

GX-500

Telephone Remote Mixer

OPERATING INSTRUCTIONS



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QUICK START.

1. The GX-500 can be operated from the internal battery supply or the ac power adapter. If the unit is to be operated from an ac power supply: 1) connect the GX-500 power supply ac input cord to a 100 to 240V 50/60 Hz ac power supply receptacle and 2) connect the dc cord to the **PWR** receptacle on the rear-panel. When the unit is operated from the ac power adapter, the power supply is used to simultaneously operate the unit and charge the internal battery pack. If the unit is to be operated from the internal battery supply, no power supply connections are required.
2. Connect the telephone line cable supplied with the unit between an available telephone line jack and the GX-500 **TELE LINE 1** receptacle.
3. Connect the microphones used for the broadcast to the **MIC 1**, **MIC 2**, **MIC 3**, or **MIC 4** receptacle on the rear-panel. Connect the headphones used for the broadcast to the **HP 1**, **HP 2**, **HP 3**, or **HP 4** receptacle on the rear-panel. If a cassette recorder is being used to playback audio for the broadcast, connect the recorder to the **AUX IN A** or **AUX IN B** receptacle on the rear-panel. If a cassette recorder is being used to record the broadcast, connect the recorder to the **AUX OUT** receptacle on the rear-panel. If the station on-air signal is to be monitored using the headphones, connect a cable between the **RADIO IN** receptacle on the rear-panel and the earphone jack of a portable radio.
4. Operate the following switches to the appropriate positions:
 - A. Operate the **POWER ON/OFF** switch to **ON**.
 - B. Operate the **RADIO IN/NORMAL** switch to **NORMAL**.
 - C. Operate the **EX IN/NORMAL** switch to **NORMAL**.
 - D. Operate the **SQ MUTE/NORMAL** switch to **NORMAL**.
 - E. Operate the **CUE/MIX** switch to **MIX**.
 - F. Operate telephone line 1 **LINE SEIZE/DISCON** switch to **DISCON**.
 - G. Operate the **TONE/PULSE** switch to **TONE**.
 - H. Operate the **LINE 2 MUTE/NORMAL** switch to **NORMAL**.
 - I. Operate the **LINE 2 LINE SEIZE/DISCON** switch to **DISCON**.

5. Apply program audio to the unit and observe the LED bargraph VU meter. Adjust the **CH1–CH4** level controls until the **VU** bargraph meter indicates **100%** VU consistently on peaks and only occasionally illuminates the red LEDs on very loud sound bursts. If the microphone levels are properly set, the **LIMITING** LED will illuminate infrequently. Adjust the headphone system for a comfortable listening level using the **HEADPHONES** volume control. If a radio is connected to the **RADIO IN** receptacle, use the **RADIO IN/NORMAL** switch to select radio audio or headphone audio. Adjust the radio level using the radio volume control.
6. Operate all unused microphone channels to position 0.
7. When an incoming telephone call is routed to the unit, the GX–500 electronic ringer will chirp. To answer the call, move the line 1 **LINE SEIZE/DISCON** switch to **SEIZE**. The **LINE 1** LED will illuminate. Communicate with the calling party using the headphones and microphone. To hang–up, move the **LINE SEIZE/DISCON** switch to **DISCON**.
8. To place a call from the unit, move the line 1 **LINE SEIZE/DISCON** switch to **SEIZE**. Ensure the **DIAL SELECT** switch is in the **LINE 1** position (switch in). Adjust the **HEADPHONES** control if required to detect a dial tone in the headphones. Move the **TONE/PULSE** switch to **TONE** for touch–tone dialing. If the telephone line will not respond to the touch–tones, move the **TONE/PULSE** switch to **PULSE** and re–dial the number. Leave the **LINE SEIZE/DISCON** switch in **SEIZE** position for the duration of the broadcast. During breaks, 2–way communication with the studio can be performed using the headphones.
9. If the unit is operating from the internal battery pack, the **BATT LOW** indicator will illuminate when the battery pack is almost completely discharged. The indicator will illuminate approximately 15 to 30 minutes prior to the complete discharge of the battery system. During this time period, an alternate ac power supply must be located.

When the battery supply requires recharging, the supply can be charged during on–air operation or when the unit is off–the–air. If the unit is off–the–air, ensure the **POWER ON/OFF** switch is operated to **OFF**. Connect the ac power adapter: 1) ac line cord to a 100V to 240V 50/60 Hz power supply and 2) dc cord to the **PWR** receptacle on the rear–panel.

Depending on the condition of the battery pack, the **BATT CHARGE** indicator will illuminate steadily or flash slow. If the **BATT CHARGE** LED illuminates steadily, this indicates the charging system is in fast-charge. This mode will last approximately 3.5 hours and allow the unit to operate for approximately 12 hours. If the **BATT CHARGE** indicator flashes on for 0.125 seconds and off for 1.375 seconds (slow flash), this indicates the charging system is in the charge pending mode. This mode slowly increases the battery voltage prior to fast charge.

When the fast charge mode has been completed, the **BATT CHARGE** indicator will flash on for 0.125 seconds and off for 0.125 seconds (fast flash). This indicates the charging system is in the top-off charge mode. This mode constantly pulses current into the batteries.

GX-500 Telephone Remote Mixer

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FCC REGISTRATION NUMBERS.

The unit utilizes an FCC approved electronic ringer bearing the following designations: FCC Number AZ-389G-67947-KX-N. The Ringer Equivalency Number is 0.4A, 1 B. The jack number is RJ11 C.

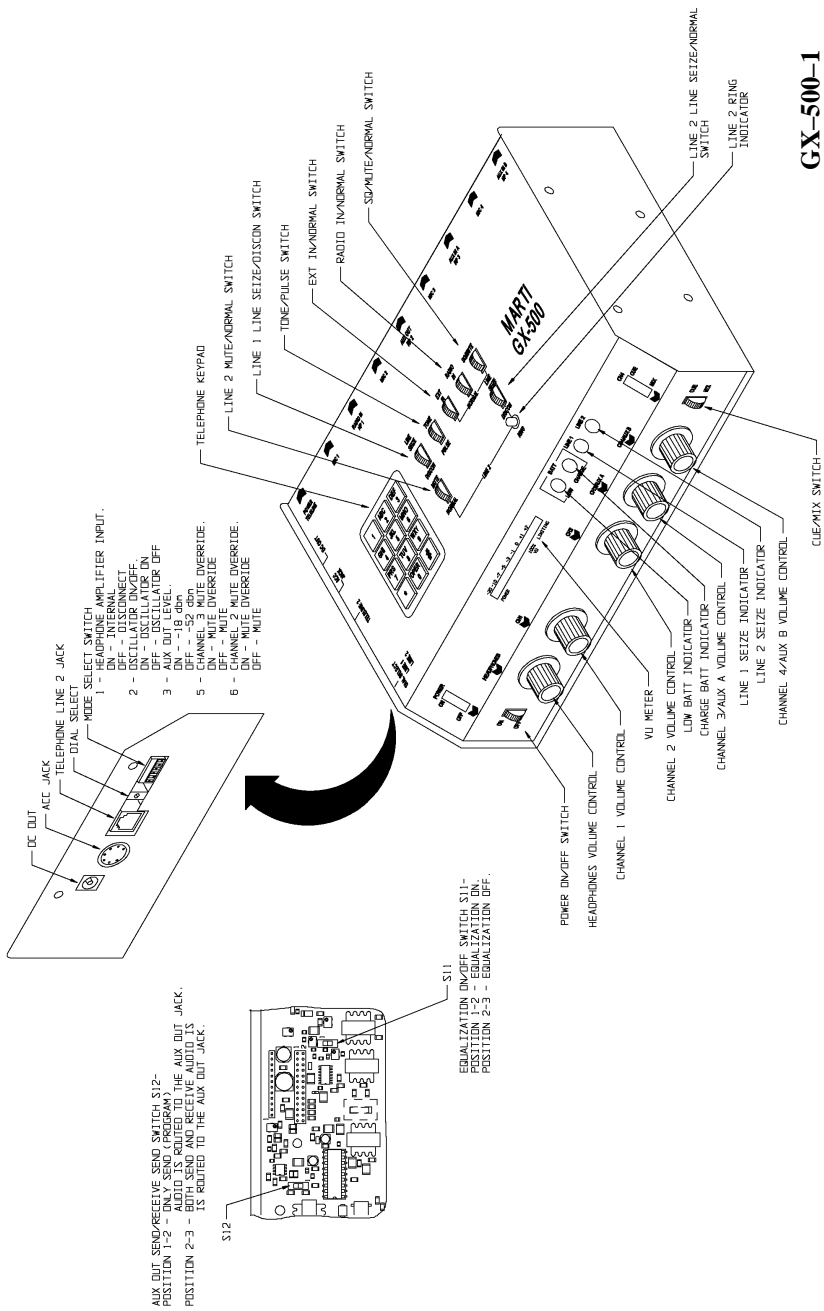
INTRODUCTION.

The GX-500 is a telephone remote mixer designed for broadcasting remote events such as ball games (refer to Figure 1). The following text presents installation, operation, and maintenance information for the GX-500 Telephone Remote Mixer. Read the information contained in this manual before attempting to use the unit. If questions about the unit are encountered, contact *MARTI* Electronics for further assistance.

SPECIFICATIONS.

TABLE 1. GX-500 SPECIFICATIONS (Sheet 1 of 3)

PARAMETER	SPECIFICATION
MIXING CHANNELS	4 Channels. Rotary Controls With Scale Reference.
MICROPHONE INPUTS	4 Inputs. Active Balanced, Low Impedance.
MICROPHONE CONNECTORS	XLR – Female.
AUXILIARY INPUTS	2 Inputs. 600 Ohm Transformer Isolated.
AUXILIARY INPUT CONNECTORS	1/4 Inch Monophonic Phono Connectors.
AUXILIARY INPUT CHANNELS	Mix On Channels 3 And 4.
AUXILIARY OUTPUT	1 Output. Monophonic, 600 Ohm, Transformer Isolated.
AUXILIARY OUTPUT SIGNAL	Monophonic Send Or Send/Receive Audio.
AUXILIARY OUTPUT LEVEL	Mic Level: –52 dBm Or Line Level: –18 dBm.
AUXILIARY OUTPUT CONNECTOR	1/4 Inch Monophonic Phono Connector, Insulated From Chassis.
CUE CHANNEL	Channel 4. Routes To Headphone Audio With CUE/MIX Switch In CUE.
HEADPHONE OUTPUTS	4 Outputs. 80 Ohms To 600 Ohms, Monophonic Audio.
HEADPHONE OUTPUT CONNECTORS	1/4 Inch Stereophonic Phono Connectors.
RADIO MONITOR INPUT	1 Input. Monophonic, Not–Amplified, Switchable.
RADIO MONITOR INPUT CONNECTOR	1/4 Inch Stereophonic Phono Connector.



- TELEPHONE LINE 2 JACK
- MODE SELECT SWITCH
- 1 - MUTE/DISCONNECT
 - 2 - OSCILLATOR OFF
 - 3 - AUX OUT LEVEL
 - 5 - CHANNEL 3 MUTE OVERRIDE
 - 6 - CHANNEL 2 MUTE OVERRIDE

- AUX OUT SEND/RECEIVE SEND SWITCH S12-
- POSITION 1-2 - ONLY SEND (PROGRAM) TO THE AUX OUT JACK.
 - POSITION 2-3 - BOTH SEND AND RECEIVE AUDIO IS IS ROUTED TO THE AUX OUT JACK.

- S11
- EQUALIZATION ON/OFF SWITCH S11-
- POSITION 1-2 - EQUALIZATION ON.
 - POSITION 2-3 - EQUALIZATION OFF.

GX-500-1

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FIGURE 1. GX-500 CONTROLS AND INDICATORS (Sheet 1 of 3)

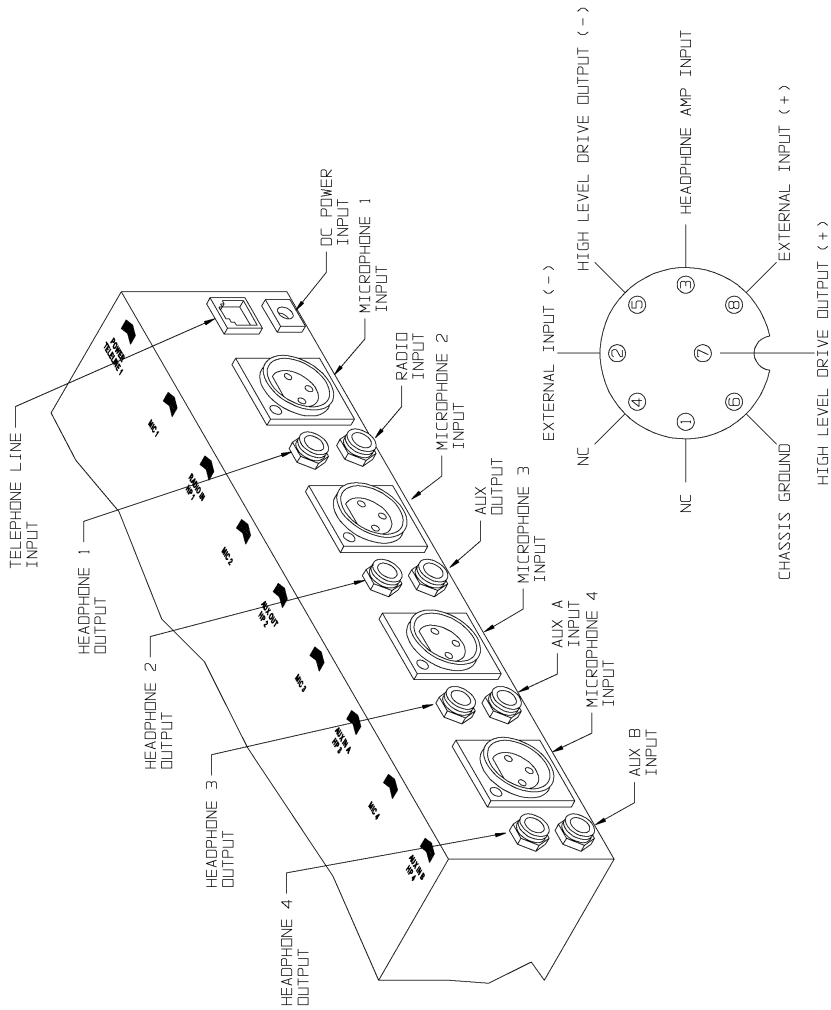


DIAGRAM #2
FRONT PANEL VIEW

GX-500-2

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FIGURE 1. GX-500 CONTROLS AND INDICATORS (Sheet 2 of 3)

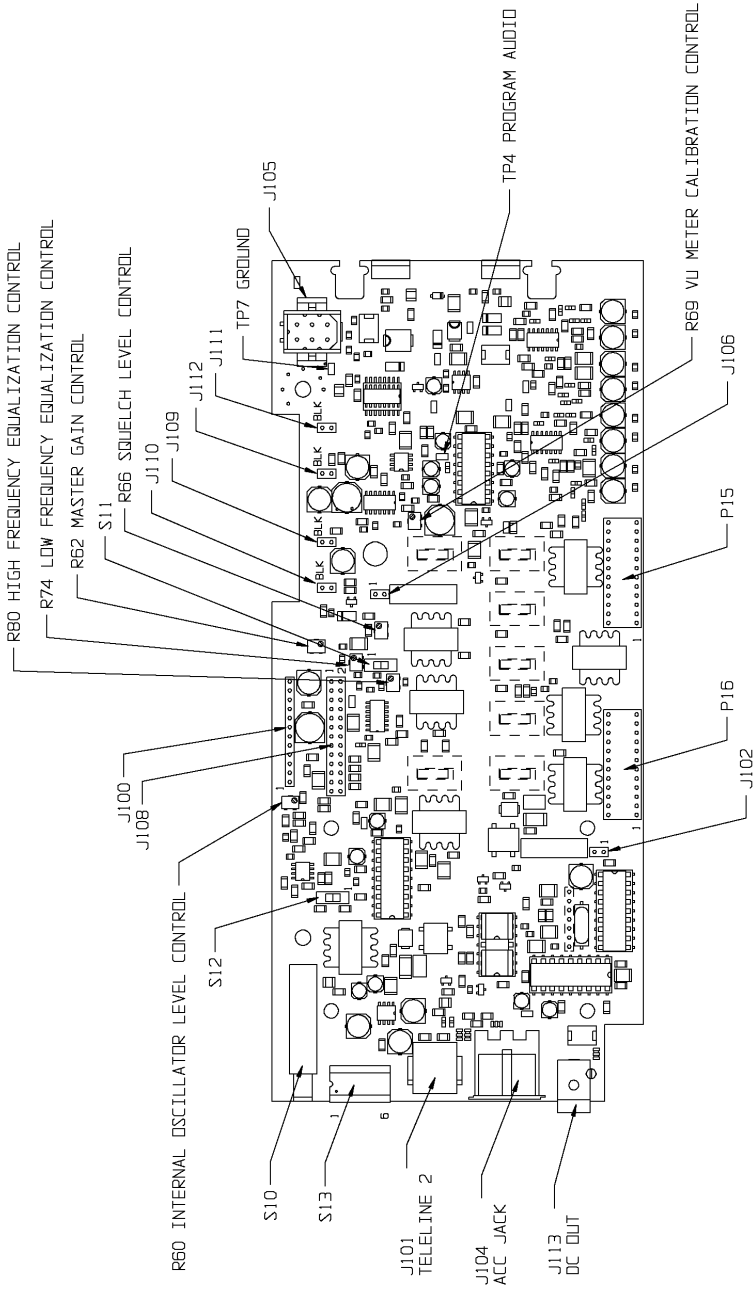


FIGURE 1. GX-500 CONTROLS AND INDICATORS (Sheet 3 of 3)

TABLE 1. GX-500 SPECIFICATIONS (Sheet 2 of 3)

PARAMETER	SPECIFICATION
ACCESSORY JACK SIGNALS	External Audio In, 600 Ohm, Isolated To Line 1. Program Audio Out, 0 dBm, 600 Ohm, Transformer Isolated. Headphone Audio In, High Impedance, Unbalanced.
ACCESSORY JACK	8-Pin, Female, DIN, Male Plug Provided.
SQUELCH	Activated By Channel 1 & 4 Audio, Switchable.
VU METER	10 LED Bargraph, 100% VU Adjustable from -9 dBm To Line Level.
PEAK/LIMITING INDICATOR	LED Illuminates At -7 dBm Into Telephone Line.
EQUALIZATION ADJUST	Internal, Trim Controls For High & Low Ends.
PHONE LINE #1	Electronic Hybrid Powered By Telephone Line 1.
PHONE LINE #2	Electronic Hybrid Powered By Telephone Line 2.
PHONE LINE CONNECTORS	2 RJ11 Jacks. One Modular Cable Provided.
DIALING PAD	DTMF Bursts Or Pulse.
MODE SELECT SWITCH	Headphone Amplifier Input ON/OFF. AUX Out Mic/Line Level Select. Test Tone Oscillator ON/OFF. Squelch Defeat For Channels 2 & 3.
INTERNAL SWITCHES	2 Switches. AUX Output Audio Send Or Send/Receive. Equalization ON/OFF.
EXTERNAL SWITCHES	10 Switches. Power ON/OFF, Line 1 Seize, Line 2 Seize, Tone/Pulse Dialing, External Input, Radio Input, Squelch/Mute, Line 2 Mute, Channel 4 Cue/Mix, Line 1/Line 2 Dial Select.
INDICATORS/RINGERS	6 - Batt Charge LED, Batt Low LED, Line 1 LED, Line 2 LED, Line 1 Electronic Ringer, Line 2 Neon Bulb Indicator.
EXTERNAL POWER SUPPLY	AC Input - 100 to 240V ac 50/60 Hz. DC Output - 15 Volts dc @ 4 A. Unit requires 15 Volts dc @ 1 A.
DC OUT CONNECTOR	Provides 7.75 to 5.5 V dc @ a maximum of 0.5 A.

TABLE 1. GX-500 SPECIFICATIONS (Sheet 3 of 3)

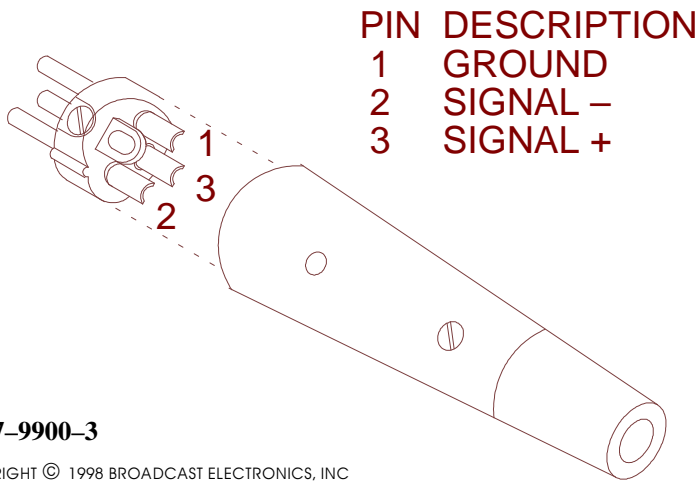
PARAMETER	SPECIFICATION
INTERNAL FUSE	5 fuses. Auto resetting.
BATTERY PACK	1 Pack consisting of 6 AA NiMH batteries, 1100 mAh, 7.2V.
BATTERY USAGE	Up To 16 Hours With a 6 hour charge. Up to 12 hours with a 3.5 hour charge.
BATTERY CHARGING SYSTEM	Voltage, Timer, And Thermostat Termination Of Charging.
BATTERY CHARGING TIME	Approximately 3.5 Hrs. Varies With Charge Remaining.
DIMENSIONS	9.6 inches W x 7.1 inches D x 2.8 inches H
WEIGHT	3 Lbs.

MICROPHONE CONNECTIONS.

The GX-500 is equipped with four female microphone jacks **MIC 1** through **MIC 4**. The jacks are numbered to correspond with the volume controls located on the front panel. The microphone jacks provide active balanced 150 Ohm inputs. Refer to Figure 2 and attach a mating connector to the microphone using cable such as Belden 8441. Once the connector is attached to the cable, connect the input to the desired microphone input receptacle. Typically, the main announcer is connected to **MIC 1**. If a spotter is used for the broadcast, connect the spotter microphone to **MIC 4**.

HEADPHONE CONNECTIONS.

Connect headphones to the 1/4 inch stereo **HP 1** through **HP 4** receptacles. The headphone volume is controlled by the **HEADPHONES** control. For best performance, use headphones with an impedance between 80 and 600 Ohms.



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FIGURE 2. XLR PIN DESCRIPTIONS

AUXILIARY INPUT CONNECTIONS.

Auxiliary audio can be applied to the unit using the 1/4 inch mono **AUX IN A** and **AUX IN B** receptacles. The **AUX IN A** signal volume is increased/decreased by the **CH3/AUX A** control. The **AUX IN B** signal volume is increased/decreased by the **CH4/AUX B** control. The **AUX IN A** and **AUX IN B** jacks provide a transformer isolated 600 Ohm input for high level (+10 dB) audio equipment such as a portable cassette recorder, cart machines, or a “mass feed” distribution amplifier.

AUXILIARY OUTPUT CONNECTIONS.

A transformer isolated 600 ohm **AUX OUT** receptacle allows program audio to be recorded. The level is factory pre-set to feed most microphone-level inputs (cassette recorders, mixers, etc.). To change the output level, refer to **GX-500 CONTROLS, INDICATORS, AND INPUTS/OUTPUTS – Mode Selector Switch – DIP Switch 3.**

TELEPHONE LINE CONNECTIONS.

The main telephone line is connected to the modular **TELELINE 1** jack. Connect the telephone cable (provided in the accessory kit) between the **TELELINE 1** receptacle and the remote broadcast room telephone jack. If the broadcast is to be sent to a second station or off-air conversations are to be performed, connect a second telephone line to the modular **TELELINE 2** receptacle.

ACCESSORY CONNECTIONS.

An 8-pin DIN **ACC JACK** provides connections for a high level 600 Ohm transformer isolated output, an external audio input, and an external headphone input. The input is controlled by the **EXT IN/NORMAL** switch. For application information using the **ACC JACK** signals, refer to **GX-500 CONTROLS, INDICATORS, AND INPUTS/OUTPUTS – ACC. JACK.**

CELLULAR TELEPHONE CONNECTIONS.

The Cellular Telephone interface is no longer available or supported due to the cellular industry changing from analog to digital service.

OFF-AIR SIGNAL MONITORING.

The station off-air signal can be monitored using a portable radio and the **RADIO IN** jack. To monitor the off-air signal, connect a cable between the portable radio earphone jack and the **GX-500 RADIO IN** jack. The signal can be monitored using the headphones. Control the radio signal level using the radio volume control. Selection of normal program audio and the radio in signal is controlled by the **RADIO IN/NORMAL** switch.

TELEPHONE LINE MONITORING.

Telephone line 1 is monitored for an incoming call by an electronic ringer. The ringer is located on the bottom chassis and is enabled when an incoming call is detected.

Telephone line 2 is monitored for an incoming call by the **LINE 2 RING** indicator. The indicator will illuminate when a call is detected on telephone line 2.

BATTERY SYSTEM – OVERVIEW.

The GX-500 is equipped with a NIMH 7.2V battery pack and a built-in charging system. Compared to a NICAD system, the NIMH system has the following advantages: 1) increased battery storage capability and 2) no memory effect. The battery pack will provide: 1) approximately 16 hours of operation with a 6 hour charge or 2) approximately 12 hours of operation with a 3.5 hour charge.

The battery system and the modular dc power supply can be used simultaneously. This allows the battery system to: 1) provide backup power in the event of an ac failure or modular dc power supply failure and 2) be charged during normal operation of the unit.

The status of the battery system is displayed by two front-panel indicators: 1) **BATT LOW** and 2) **BATT CHARGE**. The **BATT CHARGE** indicator presents the status of the charging system. The **BATT LOW** indicator alerts the operator of a pending low battery condition. The **BATT LOW** indicator illuminates approximately 15 to 30 minutes prior to the complete discharge of the battery pack. During an on-air broadcast, this allows the operator to maintain on-air operation by locating an ac power source prior to the complete discharge of the battery pack.

The battery pack will remain charged for approximately 30 days. After approximately 20 days, the pack will be approximately one-half discharged. It is recommended the GX-500 be charged within one to two days of the actual broadcast.

BATTERY SYSTEM – CHARGING.

Before using the GX-500 unit for the first time, the battery pack must be charged. The pack can be charged during on-air operation or when the unit is off-the-air.

The GX-500 battery charging system is equipped with three modes of operation: 1) charge pending, 2) fast charge, and 3) top-off charge. The modes of operation are presented by the **BATT CHARGE** indicator. The charging system is extremely versatile. The battery pack can be charged during on-air operation or when the unit is not being used in a broadcast. Also, the pack can be charged at any temperature. However, if the temperature is below +5 degrees C or above +45 degrees C, the system will not go into fast charge. The system will wait until the battery pack temperature is between +5 and +45 degrees C before entering the fast charge mode. It is recommended the battery pack be charged at room temperature. The following text presents a description of the battery system modes of operation.

<i>MODE</i>	<i>BATT CHARGE INDICATOR</i>	<i>DESCRIPTION</i>
Charge Pending	Slow Flash – Flashes on for 0.125 seconds and off for 1.375 seconds.	This mode slowly increases the battery voltage prior to fast charge.
Fast Charge	Illuminates steadily.	Rapid charge of the battery pack.
Top-Off Charge	Fast Flash – Flashes on for 0.125 seconds and off for 0.125 seconds.	This mode constantly pulses current into the batteries.

BATTERY CHARGING PROCEDURE.

The following procedure can be performed when the unit is on-the-air or when the unit is not being used in a broadcast. It is recommended the GX-500 be charged within one to two days of the actual broadcast. To charge the GX-500 battery pack, proceed as follows:

1. Connect the GX-500 power supply to a 100 to 240 volt 50/60 Hz ac power supply.
2. Connect the power supply cable to the **PWR IN** receptacle on the GX-500 rear-panel.

*Depending on the condition of the battery pack, the **BATT CHARGE** indicator will illuminate steadily or flash. The following text presents the battery pack conditions.*

BATT CHARGE Indicator Flashes Slow – Charge Pending Mode – This indicates the battery system is in the charge–pending mode. This typically occurs when the battery voltage is very low or the battery temperature is below approximately +5 degrees C. This mode will continue until the battery voltage reaches approximately 4 to 5 volts or the temperature increases above +5 degrees C. The battery charging system will slowly increase the battery pack voltage until the pack can sustain fast charge operation. This mode lasts up to 15 minutes. Once the pack reaches the voltage threshold, the charging system will automatically start the fast charge mode.

BATT CHARGE Indicator Illuminates Steadily – Fast Charge Mode – Indicates the battery system is in the fast charge mode. This mode lasts approximately 3.5 hours. Fast charge will continue until one of the following conditions occur: 1) 3.5 hours has elapsed, 2) a 15 hold–off time has expired (this occurs when the battery pack is already fully charged), or 3) the battery pack temperature exceeds approximately +45 degrees C. Once the fast charge mode has been completed, the charging system will automatically start the top–off charge mode.

BATT CHARGE INDICATOR Flashes Fast – Top–Off Charge Mode – When the fast charge mode has been completed, the BATT CHARGE Indicator will flash fast to indicate the system is in the top–off charge mode. This mode pulses small amounts of current into the battery pack to complete the battery charge process. If this condition occurs during initial power on, the battery pack is above approximately +45 degrees C. The battery system will not enter fast–charge until the pack temperature is below approximately +45 degrees C. The top–off charge mode is a continuous process. The system will remain in this mode until dc power is removed from the unit.

3. The batteries will be charged at the end of the fast-charge mode which requires approximately 3.5 hours to complete. This will operate the unit for approximately 12 hours. If the battery system is allowed to continue the top-off-charge process for approximately 1.5 to 3 hours, the unit will operate for approximately 16 hours.

Battery charge operation can be terminated at any time. To terminate charging operation, disconnect the cable from the **PWR IN** receptacle.

BATT LOW INDICATOR.

The **BATT LOW** indicator alerts the operator of a pending low battery condition. The indicator illuminates approximately 15 to 30 minutes prior to the complete discharge of the battery pack. If this occurs during a broadcast, simply connect the GX-500 power supply to the **PWR** receptacle. This will allow the unit to continue on-air operation and charge the battery pack.

OPERATION.

1. Ensure all microphones, headphones, cassette units, and telephone lines are connected to the unit.
2. Operate the **POWER ON/OFF** switch to **ON**.
*The **POWER LED** on the **VU** meter will illuminate.*
3. Pre-set and note all microphone and auxiliary levels. Adjust the levels until the **VU** meter **0/100%** indicator illuminates consistently on peaks and only occasionally illuminates the red **LED** on loud sound bursts. If the microphone levels are properly set, the **LIMITING LED** will illuminate infrequently.
4. Operate all unused microphone channels to position 0.
5. Operate the following switches to the appropriate positions.
 - A. Operate the **RADIO IN/NORMAL** switch to **NORMAL**.
 - B. Operate the **EXT IN/NORMAL** switch to **NORMAL**.
 - C. Operate the **SQ MUTE/NORMAL** switch to **NORMAL**.
 - D. Operate the **CUE/MIX** switch to **MIX**.
 - E. Operate telephone line 1 **LINE SEIZE/DISCON** switch to **DISCON**.

- F. Operate the **TONE/PULSE** switch to **TONE**.
 - G. Operate the **LINE 2 MUTE/NORMAL** switch to **NORMAL**.
 - H. Operate the **LINE 2 LINE SEIZE/DISCON** switch to **DISCON**.
6. Battery power can be conserved by waiting for in-coming calls with the **POWER ON/OFF** switch in the **OFF** position. The electronic ringer is also enabled with the **POWER ON/OFF** switch in the **ON** position.
 7. To answer an in-coming call on telephone line 1, move the **LINE SEIZE/DISCON** switch to **LINE SEIZE**. This will seize and hold the line.
 8. To place a call using telephone line 1, proceed as follows:
 - A. Select either **PULSE** or **TONE** using the **PULSE/TONE** switch. All standard dial lines will accept pulse dialing; however, this is a slower mode of operation. Attempt tone mode dialing by operating the **PULSE/TONE** switch to **TONE**. If the tone mode can not be used, operate the **PULSE/TONE** switch to **PULSE**. If a long distance service requires the entry of touch-tone access codes, operate the switch from **PULSE** to **TONE** once the service is connected.
 - B. Operate the **DIAL SELECT** switch to **LINE 1** (in position).
 - C. Move the **LINE SEIZE/DISCON** switch to **LINE SEIZE**.
 - D. Adjust the **HEADPHONES** level control to detect the presence of a dial tone in the headphones.
 - E. Using the keypad, enter all the telephone number digits. In the **PULSE** mode, the dialing will continue for a few moments after the last button has been pushed.
 - F. If the number dialed is busy, move the **LINE SEIZE/DISCON** switch to **DISCON** and then back to **LINE SEIZE** to reset the dial tone.
 - G. Once contact is established with the studio, communicate with the studio using the headset microphone and earphones. To hold the line, the **LINE SEIZE/DISCON** switch must remain in **LINE SEIZE** for the duration of the broadcast .

NOTE

WHEN THE UNIT IS SENDING PROGRAM AUDIO ON LINE 1, THE FOLLOWING PROCEDURES MUST BE PERFORMED DURING A COMMERCIAL BREAK OR ANY OTHER TIME PROGRAM AUDIO IS NOT TO BE GENERATED BY THE GX-500.

9. To place a call using telephone line 2, perform the following procedure. When the unit is sending program audio on line 1, the following procedure must be performed during a commercial break or any other time program audio is not being generated by the GX-500.
 - A. Select either **PULSE** or **TONE** using the **PULSE/TONE** switch. All standard dial lines will accept pulse dialing; however, this is a slower mode of operation. Attempt tone mode dialing by operating the **PULSE/TONE** switch to **TONE**. If the tone mode can not be used, operate the **PULSE/TONE** switch to **PULSE**. If a long distance service requires the entry of touch-tone access codes, operate the switch from **PULSE** to **TONE** once the service is connected.
 - B. Operate the **DIAL SELECT** switch to **LINE 2** (out position).
 - C. Operate the **CUE/MIX** switch to **CUE**.
 - D. Move the **LINE 2 LINE SEIZE/DISCON** switch to **LINE SEIZE**.
 - E. Adjust the **HEADPHONES** level control to detect the presence of a dial tone in the headphones.
 - F. Using the keypad, enter all the telephone number digits. In the **PULSE** mode, the dialing will continue for a few moments after the last button has been pushed.
 - G. If the number dialed is busy, move the **LINE 2 LINE SEIZE/DISCON** switch to **DISCON** and then back to **LINE SEIZE** to reset the dial tone.
 - H. Operate the **CUE/MIX** switch to **MIX**.
 - I. The following text presents operating procedures for communicating with a caller such as the studio, sending program audio to a second station, and placing a caller on-the-air. Communication with the caller is performed using the headset microphone and earphones. The **LINE 2 LINE SEIZE/DISCON** switch must remain in the **SEIZE** position in order to hold the line.

1. To send program audio to a second station, operate the **LINE 2 NORMAL/MUTE** switch to **MUTE**. This routes program output audio to telephone line 2.
2. To communicate with a caller such as the studio or to set up a call to be placed on the on-the-air, proceed as follows:
 - a. Operate the **LINE 2 NORMAL/MUTE** switch to **MUTE** to communicate to the caller.
 - b. Operate the **LINE 2 NORMAL/MUTE** switch to **NORMAL** to listen to the caller.
 - c. Adjust the caller audio level using the **CH4/AUX B** volume control. Adjust the **HEADPHONES** volume control as required to listen to the caller.
3. To place a caller on the on-the-air, proceed as follows:
 - a. Operate the **LINE 2 NORMAL/MUTE** switch to **MUTE** to mute the caller input audio and route program (announcer) audio to the caller.
 - b. Operate the **LINE 2 NORMAL/MUTE** switch to **NORMAL** to place the caller on-the-air.
 - c. Adjust the caller audio level using the **CH4/AUX B** volume control.

NOTE *DO NOT LEAVE THE SQUELCH ON DURING THE BROADCAST. USE THE SQUELCH ONLY WHEN COMMUNICATING WITH THE STUDIO.*

10. If desired, the automatic squelch/mute circuit can be enabled when communicating with the studio by operating the **SQ/MUTE/NORMAL** switch to **SQ/MUTE**.

When the **SQ/MUTE/NORMAL** switch is moved from **NORMAL** to **SQ/MUTE**, **MIC 1** and **MIC 4** will be muted until the announcer begins talking. In this mode, the microphones will not amplify background noise and the distant party will be heard more clearly. When the **SQ/MUTE/NORMAL** switch is in the **SQ/MUTE** position, only **MIC 1** and **MIC 4** are active. The **MIC 2** and **MIC 3** inputs will be muted. Therefore, **MIC 1** and **MIC 4** should always be assigned to the main announcer if the squelch function is to be used. The muting of the **MIC 2** and **MIC 3** inputs can be overridden by operating MIC2 mute override DIP switch 5 to ON and MIC3 mute override DIP switch 6 to ON. If the mute function is to be used as a cough switch, use input MIC 2 or MIC 3 with the mute override switches in the OFF position.

11. Channel 4 is equipped with a **CUE/MIX** switch. For normal operation, operate the switch to **MIX**. To remove the channel 4 or auxiliary B input audio from the on-air audio, move the **CUE/MIX** switch to **CUE**. The audio will be present in the headphones without the on-air audio. With this functionality, channel 4 is typically used as a spotter input for routing information to the main announcer(s) in a closed circuit. Other possible uses include: 1) cueing tapes, 2) monitoring a network feed, or 3) using telephone line 2 to feed information from the studio to the announcers. To prevent leakage of cue audio into the program audio, avoid feeding excessively high levels to channel 4 when using the cueing feature.
12. The following tips should be practiced to avoid picking up interference from other electrical equipment:
 - A. Keep all un-used microphone input controls at position 0.
 - B. Keep the unit as far away as possible from all transformer operated devices to avoid hum pick-up.
 - C. Avoid operation near a portable VHF/UHF transmitter or similar radio transmitting equipment. If such a situation can't be avoided, place the unit at least 15 feet away from the transmitting antenna. In situations where RF interference is present, connect the chassis of the unit to earth ground (cold water pipe, grounded outlet box, etc.). If the interference persists, install an external telephone line RF filter available from an electronic store such as Radio Shack.

OPERATION WITH A CELLULAR TELEPHONE.

The Cellular Telephone interface is no longer available or supported due to the cellular industry changing from analog to digital service.

EXTERNAL AUDIO INPUT OPERATION.

The GX-500 is equipped with an external audio input. This input is designed for the connection of external audio processing equipment such as a low frequency extender. If external audio input operation is desired, proceed as follows:

1. Refer to Figure 1 and connect the audio equipment to **ACC. JACK** as follows:

- A. Connect the processing equipment input to: 1) Audio Output (-) pin 5 and 2) Audio Output (+) pin 7.
 - B. Connect the processing equipment output to: 1) External Audio Input (-) pin 2 and 2) External Audio Input (+) pin 8.
2. Monitor the external audio input or telephone line audio as follows:
 - A. To monitor the external input audio, operate the **EXT IN/NORMAL** switch to **EXT IN**.
 - B. If the telephone line is to be used for communication with the studio during breaks, operate the **EXT IN/NORMAL** switch to **NORMAL**. This allows the telephone line audio to be monitored.

EXTERNAL HEADPHONE INPUT OPERATION.

The GX-500 is equipped with an unbalanced external headphone input. This input is designed for the connection of an unbalanced headphone signal. If external headphone input operation is desired, proceed as follows:

1. Ensure the headphone audio signal is connected to external headphone input pin 3 on the **ACC. JACK**.
2. Operate mode select DIP switch 1 to OFF.
3. Apply the headphone signal to the unit. The volume must be adjusted by a control external to the unit.
4. When finished, operate mode select DIP switch 1 to ON.

GX-500 CONTROLS, INDICATORS, AND INPUT/OUTPUTS.

<i>ITEM</i>	<i>DESCRIPTION</i>
Line 1 LINE SEIZE/DISCON Switch	Used to seize telephone line 1. The LINE SEIZE position seizes telephone line 1. The DISCON position disconnects the GX-500 from the telephone line.
TONE/PULSE Switch	Configures the dialing circuitry to the tone or pulse mode of operation. The TONE position configures the circuitry to the tone mode of operation. The PULSE position configures the circuitry to the pulse mode of operation.

ITEM	DESCRIPTION
EXT IN/NORMAL Switch	Configures the GX-500 for the use of external processing equipment such as a low frequency extender. The equipment is connected to the unit using the ACC. JACK . Operate the switch to the NORMAL position unless external audio processing is used. If processing is used, operate the switch to EXT IN . To monitor the telephone line audio, operate the switch to the NORMAL position.
RADIO IN/ NORMAL Switch	Used to monitor an off-air signal from a portable radio. The RADIO IN position routes the off-air signal to the GX-500 headphone system. The NORMAL position routes normal program audio to the headphone system.
SQ/MUTE/ NORMAL Switch	Enables the squelch/mute system. The SQ/MUTE position enables the squelch/mute circuitry. When squelch/mute is enabled, only channels 1 and 4 are active. Channels 2 and 3 are muted unless the channel 2 and 3 mute override switches are enabled (refer to MODE SELECT SWITCH in the following text). The NORMAL position disables the squelch/mute circuitry.
LINE 2 LINE SEIZE/DISCON Switch	Used to seize telephone line 2. The LINE SEIZE position seizes telephone line 2. The DISCON position disconnects the GX-500 from telephone line 2.
LINE 2 MUTE/ NORMAL Switch	The LINE 2 MUTE/NORMAL switch allows the announcer to mute audio from telephone line 2. The MUTE position mutes the telephone audio until the audio is ready to be placed on-the-air. As a result, the announcer must move the switch to MUTE whenever the caller is to listen to the announcer or other program audio. If line 2 is being used to send audio to a second studio or station, ensure the switch is in the MUTE position.

ITEM	DESCRIPTION
LINE 2 MUTE/ NORMAL Switch (Con/t)	The NORMAL position allows telephone line 2 audio to be mixed using the CH4/AUX B volume control. The NORMAL position also mutes the program audio feed to the caller.
LINE 2 RING Indicator	Illuminates to indicate a call is present on telephone line 2.
DIAL SELECT LINE 1/LINE 2	Configures the keypad for line 1 or line 2 operation. The LINE 1 (<i>in</i>) position configures the keypad for line 1 operation. The LINE 2 (<i>out</i>) position configures the keypad for line 2 operation. The switch will latch either <i>in</i> or <i>out</i> when depressed. If LINE 2 is used, return the switch to LINE 1 when finished.
TELELINE 2 Jack	An RJ-11 jack for the connection of telephone line 2.
ACC. JACK	An 8-Pin DIN connector used to interface external audio equipment to the unit. The following text presents the pin descriptions: High Level Drive (-) Output Pin 5 And High Level Drive (+) Output Pin 7 – A 600 Ohm, transformer isolated, high level (0 dBm) output used to connect the input of external processing equipment such as a low frequency extender or an ISDN/switch Net 56 interface to the unit. External Input (-) Pin 2 and External Input (+) Pin 8 – Used to connect the output of external processing equipment such as a low frequency extender to the GX-500. Headphone Amplifier Input Pin 3 – Used to connect an external unbalanced input to the headphone amplifier. Chassis Ground Pin 6 – Chassis ground.
DC OUT Jack	Provides approximately 7.6 to 5.5 volts dc.

ITEM	DESCRIPTION
POWER ON/OFF Switch	Controls the application of dc power to the unit.
HEADPHONES Level Control	Adjusts the headphone level.
CH1 Level Control	Adjusts the channel 1 audio level.
CH2 Level Control	Adjusts the channel 2 audio level.
CH3/AUX A Level Control	Adjusts the channel 3/Auxiliary A input audio level.
CH4/AUX B Level Control	Adjusts the channel 4/Auxiliary B input audio level.
CH4 CUE/MIX Switch	Used to route channel 4/auxiliary B input audio to the program mix bus or the cue bus. The CUE position routes audio to the cue bus. The MIX position routes audio to the program mix bus.
MIC1, MIC2, MIC3, MIC4 Microphone Jacks	Four balanced XLR jacks for the connection of microphones. If the squelch/mute system is to be used, connect the announcer microphone to MIC 1 or MIC 4 . Typically, the main announcer is connected to MIC 1 and a spotter is connected to MIC 4 .
HP1, HP2, HP3, HP4 Headphone Jacks	1/4 inch stereo jacks for the connection of headphones.
AUX IN A, AUX IN B Audio Jacks	1/4 inch mono jacks for the connection of high level (+10 dB) audio signals.
AUX OUT Jack	A 1/4 inch mono jack for the connection of a powered speaker, other monitor equipment, or the input to a cassette recorder. Outputs a low (-52 dB) or a high (-18 dB) level audio signal.
RADIO IN Jack	A 1/4 inch stereo jack for the connection of a portable radio headphone output.
PWR Jack	Used to connect dc power to the unit.

ITEM	DESCRIPTION
TELELINE 1 Jack	An RJ-11 jack for the connection of telephone line 1.
BATT LOW Indicator	Illuminates to indicate a pending low battery condition. The indicator illuminates approximately 15 to 30 minutes prior to the complete discharge of the battery pack.
BATT CHARGE Indicator	<p>Displays the status of the internal battery charging system.</p> <p>Flash Slow (flashes on for 0.125 seconds and off for 1.375 seconds) – Charge–Pending Mode. This mode slowly increases the battery voltage prior to fast charge.</p> <p>Illuminates Steadily – Fast Charge Mode. Rapid charge of the battery pack.</p> <p>Flash Fast (flashes on for 0.125 seconds and off for 0.125 seconds) – Top–Off Charge Mode. This mode constantly pulses current into the batteries.</p>
LINE 1 Indicator	Illuminates to indicate telephone line 1 is seized.
LINE 2 Indicator	Illuminates to indicate telephone line 2 is seized.
VU Meter	A 10 segment LED bargraph display presenting audio levels. The POWER LED illuminates when the POWER ON/OFF switch is operated to ON . The LIMITING LED illuminates when the squelch/mute circuitry is enabled.
Mode Selector Switch	The mode selector switch consists of six miniature DIP switches. The switches are factory pre-set in the normal positions. The switch functions are as follows:

ITEM	DESCRIPTION
Mode Selector Switch (Con/t)	<p>DIP Switch 1 – Headphone Amplifier Input – Normal is <i>up</i> (ON). The <i>up</i> (ON) position routes normal internal audio to the headphone system. The <i>down</i> (OFF) position disconnects the normal program audio to the headphone system. This is used when external headphone audio is applied to the unit. The external headphone input is located at pin 3 on the ACC. JACK.</p> <p>DIP Switch 2 – Oscillator – Normal is <i>down</i> (Off). The <i>up</i> (ON) position enables the internal 1 kHz test tone oscillator. This signal is used to inject a steady tone into the program audio for proper level setting at the studio. The tone will register at a level of approximately 100% on the VU meter. The <i>down</i> (OFF) position disables the internal test tone oscillator.</p> <p>DIP Switch 3 – AUX Out Level – Normal is <i>down</i> (OFF). The <i>up</i> (ON) position configures the AUX OUT jack for a –18 dBm level. The <i>down</i> (OFF) position configures the AUX OUT jack for a –52 dBm level.</p> <p>DIP Switch 5 & 6 – Squelch/Mute Enable – Normal is <i>down</i> (OFF). Switch 5 is for channel 2. Switch 6 is for channel 3. The <i>down</i> (OFF) position configures channels 2 and 3 for automatic muting when the SQ/MUTE/NORMAL switch is operated to SQ/MUTE. The <i>up</i> (ON) position defeats the automatic muting on channels 2 and 3.</p>
Equalization Switch S11	<p>Switch S11 – Switch S11 controls the GX–500 built–in equalization circuit. Access to the switch is accomplished by removing the bottom panel. When S11 is operated to position 1–2, the equalization circuit is enabled. Once enabled, the high and low frequencies can be boosted or cut by adjusting potentiometers R80 for high frequencies and R74 for low frequencies. These potentiometers are factory pre–set for a flat response at the high and low ends.</p>

<i>ITEM</i>	<i>DESCRIPTION</i>
<p>Equalization Switch S11 (Con/t)</p>	<p>If adjustment is required, it is recommended the adjustment be performed using an audio volt-meter or oscilloscope connected to high level drive output (–) pin 5 and high level drive output (+) pin 7 on the ACC JACK. As test tones are applied to one of the microphone inputs, slowly adjust the potentiometers for the desired frequency response using a level of 100% VU. When S11 is operated to position 2–3, the equalization circuit is disabled. The normal position is 2–3.</p>
<p>Aux Out Send/ Send–Receive Switch S12</p>	<p>Switch S12 – Switch S12 configures the AUX OUT receptacle to output send only or send and receive audio. Access to the switch is accomplished by removing the bottom panel. When S12 is operated to position 1–2, only the send audio (program audio) is routed to the AUX OUT receptacle. When S12 is operated to position 2–3, both the send audio and receive (telephone line) audio are routed to the AUX OUT receptacle. This is typically used for recording conversations from the telephone line. When using either position, ensure mode selector switch 3 is in the desired position (microphone level or line level). The normal position is 1–2.</p>
<p>Power Supply Unit</p>	<p>The unit is supplied with a universal switching power supply rated for 100V to 240V ac 50/60 Hz. If the power adapter is lost or damaged, a replacement adapter can be ordered by calling MARTI Electronics.</p>
<p>Fuse</p>	<p>The GX–500 is equipped with several auto–resettable fuses. If a fuse trips, wait approximately 10 minutes to allow the fuse to reset. Once the waiting period has expired attempt operation.</p>

ADJUSTMENTS.

The GX-500 is equipped with five adjustment controls. The following text presents the procedures to adjust the controls.

MASTER GAIN CONTROL R62 AND VU METER CALIBRATION CONTROL R69.

Master gain control R62 and VU meter calibration control R69 are adjusted at the factory for 0 VU with a -50 dBm input signal. With these adjustments, the GX-500 will output a level of approximately -9 dBm at the telephone line. To adjust the unit for a different output level, perform the following procedure. The procedure presented in the following text adjusts the unit for a telephone line output level of approximately -9 dBm.

1. Disconnect the GX-500 power supply cable and operate the **POWER ON/OFF** switch to **OFF**.
2. Remove the GX-500 bottom panel.
3. Connect a signal generator to the **MIC 1** microphone receptacle.
4. Adjust the signal generator for a 1 kHz -50 dBm output with a 150 Ohm output impedance.
5. Refer to Figure 1 and connect an oscilloscope between TP-4 (signal) and TP-7 (ground).
6. Re-connect the GX-500 power supply cable and operate the GX-500 **POWER ON/OFF** switch to **ON**.
7. Apply the audio to the GX-500.
8. Refer to Figure 1 and adjust master gain control R62 for a 1.4 volt peak-to-peak waveform on the oscilloscope. This will produce a telephone line output level of approximately -9 dBm. A higher output level can be obtained by adjusting the control for a waveform greater than 1.4 volts. However, the higher output level may cause clipping at the telephone line.
9. Refer to Figure 1 and adjust VU meter calibration control R69 until the VU meter 0/100% indicator illuminates.
10. Disconnect the GX-500 power supply cable and operate the **POWER ON/OFF** switch to **OFF**.
11. Remove the test equipment and replace the bottom panel.

HIGH FREQUENCY EQUALIZATION CONTROL R80 AND LOW FREQUENCY EQUALIZATION CONTROL R74.

High frequency equalization control R80 and low frequency equalization control R74 adjust the equalization circuit. The equalization can be adjusted to meet the desired frequency response. To adjust the controls, proceed as follows:

1. Disconnect the GX-500 power supply cable and operate the **POWER ON/OFF** switch to **OFF**.
2. Remove the GX-500 bottom panel.
3. Connect a signal generator to the **MIC 1** microphone receptacle.
4. Refer to Figure 1 and operate switch S11 to position 1-2.
5. Re-connect the GX-500 power supply cable and operate the GX-500 **POWER ON/OFF** switch to **ON**.
6. Adjust the controls as follows:
 - A. Adjust the signal generator for a -50 dBm output with a 150 Ohm output impedance at the desired frequency.
 - B. Refer to Figure 1 and adjust high frequency equalization control R80 and low frequency equalization control R74 for the desired audio response.
7. Repeat the procedure as required to obtain the desired response.
8. Disconnect the GX-500 power supply cable and operate the **POWER ON/OFF** switch to **OFF**.
9. Remove the test equipment and replace the bottom panel.

INTERNAL OSCILLATOR LEVEL CONTROL R60.

Internal oscillator level control R60 adjusts the level of the internal oscillator. The oscillator is adjusted at the factory for a **100%/0** VU meter indication. To adjust the control, proceed as follows:

1. Disconnect the GX-500 power supply cable and operate the **POWER ON/OFF** switch to **OFF**.

2. Remove the GX-500 bottom panel.
3. Refer to Figure 1 and operate switch S13-2 to ON.
4. Re-connect the GX-500 power supply cable and operate the GX-500 **POWER ON/OFF** switch to **ON**.
5. Refer to Figure 1 and adjust internal oscillator level control R60 until the VU meter **100%/0** LED illuminates.
6. Refer to Figure 1 and operate switch S13-2 to OFF.
7. Disconnect the GX-500 power supply cable and operate the **POWER ON/OFF** switch to **OFF**.
8. Replace the bottom panel.

PARTS LIST.

The following text presents the GX-500 replaceable parts.

<i>TABLE 2. GX-500 PARTS LIST (Sheet 1 of 2)</i>			
<i>REF. DES.</i>	<i>DESCRIPTION</i>	<i>PART NO.</i>	<i>QTY.</i>
DS2	Neon Bulb/Resistor, 272-712, 120 VAC, Radio Shack 272-712	175-001	1
DS3, DS4, DS5	LED, Green, 521-9270, 3V@40 mA Maximum, PCB Mount, Dialco 521-9270	415-454	3
DS6	LED, Yellow, 521-9271, 3V@30 mA Maximum, PCB Mount, Dialco 521-9171	DB32041	1
RING1	Ringer, Electronic, BR-3 or BR-3-9, Floyd Bell BR-3 or BR-3-9	560-023	1
—	GX-500 Input/Output Circuit Board Assembly,	800-372A1	1
—	GX-500 DC/Telephone Circuit Board Assembly,	800-372A2	1
—	GX-500 Front Panel Circuit Board Assembly,	800-372A3	1
—	GX-500 Main Circuit Board Assembly	800-371A	1
—	Power Supply, Switcher, 90-264V In, 15V DC @3.6A Out, Phihong PSA153P	800-370A	1
—	Plug, 8-Pin DIN, Male, MCM27-675 Switchcraft 15GM8M	550-287	1
—	Cable Assembly, Modular Telephone Mendelson 550-0035F (AT&T103732541)	586-184	1
—	Figure, Dial, Elma Electronics 042-3000	510-323	5

TABLE 2. GX-500 PARTS LIST (Sheet 2 of 2)

REF. DES.	DESCRIPTION	PART NO.	QTY.
—	Knob, 15mm, Collet, Matte Black Without Line, 6mm Shaft Selco Electronics K150-006	510-336	5
—	Knob, 15mm, Cap Cover, Black, Plain, Selco Electronics C150-BLACK5	510-337	1
—	Knob, 15mm, Cap Cover, Blue, Plain, Selco Electronics C150-BLUE9	510-338	1
—	Knob, 15mm, Cap Cover, Red, Plain, Selco Electronics C150-RED7	510-339	1
—	Knob, 15mm, Cap Cover, Yellow, Plain, Selco Electronics C150-YELLOW10	510-340	1
—	Knob, 15mm, Cap Cover, Gray, Plain, Selco Electronics C150-GRAY6	510-341	1
—	Connector, 2-Pin Non-Polarized Amp 87499-3 or equivalent	550-321	2
—	Flex Cable Assembly, VU Meter to Main PCB Thomas&Betts P12P2F-F	586-198	1
—	Ribbon Cable Assembly, Front-Panel PCB to Main PCB, CW C3AAG-2606G-ND	586-197	1
—	Meter, VU, LED Bargraph, 10 Element, 12-PIN SIP, Three-Five Systems TSM39168	411-226	1
—	Lens, LED, Clear, Panel Mount, 1-3/4, Mouser CMC321CTP	510-342	4
—	Cable, LED, 1-3/4, With Connector, Mouser CNXCE2104	586-199	4
—	Battery, 7.2V, 6 Cell, 1100 MAH, 6-Pin MR Connector, EAC	040-018	1
—	Contact, Crimp, Amp 8709-1	550-323	4
—	Header, 1X12, Male (For VU Meter), Samtec CES-112-02-G-S	550-291	1

SERVICE.

Technical assistance and repair service for the GX-500 is provided by *MARTI* electronics. The service department can be reached by telephone, e-mail, fax, or letter. Equipment requiring repair or exchange should be sent by common carrier, prepaid, insured, and well protected. Do not mail the equipment. We can assume no liability for inbound damage and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact *MARTI* Electronics for a Return Authorization.

TECHNICAL ASSISTANCE –

Tel: 217-224-9600 Fax: 217-224-9607 E-mail: service@martielelectronics.com
Web Site: www.martielelectronics.com

WARRANTY.

This unit is warranted by *MARTI* Electronics against defects in material and workmanship for one year from the original purchase date by the end user. The serial number indicates the date the unit was shipped. *MARTI* Electronics will repair or replace, at no charge, a defective unit, provided that a Return Authorization be obtained from *MARTI* Electronics. The product must be shipped to:

- Marti Electronics - 4100 North 24th Street - Quincy, IL 62305
Tel: 217-224-9600 Fax: 217-224-9607 E-mail: service@martielelectronics.com
- For a Return Authorization, call (217) 224-9600

Warranty is void if the unit is modified or serviced by anyone other than *MARTI* Electronics.

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MARTI ELECTRONICS

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