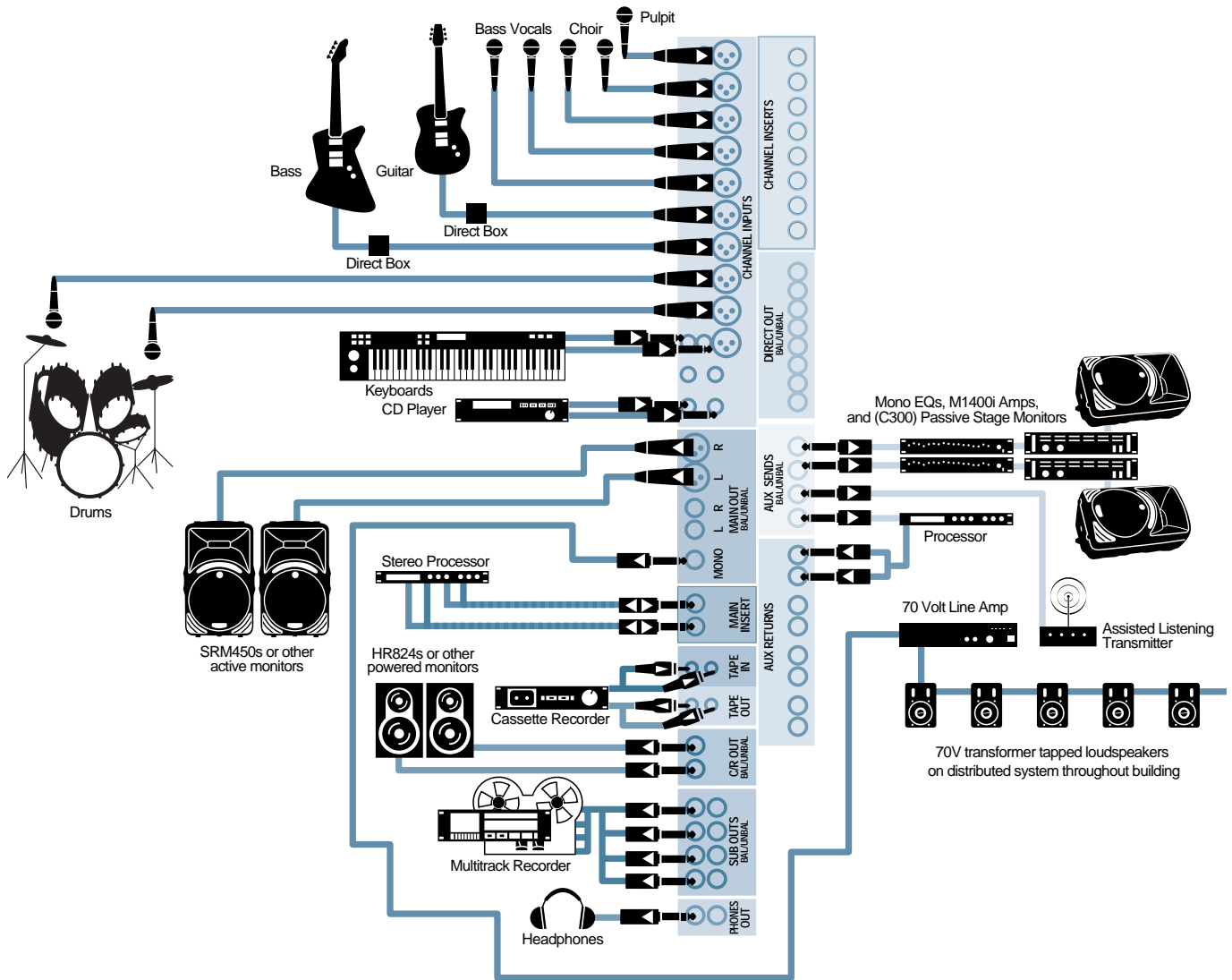


1642-VLZ PRO House of Worship Installation



This setup illustrates a typical installation for a contemporary house of worship. It includes a setup for a folk/pop-style band, a pair of mics for the choir, a pulpit mic, and a CD player for playback of incidental music. In addition to the standard main and monitor speakers, we've incorporated a couple of outputs that are typically found in institutional installations, an assisted listening transmitter and speakers placed throughout the building, fed from a 70V distribution system.

Inputs

All ten mic inputs are used in this setup. MIC INPUTs 1, 2, and 3, the pulpit and choir mics, will probably be part of a permanent installation, mounted and hung in appropriate spots with their cables remaining in place. Since the band configuration may change from week to week, those inputs will be set up as required. We've shown a typical setup for a church youth band, including direct boxes (DI's) for the acoustic guitar and bass, a couple of mics for the band's singers, and a pair of mics on the drum kit.



Note that mono/stereo channel 9-10 is used for one of the drum mics, so it becomes a mono channel.

The keyboard is connected to the stereo line inputs of channel 11-12. We've left stereo channel line inputs 13-14 open to your imagination. A wireless mic with line-level output might fit in here. Finally, stereo line inputs 15-16 receive the CD player.

Mains and Monitors

We've shown powered speakers connected to the MAIN L/R OUTPUTs. Of course passive speakers and power amplifiers could be used in their place.

Monitors, through graphic equalizers and power amplifiers, are fed from AUX 1 and AUX 2 OUTPUTs. See the 1604-VLZ PRO Stereo PA setup for further details on the controls for mixing mains and monitors.

70V Distribution System



When it's necessary to distribute speaker-level audio to multiple destinations at fairly substantial distances from the power amplifier, we often use what's known as a constant voltage distribution system.

A conventional power amplifier is designed to work most efficiently into a low impedance (2 to 8 ohm) loudspeaker. At that impedance, a substantial

amount of current flows in the speaker wires, something on the order of 10 to 15 amperes – about what an AC circuit in your house carries. That's why we recommend using at least 14 gauge wire for connecting speakers.

Wiring a building with hundreds of feet of 12-14 gauge wire for speakers isn't very practical, so we use a distribution system that's similar in concept to what the power companies use to get large amounts of power from the substation to your house – they carry that power at several thousand volts, but at a lower current, which reduces the required wire size for the same amount of power. A transformer on the utility pole outside your house drops the high voltage down to standard line voltage.

In a constant voltage speaker system, the amplifier puts out 70 volts at its rated power. We distribute this 70 volt line throughout the building and tap off it wherever we need a speaker – in the lobby, in the social hall, in the offices. A transformer installed at each speaker delivers the required amount of power to that speaker. You might need 20 watts in the lobby, 50 watts in the social hall, but only 5 watts in the offices. With a constant voltage distribution system, adding another speaker to the string creates negligible voltage drop in the wiring, so you only need to assure that the total speaker load (in watts) doesn't exceed the power rating of the amplifier.

Since distributed speakers are almost always mono, we've chosen the MONO output of the mixer to drive the 70V amplifier. It has its own volume control that will aid in matching the mixer to the amplifier.

Remember that all speakers are fed from the same amplifier, so they all follow this one volume control. When they tell you that it's fine in the lobby but too loud in the office, change to a lower wattage transformer in the office. Typically the transformers on the speaker end of a constant voltage distribution system have taps for several different power levels, so select the tap that best matches the desired volume for that location. This is something that you usually only need to set up when you first install the system, and then you can leave it until someone complains.

Assisted Listening System



Institutions often provide a wireless transmission system that makes it easier for those with hearing disabilities to hear the program. There are two common types. One type is a radio system that's like a limited range broadcast transmitter - those needing assistance are given

radio receivers equipped with earphones so that they can adjust the program to a comfortable listening level. Another type works in conjunction with a standard hearing aid, using what's known as an "induction loop." A power amplifier feeds a one-turn loop of wire which encircles the entire room and is usually installed around the baseboard. This serves as one winding of a transformer, the other winding being a pickup coil in the hearing aid.



We're using AUX 3 OUTPUT to feed the assisted listening transmitter. Since there's no master level control for AUX 3, it's necessary to adjust the level at the assisted listening transmitter. Like any other sound system component, it can be overdriven, causing clipping distortion (which is really painful when injected directly into an ear!).

Since those listening through this system will want to hear the full mix, a good way to establish the proper level into the transmitter is to set all the AUX 3 controls to their Unity Gain position and just nail them in place. Then, with a full mix crankin', set the input gain of the assisted listening transmitter for a loud but undistorted volume at a receiver. Since AUX 3 is a post-fader send, with all the send controls set at unity gain, you'll have the same mix in the Assisted Listening system as you have in the house. If the drummer is a serious pounder or the bass player has a giant amplifier, you might want to save what hearing those listeners have left by tuning the AUX 3 controls on those channels down a notch.

Recording

Worship houses often like to record their services, so we've provided a cassette recorder for that purpose. Connected to the TAPE OUT jacks, it will record whatever is happening. The recorder's outputs are connected to the TAPE IN jacks, so you can check the recording in the phones. Select TAPE as the CR SOURCE, and bring up the TAPE IN level control.



Feedback Alert! Make sure you don't accidentally assign the TAPE to MAIN MIX while you're recording.

If you want to listen to the tape playback through the PA speakers, press the TAPE TO MAIN MIX button. You probably don't want to do that while the service is in progress, however.

Adjusting the Record Level

We know that a lot of church sound folks don't run the system at rock'n'roll levels. The PA volume is fine, but the mixer output level is low, and they can't turn the gain of the recorder up high enough to get a good record level. The solution is to turn the gain of the PA amplifiers down so that the mixer can be run at a higher level. The PA volume will remain the same, but the recorder will now be seeing a higher level out of the mixer. See Gain Structure (page 205) in the Mixer Tips section for further discussion.

Multitrack Recording

We've shown a multitrack recorder connected to the SUB OUTPUTs for the purpose of recording the band or choir. Refer to the multitrack recording setups for suggestions on routing and patching to best fill the number of tracks you have available.

Notes
