ClearOne

TECH NOTE

PRODUCTS SUPPORTED:

All CONVERGE Pro 2 Products
excluding 128SR and 128SRD models

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CONVERGE® PRO 2
AEC CONFIGURATION GUIDE

Overview

This document provides guidelines for configuring a simple Acoustic Echo Cancellation (AEC) reference for CONVERGE Pro 2.

Create a Reference

On a CONVERGE Pro 2 unit, you must first create either a **standard reference** or a **custom reference** as a resource.

1. Load or create a site file offline. If you are currently connected to the stack you must first disconnect, and then load the site file into the CONVERGE CONSOLE software.
2. Go to **Resource & Partition Mgt.**
3. Make certain you have added a **Line Output** or a **Speaker Output** as a resource.
4. Click the arrow beside your main amplifier/speaker output to open it.
5. Click either the **Add Standard** button or the **Add Custom** button. Please see Figure 1.

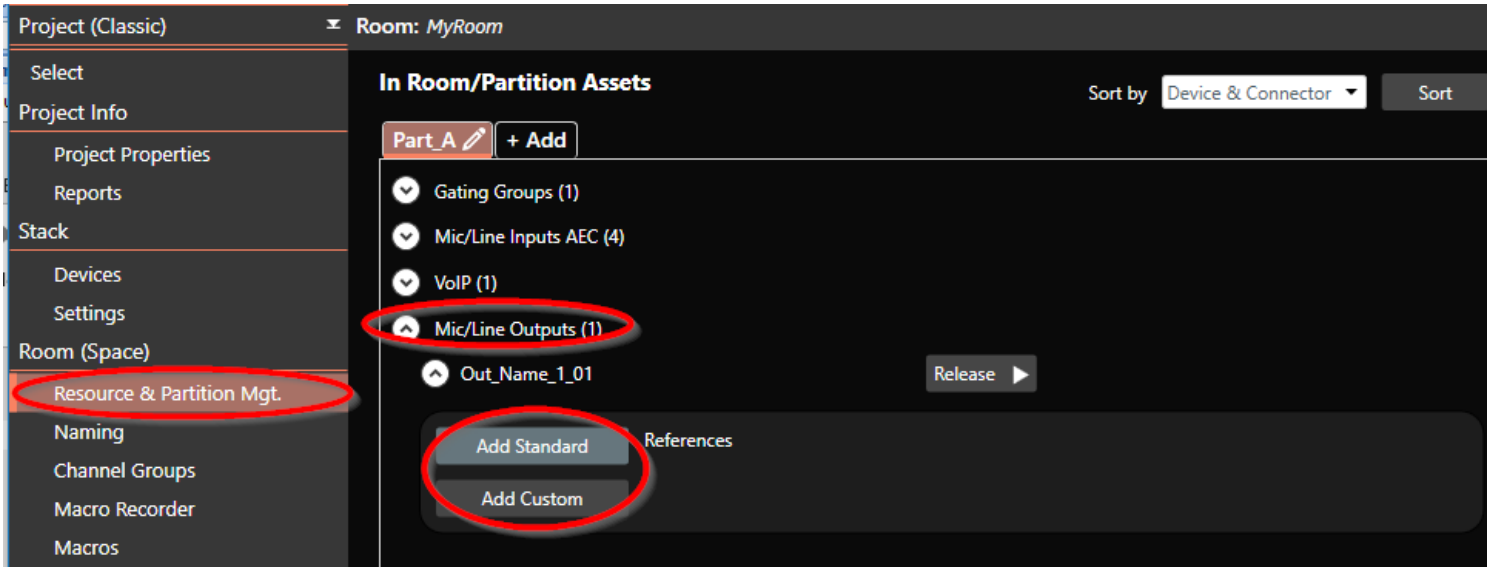

Figure 1

Configure a Standard Reference

A microphone can use a **Standard Reference** when its audio is not routed to this output, i.e. when the mic is not being reinforced into the same room for voice lift.

1. Go to the **MatrixView™**. Select the tab **Reference Matrix**.
2. Add an arrow ↵ for each microphone that will need to use this AEC reference. Please see Figure 2.

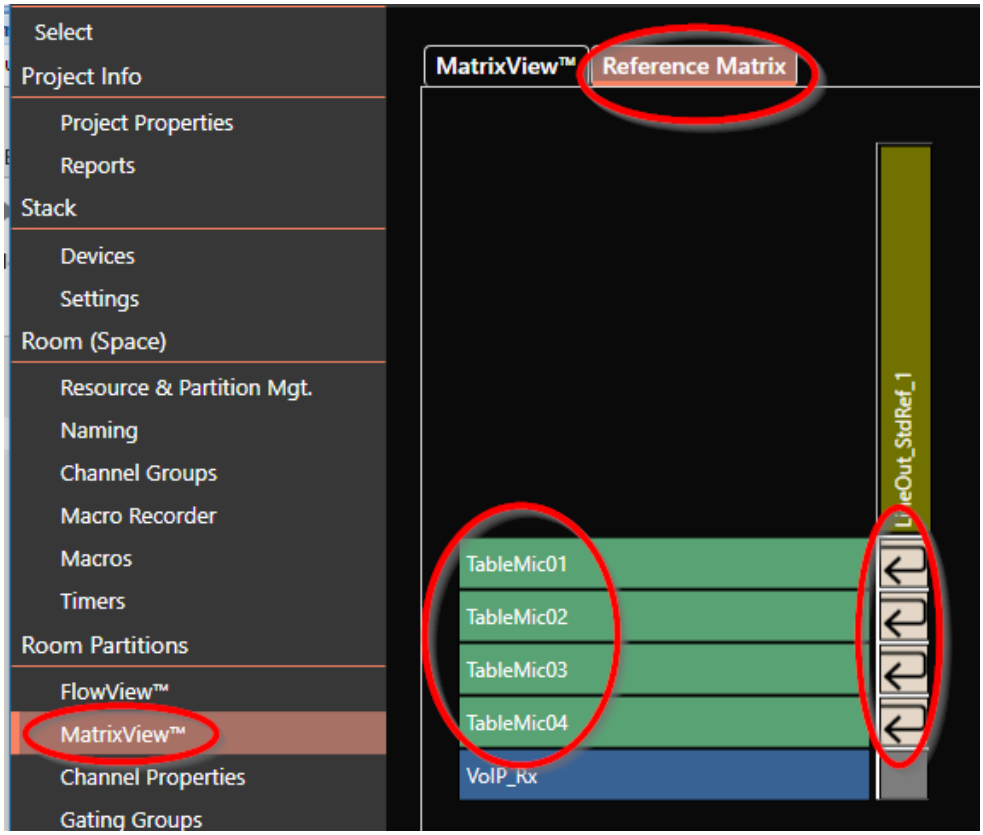

Figure 2

Configure a Custom Reference

A microphone must use a **Custom Reference** when its audio is routed to this output, i.e. when the mic is being reinforced into the same room for voice lift.

1. Go to the **MatrixView**. Select the tab **Reference Matrix**.
2. Add an arrow ↵ for each microphone that will need to use this AEC reference.
3. Add an X ☒ on each mic input whose audio must be excluded from the reference. For any mic whose audio is routed to this output that mic's audio must be excluded from the reference. Otherwise there will be self-referencing, where the AEC will try to suppress all of the mic's audio.

Any mic that is not reinforced can use a separate **Standard Reference**. Or that mic can use this same **Custom Reference**.

EXAMPLE 1

In this example all mic inputs are routed directly to the line output. For this reason, the audio from all mic inputs must be excluded from this reference. Please see Figure 3 below.

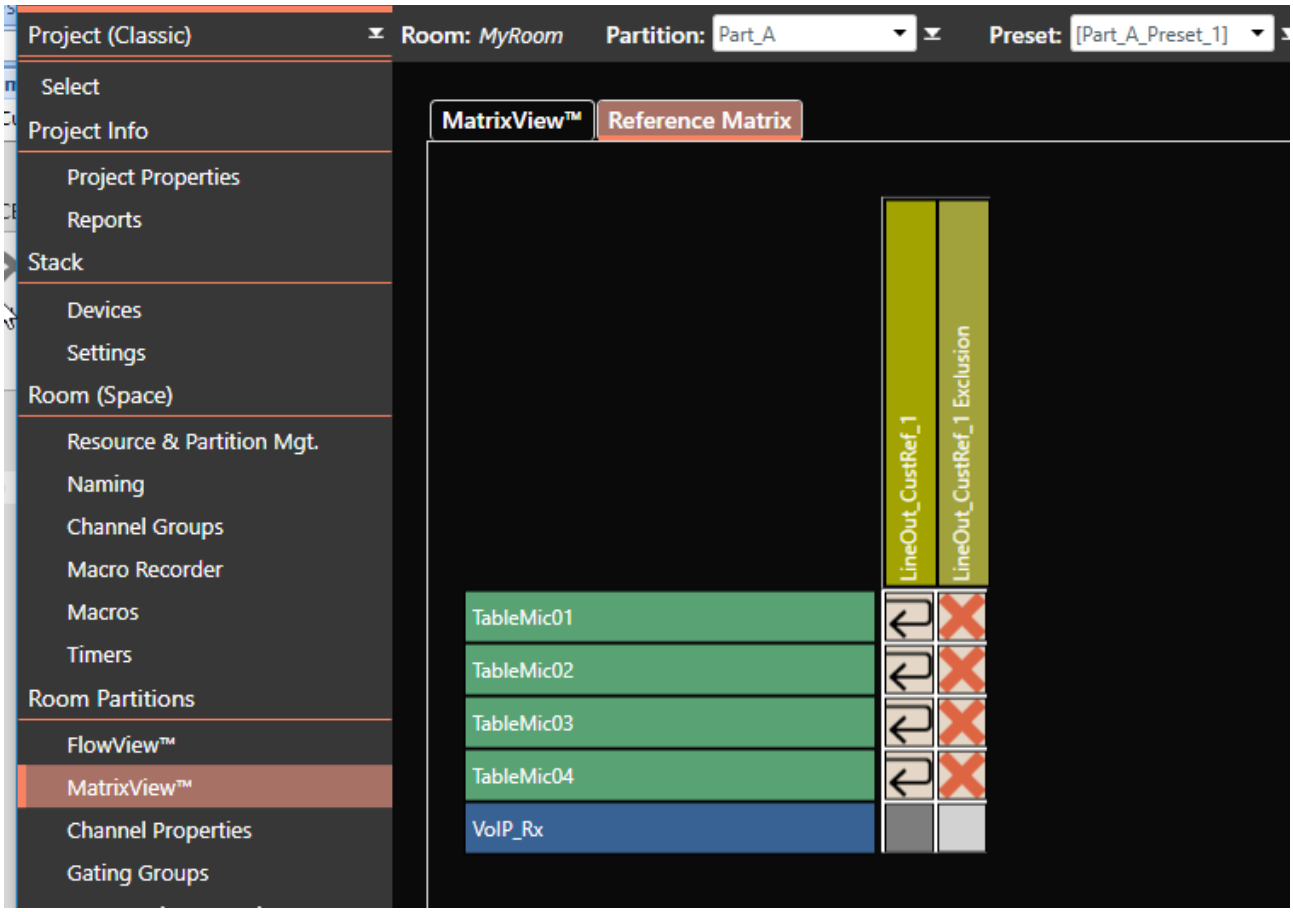

Figure 3

EXAMPLE 2

Please see Figures 4 and 5 below. In Figure 4 all mics are routing to the VoIP TX so that their audio will be heard on the far end of a VoIP call.

» **Note:** VoIP needs to be routed to AmpOut1 and AmpOut2, otherwise they do not contain the far end audio.

The table mics are also routed to the process bus labeled TableMicsReinforced and this bus is routed to the amp outputs. The handheld and lapel mics are also routed to the process bus labeled WirelessMicsReinforced and this bus is routed to the amp outputs.

Since these two process busses are routed to the amp output that contains the custom reference, their audio must be excluded from this reference. Please see Figure 5 below.

As a general rule, all audio routed directly to the output that has the custom reference is automatically included in that reference. Therefore any mic audio that is routed to this output must be excluded from that reference.

» **Note:** Each Output can support a Standard Reference. Each Standard Reference uses one C-Link channel.

» **Note:** Custom References. Each Custom Reference uses two C-Link channels.

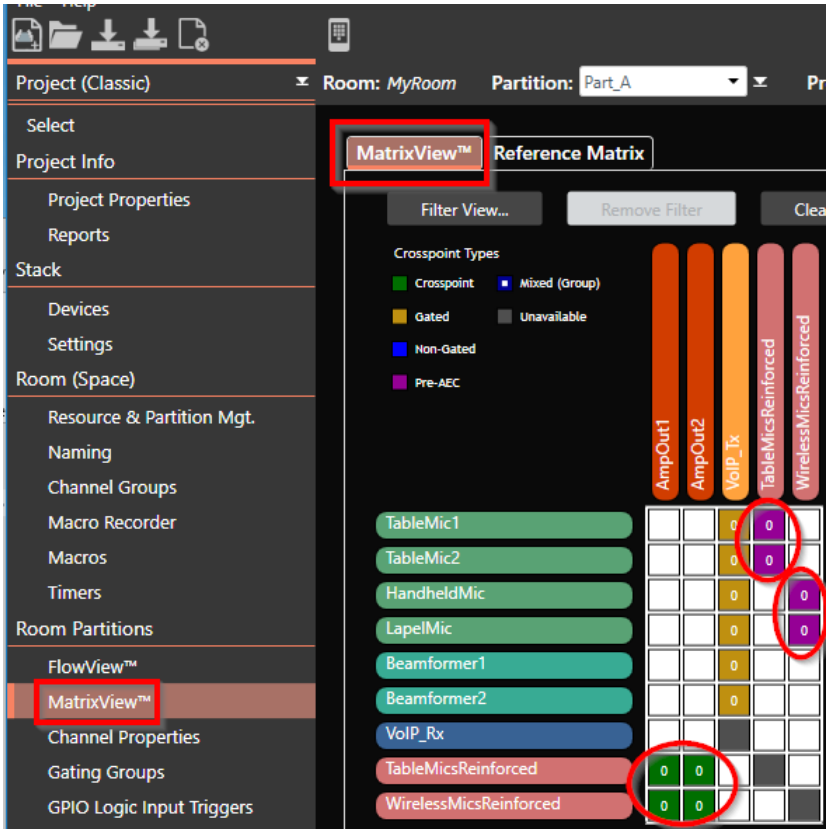

Figure 4

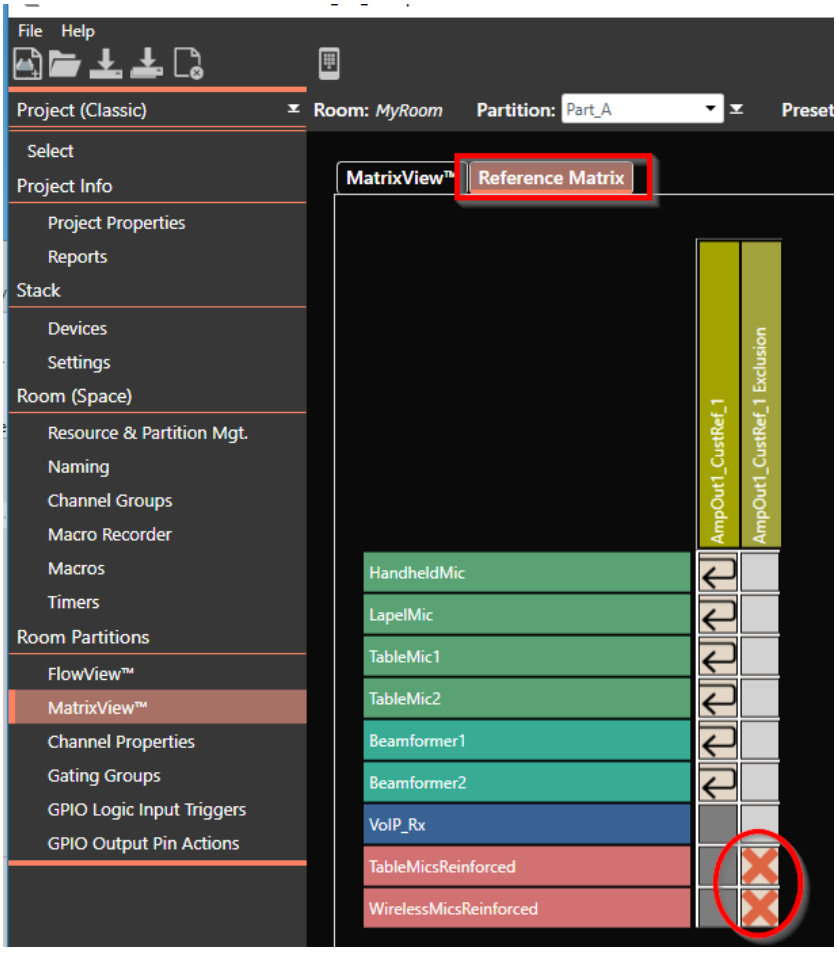

Figure 5

Gating Groups

A gating group is necessary for correct mic gating. Otherwise mics will gate independently and multiple mics can gate onto one person talking. The same audio from these different mics sources can interfere with itself. The mics will then have a hollow, distant, cave-like sound. There may also be phase cancellation which can cause the mic audio to drop out, or sound like it is in a tunnel.

A gating group is necessary to enable mics to operate together according to the enabled features such as: 1st Mic Priority, Last Mic Priority; Max # Mics; Chairman Overrride; and NOM.

» **NOTE:** In CONVERGE Pro 2 you must create a gating group resource and add all mics to that gating group in order for the mics to gate properly. Improperly gating mics may affect echo cancellation and cause other audio problems. Please see below.

1. Load your site file into CONVERGE CONSOLE while offline.
2. Go to **Resource & Partition Mgt**.
3. Add a Gating Group resource.
4. Under **Room Partitions**, go to **Gating Groups** from the "Type" tab.

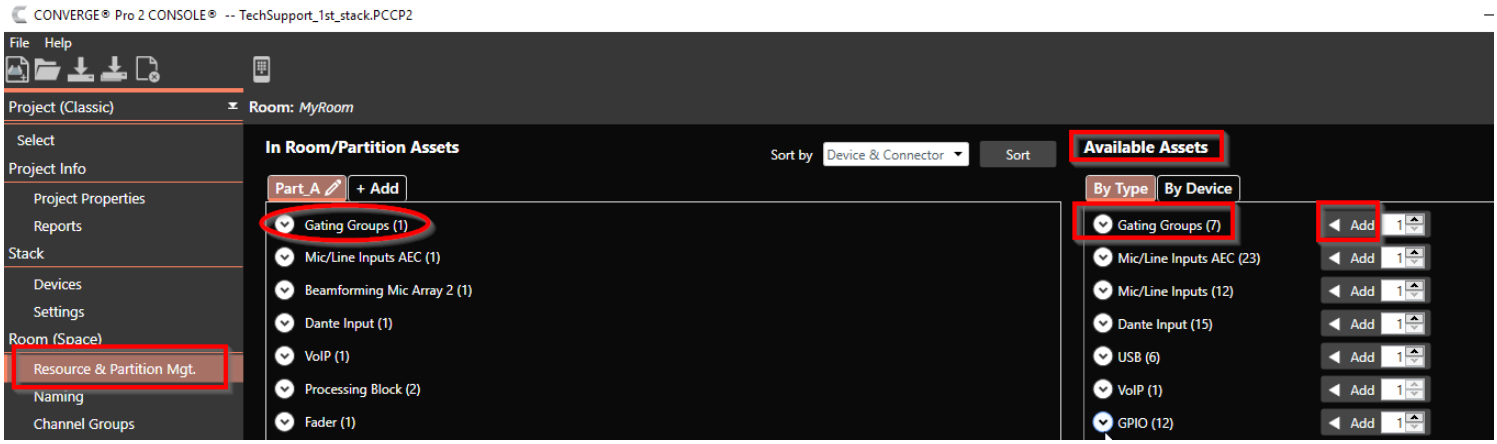

Figure 6

5. Select the gating group you created and click the button **Add/Remove Mic**.
6. Add all mic inputs and/or Beamforming Mics to this gating group.

Where there are mics in separate rooms or room divisions, there should be a separate gating group for each room or room division.

» **NOTE:** In configurations with multiple room partitions, be sure to configure a separate gating group for each partition and include all mics in the partition in the same gating group.

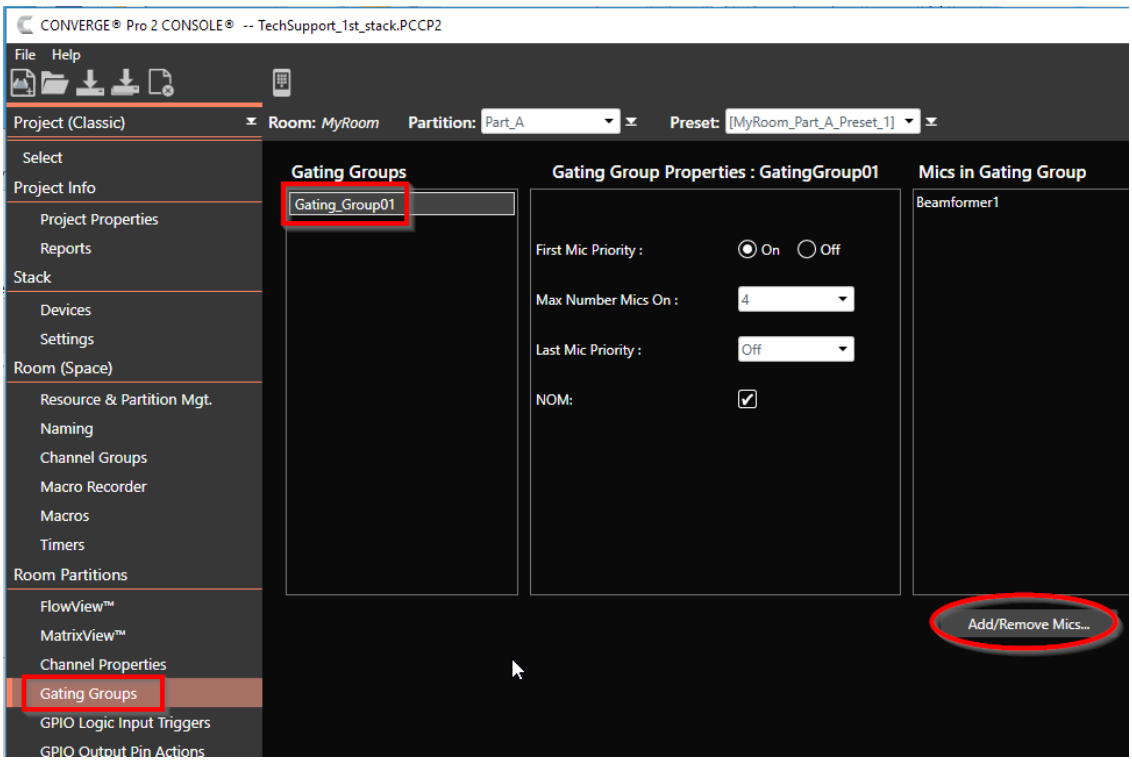

Figure 7

Line Inputs

In CONVERGE Pro 2, all inputs start out as Mic Inputs and will have mic processing enabled. When using a Line Input, i.e an input that will have line type audio rather than mic audio, you must configure it as a line input. For example, an input receiving program audio or audio from a stand-alone video conferencing system must be configured as a line input.

» **NOTE:** Be sure to configure a Line Input correctly. Please see below.

1. To configure an input as a line input, go to the **MatrixView** or **Channel Properties**.
2. Double-click on this line input to bring up its channel properties window.
3. Right-click in the channel view to bring up the pop-up window.
4. Select **Configure as Line Input**.

This disables all mic processing on this input.

» **NOTE:** In configurations with multiple room partitions, the line inputs for each partition must be separately configured as line inputs. Be sure to check each room divide/combine scenario to ensure each line input is configured as such.

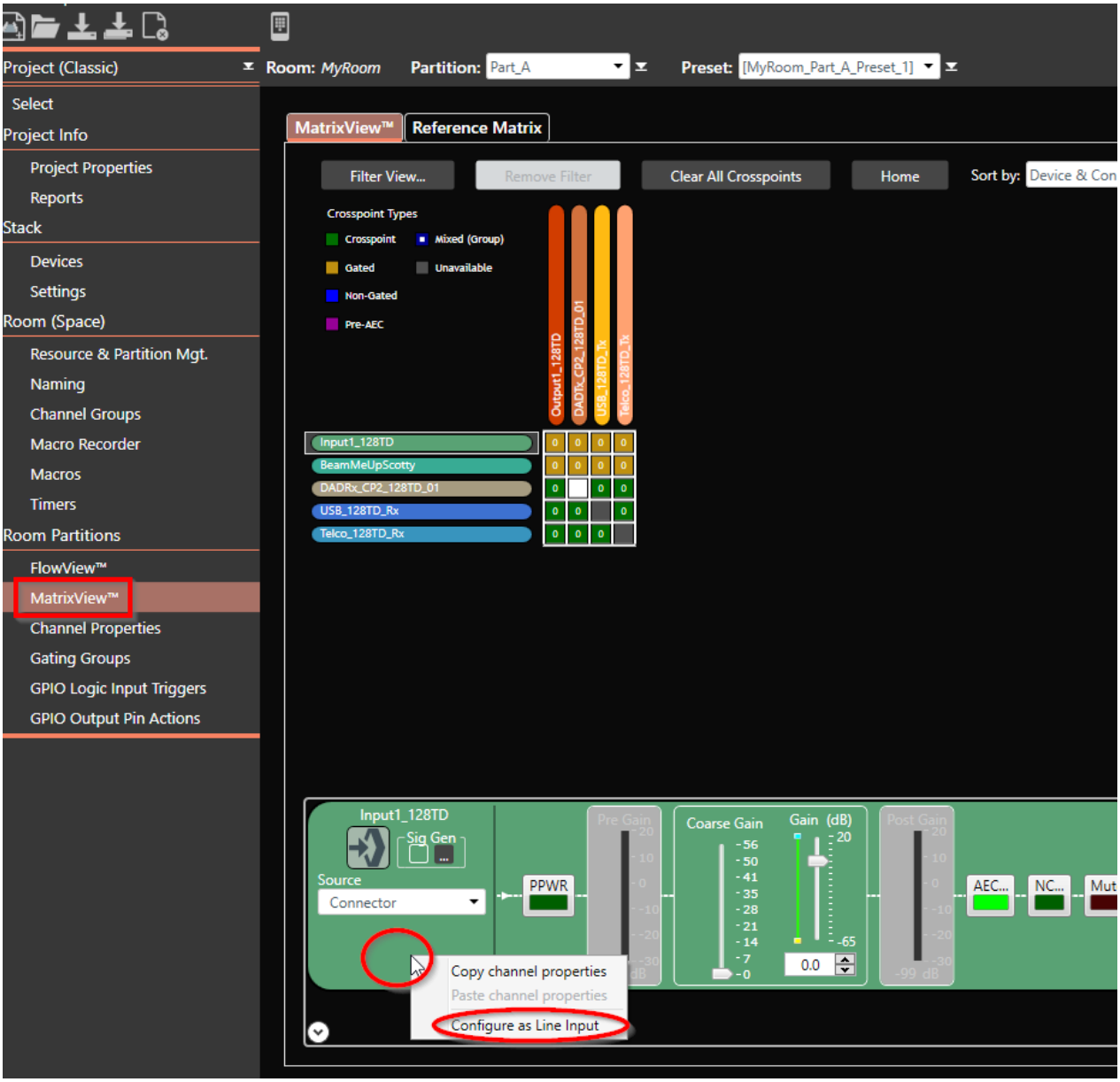

Figure 8

Multiple Room Partitions

When a project file has multiple room partitions, the AEC references for each combination of partitions have to be configured separately. For example, if there are three room partitions, then six different partition combinations will automatically be generated. See Figure 9 below.

In this example, the AEC references will have to be added to each of the three room partitions, and a reference matrix will have to be configured separately for all six partition combinations.

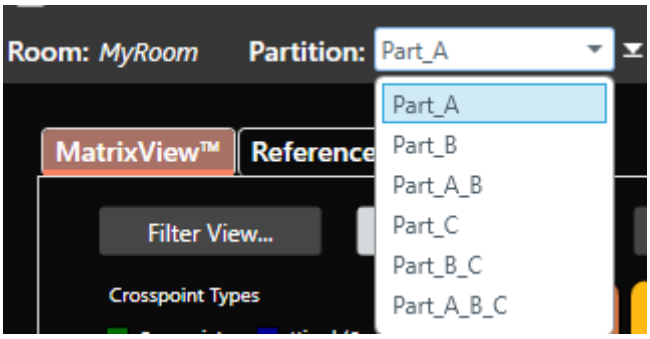

Figure 9

The same is true for multiple room configurations via presets. If you “Add” a new preset, you must also reassign AEC and other properties. If you “Clone” a preset feature, the AEC and other properties are carried over to the new preset. If that is not what is required, then it must be redefined.

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