



# CONFIGURING THE SOUNDSTATION VTX1000 FOR AUDITORIUM USE

WHITE PAPER

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## **INTRODUCTION**

The VTX 1000 is normally used in conference rooms, but it can be adapted for a wide variety of settings. One of these is the large auditorium, where you occasionally want the audience to listen to a phone call from someone on stage.

There are three main steps in setting up in an auditorium: train the audio engineer, set up and test the system, and train the presenter.

## **STEP ONE: TRAIN THE AUDIO ENGINEER**

It's best if the audio engineer reads this note before beginning to set up, because the VTX 1000 doesn't work the same as other audio systems. Here are a few key points:

- **The VTX 1000 has built-in AGC, noise reduction, gating, adaptive filtering, and other functions. These cannot be disabled; they're essential to its working correctly.**
- **Only use filters if needed, not reverb, limiters, or other dynamic effects.**
- **Place a couple of test calls during the setup to get the levels just right.**
- **Don't "ride" the levels during the call. Leave them alone.**
- **Keep gains to the lowest that's acceptable.**

## **STEP TWO: CONFIGURE AND TEST THE SYSTEM**

### **1. SET UP THE VTX 1000**

You are going to replace the VTX 1000's internal microphones and speaker with external microphones and speaker.

- a. ***ENABLE THE EXTERNAL INPUT.*** Through the keyboard interface (MENU -> AUDIO SETUP -> AUX INPUT), change the function of AUX IN to ON by pressing ON, then SAVE (remember to press SAVE!)
- b. ***ENABLE THE EXTERNAL OUTPUT.*** Through the keyboard interface, (MENU -> AUDIO SETUP -> AUX OUTPUT), change the function of AUX OUT by pressing EXT SPEAKER, then SAVE.

- c. TURN OFF THE INTERNAL MICS. Through the keyboard interface, (MENU -> AUDIO SETUP -> CONSOLE MICS), turn the console mics OFF (again, press SAVE!).
- d. TURN OFF THE INTERNAL SPEAKER. Through the keyboard interface, (MENU -> AUDIO SETUP -> CONSOLE SPEAKER), turn the console speaker OFF.
- e. CONNECT THE EXTERNAL MICROPHONE.
  - i. Connect the talker's microphone to AUX IN. This will commonly be done through the room mixer panel. The connection to AUX IN is usually made through a direct box. AUX IN is a line-level unbalanced signal, appearing on a phono-style connector on the Palomod (the rectangular grey box that is connected between the triangular console and the telco and power jacks at the wall).
  - ii. Set the mixer to "solo" the talker's mic to AUX IN. That is, only the talker's mic should be present at AUX IN. Room audio, or any other signal, should not be present here.
- f. CONNECT THE EXTERNAL SPEAKER. Connect AUX OUT to the auditorium PA system. This is normally done through another direct box to the auditorium mixer panel. The auditorium mixer can combine this VTX output with the presenter's microphone, and other sound sources as desired. When set to "EXT SPEAKER" as described above, AUX OUT will carry audio from the far end, as well as dialtone, ring tones, and so on. AUX OUT is a phono jack carrying a line-level unbalanced signal.
- g. SET CONSOLE VOLUME. Set console VOUME to maximum. This gives the lowest noise level, and you will use your mixer to adjust the level from the room speakers.

## **2. ADJUST THE AUDITORIUM AUDIO**

### **WARNING!**

***IT IS CRITICAL TO MINIMIZE MIC PICKUP.***

***The VTX 1000 is much more sensitive to feedback than a normal sound system, so:***

**KEEP GAINS LOW!**

**DON'T CHANGE THE GAINS DURING USE!**

**TALKER, STAND AWAY FROM ROOM SPEAKERS!**

Here's what to listen for: if you have this problem, *you won't hear it as feedback* oscillation. Instead, the VTX 1000 will partially *gate* the far end, and you'll hear the loudness from the far end flipping up and down.

a. CHOOSE A MICROPHONE

The best approach is to use a good-quality, wireless clip-on microphone such as the Polycom Cordless Lapel Microphone, and attach it high up on the presenter's shirt or coat. This keeps the mic close to the the mouth, which allows its gain to be kept low, and this cuts down the amount of room audio that it picks up.

You can also use a microphone stand if it is away from the room speakers, although the mic gain needs to be kept very low. The presenter will have to be 1 – 2 inches from the mic when talking. Singers are accustomed to working this close, but business talkers are often uncomfortable. So a lapel mic is best.

b. ADJUST THE GAINS. Place a call to a second VTX 1000. Use the one you'll actually be calling, if you can. Have someone talk at the far end (use human speech to set all your levels, not test signals). Listen for gating of the sound, either at the near end, or the far end. Here are the critical gains.

- Lapel mic to the room speakers. Set the volume to the lower end of the acceptable range. Don't turn it up any louder than needed.
- VTX to the room speakers. Set the volume in the same way: for the lowest loudness that is acceptable.
- Lapel mic to the VTX. Line level is usually OK. The VTX applies AGC to this path, so you won't find this adjustment to be too critical.

c. TURN OFF SIGNAL PROCESSING.

Don't use any special or nonlinear effects during the call. Gating, companding, flanging, reverberation, distortion, or "aural expanding", for example, will badly confuse the VTX 1000. Some EQ, such as a graphic or parametric equalizer, is fine..

Remember that the VTX 1000 applies a variety of nonlinear techniques internally, including compression, limiting, gating, dynamic frequency equalization, and adaptive echo cancellation. These are essential to its function, and cannot be disabled.

If it is desired for the far end to inject recorded sound, this can be done by setting the far-end unit AUX IN to EXT Microphone (in the same way that the auditorium's unit is set), and connecting a CD player, FM radio, laptop, and so on, to its AUX IN jack. Note that this unit will select the loudest source from among all its inputs, so if someone speaks while a CD is playing, the CD may be blocked out if the unit decides that the talker is louder.

## **STEP THREE: TRAIN THE PRESENTER**

These are the key points for the presenter to remember.

- **Talk close to the microphone**
- **Don't stand directly in front of any loudspeaker**
- **Neither side should interrupt any more than necessary**

## **CONCLUSION**

While this configuration will not perform quite as well as when the VTX 1000 is operating in its native environments (in particular, interaction will suffer somewhat), it is effective in extending its usefulness on those occasions where a telephone conversation needs to be shared with a larger group. In situations where this is a regular application, however, an installed audio system such as the Polycom Vortex will yield better and more consistent results.

## **TROUBLESHOOTING**

Here are some typical problems, and what to do about them.

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Auditorium hears far-end loudness pumping up and down.	Too much speaker sound getting into microphone. With the VTX 1000, this causes "pumping" instead of feedback oscillation, as the VTX 1000 gates feedback..	<ul style="list-style-type: none"> <li>&gt; Turn down gains</li> <li>&gt; Move talker away from speakers</li> <li>&gt; Move far-end talker closer to microphone</li> </ul>
Auditorium hears far-end loudness pumping up and down.	Panel gains are being changed during the call, which keeps VTX 1000 echo cancellers from adapting correctly	Leave panel settings alone during the call
VTX 1000 doesn't work afterwards: lights OK but no sound.	Internal mics and speaker are still turned off	Turn on internal mics and speaker (MENU -> AUDIO SETUP)
Buzz or hum on audio from VTX 1000 into auditorium	Unbalanced cable from AUX OUT is too long	Install direct box at VTX 1000 interface module and use a balanced microphone

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		cable for the long run back to the mixer panel.
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