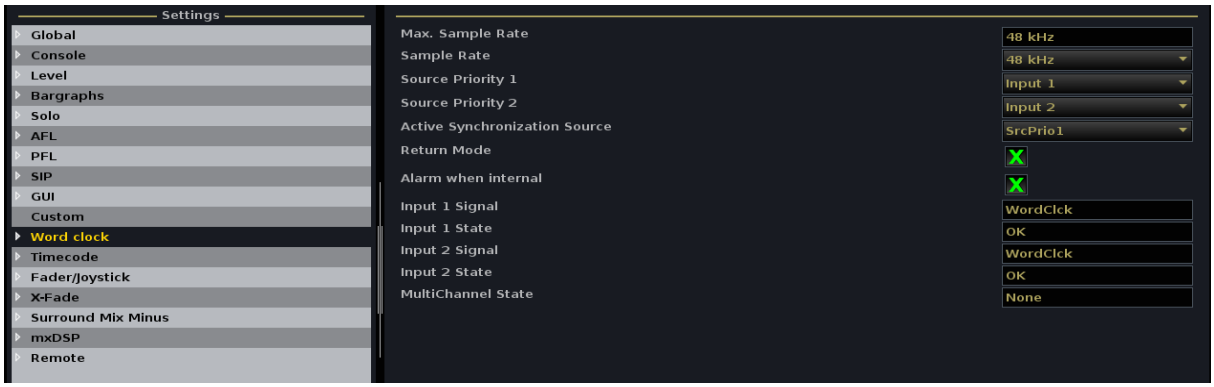
This option activates an alarm when the system is running on internal sync:

- **Alarm when internal** (On) - activates the alarm.
- **Alarm when internal** (Off) - deactivates the alarm.

The alarm triggers on-screen Warning flag and illuminates the red LED on the front panel of the HD core router card.

External Sync Input Status

The next five options are for display purposes only and show the status of the external and multi-channel sync signals.



The example above shows that a valid Wordclock signal is connected to external inputs 1 and 2, and the **Active Synchronisation Source** is Src Prio 1 = Input 1.

mxDSP Options

The **mxDSP** Topic provides options for the optional mxDSP card, see Page 101:

The option determines whether mxDSP signals are affected by snapshot loads:

- **Isolate all mxDSP signals** (on) – isolates all mxDSP signals so that they are not affected by a snapshot load. Use this option to protect the current mxDSP card settings.
- **Isolate all mxDSP signals** (off) – settings will be reset by a snapshot load. Use this option if you wish to recall mxDSP settings from snapshots.

Note that the same option can be selected using the Global Snapshot ISO **MXDSP** button on the **Snapshots** display, see Page 135.

Remote Options

The **Remote** Topic provides options for the Lawo Remote App, see Chapter 10:

The option determines whether the console may be controlled from a remote device running the Lawo Remote App:

- **Safe Mode** (on) – access from remote devices is denied. Use this mode to prevent unauthorised control of the console.
- **Safe Mode** (off) – the console may be controlled by a remote device running the Lawo Remote App.

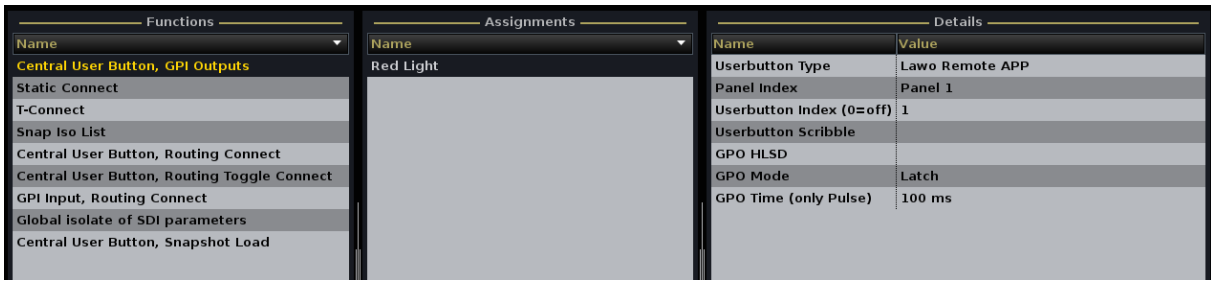
The Custom Functions Display

This display provides access to factory-configured custom functions so that users can reconfigure the console without assistance from Lawo.

Note

The functions configured from this display are stored as part of the system configuration, which means that any changes will affect all users. In addition, there are many powerful features. It is recommended that users have a good understanding of the system, are familiar with the programming of user buttons, and understand how to connect to the system via ftp or telnet. For more information, please refer to the Nova72 Technical Manual.

1. Select **Page** -> **System** -> **Custom Functions** to view this display:



The **Functions** column on the left lists the different types of function which can be configured. A brief description appears when you hover over each title.

2. Select a function – e.g. **Red Light** – to interrogate any existing assignments.

*Each time you select a different function, the **Assignments** column updates.*

3. Select an Assignment to interrogate its Details.

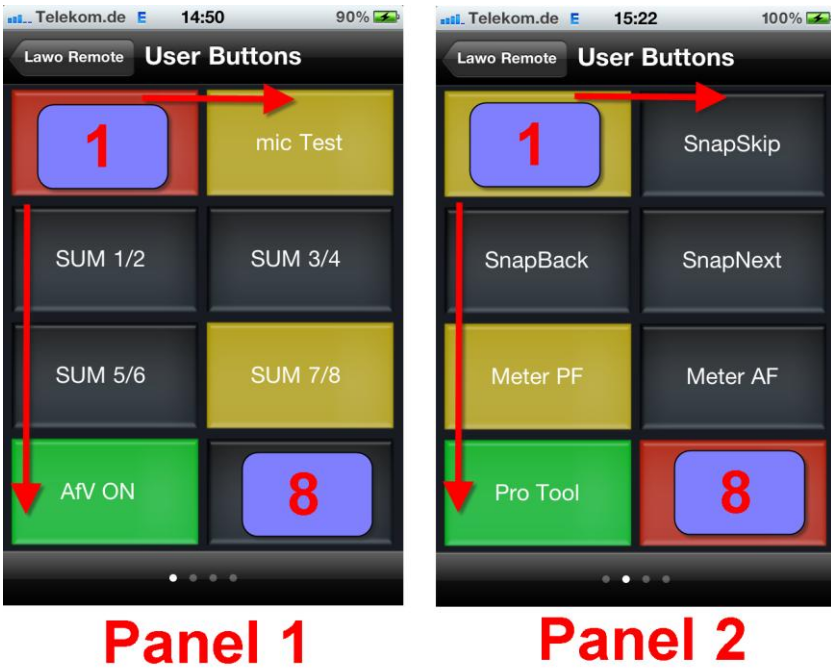
Above we can see that Lawo Remote App Panel 1, button 1 is assigned to a GPIO output; the function is named Red Light.

The look of your display will depend on the assignments stored within the system configuration.

User Buttons

Many functions listed on the **Custom Functions** display can be assigned to a user button operated from an iPhone, iPod or iPad running the Lawo Remote App, see Chapter 10.

The panel index and button numbering for the first two panels is shown below:



Panel 1 Panel 2

Up to four User Button panels may be configured.

Warning

Before changing the function of a user button, make sure that there is nothing assigned to it. Otherwise, the button will perform multiple operations!

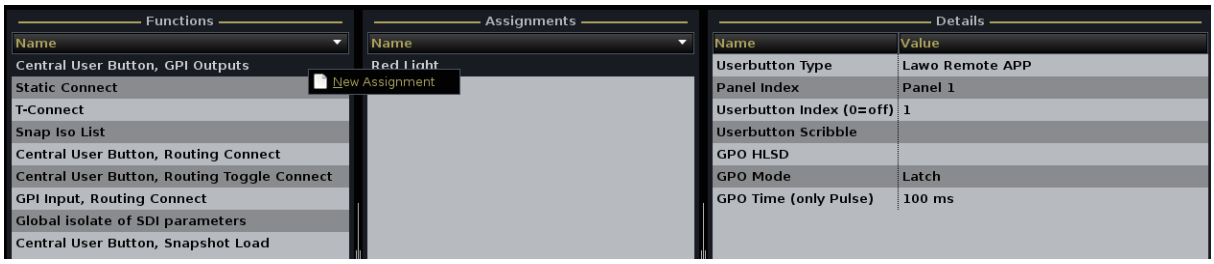
Be aware that factory-configured user functions do *NOT* appear in the **Custom Functions** list. If you wish to reprogramme these, then you should contact Lawo to remove the factory configuration first.


Warning

Creating a New Assignment

Let's take the example of mapping an unused button to a GPIO output connected to a green light:

1. Right-click on a function type and select **New Assignment**.

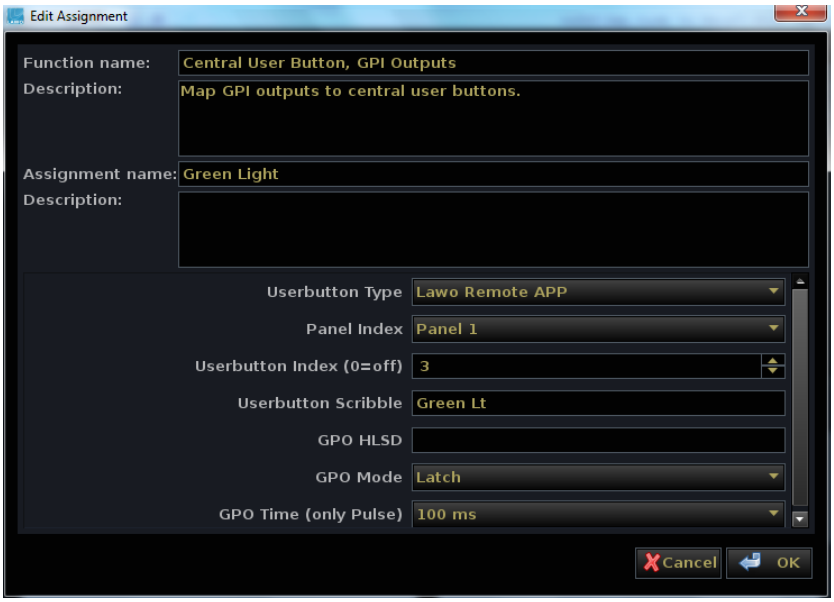


A pop-up window appears listing the assignment details:

2. Edit each field as follows:

- **Function Name** and **Description**: the first two fields are for information purposes only and cannot be edited. They describe what the function does.
- **Assignment Name**: Here you can enter a name for the assignment. In our example, we are going to name the assignment after its function – Green Light.
- **Description**: Here you can enter a user description for your assignment if you wish.
- **Userbutton Type**: This drop-down menu selects the panel for the button assignment. For a Nova73, only the **Lawo Remote APP** is relevant, so select this option.
- **Panel Index**: This drop-down menu selects the panel number.
- **Userbutton Index**: This field selects the button number you wish to assign.

In our example, we have selected button 3 on Panel 1:



- **Userbutton Scribble**: If the selected user button has an accompanying scribble strip display, then you can enter the text to be displayed in this field. Up to 8 characters.

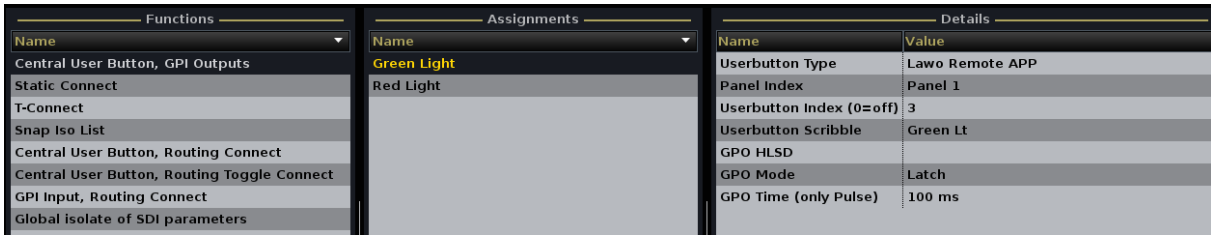
Text will only be displayed if the button has a scribble strip such as the touch-screen buttons on the Lawo Remote App.

Then enter the details for the GPO output:

- **GPO HLSD** – this is the Lawo system address of the GPO which will be triggered.
- **GPO Mode** – latching, momentary, pulse, etc.
- **GPO Time** – for a pulsed relay.

3. Once you are happy select **OK**.

*The assignment is made and you will see its name appear in the **Assignments** list:*



4. Repeat these steps to configure other custom functions.

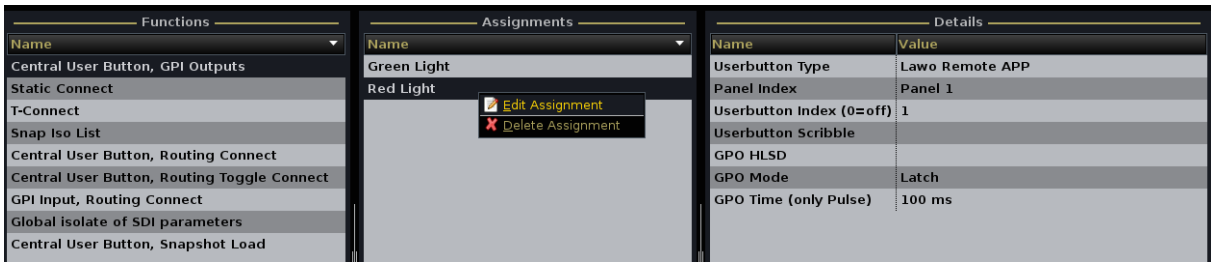
Note that as soon as you make or edit an assignment, the changes are written into the system's configuration data on the control system. Custom Functions are stored as part of the configuration and not in productions, and therefore affect all users of the system.

Note

Editing an Assignment

To edit an existing assignment:

1. Select the **Function** and **Assignment** you wish to edit – for example, **Play**.
2. Right-click and select **Edit Assignment**:



The Edit Assignment pop-up window appears showing the current details of the assignment.

3. Edit the fields and select **OK** to confirm the changes.

Deleting an Assignment

To delete an existing assignment:

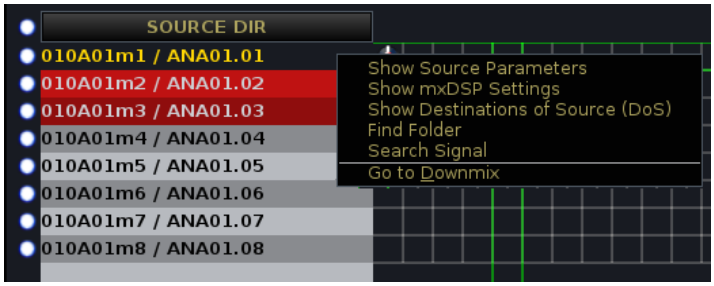
1. Select the **Function** and **Assignment** you wish to delete – for example, **Play**.
2. Right-click and select **Delete Assignment**.
3. Confirm by selecting **OK**.

The assignment is deleted.

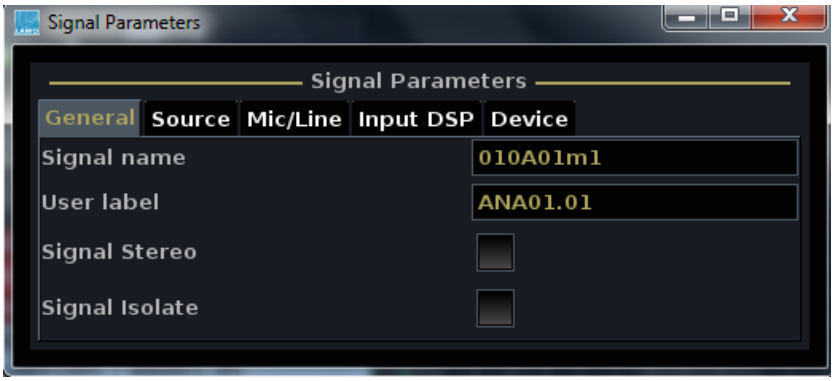
Entering a HLSD Address

Some functions require you to enter the Lawo system address (HLSD address) for a signal. You can copy and paste this address from the **mx Routing** display as follows:

1. Open the **mx Routing** display and locate the signal.
2. Right-click and select Show Source Parameters (or Show Destination Parameters):

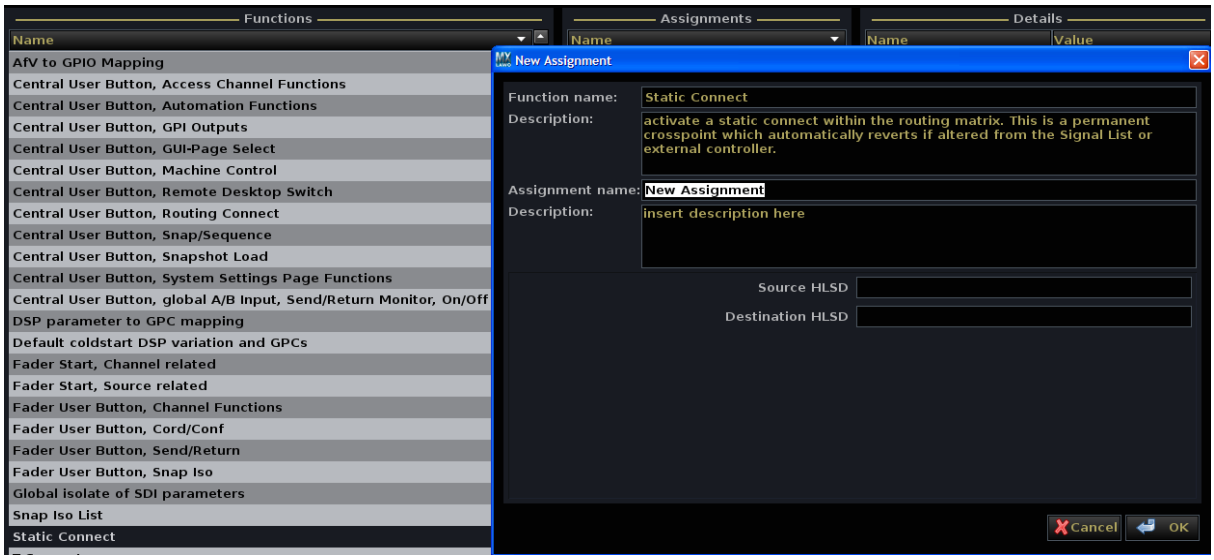


The Signal Parameters pop-up window appears.



3. Select the **Device** tab.
4. Select the **HLSD** address field, right-click and select **Copy** to copy the address to the system clipboard:

5. Now return to the **Custom Functions** display.
6. Create a new function assignment, or edit an existing assignment – for example, a **Static Connect**:



7. Right-click on the HLSD field and select **Paste** to paste the copied address.

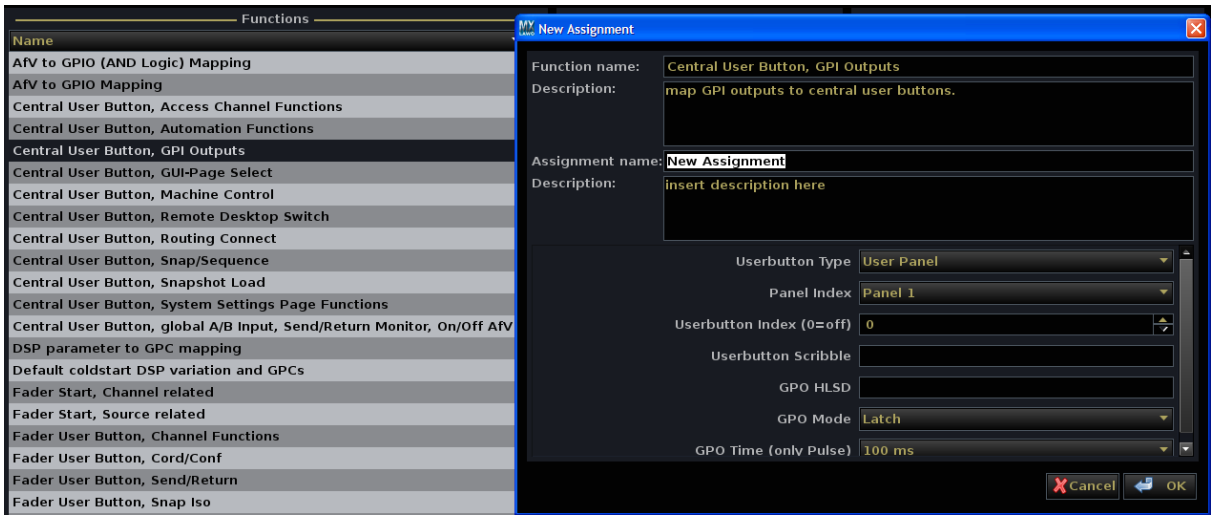
Function Commands

Each function type provides access to a different set of commands. Use the drop-down **Command** field at the bottom of the **New/Edit Assignment** window to view the available options. This section describes the functions in alphabetical order:

Central User Button, GPI Outputs

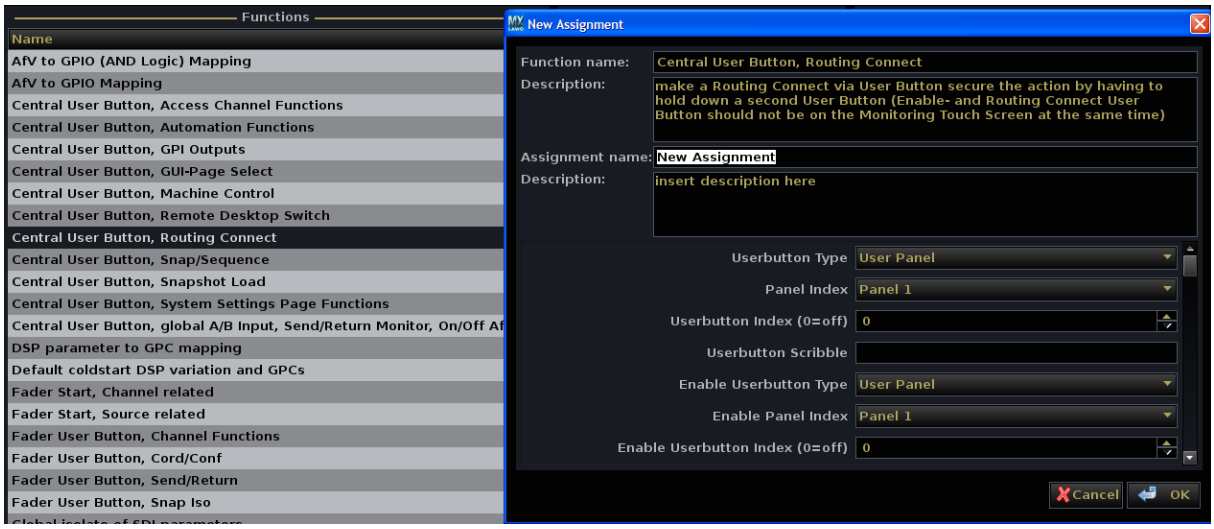
Maps user buttons to external relays (GPI Outputs). For each user button define the:

- **GPO HLSD** – this is the Lawo system address of the GPO which will be triggered.
- **GPO Mode** – latching, momentary, pulse, etc.
- **GPO Time** – for a pulsed relay.



Central User Button, Routing Connect

This function allows you to perform signal routing from a user button. Up to 28 connects/disconnects can be assigned to one User Button; you can create several instances of this template.



You can copy the source and destination **HLSD** from the **mx Routing** display, see Page 200. Routes may be made to/from any source or destination including DSP channels.

Tip

To create a disconnect, type **DISCONNECT** into the field for the Source HLSD.

To secure the operation, you can define an **Enable Userbutton**. Once defined, you will need to hold down **Enable** while pressing the **Connect** user button in order to action the connects/disconnects.

Note that the **Enable** and **Routing Connect** user buttons are not multi-touch capable, therefore do not assign them both to a touch-screen.

Note

Please ask for advice from Lawo staff if you wish to do so.

Central User Button, Routing Toggle Connect

This function is similar to above, but provides source on and source off states so that routes may toggle. Up to 16 connects/disconnects can be assigned to one User Button; you can create several instances of this template.

Central User Button, Snapshot Load

This function allows you to load a specific snapshot from a single user button press. You can make the operation more secure by defining an **Unlock** user button. This means that the operator must press and hold the **Unlock** button while pressing the **Snapshot Load** in order to recall the snapshot.

Note that the **Unlock** and **Snapshot Load** user buttons are not multi-touch capable, therefore do not assign them both to a touch-screen.

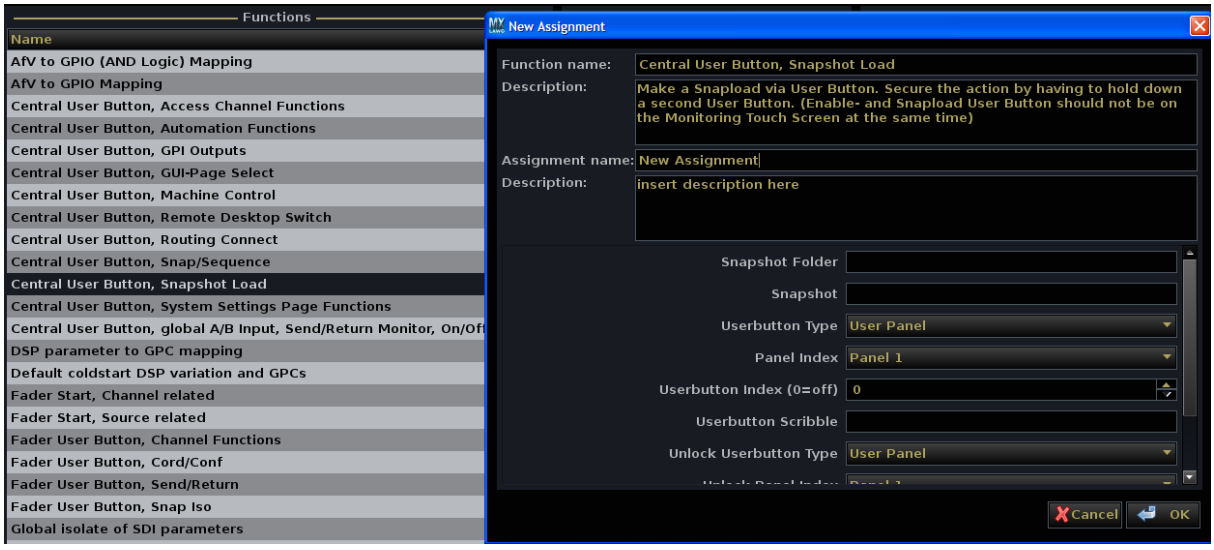
For each function, define the:

- **Snapshot Folder** – the name of the Folder where the snapshot is stored.
- **Snapshot** – the name of the Snapshot you wish to load.

Note that you can define any snapshot from any folder within the active production.

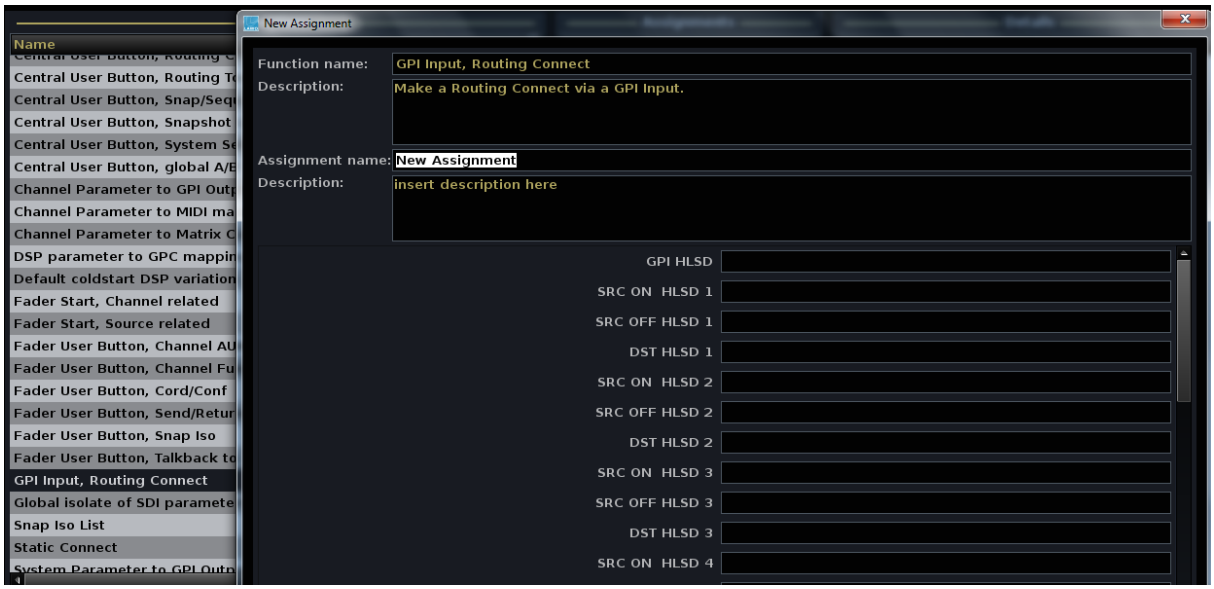
- **Userbutton Type**, **Panel Index**, etc. – the user button which will action the Snapshot Load.
- **Unlock Userbutton Type**, **Panel Index**, etc. – the user button which will action the Unlock function.

Note that if the **Unlock** user button is empty, then the **Snapshot Load** will action on a single press of the first user button.



GPI Input, Routing Connect

This function allows you to perform signal routing from a GPI Input. Up to 16 connects/disconnects can be assigned to one input; you can create several instances of this template.



You can copy the source and destination **HLSD** from the **mx Routing** display, see Page 200. Routes may be made to/from any source or destination including DSP channels.

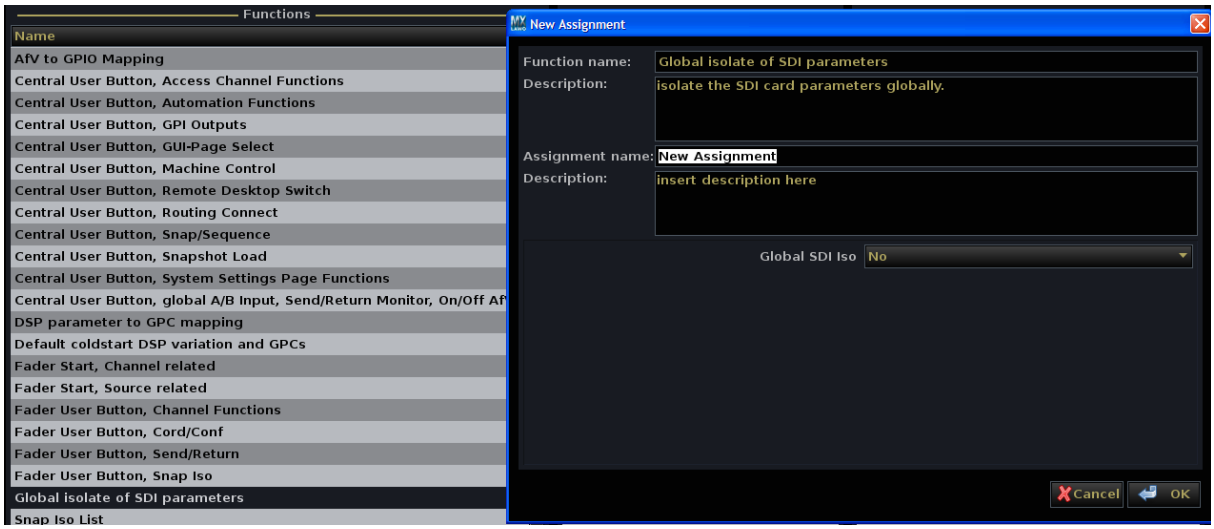
Tip

To create a disconnect, type **DISCONNECT** into the field for the Source HLSD.

Global isolate of SDI parameters

SDI parameters are never stored by snapshots. From Version 4.8.0.2 onwards, they are stored and recalled by productions. This function can be used to isolate all SDI parameters so that settings are not affected by a production load.

This template should only be created once. If created several times, the last initialised one wins.



Snap Iso List

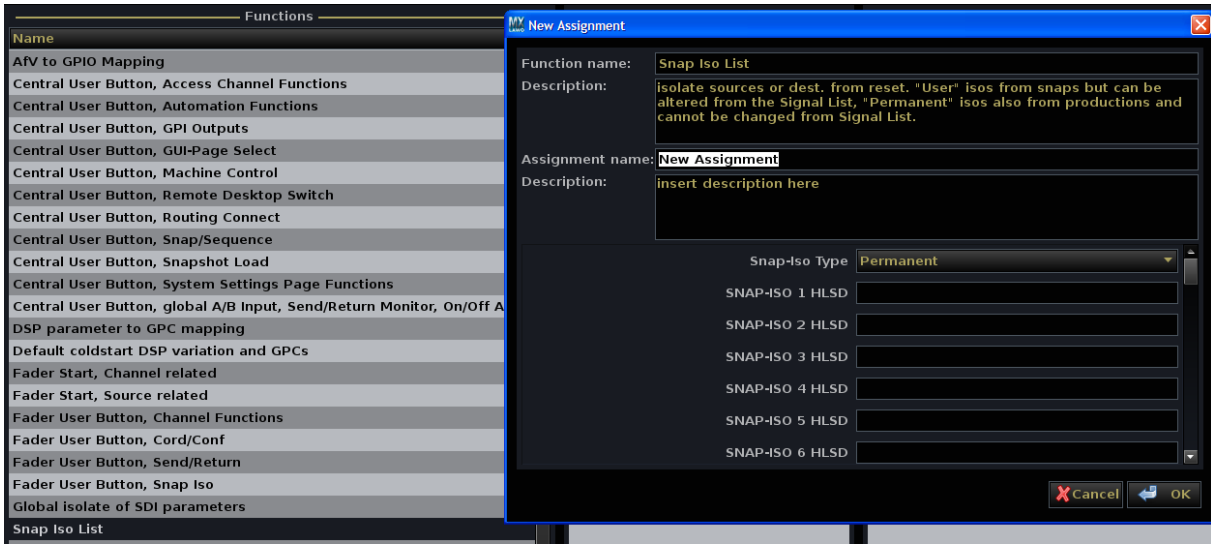
This function allows you to isolate sources or destinations to prevent them being reset by snapshots, and/or from productions or the **Signal List** display.

Up to 48 signals may be defined within each Snap Iso List assignment; you can create multiple assignments to isolate lots of signals.

Within each Snap Iso List assignment, the **Snap-iso Type** can be:

- **Permanent** – signals are not reset by snapshots or productions, and cannot be adjusted from the **Signal List** display.
- **User** – signals are not reset by snapshots, but will be reset by productions and can be adjusted manually from the **Signal List** display.

For each Snap Iso List assignment, enter the **HLSD** (Lawo system address) of the signals you wish to isolate.

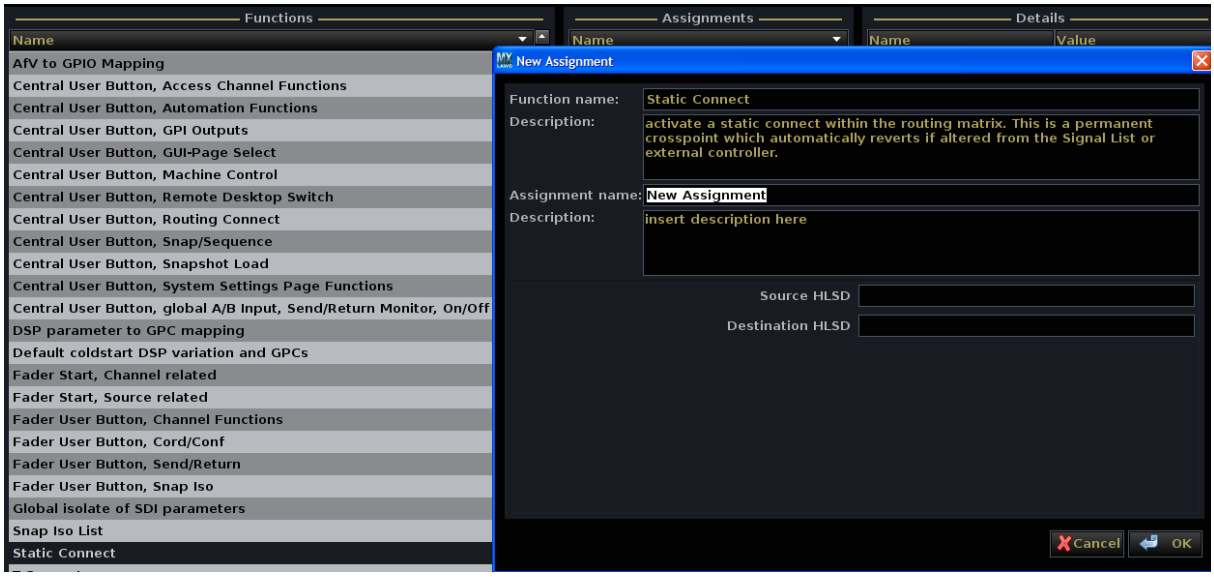


You can copy the signal HLSD from the **mx Routing** display, see Page 200.

Tip

Static Connect

This function allows you to define a Static Connect by entering the **HLSD** (system address) for a Source and a Destination:



Tip

You can copy the signal HLSD from the **mx Routing** display, see Page 200.

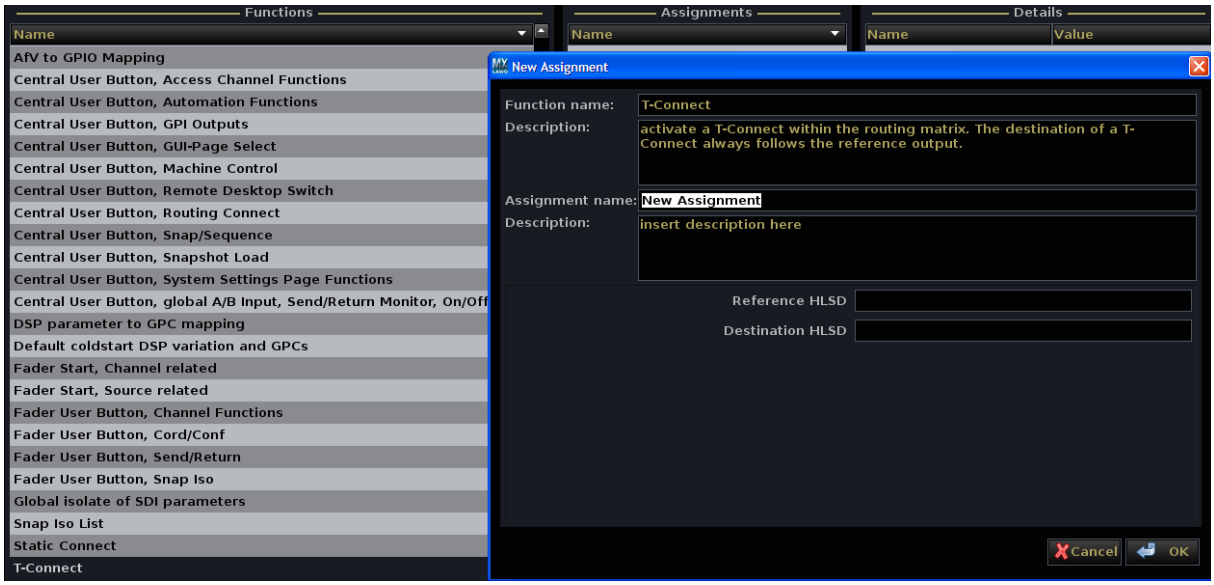
A Static Connect is a routing crosspoint which will always be active. If it is disconnected by any means, for example by the console operator or by an external controller, the crosspoint is automatically remade. You might use this function to prevent vital crosspoints from being accidentally reset.

Note

Note that having defined a Static Connect, the only way to change or disconnect the crosspoint is to delete the Static Connect from the **Custom Functions** display.

T-Connect

This function allows you to define a T-Connect by entering the **HLSD** (system address) for a Reference output and a Destination output:



The Destination output always follows the Reference output. So, for example, if the source to the reference output is Sum 3, the destination output source is also Sum 3. You might use this function if you have several transmission feeds all requiring identical routing changes

Chapter 10: Lawo Remote App

Overview

The Lawo Remote App is a free App which allows you to recall snapshots and control user-defined functions remotely from an iPhone, iPod or iPad.

From the Lawo Remote App you have access to the following:

- Snapshots – load any Snapshot from any folder within the active Production.
- User Buttons – a special page of buttons allow you to control user defined functions such as monitoring, GPI control, etc. The button assignments are made from the **Custom Functions** display and stored as part of the console configuration.

Installing the Lawo Remote App

The Lawo Remote App can be downloaded, for free, from the App store, and installed on an iPhone, iPod or iPad. Download and install the App on your device in the usual manner.

Configuring the Network

The remote device communicates with the console's control system via WLAN (Wireless Local Area Network).

To use the Lawo Remote App you must have a properly configured wireless network access point and know the IP address of the Nova73 control system. There are several configuration options depending on your network infrastructure, so please consult your network administrator or refer to the technical document "TD_AccessPoint.iApp" for details.

Once the wireless network access point is configured, you can find the IP address of the Nova73 control system from the **Signal Settings** display as follows:

1. Select **Page** -> **Signals** -> **Settings** to view this display.
2. Select the **System** from the “system tree” on the lower left of the display:

The IP address of the control system is displayed in the parameter area:

Enabling App Control

To prevent unauthorised control of the console, remote access must be enabled from the console's **System Settings** display:

1. Select **Page** -> **System** -> **System Settings**.
2. Select the **Remote** Topic and make sure that the **Safe Mode** option is unchecked:

The console may now be controlled from a Lawo Remote App device.

Note

There is no limit on the number of clients. However, if more than one device sets a parameter, the last change wins!

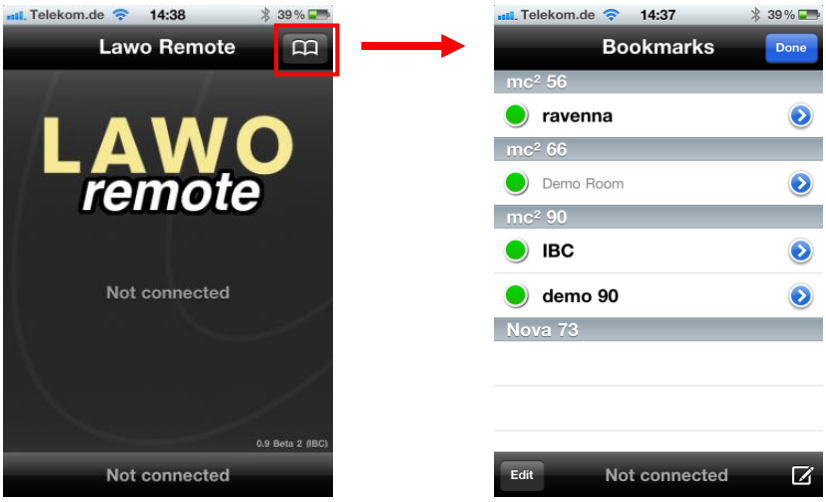
Starting the Lawo Remote App

1. On your device, open the Lawo Remote App.

The Lawo Remote welcome page appears showing the status of the existing connection – in our example, "Not connected".

2. Touch the Bookmark icon at the top right of the display.

*The **Bookmarks** page opens listing all configured connections:*



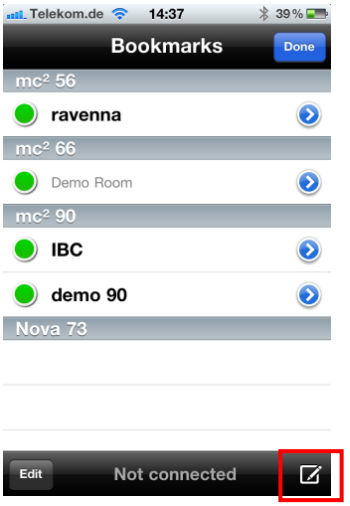
The list will be empty if no connections have been configured.

Configuring a New Connection

To configure a new connection:

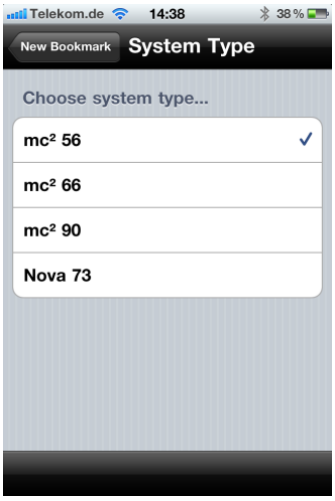
1. Select the New Bookmark icon at the lower right of the display.

*The 'New Bookmark' page opens, and your new connection is automatically configured as an **mc²56**:*

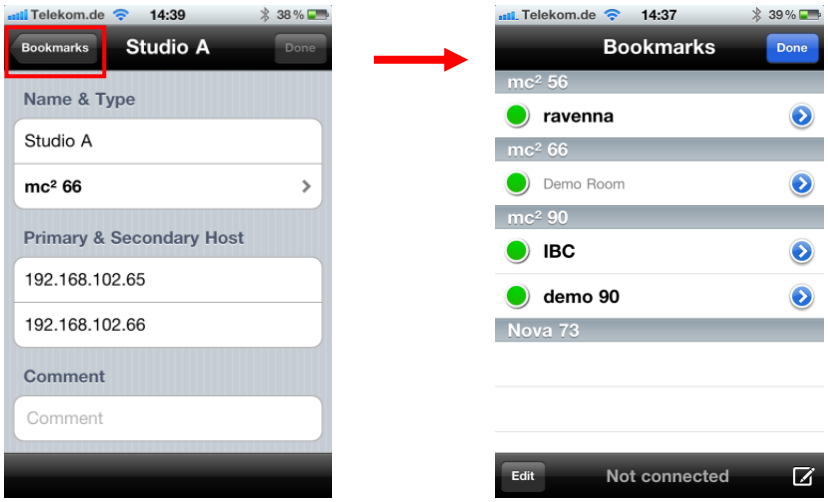


2. Touch each entry to edit the:

- **System Name** – e.g. **Studio A**. This name is used for reference within the Lawo Remote App.
- **System Type** – e.g. **mc²66**. Choose from the list of supported systems (opposite). The system type must match that of the system you wish to connect to.
- **Primary & Secondary Host** – enter the IP address of the control system you wish to connect to. If you have a redundant control system, then you will need to enter the primary and secondary IP addresses.
- **Comment** - enter a Comment if you wish.



3. When you have completed each field, touch **Bookmarks** to return to the Bookmarks page.



The name of your new connection appears in the list.

4. At any time you can edit an existing connection, by touching the **Edit** button at the lower left of the **Bookmarks** page.

Connecting to the System

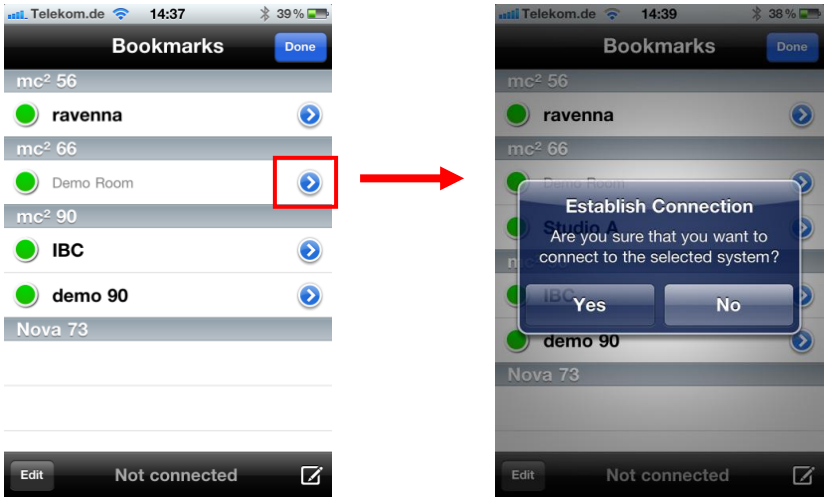
You can connect to any system configured within the **Bookmarks** page.

Note that you may only connect to one system at a time.

Note

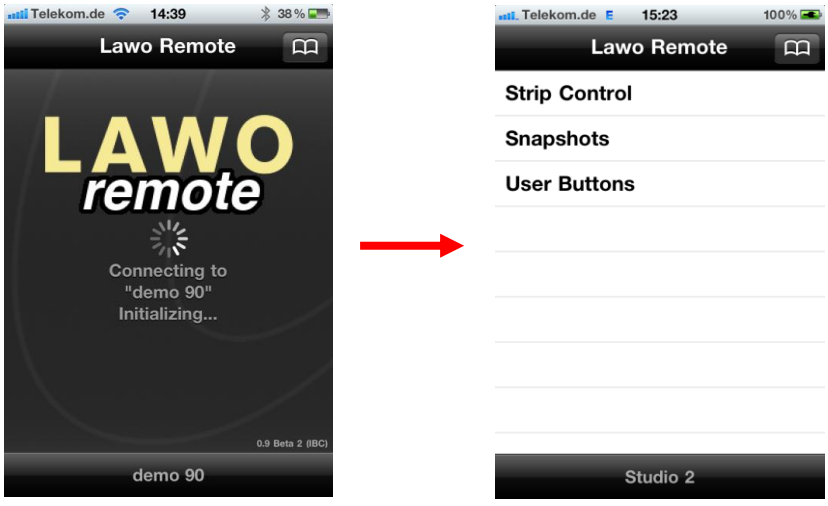
1. Open the **Bookmarks** page, and touch the arrow beside the name of the system you wish to connect to.

The following confirmation dialogue appears:



2. Touch **Yes** to continue.

The device attempts to connect. If successful, the operational menus appear and the connection status, at the bottom of the display, updates to show the system name:



If the connection fails, then an error will appear. Check the system type and IP settings from the **Bookmarks** page. Check that the iPhone, iPod or iPad is connected to the correct WLAN. If the connection still fails, then there is a problem with your network or its configuration. Please contact your network administrator for assistance.

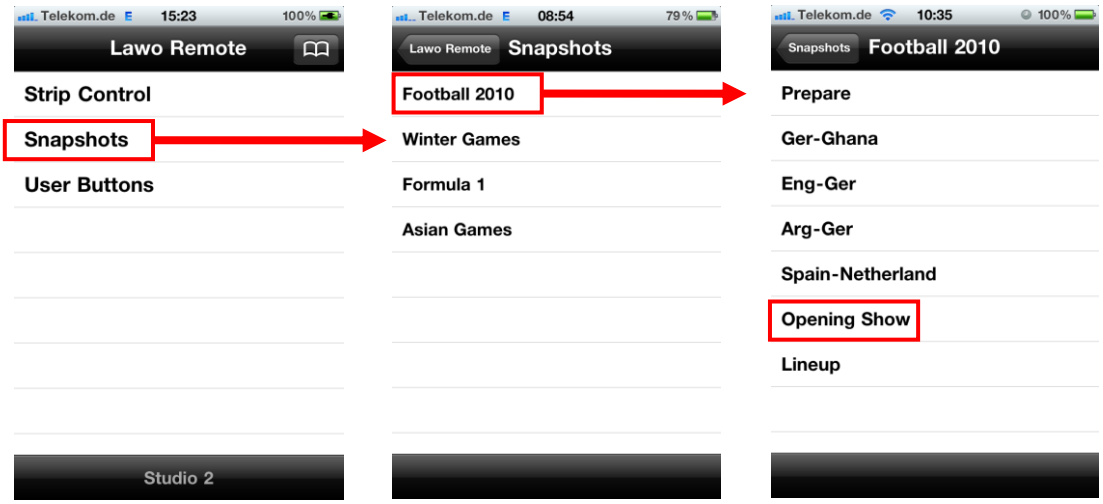
Controlling Parameters

The main operational menus appear once you have an active connection to the Nova73 system.

Note that the Strip Control menu, shown in the screenshots below, is not relevant to a Nova73 system!

Snapshots

1. Select **Snapshots** to load a Snapshot from any folder within the active Production:



2. Select the folder:
3. Then select the snapshot followed by **Load**.

The snapshot is loaded to the console. If any snapshot Filter Modes or SNAP ISO buttons are active, then these are applied.

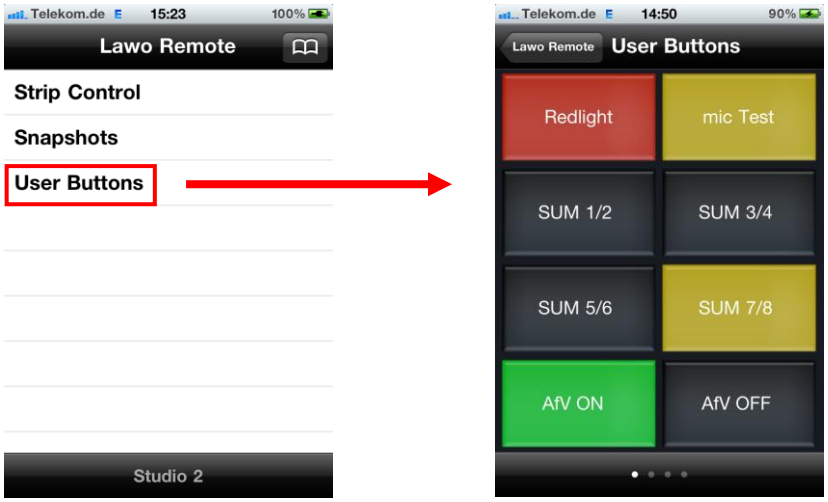
4. To return to the main menus, select **Snapshots** followed by the **Lawo Remote** button (top left).

Note

Note that you cannot save or update snapshots from the Lawo Remote App, or change production.

User Buttons

1. Select **User Buttons** to access a special page of buttons designed for monitoring functions such as source selection and monitor level control:



2. Touch a button to action its function.
3. Touch one of the dots at the bottom of the page to access a different page of functions.
4. To return to the main menus, select the **Lawo Remote** button (top left).

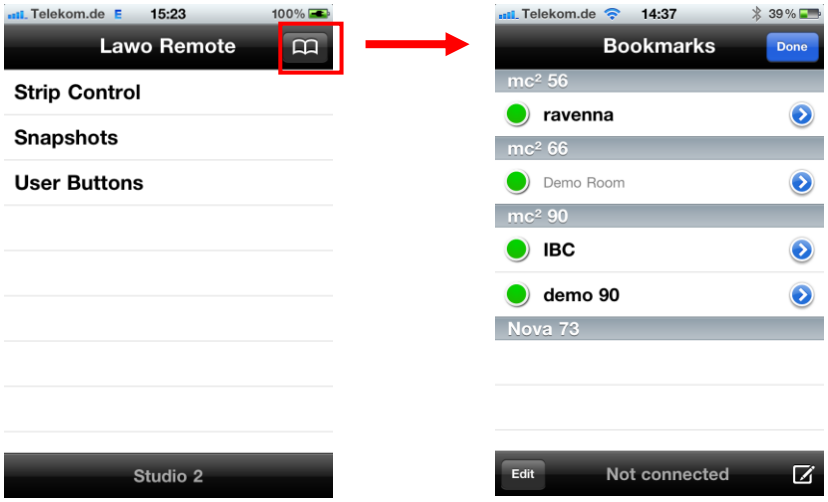
Note

Note that the Lawo Remote user buttons are assigned from the **Custom Functions** display, and therefore may vary when you connect to a different console. For details on how to change the assignments, please see Page 196.

Disconnecting from the System

1. To disconnect from the system, select the Bookmarks icon at the top right of the display.

*The **Bookmarks** page re-opens and the connection status, at the bottom of the display, updates to "Not connected":*



Appendices

Appendix A: Digital Output Settings

For each digital output, sample rate conversion and dither are applied automatically depending on your choice of sample rate and word length from the **Signal Settings** display:

The following table explains the results of each clock selection and word length combination:

Clock Selection	Word Length Selection	SRC on/off	Dither Status
System	24-bit	SRC off	Off (Truncate)
System	20-bit	SRC on	Dither on
System	16-bit	SRC on	Dither on
44.1kHz	24-bit	SRC on	Off (Truncate)
44.1kHz	20-bit	SRC on	Dither on
44.1kHz	16-bit	SRC on	Dither on
48kHz	24-bit	SRC on	Off (Truncate)
48kHz	20-bit	SRC on	Dither on
48kHz	16-bit	SRC on	Dither on
Follow Input	24-bit	SRC on	Off (Truncate)
Follow Input	20-bit	SRC on	Dither on
Follow Input	16-bit	SRC on	Dither on

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