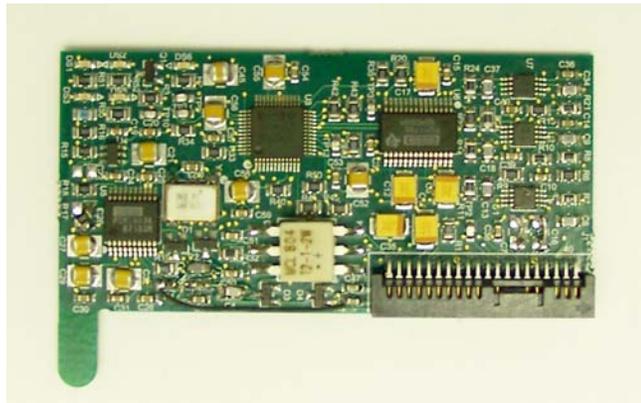




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STX Stereo Generator Option

Stereo Generator Installation

Application Guide

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1 STX Stereo Generator Option

1.1 Overview of Installing the Stereo Generator.

Successful installation of the STX LP Stereo Generator will depend on both the hardware and software version of the installed exciter board (part number 919-4000) and the software version of the installed controller board (part number 919-4030).

First, the stereo generator is only supported with exciter or controller software version 1.3 or newer. If the exciter or controller software version is at 1.2, it can and will need to be updated. The latest version of software, with install instructions, can be downloaded free of charge from the Registered User Section of the BE Support website. If the exciter or controller software version is older than 1.2, the exciter board (part number 919-4000) and controller board (part number 919-4030) will need to be replaced. Contact BE RF Technical Services for assistance.

Software Compatibility Chart

Subassembly	Version 1.1 and <	Version 1.2	Version 1.3 and >
Exciter Board (919-4000)	Replace Board	Update Software	No Action Required
Controller Board (919-4030)	Replace Board	Update Software	No Action Required

Second, the stereo generator is only supported with exciter hardware version equal to deviation 1212 (released July 21, 2009). If your unit shipped from the factory prior to July 21, 2009, the exciter board (part number 919-4000) will need to be replaced. Any unit shipped July 21, 2009 or after will be fully compatible with the stereo generator and no action is required. Contact BE RF Technical Services for assistance.

Hardware Compatibility Chart

Subassembly	Deviation 1212 not Installed	Deviation 1212 Installed
Exciter Board (919-4000)	Replace Board	No Action Required
Controller Board (919-4030)	n/a	n/a

Note: The STX LP Stereo Generator will operate properly only if both the software and hardware requirements, specified above, are met.

2 Upgrade Preparation

2.1 Overview / Estimated Completion Time For Upgrade

B.E. Stereo Generator (909-4020) contains the necessary items to upgrade the STX to Stereo operation. Installing the Stereo Generator will depend on what version of Exciter and Controller code you have. The basic installation and setup of the Stereo Generator will take about 25 minutes after the unit is on the bench.



2.2 Items / Tools required for the Upgrade Process

- No. 2 Phillips Screwdriver
- 909-4020 Optional Stereo Generator
- Software

2.3 Install the Optional Stereo Generator

To replace the optional stereo generator, refer to Figures 1 and 2, then proceed as follows:

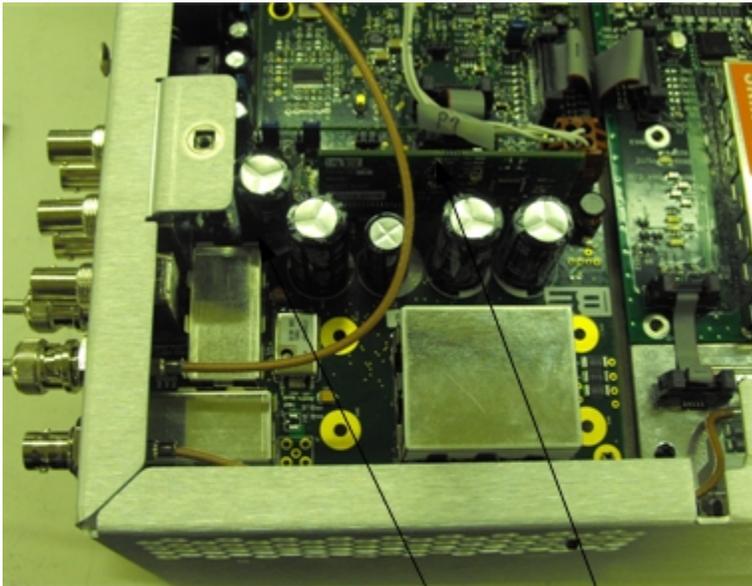


WARNING: ENSURE ALL PRIMARY POWER IS DISCONNECTED BEFORE PROCEEDING.



CAUTION: TO REMOVE OR INSERT THE STEREO GENERATOR PCB, GENTLY ROCK THE PCB IN THE SOCKET TO PREVENT DAMAGE TO THE SOCKET PINS.

1. Disconnect all transmitter primary power.
2. Using a #2 Philips screwdriver, remove the transmitter top cover.
3. Align the stereo generator circuit board tab with the hole and insert the board.
4. Replace the transmitter top cover.
5. Reconnect all transmitter primary power and Turn unit ON.



OPTIONAL STEREO GENERATOR
ASSEMBLY

EXCITER ASSEMBLY

Figure 1. Stereo Generator

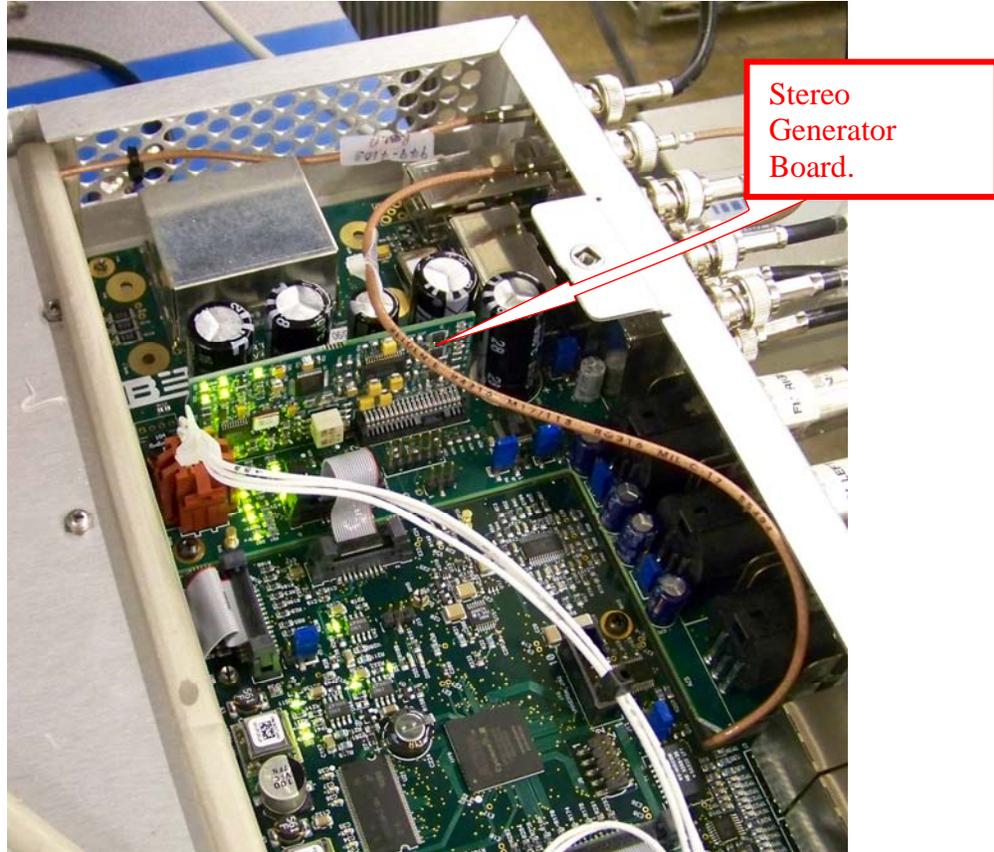


Figure 2. Stereo Generator Installation location.

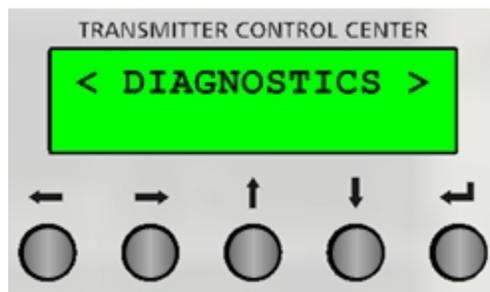
2.4 19 kHz Out Connections

The optional stereo generator board provides a 19 kHz pilot signal output for RBDS.

2.5 Diagnostics - Software Revision

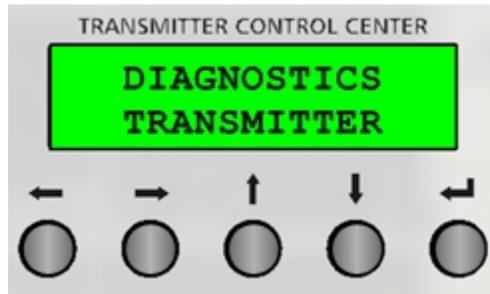
The diagnostics/stats menu allows the user to view transmitter software, proceed as follows:

1. Depress ↓ to display the Diagnostics menu.
The Diagnostics menu will appear.



2. Depress ↙.

The Diagnostics select menu will appear.



3. The ↓ ↑ buttons are used to select Stats Transmitter.
4. Depress ←.
5. The stats menu allows the user to view the transmitter stats. Use ↓ ↑ to view the following stats –
 - 100% Modulation Jumper
 - Transmitter Serial Number
 - Controller Board Serial Number
 - Software Version

Note the Software Revisions in your transmitter. The Stereo Generator of supported by revisions 1.3 or newer. If your unit has older revision 1.2, you must update the code as follows. If your unit has V1.1 you must replace the Controller and Exciter boards.

2.6 Software Update – Controller/Exciter

The transmitter controller and exciter contain software which can be changed using the STXLP software update application. The software update is performed locally at the transmitter with a direct connection between a PC and the transmitter.

The software update program requires a Windows computer with the following requirements -

- Windows XP – 500 MHz or greater.
- Windows Internet Explorer 6 or 7.

Terminate all other running programs during the download. It is recommended the computer be on the same local network as the transmitter. Once the software is downloaded to the transmitter, the controller must be reset or the AC power cycled (off then on) to load the new version. To update the controller/exciter software, proceed as follows:



NOTE: DO NOT CYCLE THE AC POWER DURING THE UPDATE PROCESS. ENSURE THE CODE HAS BEEN INSTALLED BEFORE AC POWER IS CYCLED.

1. Connect the transmitter to the PC. If a PC is to be directly connected to the transmitter, connect an Ethernet crossover cable between the PC Ethernet port and the transmitter ETHERNET connector. For direct PC connections, the PC must

be configured for the I.P. family of the transmitter. Ensure the PC is configured for the transmitter I.P. family.

2. Using Windows Explorer, copy all of the software files to a folder on the hard drive "C:\\" of the PC. Unzip the files (if they have been zipped) ensuring that all of the files remain in the "STXLP Upgrade" directory.
3. On the PC, terminate all running programs.
4. Terminate all transmitter I.P. users.
5. On the PC, using Windows Explorer, navigate to the directory on the hard drive of the PC where you copied the upgrade files to and double click on the **AutoUpdate.exe** application icon.

The AutoUpdate program will appear.

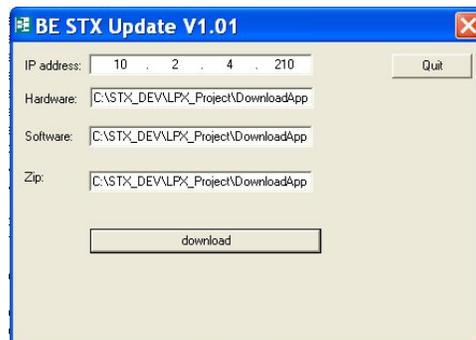


Figure 3. STXLP AutoUpdate Program

6. Once the **AutoUpdate** application has launched, enter the STXLP Transmitter I.P. Address.



NOTE: DO NOT CYCLE THE AC POWER DURING THE FLASH WRITE PROCESS.



NOTE: IF A PROBLEM OCCURS, SELECT CANCEL TO STOP THE DOWNLOAD.

7. Select DOWNLOAD.
The status bar presents the progress of the download and flash writing process. When finished, the new code will automatically start.
8. When finished, select QUIT.
9. Cycle the AC power (operate to off then on) to activate the code.
10. Check the software version using the DIAGNOSTICS TRANSMITTER menu to ensure it updated.
11. If the download fails such as from a lost I.P. connection, repeat the procedure.

2.7 Emergency Control – Backup Controller

If a controller fault occurs, the transmitter will be operating from the backup controller. When this occurs:

- The front panel CNTL LED will flash red.
- Depending on the failure, the LCD display will be blank or frozen.
- The transmitter will operate at the power level entered in the SETUP EMERGENCY PWR menu.
- Ignore all other front panel indicators. The indicators may not provide accurate information.
- The following remote functions will be functional: 1) mute, 2) failsafe, 3) transmitter on, 4) transmitter off, 5) AFC lock status, and 6) fault status.

The transmitter can be operated in this condition for an extended period of time. However, the unit will be operating with no automatic power control.

Typical causes of a controller failure are: 1) an improper download or 2) problems with the power supplies on the controller pcb assembly. To troubleshoot and repair the controller, the transmitter must be removed from on-air operation. To reprogram the software, refer to Software Update – Controller/Exciter in the preceding text and re-program the transmitter software. To replace the controller circuit board, refer to the Replace The Controller procedure in the following text.

3 Setup

The following section will present the procedures to initially turn on and setup the Stereo Generator Board. Information on the STXLP operating menus is presented in a menu tree at the end of the transmitter manual.

3.1 AES Connections

An AES source can be used for the audio input with the Stereo Generator board. Input level range is from -20 dbFS to 0 dbFS. -2 dbFS nominal. The input level range is from If AES audio is to be used –

1. Locate an XLR mating connector.
2. Attach the wires as follows –
 - Pin 1 – Ground
 - Pin 2 – Signal +
 - Pin 3 – Signal –

3.2 ANALOG L/R Connections

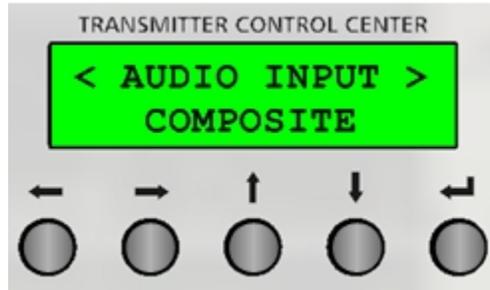
An analog L/R source can be used for the audio input with the Stereo Generator board. Input level range is from -15 dBm to +15 dBm. +10 dbm nominal. If analog L/R audio is to be used –

1. Locate 2 XLR mating connectors.
2. Attach the left channel wires as follows –
 - Pin 1 – Ground
 - Pin 2 – Signal +
 - Pin 3 – Signal –
3. Connect the cable to the LEFT connector.
4. Repeat the procedure for the right channel.

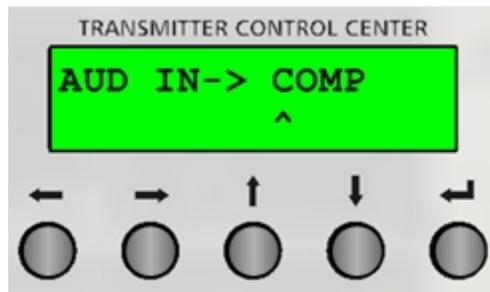


3.3 Select The Audio Input.

1. Depress ↓ to display the Audio Input menu.
The Audio menu will appear.



2. Depress ↵.
The Audio Input menu will change to the audio input select mode.



3. Use ↓↑ to select the audio input. Select between COMPOSITE, AES, or ANALOG.
4. Depress ↵.
5. *The audio input will be saved.*

3.4 Calibrate the Audio/SCA/RDS Inputs

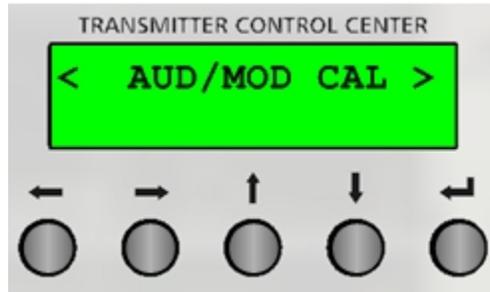
Once the input is selected, the inputs must be calibrated. The following procedure presents the calibration of the external composite input. The AES input calibration is identical to the external composite. The Analog input will require one additional input level calibration.

The procedures turn off all inputs with the exception of the source to be calibrated. Therefore, the unit must be removed from on-air operation. If SCA/RDS signals are used, the user must reduce the main channel audio level manually to prevent over modulation. The steps required to calibrate inputs are:

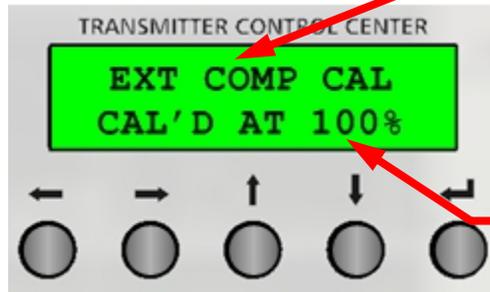
- Calibrate the main channel audio (example composite). If the analog input is selected, an additional input level calibration is required.
- Perform the deviation calibration if required.
- Calibrate the SCA/RDS inputs.

1 - CALIBRATE THE AUDIO INPUT -

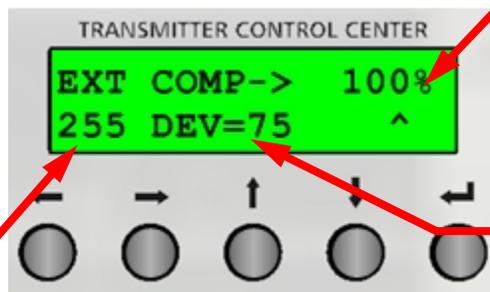
1. Apply the nominal signal to the selected input. Ensure no SCA/RDS signals are applied.
2. Depress ↓ to display the audio cal menu.
The audio calibration menu will appear.



3. Depress ↵.
A calibration menu will appear.
4. Use ↓ ↑ to select ext composite cal.



5. Depress ↵.
The edit calibration menu will appear



6. With the cursor in the 1's position, use ↓ ↑ to set the desired value. The number will not change if an upper/lower level limit is reached. If SCA/RDS and pilot signals are to be used, ensure the audio level is lower than 100% to allow the total deviation to be 100% when the SCA/RDS/pilot signals are added.

7. Depress ↵.

The calibration will be saved and the calibration menu will appear.

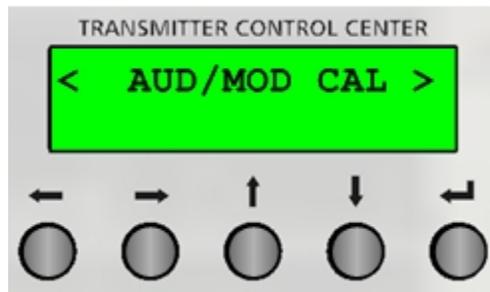
2 - REPEAT FOR AES AND ANALOG L/R -

Repeat the above procedure for the AES input with the optional stereo generator board. If the analog input is to be calibrated, the analog input level must be calibrated. To calibrate the input level, proceed as follows:

1. Apply the highest peak level audio to the analog input. Ensure no other signals are applied.

2. Depress ↓ to display the audio cal menu.

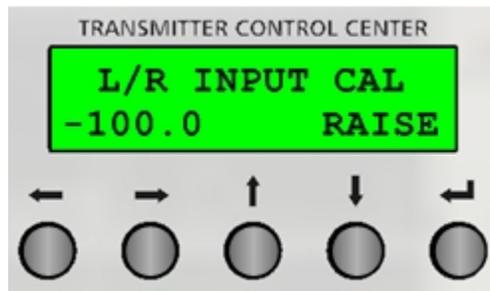
The audio calibration menu will appear.



3. Depress ↵.

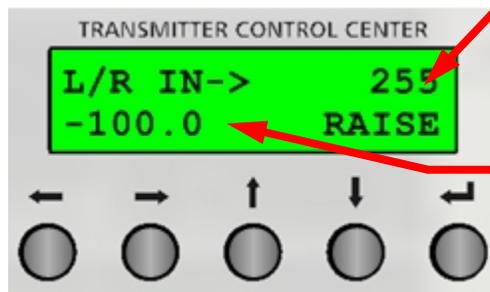
A calibration menu will appear.

4. Use ↓ ↑ to select left/right input cal.



5. Depress ↵.

The edit left/right input calibration menu will appear.



POT LEVEL.

INSTRUCTS USER TO USE THE
↓ ↑ BUTTONS TO INCREASE
OR DECREASE LEVEL, TO
MINIMIZE THE CALIBRATION
VALUE SHOWN .

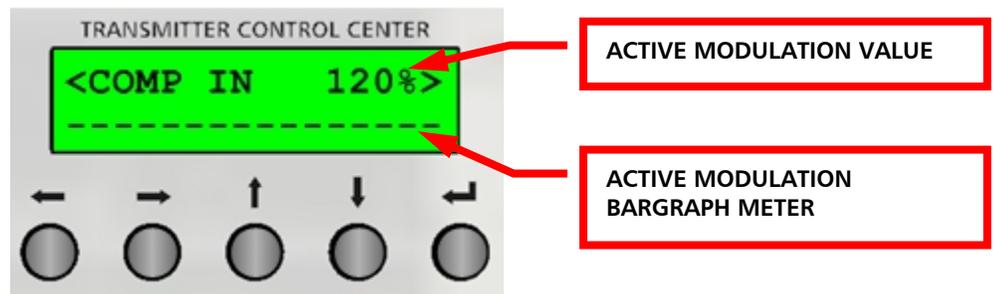
6. Check the left/right input level indication. The indication will present: 1) lower level or 2) raise level. Use ↓ ↑ to increase/decrease the pot level to minimize the calibration value shown. The value should be near 0.
7. Depress ↵.
The calibration will be saved.
8. Once the left/right input cal is finished, repeat the CALIBRATE THE AUDIO INPUT procedure for the left/right input.

3.5 Audio Input Level Menu

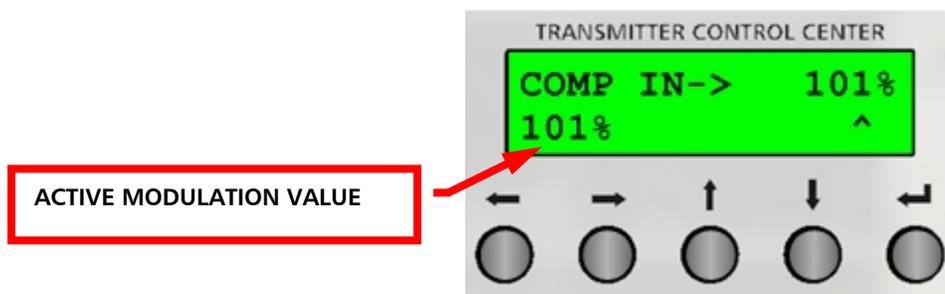
Once each audio input level has been calibrated, the Audio Input level menu allows each individual input to be adjusted. For units without the optional stereo generator board, the only input is COMPOSITE. For units with the stereo generator board, the input options are: 1) COMPOSITE, 2) AES, or 3) ANALOG L/R.

The following procedure sets the COMPOSITE input. The input level directly changes the modulation level. Therefore, the number entered is in percent of modulation.

1. Depress ↓ to display the Audio Input Level menu (audio source with a bargraph).
The Audio input level menu will appear.



2. Depress ↵.
The Audio Input Level menu will change to the audio input level set mode.

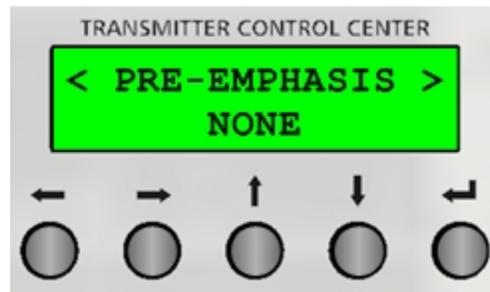


3. Use ↓ ↑ to set the desired input level. The number will not change if an upper/lower level limit is reached.
4. Depress ← .
The composite input level will be saved.
5. Repeat the procedure for the AES and ANALOG L/R inputs.
The Audio Input menu will change to the audio input select mode.

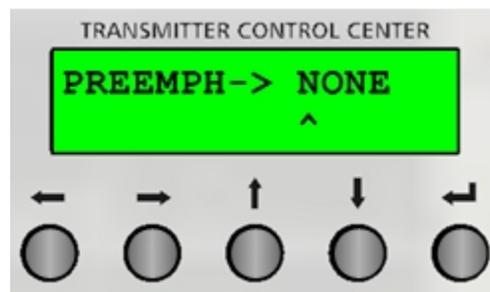
3.6 Set The Preemphasis

If the optional stereo generator circuit board is installed, the Preemphasis must be set.

1. Depress ↓ to display the PreEmphasis menu.
The Preemphasis menu will appear.



2. Depress ↙.
The Preemphasis menu will change to the Preemphasis select mode.

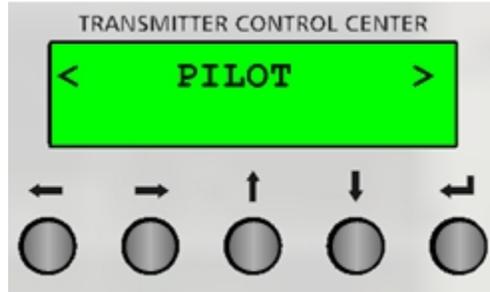


3. Use ↓ ↑ to select the preemphasis. Select between NONE, 50 uS, or 75 uS.
4. Depress ↙.
The preemphasis will be saved.

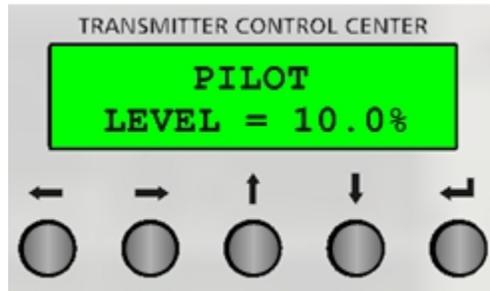
3.7 Set The Pilot Level And Enable/Disable The Pilot

The pilot level must be set when the optional stereo generator circuit board is installed. The pilot will be on when the unit is in stereo mode and off when the unit is in a mono mode. The pilot can also be enabled or disabled manually for testing using pilot on/off. This manual pilot override will be active until the unit ac power is cycled or the operator returns the pilot to normal operation. To disable the pilot during normal stereo operation, enter 0 for the pilot level.

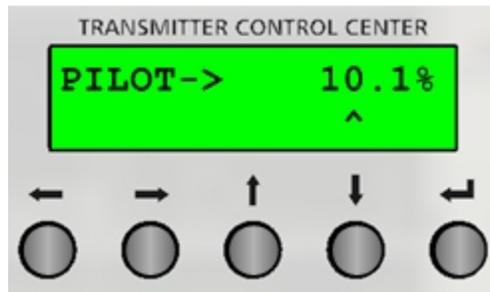
1. Depress ↓ to display the Pilot menu.
The Pilot menu will appear.



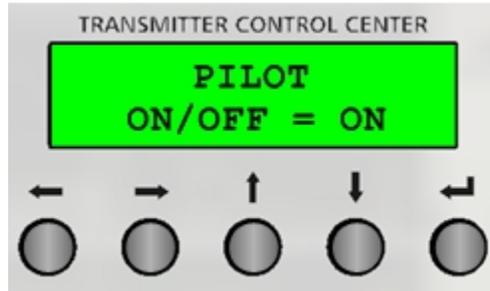
2. Depress ↵.
3. Use ↓ ↑ to select the level menu.



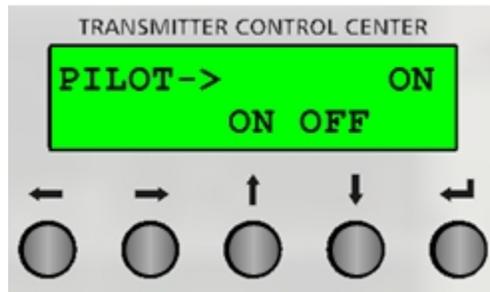
4. Depress ↵.
The pilot edit level menu will appear.



5. Use ↓ ↑ to set the input. To set the 10 % position, set level to 9 and select ↑ to increment. The number will not change if an upper/lower level limit is reached.
6. Depress ↵.
The pilot level will be saved.
7. Use ↓ ↑ to select the pilot on/off menu.



8. Depress ↵.
The pilot on/off select menu will appear.

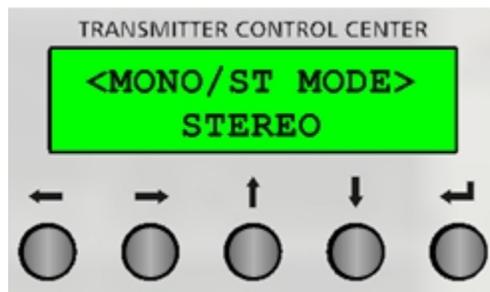


9. Use ↓↑ to enable or disable the pilot.
 10. Depress ↵.
The pilot selection will be saved.

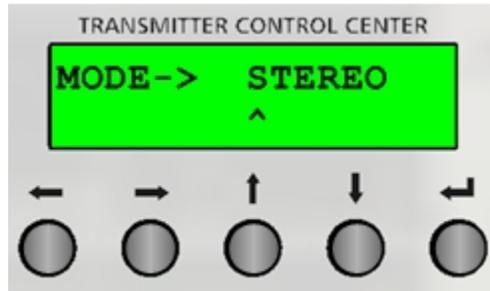
3.8 Set The Mono/Stereo Mode

The mono/stereo mode must be set to the desired mode. The pilot will be on when the unit is in stereo mode and off when the unit is in a mono mode. The pilot can also be enabled or disabled manually for testing using pilot on/off. This manual pilot override will be active until the unit ac power is cycled or the operator returns the pilot to normal operation. The mono/stereo options are: 1) mono L, 2) mono R, 3) mono L+R, and stereo. To set mode, proceed as follows:

1. Depress ↓ to display the Mono/St Mode menu.
The Mono/St Mode menu will appear.



2. Depress ↵.
The Mono/St Mode menu will appear.



3. Use ↓↑ to select the mode. Select between STEREO, MONO L, MONO R, or MONO L+R.
4. Depress ←┘.
The Mono/St Mode will be saved.

4 RF Technical Services Contact Information

RF Technical Services -

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