



Neutrino Series Open Architecture / Drag & Drop DSP - Quick Start Guide

1. What's in the Box

- Neutrino A0808, A0816, A1608, A1616 (or N, D, AEC, ND, N-AEC model version) hardware device
- This hard copy of the Quick Start Guide
- USB drive with Software, Help File, Quick Start Guide, Spec Sheets
- IEC socket detachable power cable
- Detachable 3.5mm Phoenix/Euro type terminal block connectors

2. What you need to provide

- A Windows PC – 1GHz or higher processor
- Windows 7, Vista, or XP
- 500 MB of free storage space
- 16 Bit or higher colours
- 1G or more RAM
- Network (Ethernet) interface
- Ethernet cable (Cat5 or 6)

3. Getting Help

- The included NeuConsole software - the Windows software that controls the Neutrino processing and hardware - includes a Help File.
That help file provides a detailed User Manual (software and hardware) as well as this Quick Start Guide.
If you need further beyond your understanding of the included User Manual and Quick Start Guide please contact,
- Technical Support at support@xilica.com Web Site: www.xilica.com
- North America: Contact Technical Support at 905-770-0055 ext 3 (9am-5pm EST).
- Europe: Contact Technical Support (Marco Koorstra) at +31 29940 1100.
- Asia: Contact Technical Support (Tim Cheung) at +86 13602279067.

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 NEAR WATER

Do not use the product near water. For example, near a bathtub, washbowl, 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 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.

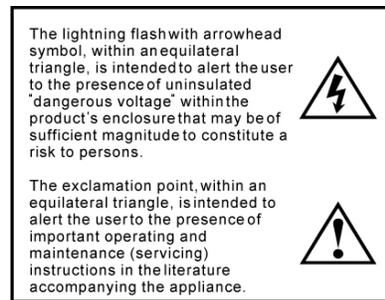
13. UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

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 line surges.

14. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANYWAY, 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.



4. Introduction and Description:

- **Thank you**

*Hello from everyone here at Xilica Audio Design and thank you for purchasing our **Neutrino Series** digital processor.*

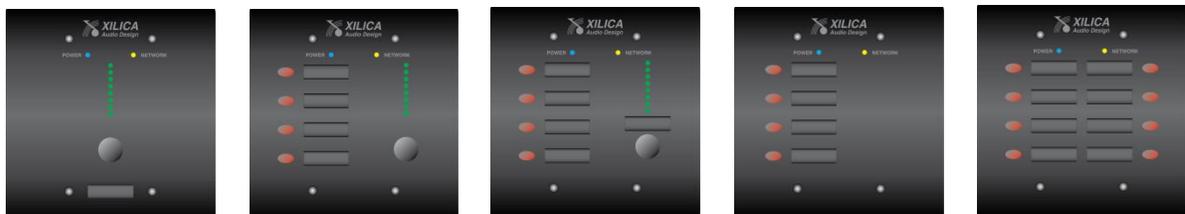
Since Neutrino is setup and controlled by a host computer via Ethernet it is important that we get you connected and up and running as quickly and easily as possible. Thus the first portion of this Quick Start Guide is dedicated to getting the Neutrino processor and the NeuConsole software connected and operating with ease. Once the Neutrino processor and the NeuConsole software is connected and operational we believe you will find working with the software and processor to be straight forward as outlined in the balance of this Quick Start Guide. If you have any suggestions for making this quick start guide better in that or any regard please bring them to my attention at barry@xilica.com and we will make those changes.

- **Neutrino Series Digital Processor**

Designed in Canada and built on the audio performance reputation of our 40 Bit, Floating Point DSP Engine and High Performance 24 Bit Converters – Neutrino brings a new level of audio performance, ease of use, and value to the world of open architecture-drag & drop audio processing for fixed audio installations.

Neutrino Series processors are available in four I/O model configurations - 8x8, 8x16, 16x8 and 16x16 with Mic/Line input selection per input, 48v phantom power and high performance mic pre-amps. Neutrino A-Series N, D, AEC, ND, and N-AEC model versions provide Network Dante I/O, Digital I/O, Acoustic Echo Cancellation (AEC), and Network/Digital & Network/AEC combo model versions for added I/O and application flexibility.

From a large palette of audio DSP modules, create your personal DSP system design to accommodate each unique project requirement using the NeuConsole drag & drop software. Control Neutrino via Ethernet using the included NeuConsole software GUI, from any PC using our NeuPanel PC control designer, with the logic input/relay output ports, using the optional NeuPanel - Mini and Touch Series programmable wall controls or any third party controller. Neutrino provides auto recognition and connection of all Neutrino devices and controls on the network (in DHCP mode).



Optional NeuPanel – Mini Series Programmable Wall Controls – see www.xilica.com

5. Hardware:



FRONT PANEL Front panel of Neutrino A1616 model shown (older front panel version shown below it)

1. LCD Display

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

2. Power Status LED (New front panel version only)

3. Network Status LED (Data Status LED on older front panel version)

- When the processor has an Ethernet cable / network cable connected the Network status LED on the front of the processor will light - once the processor initializes. If there is no Ethernet / network cable attached it remains off.
Note: When the Network status LED is on it does not mean that you have established a Network Connection – only that an Ethernet or network cable is connected to the processor. Proper Network Connection and Operation is indicated/displayed only in the software’s “Network View” page (see the Network View & Connection section of this guide).

- When the processor and software are connected and communicating the Network status (Data status) light will flash.

4. Input/Output Signal Indicators

Each Input and Output channel has a dual colour LED signal indicator. Green for signal present at -40 dBu and Red at +17 dBu at the advent of analog clipping.

5. Menu Buttons

There are 6 menu keys: <<Menu (Menu Down), Menu>> (Menu Up), <<Cursor (Cursor Down), Cursor>> (Cursor Up), Enter and Exit. The functions of each key is explained below:

<<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 the 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 the **Main Menu**.



REAR PANEL (Rear panel of Neutrino A1616 and A1616-ND models shown above)

1. Power On/Off Switch

2. Fuse Compartment

Should you need to replace the fuse use a T2 5A-250v fuse. Ensure power to the device is disconnected when replacing the fuse.

3. **Power Input Connector**
Insert the IEC plug connector end of the supplied cable into the rear panel of the Uno. Connect the AC end of the cord into an AC power source of the correct voltage and frequency (100-240 VAC, 50/60 Hz).
4. **Ethernet Connector**
Neutrino utilizes a TCP protocol for communication with the host PC running the NeuConsole software. The port is a standard RJ45 (Ethernet) jack.
5. **IP Reset Button.**
See the IP Reset / Reset Processor Network Settings section in this guide.
6. **Logic Control Input/Output Port**
Utilizing twisted pair wire with an attached terminal block, you can use external signals to control parameters such as triggering presets within NeuConsole or control external devices like an electric screen for example.
7. **Analog Line Outputs**
Euro/Phoenix style terminal block output connections utilizing 3.5mm terminal block connectors (included). Use balanced, shielded audio cabling. Neutrino has eight (8) or sixteen (16) outputs depending on the model.
8. **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 (8) or sixteen (16) switchable Mic/Line inputs w 48v phantom power depending on the model.
9. **Network Audio Connectors** (16x16 I/O channels on one RJ45 connector – one RJ45 for redundancy)
Included RJ45 Dante network audio connectors (not to be confused with the Ethernet connector) on Neutrino A-Series N, ND, and N-AEC model versions only. As shown on the A1616-ND model version on page 4 above.
10. **Digital AES/EBU Connector**
DB25 connector (Tascam Format) on Neutrino A-Series D and ND model versions only. As shown on the A1616-ND model version on page 4 above.

6. Install the NeuConsole Software:

The USB drive included with each processor includes a copy of the Neutrino's NeuConsole software or you can download the Windows 7, Vista, XP compatible NeuConsole software from our web site and install on your computer (www.xilica.com).

Note: The Microsoft installation program/process remembers what location you installed from - the first time you load the NeuConsole software into your computer. This can cause issues if you try and load a new software Version (update) from a different location than the location originally used to load the NeuConsole software into your computer (USB, Internet Download, etc).

Solution: Simply un-install the old NeuConsole software version in Control Panel before you update your software version each time. You won't have any update issues and you won't have to remember what location you loaded the software from previously or what the source was - USB, Internet, etc.

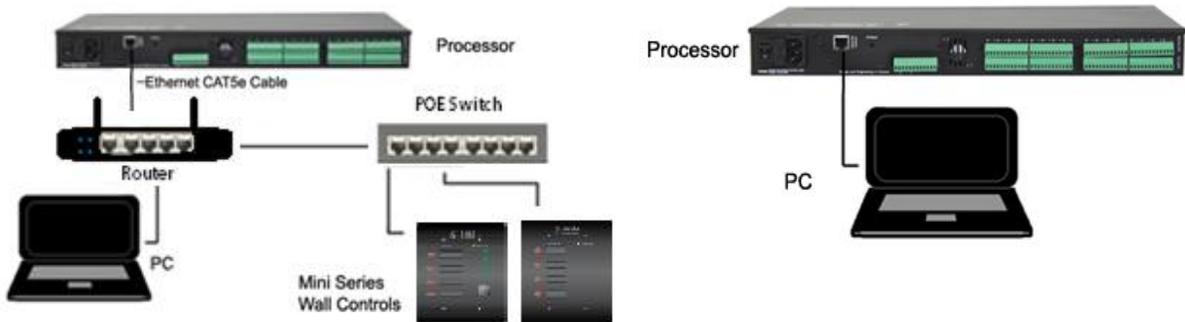
- **Make sure the NeuConsole Software version is the latest version (see "About" menu in NeuConsole to view version) vs. version on the web site. Make sure the processors Firmware version is compatible with the software (view device firmware version in Network View). See Firmware Update on Page 10- #15 to assist.**
- If you have a personal Firewall setup on your computer, a Firewall popup window might be displayed during the software installation to ask whether users want to "Block" or "Allow" NeuConsole from accessing the network. Select "Allow" to continue installation.
- Once installed and working – close the NeuConsole software for now until you are instructed to open it again.

7. Initial Device Connectivity:

The Neutrino series of digital processors run on a network based infrastructure and are set up and controlled by a host computer via Ethernet using the NeuConsole software.

A network connection can be made between your computer and Neutrino **(A)** Via a DHCP enabled Router, Server, or Router/Server/Switch combination as recommended and shown below or **(B)** A Non-DHCP enabled Direct connection or Indirectly via an Ethernet switch.

The primary difference between these two connection methods is the automatic IP address assignment that DHCP provides in **(A)**.



(A) DHCP Enabled Router, Server, or Router/Server/Switch Combo Connection

The Neutrino processor device boots up with DHCP enabled by default so with DHCP enabled routers and servers Neutrino will automatically obtain an IP address upon power up and connection. This may take a minute or two as the devices look for DHCP to obtain their IP address.

Available DHCP is the recommended connection method. Where our NeuPanel Series wall controls will be used to control the processor we recommend the use of a low cost router along with a POE switch. This combo will provide **DHCP** as well as power to the wall controls over their Ethernet cable by way of the switches **POE** feature (Power Over Ethernet).

Note: Linksys routers/NetGear switches have tested well (D-Link routers have not).

(B) Non-DHCP Enabled Direct 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) A Single Processor or Device in the Network Only - No DHCP Available

Once no DHCP is detected - a single direct or indirectly connected processor device will either try to connect using the IP address last assigned and stored in the device or attempt to revert to its default IP address of 169.254.128.128. Under some conditions the processor might refuse to relinquish its stored IP address or revert to its default IP address and thus refuse to connect. **To simplify and speed this non-DHCP enabled connection we recommend** - that before you power up your device you should **Reset** the processor to its **Default IP Address** using the **IP Reset Button** on the rear of the processor. Resetting the processor to its default IP address of 169.254.128.128 will have you connecting directly quickly and without problems when no DHCP is available. Please see - **IP Reset Push Button / Reset Processor Network Settings** instructions on **Page 7** below.

Note: Your PC should be set to "Obtain IP Address Automatically" (default setting).

Note: For direct connection a standard Ethernet cable should work with most computers.

IP Reset Push Button / Reset Processor Network Settings (DHCP not available)

Follow these instructions prior to powering up the processor and opening the NeuConsole software.

- (a) At the rear of the processor you will see a small round recessed push button labeled “**IP Reset**”- just to the right of the Ethernet connector (looking from the back). You are able to push this reset push button inward using the point of a pen or a small pointed object.
- (b) Press the IP Reset push button inward and while holding it pushed in power up the processor device.
- (c) **Wait 5 seconds after power up and then release the IP Reset push button.**
- (d) Wait for the processor to power up completely (this will take a minute or so as it initializes and sets its default IP address). When complete the Network LED (Data LED on older models) will light and remain on.
- (e) You can verify your network connection on **Page 8 - #11**.

Page | 7

Note: Some Uno processors were manufactured with a different IP **Reset** switch that was hidden behind a removable cover on the rear of the processor. If yours is like that – Remove the small black cover on the rear of the processor near the Ethernet connector (remove 2 small screws). Looking from the back of the processor you will see a small black Reset Switch to the right of the Ethernet connector. Press this Reset Switch forward lightly with your finger and while holding it pressed forward power up the processor. **Wait 5 seconds after power up and then release the Reset Switch.** The balance of the process is as above.

Note: Although not as reliable, each connected device also has a software IP reset function. In **Network View**, right click the device and select **Remote Reset**.

(2) Multiple Processor Devices Connected to the Network – No DHCP Available

Where you will be connecting multiple processors in your network and DHCP is not available, the user will have to manually assign unique IP addresses to each processor device. See – **Manual Assignment of IP Addresses on Page 9 &10 - #13 & 14**.

8. Processor Device Connected and Powered Up:

With your processor (and devices) connected as a network or directly to your computer, power on all devices.

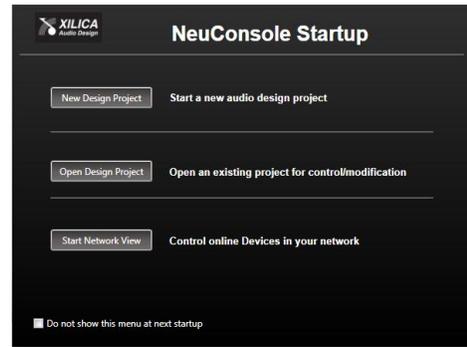
- (a) On power up the processors power status LED and LCD display will light (just the LCD display on the older models).
- (b) If the processor has an Ethernet cable / network cable connected the Network LED (Data LED on older models) on the front of the processor will light - once the processor initializes. If there is no Ethernet / network cable attached it will remain off.

Note: This does not mean that you have established a Network Connection – only that an Ethernet or network cable is connected to the processor. Proper Network Connection and Operation is indicated/displayed only in the software’s Network View page – see **Network View & Connection** on Page 8 below.

- (c) Upon being powered up the processor will search for a DHCP enabled router or server to obtain an IP address. If it locates DHCP it will connect quickly. If you are using a non-DHCP direct or indirect connection you will have followed the instructions on **Page 6 & 7, 9 & 10** to connect to a single processor or multiple processors – where DHCP is not available.
- (d) When the processor and software are connected and commands are being sent to the device the blue Network status LED (Data LED on older models) will flash.

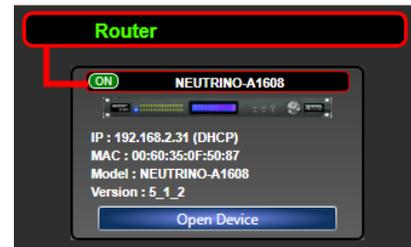
10. Launch NeuConsole Software: (Getting Connected)

Upon opening the NeuConsole software you will be shown the “**NeuConsole StartUp**” window. It provides 3 possible selections – **New Design Project**, **Open Design Project**, and **Start “Network View”** (Network View will also be available to you as a separate button located at the top right of the main Project Design window once you are working on a DSP project).



11. Network View and Connection:

- Click **Start “Network View”** from the NeuConsole Start Up window. The Network View displays all processors and control devices connected to the network plus information such as the processor device model, a green, yellow or red network connection indicator, the IP address, and the devices Firmware version – as shown.
- In **Network View** as shown at right - you should now see your processor device model connected to the network router block and the **Network Connection Indicator** to the left of the processor device model should be **Green** (meaning it is connected and operational).
- Note the **Firmware** version of the device. Any device firmware / software incompatibility will be indicated in **Network View** with a red or yellow warning symbol as shown at right (firmware upgrade required (red) or firmware upgrade recommended (yellow)).
- If your processor and software have Not connected properly you will see a Yellow or Red connection indicator to the left of the processor device model indicating a connection or operational problem.



Network Connection Indicators

Green - Connected and operational.

Yellow - Connected/Online but Not operational.

Red - The processor is offline – not connected – no communication between the NeuConsole software and the processor. Check cables and connections.

Note: This could also be a temporary Offline interruption if the processor is busy performing a firmware upgrade or the processor is re-booting.

12. Connection Problems?

Yellow Network Connection Indicator

While in **Network View** if there is a **Yellow** network connection indicator next to the processor device model the device is connected/online - **but Not Ready / Not Operational**.

- The three most common reasons for this Yellow connection indicator is the result of (1) A non-DHCP connection where multiple processors are in use and each device needs a unique IP address manually assigned to it (2) Where a non-DHCP direct or indirectly connected - single

processor device is not reverting to its default IP address and/or is holding onto its previous address and (3) Software/Firmware incompatibility.

- (b) **Solutions** – (1) See instructions #13 below – Manual Assignment of IP Addresses (2) See **Page 7** to reset the processor to its Default IP address and (3) Check device firmware version in Network View & perform a processor Firmware Upgrade – as described on **Page 10 - #15**.
- (c) Those connection solutions resolve 99% of any Yellow indicator connection issues but to assist further, when the indicator is Yellow you can hover your cursor over the device and there is a pop-up Tooltip message to tell you the kind of issues it has detected.

- (d) A few message and solution examples,

Message: Device not ready.

Solution: Wait a minute or two till the device is ready and it should then connect and the indicator turn Green if successful.

Solution: If the indicator remains Yellow, close the NeuConsole software and then re-open. Or Reset the processor.

Message: Device Schematic Not ready.

Solution: The processor has already been loaded with a DSP design. Give the connection process a minute to connect and if it does not connect close the NeuConsole software, open it again, select Start Network View and you should now see that the processor is connected and operational - as indicated by the Green network connection indicator to the left of the processor device model.

Solution: If not connected – reset the processor – see IP Reset Button/Reset Processor on **Page 7**.

Message: DSP Processing Error.

Solution: This could be a bad DSP Design schematic. You may need to reload the DSP schematic and restart and/or restart device to reset its DSP chip.

Message: Error in Firmware Upgrade.

Solution: It will print out an error code when you hover your cursor over the device in Network View (Do Firmware Upgrade again).

13. Manual Assignment of IP Addresses To Multiple Devices - DHCP Not Available:

Unique, manually assigned/static IP addresses are required for each processor device. Computer set to “Obtain IP Address Automatically”. **We will set your computers static IP address after setting each processor or device.**

To manually assign IP addresses,

- (a) Connect processor device number one directly to your PC. Reset its IP as described on **Page 6 & 7** (IP Reset) and establish a connection.

- (b) In **Network View** as shown below left - right click the processor device and select “**Device Setup**”.

In the **Network Properties** window as shown at the far right - select the “**Change Network Configuration**” button in order to disable **DHCP** and to insert IP addresses manually.



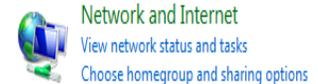
- (c) With the **DHCP** button **disabled**, assign the **unique IP Address of 192.168.1.X** – where X is a unique number between 0 & 255 – to the first device and subsequent unique IP addresses to the remaining devices in the network.

- (d) When finished – Select “**Apply**” to save changes and then “**Done**” to exit.
- (e) Complete steps 1 thru 4 for each subsequent processor or device so each is assigned its own unique IP address (example-might be 192.168.1.180/181/182 etc).
- (f) **Your devices will appear Offline in Network View until you are able to assign a static IP address to your PC - as described in #14 below.**

14. A Static IP Address for your Computer - Multiple Devices – No DHCP Available:

In this section, we will be navigating through Microsoft Windows to determine your home networking information as it applies to manually assigning a unique static IP addresses to your computer.

- (a) The first step is to open the '**Start Menu**' and select **Control Panel**.
- (b) Click **View Network Status and Tasks** under the Network and Internet header as shown at the right.
- (c) Click on **Change adapter settings** on the left most tab.
- (d) Left-Click on **Local Area Connection** and click the **Properties** button. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties** to access the manual IP settings.



- (e) Set up your IP address to be **192.168.1.X** where the X can be any value from 0 – 255 – but unique from the other devices that you already manually assigned unique IP addresses to.
- (f) **Use the following settings for your PC's unique static address:** **IP Address: 192.168.1.X**
Subnet Mask: 255.255.255.0
Gateway: 192.168.1.1
DNS Servers: 192.168.1.1
- (g) If you set up your devices as per step 13 on Page 9 & 10 above, you will now see them appear online and connected in **Network View** in the NeuConsole software.

15. Firmware Upgrade to Processor Device:

Once you have the processor device and the NeuConsole software connected and operational and before you start work on a DSP design project - make sure your processor has the latest firmware installed (www.xilica.com - verify, download latest firmware & save file to your PC).

Note: It is imperative that power is not disrupted during the firmware update process.

- **In Network View** – Right click the device and select “**Firmware Upgrade**” from the menu and follow the instructions as shown below.
- As indicated during the firmware upgrade procedure – a firmware upgrade will erase all saved data on the device. Do a firmware upgrade first or re-transfer/save a saved project design file to the processor device after the processor firmware upgrade is complete.



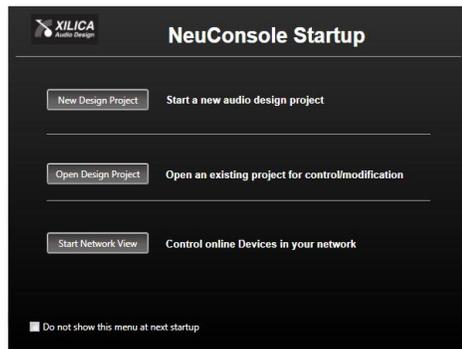
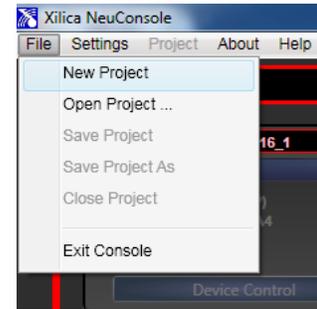
16. NeuConsole Software: (Project View/Design Mode)

You are able to work with the NeuConsole software without being connected to the network and processor but for the purpose of this guide example we are establishing a network connection first before beginning to work on a New Design Project.

In the following example the processor is connected and operational.

New Design Project

If you are still in the **Network View** window (or in the Project View window) – Go to “**File**” at the top left and select “**New Project**” in order to begin a new DSP design project as shown at right.

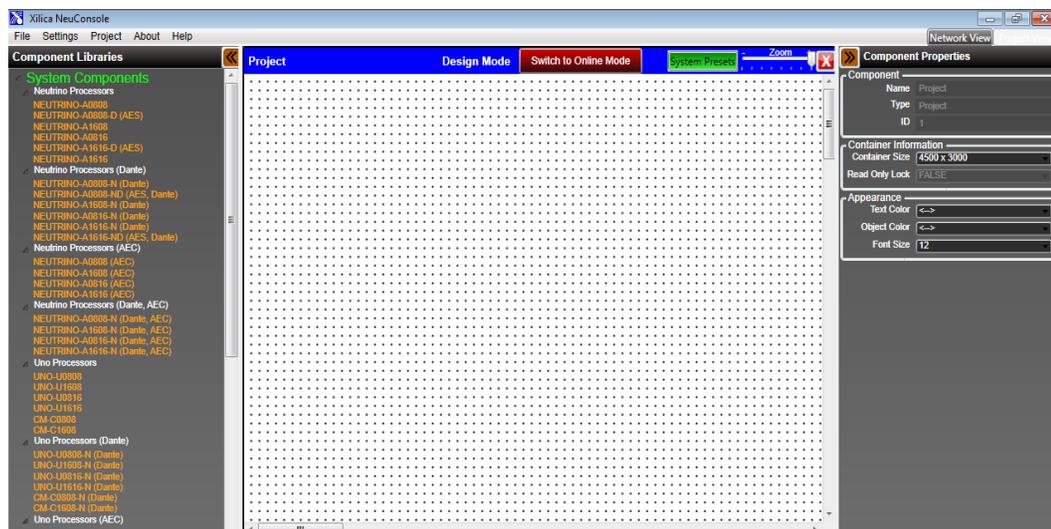


If you have just opened the software - from the **NeuConsole Startup** window you can select “**New Design Project**” in order to begin a new DSP design project.

Project View / Design Mode Work Area

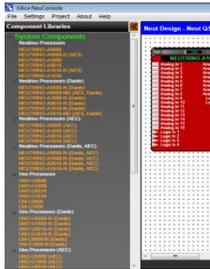
Either will open the **Project View/Design Mode** work area page as identified by the white, dotted alignment work area shown below.

- (a) See the **Project, Design Mode**, and the red **Switch To Online Mode** headings and button at the top left and center of the work area. See & the grey **Network View** (Project View) button at the top right hand side above component properties. See the **Component Libraries** menu on the left and the **Component Properties** menu at the far right – as shown below.



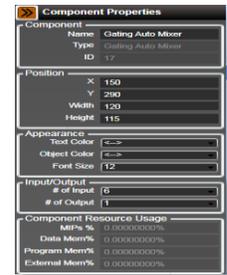
- (b) Once you are in **Project View/Design Mode** working on a DSP design you are able to switch back & forth between “**Project View**” and “**Network View**” by selecting the **Network View / Project View** button at the top right of the work page area. Once you do it will take you to the Network View page and the button will re-name itself “Project View”. Selecting the **Project View** button will take you back to the Project View page to continue working on your DSP design project.

Component Libraries / Component Properties



The **Component Libraries** menu on the left side of the **Project View/Design Mode** work area is where you will find all the processor, control device, and DSP modules you will be selecting and working with - found under the **System Components & DSP Modules** sub heading and the category headings of **Neutrino Processors, Control Devices** and **DSP Modules**.

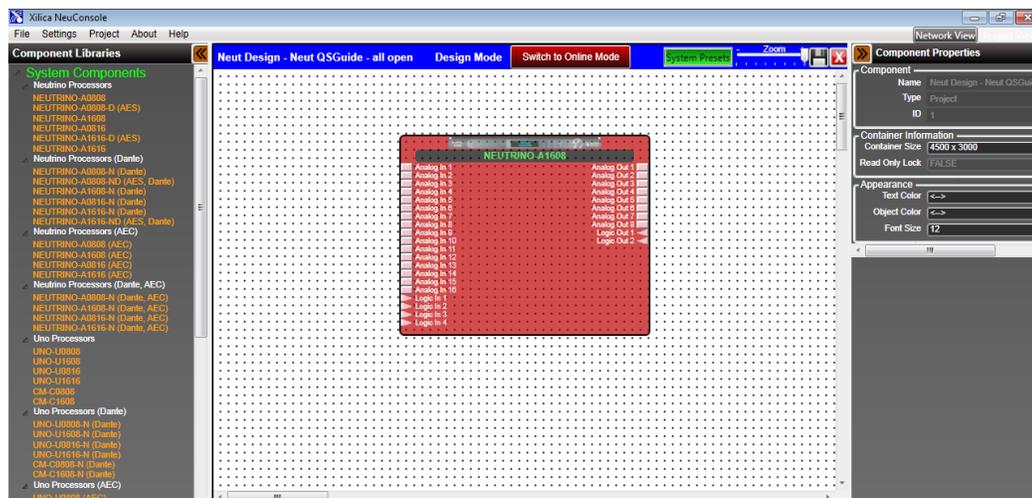
The **Component Properties** menu on the right side of the Project View work area provides the means to alter the specific characteristics of each individual DSP Module. Click on any module or wire to open up its specific properties menu. Characteristics such as Name, Position, Appearance, I/O Size (# of Inputs and Outputs), Resource Usage, Link Information (source & destination labels) and more can be adjusted in this menu.



Processor Module

Neutrino is an open architecture DSP and you use the NeuConsole drag and drop software to create your own specific DSP design layout for each project application.

- (a) From **System Components** in the **Component Libraries** on the left of the Project View/Design Mode work area – click and drag the **Neutrino A1608** processor module we will use for our design example and drop it onto the **Project View/Design Mode** work area as shown below.



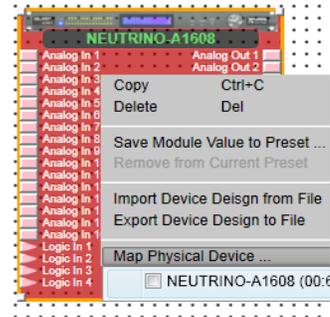
- (b) You will notice that the red A1608 processor module placed in the project view work area is a light see through red color.

Map Physical Device

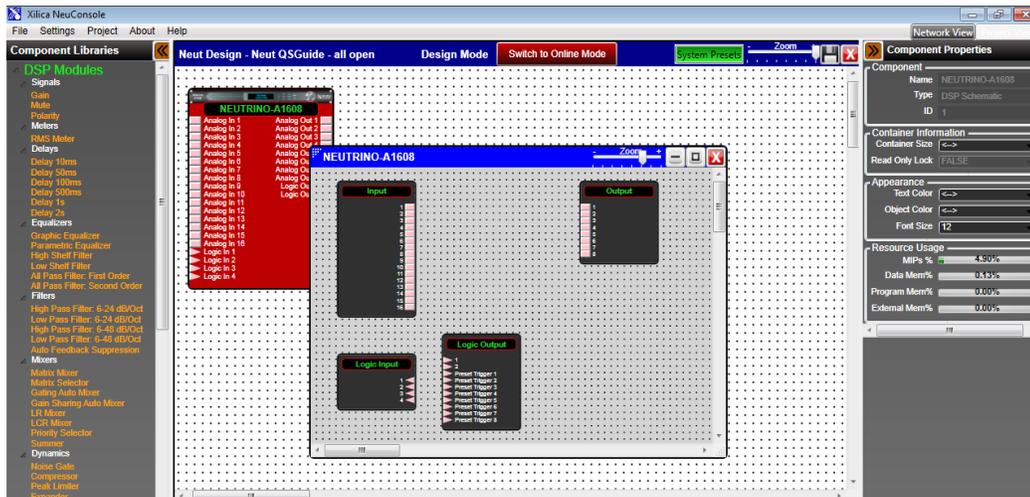
- (a) With the **Neutrino A1608 processor module** for this application placed in the software's **Project View/Design Mode** work area on page 12 above (and when the processor device is connected to the NeuConsole software) we need to **Map** or connect the Neutrino's software processor module in the work area with the actual physical Neutrino processor device that is connected to the PC via the network connection.

To Map the physical processor device,

- (b) Right click the Neutrino processor module in the Project View/Design Mode work area; Select **"Map Physical Device"** and then select the processor device model you are working with from the drop down list – as shown at right. Once done you will notice that the software processor module in the Project View/Design Mode work area has turned from light see through red to a **solid red** – indicating successful Mapping (connected to physical device) - as shown below.



(This Mapping procedure can be done later if you have no physical processor to connect to at this time. Simply continue with your DSP design work, save as you go, and Map the software processor to the physical processor when one is connected and when you want to be able to transfer/save your DSP design work into the physical processor device)



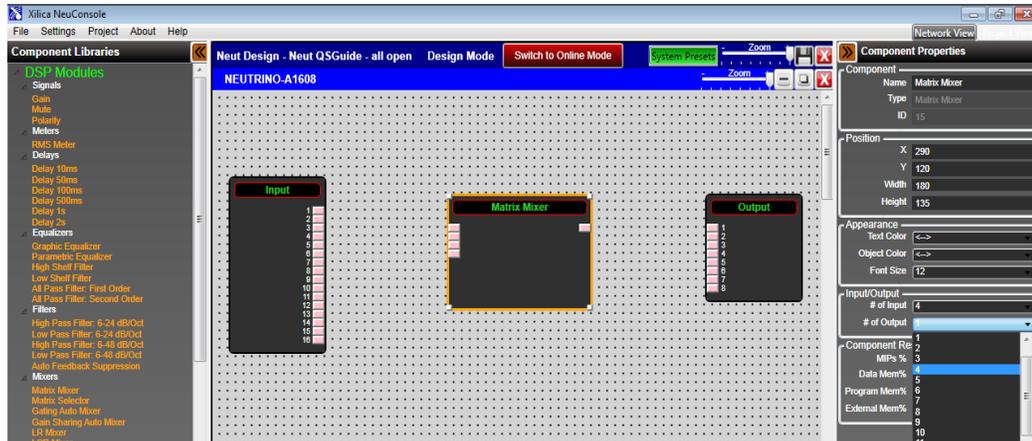
Processor Module – DSP Schematic Design Page

- (a) Double-Click on the red Neutrino A1608 processor module to open it and to access its DSP schematic design layout page – defined by a grey dotted work area (not white) as shown above.
- (b) The DSP schematic design page has 'Input', 'Output' and 'Logic' DSP modules already inserted and shown by default.
- (c) Notice that once you've opened up the Neutrino DSP module to display the DSP schematic design page that under the **Component Libraries** at the left – the list of **System Components** has been replaced by **DSP Modules**. DSP modules that can be dragged and dropped into the DSP schematic design page to create your DSP design schematic.

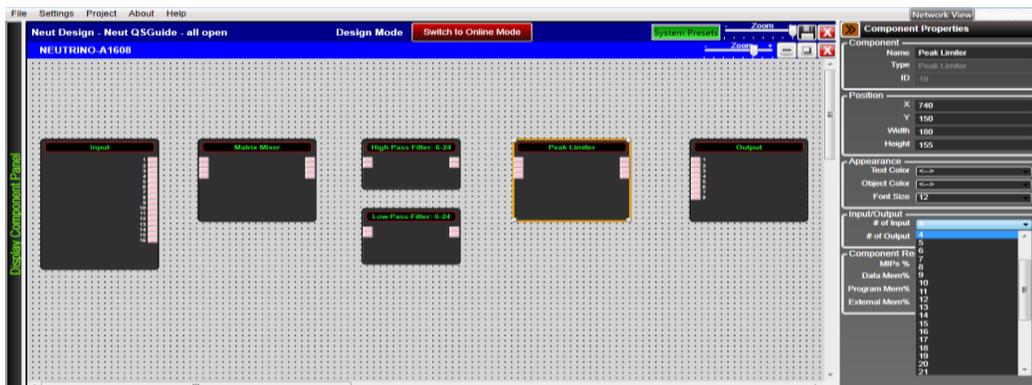
Creating Your DSP Design Schematic

For this design example, we will create a very simplistic speaker crossover DSP schematic.

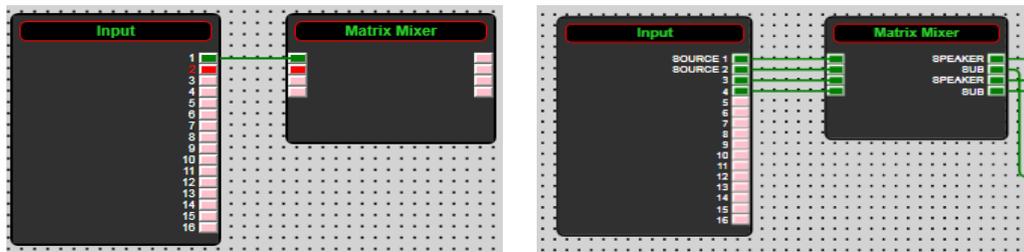
- (a) Enlarge the opened, grey dotted DSP Schematic design page, move the Input and Output DSP modules to the left and right and the two logic modules out of the way (since we will not be using them this time) to create a larger DSP schematic work area – as shown below.
- (b) As shown below - under **DSP Modules** on the left - drag and drop a **Matrix Mixer** onto the schematic design work area. (Click on the grey dotted DSP schematic design page to open the Components Library and the list of DSP modules if it is temporarily hidden).



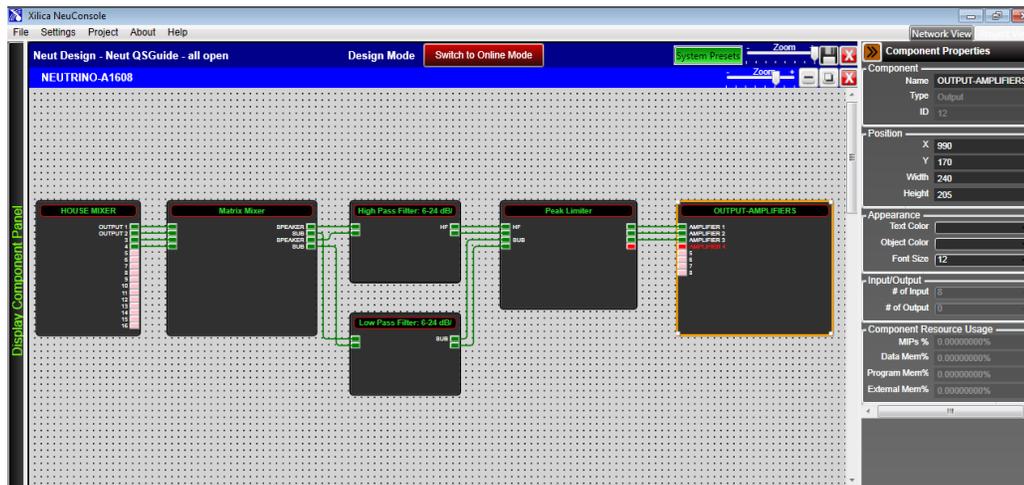
- (c) The Matrix Mixer as dropped/placed in the schematic design area arrives as a 1x1 I/O Matrix Mixer. **As shown above**, I have already re-sized the Matrix Input from 1 to 4 inputs for our design example.
- (d) To **Re-Size** the Matrix Mixer (or any module), click it so it is highlighted in Orange (if not already highlighted) and see the **Input/Output** section of the Component Properties menu on the right. As indicated with the Blue dropdown selection above, I have chosen to re-size the output side of the Matrix Mixer to 4 outputs – creating a 4x4 Matrix Mixer (as shown below).
- (e) **Next**, from **DSP Modules** on the left, drag and drop a **High Pass Filter** (6-24 db/Oct); a **Low Pass Filter** (6-24 db/Oct); and a **Peak Limiter** onto the grey dotted, schematic design area and re-size each as we did with the Matrix Mixer – as 2x2 Filters and a 4x4 Peak Limiter.
- (f) Once completed, **Minimize** the **Component Libraries** menu on the left using the orange double arrow symbol so we can create a larger work area to better continue our DSP design work (positioning, wire DSP modules, label Source/Destination connections, open and configure DSP modules, etc) – as shown below.



- (g) **Next**, as shown below left – point, click, and drag from one DSP module I/O connection node to another. Release when the destination node is reached and it turns red to create a “wire” connection between the two modules I/O. Alternatively, you can highlight a box around multiple nodes (capture them) to make more than one connection at a time.
- (h) As shown below right - connect the first 4 connections from the **Input** module to the **Matrix Mixer**. You can name the source and destination labels of each DSP modules inputs/outputs by pointing at and clicking on a “wire” and typing in the label name under the appropriate Source or Destination Label in the Link Information section of the **Component Properties** menu on the right hand side of the work area page (that is why it remains open). Alternatively, you can copy and paste modules by highlighting the desired modules and pressing **ctrl+c** to copy and then **ctrl+v** to paste or selecting copy/paste from the right-click menu.

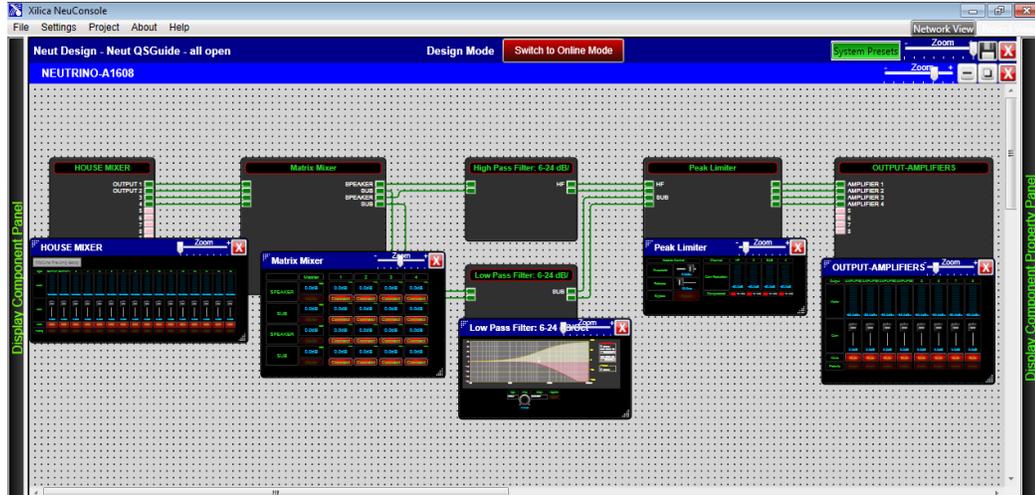


- (i) As shown below, wire/connect the balance of your DSP modules - Matrix outputs 1 & 3 to the High Pass Filter; Matrix outputs 2 & 4 to the Low Pass Filter; Filter outputs to the Peak Limiter; Peak limiter to the Output module (point and right click to delete a wire connection). Label each DSP modules source and destination I/O as you desire.
- (j) By clicking a DSP module you can re-label it in the Component Properties menu (we re-labeled the Input module to House Mixer). **This completes the DSP design example.**

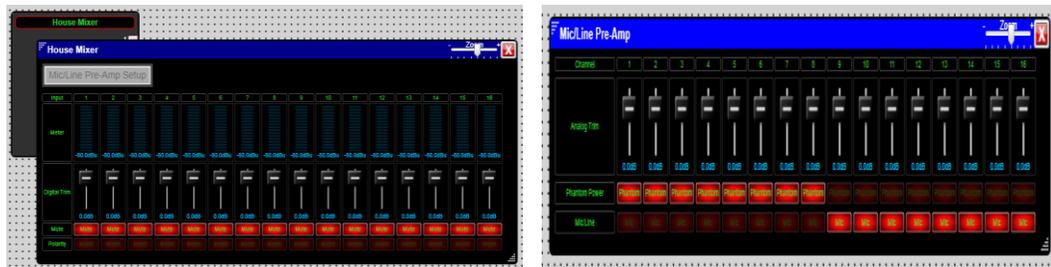


DSP Module Parameters – Open and Adjust

- (a) Double clicking any DSP module will open it and display the modules parameter controls.
- (b) All but one of the DSP modules are shown opened on **Page 16** below.
- (c) I have also now minimized the Component Properties menu to provide more work space.



- (d) Double clicking on the **Input DSP** module (re-labeled as House Mixer in our example) provides access to the Master Input – Polarity, Mute, Digital Trim, & Meters (below left) as well as the processors **Mic/Line Pre-Amp** controls by way of a secondary Grey select button at the top left of the **Input DSP** module.

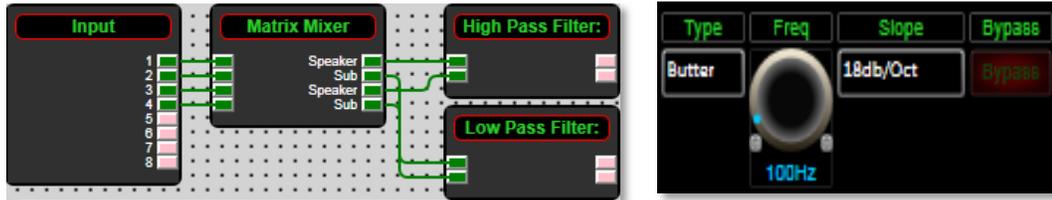


- (e) Click the grey “**Mic/Line Pre-Amp Setup**” button in the opened Input module (House Mixer) window above left to display and adjust the processors **Mic/Line Pre-Amp** parameters - Mic/Line selection, Phantom Power and Analog Trim (shown above right).
- (f) Make appropriate parameter adjustments as required.

- (g) **Next**, double-Click on the **Matrix Mixer** to open up the routing matrix. Here input sources are assigned to any or all outputs. Ensure that Input 1 routes to Output 1, Input 2 to Output 2 and so on as shown at right. The **Connect** button ensures that the signal routes to the associated output. Turn the Connect Button OFF when you want to mute the signal going to the conflicting outputs. The Matrix screen shot at the right displays the correct routing assignments for our design example.

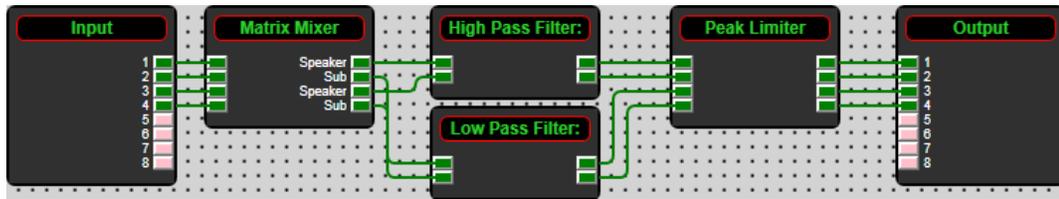


- For the sake of this example, we are going to designate Outputs 1 and 3 as speaker channels (high frequencies) and Outputs 2 and 4 as subwoofer channels (low frequencies).
- (h) Double click to open the **High Pass Filter** DSP module. Set the **Type** to Butterworth. The **Slope** to 18 dB/Oct and set the cutoff **Frequency** appropriately.
- (i) Open the **Low Pass Filter** DSP module. Set the **Type** to Butterworth. The **Slope** to 18 dB/Oct and set the cutoff **Frequency** appropriately.



- (j) Double-Click the **Peak Limiter** DSP module to open the limiter's DSP parameters. Ensure that the threshold is set to 0dB or less.

- That completes our design example, DSP module parameter settings.



17. Save Project:



- (a) Click the **“Save Project” Disc** located to the right of the zoom control in the Project View/Design Mode work area to “Save Project As” or “Save” your DSP design project (each time a DSP adjustment is made the Save Project Disc will reappear) **OR** Select **“Save Project As”** under the **File** menu at the top left of the application to name and save your design project or **“Save Project”** to save as you work.
- (b) **This saves the DSP design project you are working on to your PC/Computer (not to the physical processor device). See Switch to Online Mode below to accomplish that.**
- (c) We recommend that you **Save As** the project file twice. Once to create a **Master File** and a second time to create a **Work File**. Continue working with the Work File (or a file name of choice) and the Master File is protected should you ever need it. At the end of the project – continue running the system with the Work File, rename it to Master Ver 2, or other.

18. Switch to Online Mode: (Transfer/Save DSP design project to the physical processor device)

Once your DSP design project and parameter adjustments are completed (and saved to your PC) you can **Transfer/Save** your work to the connected processor device. To do this,

- (a) Select the red **“Switch to Online Mode”** button at the top center of the **Project View / Design Mode** work area page – as shown on **Page 16**.
- (b) This button selection performs two functions at the same time – it transfers or saves your DSP design project to the connected processor device and that processor is now Online/Live.

- (c) Follow **Permission Instructions** menu shown below **carefully**. Once permissions are given a **Preparing Devices. Please Wait...** prompt will appear once the process begins of transferring / saving your DSP design project to the physical processor device.



- (d) Any problems – check Auto Warning Messages in Network View regarding any Firmware Incompatibility with Software (will not load your design into device if any incompatibility).

When complete – as shown below,

- (a) Note that the Design Mode label at the top of the page has changed to **“Online Mode”** and that the red **“Switch to Online Mode”** button is now Blue and has been re-named **“Switch to Design Mode”**. Thus you are able to quickly switch back and forth between **Online Mode** and **Design Mode**.
- (b) Note that the **Tool Bars** at the top of the **Online Mode** page, the opened DSP schematic and the two opened DSP modules shown are now **Red** (not blue) indicating that the hardware and software are in **Online Mode**.



- (c) Note that when the red processor module is visible as it is above that the processor device model has a green indicator beside it to indicate that the processor device is connected, is in Online Mode and active.
- (d) **Note** that you can continue to make adjustments to the DSP modules in **Online Mode**. When you do, upon switching back to **Design Mode** you will be asked **“do you want to copy the Online Device parameter changes back to your project (file) – yes or no”**.

So you can make parameter adjustment changes to the DSP modules in **Online Mode**, hear their effect live, and not affect the related DSP design project file as saved on your PC if you select **“No”** from that menu. Or select **Yes** to modify your saved project file and continue working or **Yes and Save As** immediately to save the changed processor settings to a new project file – thus protecting the original project file. Then continue working.

Be careful here not to write over a saved project file by mistake.

(e) **Note** the green **“Mute All Devices”** speaker symbol button at the top of the **Online Mode** page to the right of the System Presets button.

19. Working Offline:

Of course you can work on a DSP design project and save it to a file while **“Offline”** - with no processor device connected, no Map Physical Device action taken and without transferring / saving your work to the processor device right away. Then later, connect processor, open your saved project, Map Physical Device, and transfer/save your saved DSP design project file to the connected processor device by selecting the **“Switch to Online Mode”** button.

20. Open Design Project:

Open Design Project or **Open Project** is where we open or access previously worked on and saved DSP design project files (as compared to New Design Project/Open Project).

- From the software **NeuConsole Startup** window – Select **“Open Design Project”** and select and open the specific DSP design project saved in your files.
- Or - From the **Network View** or **Project View** window - Go to **“File”** at the top of the page, select **“Open Project”** and select and open the specific DSP design project saved in your files.
- In both cases the saved DSP design project once opened will appear in your Project View/ Design Mode work area. Double click the red processor module in the work area to view the saved DSP design project schematic. Double click DSP modules to open them and make parameter adjustments as required.
- Save your work as you go and the balance of your work operations are the same as described above in New Design Project.

21. Open Device: (Quick Access to a Programmed Processor Device)

If you are connecting to a processor device that has already been programmed with a DSP design project and you need quick access to the processors DSP to check out its settings or to make new **“Live”** DSP module parameter adjustments,

- (a) Connect to the processor device.
- (b) Open the NeuConsole software.
- (c) From the **NeuConsole Startup** window select **Start “Network View”**.
- (d) In the Network View window as shown at the right - make sure the network connection indicator to the left of the processor device model is Green (connected and operational).
- (e) At the bottom of the Network View page see **“Open Device”**.
- (f) Select **“Open Device”** to open the DSP design project saved



on the connected physical processor device.

- (g) Once open - the processors DSP is active (live) now just as it was/is in Online Mode.
- (h) Double click DSP modules “if” you need to open and make parameter adjustments to the DSP modules in real time.

Note 1: Any parameter changes you make from “Open Device” mode will only be maintained in the processor device itself and can Not be saved to the specific DSP design project file as saved on your PC. Thus no one can accidentally alter the original saved project file while working in the **Open Device** operating mode.

Note 2: You must be working with that same, specific DSP design project file as saved on your PC and working in **Project View/Design Mode** and **Online Mode** in order for parameter changes made to the physical processor device while in **Open Device** mode to be accessible and savable to your PC project file – and there are safety reminders and permissions required in order to accomplish that to protect your original as-saved design project file. On switching to Online Mode from Design Mode, if you answer **No** to permissions the processor is not loaded with the saved project file and thus any changes to the processor settings made in **Open Device** mode are visible. On switching back to **Design Mode** you have two options – save the processor settings back to the project file (Yes) or not (No)]. **So proceed carefully in this regard so as not to over write your original file if that is not the intent.**

Note 3: A continuation from Note 2 above - you are able to **Export** the settings in the physical processor device to a separate design file (.xml file). Use as a reference file for changes made, as a recovery file, or import that file into NeuConsole as a new project design. To **Export** the processors settings - right click the processor in **Network View** and select **Export Device Design To File**.

22. Neutrino DSP Remote Control

The Neutrino processor can be remotely controlled using its NeuConsole software GUI, from any PC using our NeuPanel PC control designer, with the logic input/relay output ports, using the optional NeuPanel - Mini and Touch Series programmable wall controls, or any third party controller. See www.xilica.com for spec sheets and information or contact Xilica using the contact information provided on Page 1.

23. Additional Operational Guidance

That should get you connected, operational, creating new DSP design projects, opening and working on saved DSP design project files, transferring/saving your DSP design projects to the processor, and working in Online mode and Open Device mode.

- For more detailed operational guidance (regarding Presets and other topics) please see the detailed User Manual that can be viewed in the NeuConsole software “Help File” or information on the USB drive packaged with each processor (this Quick Start Guide can be found in both locations as well).

Or contact Xilica using the contact information on page 1.

Again, from everyone here at Xilica Audio Design, thank you for your support.

Kind regards,

Barry Steinburg

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