Vortex EF2280
Applications and Presets Guide

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VORTEXAPPGUIDE-0100-01

INTRODUCTION

This manual describes useful application information and the factory presets of the Vortex®. The following is an overview of each section:

- *Building Your System with Multiple Vortexes®* outlines things you need to consider as you build a system with mulitple Vortex units.
- *Presets* shows Factory Presets 0-6 in block diagram form and matrix settings. These are meant to be used as examples. Vortex Factory Presets include the following:
  - Factory Preset 0: DEFAULT. Inputs 1-8 direct out; Inputs A-D mix minus to Outputs A-D for room audio, codec, Phone Add, and/or program audio.
  - Factory Preset 1: DEFAULT, STEREO. Default configuration with stereo.
  - Factory Preset 2: SPLIT. Vortex split between 2 rooms. Inputs 1-4, Output 1 go to Room 1; Inputs 5-8, Output 5 to Room 2. Input/Output A-B and Input/Output C-D for codec and Phone Add in each room.
  - Factory Preset 3: RESERVED.
  - Factory Preset 4: 8 MICS/ZONE. For applications with 8 microphones per loudspeaker zone.
  - Factory Preset 5: 8/ZONE, STEREO. 8 mics/zone with stereo.
  - Factory Preset 6: 4 MICS/ZONE. For applications with 4 microphones per loudspeaker zone.
  - Factory Preset 7-12: RESERVED for future use.
  - Factory Preset 13: PASSTHROUGH MIC. Passthrough mode (Inputs 1-8, A-D are direct out) with Inputs 1-8 set to Mic level. Everything else is disabled.
  - Factory Preset 14: PASSTHROUGH LINE. Passthrough mode (Inputs 1-8, A-D are direct out) with Inputs 1-8 set to Line level. Everything else is disabled.
  - Factory Preset 15 BLANK SLATE. All crosspoints muted. Everything disabled.

BUILDING YOUR SYSTEM WITH MULTIPLE VORTEXES®

The following is a checklist for building a system with multiple Vortexes:

1. Assign Inputs.
2. Assign Outputs.
3. Configure submatrix (the EF Bus).
4. Configure your echo canceller reference.

1. ASSIGN INPUTS

Assign each audio source to an input. Remember to include the conferencing equipment such as the EF200 Phone Add or a video codec and any program audio.

2. ASSIGN OUTPUTS

Try to assign as many outputs as you can to each Vortex to make a simpler submatrix. Remember that Outputs 1-8 can also be used as outputs of the matrix. The bussing can get very complicated very quickly if you choose to spread your outputs over several units.

3. CONFIGURE THE SUBMATRIX

To link multiple Vortex devices together, use the submatrix on the EF Bus.

The EF Bus

The EF Bus is a high speed, low delay digital bus that includes the W, X, Y, and Z audio busses as well as the echo canceller reference and remote control information (for other Vortexes) and can link up to 8 Vortex devices. All busses include NOM information and can be used for sharing microphone inputs, or for sharing mono or stereo program information.

Crosspoint Mix Minus Bus. Each Vortex device in the system can create four output mixes (W, X, Y, and Z) and place them on the bus. Each device also can create three input mixes each from the W, X, Y, and Z busses of the other devices (for a total of 12 mixes). The mixes can have crosspoint gains on the signals from the other devices. See Figure 1 below. All 12 mixes become inputs to the main matrix and can

be mixed with the other inputs to create Outputs 1-8, A-D, Ref 1, Ref 2, and W, X, Y, and Z bus outputs.

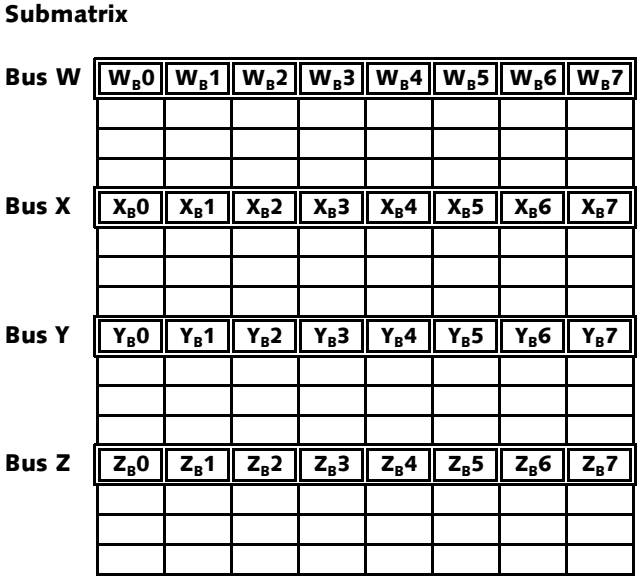


Figure 1. W, X, Y, and Z submatrices.

EF Bus Reference. In a system with multiple devices, if all devices need the same echo canceller reference, one device should be designated to put its echo canceller reference (either Ref 1 or Ref 2) on the EF bus to be used as the EF Bus Reference.

All other Vortexes may use the EF bus reference as the reference for their echo cancellers, or they can use their own internal references. The references may include a mix of any input, with crosspoint gains, including W, X, Y, and Z busses.

NOM Bus. All busses on the EF Bus contain NOM information. See "NOM Active" on page 29 of the Vortex Reference Manual for more information on how NOM attenuation is applied.

> **Note.** ***The EF Bus must be connected so that the EF Bus Out of one Vortex device is connected to the EF Bus In of another Vortex. Connecting EF Bus In to another EF Bus In (or EF Bus Out to EF Bus Out) will not work. See "Connector Pinouts" on page 43 for pinout of Cat 5 cable.***

4. CONFIGURE YOUR ECHO CANCELLER REFERENCE

Review what inputs need to be included in your echo canceller reference — See "Build Your Echo Canceller Reference (if not using Preset 0)" on page 13. of the Vortex Reference Manual. Remember that each microphone needs an echo canceller reference. If all microphones are in the same room and use the same reference, configure the echo canceller reference on one Vortex and assign it to the EF Bus as the EF Bus Reference. Only one Vortex out of multiple units linked together can put

an echo canceller reference on the EF Bus. For each additional unit, assign the echo canceller reference to use the EF Bus Reference.

For systems with more than one room, you will need to use the W, X, Y, or Z sub-busses to share the echo canceller reference in your additional rooms if the EF Bus Reference has already been assigned to the EF Bus.

AUTOMIXER SETTINGS FOR MULTIPLE VORTEXES

When using more than one Vortex in your room system, you have several possibilities for how you configure the automixer. Each Vortex can operate as one of the following:

- One automixer, independent of other Vortexes linked to it
- Two automixers, independent of other Vortexes linked to it
- One large automixer, sharing automixer functions with other Vortexes linked to it
- Two large automixers, sharing automixer functions with other Vortexes linked to it

Figure 2. Vortex Automixer Global Parameters in Conference Composer Software

Automixer and Bus Mixer Settings

To operate the Vortex in any of the above possibilites, two global parameters need to be changed: the AUTOMIXER and the BUS MIXER (see Figure 2). The AUTOMIXER parameter chooses which automixer the input channel will be on (this is changed either on the AUTOMIXER page in Conference Composer or on the MATRIX MIXER page).

The BUS MIXER parameter is used to assign one of the two internal automixers to one of the eight EF Bus automixer groups. For example, consider three Vortexes each of which has four microphones assigned to Automixer 1 and 4 microphones assigned to Automixer 2. Now, if each of these Vortexes sets their Automixer 1 to have Bus Mixer 5 (the Bus Mixer is also referred to as the Bus ID), then the three automixers (one from each Vortex) will work as a single automixer containing 12 (3 x 4) microphones. Setting BUS MIXER to 0 means that the automixer is not grouped on the EF Bus.

Operating as an Independent Automixer

To set the Vortex to operate as an independent automixer (or two independent mixers), set the BUS MIXER parameter to 0, or to a number that is different from any other automixer group currently in use on the EF Bus.

Operating as One Automixer with Multiple Vortexes

To set the Vortex to operate as one automixer across several Vortexes, set the BUS MIXER parameter on all Vortexes to the same automixer group.

Example: Room Combining

Let's take a room combining setup as an example. You have 3 rooms, each with 8 microphones, therefore needing 3 Vortexes. For the purposes of this example, the 3 rooms can operate as 3 separate rooms, 2 rooms with 12 mics each, or one large room.

When the system is split into 3 Rooms, the BUS MIXER option should have the following settings:

ROOM	VORTEX ID	AUTOMIXER	BUS MIXER	MICS
1	00	AM1	0	1-8
2	01	AM1	0	1-8
3	02	AM1	0	1-8

Table 1: BUS MIXER settings for 3 separate rooms each with 8 microphones operating independently

When split into 2 Rooms:

ROOM	VORTEX ID	AUTOMIXER	BUS MIXER	MICS
1	00	AM1	1	1-8
2	01	AM1	1	1-4
2	01	AM2	2	5-8
3	02	AM2	2	1-8

Table 2: BUS MIXER settings for 2 rooms with 12 microphones each

And finally, all combined into one room:

ROOM	VORTEX ID	AUTOMIXER	BUS MIXER	MICS
1	00	AM1	3	1-8
2	01	AM1	3	1-8
3	02	AM1	3	1-8

Table 3: BUS MIXER settings for one room with 24 microphones

The various room setups can be saved in the user defined presets or can be changed with macros.

CONNECTING MULTIPLE VORTEXES

Up to 8 Vortexes can be linked together at one time. Each unit in the chain must have a unique Device ID. Use the EF Bus to link multiple Vortexes together.

The following steps should be followed to connect the EF Bus:

- Connect the RS-232 remote control device to the first Vortex in the chain.
- Connect the provided Cat-5 cable between the EF BUS OUT of the first device, and the EF BUS IN of the second device.

> ***Note.*** ***The EF Bus must be connected so that the EF Bus In of one box is connected to the EF Bus Out of another. Connecting the EF Bus In to another EF Bus In (or Out to Out) will not work.***

- Connect another Cat-5 cable between the EF BUS OUT of the second device and the EF BUS IN of the third device, and so on.
- Terminate the chain of Vortexes using the instructions below.

Terminating the Vortex

The Vortex must be terminated with the provided EF Bus terminator. Place a terminator in the EF BUS IN of the first device in the chain and also in the EF BUS OUT of the last device. If you lose the terminator provided with your Vortex unit, see "Making an EF Bus Terminator" on page 45 for information and instructions on how to make one.

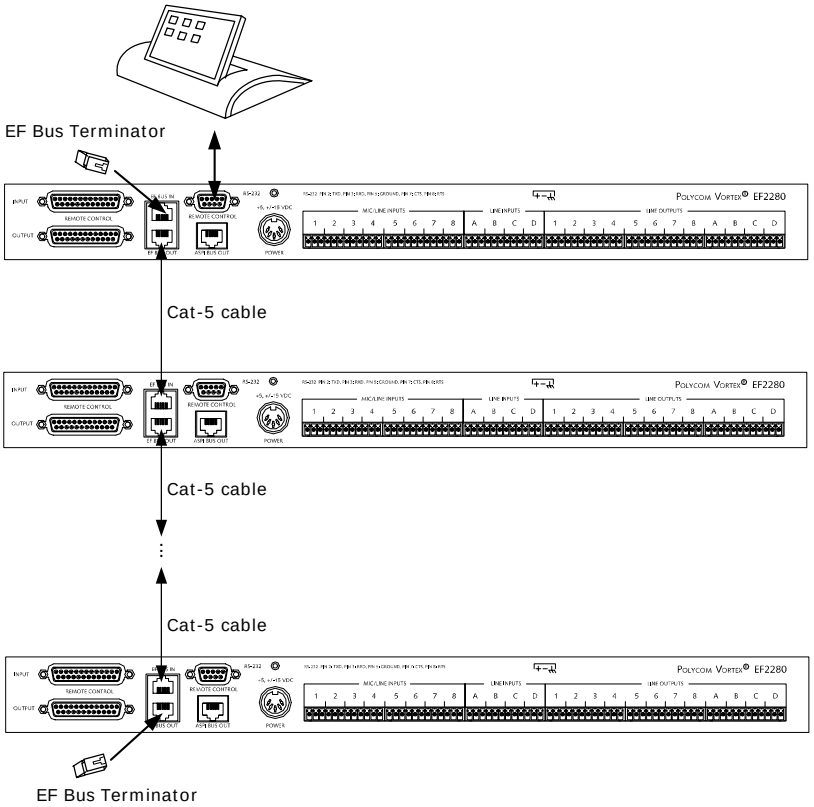


Figure 3. Connecting and terminating multiple Vortexes.

The Vortex does not have to be terminated if you are using a single unit not connected together with another Vortex.

Connecting the Vortex with Other EchoFree Devices

If you are linking multiple Vortexes, you must use the EF bus to link the Vortexes to each other. If you are linking a Vortex to other EchoFree devices, such as the EF200 Phone Add, for RS-232 control, use the ASPI bus. See Figure 4 below. The ASPI Bus does not need to be terminated.

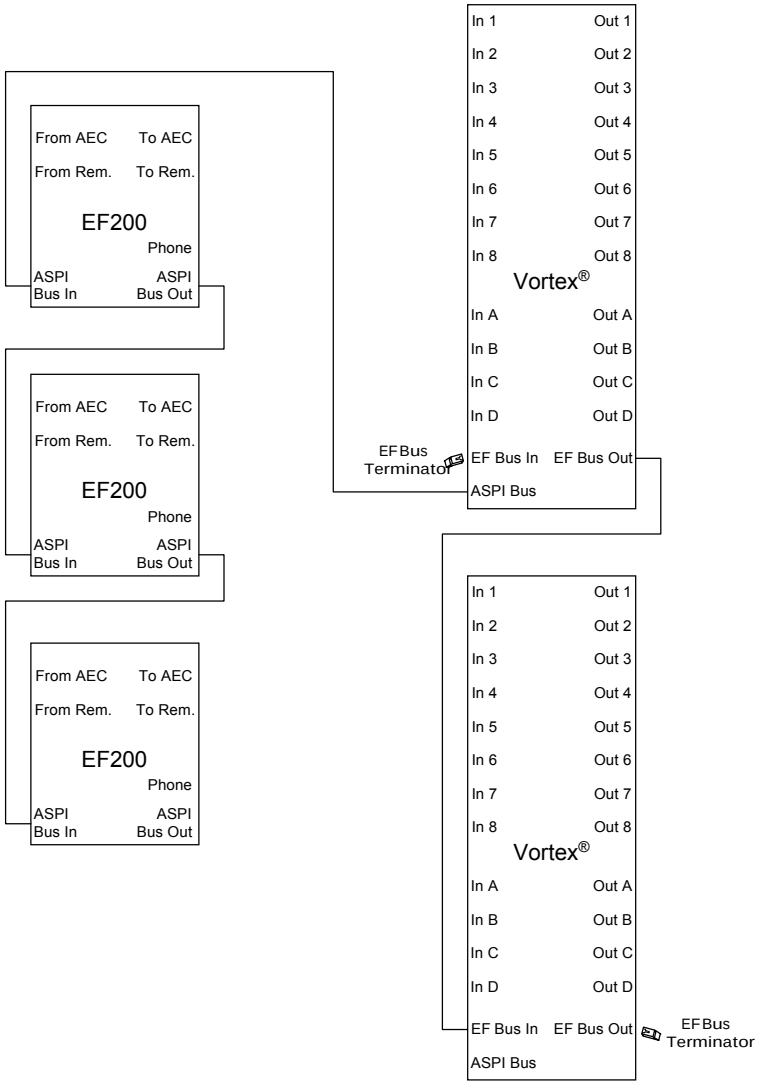
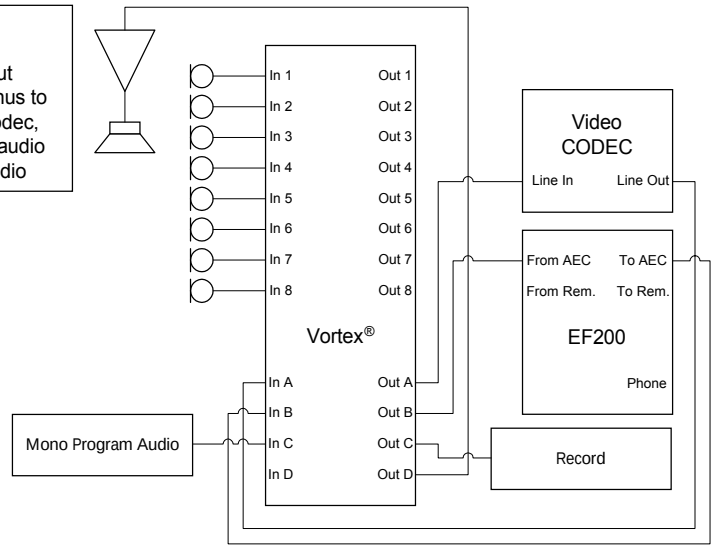


Figure 4. Linking the Vortex to other EchoFree devices.

PRESETS

POLYCOM Vortex Factory Preset 0: Default

Factory Preset 0:
- 8 mics per zone
- Inputs 1-8 direct out
- Inputs A-D mix minus to Outputs A-D for codec, Phone Add, room audio and/or program audio



OUTPUTS

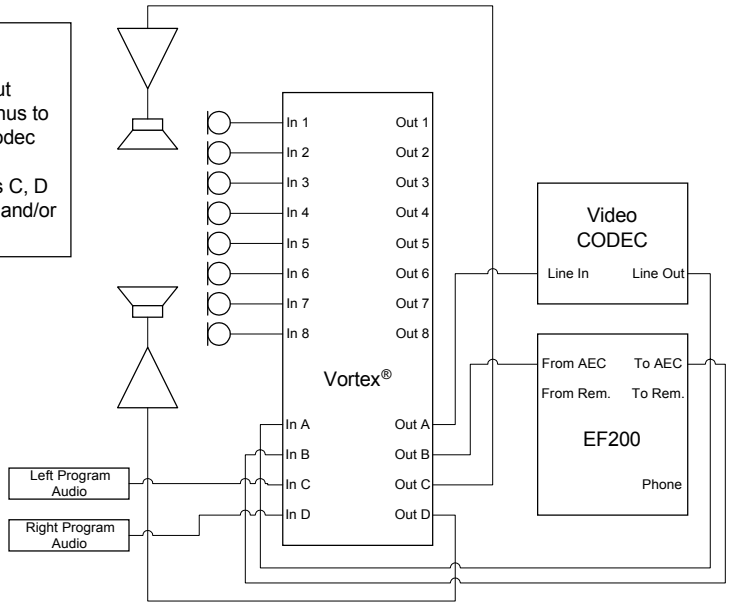
Safety Mute

INPUTS		IN	1	2	3	4	5	6	7	8	A	B	C	D	W	X	Y	Z	R1	R2	Mixer	AEC
	OUT		0	0	0	0	0	0	0	0	0	0	0	0								
	NOM		On	On	On	On	On	On	On	On	On	On	On	On								
Input 1	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 2	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 3	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 4	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 5	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 6	6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 7	7	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 8	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input D	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SubMix WM0	WM0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM1	WM1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM2	WM2		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix XM0	XM0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM1	XM1		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM2	XM2		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix YM0	YM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM1	YM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM2	YM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix ZM0	ZM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM1	ZM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM2	ZM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
Signal Generator	SG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Fixed | Not Muted | Muted | Automixer 1 | Automixer 2

POLYCOM

Factory Preset 1:
- 8 mics per zone
- Inputs 1-8 direct out
- Inputs A, B mix minus to Outputs A, B for codec and Phone Add
- Inputs and Outputs C, D stereo room audio and/or program audio



OUTPUTS

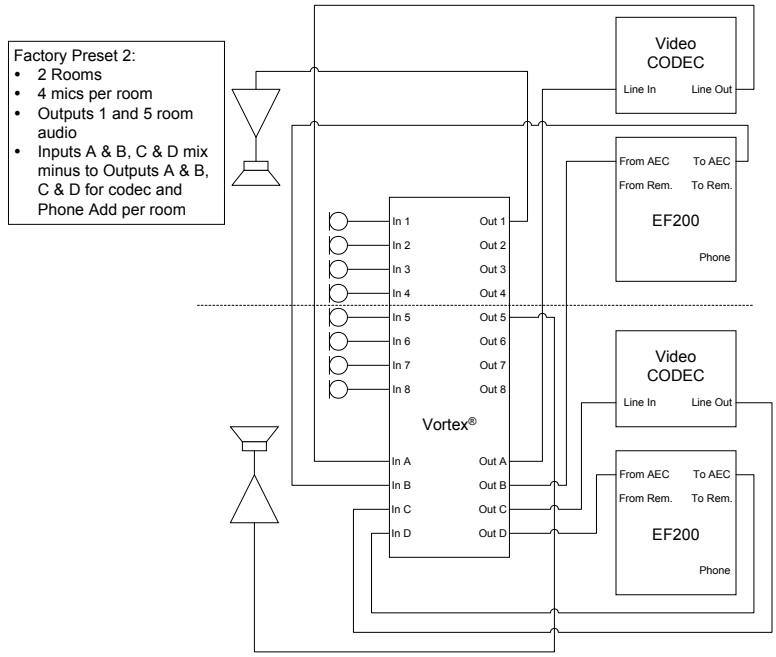
Safety Mute

INPUTS		IN	1 Mic 8 spkr zone	2 Mic 7 sprk zone	3 Outp ut 3	4 Outp ut 4	5 Outp ut 5	6 Outp ut 6	7 Outp ut 7	8 Outp ut 8	A Outp ut A	B Outp ut B	C Outp ut C	D Outp ut D	W Outp ut W	X Outp ut X	Y Outp ut Y	Z Outp ut Z	R1 Refer ence 1	R2 Refer ence 2	Mixer	AEC
	OUT		0	0	0	0	0	0	0	0	0	0	0	0								
	NOM		On	On	On	On	On	On	On	On	On	On	On	On								
Table 1	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Table 2	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Table 3	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Table 4	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Table 5	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Table 6	6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Ceiling Far	7	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Ceiling Near	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	R1
Input A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Input B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Input C	C	0	0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0	0	-3			
Input D	D	0	0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0	0	-3			
SubMix WM0	WM0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM1	WM1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM2	WM2		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix XM0	XM0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM1	XM1		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM2	XM2		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix YM0	YM0		0	0	0	0	0	0	0	0	-3	-3	0	0	0	0		0	-3	0		
SubMix YM1	YM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM2	YM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix ZM0	ZM0		0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0		-3	0		
SubMix ZM1	ZM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM2	ZM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
Signal Generator	SG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Fixed | Not Muted | Muted | Automixer 1 | Automixer 2

Vortex Factory Preset 2: Split, Mono

Factory Preset 2:
- 2 Rooms
- 4 mics per room
- Outputs 1 and 5 room audio
- Inputs A & B, C & D mix minus to Outputs A & B, C & D for codec and Phone Add per room



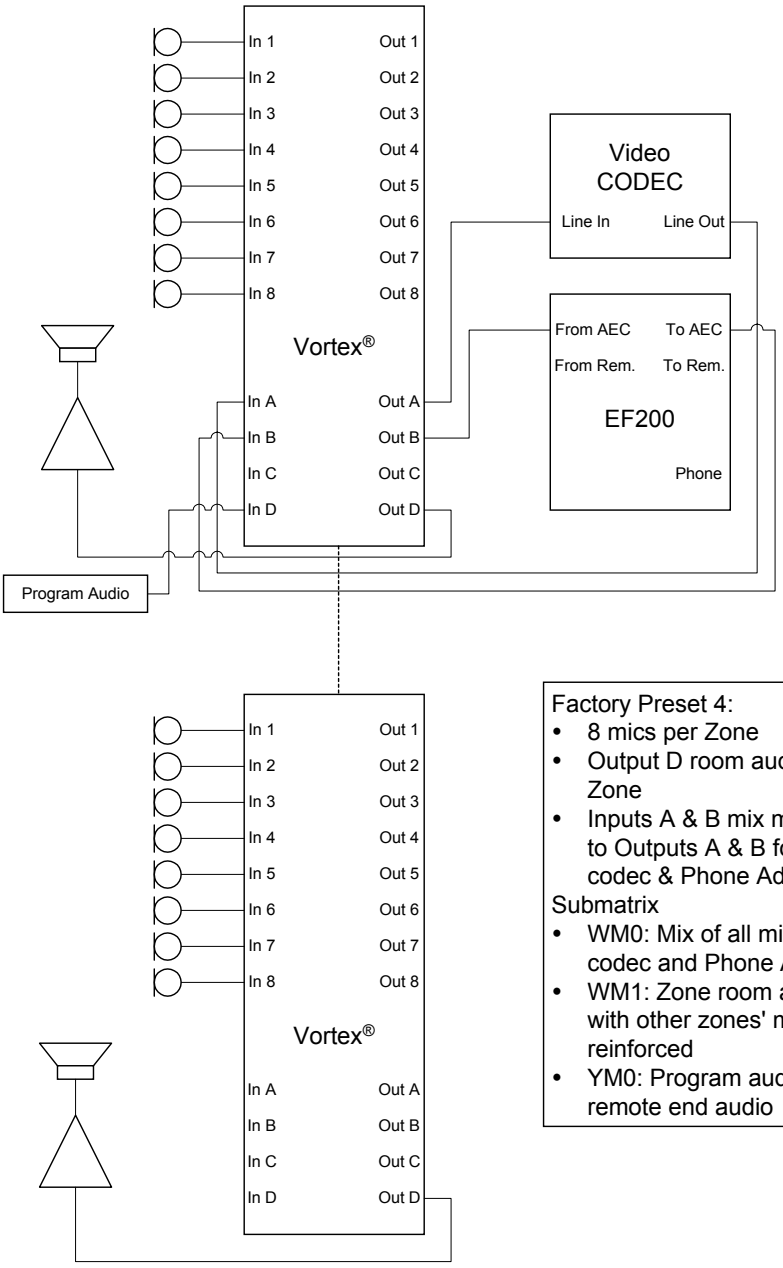
OUTPUTS

Safety Mute

		IN	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8	Output A	Output B	Output C	Output D	Output W	Output X	Output Y	Output Z	Reference 1	Reference 2	Mixer	AEC
	OUT		0	0	0	0	0	0	0	0	0	0	0	0								
	NOM		On	On	On	On	On	On	On	On	On	On	On	On								
INPUTS																						
Input 1	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 2	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 3	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 4	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 5	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	R2
Input 6	6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	R2
Input 7	7	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	R2
Input 8	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	R2
Input A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input D	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SubMix WM0	WM0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM1	WM1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM2	WM2		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix XM0	XM0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM1	XM1		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM2	XM2		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix YM0	YM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM1	YM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM2	YM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix ZM0	ZM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM1	ZM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM2	ZM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
Signal Generator	SG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Fixed | Not Muted | Muted | Automixer 1 | Automixer 2

Vortex Factory Preset 4: 8 mics/Zone

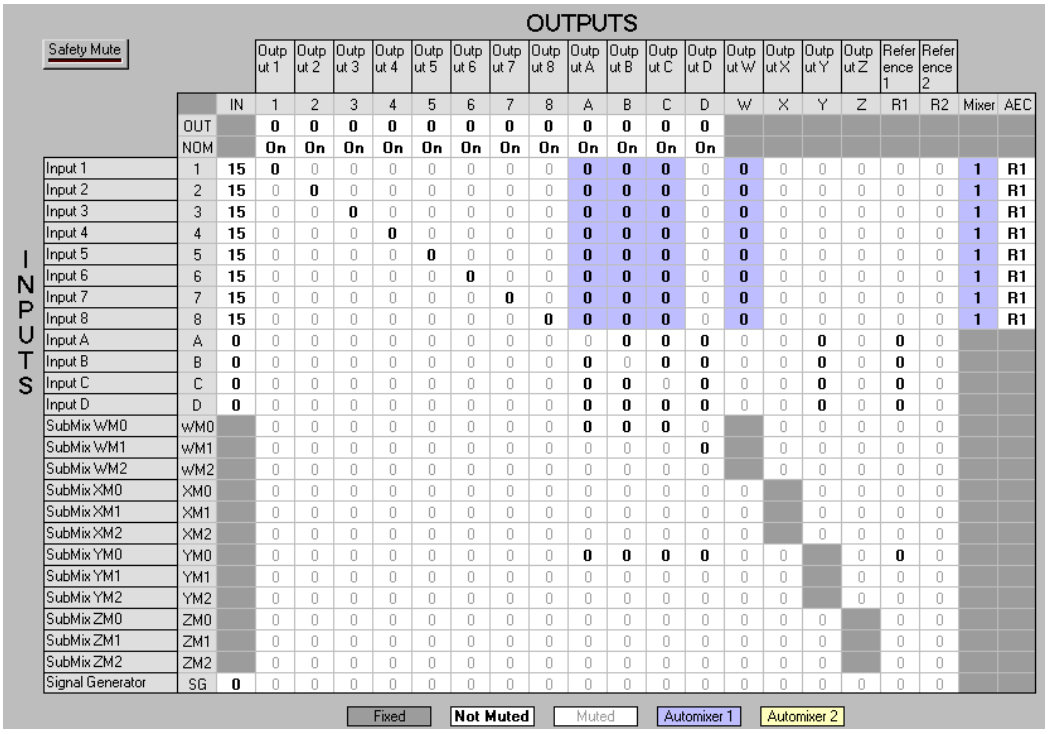


Factory Preset 4:

- 8 mics per Zone
- Output D room audio per Zone
- Inputs A & B mix minus to Outputs A & B for codec & Phone Add

Submatrix

- WM0: Mix of all mics for codec and Phone Add
- WM1: Zone room audio with other zones' mics reinforced
- YM0: Program audio and remote end audio



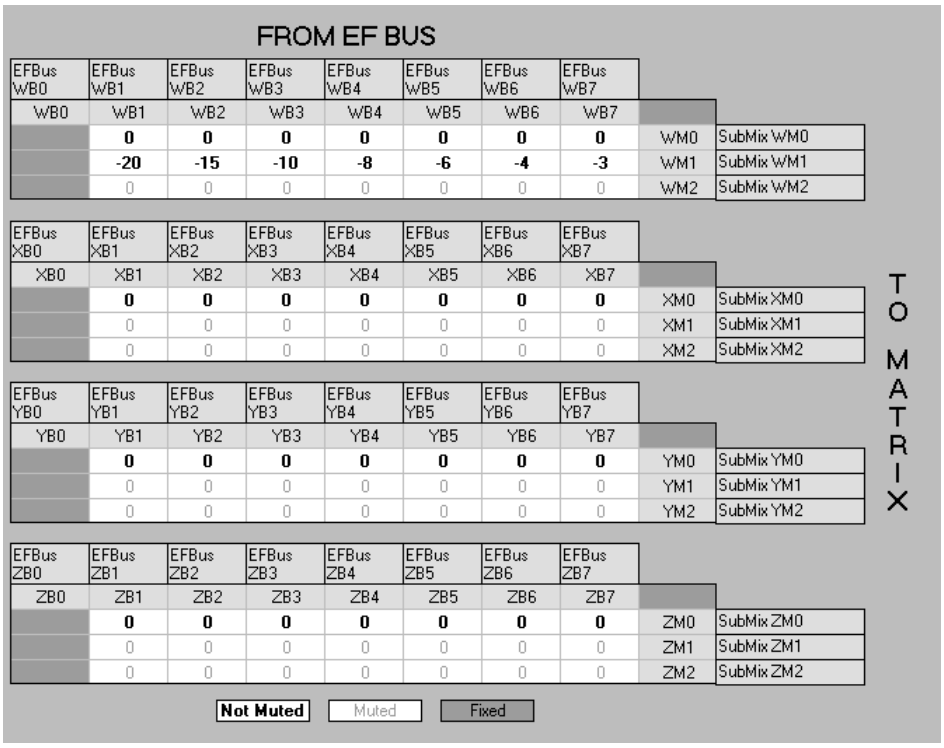
OUTPUTS

Safety Mute

		IN	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8	Output A	Output B	Output C	Output D	Output W	Output X	Output Y	Output Z	Reference 1	Reference 2	Mixer	AEC
	OUT		0	0	0	0	0	0	0	0	0	0	0	0								
	NOM		On	On	On	On	On	On	On	On	On	On	On	On								
Input 1	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 2	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 3	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 4	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 5	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 6	6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 7	7	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input 8	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input D	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SubMix WM0	WM0		0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0		
SubMix WM1	WM1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM2	WM2		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix XM0	XM0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM1	XM1		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM2	XM2		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix YM0	YM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM1	YM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM2	YM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix ZM0	ZM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM1	ZM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM2	ZM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
Signal Generator	SG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

INPUTS

Fixed | Not Muted | Muted | Automixer 1 | Automixer 2



FROM EF BUS

EFBus WB0	EFBus WB1	EFBus WB2	EFBus WB3	EFBus WB4	EFBus WB5	EFBus WB6	EFBus WB7		
WB0	WB1	WB2	WB3	WB4	WB5	WB6	WB7		
	0	0	0	0	0	0	0	WM0	SubMix WM0
	-20	-15	-10	-8	-6	-4	-3	WM1	SubMix WM1
	0	0	0	0	0	0	0	WM2	SubMix WM2

EFBus XB0	EFBus XB1	EFBus XB2	EFBus XB3	EFBus XB4	EFBus XB5	EFBus XB6	EFBus XB7		
XB0	XB1	XB2	XB3	XB4	XB5	XB6	XB7		
	0	0	0	0	0	0	0	XM0	SubMix XM0
	0	0	0	0	0	0	0	XM1	SubMix XM1
	0	0	0	0	0	0	0	XM2	SubMix XM2

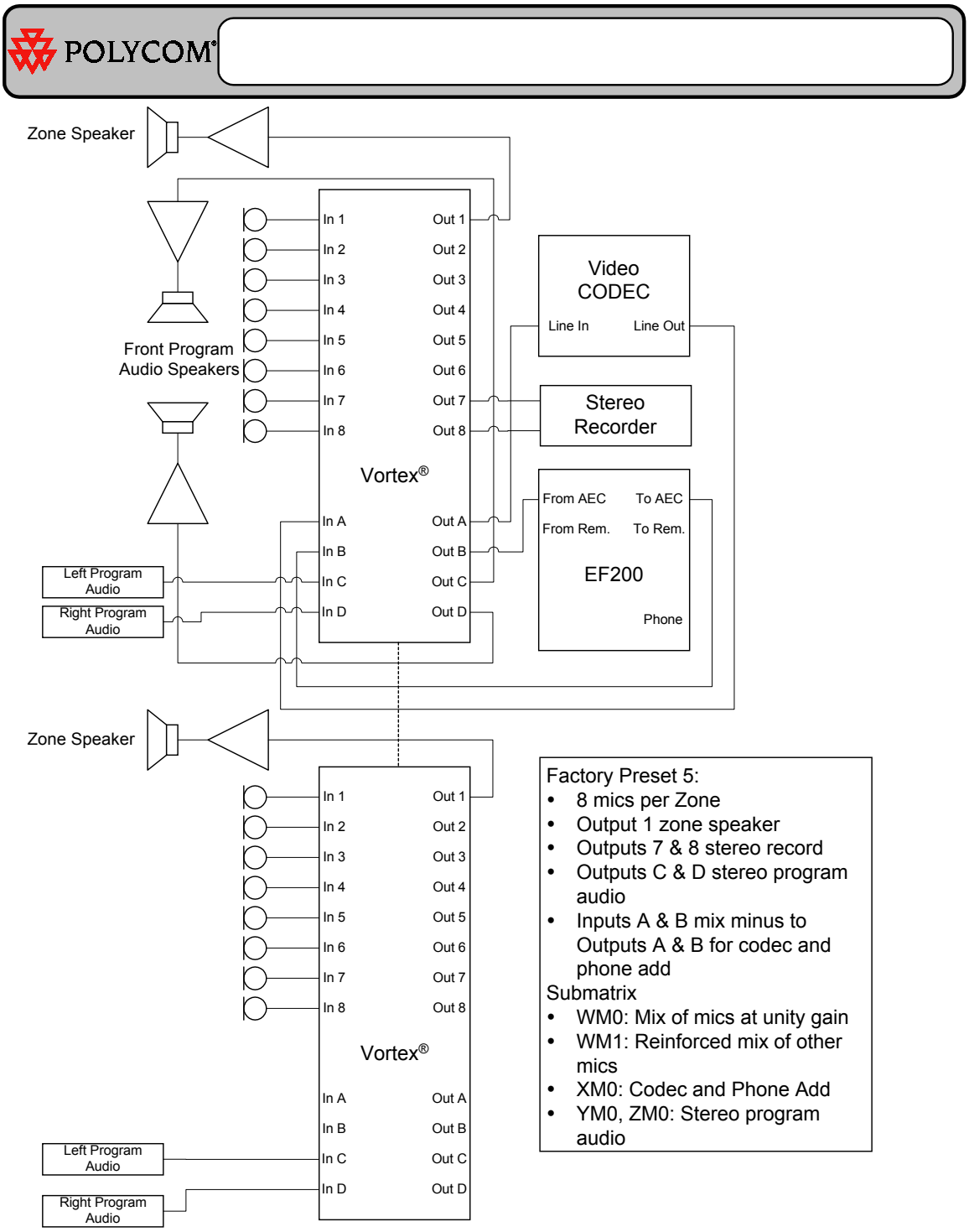
EFBus YB0	EFBus YB1	EFBus YB2	EFBus YB3	EFBus YB4	EFBus YB5	EFBus YB6	EFBus YB7		
YB0	YB1	YB2	YB3	YB4	YB5	YB6	YB7		
	0	0	0	0	0	0	0	YM0	SubMix YM0
	0	0	0	0	0	0	0	YM1	SubMix YM1
	0	0	0	0	0	0	0	YM2	SubMix YM2

EFBus ZB0	EFBus ZB1	EFBus ZB2	EFBus ZB3	EFBus ZB4	EFBus ZB5	EFBus ZB6	EFBus ZB7		
ZB0	ZB1	ZB2	ZB3	ZB4	ZB5	ZB6	ZB7		
	0	0	0	0	0	0	0	ZM0	SubMix ZM0
	0	0	0	0	0	0	0	ZM1	SubMix ZM1
	0	0	0	0	0	0	0	ZM2	SubMix ZM2

TO MATRIX

Not Muted | Muted | Fixed

The Submatrix assumes that Vortex 01 is the next closest zone, Vortex 02 is the next one, etc., and Vortex 07 is the farthest zone (reinforced at the highest level).

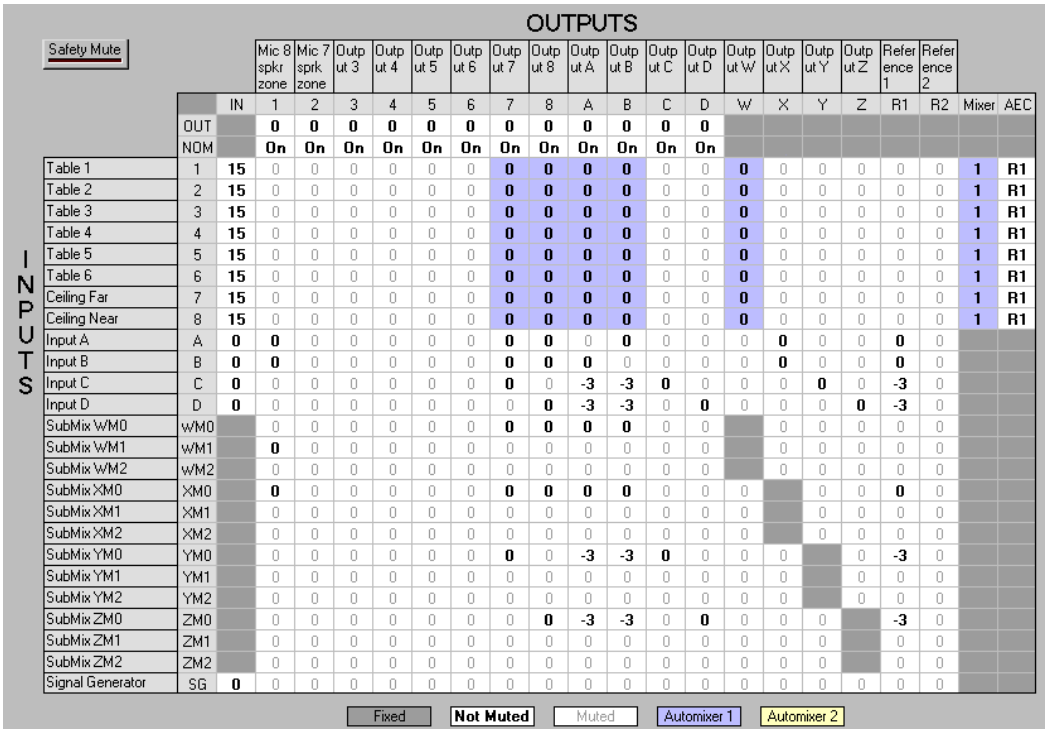


Factory Preset 5:

- 8 mics per Zone
- Output 1 zone speaker
- Outputs 7 & 8 stereo record
- Outputs C & D stereo program audio
- Inputs A & B mix minus to Outputs A & B for codec and phone add

Submatrix

- WM0: Mix of mics at unity gain
- WM1: Reinforced mix of other mics
- XM0: Codec and Phone Add
- YM0, ZM0: Stereo program audio

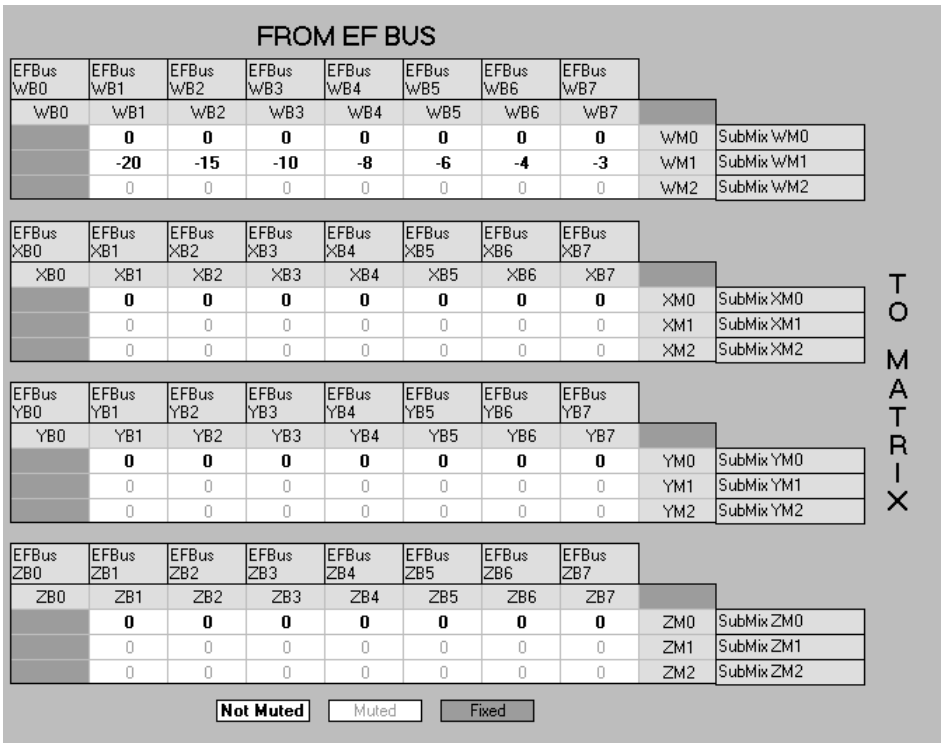


OUTPUTS

Safety Mute

		IN	Mic 8 spkr zone 1	Mic 7 sprk zone 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8	Output A	Output B	Output C	Output D	Output W	Output X	Output Y	Output Z	Reference 1	Reference 2	Mixer	AEC
	OUT		0	0	0	0	0	0	0	0	0	0	0	0								
	NOM		On	On	On	On	On	On	On	On	On	On	On	On								
INPUTS																						
Table 1	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Table 2	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Table 3	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Table 4	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Table 5	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Table 6	6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Ceiling Far	7	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Ceiling Near	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	R1
Input A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input C	C	0	0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0	0	-3	0		
Input D	D	0	0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0	0	-3	0		
SubMix WM0	WM0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM1	WM1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM2	WM2		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix XM0	XM0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM1	XM1		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM2	XM2		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix YM0	YM0		0	0	0	0	0	0	0	0	-3	-3	0	0	0	0		0	-3	0		
SubMix YM1	YM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM2	YM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix ZM0	ZM0		0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0		-3	0		
SubMix ZM1	ZM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM2	ZM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
Signal Generator	SG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Fixed | Not Muted | Muted | Automixer 1 | Automixer 2



FROM EF BUS

EFBus WB0	EFBus WB1	EFBus WB2	EFBus WB3	EFBus WB4	EFBus WB5	EFBus WB6	EFBus WB7		
WB0	WB1	WB2	WB3	WB4	WB5	WB6	WB7		
	0	0	0	0	0	0	0	WM0	SubMix WM0
	-20	-15	-10	-8	-6	-4	-3	WM1	SubMix WM1
	0	0	0	0	0	0	0	WM2	SubMix WM2

EFBus XB0	EFBus XB1	EFBus XB2	EFBus XB3	EFBus XB4	EFBus XB5	EFBus XB6	EFBus XB7		
XB0	XB1	XB2	XB3	XB4	XB5	XB6	XB7		
	0	0	0	0	0	0	0	XM0	SubMix XM0
	0	0	0	0	0	0	0	XM1	SubMix XM1
	0	0	0	0	0	0	0	XM2	SubMix XM2

EFBus YB0	EFBus YB1	EFBus YB2	EFBus YB3	EFBus YB4	EFBus YB5	EFBus YB6	EFBus YB7		
YB0	YB1	YB2	YB3	YB4	YB5	YB6	YB7		
	0	0	0	0	0	0	0	YM0	SubMix YM0
	0	0	0	0	0	0	0	YM1	SubMix YM1
	0	0	0	0	0	0	0	YM2	SubMix YM2

EFBus ZB0	EFBus ZB1	EFBus ZB2	EFBus ZB3	EFBus ZB4	EFBus ZB5	EFBus ZB6	EFBus ZB7		
ZB0	ZB1	ZB2	ZB3	ZB4	ZB5	ZB6	ZB7		
	0	0	0	0	0	0	0	ZM0	SubMix ZM0
	0	0	0	0	0	0	0	ZM1	SubMix ZM1
	0	0	0	0	0	0	0	ZM2	SubMix ZM2

TO MATRIX

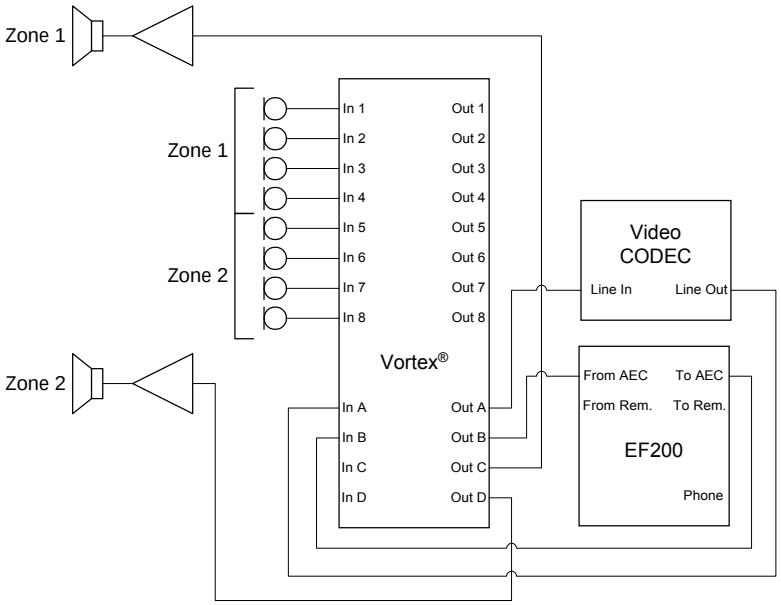
Not Muted | Muted | Fixed

The Submatrix assumes that Vortex 01 is the next closest zone, Vortex 02 is the next one, etc., and Vortex 07 is the farthest zone (reinforced at the highest level).

Vortex Factory Preset 6: 4 mics/Zone

Factory Preset 6:
- 4 mics per Zone
- Output C & D room audio per Zone
- Inputs A & B mix minus to Outputs A & B for codec & Phone Add

Submatrix
- WM0, XM0: Mix of mics at unity gain for codec and Phone Add
- WM1, WM2, XM1, XM2: Zone room audio with other zones' mics reinforced
- YM0: Program audio and remote end audio



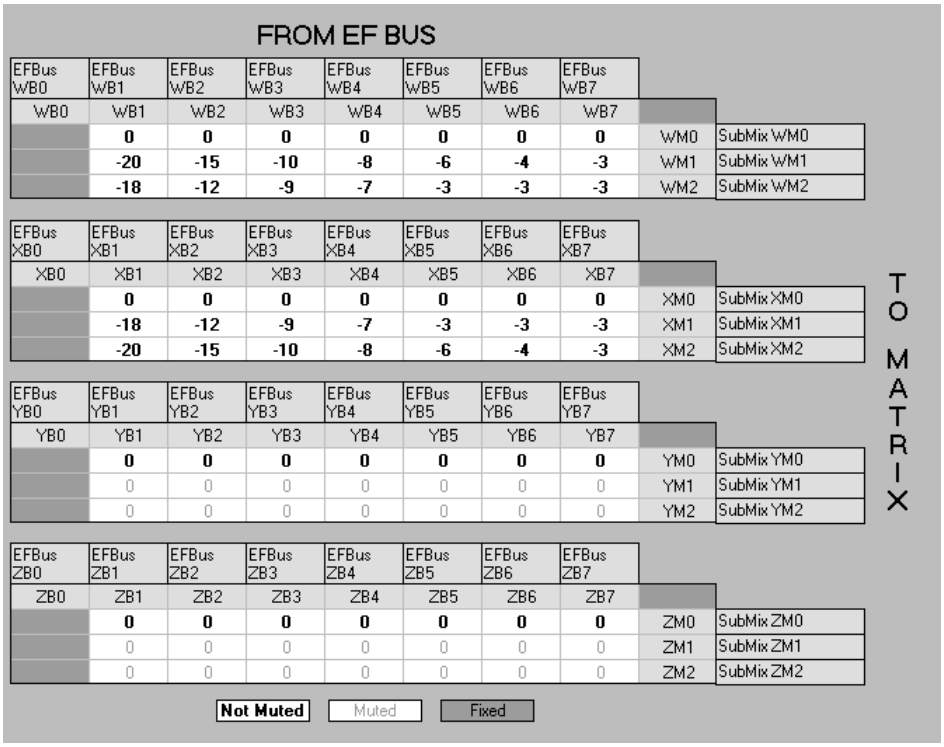
OUTPUTS

Safety Mute

		IN	1 Mic 8 spkr zone	2 Mic 7 spkr zone	3 Output 3	4 Output 4	5 Output 5	6 Output 6	7 Output 7	8 Output 8	A Output A	B Output B	C Output C	D Output D	W Output W	X Output X	Y Output Y	Z Output Z	R1 Reference 1	R2 Reference 2	Mixer	AEC
	OUT		0	0	0	0	0	0	0	0	0	0	0	0								
	NOM		On	On	On	On	On	On	On	On	On	On	On	On								
Table 1	1	15	0	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	1	R1
Table 2	2	15	0	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	1	R1
Table 3	3	15	0	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	1	R1
Table 4	4	15	0	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	1	R1
Table 5	5	15	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	0	1	R1
Table 6	6	15	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	0	1	R1
Ceiling Far	7	15	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	0	1	R1
Ceiling Near	8	15	0	0	0	0	0	0	0	0	0	0	-24	0	0	0	0	0	0	0	1	R1
Input A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Input D	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SubMix WM0	WM0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM1	WM1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix WM2	WM2		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		
SubMix XM0	XM0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM1	XM1		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix XM2	XM2		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
SubMix YM0	YM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM1	YM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix YM2	YM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SubMix ZM0	ZM0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM1	ZM1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
SubMix ZM2	ZM2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		
Signal Generator	SG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

INPUTS

Fixed | Not Muted | Muted | Automixer 1 | Automixer 2



The Submatrix assumes that Vortex 01 is the next closest zone, Vortex 02 is the next one, etc., and Vortex 07 is the farthest zone (reinforced at the highest level).

Presets 3, 7-12 ***Reserved.***

Preset 13 ***Passthrough Mic.*** Passthrough mode (Inputs 1-8, A-D are direct out) with Inputs 1-8 set to Mic level. Everything else is disabled.

Preset 14 ***Passthrough Line.*** Passthrough mode (Inputs 1-8, A-D are direct out) with Inputs 1-8 set to Line level. Everything else is disabled.

Preset 15 ***Blank Slate.*** All crosspoints muted. Everything disabled.