

MXE5-64 DSP Matrix Mix Engine

Q-SYS Plugin (for flexible DSP config mode)



Release Notes

Release Date	Version	Changes
09/2023	V1.0.0	<ul style="list-style-type: none">• First release.• Requires SONICUE V1.3.1 or greater, MXE5 firmware 1.4.3161 or greater, and Q-SYS Designer 9.8 or greater.• Use this plugin to control DSP blocks when the MXE5 is in flexible DSP config mode. You can continue to use the original MXE5 plugin when it is in fixed config mode.
06/2024	V1.1.0	<ul style="list-style-type: none">• Updated for MXE5-64, now supports up to 64 Dante input and output channels.• Added Dante Subscription Fail flags for Dante channels 1..64.• Added GPIO controls allowing MXE5 analog and digital GPI's to trigger Q-SYS operations, or Q-SYS operations to trigger MXE5 GPO control outputs.• Built using Q-SYS Designer V9.10.1• Works with both MXE5-64 and legacy MXE5 (only 24 Dante channels available on legacy MXE5).

Introduction

The Dynacord MXE5 DSP Matrix Mix Engine is designed to control, mix, and route audio signals through professional audio systems in fixed installations and live audio applications. Its key features are;

- Open architecture for flexible DSP configuration
- 12 mic/line inputs and 8 x line outputs
- Dante audio IO and AES70 remote control, via the OMNEO networking interface
- 8 x GPIO control ports
- 48 kHz and 96 kHz sample rates
- Task engine for powerful logic processing and control

OMNEO is a media networking architecture that combines studio-quality multi-channel audio, and a common control system over standard IT networks. OMNEO's media transport uses Dante, while the control system uses Open Control Architecture (OCA). OCA is an open public standard, also known as AES70, for control and monitoring of professional media networks.

The plugin allows the MXE5 to be integrated into the Q-SYS platform. This enables Q-SYS Core processors to control many common functions of the device, such as its DSP objects, input and output channel levels and mutes, power, and preset recall. The Q-SYS Core can also supervise the MXE5's status and operating conditions in real time, including metering, and error status of numerous parameters. The plugin is compatible with all Q-SYS Core models for control and supervision functions. If the Core supports, and is configured with either the CDN64 Dante Audio Bridge card, software Dante, or AES67, networked digital audio can also be routed between the Core and the MXE5.

The MXE5 should initially be setup with Dynacord's SONICUE software. This is used to configure DSP processing, mixing and loudspeaker settings, create presets, setup the required error notifications, and task engine logic control. Once this is done the plugin can operate simultaneously with SONICUE, or completely standalone if SONICUE is not required for routine operation.

To simplify connecting to the MXE5 we recommend using the Dynacord OMNEO Discovery plugin to discover OMNEO compatible devices on your network. This plugin allows you to discover and connect to your MXE5 by name, without having to worry about IP addressing or TCP/IP port numbers.

This guide explains how to integrate the plugin into a Q-SYS design.

More information about Q-SYS and the Q-SYS Designer software can be found on the QSC website at; <https://www.qsc.com/resources/software-and-firmware/q-sys-designer-software/>

More information about the Dynacord MXE5 can be found on the Dynacord website at; <https://products.dynacord.com/na/en/mxe5/>

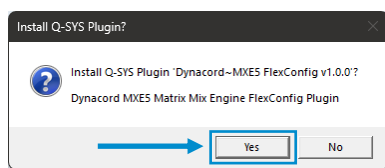
1. Installing the plugin

The plugin requires Q-SYS Designer version 9.8 or higher. The latest version can be downloaded from the QSC website. If necessary, install Q-SYS Designer following the instructions given by QSC.

Note: Plugins use the Q-SYS Scripting Engine, which is a licensed feature on certain Cores. You may need to purchase and install a feature license from QSC in order to deploy this plugin on a Core. More information can be found in the Q-SYS Designer Help and on the QSC website.

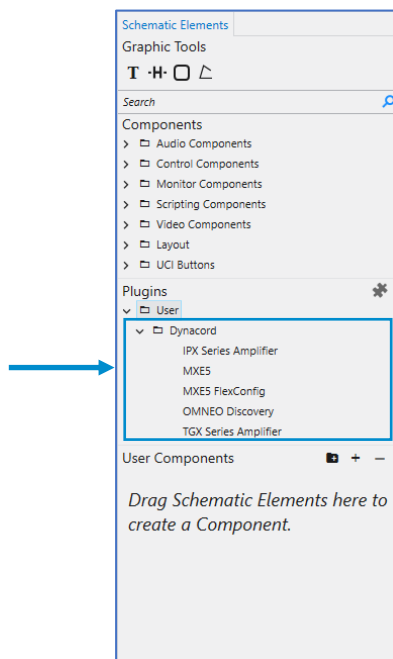
To install the plugin:

1. Double-click the plugin file **Dynacord MXE5 FlexConfig vx.x.x.qplug** then click **Yes** in the confirmation dialog to complete the installation.



2. Double-click on the plugin file **Dynacord OMNEO Discovery vx.x.x.qplug** to install it in the same way.
3. Open Q-SYS Designer. The plugins are located in the right-side **Schematic Elements** pane. They can be found in the Plugins section by expanding the menu option, **User > Dynacord**.
4. The plugins are now installed and ready for use in your Q-SYS designs.

You can also manually install the plugins by copying the files into the Plugins folder (typically located) at: C:\Users\username\Documents\QSC\Q-Sys Designer\Plugins



2. Removing the plugin

If you need to remove the plugin you can do this by deleting it from the Plugins folder at:

`C:\Users\username\Documents\QSC\Q-Sys Designer\Plugins`

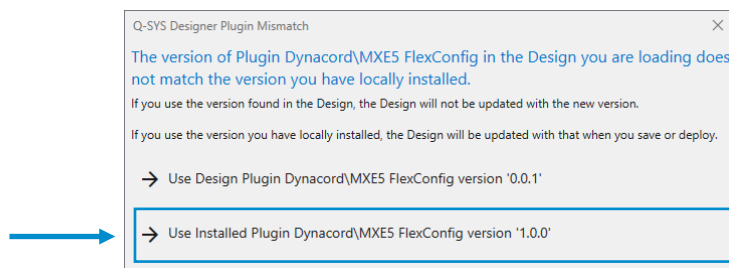
Note: This will not remove the plugin from any of your design projects. If you need to remove it from a design you will need to manually delete each plugin component added to the design.

3. Updating the plugin

If a newer version of the plugin becomes available you can update it by following the procedure to install the plugin above. Once a newer version is installed, Q-SYS Designer will ask if you want to update to that version when you next open a design containing the plugin.

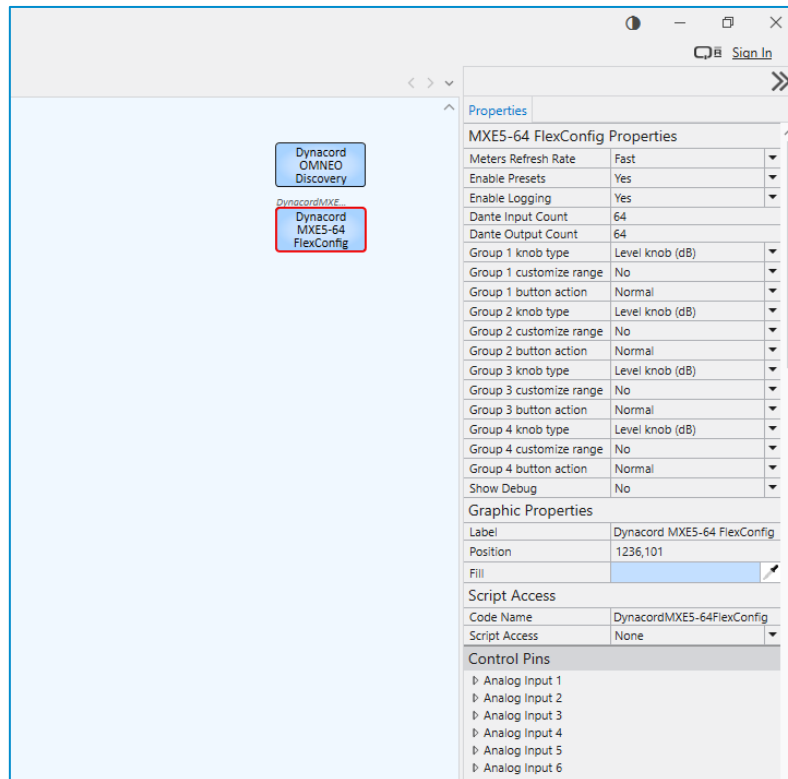
Select the option to **Use Installed Plugin** to update the design. The design will be updated when you next save and deploy it.

Note: If you don't want to update the plugin at this time select the option to **Use Design Plugin** instead.



4. Plugin overview

Drag an **OMNEO Discovery** component, and an **MXE5-64 FlexConfig** component from the **Plugins** pane onto the **Schematic**. Click the MXE5 component to select it. This will also display its properties in the right-hand **Properties** pane of Q-SYS Designer.



Properties

Meters Refresh Rate: Combo box to select how frequently the signal meters are updated, the default setting is fast. The available options are;

- Fast - (meters are updated every 100ms)
- Medium - (meters are updated every 250ms)
- Slow - (meters are updated every 500ms)
- Off - (meters are not updated)

For most applications the refresh rate can be left on the Fast setting as this will give the best graphical display for the meters. If the network is very congested, or you are working with a very large number of plugins, using a slower setting will consume less network bandwidth and Q-SYS processing horsepower. If metering is not important for your application it can be turned off completely by selecting the 'Off' setting.

Enable Presets: Combo box with Yes/No option, the default setting is Yes. When set to Yes, MXE5 presets, created beforehand using SONICUE, can be recalled from the plugin. When set to No, the Load Preset controls on the control panel will be hidden.

Enable Logging: Combo box with Yes/No option, the default setting is Yes. When set to Yes, OCA communication errors, and supervision errors generated by the MXE5, will be written to the Core's event log. Individual control of which supervision errors should be written to the log can be set on the **Device** page of the control panel. When set to No, errors are not written to the event log.

Dante Input Count: Specifies the number of Dante input channel controls to use in the plugin, the default is 64.

Dante Output Count: Specifies the number of Dante output channel controls to use in the plugin, the default is 64.

Displayed Dante controls that have not be configured in SONICUE will be ignored, so it is allowed to display the controls for all 64 Dante channels regardless of how many are actually in use in your SONICUE project. However, specifying a property value for the actual number of configured channels removes unused controls from the plugin for a more concise UCI. Enter a value between 0 and 64.

Group 1..4 knob type: Combo box with different knob type options, the default is Level knob (dB). Select from Generic float, Generic integer or Level. The choice will determine the knob type for all virtual analog controls in the corresponding group. There are 4 groups each with 25 controls of each type (virtual analog, virtual logic and userflag).

Group 1..4 Customize range: Combo box with Yes/No option, the default setting is No. When set to Yes the minimum and maximum range allowed for the knob type can be specified in the property boxes that appear. The values entered will determine the range for all virtual analog controls in the corresponding group. When set to No the default values will be used; -100/10 for Generic float and integer, -80/10 for Level. It is down to the programmer to choose the most appropriate knob type for the DSP parameters they want to control on the MXE5. Virtual Analog's are purely a mechanism for transferring variable values to and from the MXE5, the correct number type and min/max range should be determined by the DSP control it will be linked to through the MXE5 task engine.

Group 1..4 minimum: Only displayed when the corresponding Customize range property is set to Yes. Specifies the minimum value allowed on all virtual analog controls in the corresponding group.

Group 1..4 maximum: Only displayed when the corresponding Customize range property is set to Yes. Specifies the maximum value allowed on all virtual analog controls in the corresponding group.

Group 1..4 button action: Combo box with Normal/Reversed option, the default is Normal. When set to Reversed the display state of each virtual logic control in the corresponding group will be reversed. This can be useful when the virtual logic is linked to control crosspoints on an MXE5 mixer DSP object for example. If the button action is normal, then the virtual logic button would be on (blue background) when the crosspoint is off, reversing the button action will allow the button to be on when the crosspoint is on.

Show Debug: Combo box with Yes/No option, the default is No. When set to Yes, the plugin will display the Q-SYS Debug Output window below the device's control panel. The Debug Output window displays the list of devices (of the same type) discovery by the OMNEO Discovery plugin,

error messages, and log messages that are written to the Core's event log. Log messages are written to the Debug Window even in emulation mode, enabling you to test various device error log settings before deploying to your Core.

Graphic Properties

Position: Coordinates of the plugin component on the Schematic page.

Fill: Sets the background colour of the plugin component.

Refer to the Q-SYS Designer Help for more information on Graphic Properties.

Control Pins

Control Pins are an advanced Q-SYS Designer function that enable controlling and monitoring of many of the plugin components parameters via other Q-SYS Control Components.

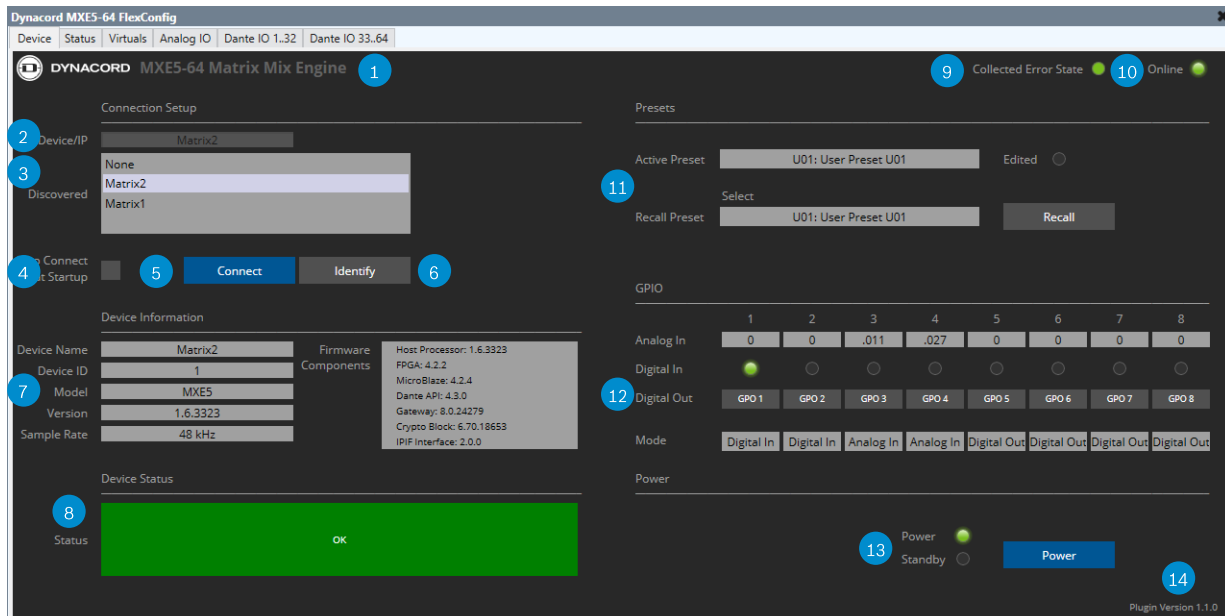
Using Control Pins and Control Components is beyond the scope of this user guide. However, there are a couple of simple examples shown in the section **Getting Started**. Refer to the Q-SYS Designer Help for more examples of using Control Pins.

Tip: Virtual analog control pins can be connected with knobs or faders on Q-SYS 'Custom Controls' components if fine grained control of the virtual analog knob settings is required on a UCI. In this way, the control knob units (level, time, frequency, distance etc.) can be specified on the Custom Control along with differing min/max ranges, for each individual virtual analog control. Connect control pins from the Custom Control to virtual analog pins on the plugin, then place the controls from the Custom Controls on UCI's to 'drive' virtual analogs on the plugin.

Control Panel

Double-click the component to open its control panel. Device information, virtual controls, and IO functions are split over several pages. Click the tabs at the top of the control panel to change pages.

Device Page:



1. Displays the MXE Matrix model.
2. **Device/IP:** Displays the MXE5 selected from the 'Discovered' list of devices, or allows you to manually enter the IP address and port number.
 - **Discovery mode:** Use the OMNEO Discovery plugin to find OMNEO devices on the network. Once the Discovery plugin has found devices, they appear in the 'Discovered' box. Select the device you want to control from the list.
 - **Manual mode:** The IP address and TCP/IP port number can be manually entered into the 'Device/IP' box in the format *<IP address>:<Port Number>*, (for example 192.168.1.100:55555). The MXE5-64 TCP port number is fixed at 55555.

Tip: Use manual mode when you need to connect to a device on a different subnet, as the Discovery plugin is only able to discover devices on the same subnet as the Q-SYS Core. A network router, or layer 3 switch which supports routing, will also be required to route traffic between subnets.

Tip: The Device/IP box is disabled while you are connected to a device. If you need to make changes to the connection settings, disconnect from the MXE5 first. Toggle the Connect button on the plugin to disconnect from the MXE5, don't disconnect from the Q-SYS Core!

Note: Unless you are specifically routing traffic between subnets, and have configured your network correctly to allow this, it is important that both the Q-SYS Core and the MXE5 Mix Engine have IP addresses that are in the same range on the same subnet, otherwise discovery for the MXE5 will fail. This is usually satisfied if all your network devices are set to obtain an IP address from a DHCP

service, and an active server is available on the network. If you are using a link local address for your MXE5 (169.254.X.X) your Q-SYS Core must also be assigned an address in this range.

Link local is an addressing system that automatically assigns an IP address to a device (in the link local range), if a DHCP server is not enabled on the network, and it has not been configured with a static IP address. Discovery uses UDP on port 5353, it may be necessary to allow this port on some firewalls and/or network switches. If the discovery plugin fails to find any devices these are some of the first things you should check while troubleshooting.

3. **Discovered:** Displays a list of compatible devices discovered by the OMNEO Discovery plugin. The list is automatically updated as devices come and go from the network. Select the device you want to connect to from the list, or select 'None' to clear the currently selected device. If no devices appear in the list check the OMNEO Discovery plugin has been added to your Q-SYS design and that discovery is actually running (make sure the 'Start' button is pressed on the Discovery plugin). Refer to the OMNEO Discovery plugin user guide for further information.
4. **Auto Connect at Startup:** When this button is enabled (blue background = enabled) the plugin will automatically attempt to connect to the MXE5 whenever the design is saved to the Core, or the Core is rebooted/power cycled.
5. **Connect:** Toggle this button to connect to, and disconnect from, the MXE5 (blue background = connected).
6. **Identify:** Toggle this button to identify a physical device in a large system setup (blue background = enabled). When enabled, the MXE5's front panel LCD display will show identity information and the blue OMNEO LED will flash. Note, you must connect to the device first for locate to work.
7. Displays information about the MXE5 including version and firmware, and the current sample rate.
8. **Status:** Displays the current status of the MXE5;
 - Grey – Disconnected.
 - Blue – Initializing: Connection to the MXE5 is underway, it will be available soon.
 - Green – Connected: The plugin component is now connected to the MXE5.
 - Orange – Compromised: The MXE5 is reporting a Compromised collected error state.
 - Red – Fault: The MXE5 is reporting a Fault error state, or there is a network error and communication with the device is not possible.
 - Dark Red - Device Missing: The MXE5 is not responding to the plugin component.
9. **Collected Error State LED:** Glows red whenever one or more supervision errors are reported by the MXE5. The supervision error flags that activate this LED are defined in SONICUE. This LED is displayed on every page of the plugin control panel.
10. **Online LED:** Glows green when the MXE5 is connected to the plugin component. This LED is displayed on every page of the plugin control panel.

11. Presets:

- **Active Preset** – Displays the currently loaded preset number and description.
- **Edited LED** – glows red if any of the preset's parameters are different to the actual preset. For example, a channel level has been changed to a value that is different to the value stored in the preset.
- **Recall Preset** – Enables a different preset to be recalled. Click the required preset from the pop-up list to select. The preset will not be recalled until you click the 'Recall' button.

Note: If the **Enable Presets** property is set to **No** the Recall Preset controls will not be displayed.

This is useful if you don't want system operators to change presets. Also, the plugin can only be used to recall presets, you must create them first using SONICUE. If you select a preset that hasn't previously been saved, recalling it will have no effect.

12. **GPIO:** General purpose input/output's are the eight control ports available on the rear panel of the MXE5. They can be used to activate external devices such as relays and LED indicators, or take input from external devices such as switches, potentiometers, and fire alarm panel relay contacts. Refer to the MXE5 user manual for information on using these control ports.

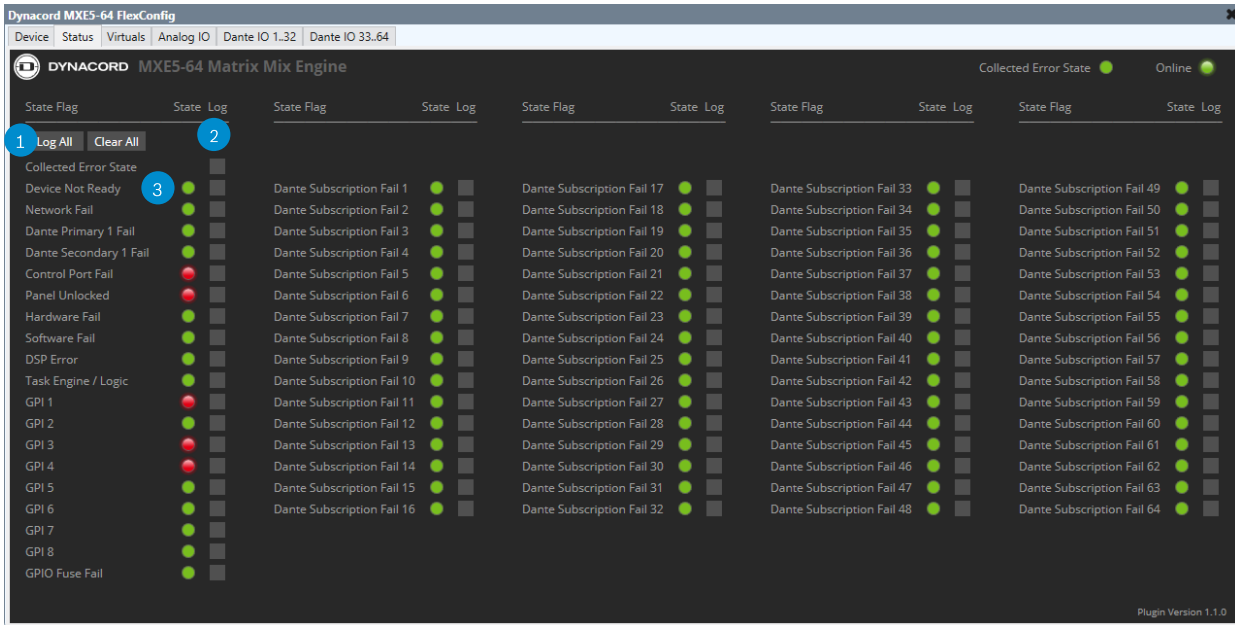
- **Analog In** – Displays the value of the DC voltage present at the corresponding GPI input on the MXE5. The value will be 0 (zero) if the **Mode** is not set to Analog In.
- **Digital In** – Glows green when the corresponding GPI digital input is on. The LED will always be off if the **Mode** is not set to Digital In.
- **Digital Out** - Toggles the corresponding MXE5 GPO on and off (blue background = on). Only activates the GPO on the MXE5 if the **Mode** is set to Digital Out.
- **Mode** – Combo box to select the required mode for each GPIO. The choices are Analog In, Digital In, or Digital Out. The Mode can also be set from the GPIO workflow in SONICUE.

13. Power:

- **Power LED** - Glows green when the MXE5 is powered on and ready for operation.
- **Standby LED** - Glows red when the MXE5 is in standby mode.
- **Power** - Toggles the MXE5 between the On and Standby states (blue background = on).

14. **Plugin version:** Displays the major.minor.build version of the plugin.

Status page:



1. **Log All / Clear All:** Clicking these buttons provides a shortcut to selecting, or deselecting, all of the device error detection Log buttons. Individual device error **Log** buttons can then be toggled to customise the selection.
2. **Log:** Enables/disables writing the corresponding device error to the Core's event log (only if logging has been enabled in the plugins properties).
3. **State flags:** LED's corresponding to the state flags active on the MXE5. State flag reporting is configured using the Status workflow in SONICUE. A red LED indicates that the state flag is active and potentially signalling an error or fault condition. If the 'Collect' switch for a given state flag has been activated on the Status workflow, the error or fault message will also appear in the **Status** box on the **Device** page.

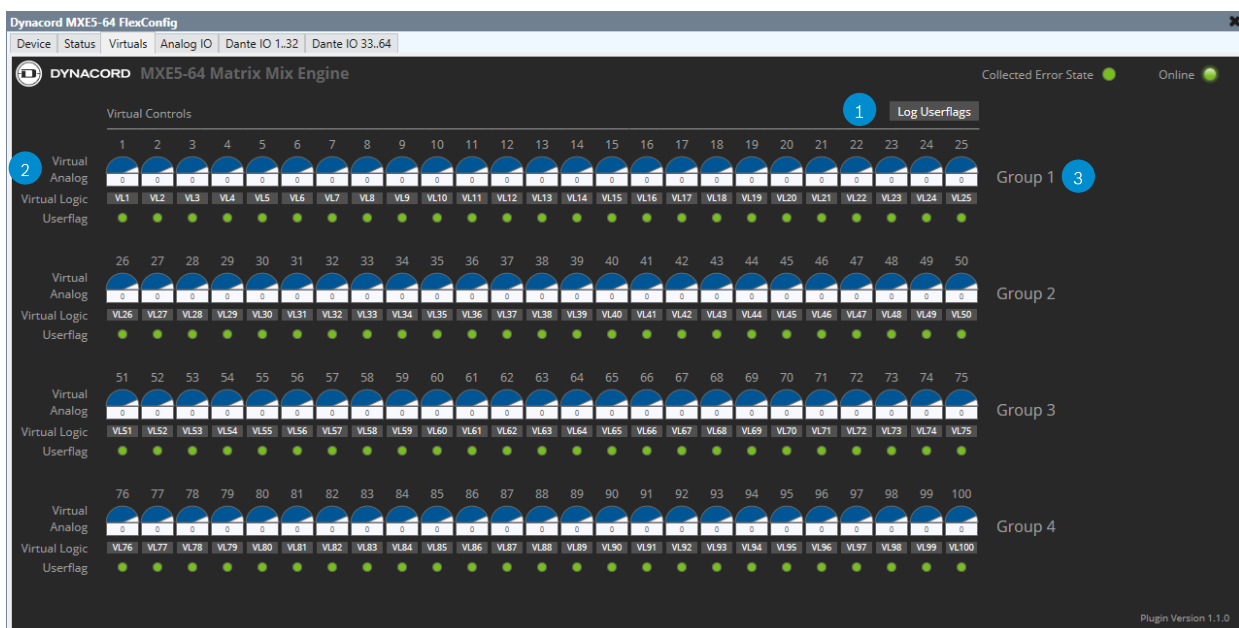
Virtuals page:

Virtual analog blocks on an MXE5 allow you to store a numerical value to a memory location on the device that can then be linked to a DSP control through Logic programming, or, with the release of SONICUE V1.3.1, the TaskEngine. Similarly, virtual logic blocks allow you to store a Boolean (true/false, or on/off) value. The MXE5 supports 100 virtual analog and 100 virtual logic blocks, each of which is available for control via the plugin.

After linking the Virtual block to a control of your choice in the TaskEngine, you have the flexibility to control pretty much any parameter with either, a variable or an on/off style value, from your Q-SYS control system. For example, you could control a mixer level, a compressor threshold, a ducker bypass, or a matrix crosspoint. This is something that was not possible using the original MXE5 plugin as it can only target specific controls when the MXE5 is configured for fixed config DSP mode.

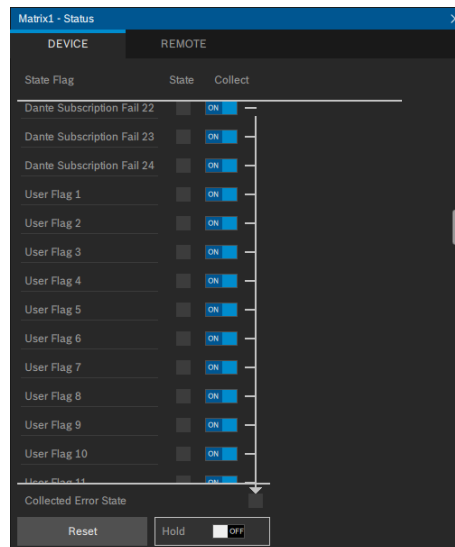
SONICUE V1.3.1 introduced flexible DSP configurations allowing the system programmer to layout and connect their DSP blocks however they wish. As there is no way for the Q-SYS plugin to know how the programmer has configured the MXE5, control of flexible DSP configurations must be done using these Virtual Analog and Virtual Logic blocks instead.

As the saying goes, a picture paints a thousand words, so it is highly recommended that you refer to the SONICUE FlexConfig demo project, included in the plugin download package, to see how to set up Virtual blocks on the MXE5. Open the project in SONICUE, then look at the TaskEngine configuration to see how its done. From the Design workflow, click the MXE5 Matrix 1 device on the main workspace then, from the popup context menu, click the 'Logic' button to open the TaskEngine window. Check out the SONICUE help too, for plenty of TaskEngine examples and detailed descriptions of the complete catalog of logic processing blocks, including many short videos on how to get started.



1. **Log Userflags:** Enables/disables writing userflag state changes to the Core's event log (blue background = enabled).

Note: Only userflags that have been enabled for 'Collected Error State' from the SONICUE 'Status' flyout will trigger these messages. In SONICUE, select the 'Status' workflow, then click the MXE5 to open its Status flyout. Turn on the 'Collect' switch for each userflag that should trigger a Collected error.



Note: This is an image of the of the Status flyout in SONICUE, not the plugin.

2. Virtual Controls:

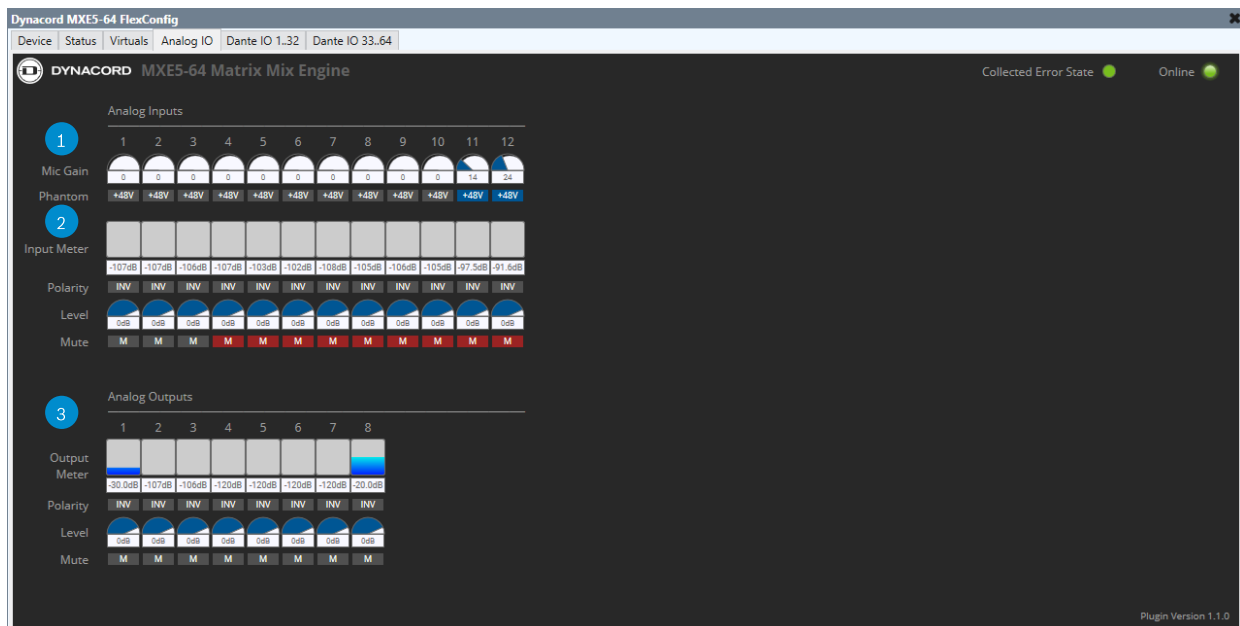
- **Virtual Analog** – Varies the output of the corresponding virtual analog connection node on the SONICUE 'MXE Matrix' task engine block.
- **Virtual Logic** – Toggles the state of corresponding virtual logic connection node on the SONICUE 'MXE Matrix' task engine block.
- **Userflag** – Userflags can be activated through various logic conditions programmed via the SONICUE task engine. Like virtual controls, userflag connection nodes states are programmed via the 'MXE Matrix' task engine block. The plugin LED glows green when the userflag is off and red when it is on.

3. **Control Groups:** To provide the system programmer with more flexibility the virtual controls have been divided into 4 groups, each with 25 analog and 25 logic controls. This might be particularly useful for virtual analogs used to control different DSP parameters. For example, group 1 could be configured for level controls where the knob type is a Level knob (dB), while group 2 might have a knob type of Generic float to control other DSP parameters such as thresholds or frequencies. See the properties section for further information on the available control parameters for each group.

Tip: If your project requires even finer grained control over each knob's control units, or minimum and maximum range you could set the virtual analog controls to 'Generic Float Knob' in the properties and use Custom Controls components connected to the plugin's Virtual Analog control

pins. You can then customize the Custom Controls with the knob type and units (time, frequency, distance etc.) and min/max range to exactly suit your project requirements.

Analog IO Page:



1. Analog Preamp Inputs:

- **Mic Gain** – sets the input gain of the analog input.
- **Phantom** – enables 48V phantom power on the analog input (blue background = enabled).

2. Analog Inputs: The MXE5 supports 12 analog input sources. How the available input sources are connected is set up in SONICUE. Although all available input sources are displayed in the plugin, not all of them may be in use. When creating custom UCI's, remember to add only the controls that have been used in SONICUE.

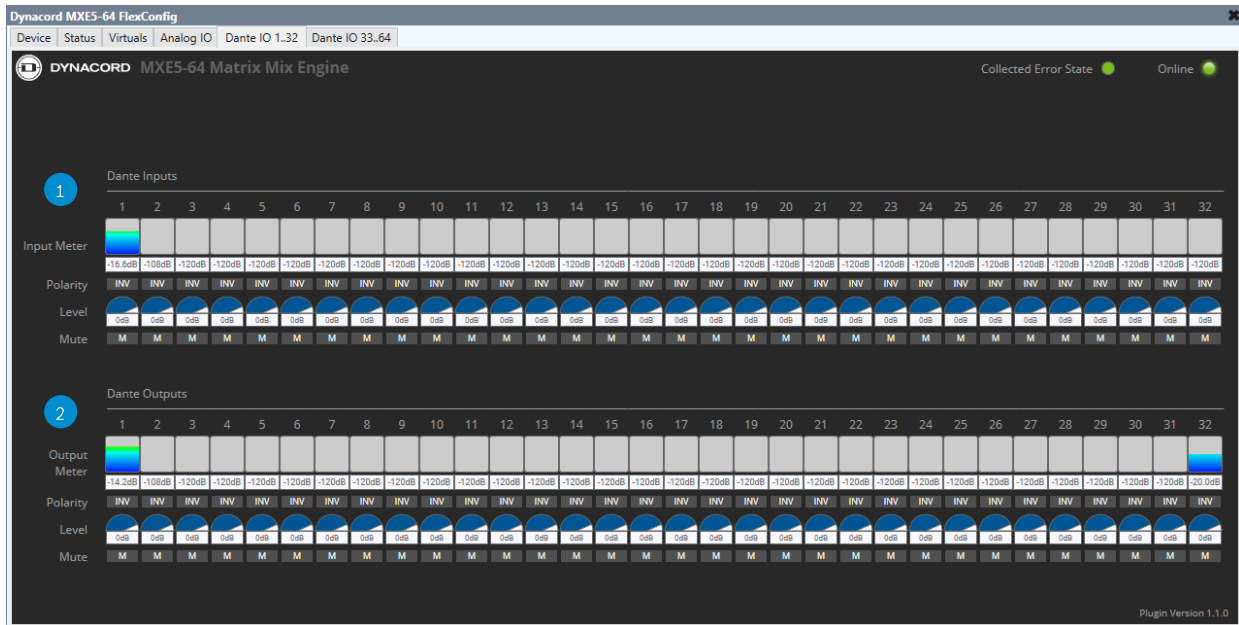
- **Input Meter** – VU signal meter for the input channel in dBFS.
- **Polarity** – Inverts the polarity of the input channel (blue background = inverted).
- **Level** – Adjusts the level of the input channel, most commonly used to balance the input levels of differing input sources where the adjustment cannot be made at the output of the upstream device.
- **Mute** – Mutes the input channel (red background = muted). Input meter signal levels are taken pre-input mute; therefore, the meters will continue to display signal level even when the channel is muted.

3. Analog Outputs: The MXE5 supports 8 analog outputs. How the available output channels are connected is set up in SONICUE. Similar to the inputs, all available output channels are displayed in the plugin although not all may be in use. Keep this in mind when selecting controls to display on a custom UCI.

- **Output Meter** – VU signal meter for the output channel in dBFS.
- **Polarity** – Inverts the polarity of the output channel (blue background = inverted).

- **Level** – Adjusts the level of the output channel.
- **Mute** – Mutes the output channel (red background = muted). Output meter signal levels are taken pre-output mute; therefore, the meters will continue to display signal level even when the channel is muted.

Dante IO Page:



1. **Dante Inputs:** The MXE5-64 supports up to 64 Dante input channels. Legacy MXE5's support up to 24 Dante channels. The number of channels displayed is determined by the value entered in the **Dante Input Count** property. Unused Dante input channel controls can be displayed in the plugin but changes to control values will be ignored. Keep this in mind when selecting controls to display on a custom UCI.
 - **Input Meter** – VU signal meter for the input channel in dBFS.
 - **Polarity** – Inverts the polarity of the input channel (blue background = inverted).
 - **Level** – Adjusts the level of the input channel, most commonly used to balance the input levels of differing input sources where the adjustment cannot be made at the output of the upstream device.
 - **Mute** – Mutes the input channel (red background = muted). Input meter signal levels are taken pre-input mute; therefore, the meters will continue to display signal level even when the channel is muted.
2. **Dante Outputs:** Similar to the Dante inputs, the MXE5-64 supports up to 64 Dante output channels and legacy MXE5's support up to 24 channels. The same information for unused channel applies.
 - **Output Meter** – VU signal meter for the output channel in dBFS.
 - **Polarity** – Inverts the polarity of the output channel (blue background = inverted).
 - **Level** – Adjusts the level of the output channel.

- **Mute** – Mutes the output channel (red background = muted). Output meter signal levels are taken pre-output mute; therefore, the meters will continue to display signal level even when the channel is muted.

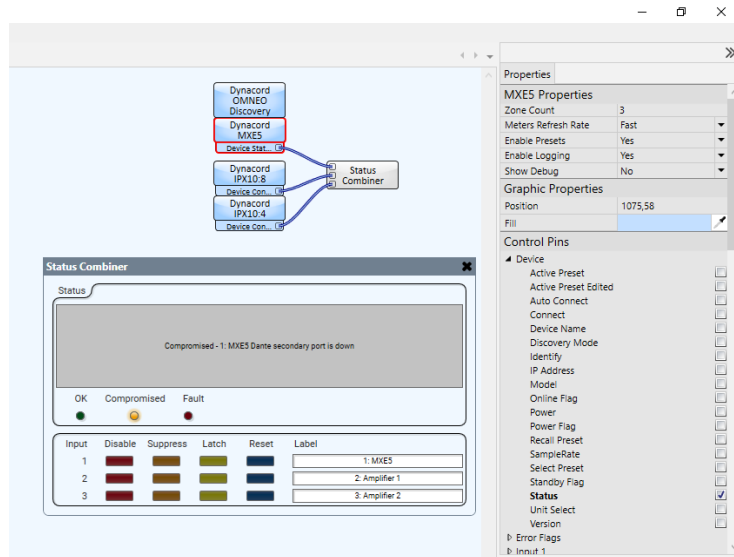
5. Getting started

1. Drag an OMNEO Discovery component onto the Schematic. Only one discovery component is required in a design as it sends the discovered device information to all other Dynacord OMNEO enabled components.
2. Drag an MXE5-64 FlexConfig component onto the Schematic for each physical device you have in your system.
3. Set any properties required on the properties pane.
4. Save the design to the Core (press F5), then double-click the OMNEO Discovery component to open its control panel and click 'Start' to begin device discovery. Refer to the OMNEO Discovery user guide for further information on working with the discovery plugin.
5. Once your device is displayed in the 'Discovered OMNEO Devices' list of the Discovery plugin, double-click the MXE5 component. On the **Device** page, select your MXE5 from the 'Discovered' list. It appears in the 'Device/IP' box to confirm your selection. Click 'Connect' to connect to the device.
6. If you don't have a Core available, the plugin can also be tested in Emulation mode (press F6), then follow the remainder of steps 4 and 5.
7. When the plugin connects to the MXE5 it will synchronise with the control values currently stored on the device. If the values on the device are different, the values in the plugin will be updated to match. For example, if analog input channel 1 level on the MXE5 is set at -20dB but the level knob on the plugin component is set at 0dB, when the plugin is connected to the device, its channel 1 level knob will change to -20dB.

Tip 1: You can use the 'Status' control pin of the plugin to send the status of multiple devices to a Q-SYS Status Combiner component.

1. Return to Q-SYS design mode (press F7) and add a Status Combiner component from the Schematic Elements pane. In this example we will use this to collect the status of an MXE5 and several Dynacord IPX Series amplifiers.
2. Enable the **Status** control pin on the MXE5 and the **Connection Status** control pin on each IPX amplifier component in your design. The Status pin is found in 'Control Pins' property pane inside the 'Device' group. Click the glyph to the left of the Device group to expand it and display the folder contents.

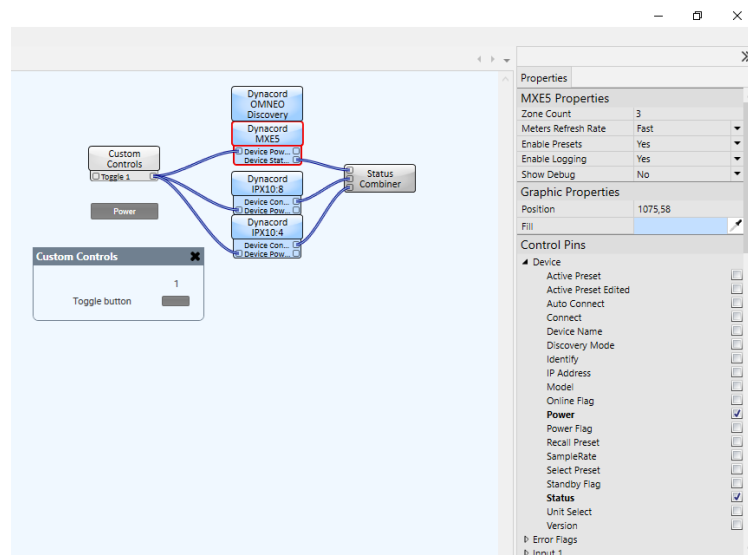
3. Wire the Status control pin of each MXE5 and IPX amplifier to an unused input pin on the Status Combiner. If necessary, increase the 'Input Count' property of the Status Combiner to match the number of devices in the system.
4. Save the updated design to the Core (F5), or emulate (F6).
5. Now, after going online to all of the devices, the status of the entire system of the MXE5 and IPX amplifiers can be monitored from a single point.



IMPORTANT: You **MUST** use the 'Status' control pin to connect to a Status Combiner component. Other error flag control pins on the plugin have Boolean (true/false) outputs. These can be used to drive other operations and signal LED's in your Q-SYS project but they do not produce the output format expected by the Status Combiner.

Tip 2: You can also use the control pins to create global controls, such as a global mute, or a global power button. Here, one control can be used to activate a function simultaneously on numerous devices.

6. Add a Q-SYS Custom Controls component from the Schematic Elements pane.
7. Set the custom control's type to a 'toggle button' in the properties pane.
8. Enable the 'Power' control pin on each MXE5 and IPX amplifier component in your design.
9. Wire the toggle button control pin on the custom control to the MXE5 and IPX amplifier 'Power' control pins.
10. Double-click the custom controls component, select the toggle button, then drag it onto the Schematic page. Resize the toggle button to make it a little larger, and label it 'Power'.
11. Save the updated design to the Core (F5), or emulate (F6).
12. Now when you click the toggle button it will power up/down all of the MXE5 and IPX amplifiers simultaneously.



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