

## APPLICATION NOTES

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## CONNECTING A COLLABORATE™ ROOM TO A CONVERGE PRO

### Purpose:

This application note will describe the steps needed to interface the ClearOne CONVERGE Pro audio conferencing system to ClearOne's video conferencing solution, the COLLABORATE Room. The CONVERGE Pro can be easily interfaced to the COLLABORATE Room video conferencing system bringing professional audio capabilities and features including, audio expandability and advanced audio processing to the video conferencing experience. In the following sections we will define:

- Physical connections between the COLLABORATE Room and CONVERGE Pro
- Necessary configuration of the COLLABORATE Room for use with the CONVERGE Pro
- Necessary configuration of the CONVERGE Pro for use with COLLABORATE Room

### Connecting the COLLABORATE Room to the CONVERGE Pro:

The connections on the COLLABORATE Room are 3.5mm unbalanced stereo. Line Output and Mic Input are shown in Figure 1 below. The connections on the CONVERGE Pro are made with a balanced mini terminal block, Line In and Line Out, are shown in Figure 2.

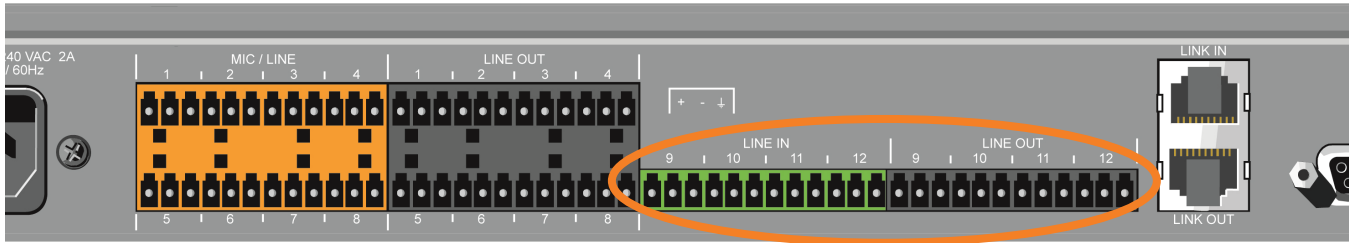
You must build 2 custom cables to connect both Transmit and Receive audio between the two devices.

- » **NOTE:** Connections between devices are the same for all COLLABORATE Room models (SD, HD, FHD and PHD) and CONVERGE Pro models excluding the TH20, VH20 and 8i. In this example we will be using a COLLABORATE Room HD and CONVERGE Pro 880.

**Figure 1. (COLLABORATE Room HD Back Panel)**






**Figure 2. (CONVERGE Pro 880 Back Panel)**



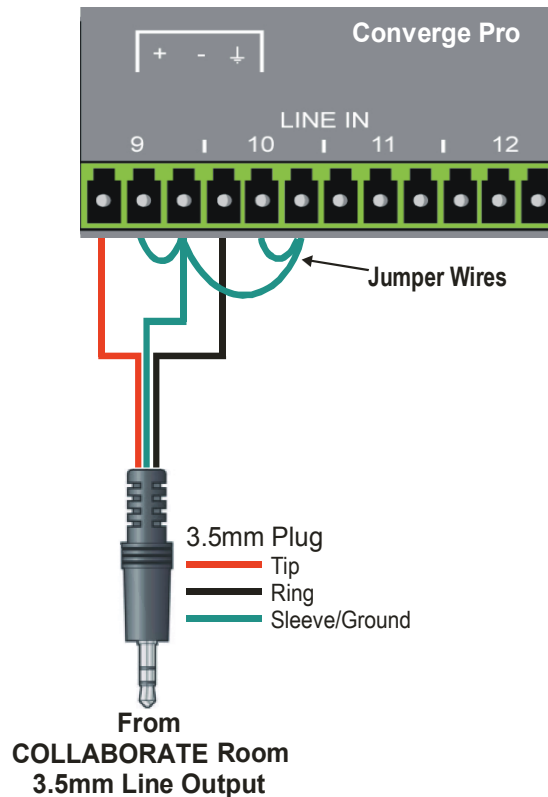
### Receive Audio Connections:

Because the COLLABORATE Room Line Output is stereo, it requires connection to two available Line Input channels on the CONVERGE Pro. In our example we will use Line Inputs 9 and 10 but any available channels will work. Refer to Table 1 and Figure 3 to build the receive audio cable.

**Table 1. (Receive Audio Cable Pin Assignments)**

COLLABORATE Room		CONVERGE Pro
3.5mm Line Output		Line Inputs mini-terminal block
Tip		Line Input 9 Positive
Ring		Line Input 10 Positive
Sleeve/Ground		Line Input 9 Ground Line Input 9 Negative Line Input 10 Ground Line Input 10 Negative




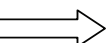
**Figure 3. (Receive Audio Cable Wiring)**



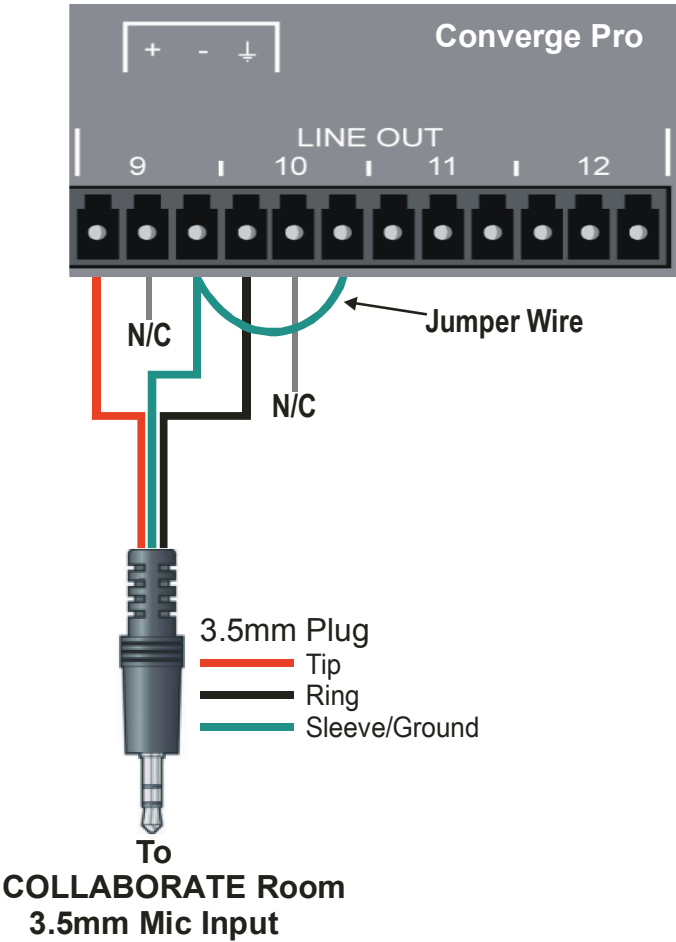
**Transmit Audio Connections:**

The COLLABORATE Room Mic Input is also stereo and will connect to any two available Line Out channels on the CONVERGE Pro. In our example we will use Line Outputs 9 and 10. To build the cable for the transmit audio connection refer to Table 2 and Figure 4 below.

**Table 2. (Transmit Audio Cable Pin Assignments)**

CONVERGE Pro		COLLABORATE Room
Line Out mini-terminal block		3.5mm Line Input
Line Out 9 Positive		Tip
Line Out 10 Positive		Ring
Line Out 9 Ground Line Out 10 Ground		Sleeve/Ground
Line Out 9 Negative Line Out 10 Negative		No Connection

**Figure 4. (Transmit Audio Cable Wiring)**



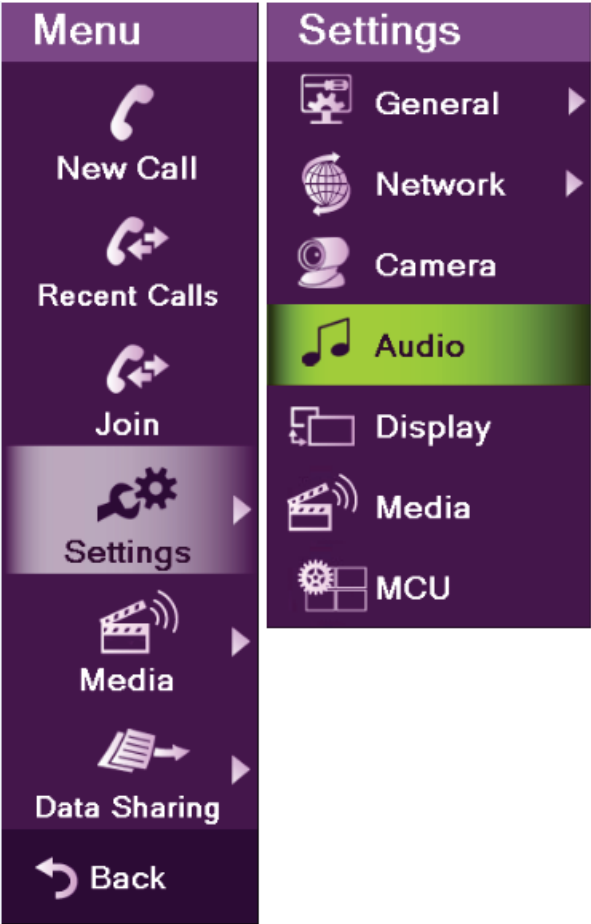
**Configuring the COLLABORATE Room and CONVERGE Pro:**

Now that the audio connections have been made, the COLLABORATE Room and CONVERGE Pro will need a few minor configuration changes to allow the two devices to interoperate normally.

**COLLABORATE Room Configuration:**

From the COLLABORATE Room menu, select the **Audio** option in the **Settings** menu (Figure 5).

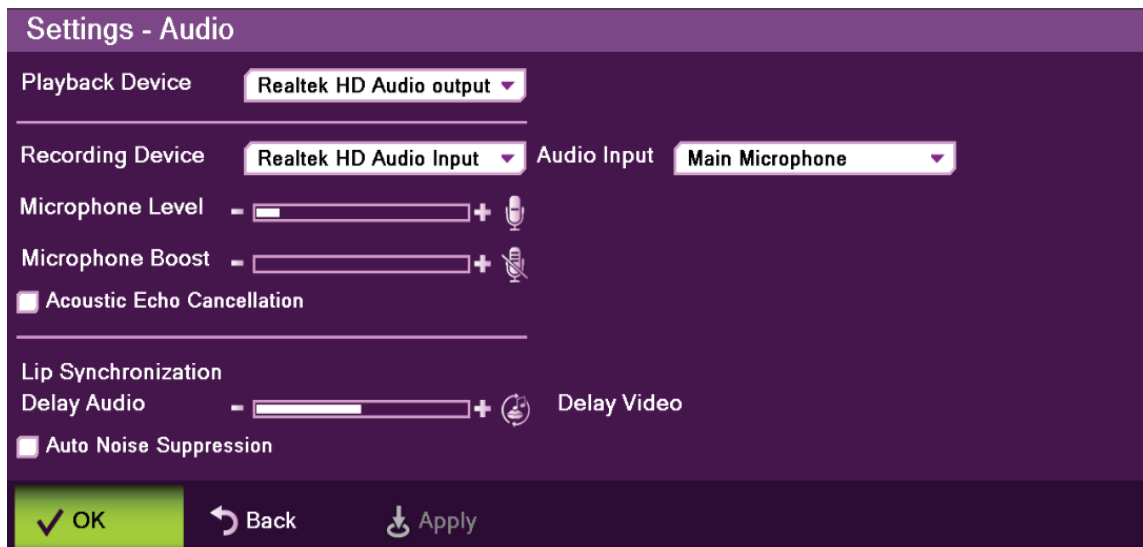
**Figure 5. (Room Configuration)**



In the Audio Settings page (Figure 6), set the following:

1. Audio Input – **Main Microphone**
2. Microphone Level – One bar on the volume bar graph as shown in Figure 6. Note that the volume level may need to be varied slightly depending on application and conditions.
3. Microphone Boost – **Disabled/Off**
4. Acoustic Echo Cancellation – **Disabled/Off**
5. Auto Noise Suppression – **Disabled/Off**
6. Select **OK** to confirm changes.

**Figure 6. (Audio Settings)**



7. The Receive level on the COLLABORATE Room is set with the COLLABORATE Room remote control volume control. Set this to midway (50%) on the volume bar graph during the calibration process. Once all devices have been calibrated this can be adjusted as needed to suit user volume preferences.

## CONVERGE Pro Room Configuration:

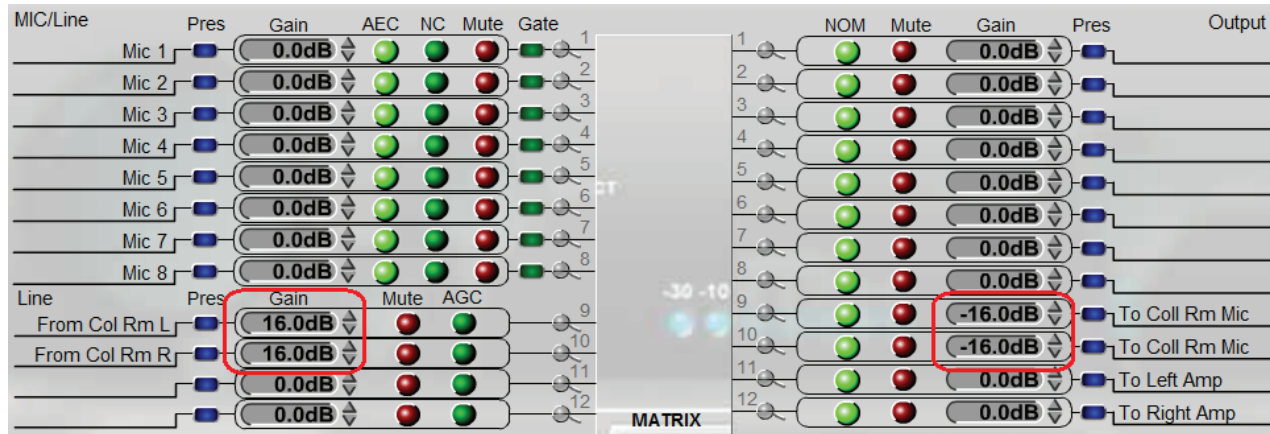
1. In the CONVERGE Pro Routing Matrix, route the audio to and from the COLLABORATE Room channels as desired and necessary for your application.
  - a. Below (Figure 7), is a simplified routing matrix demonstrating the audio routing to and from the Inputs and Outputs connected to the COLLABORATE Room.
  - b. Route all audio to be transmitted to the video callers, including microphones and Phone Add, to both channels feeding the COLLABORATE Room. In this example, outputs 9 and 10 on the CONVERGE Pro 880.
  - c. For Receive audio, route one channel of the audio coming from the COLLABORATE Room to the output feeding the left amp/speakers and the other to the output feeding the right amp/speakers. In a mono application, route both inputs from COLLABORATE Room to the amp/speaker channel.

**Figure 7. (CONVERGE Pro Routing)**

<div> <div>Gated</div> <div>Non Gated</div> <div>Pre AEC</div> <div>Crosspoint</div> </div> <div>Clear Matrix</div>																	
		1	2	3	4	5	6	7	8	9	10	11	12	O	P		
Mic 1	1									0	0			0			
Mic 2	2									0	0			0			
Mic 3	3									0	0			0			
Mic 4	4									0	0			0			
Mic 5	5									0	0			0			
Mic 6	6									0	0			0			
Mic 7	7									0	0			0			
Mic 8	8									0	0			0			
From Coll Rm L	9											0		0			
From Coll Rm R	10												0	0			
	11																
	12																
Phone Add RX	O									0	0	0	0				
	P																

2. The final step is to set the levels on the CONVERGE Pro Channels to and from the COLLABORATE Room. (Figure 8)
  - a. The Line Input channels, audio coming from the COLLABORATE Room, should be set to +16dB as a starting value. Some adjustment may need to be made depending on application and conditions. Once this is set, adjust amp levels.
  - b. The Line Output channels, audio going to the COLLABORATE Room, should be set to -16dB as a starting value. Once again some adjustment may need to be made depending on application and conditions. Note that this recommended level assumes that all mic channels have been previously set to nominal as indicated on the CONVERGE Pro mic channel meters.

**Figure 8. (CONVERGE Pro Levels)**



For more information or a complete guide to configuring your CONVERGE Pro or COLLABORATE Room, or if you require additional assistance, refer to your manual or contact ClearOne's Technical Support.