



NEUTRINO

User Manual

 **XILICA**

Important Safety Information

1. READ THESE INSTRUCTIONS

All the safety and operating instructions should be read before the product is operated.

2. KEEP THESE INSTRUCTIONS

The safety and operating instructions should be retained for future reference.

3. HEED ALL WARNINGS

All warnings on the product and in the operating instructions should be adhered to.

4. FOLLOW ALL INSTRUCTIONS

All operating and use of instructions should be followed.

5. DO NOT USE THIS APPARATUS IN WATER.

Do not use the product near water. For example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

6. CLEAN ONLY WITH DRY CLOTH.

Unplug the unit from the wall outlet before cleaning.

7. DO NOT BLOCK ANY VENTILATION OPENINGS

Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the limit and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or similar surface. This product should never be placed near or over a radiator or heat source. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

8. DO NOT INSTALL NEAR ANY HEAT SOURCES

This product should be situated away from heat sources such as radiators, stoves or other products (including amplifiers) that produces heat.

9. DO NOT DEFEAT THE SAFETY PURPOSE OF THE POLARIZED OR GROUNDING-TYPE PLUG

A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prongs are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. PROTECT THE POWER CORD FROM BEING WALKED ON OR PINCHED PARTICULARLY AT PLUGS, CONVENIENCE RECEPTACLES, AND THE POINT WHERE THEY EXIT FROM THE APPARATUS.

11. ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

12. USE ONLY WITH CART, STAND, TRIPOD, BRACKET, OR TABLE SPECIFIED BY THE MANUFACTURER, OR SOLD WITH THE APPARATUS. WHEN A CART IS USED, USE WITH CAUTION WHEN MOVING THE CART/APPARATUS TO AVOID INJURY FROM TIP-OVER.

Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury to someone, and serious damage to the appliance. A unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

13. UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

For added protection for this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power surges.

14. REFER ALL SERVICING TO QUALIFIED PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANY WAY. SUCH AS, WHEN THE POWER SUPPLY CORD OR PLUG IS DAMAGED, LIQUID HAS BEEN SPILLED, OR OBJECTS HAVE FALLEN INTO THE APPARATUS, THE APPARATUS HAS BEEN EXPOSED TO RAIN OR MOISTURE, DOES NOT OPERATE NORMALLY, OR HAS BEEN DROPPED.

15. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

16. APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

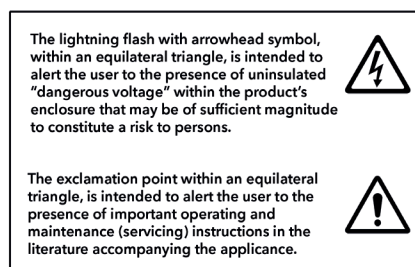
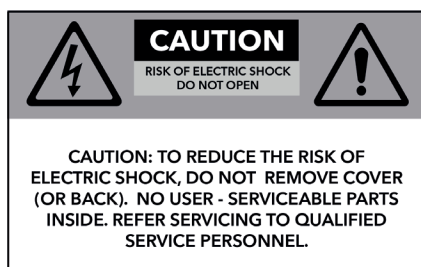


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What's in the Box

- Neutrino series hardware device
- Hard copy of the Quick Start Guide
- USB drive with Xilica Designer software, Help file, User manual and Specs sheet
- Detachable IEC 90-240 VAC (50-60Hz) power cable
- Detachable 3.5mm Phoenix/Euro type terminal block connectors

What you need to Provide

- Computer with a processor 1GHz or higher
- Windows 7 or higher
- Mac OS X 10.8 or higher
- 500 MB of available space
- 1 GB graphics card
- 4 GB of RAM
- Network interface (Router, PoE switch)
 - A router is used for IP assignment and easy connectivity to computer and control devices.
 - A PoE switch is used for controllers if local power is not used.
- Ethernet cable (Cat5/6)

Getting Help

Additional Help Files and video tutorials are available at our website: www.xilica.com

For further technical support, please email: support@xilica.com and we'll connect you with a solutions engineer. Alternatively, you can call our worldwide offices for immediate assistance:

North America & Rest of World: +1 905-770-0055

Europe: +31 29940-1100

China & Hong Kong SAR: +852 2604-9382



 **Badge name**

 **Network LED**

When the processor has an Ethernet cable connected, the Network status LED will light orange once the processor initializes. If there is no Ethernet cable attached, this light will remain off.

Note: When the Network status LED is on, it does not indicate that you have established a Network connection - only that an Ethernet cable is connected to the processor. Proper Network connection is displayed in Xilica Designer's Network view. For more detail please refer to 'Network view' on Page 11.

 **Power status LED**

When the device is Powered On, this indicator will light blue.

 **Input LEDs**

Each input channel has a dual color LED signal indicator. Green displays the signal present at -40dBu and Red at +17dBu at the advent of analog clipping.

 **Output LEDs**

Each output channel has a dual color LED signal indicator. Green displays the signal present at -40dBu and Red at +17dBu at the advent of analog clipping.

 **LCD Display**

The LCD display shows all of the necessary information to control the settings of the unit from the front panel.

 **Menu buttons**

There are six menu buttons: **<<Menu** (Menu down), **Menu>>** (Menu up), **<<Cursor** (Cursor down), **Cursor>>** (Cursor Up), **Enter** and **Exit**.

<<Menu: Go to previous menu screen

Menu>>: Go to next menu screen

<<Cursor: Go to previous cursor in the menu screen

Cursor>>: Go to next cursor in menu screen

Enter: Enter enters the **system menu** from the main menu and is used in the system menu to proceed with selected actions

Exit: Exit to **main menu**

 **Jog wheel**

Scroll through menu options using the jog wheel.

 **Xilica badge**



- 
Power On/Off switch

- 
Power input connector

Insert the supplied IEC plug connector into the socket. Connect the AC end of the cord into a 90-240 VAC 50-60Hz power source.

- 
Ethernet control

Neutrino utilizes a TCP protocol for communication with the host computer running the Xilica Designer software. The port is a standard RJ45 (Ethernet).

- 
IP Reset

Reset the processor network settings using this button. Please refer to 'IP Reset instructions on Page 12.

- 
AES/EBU connector

Digital I/O capability of 8x8 AES/EBU channels on a separate connector. **Only available for 'D' model versions. (Neutrino-D, ND models)**

- 
Dante connector

Digitally transport 16x16 I/O of Dante network audio bi-directionally over an Ethernet cable. **Only available for 'N' model versions. (Neutrino-N, ND, and AEC-N models)**

- 
GPIO input/output

Utilizing a twisted pair wire with an attached terminal block, you can use external signals to control parameters such as triggering presets within the Xilica Designer software or control external devices like an electric screen, for example.

- 
Analog mic/line outputs

Euro/Phoenix style terminal block output connections utilizing 3.5mm terminal block connectors (included). Use balanced shielded audio cabling. Neutrino has eight or sixteen switchable mic/line outputs, depending on the model.

- 
Analog mic/line inputs

Euro/Phoenix style terminal block input connections utilizing 3.5mm terminal block connectors (included). Use balanced shielded audio cabling. Neutrino has eight or sixteen switchable mic/line inputs w/ 48v phantom power, depending on the model.

Initial Device Connectivity:

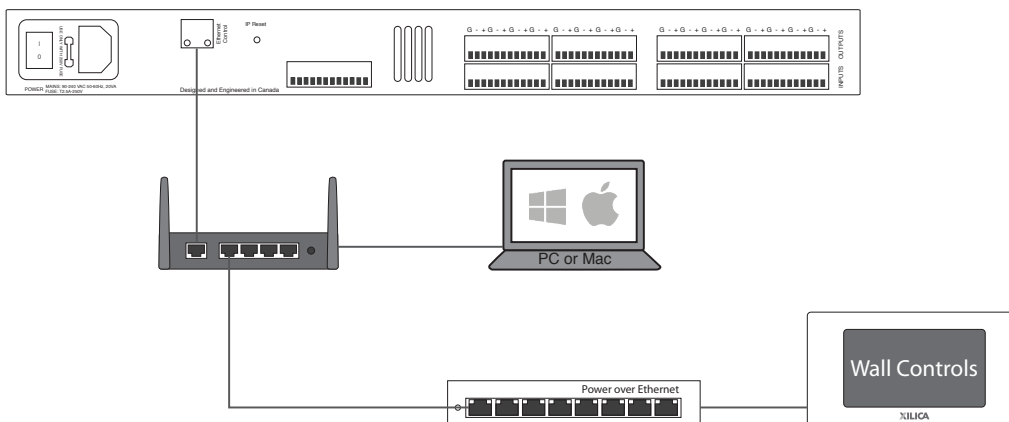
Xilica processors and control devices run on a network based infrastructure and are set up and controlled by a host computer via Ethernet using the Xilica Designer software.

A network connection can be made between the computer and processor using:

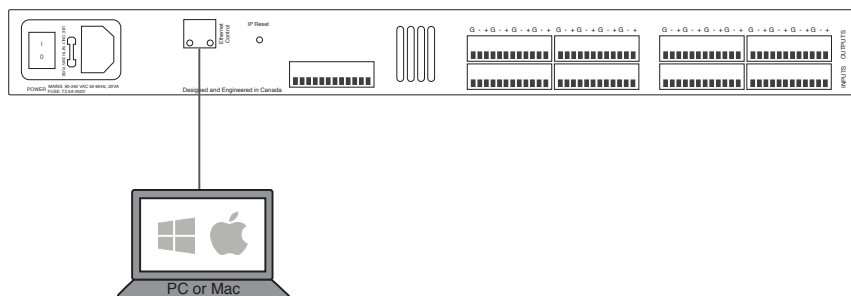
- DHCP enabled Router or Server/Router combination (Recommended)
- or a non-DHCP direct connection or indirect connection via an Ethernet switch.

Note: DHCP enabled Router/switch gear should be turned on first, with all Ethernet cables connected to the hardware prior to powering on the Hardware. This will allow for proper handling of IP address distribution to the Hardware. The IP address assignment is automatic if connected to a DHCP enabled router.

A) DHCP enabled router or server/router combination (Recommended)



B) Non-DHCP direct connection or indirect connection



All wired connections use a standard RJ45 Cat 5/6 (Ethernet) connection.

Xilica Designer and XTouch Applications can also be connected via a Wi-Fi connection, but this is not recommended.



Standard RJ45 cable

A) DHCP enabled router or server/router combination (Recommended)

With DHCP enabled routers and servers, the processor will automatically obtain the IP address upon power up and connection.

When Xilica NeuPanel Series wall controls will also be used, it is recommended to use a router and PoE switch. This combo provides DHCP as well as power to the wall controls. Linksys routers and Netgear switches are recommended.

B) Non-DHCP direct connection or indirect connection

When the processor is connected directly to a computer or indirectly via a switch or hub and DHCP is not available to assign IP addresses, the connection process is not automatic.

1. Single processor (Non-DHCP)

Once no DHCP is detected, the processor will either try to connect using the IP address last assigned and stored on the device or attempt to revert to its default IP address of 169.254.128.128.

Under some conditions, the processor may refuse to relinquish its stored IP addresses or revert to its default IP address and thus refuse to connect. We recommend performing an IP Reset (Page 12).

2. Multiple processors (Non-DHCP)

For multiple processor connected to the network with no DHCP available, the user will have to manually assign unique IP addresses to each device. (Page 14-16)

**Connect Mains Power**

Insert the supplied IEC power cable and connect the AC end of the cord into an AC power source of 90-240 VAC (50/60 Hz).

Power On Devices

With your processors and devices connected as a network or directly/indirectly to your computer, power on all devices. On power up, the processors blue power status LED and LCD display will light.

If the processor has an Ethernet cable connected, the orange Network LED will light once the processor initializes. (Please note that this does not mean you have established a network connection but only that an Ethernet cable is connected. Network connection is displayed in Xilica Designer's Network view.

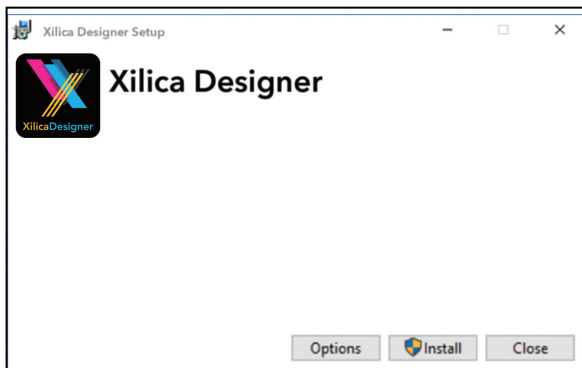
Upon power up, the processor will search for a DHCP router or server to obtain an IP address.

If it locates a DHCP server or router, it will connect quickly. If not, the processor will revert to its default IP address (169.254.128.128). If you are using a non-DHCP direct or indirect connection, please follow 'Manual IP address assignment' on page 14-16.

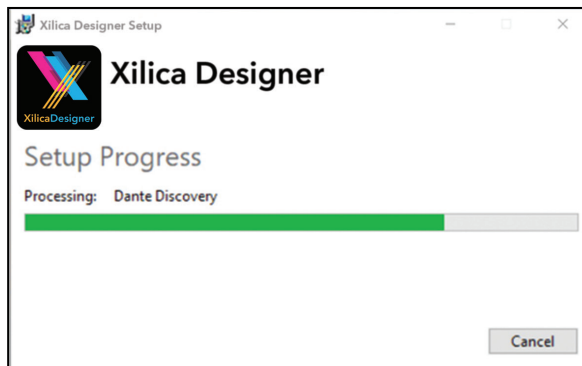
Xilica Designer Software Installation

Windows Platform Installation

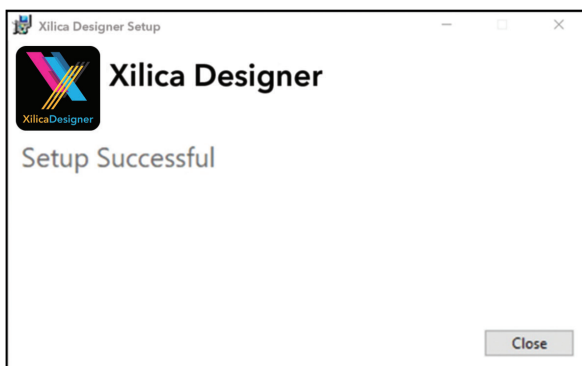
1. With the Xilica USB thumb drive included with your Xilica product, transfer the files from the USB to a memorable location on your computer. Alternatively, you can download the latest version of the Xilica Designer software from the Xilica website (www.xilica.com). It is highly recommended that you make sure you are using the latest version.
2. Double click on the 'XilicaDesigner.exe.' file saved on your computer.
3. When asked to install the file, click 'Install' to continue.



4. Allow the program to complete the installation process. This may take a several minutes.



5. When complete, Windows will ask for permission to allow firewall access. The suggested setting is to allow Xilica Designer to communicate in Private networks, such as home or work. Allow access to public networks at your own discretion. Check the appropriate boxes, then click 'Allow Access' to finish.
6. The Xilica Designer software is now installed.

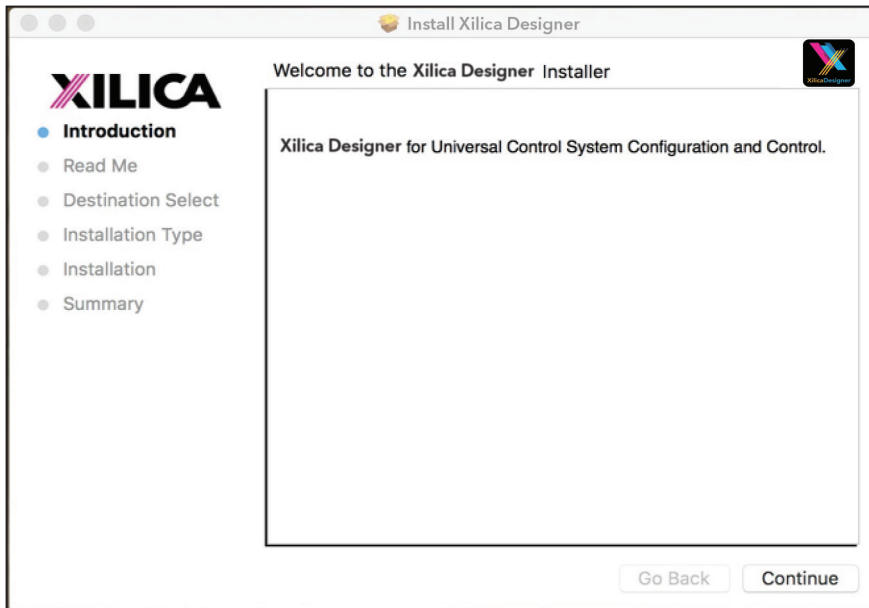


Installation Notes

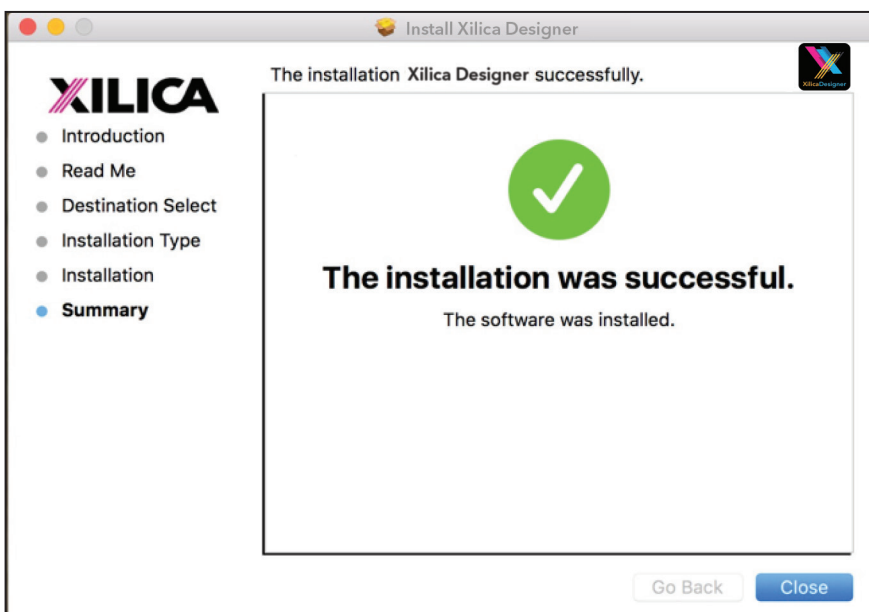
If a personal Firewall is set up on your computer, a pop-up Firewall window may ask whether users want to "Block" or "Allow" Xilica Designer from accessing the network. Select "Allow" to continue the installation.

Mac OSX Platform Installation

1. With the Xilica USB thumb drive included with your Xilica product, transfer the files from the USB to a memorable location on your computer. Alternatively, you can download the latest version of the Xilica Designer software from the Xilica website (www.xilica.com)
2. Double click on the 'XilicaDesigner.mpkg.' file saved on your computer.
3. OSX will display an installation dialogue. Read and follow each step carefully, then click 'continue' to proceed.

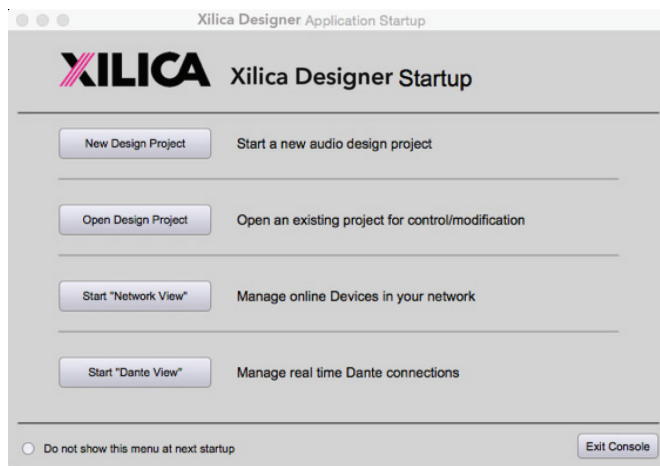


4. When the installation is successful, the following dialogue will be displayed.



Launch the Xilica Designer Software

Upon launching the Xilica Designer software, a start-up window will pop up.



You may select a 'New Design Project', 'Open Design Project', 'Start Network View' or 'Start Dante View'. (Network and Dante View are also available within the Xilica Designer software).

Select 'Start Network View'.

Network view



The Network View displays all processors and control devices on the network. The Network View displays information such as the device model, a network connection indicator, Computer address, IP address, Manufacturer and the firmware version.

In Network View, you should see your processor(s) listed.

At the top left of the device block is a network connection indicator. This indicator displays three colors: red, yellow and green. (Circled in Red)

Network Connection Indicators:

- Green: The device is Connected and operational.
- Yellow: The device is Connected and online, but not operational. Hovering over the network indicator will display a pop-up message of identified problems. (Normally this would indicate that no device design is loaded.)
- Red: The device is not connected and offline. There is no communication between the Xilica Designer software and the device. Please check all cables, modular cards, connections and power. If the processor is busy performing a firmware upgrade or is in the process of rebooting, this may be a temporary offline interruption.

At times you may just see an exclamation mark (!). This indicates that a firmware upgrade is available.

Normally this is not an issue unless there are updated modules in the project file that the outdated firmware does not support.

Connection Problems?

Yellow Network indicator

In Xilica Designer's Network View, if there is a Yellow network connection indicator at the top left of the device, the device is connected and online, but Not operational. To assist in identifying the problem, hover your cursor over the device network indicator and a pop-up message will identify the problems it has detected.

Probable causes include:

Non-DHCP Connection

When you are Not connected to a DHCP enabled router or server, the processor will revert to its auto-configured IP Address (169.254.128.128). In Network View, you can view the IP address displayed for your device(s).

If the default IP address is shown, the default IP address is in effect.

If the default IP address is incorrect, please follow the 'IP Reset' instructions below.

For multiple processor connected to the network with no DHCP available, the user will have to manually assign unique IP addresses to each device. Please refer to 'Manual IP address assignment' and 'Assigning a Static IP Address to your computer' on Page 14 -16.

DHCP Connection

If you are connected to a DHCP enabled router,

1. Reboot the router.
2. Restart the processor.
3. Shut down the Xilica Designer software and restart the program again.
4. The network connection indicator should now be green, indicating that the processor is connected, online and operational.

Note: If you are Not connecting via Wi-Fi, turn off your device's Wi-Fi so the device can connect to the desired network.

If the connection indicator is still Yellow (connected but Not operational) after the reboot procedure, it is possible that the processor is holding onto a previously assigned IP address and is not allowing the processor to revert to its default IP address. To resolve this issue, the processors' network settings and password need to be reset. Please follow the IP reset / Reset processor network settings and password procedure.

IP Reset / Reset Processor Network Settings and Password

1. Shut down the Xilica Designer software.
2. Power Off the processor.
3. At the back of the processor, you will see a small, recessed push button labelled "IP Reset".
4. Push the IP Reset button inward using a small pointed object.
5. While holding the button pushed in, power up the device.
6. Wait 5-10 seconds after power up until the orange "Network" light begins to flash, and then release the IP Reset push button.
7. Wait for the processor to power up completely. This may take up to several minutes.
8. Open the Xilica Designer software and select "Start Network View"
9. In Network View, the network status indicator should now be green (Connected and operational)

If the default IP address of 169.254.128.128 is not shown, you're either using an incorrectly configured Static IP setup, or the DHCP server still isn't available to the device.

Software network problems continued

Device Not Ready

If the pop-up message shown says Device Not ready, then the processor needs a design loaded to the unit. If the same error message persists, restart the device and reboot the Xilica Designer software.

DSP Processing Error

If the pop-up message shown says DSP Processing Error, this could be a bad pre-designed DSP project.

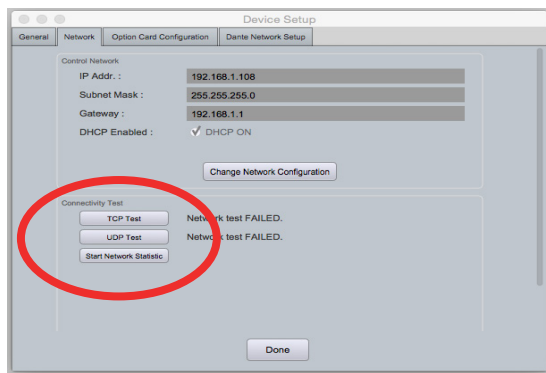
1. Retry reloading the pre-designed DSP app schematic.
2. If the connection indicator is still yellow, reboot the Xilica Designer software and restart the processor.

Error in Firmware Upgrade

The pop up message shown will print out an error code. Retry the Firmware Upgrade again.

Device can communicate to Xilica Designer with UDP but cannot communicate with TCP

1. Right click the device in Network view and select "**Device Set up**". Select the "**Network tab**"



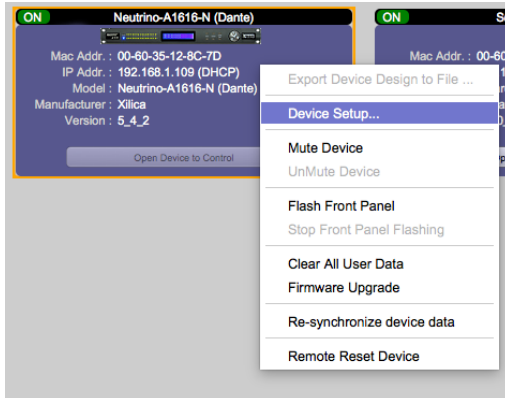
2. Click "**TCP Test**" / "**UDP Test**" to test TCP / UDP connections.
3. If failed, please check your PC's firewall or router settings. If you are not connecting via Wi-Fi, make sure that Wi-Fi is turned off.
4. Click "**Start Network Statistics**" to see network statistic information.
5. Once a change has been made, restart Xilica Designer and review your device connection.

Manual Assignment of IP Addresses for devices

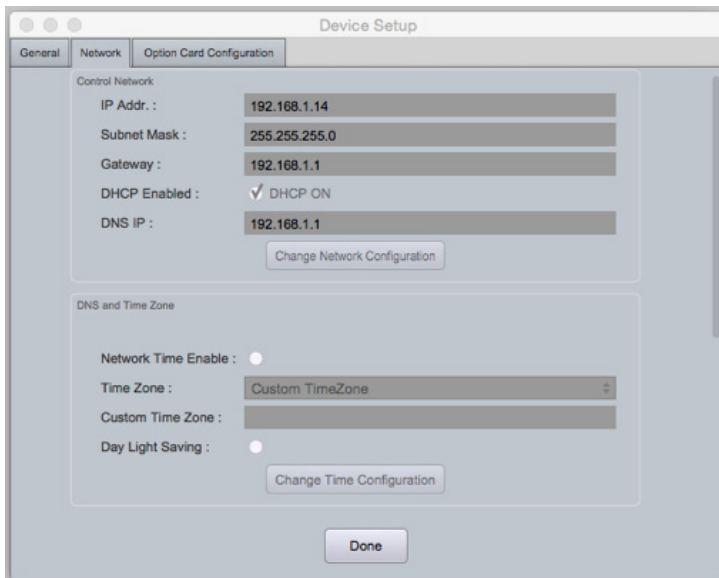
There are applications that require the IP address to be manually assigned (the same solution may apply to some connection issues).

To manually assign IP addresses,

1. In the Network View, right click the device and select '**Device Setup**'.



2. In the '**Network**' tab, select "**Change Network Configuration**" to disable DHCP and to insert IP addresses manually (It also provides two built-in test procedures, device security, and device information along with Dante Configuration, if applicable).



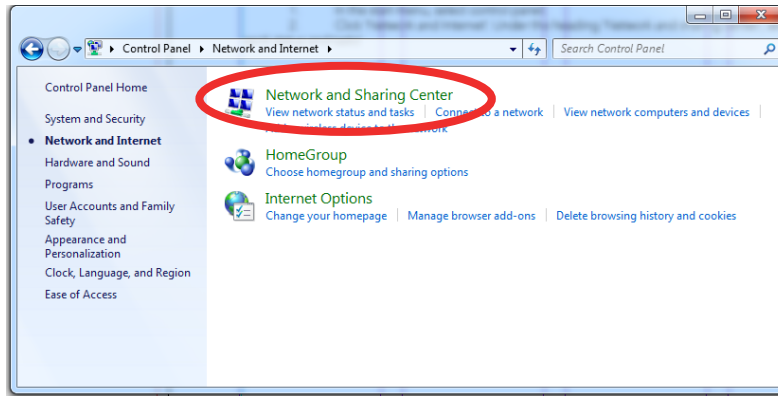
3. When finished, select "**Apply**" to save changes and then "**Done**" to exit.
4. Repeat steps 1 through 3 for each subsequent processor so each processor has its own unique IP address. (For example: 192.168.1.180/181/182...)
The devices will appear Offline in Network view until you are able to assign a static IP address to your computer. (Page 15)

Assigning a Static IP address for your computer

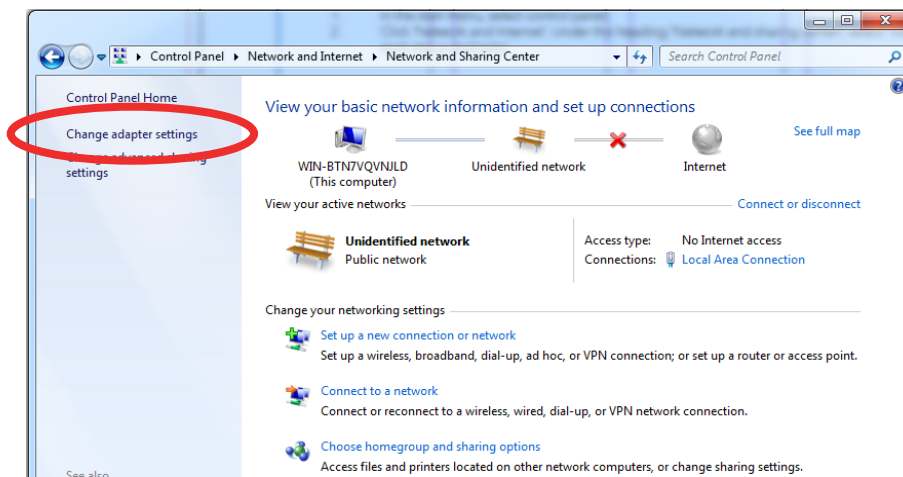
The following process applies to manually assigning a unique static IP address to your computer.

Windows platform

1. In the start menu, select **control panel**.
2. Click '**Network and Internet**'. Under the heading '**Network and sharing center**', select '**View network status and tasks**'



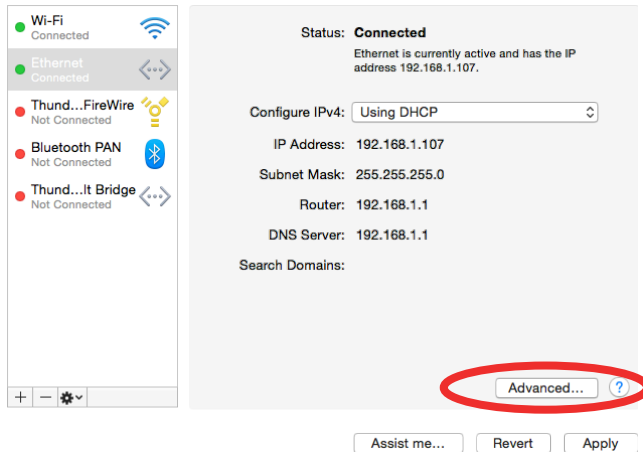
3. Click on '**Change adapter settings**' on the left tab.



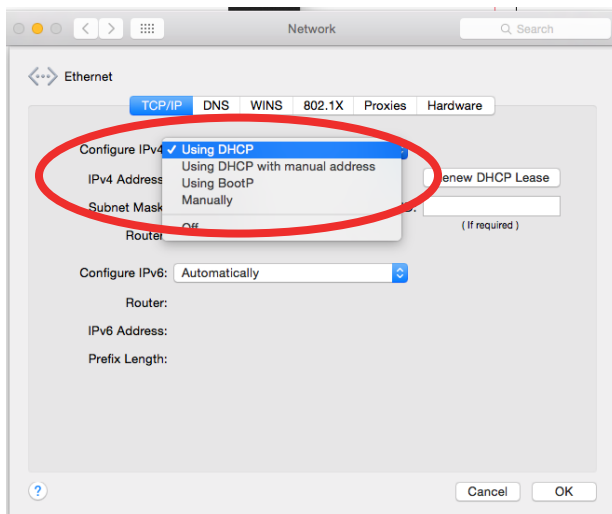
4. Select '**Local Area Connection**' and click on the **Properties** button. Select **Internet Protocol Version 4 (TCP/IPv4)** then '**Properties**' to access the manual IP settings.
5. Set up your computer's IP address to be **192.168.1.X** where X can be any value from 0-255, but unique from other manually assigned device IP addresses.
6. Use the following settings for your PC's unique static address:
IP address: 192.168.1.X (X is any value from 0-255 but unique from other device IP addresses)
Subnet mask: 255.255.255.0
Gateway: 192.168.1.1
DNS Servers: 192.168.1.1
7. If your devices are set up following the 'Manual Device IP Assignment' and 'Assigning a Static IP Address to your computer' sections, the devices will now appear online and connected in Xilica Designer's Network view.

Mac platform

1. From the Apple menu, select **System preferences**.
2. Select '**Network**'. From the sidebar, select the network interface you are using.
3. Then click '**Advanced...**'



4. In the TCP/IP tab, set **Configure IPv4** to '**Manually**' using the drop down menu.



5. Enter a static IP address in the IPv4 Address field. Set up your computer's IP address to be **192.168.1.X** where X can be any value from 0-255, but unique from other device IP addresses.
6. Use the following settings for your computers static address:
IP address: 192.168.1.X (X is any value from 0-255 but unique from other device IP addresses)
Subnet mask: 255.255.255.0
Router: 192.168.1.1
7. Click '**Ok**' and '**Apply**' to apply your changes. Then reboot the Xilica Designer software.

If your devices are set up following the 'Manual Device IP Assignment' and 'Assigning a Static IP Address to your computer' sections, the devices will now appear online and connected in Xilica Designer's Network view.

Firmware Upgrade

It is strongly recommended that you check the Xilica website (www.xilica.com) frequently for the latest software and firmware versions, as these updates may contain critical bug fixes and new features.

Note: Using an older version of software with a newer firmware or newer software with an older firmware will work but some of the features may not be available and bugs could exist.

Before you begin, check your software and firmware versions.

1. In Xilica Designer's Network View, select 'Start Network View'.



The Network View shows all processors and devices connected to the network. The device's current firmware version is displayed here. (Ex. Version 1.0.0)

2. To view the current software version, click on the "About" tab at the top of the software. This window will display your current software version.



Matching the Firmware

To assist you in determining which firmware file is appropriate for your device, refer to the chart below. Note: The file structure may be different from the date that this list was created. Always check the Xilica website (www.xilica.com) to keep updated.

#_#_# Represents the 3 digit version code of the firmware update.

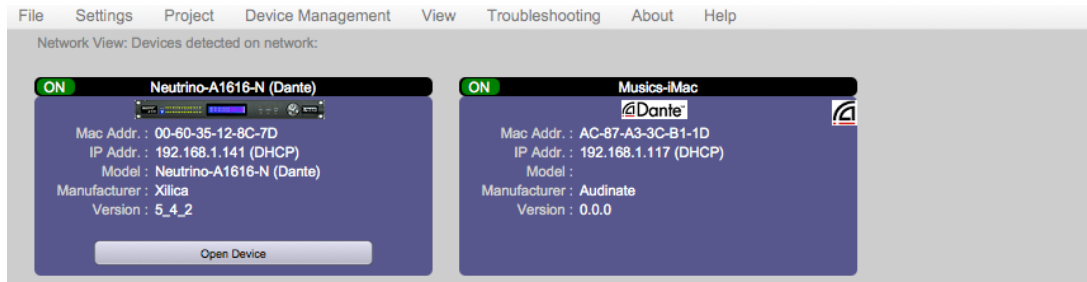
(SOLARO_#_#_#.img)	Solaro series: QR, FR
(NEUTRINO_#_#_#.img)	Neutrino series: A, A-D (AES), A-N (Dante), A-ND (Dante, AES)
(UNO_#_#_#.img)	Uno series: U, U-D (AES), U-N (Dante), U-ND (Dante, AES)
(NEUTRINO-AEC_#_#_#.img)	Neutrino AEC Series
(UNO-AEC_#_#_#.img)	Uno AEC Series
(RIO_#_#_#.img)	Rio Series
(NEUPANEL MINI_#_#_#.img)	NeuPanel Mini Series: K1, K4, S4, S8, S4K1
(NeuPanel Touch_#_#_#.zip)	NeuPanel Touch Device

Step-by-Step Firmware Upgrade Guide

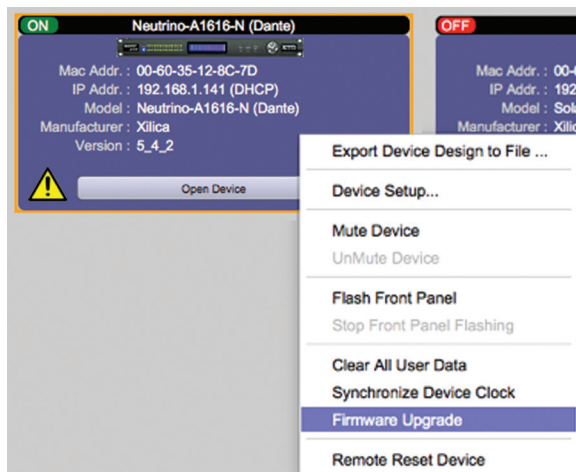
The hardware device must be connected and operational (Green indicator) before upgrading the firmware.

1. Download the latest firmware version for your device from our website. (www.xilica.com)

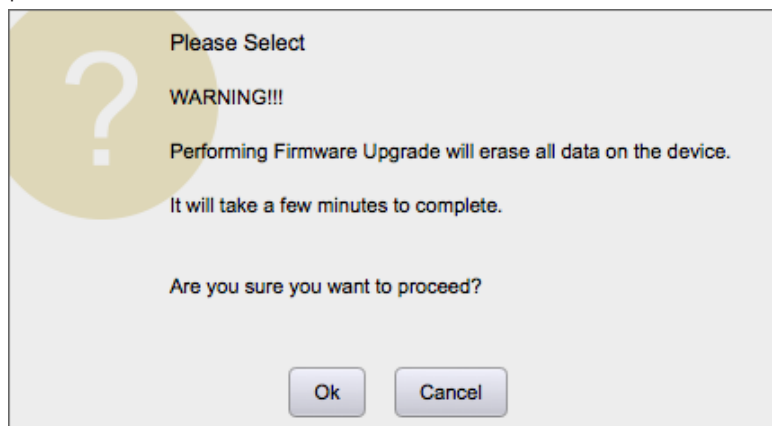
In Network View, all the units on the network are displayed. The network connection indicator is displayed at the top left of each device.



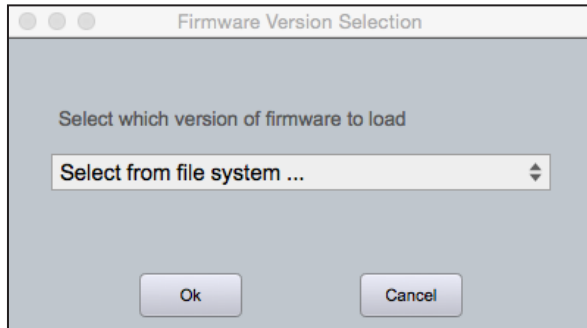
2. Save any design files from the device onto your computer. All programmed data on the device will be erased during the upgrade process. (To save, navigate to the File tab at the top left of the software and click 'Save'.)
After the firmware upgrade is complete, you may reload saved design files back into the device.
3. Right click the device that you would like to update. Select 'Firmware Upgrade'.



4. A pop up window will ask you if you'd like to proceed with the firmware upgrade. Select "OK" to proceed.



5. Click 'Ok' to select a file from your computer. Then navigate to the appropriate firmware file that you have downloaded from our website. Select the correct file and click "Open".
(Ex. A Neutrino A1616-N is being updated, so the firmware file at the time of this document is Neutrino_5_4_2.img.)



6. A status bar in the device window will monitor the Firmware upgrade progress.



7. When the Firmware has been uploaded to the device, the device will automatically restart and update its internal data. This may take several minutes.
8. During this period, the device network indicator will turn RED and appear offline.
DO NOT POWER OFF THE DEVICE as the device is performing self-initialization.



9. Once the device is initialized, the status indicator will become Yellow. This indicates that the device does not have a design file loaded to it yet.

NOTE: Powering Off your device during a firmware upgrade can result in a complete corruption of the processor. If this happens, please follow the 'Xilica Designer: Firmware Upgrade' guide.

Note: If more than one unit needs a firmware upgrade, you can save time by updating them all at the same time. This can be done as long as they are the same Network and have a green network indicator (connected and operational), as displayed on the Network View page.

10. The network indicator of the device should now be green and the device is ready for use.

Creating a Project

At the top left under the 'File' tab, select 'New Project'.

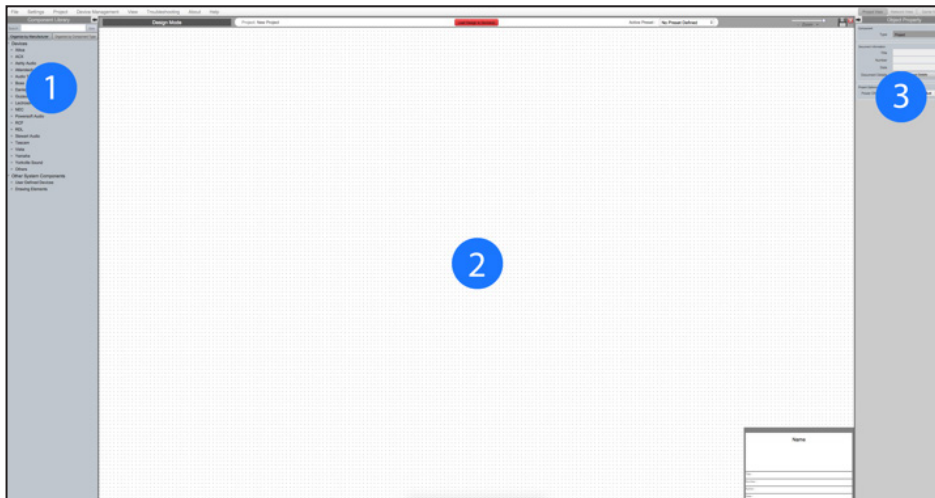
When creating a new project, Xilica Designer will ask you what DSP you are using. Neutrino/Uno series DSP is rather different from Solaro series DSP, therefore the two DSPs cannot be used in the same project file.



For more information, please visit the Xilica Designer section in the Xilica website: www.xilica.com

Switch between Xilica Designer's three windows: Project view, Network view and Dante view any time at the top right of the software.

Project view



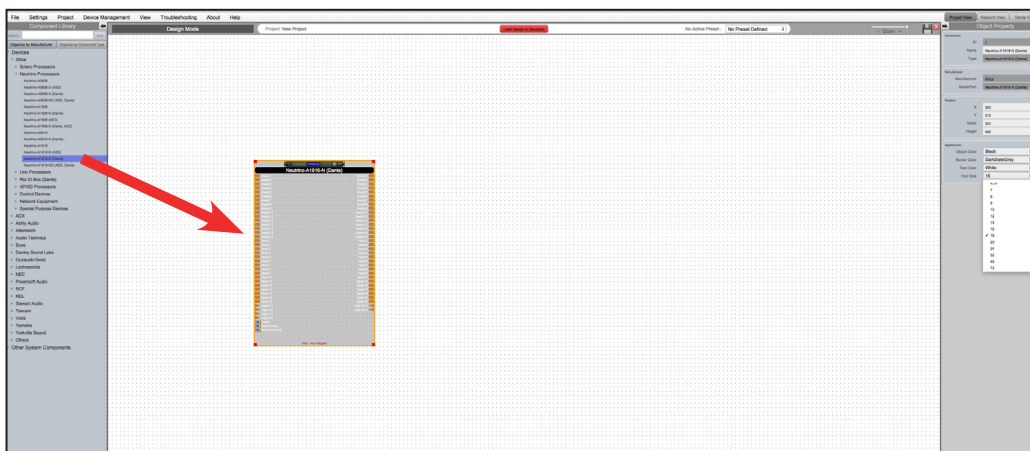
1. To the left of the screen is the Component Libraries Menu.
This menu displays a list of design modules and devices that you can use in your project.
2. The dotted grid in the centre of the screen is your work area.
This area allows you to configure, connect and organize your design modules.
3. To the right of the screen is Object Properties.
This menu allows you to customize your design modules and connections. Simply select your desired module and this menu will display different parameters that you can change in that particular module. (Ex. name, module color, I/O)

Starting a design

For the example, a single DSP hardware block will be used, but a design can be done with multiple DSP hardware items, including the Dante Digital Audio Transport.

It is a good idea to have an understanding of the system design needed for the project prior to starting. Projects can be designed Offline (no devices connected) and the design can be loaded to your devices once the devices are connected and online.

1. From the Component Library, drag and drop your DSP model to the dotted work area.



- With the DSP module highlighted, you may adjust module parameters in the Object Property menu on the right. Object Properties differ for each module selected.

The Object Property panel for the Neutrino-A1616-N (Dante) module is shown. It has two tabs: 'Show Basic Properties' (selected) and 'Show Advance Properties'. The panel is divided into four sections: Component, Manufacturer, Position, and Appearance.

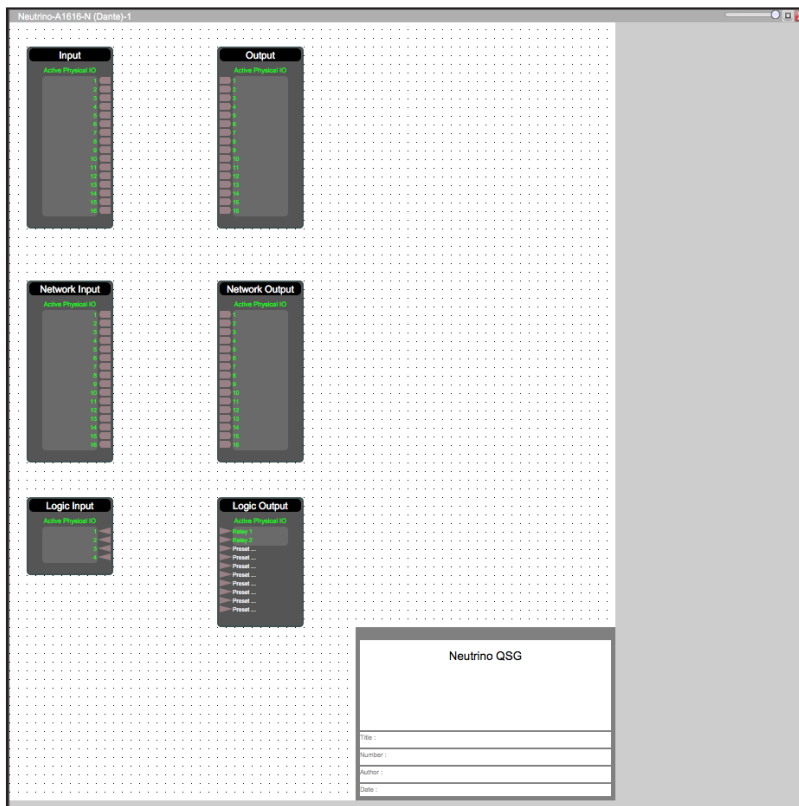
Component	
Name	Neutrino-A1616-N (Dante)

Manufacturer	
Manufacturer	Xilica
Model/Part	Neutrino-A1616-N (Dante)

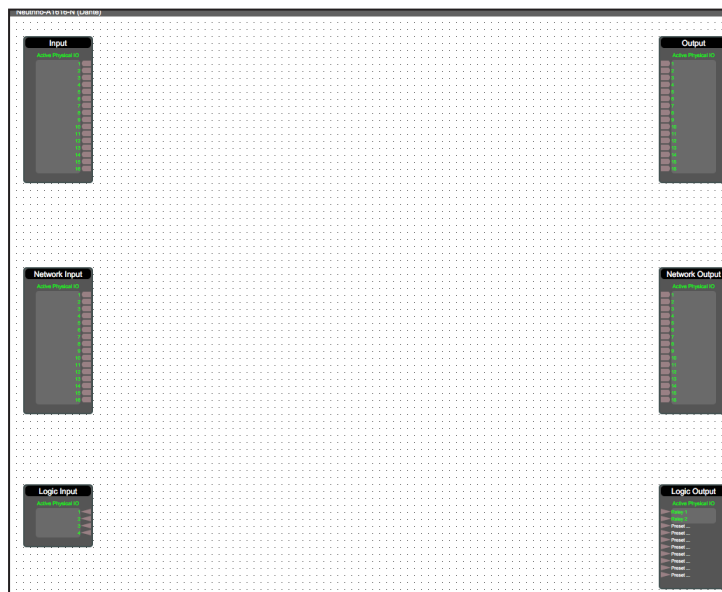
Position	
X	920
Y	220
Width	200
Height	450

Appearance	
Object Color	Black
Border Color	DarkSlateGrey
Text Color	White
Font Size	15

- Double click the DSP module to open the design schematic. A new window will appear. Resize the window by clicking and dragging the corner of the window.

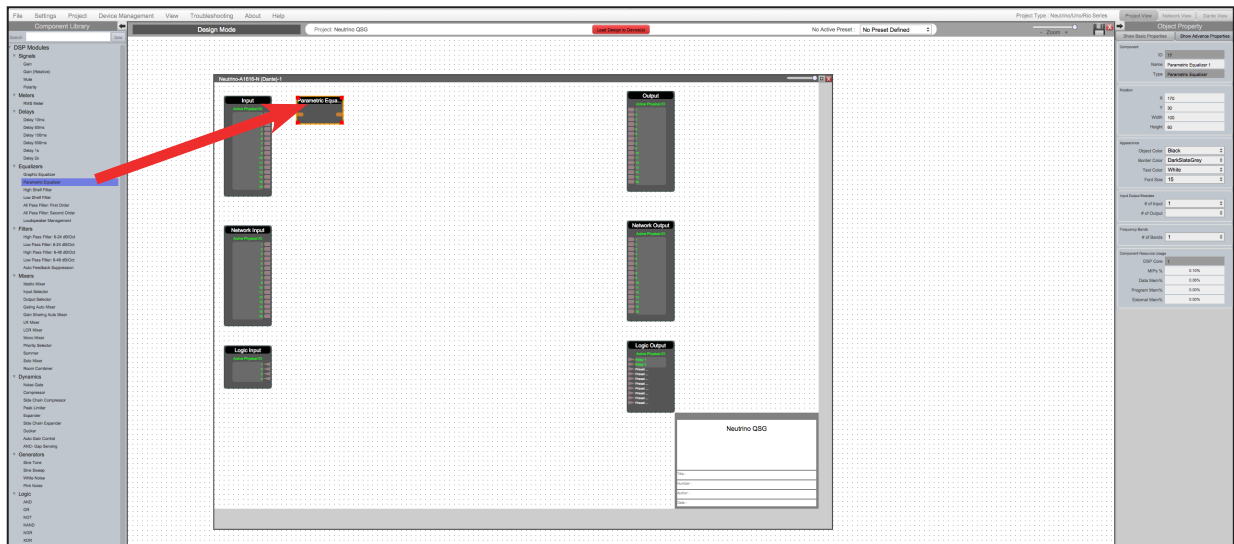


4. To space out your work area, click and drag a selection box around the output modules and drag them to the right. This will extend the work area.



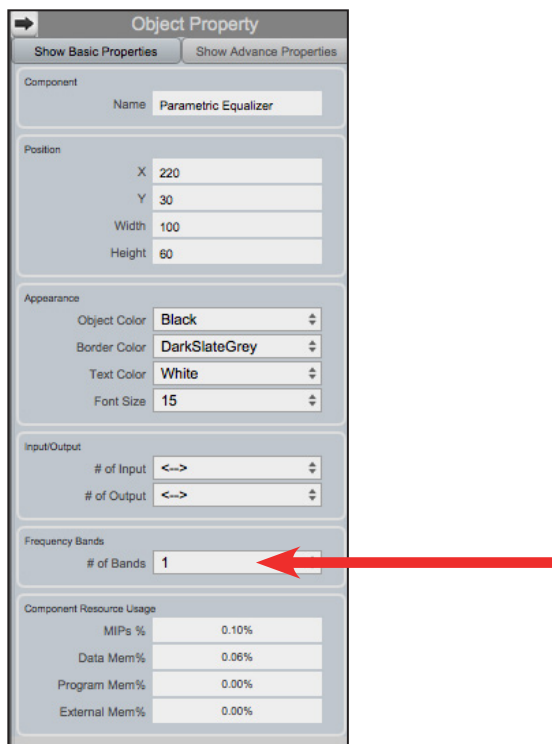
Notice that when this window is selected, the Component Library menu on the left, now displays a variety of DSP modules.

- Click and drag a DSP module into the device schematic window.

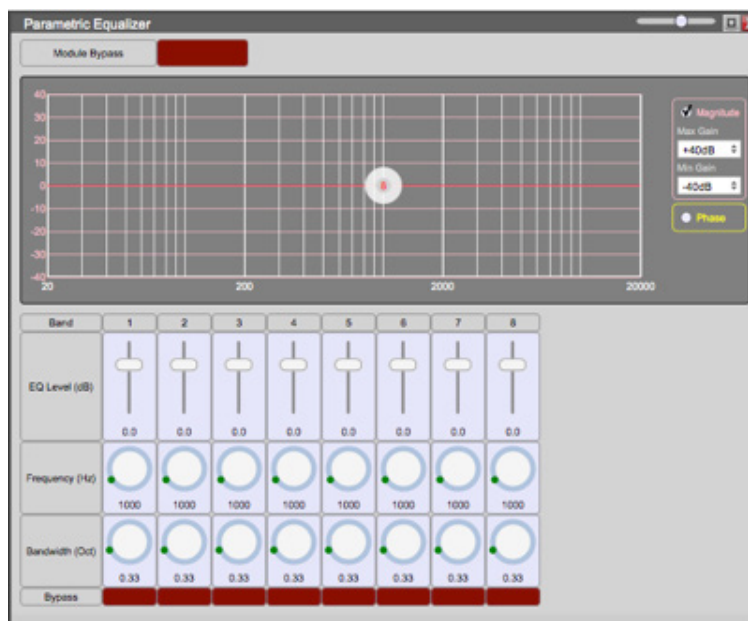


In the example, a PEQ (Parametric Equalizer) was added.

6. In the Object Property menu on the right, you can customize your module.

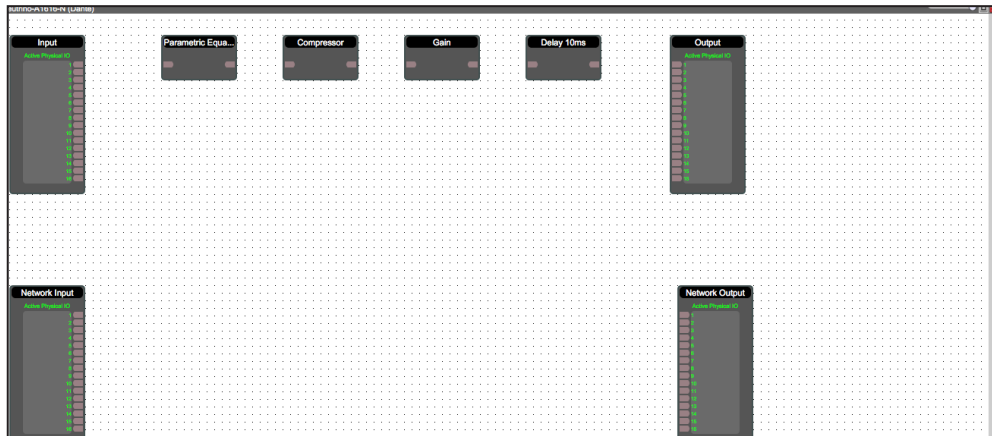


7. Double click the DSP module to open it.

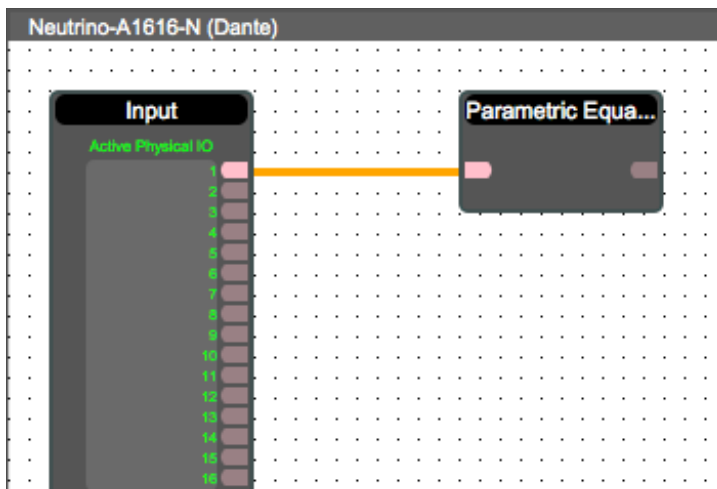


In the PEQ module, the number of bands determined in the object property menu is reflected in the DSP module.

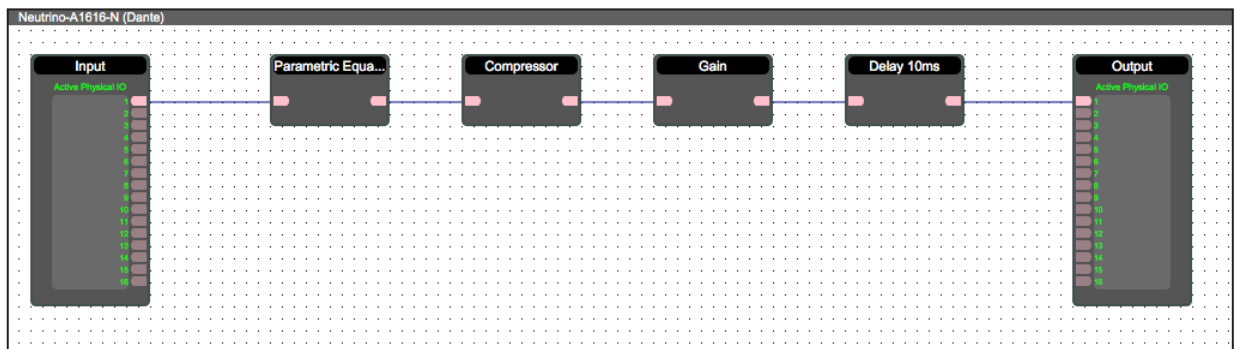
8. Drag and drop other desired modules into the device schematic work area.



9. Click and drag from the first input module node to the PEQ input node. This will create a wire.



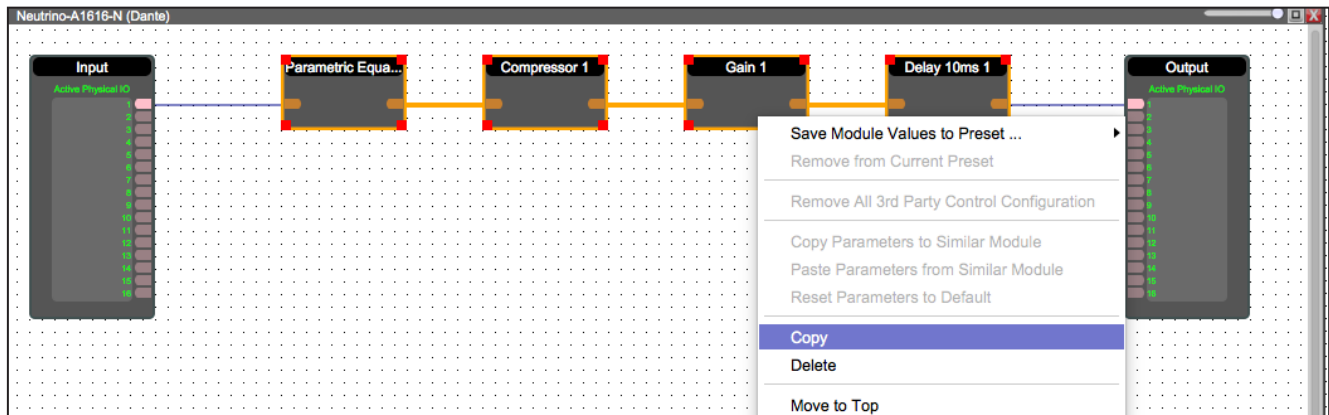
10. For this example, we will route the input to the output channel.



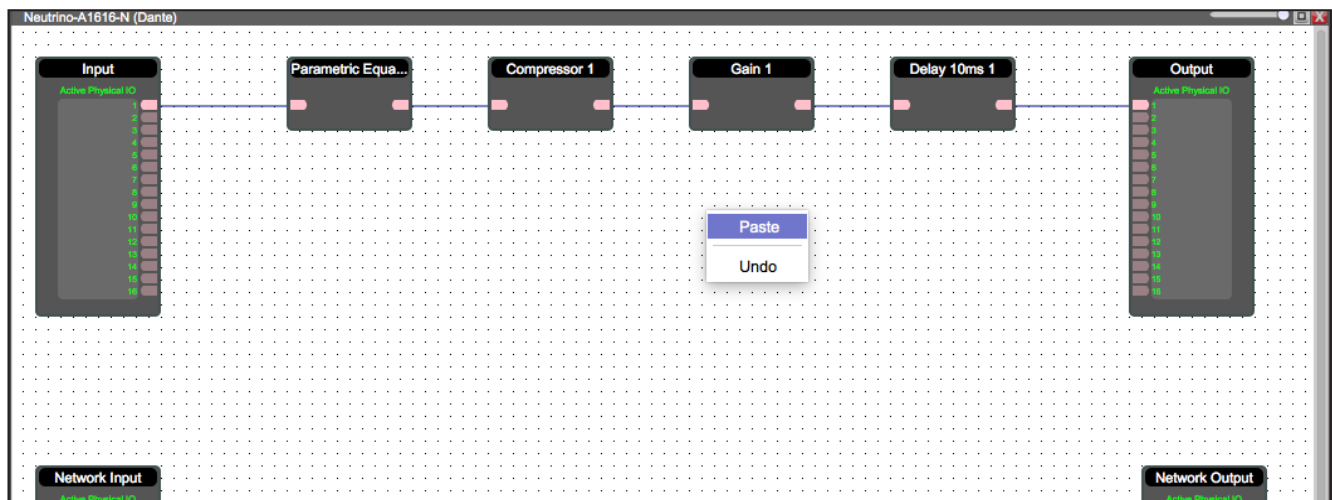
You can add different DSP blocks or duplicate the same processing chain for each channel.

To duplicate the same processing chain,

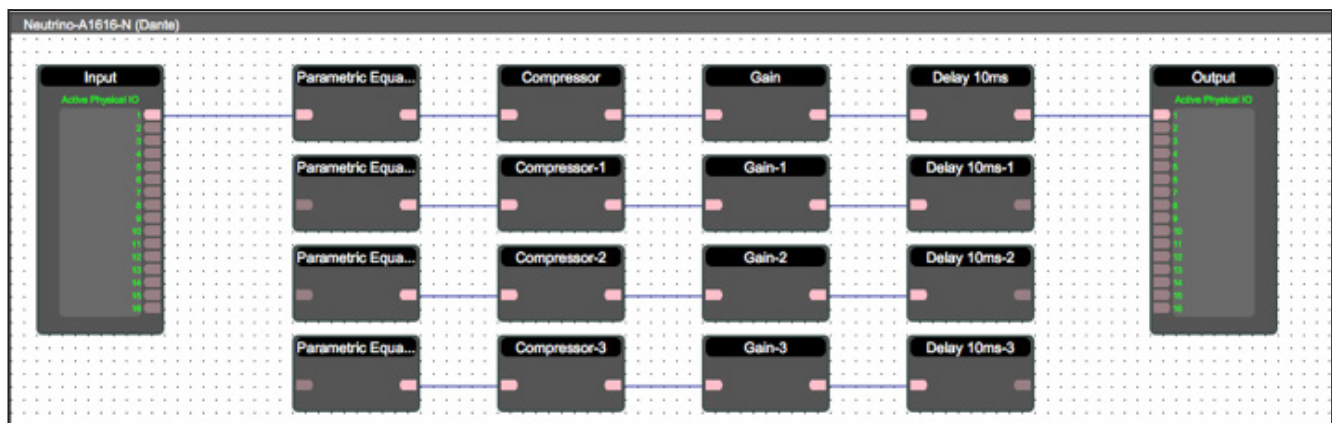
- Click and drag a selection box around the DSP modules. Ensure all modules are highlighted.
- Right click the module and select 'Copy'.



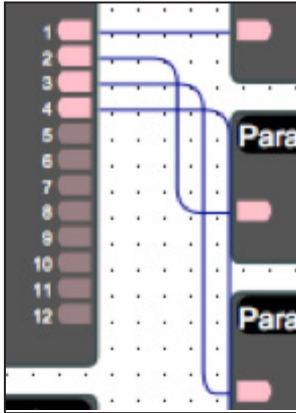
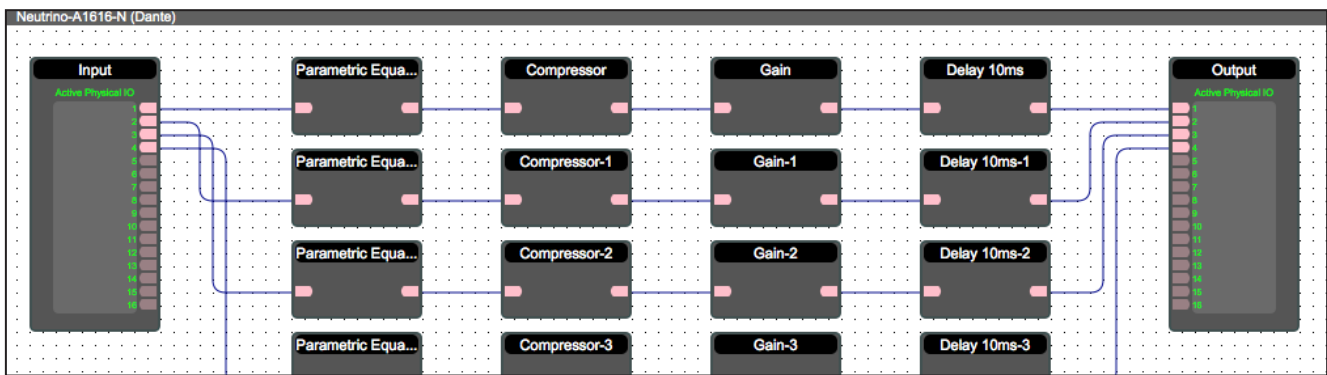
- Then right click the work area and select 'Paste'.



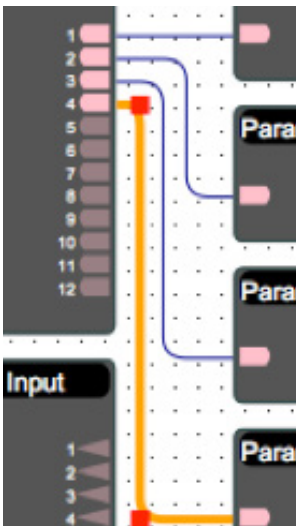
For the example, the chain is duplicated four times.



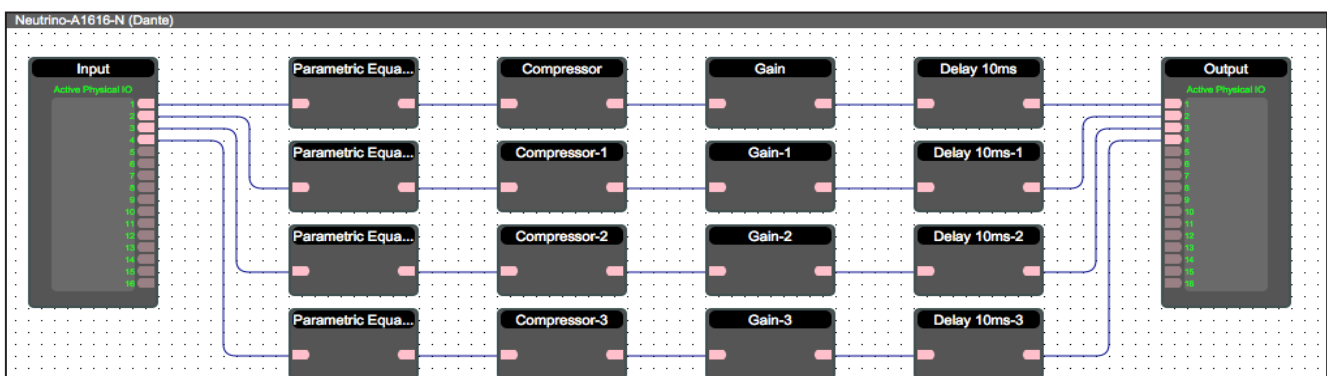
Wire the modules using the same wiring process as above.



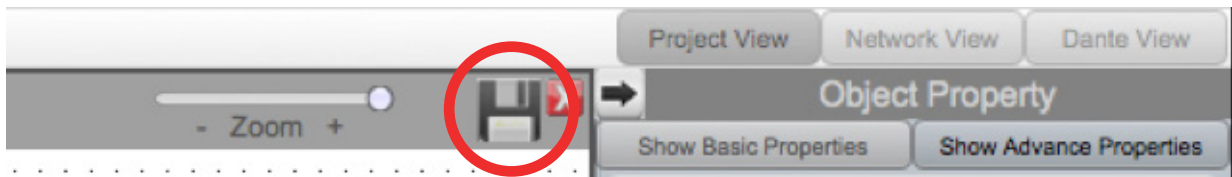
When drawing wires, wires may overlap and be difficult to read.



To move wires, click and drag the corner of a wire
Or highlight the wire and click and drag the red corner nodes.



11. To save your project, navigate to the top left of the software. Under File, click 'Save As' to save a new project file or If a project file is already created, click 'Save' to save all changes. You may also use the save icon at the top right of the work area to save changes.



It is recommended to back up your Master project file to an external location.

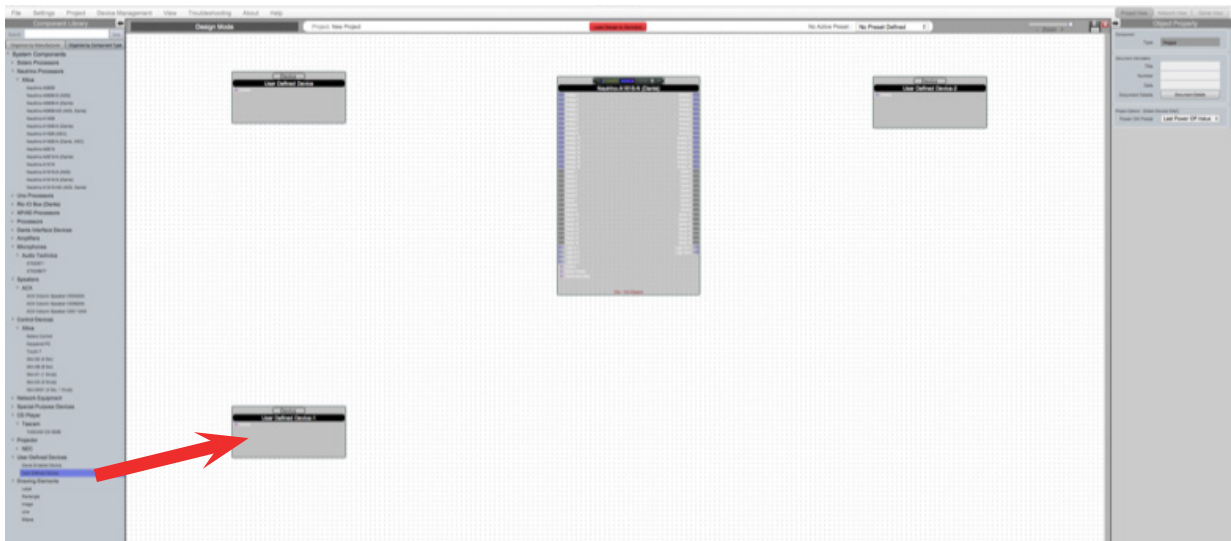
Design Blueprint

Xilica Designer allows the designer to create a Blueprint that can be used for documentation, submittals, and handed to an installation technician for use on the job site. The Blue Print page can include wire identification/type, equipment names and locations, including notes for the job.

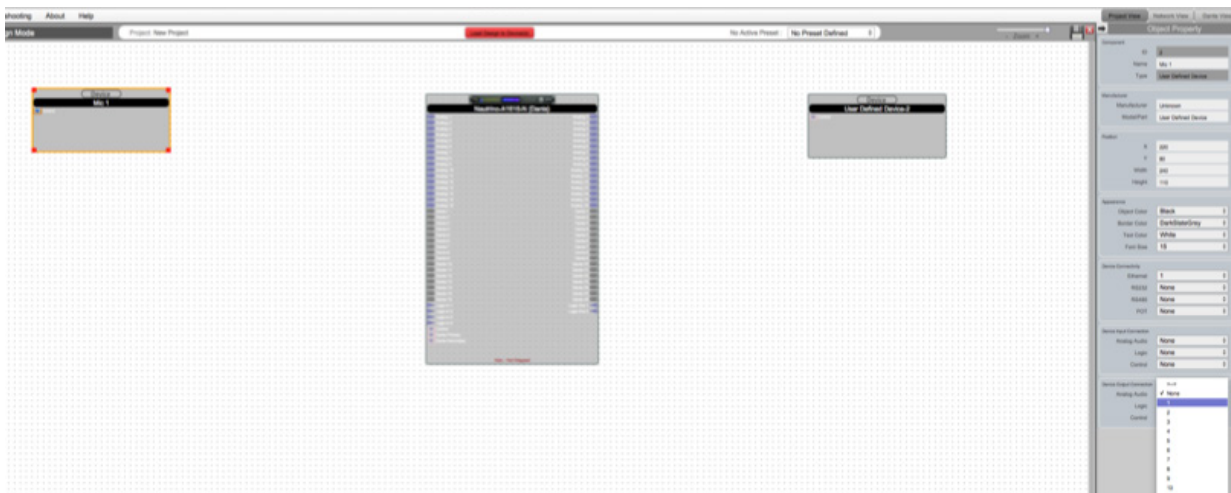
Let's begin by creating a 'Blueprint' for the above example design.

1. From the Component Libraries Menu on the left, click and drag the devices needed for your design.

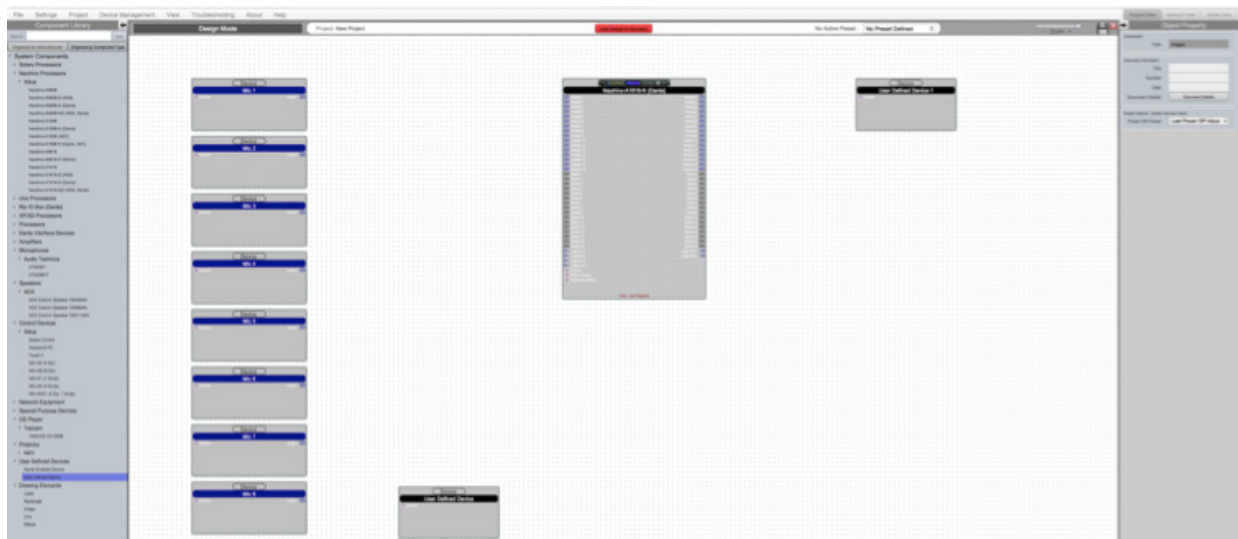
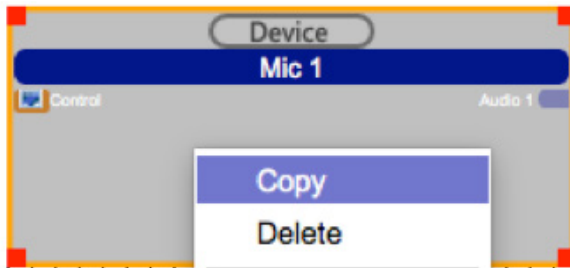
For our design example, a Neutrino A1616-N and three User Defined Devices were added to the work area. Simply click and drag modules to move them and click and drag the corner of the module to resize the objects. (Alternatively, you may resize objects using the Object Property menu)



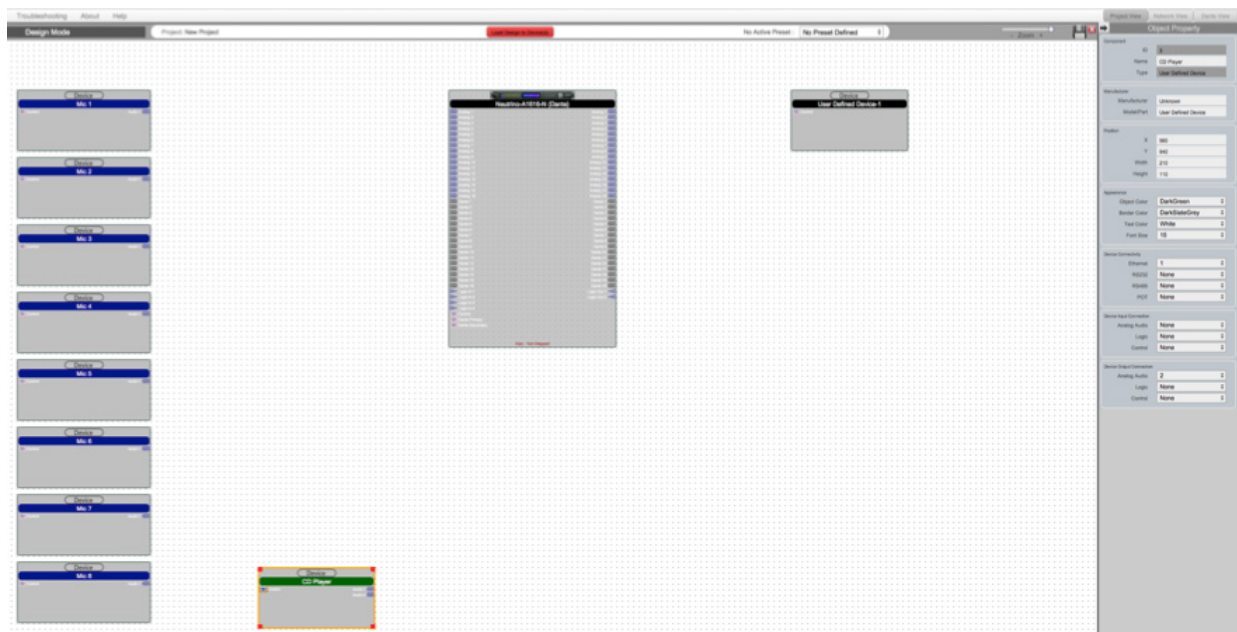
2. Select the first User Defined Device. With the device highlighted, you can change the Object Properties using the menu on the right. (Properties include: Device name, information, color, device connection and I/O options)
For this module, we will create a microphone.



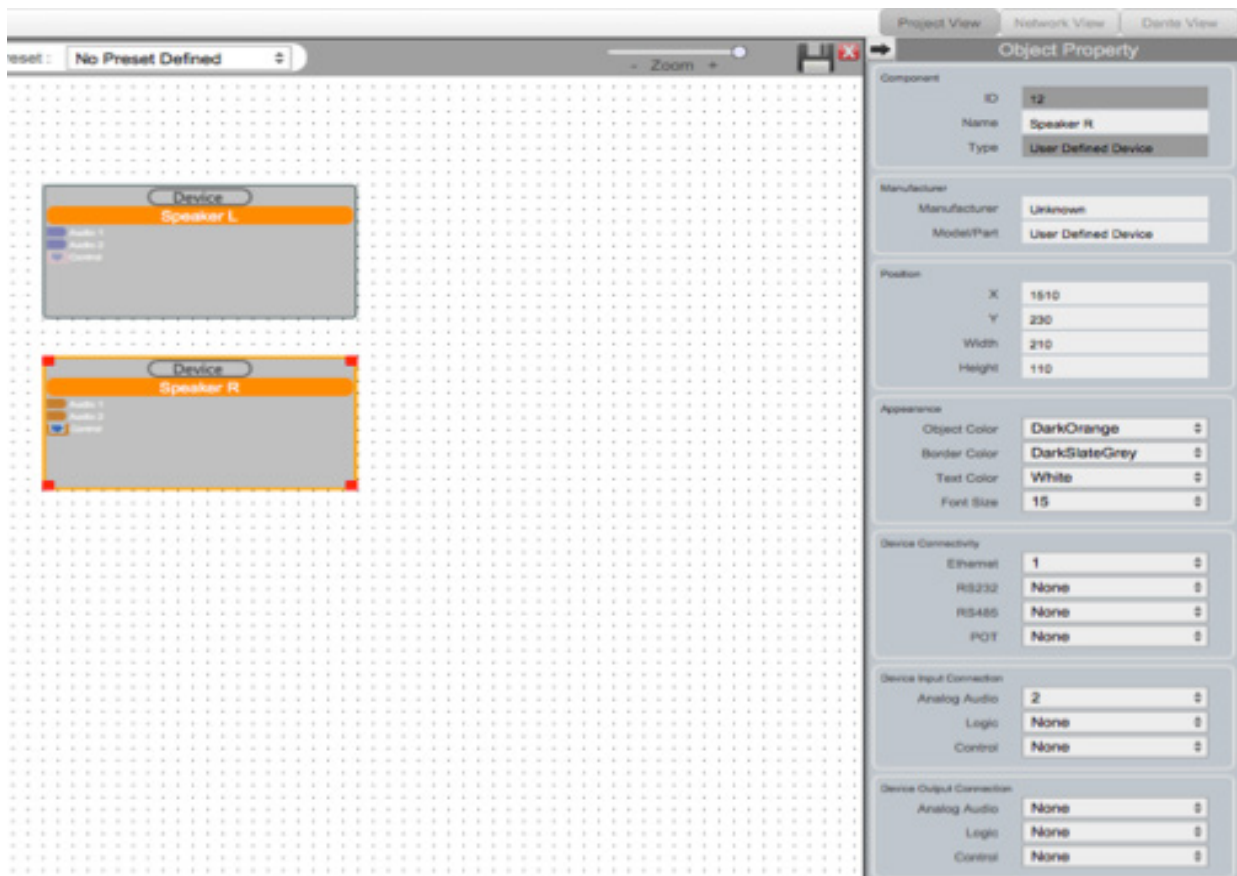
3. Since our example includes eight microphones, we will need to duplicate this module. To duplicate a device, right click the highlighted module and select 'Copy'. Then select the dotted work area and click 'Paste'. You may also copy and paste multiple modules at once.



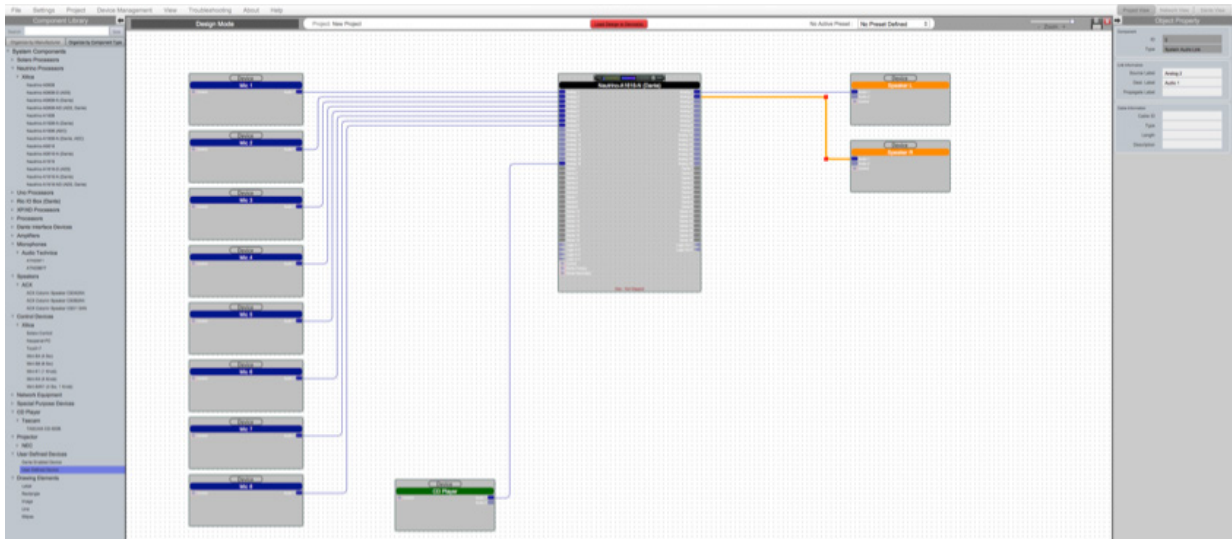
- For the next blank User Defined Device, we will create a background music source. Similarly, adjust the object properties using the menu on the right.



- For our third blank User Defined Device, we will create two output speakers. Adjust the object properties on the right and duplicate the device so that there are two speakers.

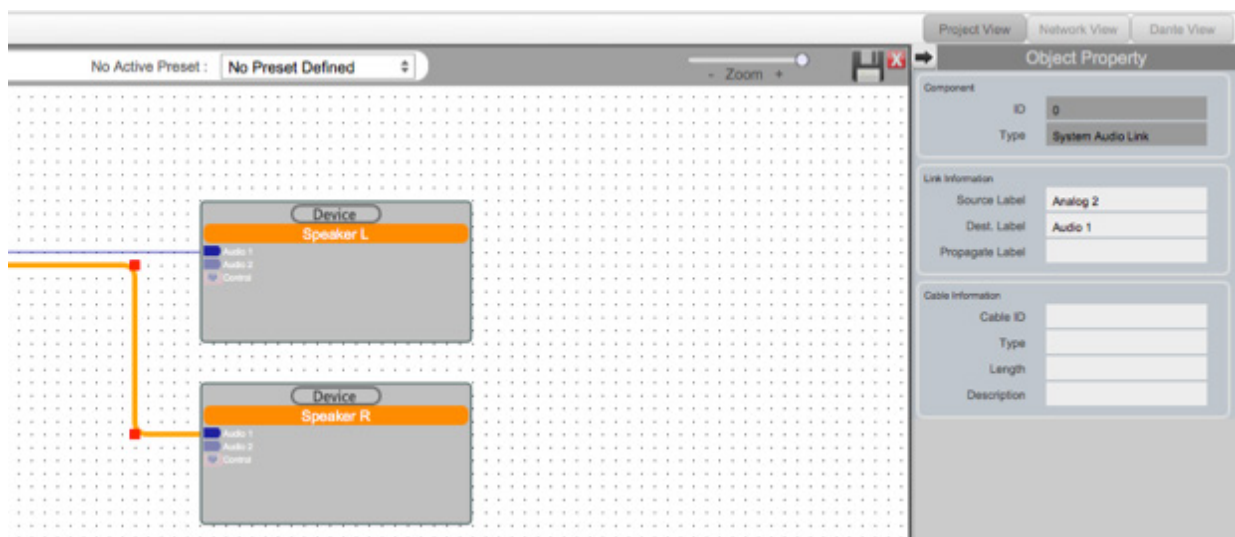


6. To connect your device modules together, simply click and drag from an output node to an input node. This will create a virtual wire.

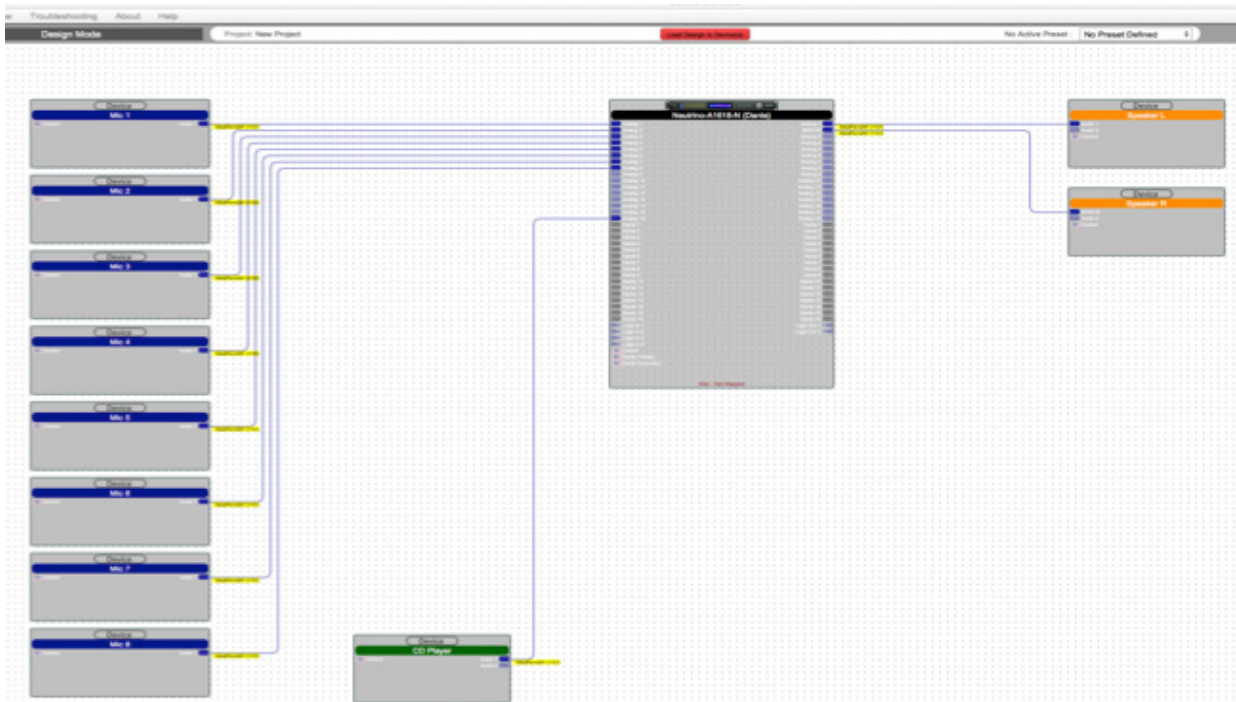


Wire adjustment may be necessary. Select the wire and use the red nodes to adjust the wire path. You may also select multiple wires and adjust them as a group.

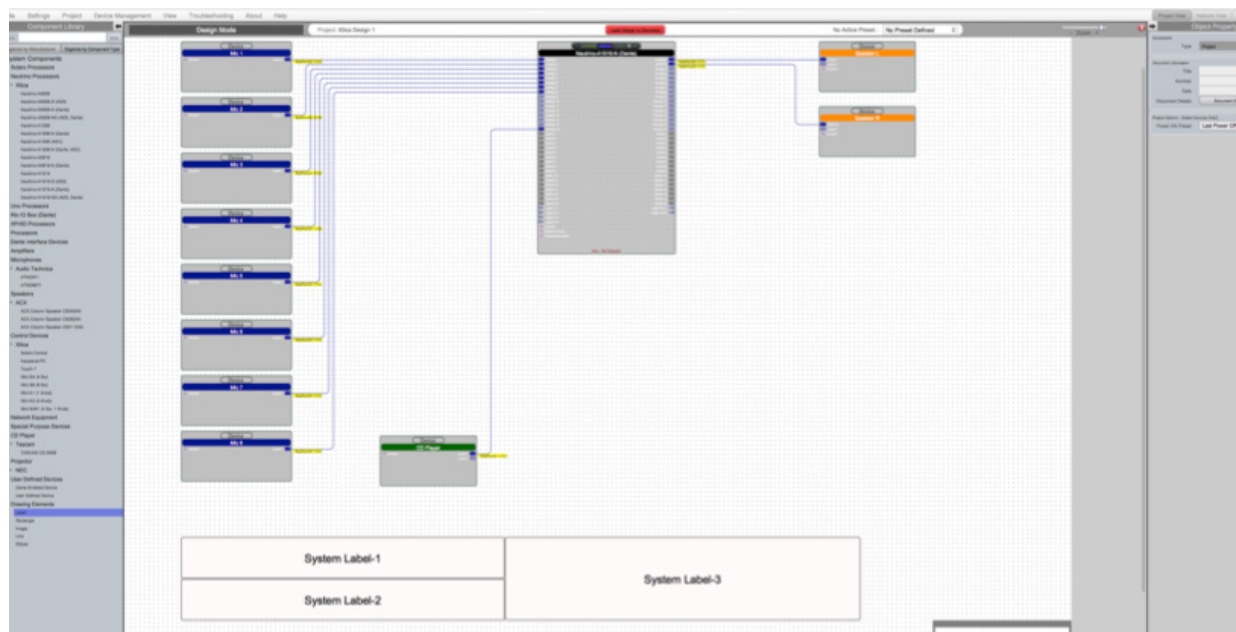
7. Wires can also be named and labelled under the Object Property menu on the right. Select a wire and change the Cable Information. Labelled wires will be displayed in the work area.



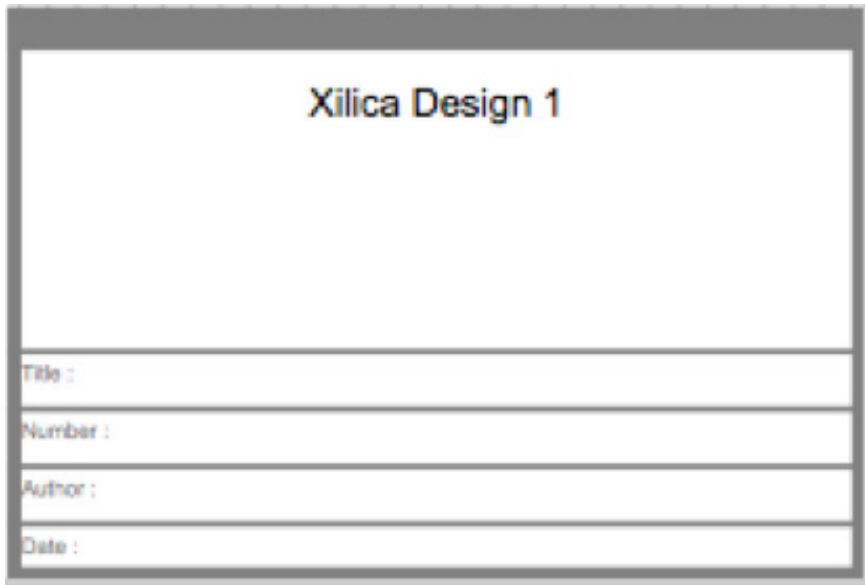
'Source Label' labels the input of the wire. 'Dest. Label' labels the wire destination.



8. Under the 'Drawing Elements' in the Component Library menu, labels, shapes and lines can be added to the project work area for the finished look of the Blueprint.

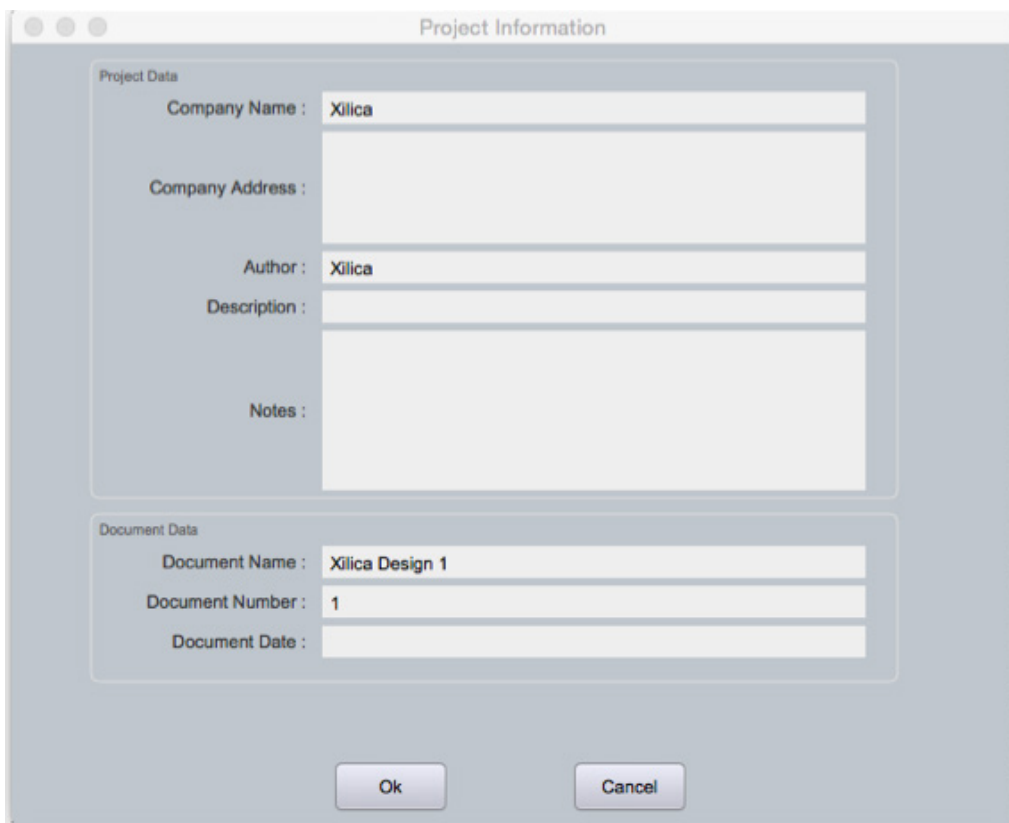


9. At the bottom right of the work area displays a Project information box.



A rectangular box with a dark border. At the top, the text "Xilica Design 1" is centered. Below this, there are four horizontal input fields, each preceded by a label: "Title :", "Number :", "Author :", and "Date :".

Simply edit the project information by double clicking this box. Then click 'Done' to save your changes.



A dialog box titled "Project Information" with a standard macOS-style title bar. It contains two main sections: "Project Data" and "Document Data".

Project Data:

- Company Name : Xilica
- Company Address : (empty field)
- Author : Xilica
- Description : (empty field)
- Notes : (empty text area)

Document Data:

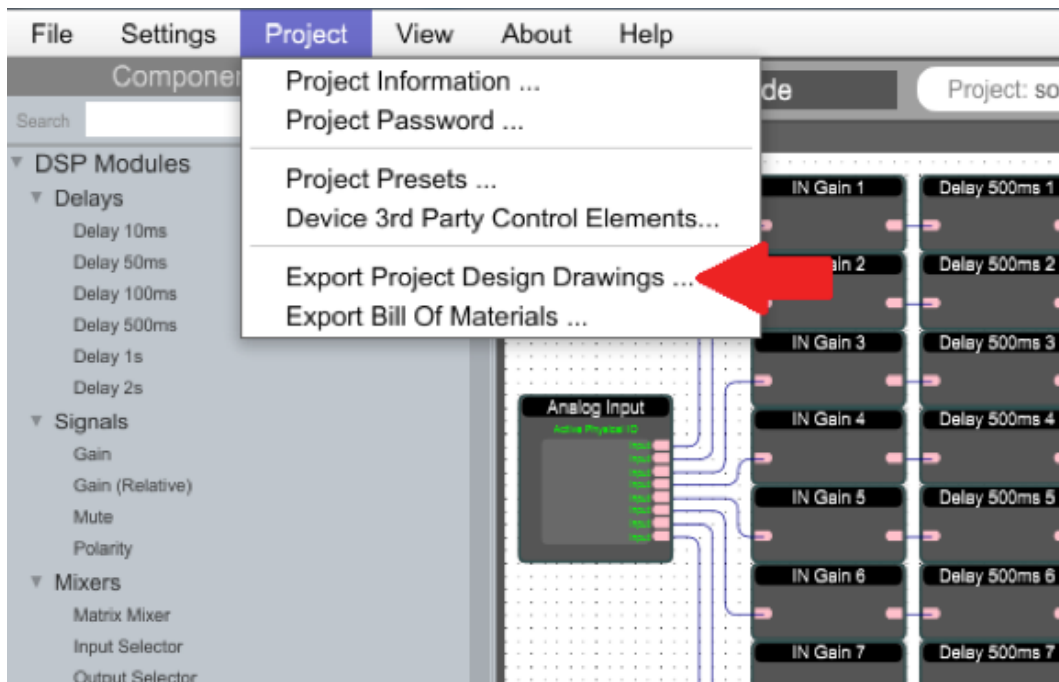
- Document Name : Xilica Design 1
- Document Number : 1
- Document Date : (empty field)

At the bottom of the dialog are two buttons: "Ok" and "Cancel".

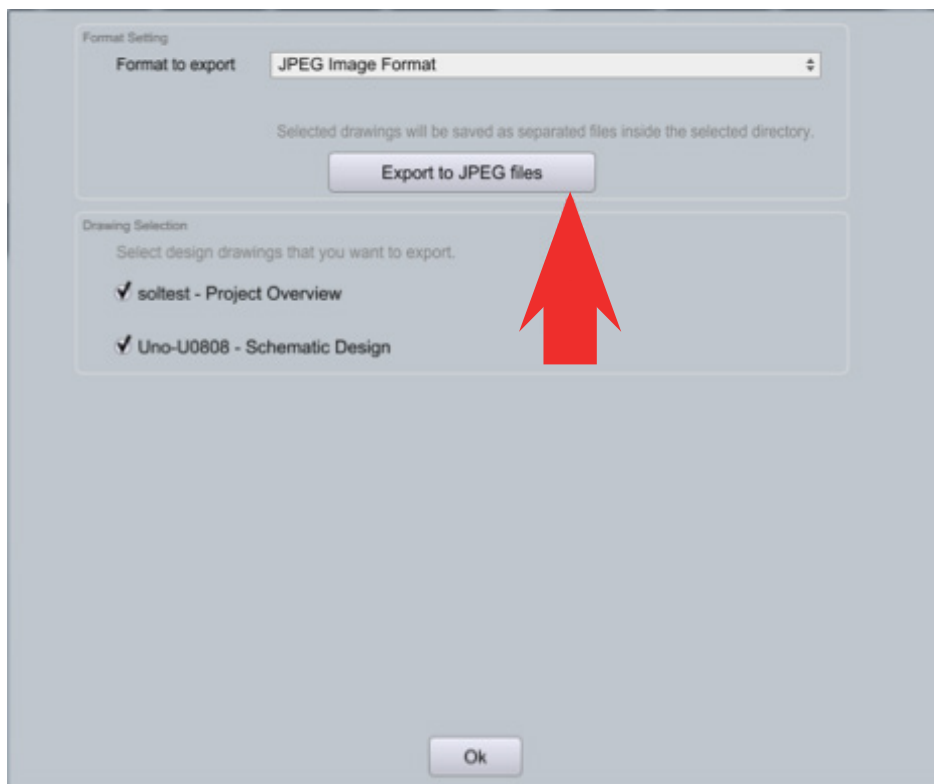
To this point only the documentation has been created for the design.

Export design to Jpeg or AutoCAD

At any point in the design process, you have the ability to print a copy of your project as a .jpg or .dfx image file.



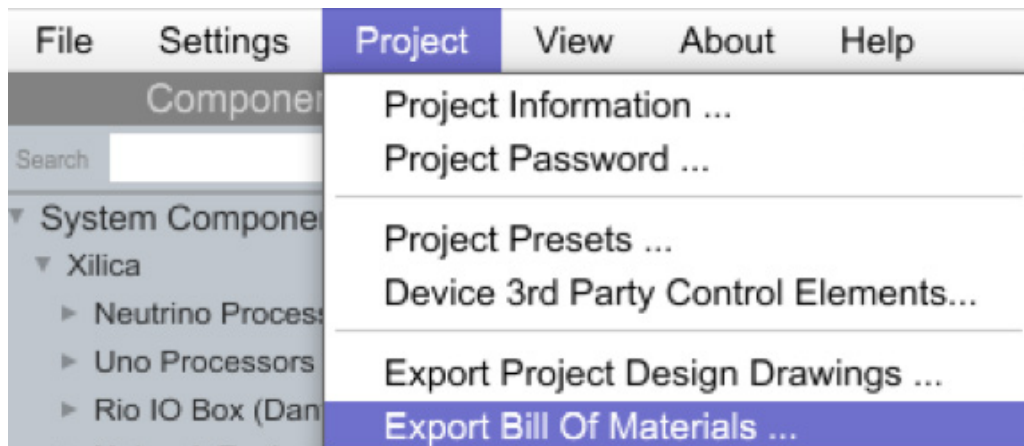
Under the 'Project' tab at the top of the software, select 'Export Project Design Drawings...'. This will print a jpeg image of the project view at a resolution of 1800 x 1200 pixels.



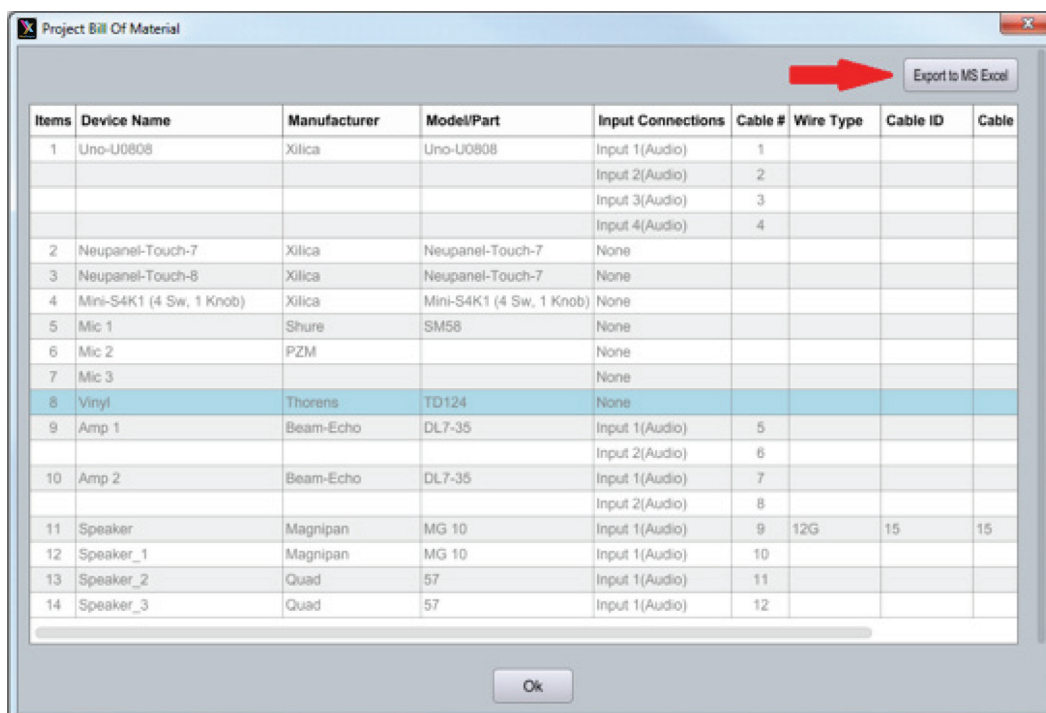
Export Bill of Materials

Export Bill of Materials generates an organized document listing all physical cabling and hardware description required for your project. Elements such as CD Players, microphones, amplifiers, and speakers, all play an important part in the compilation of the bill of materials.

Under the 'Project' tab, select 'Export Bill of Materials'.



You may need to save your project first. At the top left of the software, click 'File' and 'Save Project As'. Navigate to your destination folder, type in the file name as you wish, and then click 'Save'.



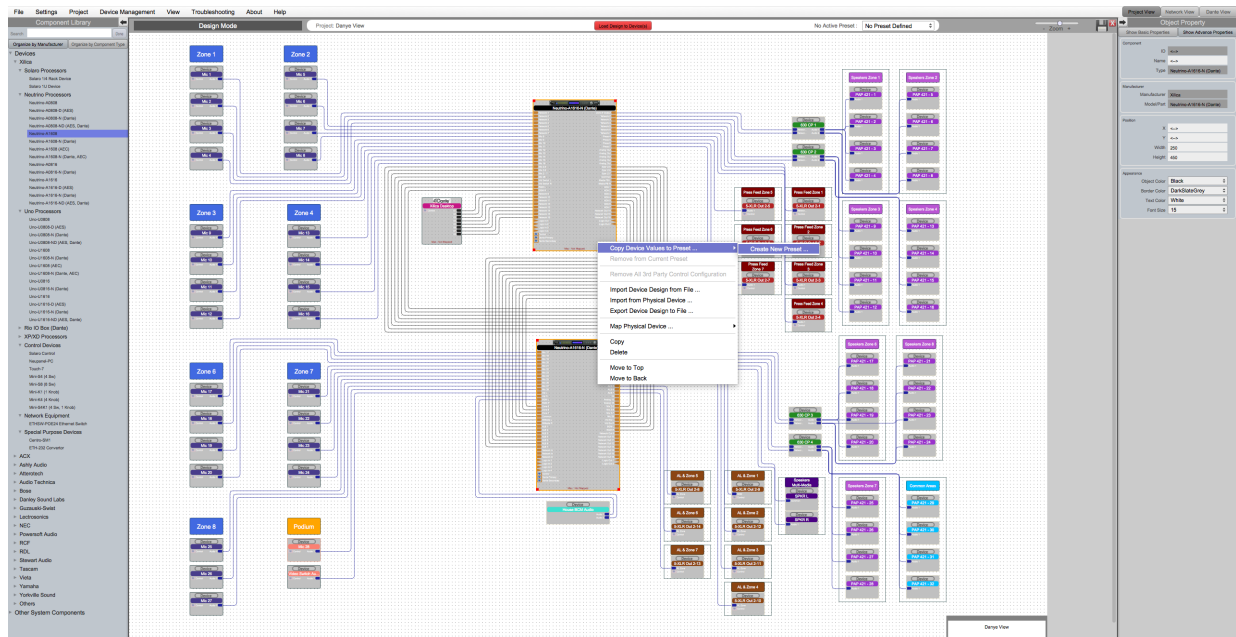
Clicking on "Export to MS Excel" will generate an XLS file with the information entered. This can be saved as desired.

Presets

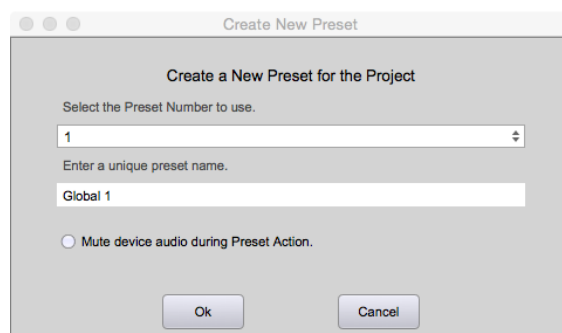
Global presets

Global presets allow the user to recall a saved setting for all devices in the system.

1. Make sure all devices in the system are set to their desired settings. Click and drag a selection box around all devices to highlight them. Then, right click on a DSP hardware module blocks.
2. Select 'Copy Device Values to Preset'.
Then 'Create New Preset'.



3. When creating a new preset, the preset will automatically be saved in the next available preset slot. You can rename the preset and also choose to 'Mute Device during Preset Action'.

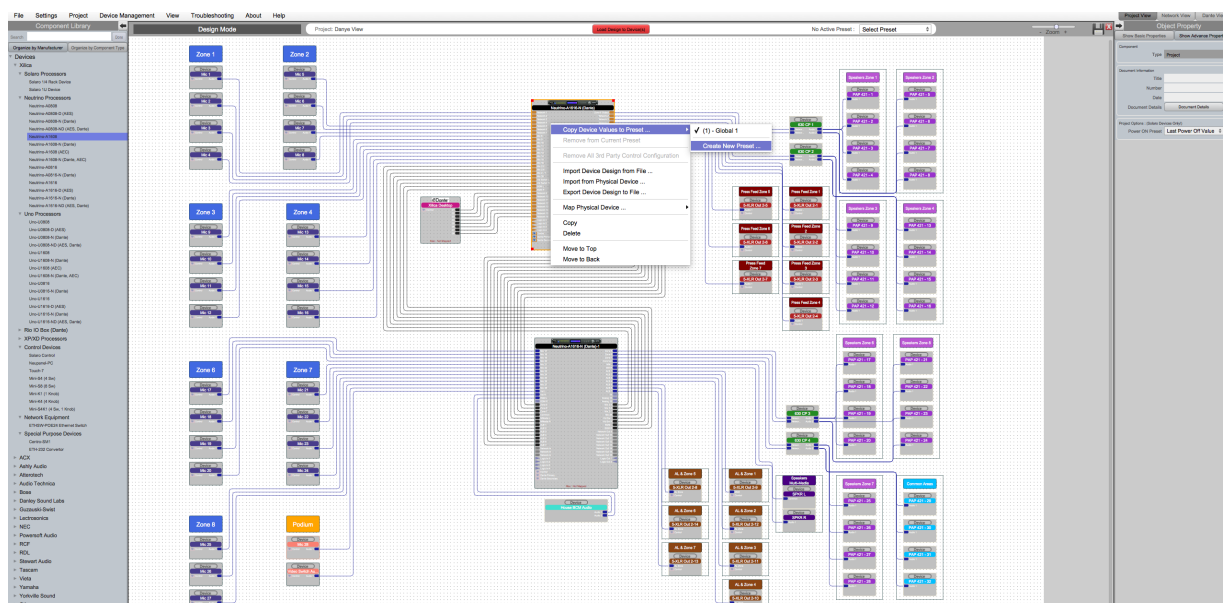


4. Click 'Ok' to save your settings.

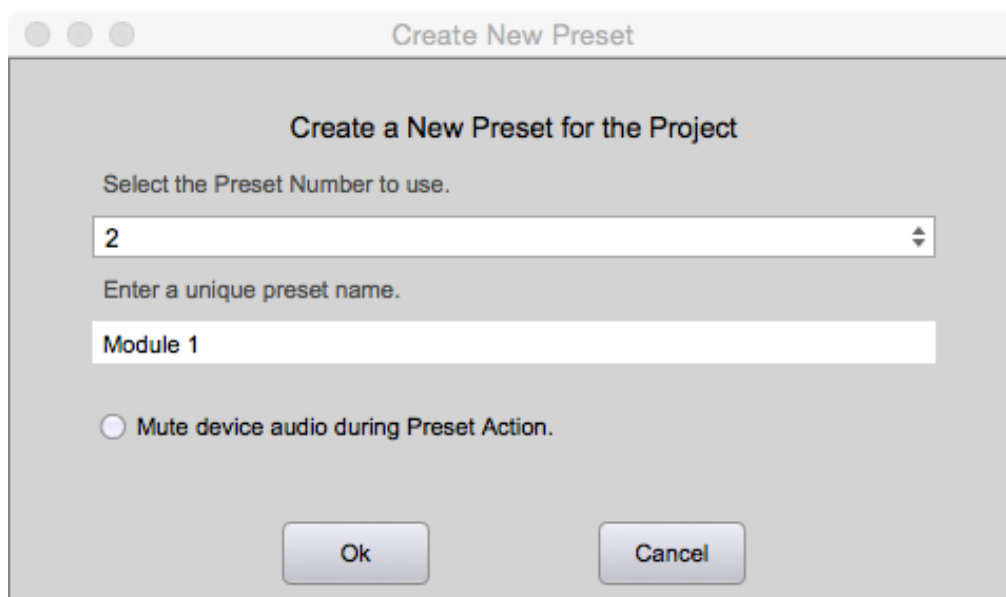
Module presets

Module presets allow the user to recall a saved setting for a device module.

1. Make sure that the device is set to the desired settings. Then right click on the device.
2. Select 'Copy Device Values to Preset'.
Then 'Create New Preset'.



3. When creating a new preset, the preset will automatically be saved in the next available preset slot. You can rename the preset and also choose to 'Mute Device during Preset Action'.

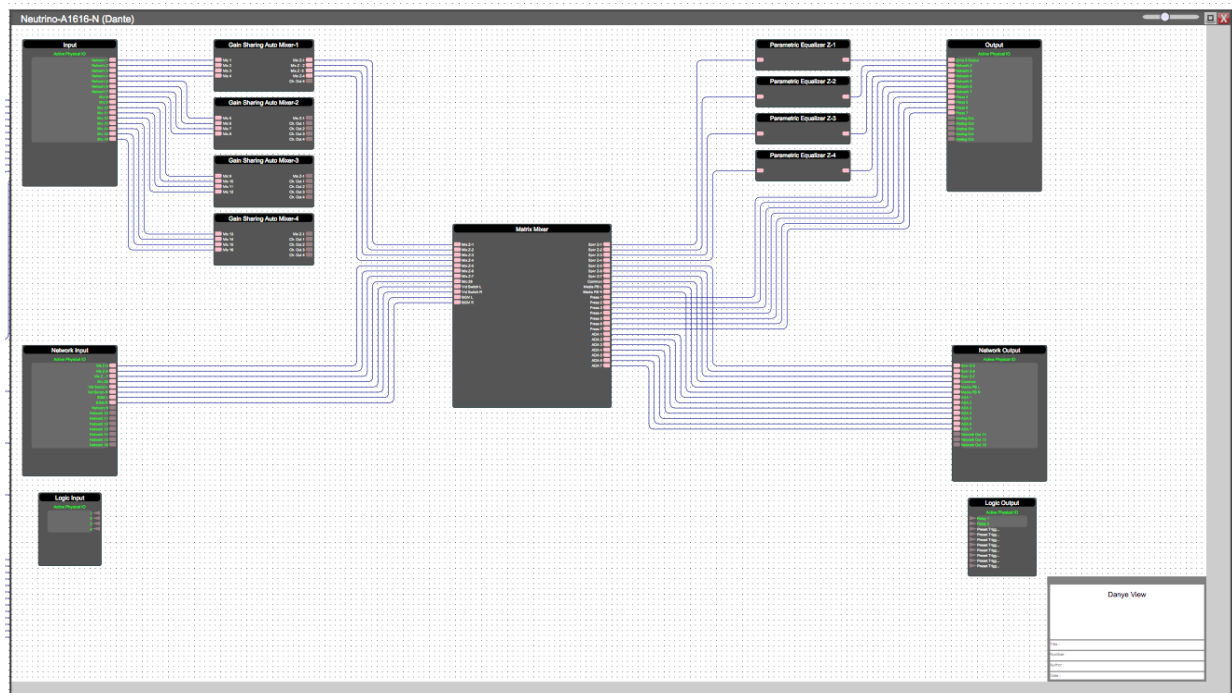


4. Click 'Ok' to save your settings.

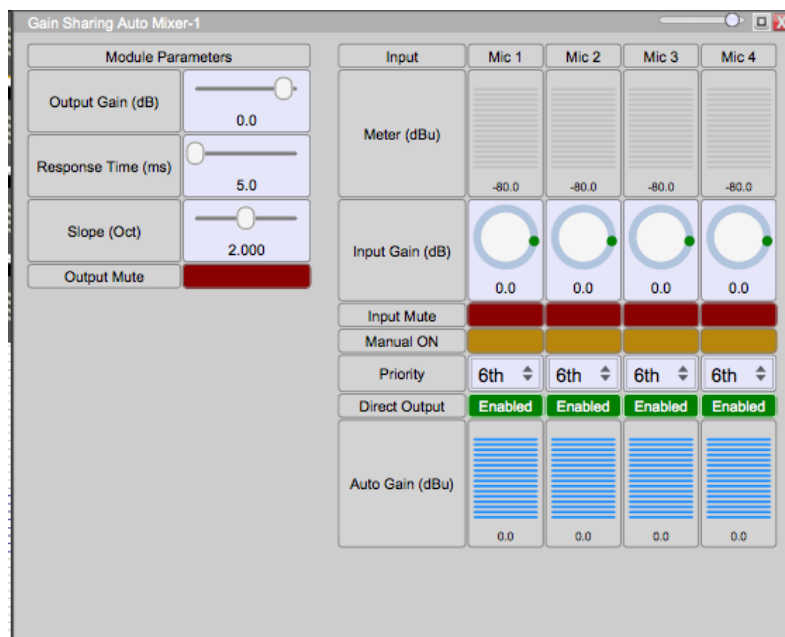
Individual DSP module preset

To create a DSP module preset,

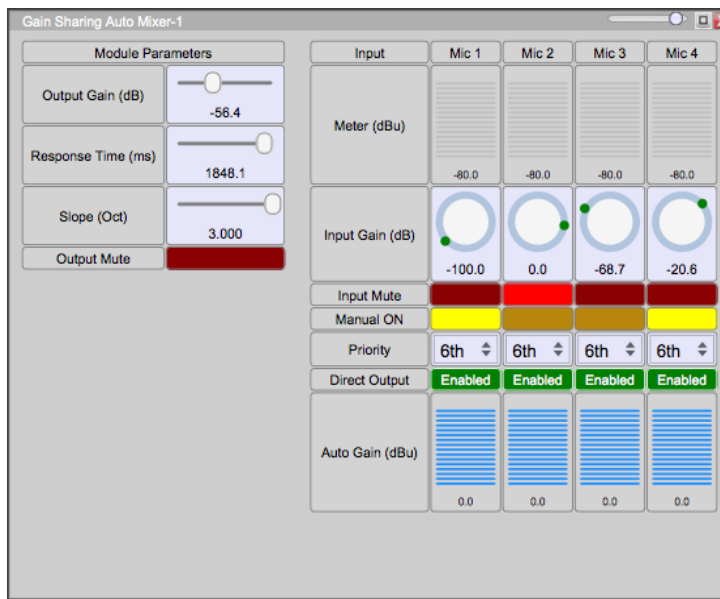
1. Double click a device in your work area to open the device schematic.



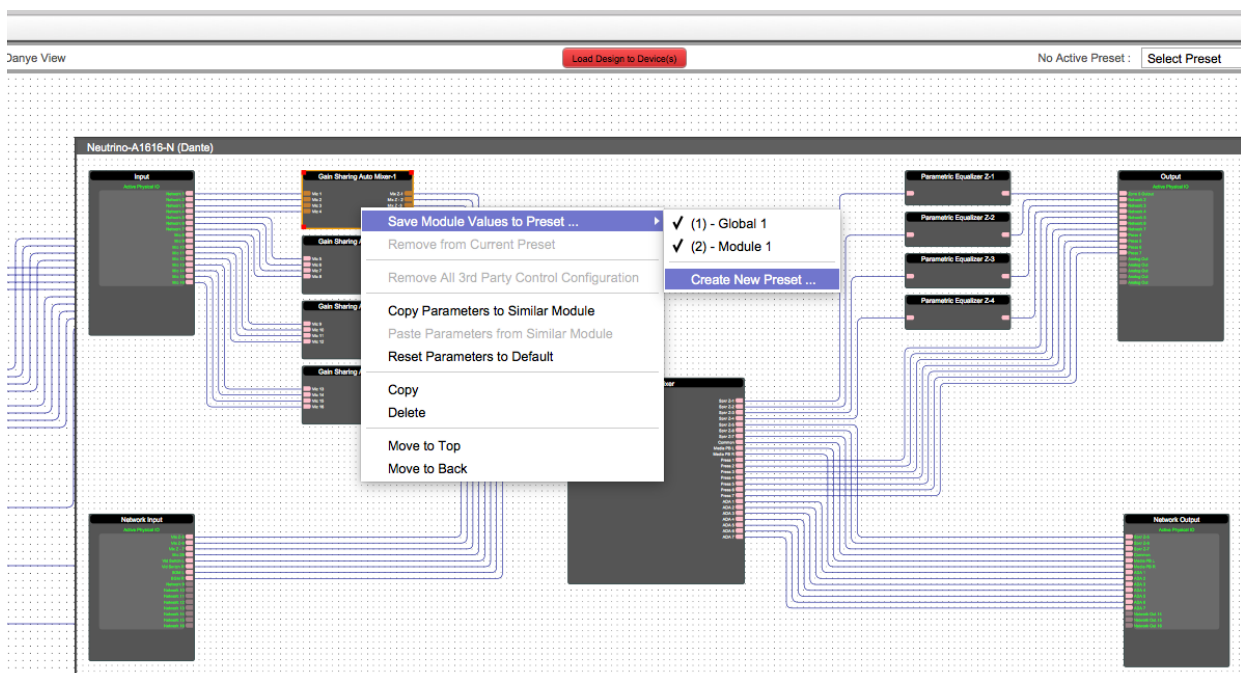
2. Double click a processing block to open it.



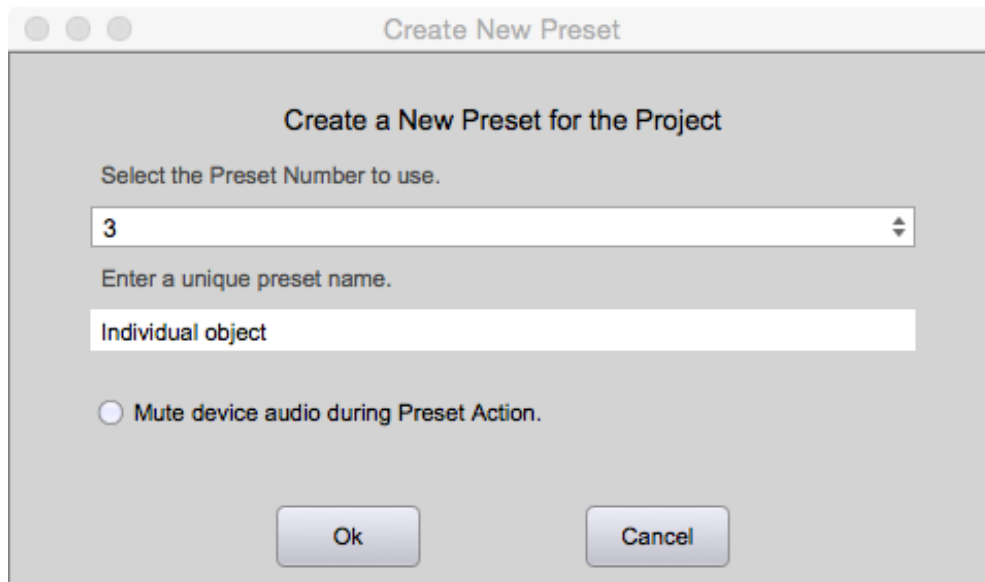
- Adjust the processing module parameters to the settings that you'd like to save.



- Close the module parameters. Right click the DSP module block and select 'Copy Device Values to Preset'. Then 'Create New Preset'.



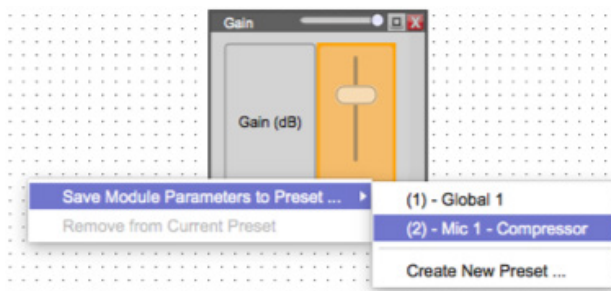
- When creating a new preset, the preset will automatically be saved in the next available preset slot. You can rename the preset and also choose to 'Mute Device during Preset Action'.



- Click 'Ok' to save your settings.

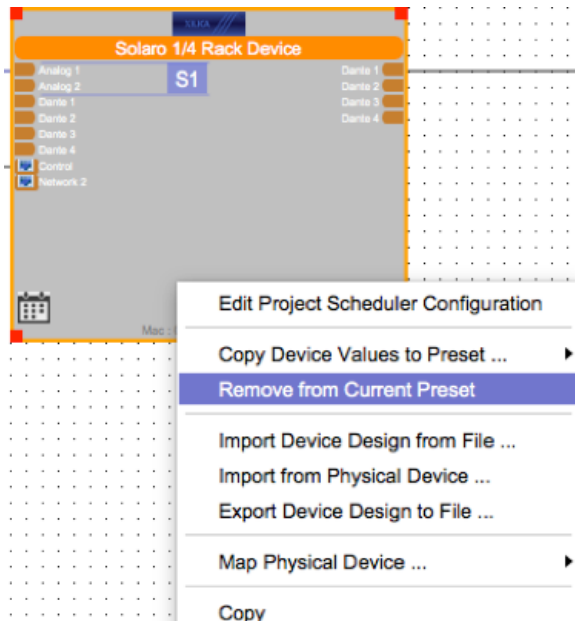
Adding new parameters/modules/devices to an existing preset

- Click and drag the selection box to highlight the desired parameters/modules/devices Or Hold Cmd + Click (Mac), or Ctrl + Click (PC) to select individual objects.
- With the desired objects highlighted, right click and select 'Save Module Value to Preset'.
- Select the preset number/name that you would like to add the new selection to.



Removing parameters/modules/devices from an existing preset

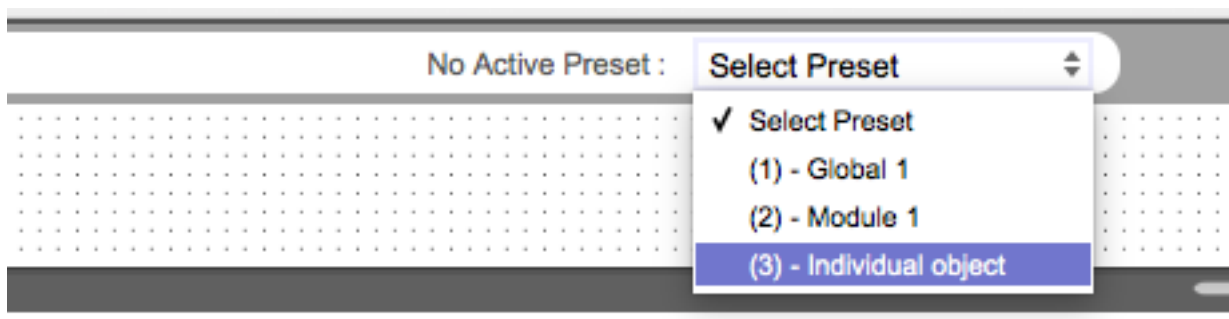
1. With the preset activated, select the object(s) you would like to remove.
2. Right click and select 'Remove from current preset'

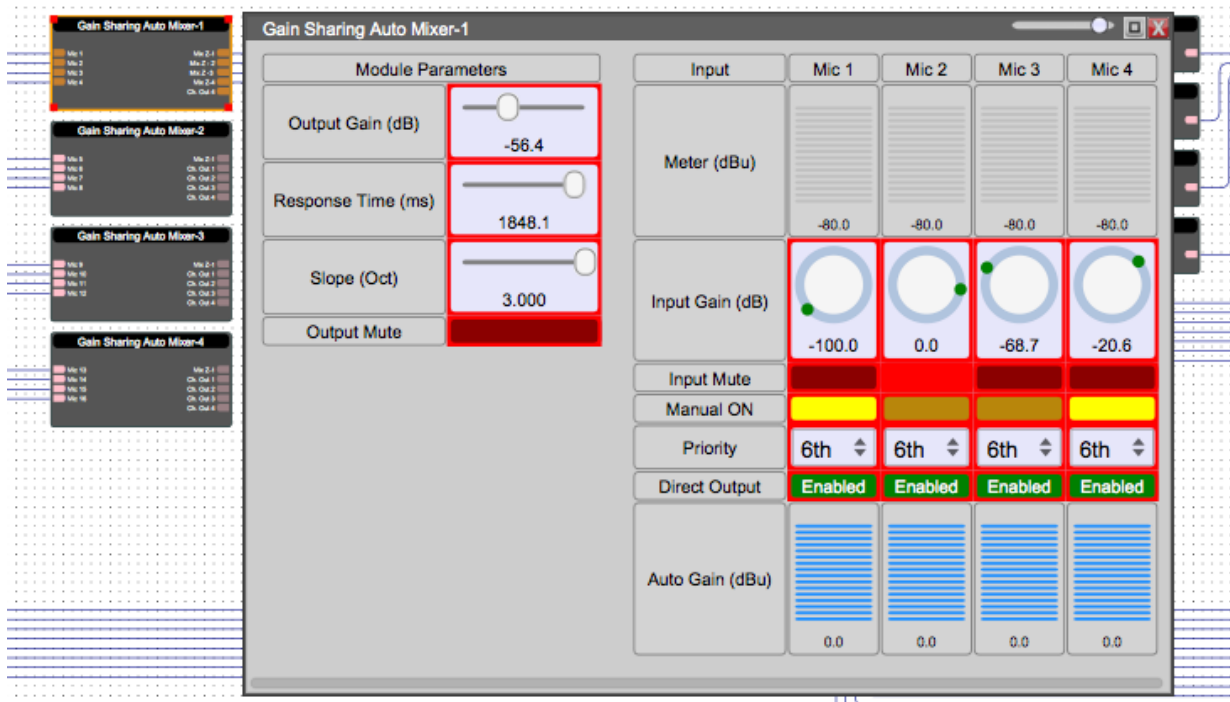


Activate presets

To activate saved presets,

1. At the top right of the work area beside the heading "Active preset", select the drop down menu.
2. This will list all of your saved project presets. Select your desired preset to activate the preset.

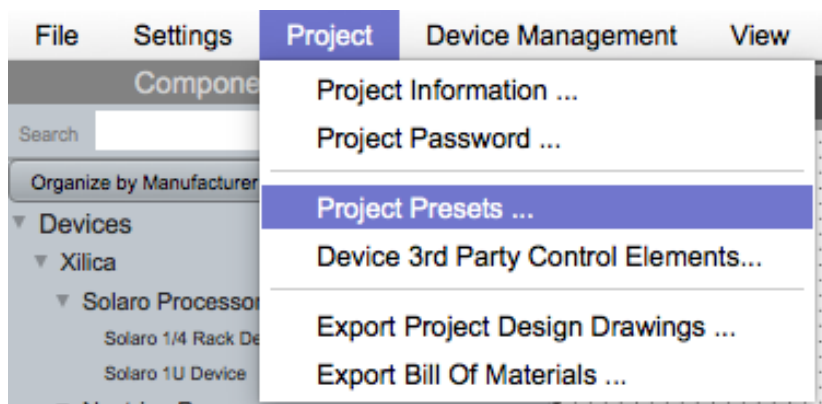


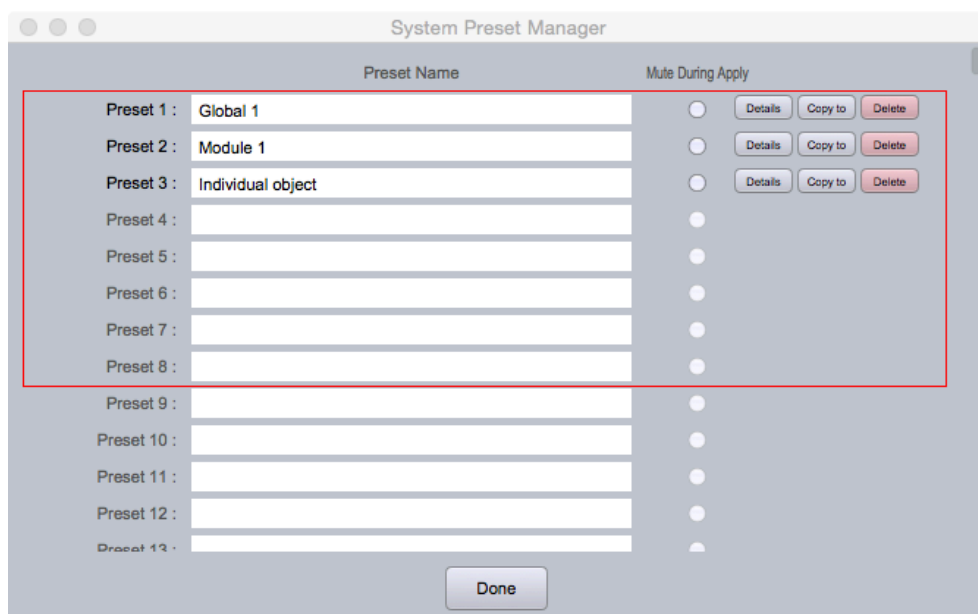


Preset management

The Preset Management window displays all of your saved presets and can be used to rename, copy and remove presets from the project file.

1. At the top of the software, under the Project tab, select "Project Presets". Project Presets lists all presets in the project.





In this window you can view the 200 available presets.

The red box highlights presets that can be controlled by GPIO inputs. This is done by wiring the GPIO circuit into the GPIO Output DSP Block. (Please refer to the Xilica Designer: GPIO guide)

Remove presets

Presets can be removed by checking the 'Delete' button next to the desired preset.

Rename presets

Presets can be renamed by typing in the 'Preset Name' text box next to the corresponding preset number.

Each preset includes a check box for 'Mute During Apply'. When changes are applied and saved, the Audio System will mute for a short period of time. Mute time is dependent upon how many parameters are being changed within the selected preset. Uncheck this box for a seamless preset change (Best for changing a small number of values).

Duplicating presets

Presets can be duplicated to and saved to other preset numbers/names by selecting 'Copy to'.

Save your changes by clicking '**Done**' at the bottom of the window.

Saving changes from Online mode

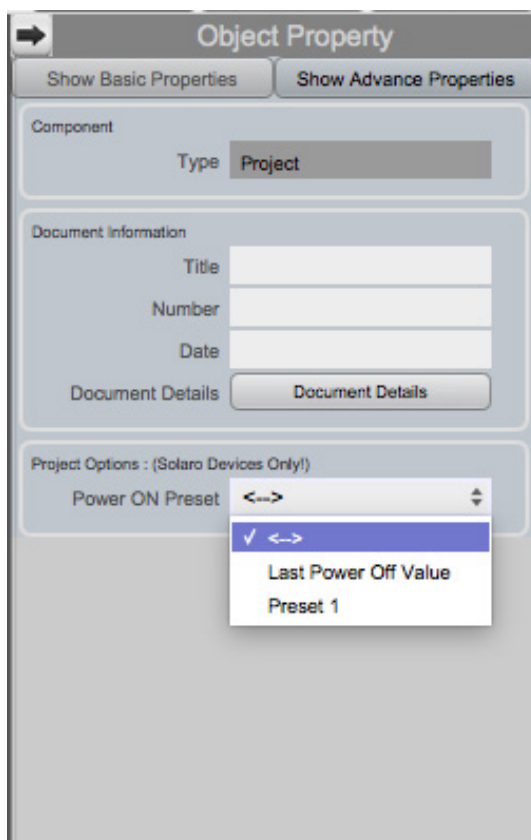
1. If you are online and want to save your changes back into the design file, select 'Yes' when prompted to copy device parameters when switching back to design mode.
2. The changes will be applied to your design. You may add the new parameter/module/device settings to an existing preset or create new presets.

Working with power ON preset

The power ON preset applies to your hardware devices automatically once you turn your hardware device ON. Please note this is only available for Solaro devices.

To enable the Power ON preset,

1. Click on the dotted work area.
2. In the Object Property menu beside 'Power ON Preset', click the drop down menu.
3. Select the desired preset that you would like to recall when your devices are powered ON.



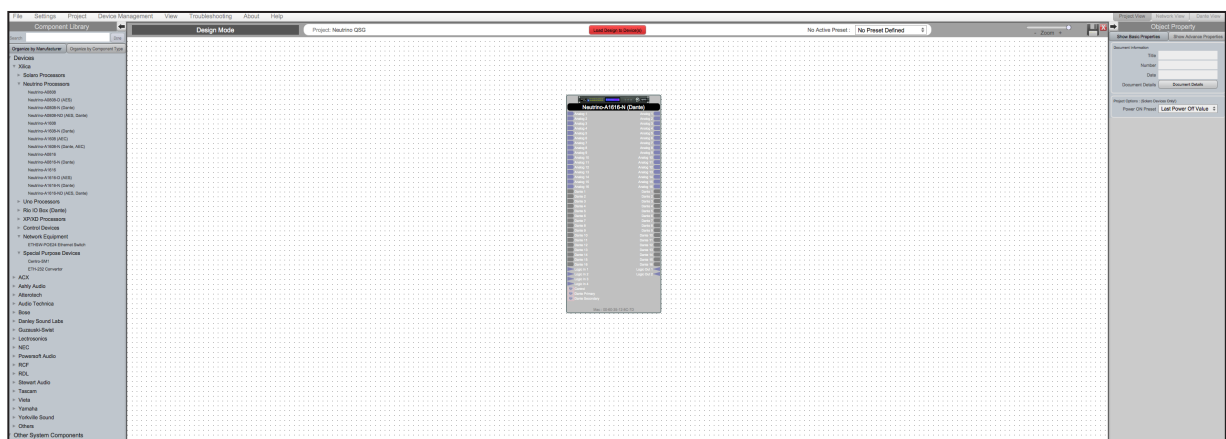
Map device(s)/Online mode

Once your Design is complete, it is time to go Online.

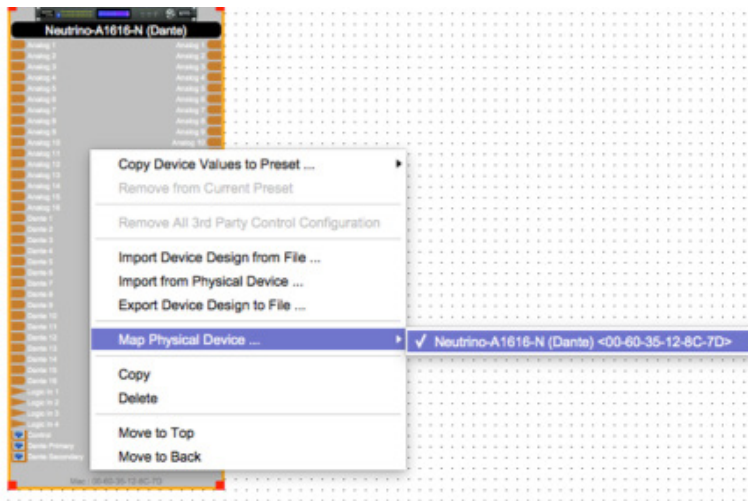
Please note that in order to go Online, all devices must be connected and online. (Displayed in Network View with a green indicator).



1. Navigate back to the work area that displays your device design.



2. Right click your DSP module and select 'Map to Physical Device'.
This will associate the physical hardware with the hardware shown in the software.
3. Select the DSP model you would like to map to.

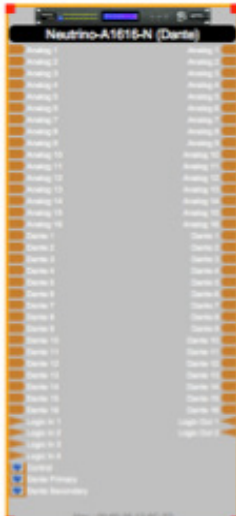


Note: If there is more than one of the same devices in the network, match the device Mac address in Network view with the device listed.

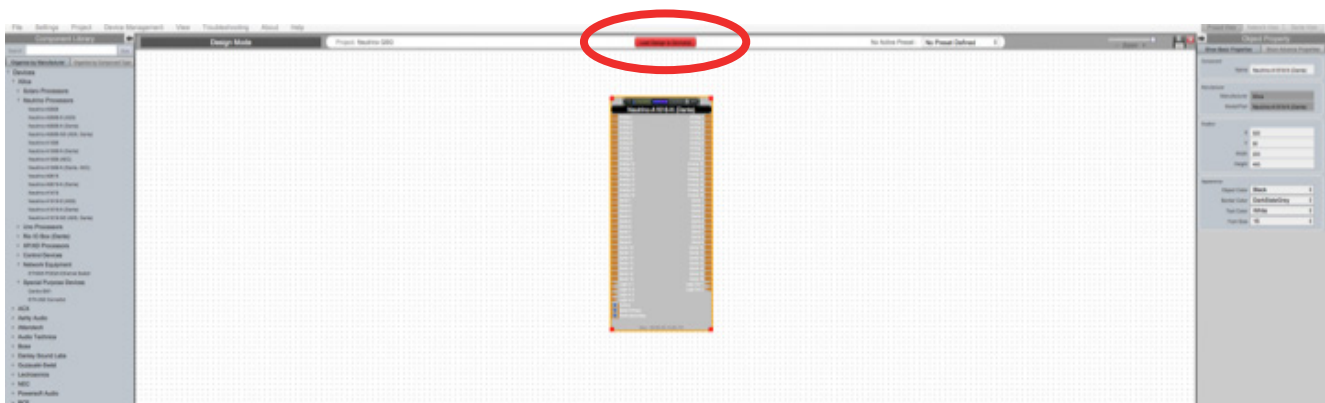


Note: It is very important to make sure the name of the DSP block in the design file matches exactly to the unit in the Network View. Otherwise you will not be able to load the design to the physical device.

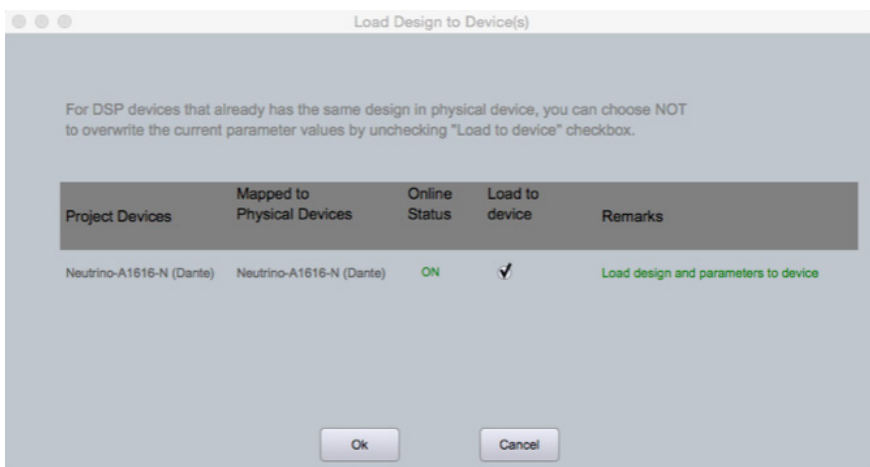
Once mapped, the module will become a solid grey colour.



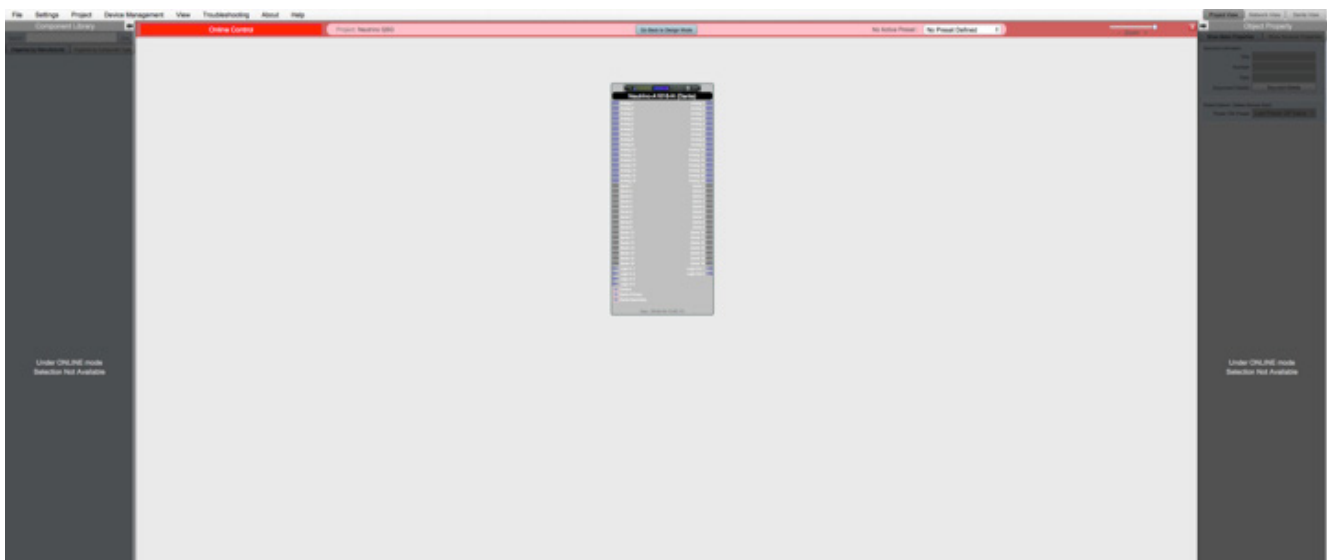
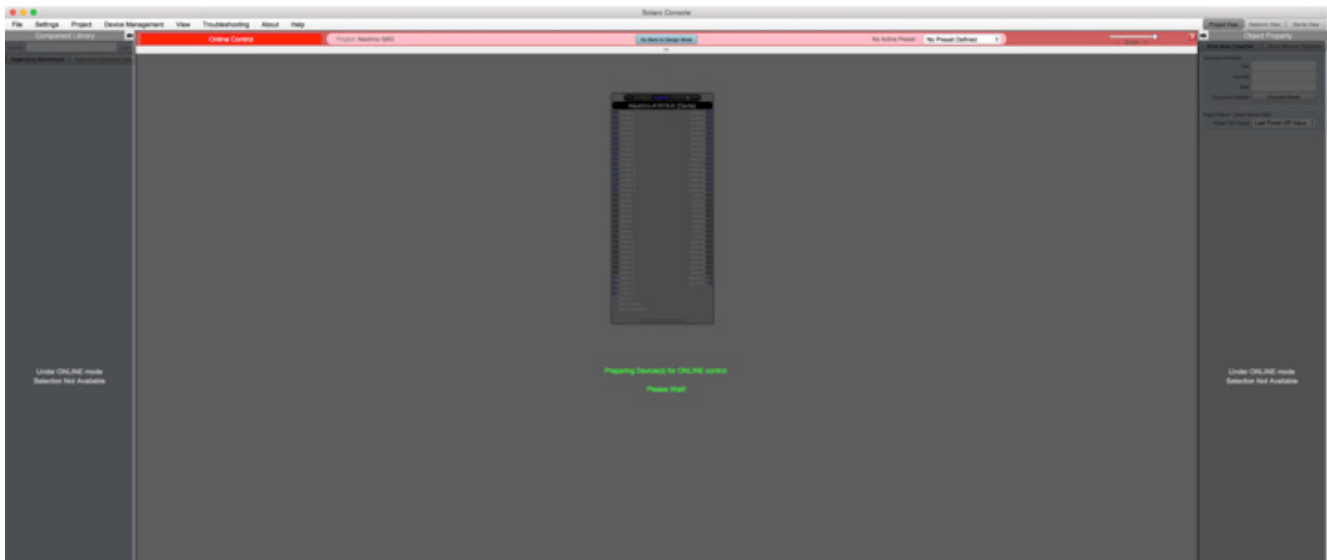
4. Then click the red 'Load Design to Device(s)' button at the top of the work area.



5. A window will pop up. Check the connected devices that you would like to load your design to. Then click 'Ok'.



6. Going online may take up to several minutes. Please do not disrupt the process. The progress bar at the top will display the overall progress percentage.

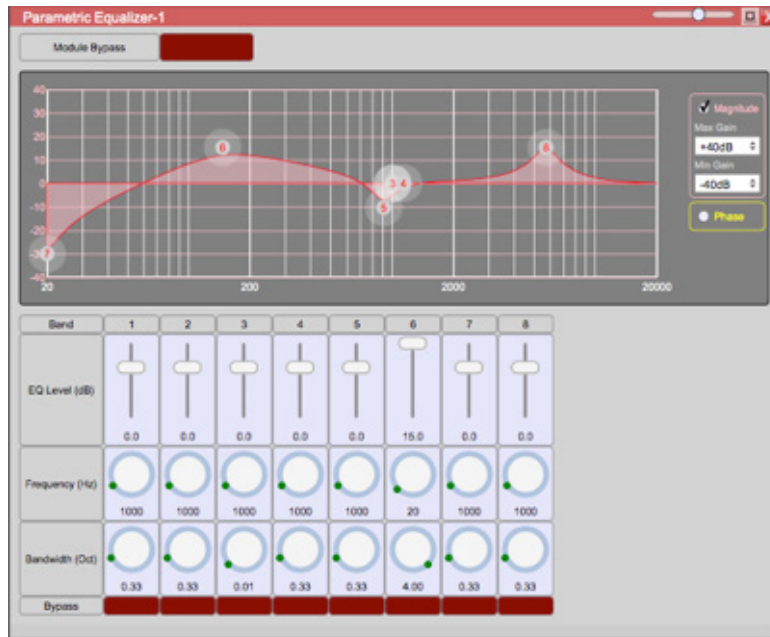


Once online, notice that the work area has become a solid color and the design menus are no longer available.

7. Double click the DSP module to open up the device schematic.



You can adjust the DSP module parameters in real-time.



8. You can go back to design mode at any time by clicking the 'Go Back to Design Mode' button at the top of the work area.



Dante devices

To create a Dante' network exclusively using Solaro/Uno/Neutrino Series DSP hardware, no other software is needed to control network audio signal flow. However it is recommended that Dante' Controller Software is downloaded and available for the project as the Dante' Controller software adds additional tools for completing a successful project.

Important things to consider concerning Dante' use:

When designing a network of Dante-enabled devices, Wherever possible, use gigabit links and always use gigabit links between switches. If your Dante-enabled devices have gigabit-capable interfaces then connect them using gigabit links. Enable QoS on your Ethernet switches when using 100Mbit/s devices.

Switches that should be used when using Dante enabled hardware:

Dante provides high performance audio networking on off-the-shelf Ethernet switches. Here is a non-exhaustive list of switches that have been used successfully with Dante:

- Linksys: SRW224G4, SRW2024, SRW2016, SRW2008, SRW208G, SLM2008, SLM2024
- Dell: PowerConnect 2708, PowerConnect 5324
- HP ProCurve: Various models including ProCurve 3500 series, ProCurve 2600 series
- Cisco: Various models including Catalyst 3750 series, Catalyst 3560 Series

Important features when purchasing a switch:

Dante makes use of standard Voice over IP (VoIP) Quality of Service (QoS) switch features, to prioritize clock sync and audio traffic over other network traffic. VoIP QoS features are available in a variety of inexpensive and enterprise Ethernet switches. Any switches with the following features should be appropriate for use with Dante:

- Gigabit ports for inter-switch connections
- Quality of Service (QoS) with 4 queues
- Diffserv (DSCP) QoS, with strict priority

A managed switch is also recommended, to provide detailed information about the operation of each network link: port speed, error counters, bandwidth used, etc.

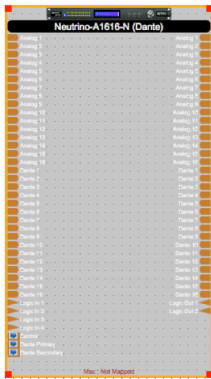
All Dante connections are made in the Xilica Designer software and there is no need to use the Audinate "Dante' Controller" software. However the Dante controller can still be used, if needed.

Dante controller is equipped with many useful functions such as: an Event Log, Clock Status to set the Master clock, Device Status including IP addresses and Routing. The Routing function allows for cross point connecting of the entire Dante audio network.

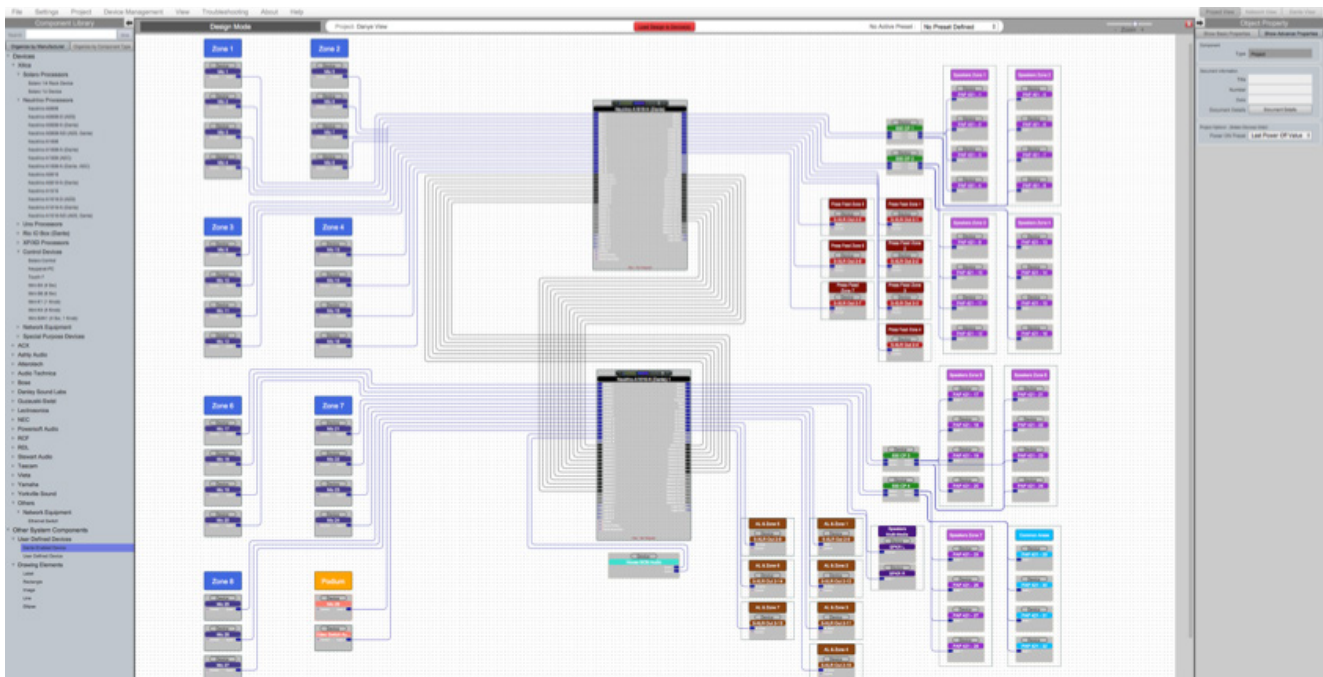
Note: If routing changes are made on the Dante Controller software, the Xilica Designer network will revert back to the original settings if there is a power cycle event. In other words, if there are routing changes that need to be permanent, the changes need to be reflected in the wiring of the Blueprint.

For a complete understanding of the Audinate Dante Platform refer to: www.audinate.com

Xilica's Neutrino-N, ND and AEC-N series processors provide 16x16 I/O channels of Dante network audio bi-directionally over Ethernet.



Below is an example of a typical conference centre design utilizing two Neutrino A1616-N DSP devices on an exclusive Dante' network. Dante' wiring is represented in black wiring. Analog wiring is in blue.



A brief Description of this audio design Blueprint:

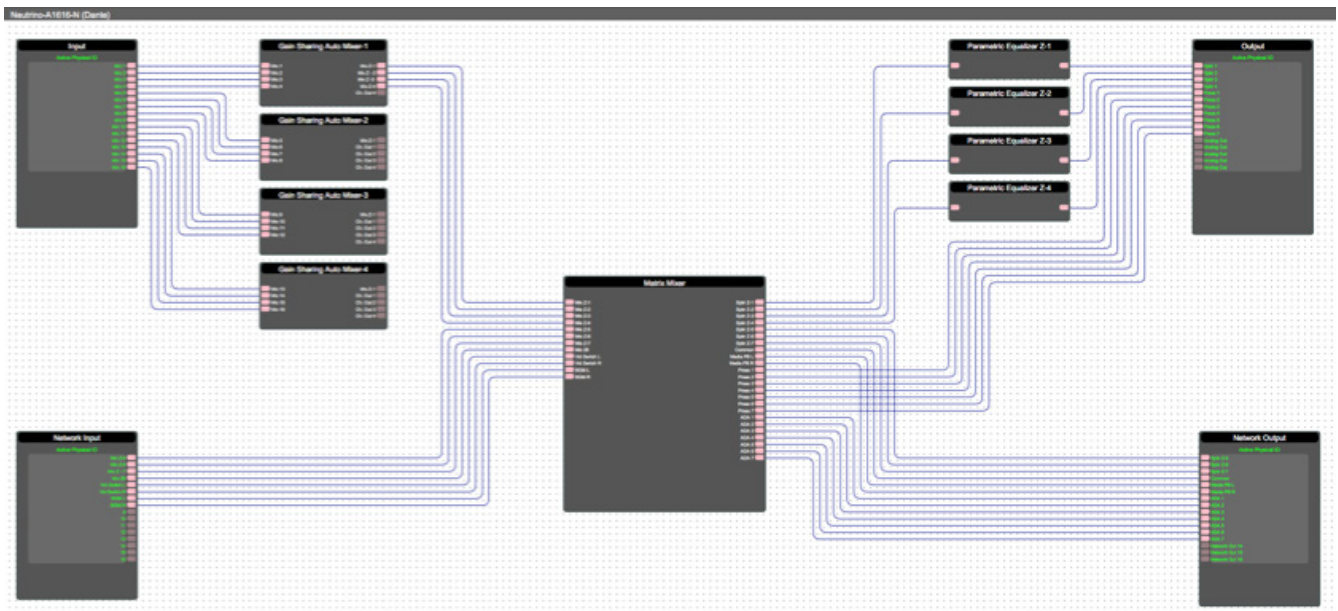
Inputs: 27 conference table microphones broken out into 7 zones (mix-minus), 1 podium microphone, stereo audio from video switcher in podium and background music from facility.

Outputs: 7 zones of distributed ceiling speakers, stereo main speakers for media playback, 7 zones of press feeds and 7 zones of assisted listening/translation. Dante network will provide audio transport function between the two Neutrino DSP units.

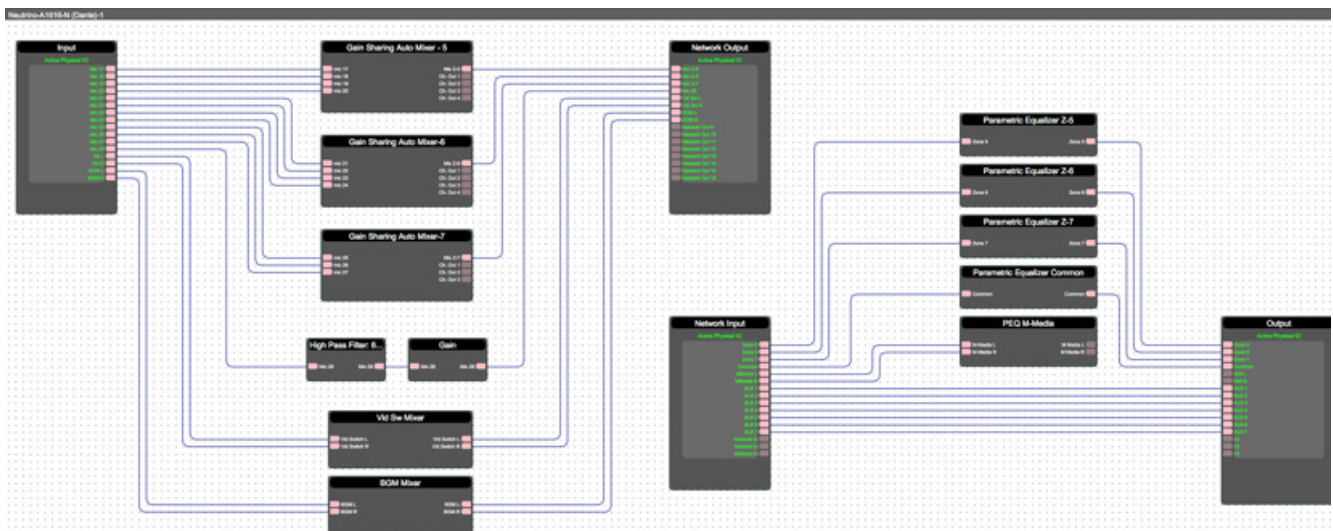
Follow the signal flow on the Network I/O blocks: The Network Output shown in the Unit 1 design flows through the Unit 2 Network Input, while the Network Output of the Unit 2 design flows through the Unit 1 Network Input.

It is very helpful to label the Network I/O to keep track of the signal flow in the design.

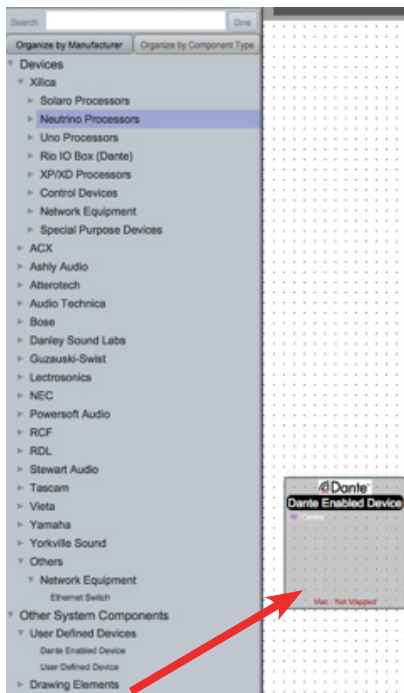
Example of the internal configuration inside the first Neutrino A1616-N DSP or "Unit 1":



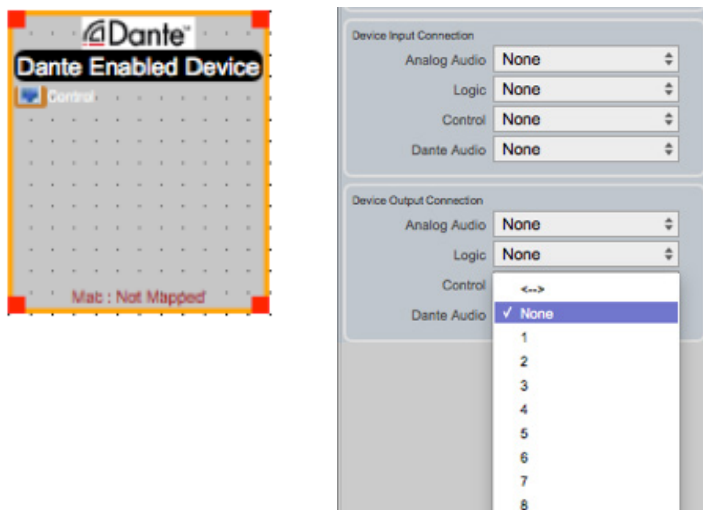
Example of the internal configuration inside the second Neutrino A1616-N DSP or "Unit 2":



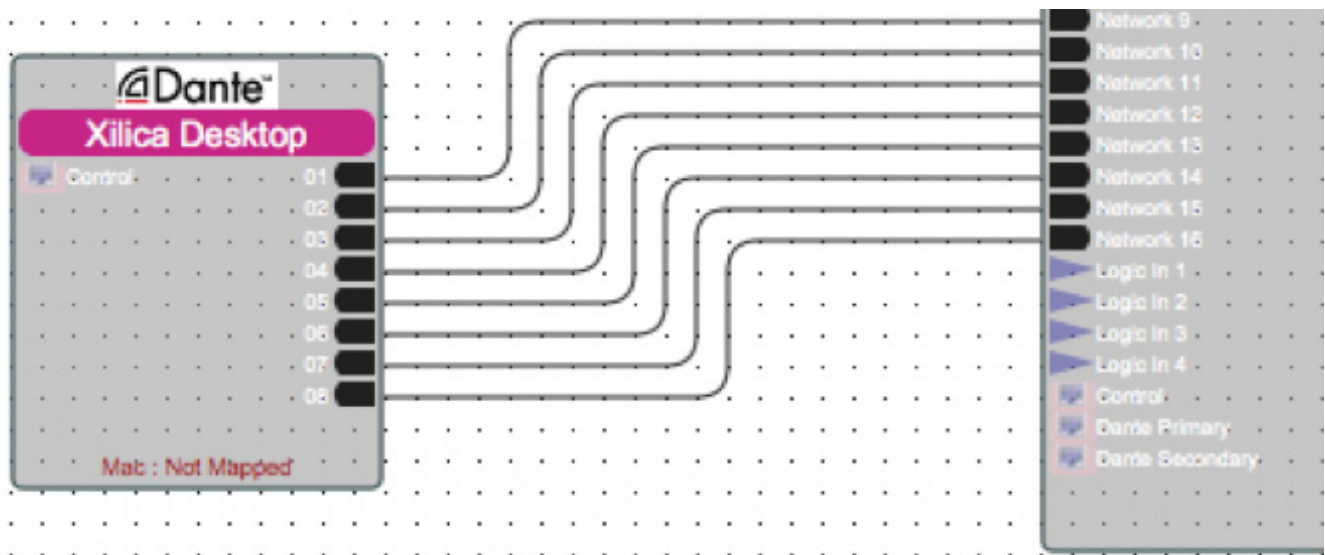
Creating a design with other Dante hardware can be found in the Project Design Element of the Component Libraries. You can select your Dante device from the list of manufacturers or you can create your own Dante device by adding a 'Dante Enabled Device'.



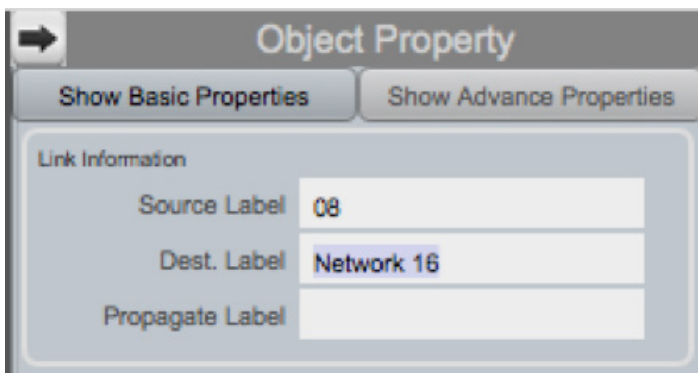
Adjust the number of Network Inputs or Outputs needed on the Dante Enabled Device to represent the third party hardware's function in the design. This is done in the "Input/Output" section of the Object Property menu on the right.



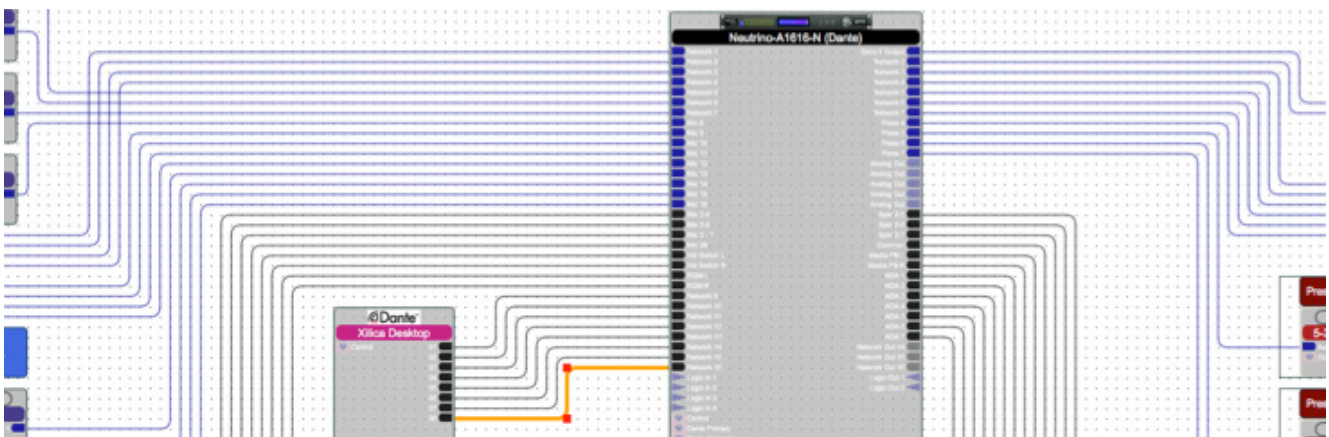
The 'Dante Enabled Device' must be properly named and the channels must be named. Naming is done in the Component Properties pane, the same as Naming any other Processing Block.



To name the Channel,
select the wire and change the name in the Object Property menu.
"Source Label" labels the wire input and 'Dest. Label' labels the wire destination.

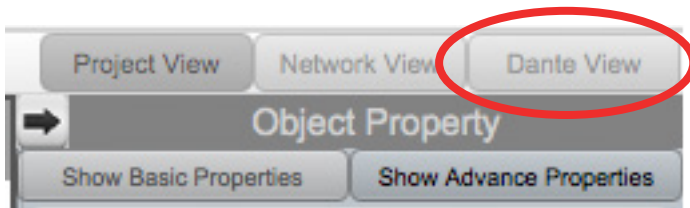


Notice the Identification of the hardware on the network, the channel names, and the connection points. Pay attention to the destination of your Dante devices. This is where most connection mistakes are made due to confusion in signal flow.

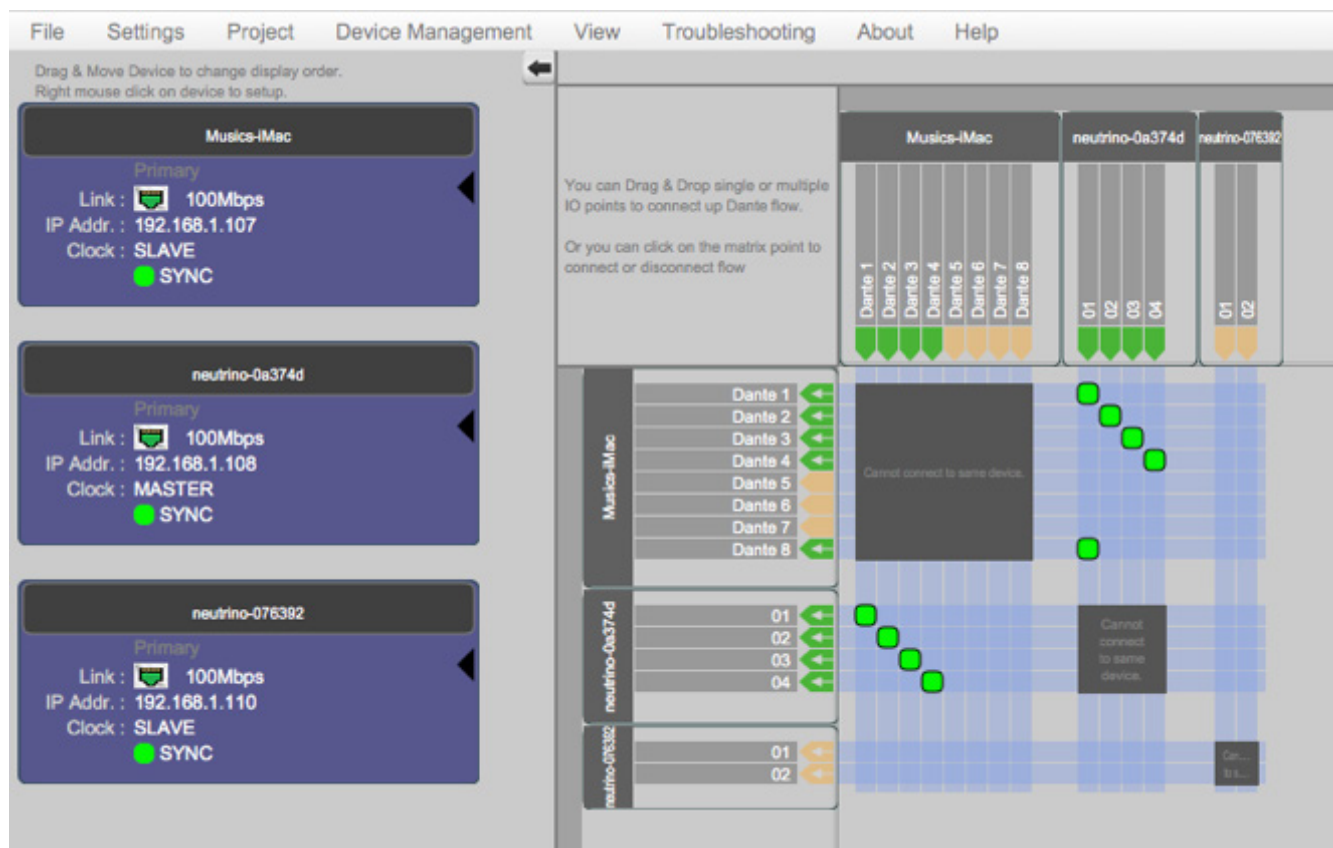


Dante view

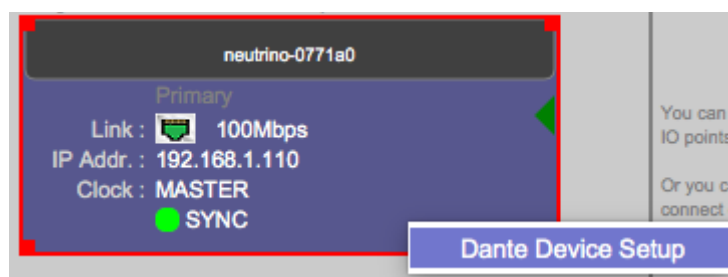
At the top right of the software, select 'Dante view'.



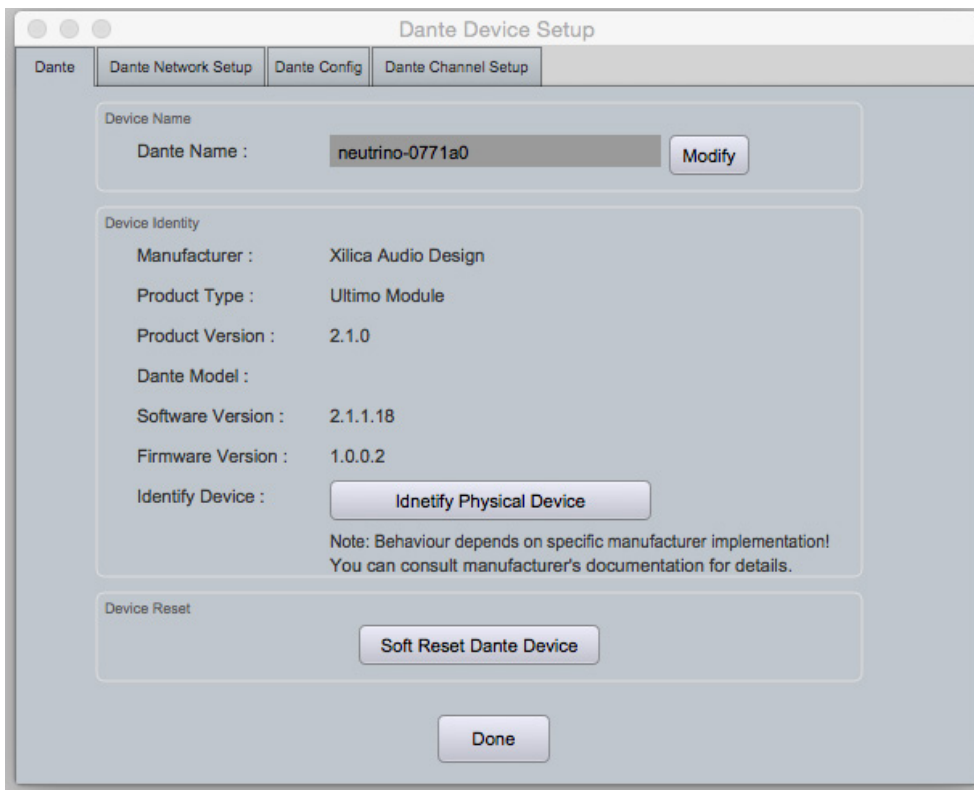
Dante view is where you can configure and view connected Dante devices.



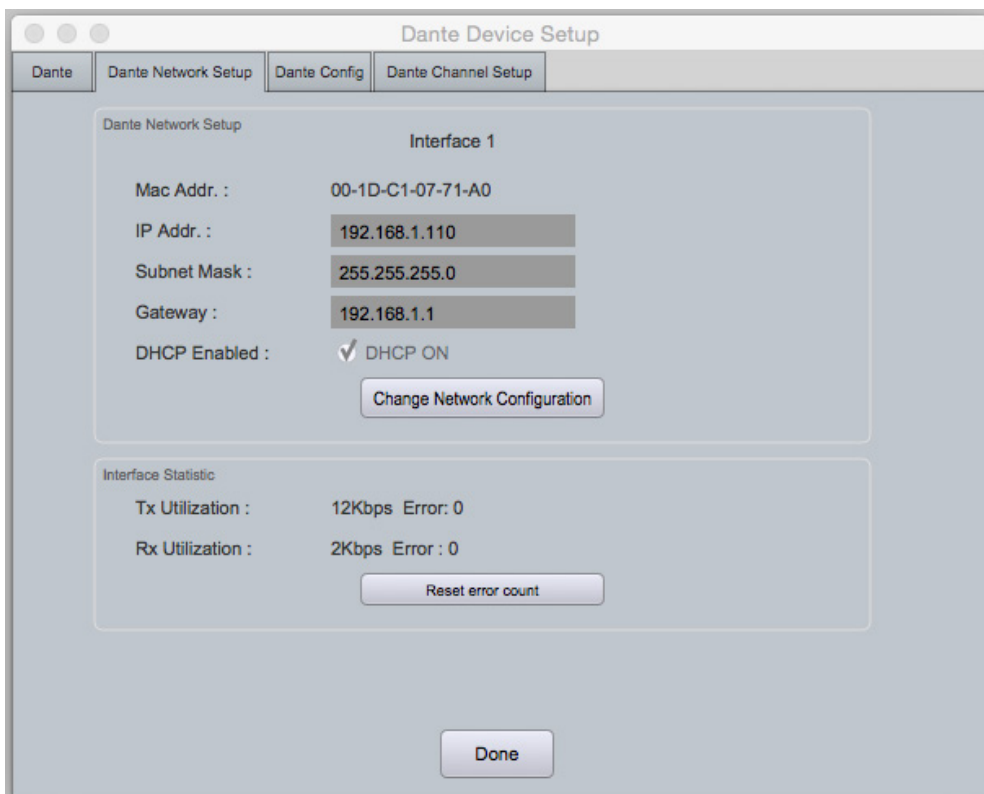
Connected Dante devices are listed on the left. Click and drag devices to rearrange the order of devices. To view device settings, right click the desired device block, and select 'Dante Device Set up'.



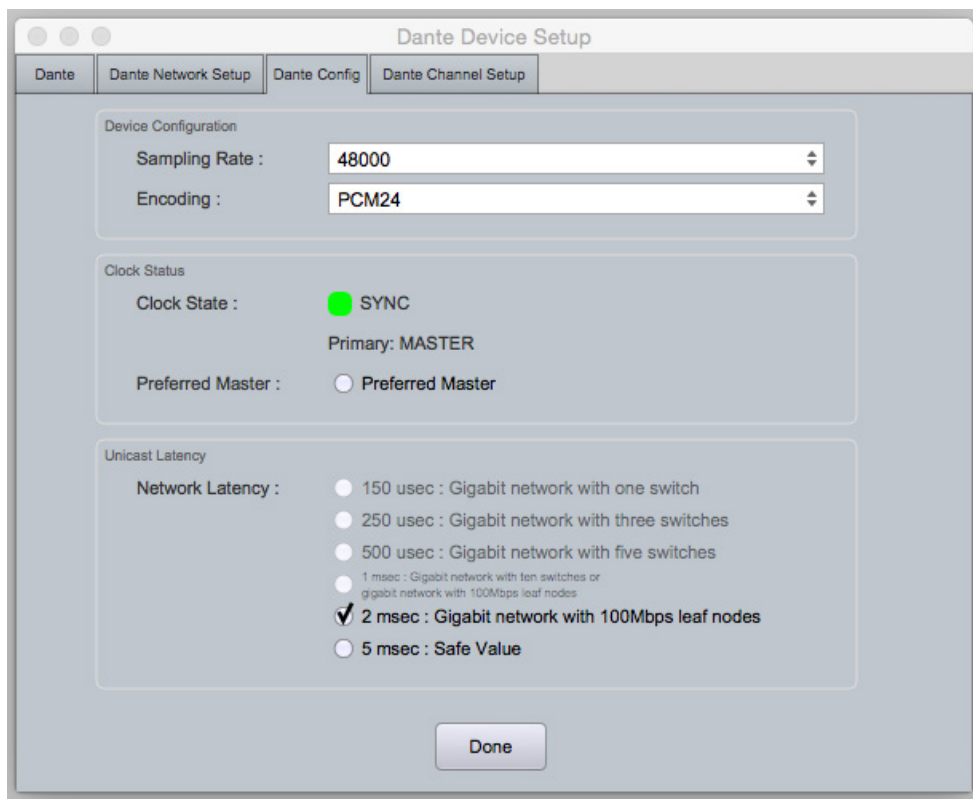
The first Dante tab displays product model information. You may also rename devices.



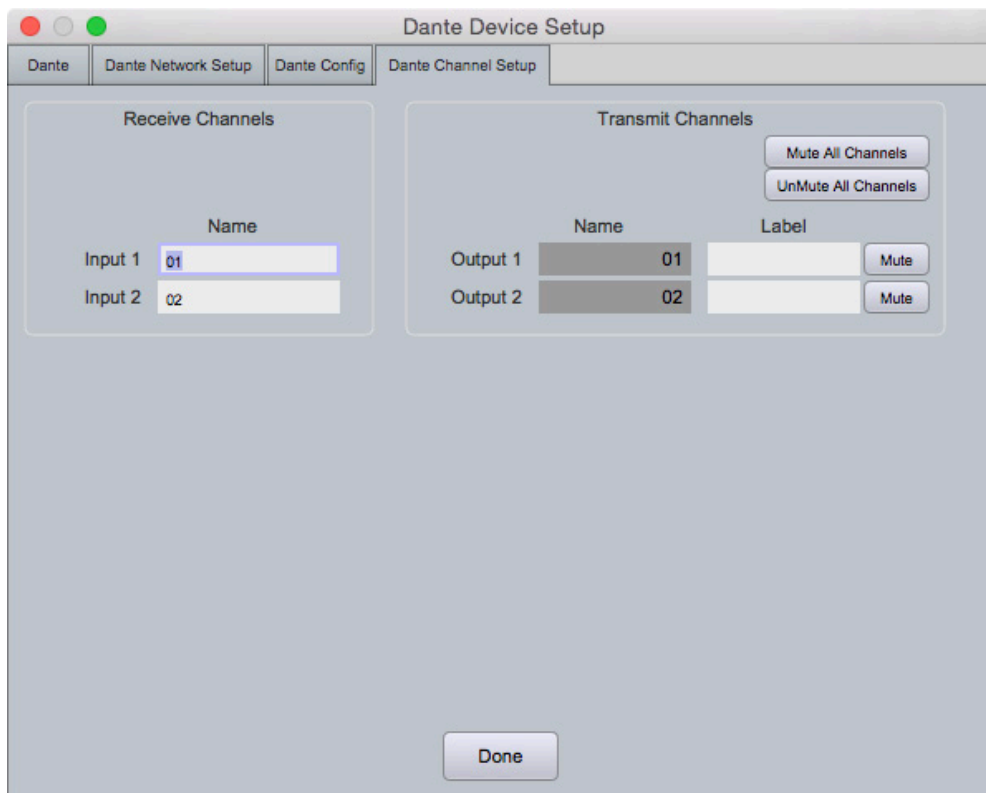
The next Dante Network Setup tab displays your Dante device network information.

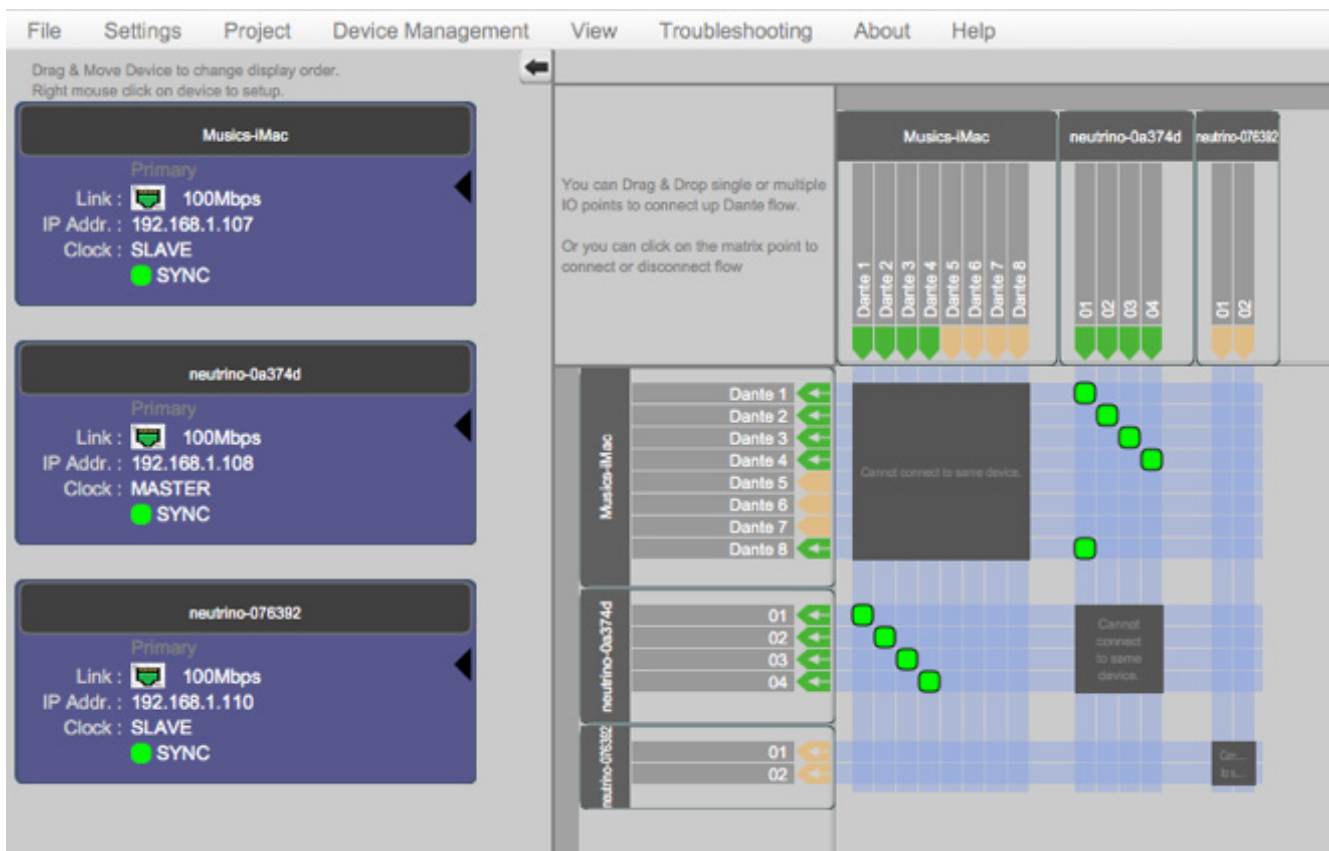


Dante Config tab allows you to configure your Dante device.



Dante Channel set up allows you to rename input and output channels. You may also mute channels. Once done reviewing you device settings, click 'Done'.





The diagram on the right is where you may route your Dante enabled devices.

Drag & drop single or multiple I/O points to connect up Dante flow. Or you can click on the matrix point to connect or disconnect flow.

GPIO Guide

What is GPIO?

The term 'GPIO' refers to the sequence of operations and conditioning required for a specific action to be performed. Within Xilica Designer, this sequence is to be carried out on a physical electronic signal in order to perform programmed actions such as triggering presets or muting an audio channel.

Where does this electronic signal originate?

The electronic signal in question (referred to as the GPIO input) is generated by creating a wired connection between the physical GPIO input ports (1 through 4, found on the back of the Neutrino/Uno DSP) and the corresponding ground pin (G).

Operations and conditions (Modules)

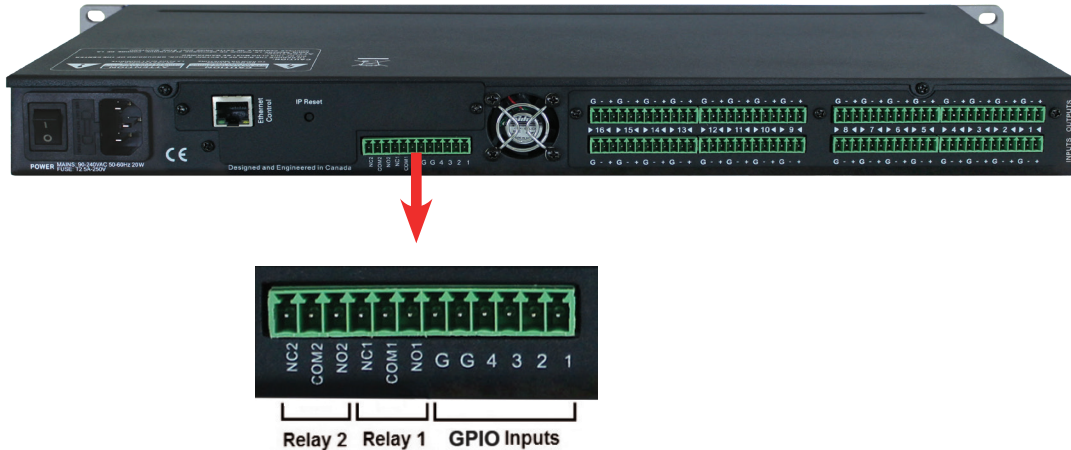
GPIO operations are programmed within Xilica Designer through the use of wiring and modules, much like that of an audio signal. Each function, operation, or condition has its own module block that can be inserted and wired into your design.

Features and Typical uses

The GPIO Output module allows for two basic functions: Triggering the physical relays and Triggering preset recalls. This basic approach is very open ended in the fact that presets can perform any change of settings to the device that you wish, and the external relays can complete any possible electronic circuit you require. The physical output contacts do not provide any specific voltages, meaning that powered circuit of any voltage or power requirements will be compatible with your processor. Xilica Designer processors have physical GPIO I/O capabilities allowing for added functionality such as:

- Emergency Mute
- Contact Switch Input
- LED Display
- Preset Triggering
- GPIO Controlled Mute
- And more...

Hardware



The GPIO I/O structure can be broken down into three basic groups:

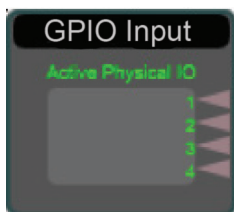
1. GPIO Inputs
2. Output Relay 1
3. Output Relay 2

GPIO Inputs

There are six contact dedicated GPIO input signals. Four are input signal contacts and two are dedicated as ground.

GPIO input signals are momentary unless otherwise programmed in Xilica Designer.

Creating a physical connection between any input channel and Ground (G) will send a GPIO HIGH signal to the processor through the corresponding channel.



Relays 1&2

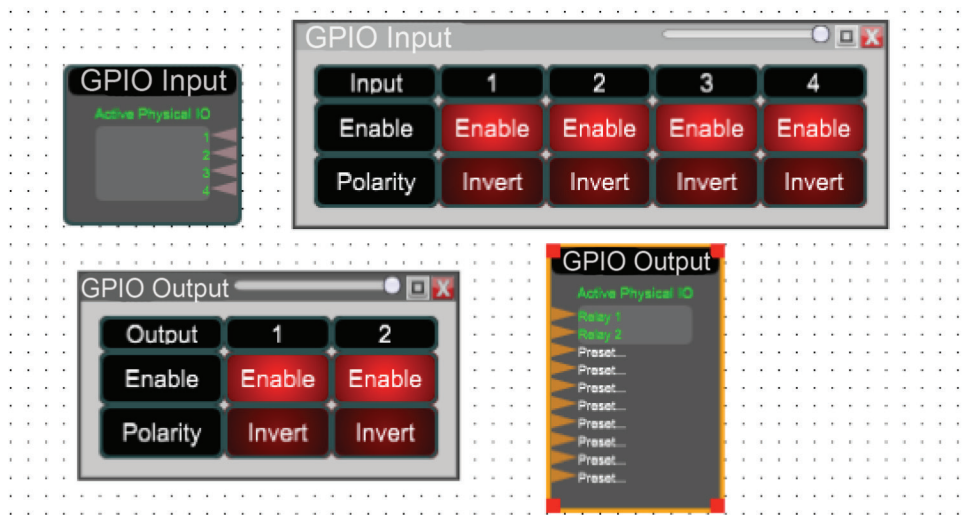
Each relay has a normally open (NO) contact, a normally closed (NC) contact, and a common.

When a HIGH signal reaches the Relay contact in the GPIO Output module, both the NO and NC physical contacts will invert, either closing the external circuit (NO) or opening it (NC).



Design introduction

Designing GPIO circuits with a Neutrino DSP is very similar to that of designing an audio schematic. The initial blank palette features both an input and output module, and requires the virtual wiring of GPIO modules to complete the I/O circuit.



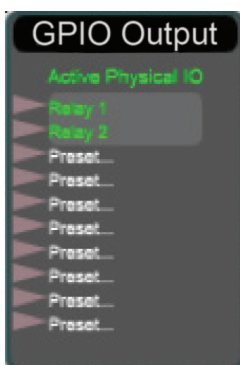
GPIO input

The GPIO input is the first point that the physical GPIO signals enter the DSP schematic. This module has 4 nodes labelled 1-4 by default; any and all channels can be either inverted or disabled. These nodes represent the physical GPIO input contacts on the hardware.



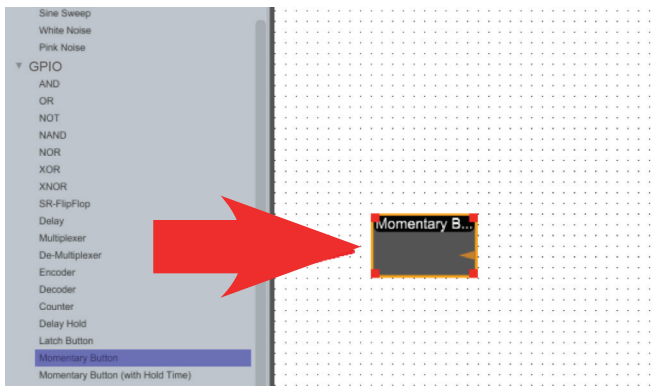
GPIO output

The GPIO output module is the final destination of the GPIO signal from where you can decide to either trigger the internal physical relays, or trigger presets 1 through 8. Each relay has a normally open (NO) contact, a normally closed (NC) contact. When a HIGH signal reaches the Relay contact in the GPIO Output Module, both the NO and NC physical contacts will invert, either closing the external circuit (NO) or opening it (NC). Open the GPIO Output module to find that the output relays can be enabled/disabled or inverted if need be. The Preset Trigger feature is simple in functionality. Send a HIGH signal to the desired channel in order to recall the corresponding preset.



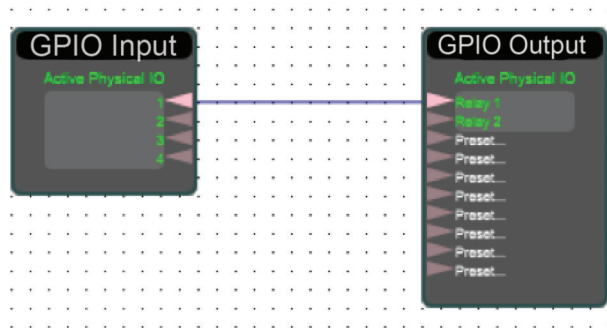
Design basics

To add any component that suits your design, simply click and drag the desired module from the Component Library to the work area.

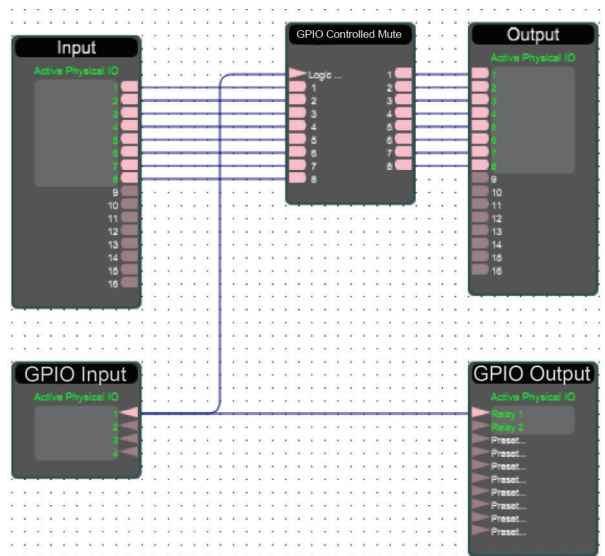


Wiring

Connect modules together by creating a wire. Simply click and drag from the output node of one module to an input node.

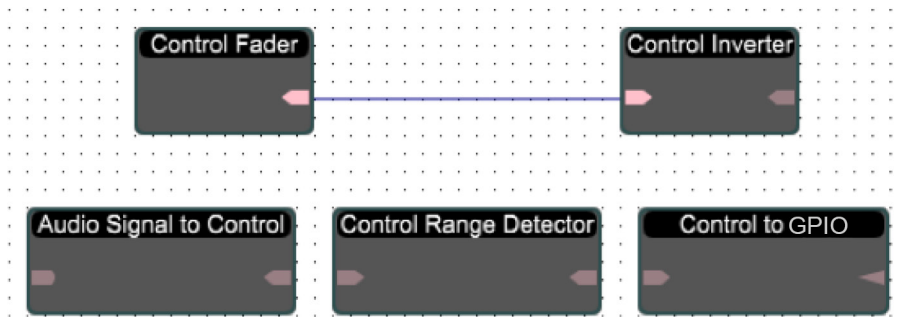


Depending on the modules being wired, you can link multiple wires to single nodes. This will send the signal through both wires simultaneously as a parallel connection.



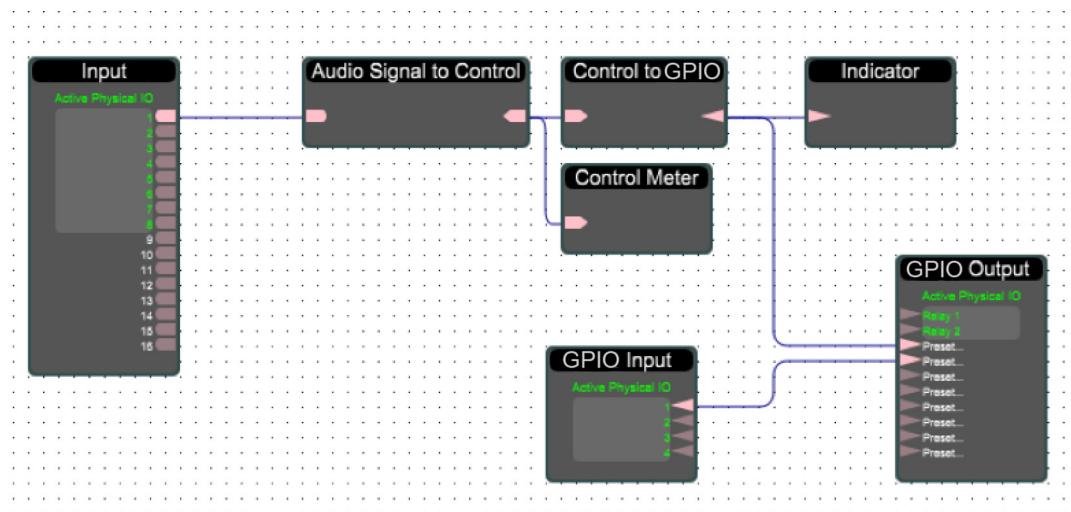
In the example above, notice that the input signal and Relay 1 is being routed to the GPIO Controlled Mute. One practical use for this configuration is having an external LED light up when the emergency mute button is active.

Control objects



Like GPIO, control signals are data signals that are used as a utility for functionality, however control values are represented as a range. This range can be manipulated and detected via various threshold tools to allow for intricate control over various applications.

Some modules are dedicated to the conversion of signals, be it from Audio to Control, Control to GPIO, or GPIO to Control. These tools can be used in conjunction with each other for such purposes as using a line level signal to trigger a preset, which in turn could turn on an emergency mute, for example.



In the above example, the audio signal is converted to Control, and the Control is then converted to GPIO.

For module descriptions and definitions, please refer to the 'Xilica Designer: User manual'.



Customer Support

If you'd like to contact us regarding product support or technical designs, email support@xilica.com and we'll connect you with a solutions engineer. Alternatively, if you'd like to speak to someone, you can call the following numbers for immediate assistance:

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www.xilica.com

Version: 2.0

