Greyfield Audio/Video Frequently Asked Questions

Audio

Q. I have a system with multiple 5501 series audio consoles. Why do the consoles seem to have different outgoing volumes?

A. Check the firmware revision from the serial number label on the bottom of each console. Consoles with firmware revision 1.1 will have significantly more outgoing volume than consoles with revision 1.0. If these consoles must be mixed on the same system, use the following procedure to adjust the system.

1. Increase the mic sensitivity pot on the revision 1.0 consoles to maximum. This pot is accessible by puncturing the black dot on the label on the bottom of the console. Turn the pot fully counter-clockwise.
2. While using the revision 1.0 consoles, check the outgoing volume level at each customer lane and re-adjust the speaker gain pots on the matrix as necessary.
3. Reduce the mic sensitivity on the revision 1.1 consoles by turning the pot clockwise a little at a time and compare the outgoing volume with the revision 1.0 consoles. The goal is to match the volume from both versions.

Q. Why is there sometimes a "gurgling" sound from the incoming audio of a 5000 series audio console?

A. The audio processor used in 5000 series audio consoles has built in background noise cancellation. This feature works well to reduce constant and consistent background sounds such as idling vehicles or loud mufflers. However when the background noise is constantly changing, such as traffic noise from a nearby busy street, the processor can't keep up with the changes. This will cause a side effect that most people describe as an under water or gurgling sound. Vehicles sitting in front of a deal drawer have also been known to cause this symptom at some locations due to the sound bouncing between the building and vehicle, although this may not occur with all vehicles. The symptom gets worse as the gains on the matrix pots are increased, the volume adjustment on the console is increased, or the level of the background noise increases due to conditions such as heavier traffic or the presence of large trucks. Note that this "watery" sound is left over background noise and it should have no affect on the customer's voice at the lane.

Q. Is it possible to turn off the background noise cancellation feature of a 5000 series audio console?

A. Older 5001 consoles have background noise cancellation enabled at all times and it is not possible to turn it off. Later 5001 consoles and all 5501 consoles allow the ability to toggle this feature on/off on a console by console basis. With 5001 consoles press the volume up arrow while no lane is selected. The model number of the console determines which LED's indicate the status when this feature is toggled but in all cases GREEN = ON and RED = OFF. The indicator is as follows:

5001-1 .....Lane 1 LED 5001-6 .....Lane 1 & 2 LED's
5001-2 .....Lane 1 & 2 LED's 5001-12 .....Lane 1 & 3 LED's

All 5501 consoles have a dedicated noise cancel button & LED and also allow the feature to be toggled while a lane is selected. Keep in mind that turning background noise cancellation off will allow all noise at the lane to be heard, including a noisy vehicle or traffic noise.

Q. When a lane is selected using a 5000 series audio console, why are the first few words from the customer sometimes hard to understand?

A. To answer this question it is necessary to explain the echo canceller feature in the 5000 series consoles. Since these consoles operate in full duplex, the teller's voice going out the customer speaker is picked up by the customer microphone which then comes back through the teller speaker.

The result is the teller hearing their own voice. The echo canceller in the 5000 series consoles works to reduce that effect. The echo canceller can have either dynamic or fixed learning. Dynamic learning adjusts to its environment each time a teller selects a lane whereas fixed learning stays at a factory preset value. Dynamic learning can cause what some people describe as "robot voice" in certain environments when the lane is initially selected and then clears up after "learning" has been accomplished which could take a few seconds. Fixed learning will eliminate this condition but the echo canceller will not work as well so there will be more of a tendency for the teller to hear their own voice coming back through the console speaker. This condition will be worse with higher settings of the speaker/mic pots on the matrix or when customer units have their speaker and microphone in close proximity to each other. The varying acoustics from sound bouncing off the customer's vehicle also has an effect. The type of learning is determined by feature switch #7 on the audio matrix as follows:
Switch 7 UP .....DYNAMIC Echo Canceller Learning (Factory Setting)
Switch 7 DOWN.....FIXED Echo Canceller Learning
For 5001-1 consoles which have no matrix, switch #1 on the main board inside the console has this same effect. Be sure to cycle power to the system any time this switch is changed. *Note that older versions of 5001 consoles have varying degrees of "learning" and this switch may not operate the same.*

Q. The teller can hear their own voice through the console speaker when certain lanes are selected. Also there is sometimes feedback. What can be done to prevent this?
A. Any console that operates in full duplex can exhibit these problems if the customer speaker and microphone are too close together and the volume levels are too loud. Sound bouncing off the customer vehicle also contributes to this. 5000 series consoles have an echo canceller feature which reduces the effect of this condition. See the previous question for more information on the echo canceller. It is also possible that the wrong type of cabling was used from the matrix to the lane. If a shielded pair is not used for the microphone there can be enough capacitive coupling from the speaker wires to the microphone wires to cause these problems since the microphone operates with an extremely small amount of current. NEVER use a 6 conductor cable with an overall shield.

Q. What is the proper cable to use from the audio matrix to the customer lanes?
A. Greyfield offers a cable (GE0680) that is ideal for this application. It has a 16AWG twisted, unshielded pair for the speaker, a 20AWG twisted, unshielded pair for the call button and a 20AWG twisted, shielded pair for the microphone. Be sure to use 16AWG wire for the speaker if different cabling is used. Heavier speaker wire may be needed for distances over 180 feet. The microphone wire must be a twisted, shielded pair. The shield must be attached to terminal 7 of the lane connector on the matrix but cut off and taped at the customer end. Also be sure to ground the matrix.

Q. I have an installation with a long cable run and I can't get adequate outgoing volume to the customer lane. It would be very difficult to pull a larger wire gauge speaker cable. Do I have any other option?
A. A Cat 5 Lane Speaker Driver Kit (GE0958-KIT) is available and allows Cat 5 cable to be used in place of standard audio cable for distances up to 1000 feet. This same kit can be used with standard GE0680 audio cable that has extended length. A Cat 5 pigtail would have to be spliced to the standard cable at the lane since the cable connects to the driver board with an RJ-45 connector. The driver board in the kit presents a high impedance to the audio matrix which results in much lower current (less loss) across the speaker wires. 12VDC is required to power the board. If this voltage is not available in the unit you can use the power supply that is included with the kit; although a 110VAC outlet would then be required.

Q. What is the proper power supply to use with the various matrixes?

A. The proper power supply to use with each audio matrix is listed below. Video matrixes get their power from the audio matrix via the modular cable that is supplied with each video matrix. Likewise audio consoles get their power through their modular cables. ***Do not power cameras, monitors or any other device with the same power supply that is connected to the matrix.***

Matrix	**Power Supply**
5002-4 (and older 4 lane matrixes) *	GE10149 (12VDC, 2A)
5002-8 (and older 8 lane matrixes) *	GE10149 (12VDC, 2A)
5002-12 (and older 12 lane matrixes) *	GE10149 (12VDC, 2A)
5004 (and older 2 lane matrixes) *	GE0947 (12VDC, 1A) – Included with matrix
5006 (and older 2 lane matrixes) *	GE0947 (12VDC, 1A) – Included with matrix
5003	G571-001 (12VDC, 1A) – Included with matrix
* Any matrix that has 4101 consoles	GE0736 (12VDC, 5.5A)

Q. Is it possible to replace a defective console with a different model or series of console?

A. Generally speaking the answer is yes, but observe the following guidelines:

- Consoles within the same series can be substituted but the number of available lanes may be affected. For example, a 12-lane console could be used on a 2-lane matrix but only the first 2 lanes on the console would work. Likewise, a 2-lane console could be used on a 12-lane matrix but only the first two lanes would be available with that console.
- Consoles within the same series but of different revisions may not have exactly the same features. For example, a newer 5001 console has the ability to turn off background noise cancellation while an older 5001 console may not. Also the echo canceller "learning" may work differently.
- If there are multiple teller stations in a system, be aware of possible issues when mixing consoles from different series on a permanent basis. Besides feature differences, each series of console has a different quality of audio and may require different level settings with the matrix speaker & mic pots. It may be difficult to adjust the system for optimal performance with all consoles.
- A 5501 console will not work if it is substituted into a system that has the lane order reversed. This is determined by feature switch #1 on the audio matrix. This switch must be set to the up (normal) position when using 5501 consoles.
- If a 3000 series matrix is being used, it is recommended to only use 3000 series consoles. A 5000 series console may have issues at times such as a delay when selecting a lane or having to select a lane twice before it works. A 4000 series console may completely lock up.
- 3001-1, 4001-1 and 5001-1 consoles are stand-alone systems and they will not work with a matrix. *Don't be confused by the small interconnect board which is not a matrix.* The interconnect board for the 4001-1 or 5001-1 will work with either console. The interconnect board for the 3001-1 will only work with that console.

Q. Is it possible to replace a defective audio matrix with a different model of audio matrix?

A. Generally speaking the answer is yes, but observe the following guidelines:

- 4000 and 5000 series audio matrixes can replace each other with no problems even if the system has video. A 4000 series audio matrix will work fine with a 5000 series video matrix or vice versa.
- 4000 and 5000 series audio matrixes can replace 3000 series audio matrixes if the system does not have video. The communications and cabling to a 3000 series video matrix is different than 4000 or 5000 series video matrixes so in this case it would be necessary to replace both the audio and video matrixes.

- 3000 series audio matrixes should not be used to replace 4000 or 5000 series audio matrixes because of possible console issues – see the previous question. Also it would not be compatible with a 4000 or 5000 series video matrix.
- Whenever replacing an older matrix with a new one be sure to check the power supply. Older Samlex power supplies (3A or 10A) can develop problems as they age. As the capacitors dry out there will be AC ripple on the DC output. Also these power supplies are listed as 13.6VDC but the output has been known to rise as high as 18VDC or more as they age. This will cause equipment failures. The recommended power supply to use is GE0736 which is much smaller and rated at 12VDC, 5.5A.

Q. How can I change the call tone or call tone volume?

A. The instructions can be found on the audio matrix label but are listed below for reference. Any console in the system can be used to program these items.

1. Press the LANE 1 key while pressing the HOLD key. Lane 1 & 2 indicators will light orange.
2. Press the LANE 2 key to rotate through the call tone types until the desired tone is heard.
3. Press the LANE 1 key to rotate through the volume levels until the desired level is heard.
4. Press the ▼ key to select a single call tone (1 beep) or repeating tones (2 beeps).
5. Press the HOLD key to exit programming mode.

The instructions above are for all systems that have an audio matrix. The 3001-1, 4001-1 and 5001-1 consoles have a volume control for the call tone which is accessible from the bottom of the unit. The call tone type cannot be changed on these consoles.

Q. What do the switches on the audio matrix do?

A. The switches are identified on the audio matrix label but are listed below in greater detail for reference. Factory settings are shown in **bold** type.

Feature	Switch #	Switch Position	
		UP (OFF)	**DOWN (ON)**
Lane Order [1]	1	**Normal**	Reverse
Console Limit [2]	2	**2 Per Lane**	1 Per Lane
Delayed Unmute [3]	3	No Delay	**1 Second**
Delayed Unmute [3]	4	**No Delay**	2 Seconds
Aux. Audio Mode [4]	5	**Normal**	Noise Abate
Call Tone Default [5]	6	**Normal**	Erase
Echo Canceller [6]	7	**Dynamic Learning**	Fixed Learning
Background Noise Cancellation [6]	8	Off At Startup	**On At Startup**

[1] Determines whether the console lane buttons work from left to right (normal) or right to left (reverse). This switch must be UP for 5501 series consoles.

[2] Determines if more than one console can select the same lane at the same time. Volume levels will be reduced when multiple consoles select the same lane. This switch has no effect with a 5003 matrix.

[3] The mute circuit is wired so the closure of an auxiliary contact of the blower relay shorts across the lane microphone to mute the incoming audio while the blower is running. These switches determine the length of delay after the microphone short is removed until the incoming audio comes back on. The switches can be combined to give a 3 second delay.

[4] Noise Abate mutes the auxiliary audio (if used) until the call button is pressed or the lane is put on hold. This feature is generally used if the facility is near a housing development to prevent complaints from the residents. This switch has no effect with a 5003 matrix.

[5] This determines whether the call tone programming goes back to factory default (erase) when the system goes through a reset or whether the programming is saved (normal). The programming is always saved with a 5000 series audio matrix regardless of the position of this switch.

[6] These switches as listed are for features in 5000 series consoles. They are explained in detail in previous questions in this document.

Q. Why are the MIC DC switches not present on the current 5000 series audio matrixes?

A. These switches were used to set the type of customer lane microphone. The switch needed to be set to the down (DC) position for electret microphones and to the up position for dynamic microphones. It was somewhat common for these switches to be set wrong during installation and then the lane microphones would not work. For this reason, and because it is extremely rare that dynamic microphones are used, the switches have been omitted and the matrix boards have been internally set to the DC position. If it is absolutely necessary to use dynamic microphones with these matrixes contact Finetech Tech Support at 877-236-0245 for guidance.

Q. What are the requirements for the auxiliary audio input on the matrix?

A. This is a standard line level input like you would find on the output of a computer sound card. A level adjustment next to the RCA connectors on the matrix controls the volume. Left and right channel connectors allow for connection to a stereo source but they will be mixed together for a mono output at the customer lane. If a mono source is used, either input on the matrix can be used.

Q. The console cable that ships with each audio console is too short for a particular installation. Can I make a longer cable without causing problems?

A. This cable has been tested at lengths up to 50 feet with no problems. Use standard category 5 cable with wire colors matching at each RJ45 connector. Contact Finetech tech support (877-236-0245) for guidance if greater lengths are needed.

Q. I have a problem site where the matrix and/or audio consoles are failing prematurely. Sometimes cycling power to the system will cause it to start working again. What could be happening?

A. You should start by checking for power problems, especially if this is an old building. “Dirty” power with voltage spikes or current surges can cause all kinds of problems with electronic equipment. Static electricity also causes problems and is generally more likely during the winter months. All consoles with a metal chassis should have a ground wire (16AWG or larger) attached at the rear to help divert static around the components. Attach the ground wire to the best ground source available. An electrical ground is usually adequate. In severe cases it may be necessary to use static mats or take other means to prevent static from happening. 5501 series consoles are less likely to be affected by static electricity than any of the other consoles.

Q. What can be done about wind noise at the customer lane?

A. Greyfield has an External Universal Microphone Assembly (GE0957) that has worked well in several locations that were experiencing wind noise problems. It incorporates a combination of foam, scotchbrite and a large screened opening to break up the wind. It has been found to work best when the wind is blowing across the face of the unit rather than directly into the front. A vehicle at the lane should block most of the direct wind. The assembly mounts to the top of a pneumatic unit.

Q. I have received complaints that customers using the handset with a remote unit can hear other tellers speaking to other customers. What could cause this?

A. There are multiple things to consider for this issue as follows.

(1) Contact Finetech Tech Support (877-236-0245) with the model and serial number of the matrix to determine if that matrix needs a modification. Also look for any stickers on the matrix indicating an upgrade was performed at the Finetech repair center.
(2) If the handset board is a model 4012, remove the yellow wire coming from the handset and add a 6.8k resister in series with the wire.
(3) If the handset board is a model 5012, look for resistor R11 near the terminal strip. If a jumper wire is installed instead of a resistor either replace the jumper with a 6.8k resistor or add the resistor in series with the yellow handset wire as in step 2.
(4) Adjust the speaker & mic gain pots on the matrix using the local speaker and microphone in the remote unit, **not** the handset. Keep the gains as low as possible without the audio being too weak. Since the remote units using handsets are often installed indoors it is not necessary, nor desirable, for the speaker volume to be very loud.
(5) Lift the handset off the cradle and adjust the gain pots on the 5012 / 4012 board for adequate volume with the handset. As before, don't set the volumes louder than necessary.
(6) If the tellers sometimes use headsets don't overlook the possibility that the headsets are not adjusted properly resulting in excessive volume at the remote unit.

Q. I am installing a Plantronics CS50 / CS55 wireless headset to an audio console and I can't get it to work. What could be wrong?
A. One possibility is the phone cable is plugged into the wrong jack on the base unit of the CS50 / CS55. Be sure to use the jack with the picture of a complete telephone, not the handset jack. It's also possible that the 5014 wireless interface adapter is being used where it is not needed. Many newer 5001 consoles and all 5501 consoles have a phone jack next to the RJ45 matrix cable jack. With these consoles the base unit of the wireless headset should plug directly into the console and the 5014 should not be used. Consoles without the phone jack will require the 5014. In this case the pins from the 5014 may not be making proper contact in the phono jacks of the console. Open up the console and loosen the 3 screws that hold the console board to the bottom of the chassis. Slide the board to the rear and tighten the screws. Plug the 5014 in and out of the console several times to help clean the contacts which may have gotten dirty or corroded over the years. It is also highly recommended to use the sheet metal screw that is supplied with each 5014 to secure it to the console. This is especially important with 5001-1 consoles. A slot in the 5014 allows the console ground wire to attach using the same screw.

Q. How do I change from console to headset use when the console is not using the 5014 adapter?
A. With 5001 consoles the camera button on the keyboard is also the wireless button. While no lane is selected this button will toggle between console mode and wireless headset mode. A yellow LED directly under the microphone boom indicates wireless mode. 5501 consoles have a dedicated button for this purpose. The yellow LED is next to the button.

Q. What is the proper procedure for adjusting the CS50 / CS55 wireless headset?
A. 1. Make sure to first adjust the lane speaker & mic pots on the matrix for proper levels using the console mode, not the wireless mode.
2. Set the master talk switch on the bottom of the CS50 / CS55 base to the B position.
3. Set the master listen switch on the back of the CS50 / CS55 base to the 2 position.
4. Set the console to the wireless mode and then use the fine tune adjustments on the CS50 / CS55 to balance the audio levels to match the console mode. The + and – buttons on the back of the base are for fine tuning the talk volume. The roll switch on the headset adjusts the listen volume.

Q. My Plantronics CS50 / CS55 wireless headset quit working and causes a loud static sound at the customer lane. What could be wrong?

A. Power surges or static electricity are the most likely causes of this symptom according to Plantronics tech support. Use the following steps to reset the headset and correct the problem.
   1. Press both the talk button and the mute control button on the headset for 5 seconds. (The mute control is the volume control pressed in.)
   2. When the talk indicator light on the headset blinks, release both buttons.
   3. Press the talk button again.
   4. Remove power from the base unit for 5 seconds and then power it back up.

Q. I have two sites with wireless headsets. At one location the teller call tones come through the headset and at the other site the call tones come through the console speaker. Why is this?

A. This has to do with the circuitry of the console board and whether it has a built-in wireless headset jack. Newer 5001 and all 5501 consoles have the built-in jack and the teller call tone will always come through the console, even when it is in headset mode. Consoles that do not have this jack require the 5014 adapter to connect a wireless headset. With most of these consoles the call tone will only sound through the headset while the toggle switch is in headset mode. It is not possible to change how this works on a given console since the board design is the determining factor.

Q. Is there any other wireless headset system available for the Greyfield audio consoles besides the Plantronics CS50?

A. There are many different wireless headsets on the market from various manufacturers and most of them would probably work fine but the only one currently sold by Greyfield is the Plantronics CS50. Another one that is known to be compatible is the Jabra GN9330e. This unit has a user replaceable spare battery with charger available as an option. It also allows a different headset to be quickly linked to the base with the push of a button. Follow the link below for more information on this product. http://www.jabra.com/na-us/headsetsolutions/pages/jabragn9300.aspx Note that Greyfield cannot guarantee compatibility with other headsets, so try them at your own risk.

Video

Q. Is it possible to use audio and video matrixes from different series together on the same system?

A. 4000 and 5000 series audio and video matrixes can be interchanged. 3000 series audio matrixes can only be used with 3000 series video matrixes since the communications and cabling are different.

Q. I have an application requiring one-way video. Is a video matrix available for one-way use only?

A. All video matrixes currently manufactured are bidirectional. For one-way video just use the lane camera and console monitor connectors.

Q. What are the dip switches on the end of the video matrix for?

A. The dip switches set features in the video matrix as follows. Factory default settings are shown **bold**.

Feature	Switch #	Switch Position	
		UP (OFF)	**DOWN (ON)**
Idle Console View	1	Driveway Camera Only	**All Cameras**
Auxiliary Video [1]	2	Normal	**Static**
Not Used	3	**X**	
Lane Shift [2]	4	**Normal**	Shifted
Not Used	5	**X**	

[1] The static position generally works best for most video signals. If the auxiliary video does not work, try the normal position.

[2] This switch causes the lane numbers on the video matrix to be associated with the next higher lane number on the audio matrix. For example, assume a facility has 5 lanes of audio with lane 1 being a deal drawer and lanes 2 through 5 being pneumatic units. If video was only being used on the pneumatic units you could get by with a 4-lane video matrix by shifting the lanes on the video matrix so they would be associated with audio lanes 2 through 5.

Q. What are the requirements for the auxiliary video input on the video matrix?

A. This input requires an industry standard 1V peak to peak composite video signal, the same as the output from a CCTV camera. Typical sources for this signal are the video output of a DVR or a computer that has a video card with a composite video output.

Q. I just installed a video matrix that I know is good but one or more teller monitors will not lock in on any lane camera when that lane is selected. What could be wrong?

A. Make sure that the teller positions match up on the audio and video matrixes. For example if an audio console is plugged into CONSOLE 2 of the audio matrix, the camera and monitor for that teller must be plugged into CONSOLE 2 of the video matrix. Also make sure that the termination switches are set properly for each lane camera and the driveway camera (see the following question).

Q. When a teller selects a particular lane, the teller monitor either doesn't lock in on that lane camera or it will lock in initially but then start cycling between lanes again. The problem may be intermittent and not all lanes may be affected. What causes this?

A. The termination switches, labeled TERM, are probably not set properly for each lane camera and the driveway camera on the video matrix. These switches terminate the cable at 75 ohms which is required for the end of the run for any CCTV signal. If the cable from the camera "terminates" at the video matrix, the switch should be ON. If there is a t-tap at the video matrix to send the camera signal on to some other device, such as a DVR, the switch should be OFF because the end of the run is now the DVR and the termination should happen there. Keep in mind that the video signal will still be reduced any time a t-tap is used. If the DVR has true looping outputs, meaning the signal is regenerated, it would be best to run the cables from the lane cameras to the DVR first and then terminate them at the video matrix. When troubleshooting this type of problem on a system that has t-taps, and the termination switches are set properly, try removing the t-taps temporarily and terminate the cables at the matrix. If the system works properly at this point, the problem may be weak outputs from the cameras or signal loss from long cable runs. It is also possible that the DVR was not terminating the cable properly. Also make sure that the coax cable is intended for CCTV and that 75 ohm BNC connectors are being used. Belden 1426A is a very good cable to use for this application and should work for cable runs up to about 800 feet.

Q. I just installed one or more 5517 customer video units and the monitors won't work. What could be wrong?

A. The power supply for each 5517 connects to a relay module near the top of the video unit. The camera power is prewired to the unswitched output and the monitor power is prewired to the switched output of the relay module. A GE0885 Video Power Control Kit is normally used to control the relays from inside the facility so the monitors can be turned off after hours. If this kit is not being used, or not yet installed, simply move the monitor power wires to the unswitched output of the relay board.

Q. I just installed 5550 teller video units or 5517 customer video units and the monitors always show the camera from that unit. What could be wrong?

A. The most likely cause is the service switch inside the unit being in the service position. In this mode the video cables leaving the unit are disconnected and the camera is internally connected directly to the monitor.

Q. I just installed 5550 teller video units or 5517 customer video units. The monitors worked at first but now I cannot get a picture. What could be wrong?

A. If a blue box appears on the screen with a message that says “AV No Signal”, the monitor is working but it is not receiving a video signal. If the message says “SV No Signal” or “VGA No Signal” the video input source has been changed. The left button on the adjustment board which is mounted in the top left of the unit changes the source. Press this button to cycle through the choices to get the input set for AV.