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DIVISION OF MILLER INGENUITY

Installation, Adjustment & Operation Instructions

Applicability: Intercoms & Radio Control Consoles, with the following Model Numbers:

Intercoms 11-11155, 11-11156 and 11-11161
Radio Control Consoles 17-11008

Instruction Part Number: PI-17-1002-000, Rev. 1

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Revision History

Rev 0, original release, June, 2011

Rev 1, April, 2015. Update to reflect current models, update info for Model 17-11008. Update to reflect Miller Ingenuity

1. INTRODUCTION

As of April, 2011, the "McGee Box" intercoms were redesigned to provide improved audio characteristics, (especially the ALC circuitry) and even greater reliability. These intercoms are now better able to handle situations where the voice input level may vary over a wide range, according to operator practices. Additionally, a method is provided to eliminate the ALC circuits using a few jumpers. A new-style electret microphone is used to provide improved transmit audio and to compliment the microphone the front panel features a redesigned microphone grill with four small holes in a square pattern.

2. APPLICABILITY, GENERAL SPECS, INTALLATION, ADJUSTMENTS & USE OVERVIEW

APPLICABILITY

These instructions cover the installation, adjustments and use of intercom models 11-11155, 11-11156 and 11-11161, and Radio Control Console model 17-10008.

General installation, adjustments and use instructions as applicable to all models in general are followed by specific instructions, covering specific models when applicable.

GENERAL SPECIFICATIONS

- Construction: Heavy gauge, hard anodized aluminum base with painted steel upper panel.
- Size: 6 7/8" Wide x 4 5/8" Tall x 7 5/8" Deep.
- Line Type: 2-Wire & 4-Wire, "0dBm" communication lines.
- Receive Level: -20 to +12 dBm, with ALC knee set at –26dBm.
- Transmit Level: -26 to +3 dBm into 600 Ohms.
- Speaker: 3 ½", heavy duty with water-resistant cone.
- Audio Output: 2 Watts.
- Power Supply: Nominal 12 VDC, current requirement varies with model, 2.1 mm Power Jack with center positive, externally accessible fuse.
  NOTE: An 18 Volt TVS is in the 12 VDC power input circuit. DO NOT USE A DC POWER SUPPLY WITH VOLTAGE GREATER THAN 17 VDC.
- Line Connections: Shielded RJ45 connector on back panel.
- Auxiliary connections via pluggable connector accessable from rear of unit. Auxiliary connections include PTT foot switch, ground cross mute and Auxiliary Relay contact. Auxiliary Relay contact is a "Form A" contact (1 A @ 24 Volts nominal, AC or DC), resistive load.
- Available amplifier adjustments: Receive Sensitivity, Transmit Level and Microphone Sensitivity
- DTMF Decoder on 11-11156 and 17-11008: User programmable with two addresses - one standard and one "9-1-1".
- DTMF Encoder (when equipped): Touchpad for sending DTMF digits on 11-11156 and 17-11008. Multiple numbers can be programmed for "speed dialing" on the 11-11156.
- Push buttons with reed switches for long life. Switches illuminated with long-lasting LEDs.

INSTALLATION, ADJUSTMENT AND USE OVERVIEW

The first step is to insure the internal jumpers have been set properly. If the configuration is specified at the time the unit is ordered, the jumpers will be set at the factory and noted on the bottom of the intercom. If not, you may need to verify the jumpers are set as needed. In addition to the basic settings, there may be model-specific settings that need to be verified.

The second step is to make the appropriate connections. This will consist of connecting the audio line via the RJ45 connector, connecting the power supply and making any auxiliary connections desired (e.g., foot switch).

The next step is to make line level adjustments if needed and to make any model-specific adjustments. These adjustment pots are on the bottom of the main circuit board and are accessible through access holes on the bottom of the intercom. See Figure 6.

NSTALLATION OF JUMPERS

MAIN CIRCUIT BOARD

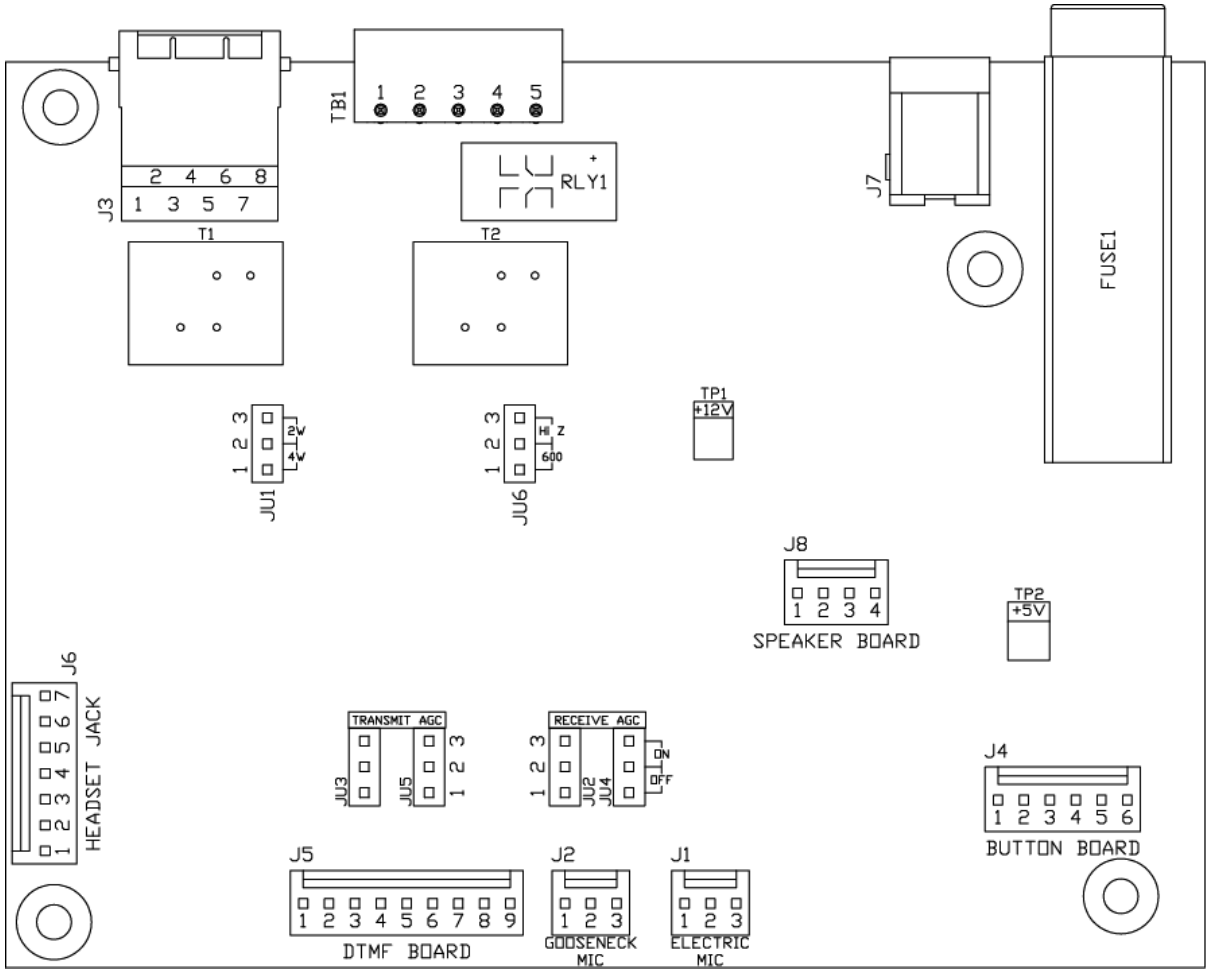

FIGURE 1. MAIN CIRCUIT BOARD, TOP VIEW

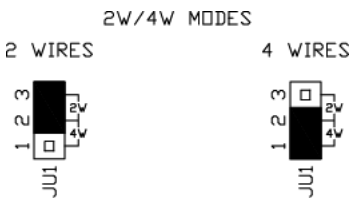

FIGURE 2. 2-WIRE/4-WIRE

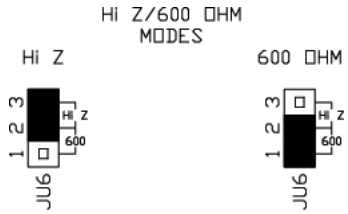

FIGURE 3. 600 OHM/Hi Z

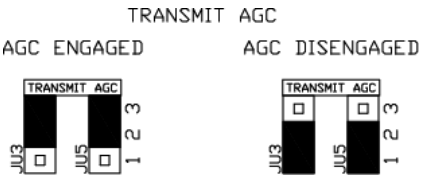

FIGURE 4. TRANSMIT AGC

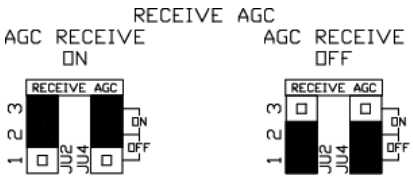

FIGURE 5. RECEIVE AGC

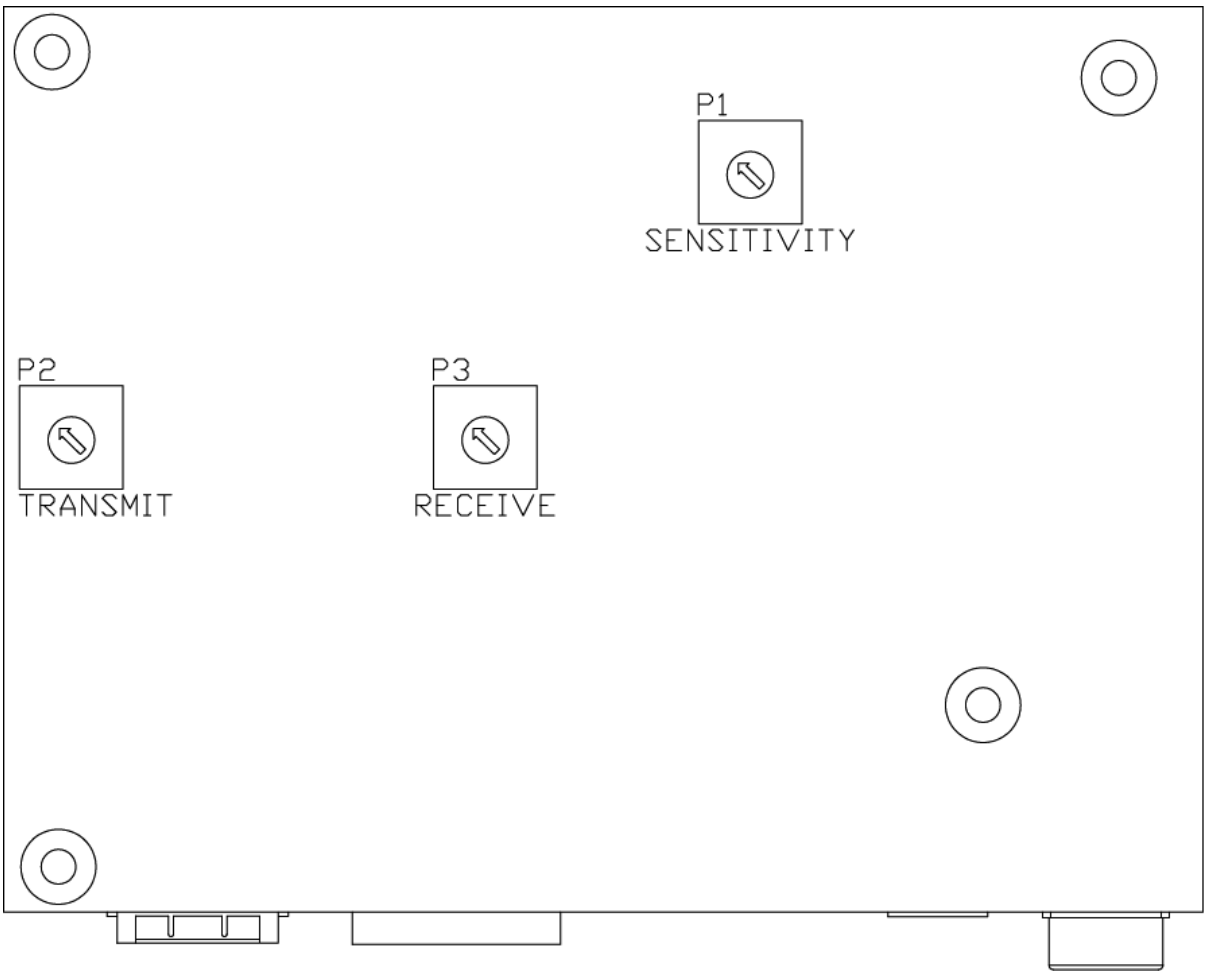

FIGURE 6. MAIN CIRCUIT BOARD, BOTTOM VIEW

Figures 1 through 6, illustrate the locations of the Jumpers and Pots on the Main Circuit Board. The pots shown in Figure 6 are accessible through holes in the bottom of the intercom.

Ensure all jumpers are in the appropriate position. If the unit is labeled externally from the factory indicating the jumper configuration, this step can be skipped.

Check subsequent sections for any model-specific instructions.

JU1 sets for 2-Wire or 4-Wire.
JU6 sets for 600 OHM receive termination or for Hi-Z receive termination (approximately 10K OHM).

DTMF CIRCUIT BOARD

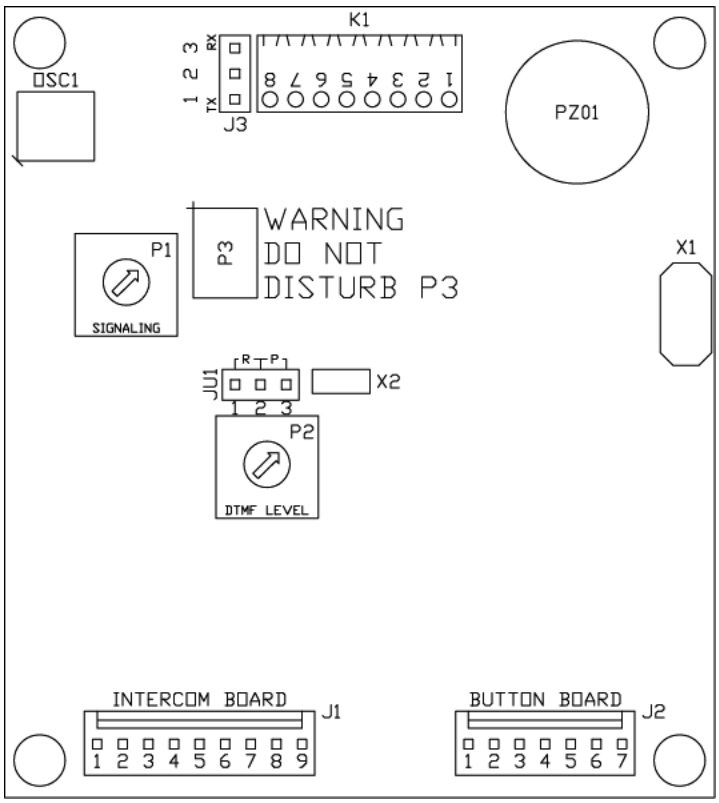

FIGURE 7. DTMF ENCODER/DECODER CIRCUIT BOARD

Figures 7, illustrates the locations of the Jumpers and Pots on the DTMF Circuit Board.

Models with DTMF decoder/encoder (11-11156 and 17-11008
JU1 set from factory at “R” positions, only change to “P” position for programming the Unit (See User Programming Mode).
J3 is for factory Use ONLY (There should be no jumper on J3).
P3 WARNING. Do Not Disturb P3.
Level of DTMF with respect to voice can be adjusted with P2 on the DTMF board.

PROGRAMMING RADIO KEYING TONES

Models 17-11008: This model is a “Single-Function” model, meaning it can transmit one keying tone sequence (e.g., 2175-1950-2175Hz). These models have one programmable button (“TALK”).

Keying Tone Information

The standard keying tone format used in these units is as follows (assuming line level set at 0dBm):

2175 @ 0 dBm for 120 ms
Function (e.g., 1950) @ -10 dBm for 40 ms
2175 @ -30 dBm as long as the push button is held.

The level of the tone sequence as indicated above is based on transmit audio being adjusted to a nominal 0 dBm. The level of the tones (as a group) can be changed relative to the audio level via pot P1 on the DTMF Circuit Board (see Figure 7).

1. CONNECTIONS

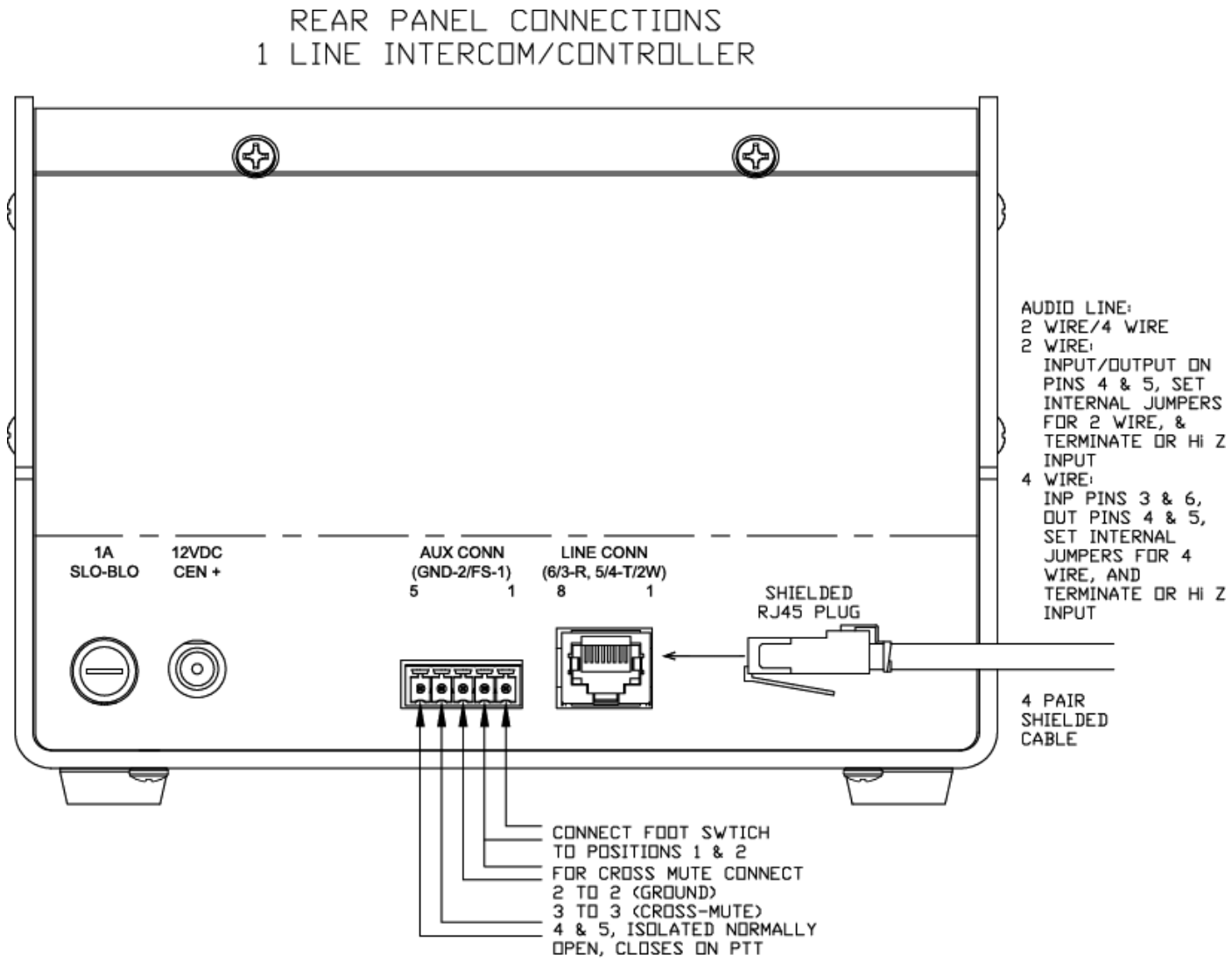

FIGURE 8. REAR PANEL CONNECTIONS

Figures 8, illustrates all the Connections at the Rear Panel of the Unit.

Communication Line: The communication line is connected with an RJ 45 connecter, as shown in the above figure. The receptacle is shielded and allows for grounding of a shielded cable. If shielding is used for your communication line, it is recommended you ground only one end of the shield. To ground the shield at the intercom end, use a shielded RJ-45 connector and ground the unit via the terminal 2 of the connector. For 2-Wire configurations, the center pair is used (pins 4 & 5). For 4-Wire configurations, pins 4 & 5 are for the transmit pair and pins 3 & 6 are for receive pair.

On Model 11-11161 (Monitor), use pins 3 & 6 of the RJ-45 connector. JU1 will be in the “4W” position. If you prefer to use pins 4 & 5, you may do so if you first move JU1 to the “2W” position.

Power Supply: All models are provided with an external power supply with a single connector, a 2.1mm Ø plug.

The RJ-45 connector is shielded, so you can use shielded cable & shielded RJ-45 connectors. Make sure that any intermediate connection in the line carries the shield through.

Auxiliary PTT outputs are also made at the Auxiliary Connector.

Foot Switch: If a foot switch for push-to-talk is to be used, it is connected to terminals 1 & 2 of the Auxiliary Connector.

Cross Mute: If two units operating on the same line are in close proximity, so that there may be feedback between the two units, use the cross mute feature. When cross mute is enabled on a pair of these devices, actuating the talk switch on one of the units will cause the receive audio of the other unit to be muted, eliminating feedback. As shown in Figure 8, connect the ground and Cross Mute terminals of the two units via their Auxiliary Connectors. Cross mute is a ground signal.

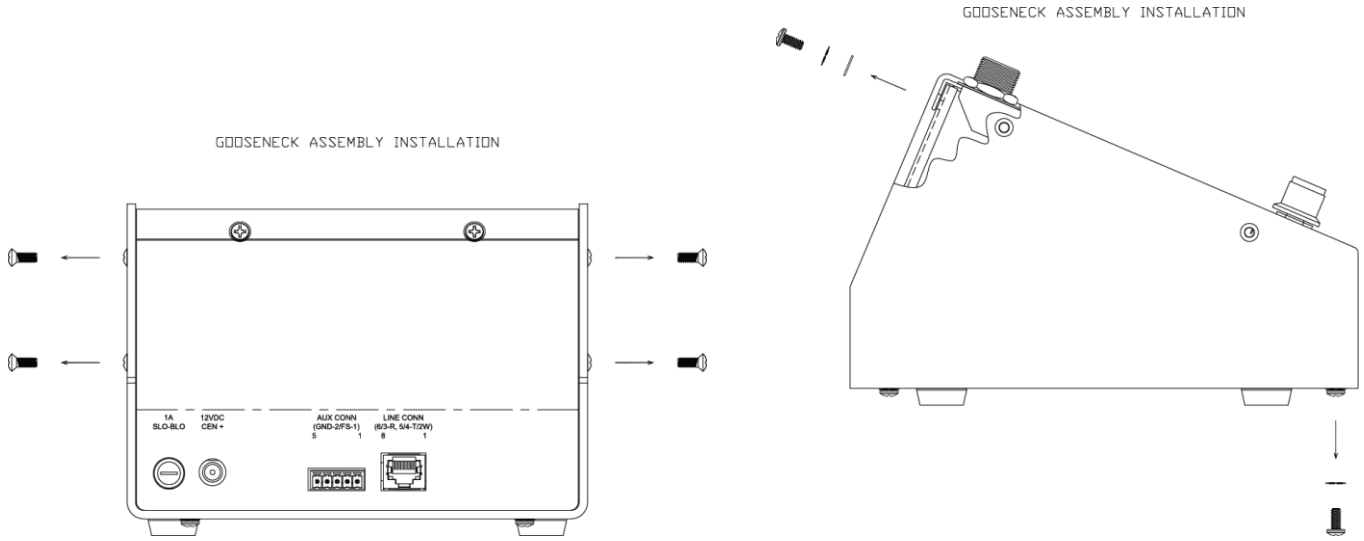

FIGURE 9. GOOSENECK ASSEMBLY INSTALLATION, SIDES, BOTTOM & BACK SCREWS REMOVAL

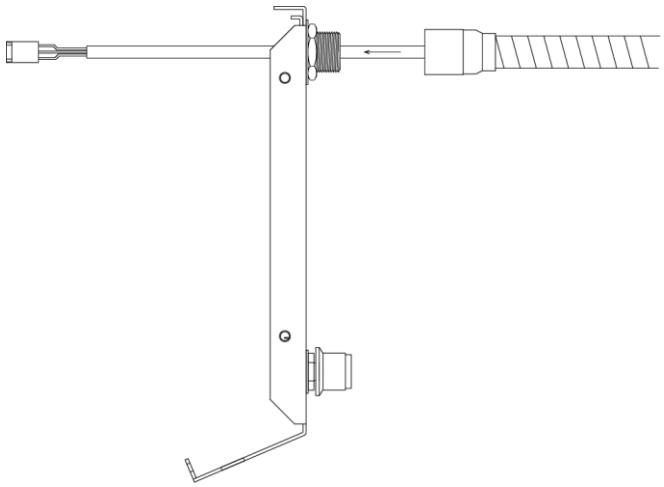

FIGURE 10. GOOSENECK ASSEMBLY INSTALLATION, GOOSENECK MOUNTING

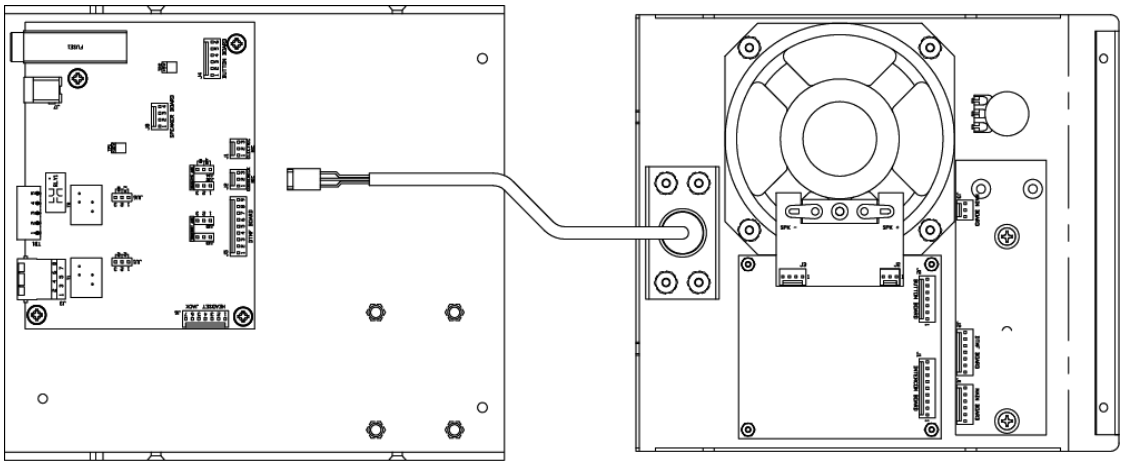

FIGURE 11. GOOSENECK ASSEMBLY INSTALLATION, GOOSENECK CABLE CONNECTION

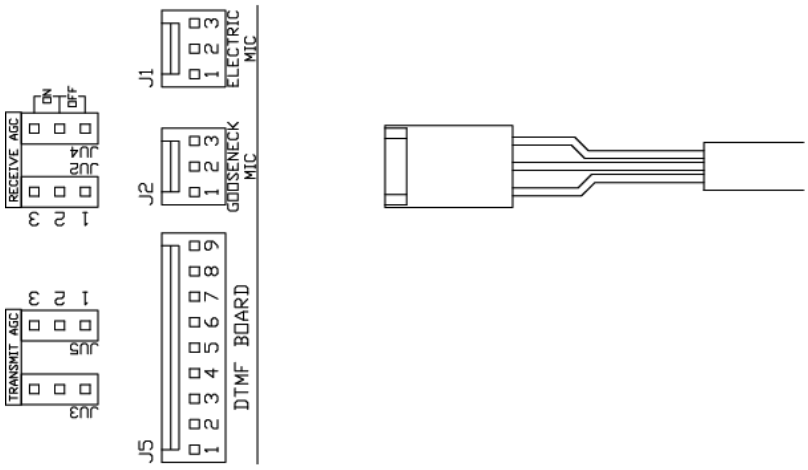

FIGURE 12. GOOSENECK ASSEMBLY INSTALLATION, CABLE DETAIL

Figures 9 through 12, illustrates the Gooseneck Assembly Installation & Connection to the Main Board.

Microphones: These devices are equipped with an electret microphone as standard equipment. A dynamic microphone on a gooseneck may be provided in place of the built-in microphone. A gooseneck microphone is mounted as illustrated on Figures 9 through 12.

Headsets: If your unit is equipped with headset jacks, they are designed for use with Plantronics-type headsets using a P-10 Plug Prong connector.

5. ADJUSTMENTS:

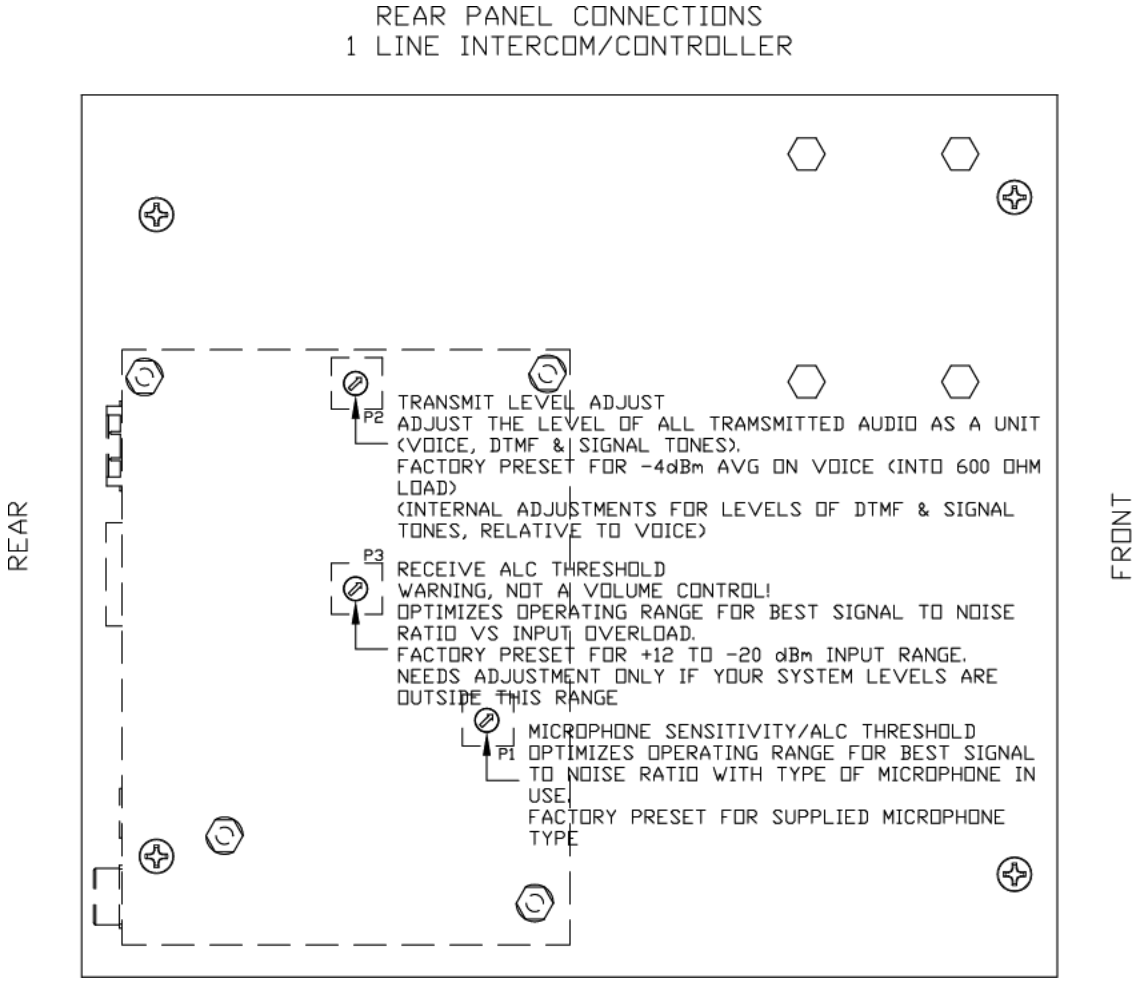

FIGURE 13. LEVEL ADJUSTMENTS, INTERCOM BOTTOM VIEW

Figure 13, illustrates the Level Adjustments available at the Bottom of the Unit.

The level adjustments at the bottom of the unit are preset at the factory for typical applications. If your application requires a different adjustment for microphone sensitivity, transmit level or receive sensitivity, make those adjustments as illustrated in Figure 13. The factory adjustments are made using a 600 Ohm line load. Transmit Level is set at a nominal 0 dBm into a 600 Ohm load. If the unit is installed into a higher impedance circuit, the transmit level can be up to 6 dBm higher.

Models with DTMF Encoders and Decoders (11-11156 and 17-11008) – The level of the DTMF tones with respect to the nominal voice level is factory preset at about 10 dBm below voice. To change the relative level of the DTMF tones, use adjustment pot P2 on the DTMF Circuit Board (Figure 7).

Models with radio control tones (17-11008) – The level of the keying tone sequence is factory preset so that the initial tone is at the same level as the nominal voice level, the function tone is 10 dBm lower and the holding tone is 30 dB below the voice level. To change the levels of these tones (as a group) use pot P1 on the DTMF Circuit Board (Figure 7).

6. FIRMWARE CHECK

The user may determine the firmware version of the unit by pressing the “Call/Mute” key of the intercom model or F1 key for Console model when powering on the unit. Here is the procedure for that. Power the unit on and press and hold the “Call/Mute” key for intercom model or F1 key for Console. After the 4 start up beeps have sounded they will stop and then the unit will beep its firmware version. For this example we will assume the firmware version is 2.1. The number before the “.” is the Major and the number after the “.” is the minor. The unit will beep the major number first, then the minor. So for this example the unit will beep 2 times (each beep will be 1 second interval), followed by a short beep, which is letting you know we are done beeping the Major and will now beep the Minor. After the short beep, it then will beep 1 time for the minor. You can release the button after you start to hear the beeps. Note: If the minor number is 0, then you will hear the major beeps followed by a short beep then nothing.

NOTE

The Firmware Check only applies to models with DTMF Keypad Circuit Board

7. PROGRAMMING AND USE OF THE DTMF ENCODER AND DECODER

USER PROGRAMMING MODE (Only Applicable to Models with DTMF Keypad)

To enter the user-programming mode, JU1 on DTMF must be placed in pins 1 & 2 or the “P” position on the silk screen for Program mode, the “R” is for Run mode. The default location of this jumper from the factory is in the “P” position. It is not necessary when done programming the unit to remove the jumper and place it on the “R” terminals, as this would only be necessary if you do not want any unauthorized person to re-program the unit at a later time. When it is on the “R” position the unit cannot be programmed. Power on the unit while holding the “0” key on the DTMF keypad down and after the 4 start up beeps have passed the unit will check to see if the “0” key is pressed. If so, it will then make sure you want to enter this mode by making sure the “0” is held down for the entire 4 seconds. Continue to hold the “0” key until you hear a constant beep. At this time you may release the “0” key. Releasing the “0” key before the constant beep, will not place the unit into program mode. Now that the unit is in Programming Mode, this is confirmed by 3 beeps.

MODES EXPLAINED

The following are the user options. These options are selected via the DTMF keypad.

A) Program Memory Dialer
B) Program Alert Codes
C) Program Burst Code
D) Program DTMF On / OFF Timing
*****) Program F1, F2 or Monitor Tones
#) Enable / Disable Signaling Tones
1) Enable / Disable Star Pound Keying
2) Enable / Disable Memory Dialer
3) Program After Relay Delay in ms
0) Restore User Defaults

PTT) Pressing PTT alone will reboot the unit. All current setting will remain in flash storage and re-loaded when the unit reboots.

The above options are described here briefly and then later in greater detail.

- **Program Memory Dialer**: There are 5 user's programmable dialing locations each can store up to 12 DTMF digits.

- **Program Alert Codes**: There are 2 alert codes. The first is Normal alert, and the second is the Emergency alert code. Each code can store a max of 12 DTMF digits. The intercom is always listening for incoming DTMF. If you have set a DTMF code in either the Normal, Emergency or both, then the unit will beep 2 times for the normal alert, followed by sending an answer tone to the sender to confirm we have received it. It will then flash the Call/Mute button slowly. Every 20 seconds it will beep 2 times until the Talk button is pressed at which time clears the alarm. If the Emergency code is received then the unit will beep 4 times followed by sending an answer tone to the sender to confirm we have received it. It will then flash the Call/Mute button quickly. Every 10 seconds it will beep 4 times until the Talk button is pressed at which time clears the alarm. If both of the alert codes are not programmed, then the unit will not listen for any DTMF alert codes.

- **Program Burst Code**: The burst code is a string of DTMF codes that are send out automatically, anytime the Talk button is pressed. The burst code can store a max of 12 DTMF digits. When you press the PTT button you will hear a beep for each DTMF that gets send out. You will need to wait until the beeps stop before you start talking.

- **DTMF On/Off Timing:** The DTMF ON & OFF time can be programmed in milliseconds. The max is 999ms for the on/off time, and the minimum is 1ms.

- **Program F1, F2 or Monitor Tones:** The F1, F2 and Monitor function tones can be programmed. Following is the list of programmable function tones: 2050, 1950, 1850, 1750, 1650, 1550, 1450, 1350, 1250, 1150, 1050, 950, 850, 750 & 650.

- **Program Relay Delay in ms:** If using the external PTT relay to control other equipment may need a bit of time to activate before being able to accept audio from the intercom. This delay is a feature when you press the PTT or DTMF activates the internal relay then waits this delay time before doing any other function. The default time is 25ms. For example, If one were to push any key on the DTMF keypad the unit would first activate the PTT relay wait this delay then send out the DTMF tone. Likewise for all other features for example signaling, burst keying or Start Pound Keying.

- **Enable / Disable Signaling Tones:** This enables or disables the use of the signaling tones. If enabled, when the PTT is pressed it will send out the 2175 burst tone followed by the programmed F1 tone. When the PTT is released the signaling will stop.

- **Enable / Disable Star Pound Keying:** When enabled this will send a "*" when the PTT is pressed. When released, then it will send a "#".

- **Enable / Disable Memory Dialer:** When enabled, this will allow the user to send out the pre programmed memory dialed locations.

PROGRAMMING MODES

Before using any of these modes you must first enter programming mode. See section on "**User Programming Mode",** and enter this mode first.

There are some beeps the unit does that you should be familiar with first. Afterward this manual will refer to them by its acronyms.
#1) **1 Quick Beep (1QB)**, indicates that it recognized your DTMF press.
#2) **3 Quick Beeps (3QB)**, indicated that the unit has accepted your request.
#3) **1 Long Beep (1LB),** indicates that there was either a timeout error or an invalid entry. After hearing this it goes back to the main programming menu.

NOTE: Upon entering any of these settings (A, B, C, D *, #, 1, 2, 3 and 4) you have 10 seconds in which to do complete them. If 10 seconds passes and nothing is entered the unit will sound the 1LB and return to the main programming menu. If you are in the middle of a process and get confused or distracted just wait the 10 seconds and the unit will not save any of the current changes and return to the main programming menu. Also, when entering in a DTMF code like say the memory locations, you have 10 seconds to hit the next DTMF key or PTT to save the changes. Pressing any key gives you 10 more seconds to the next step. If at any time you hear the 1LB, there was an error and nothing was saved and the unit will return back to the programming menu. Pressing the PTT button saves your changes in the current step. Anytime the unit is in programming mode the button LEDs will be flashing. This lets you know that you are in the programming mode.

PROGRAMMING HOW TO EXAMPLES

- **(A) Program Memory Dialer:** To enter this mode Press the "A" key on the DTMF keypad. You will hear the 1QB. Next you will have to press 1-5 for the memory location you want to program. You have 10 seconds to do this. If you exceed the 10 seconds you will hear the 1LB, which indicates that there was an error in programming this location and nothing was changed. When you have pressed 1-5 you will hear 3QB confirming the memory location to be programmed. Now you may enter in any DTMF digit up to 12 digits long. When you have finished entering the DTMF memory code, press the PTT button, this will save your changes. You will then hear 3QB to confirm that the unit has saved the changes. Note: that there is a max of 12 DTMF digits per memory location.

- **(B) Program Alert Codes**: The alert codes are factory set to 123 for Normal, and 911 for Emergency. Enter this mode by pressing the "B" key. You will hear the 1QB. Next you must press 1 for Normal alert code or 2 for Emergency code. The unit will sound another 1QB for that press followed by a pause then sound the 3QB to let you know it is ready for you to enter in the DTMF code. You may now enter in the DTMF code for the Alert code you selected. Each alert code can hold a max of 12 DTMF digits. When you have entered in the code you desire, press the PTT button. You will then hear 3QB confirming the saved changes. To program the other alert code you will need to start this procedure over by pressing the "B" key and continuing on. There is no separate Enable/Disable feature for this mode. To enable either or both of these codes simple set a code in as above. To disable either or both of these alert codes enter this mode like you normally would, except when it's time to enter in the alert code press the PTT instead. When you press the PTT without entering a DTMF code you will hear 3QB indicating that it has saved this code to null. A null code effectively disables the currently selected alert code from ever sounding an alert.

- **(C) Program Burst Code**: The burst keying is factory set to disabled. Enter this mode by pressing the "C" key. You will hear the 1QB followed by a pause then 3QB to let you know its ready for you to enter in the DTMF code. You may now enter in the DTMF code for the Burst code. When you are done press the PTT button. You will then hear 3QB confirming the save changes. There is no

separate Enable / Disable feature for this mode. To enable this feature simply set a code in as above. To disable, enter this mode like you normally would, except when its time to enter in the burst code press the PTT instead. When you press the PTT without entering a DTMF code you will hear 3QB indicating that it has saved this code to null. A null code effectively disables the burst code feature.

- **(D) Program DTMF On / OFF Timing:** Factory defaults are 100ms on and 75ms off. Enter this mode by pressing the "D" key. You will hear the 1QB followed by a pause then 3QB to let you know it's ready for you to enter in the On/Off timing. Here is how one would enter in the timing. Let us assume you want to enter in a ON time of 75ms and a OFF time of 25ms. After you heard the 3QB, you would press "075025" then the PTT key. After the PTT key is pressed you will hear 3QB acknowledging the change. The format for entering on and off timing must be 6 digits in length. So if your ON or OFF time is less that 100, you must enter a 0 first then your number. Another example for an on/off time of 125ms on and 50ms off would be to enter "125050" the max ON/OFF time is 999ms, and the minimum is 1ms. If the user tries to enter in an ON or OFF time of 0 the unit will sound the 1LB.

- **(*) Program F1, F2 or Monitor Tones**: The default factory settings are 1950 for F1, 1850 for F2, and 2050 for Monitor. If you need to change these press the "*" key on the DTMF keypad. You will hear the 1QB. Next you will have to press 1, 2 or 3. Pressing 1 will set the F1 function tone. 2 will set the F2 function tone, and 3 will set the monitor tone. When you press 1, 2 or 3 you will hear the 1QB followed by a short delay then you will hear the 3QB. Now you will enter in the freq you desire followed by the PTT button to save it. Let us assume you want to enter in a frequency of 1750 for the F1 tone. After you pressed the "1" key and hear the 3QB, you would press "1750" on the keypad then press PTT. After you press the PTT you will hear the 3QB again confirming the change. If you wanted to set the F2 to 850, you would press "2" then "650" then PTT. If you hear the 1LB at anytime you entered an incorrect frequency or took too long to enter it in. You may only enter in the following form for a valid function tone (anything else will result in an error): 2050, 1950, 1850, 1750, 1650, 1550, 1450, 1350, 1250, 1150, 1050, 950, 850, 750 & 650.

- **(#) Enable / Disable Signaling Tones**: The signaling is factory set to disabled. To enable or disable the signaling tones when the PTT is pressed, press the "#" key. You will hear the 1QB. Then you must press "1" for Enable or "0" for Disable. After you press 1 or 0 you will hear 3QB informing you the changes are saved.

- **(1) Enable / Disable Star Pound Keying:** The star/pound keying is factory set to disabled. Star Pound Keying is when you press the PTT the unit will send out a DTMF "*". When you release the PTT it will send out a DTMF "#". If you would like to enable / disable this feature you would press the "1" key. After which you will hear the 1QB. Then you must press "1" for Enable or "0" for Disable. After you press 1 or 0 you will hear 3QB informing you the changes are saved.

- **(2) Enable / Disable Memory Dialer:** The memory dialer is factory set to disabled. To enable it, press the "2" key. You will hear the 1QB. Then you must press "1" for Enable or "0" for Disable. After you press 1 or 0 you will hear 3QB informing you the changes are saved.

- **(3) Program after Relay Delay in ms**: To change the factory default or 25ms delay. Press the "3" key. You will hear the 1QB followed by a short pause then 3QB. At this time you must enter in the

delay in ms followed by the PTT button. After pressing the PTT button you will hear 3QB confirming the saved changes. The maximum ms setting is 9999ms, and the minimum is 0ms. For example, if one wanted to set a delay of 1.2 seconds or 1200ms you would enter “1200” then PTT. Or for 50ms one would enter “50” then PTT. For 0ms you can either press “0” or just press the PTT without entering in a delay.

- **Restore User Defaults:** If one is ever unsure of something they set or would just like to restore all settings to the factory defaults simple press “0”. After you press “0” you will hear 3QB. This indicates that the unit restored all settings to the factory defaults. Here we have listed these default values:

  Phone [1]: 1, 2, 3
  Phone [2]: 1, 2, 3
  Phone [3]: 1, 2, 3
  Phone [4]: 1, 2, 3
  Phone [5]: 1, 2, 3
  Norm Call: 1, 2, 3
  Emergency Call: 9, 1, 1
  Burst Code: Disabled
  DTMF ON /OFF Timing: 100 On / 75 Off
  Signaling: Disabled
  Star Pound Keying: Disabled
  Memory Dialer: Disabled
  Relay Delay: 25 (ms)

8. USE OF INTERCOMS AND RADIO CONTROL CONSOLES

This section describes the basic use of the intercoms and radio control consoles.
Foreword: For the rest of this manual, whenever you read “PTT is pressed” also means and / or the Foot Switch is pressed.

GENERAL USE INSTRUCTIONS

Intercoms – To talk over the line depress the “Talk” push button and speak toward the microphone.

MODEL-SPECIFIC INSTRUCTIONS

- **Intercom with no DTMF Keypad:** This model just has a PTT button. Its normal operation is simply by pressing the PTT button, following by begin to talk and then releasing the PTT button when done. When the PTT is pressed, the button will light indicating its ok to start talking. If the x-mute input is detected the PTT button will flash indicating that the x-mute signal is detected. During this time the speaker will be muted and continue to be muted for the duration of the x-mute signal. Also while the x-mute signal is present the PTT and foot switch input will be disabled not allowing the user to cross talk over the existing line.

- **Intercom with DTMF Keypad:** The basic features are the same as with the intercom with no DTMF keypad along with several additional characteristic. This model not only has the PTT button but also has a Call/Mute button along with the full 16 digit DTMF Keypad. This unit also has more internal features as well, which are listed here below:

    1. Memory Dialing. 5 separate memory location each able to store 12 DTMF digits.
    2. Alert Calls. There are 2 alert calls, Normal and Emergency. When either of these alert codes is received via DTMF the unit will alert the operator with a buzzer and flash the Call/Mute button. The normal code flashes the button and sounds the alert at a slower rate whereas the Emergency code flashes the button faster and sounds a reminder beep more often.
    3. Burst Code. The burst code is a feature when you press the PTT or Foot Switch it will immediately send out the programmed DTMF code.
    4. DTMF on and off time in ms can now be set by the user.
    5. Signaling. The unit will send out the typical 2175/Ftone signaling. The Ftone is also user programmable.
    6. Star Pound keying. When enabled the unit will send out a DTMF “*” when the PTT or Foot Switch is pressed. When released it will send out a DTMF “#”.
    7. After Relay Delay. Anytime the unit is transmitting the internal relay activates. If the user will be connecting external equipment to the intercom's external relay connection there may be a need to delay the intercom's operations a short while to allow this external equipment to process the audio. The default delay is 25ms. When the PTT or Foot Switch is pressed the internal relay activates, then delays 25ms before doing any other operation like sending out the signaling or burst keying. This delay gives the external equipment time to start up and get going to process the audio in/out of the intercom. This delay can be set from 0ms to 9999ms.

        - **DTMF Keypad Explained.** The DTMF keypad can be used in two ways. Pressing the DTMF keypad alone with send out the DTMF tone, or it can be used while the PTT is pressed. When pressing the DTMF without the PTT pressed there is a inter digit 2 second timer. This means that when you press the first DTMF digit, the relay closes and sends out the DTMF tone, then continues to keep the relay closed for up to 2 seconds more to see if another DTMF digit is pressed. Otherwise the relay would click on and off for every DTMF press

which is not efficient. When the PTT is pressed the DTMF is sent out immediately, and the 2-second timer is disabled. When you release the PTT the relay opens at that time. If the memory dialing feature is enabled it behaves a bit differently. With memory dialing enabled it assumes that any time you press the "#" key with the PTT pressed first, you want to dial a memory location. When you press first press the PTT then "#" you will hear the 1QB, then you need to press 1-5 for the memory location you choose to have automatically dialed. When the unit is dialing the selected memory location the unit will beep. When the beeping is done the DTMF string has been sent out and it is now ok to start talking. If you start talking before the beeps are done your audio will not be sent out as the mic is muted during this time. Also, if when you press the PTT then "#" and do not select 1-5 within 2 seconds the unit will send out the DTMF "#".

- **Memory Dialing explained in detail:** Be sure that this is enabled first before trying to use this feature. Or one can just try the following and if it does not work, then it's disabled. To perform a memory dial you first need to press the PTT button then press " # ", when you do you will hear a 1QB. At this time you need to press 1-5 for the memory location you want automatically dialed. After you select 1-5 the unit will start to dial the memory location automatically. For each DTMF ion the memory location that gets sent out a beep is sounded on the intercom to let the user know it's sending the DTMF out. One must wait until these beeps are done before you start talking. The reason is the microphone is muted during this time so the DTMF is sent out cleanly. After the DTMF memory location is sent out the microphone is opened and it is ok to start talking.

- **Alert Codes explained in detail:** There are 2 alert codes, Normal alert code and Emergency alert. These are DTMF codes that are stored in the unit and when set makes the unit listen for any incommoding DTMF tones. If these tones match the stored alert codes the Call/Mute Button flashes and the Beeper sounds. When the Normal code is received the beeper sounds 2 times, sends an answer back tone to the sender to let them know it was received and accepted. It then flashes the Call/Mute button at a rate of 1 second on and 1 second off. It will, thereafter every 20 seconds, sound the beeper 2 times to alert the user that a Normal call was received. To cancel these alerts simply press the PTT or any buttons on the DTMF keypad (note that if pressing the DTMF keypad that DTMF digit will get sent out). When the Emergency code is received it will sound the beeper 4 times, send the answer back tone to the sender and flash the Call/Mute button faster. The reminder beep will also sound 4 more times every 10 seconds. Again to cancel these press the PTT or any key on the DTMF keypad. One thing to keep in mind, if either of the current alert codes are in alert status and the other alert code is received it will override the current alert code with the new one. An example of this would be if the unit received the Normal alert code and sometime later received the Emergency code the unit would not display and beep the Emergency code signal and clear the Normal one.

- **Burst Code explained in detail:** When this code is programmed enables this feature. Anytime the PTT is pressed the burst code will be sent out. For every DTMF digit of the burst code sent the unit will beep letting the user know that its sending it out. Wait until the beeps have finished until you start to talk otherwise no audio will be sent as the microphone is muted during this time and UN-muted after its done sending the burst code DTMF string.

- **Star Pound Keying:** When enabled, anytime the PTT is pressed the unit will send out a DTMF "*", then open the microphone. When the PTT is released it will then send out a DTMF "#".

- **Intercom Console with no DTMF keypad:** The basic code features are the same as with the intercom with no DTMF keypad. With the exception of memory, dialing, and alert codes can be programmed in at the factory. The other features can be. On this model there are 3 buttons. F1, F2 and Monitor. The Foot Switch works in conjunction with the F1 button only. Any time you press F1, F2 or Monitor it will send out the 2175 signaling tone followed by the selected Ftone as programmed into the unit for that selected Fx button followed by the low level 2175 and remain on as long as the button is held. If any of the other options like burst keying are programmed in at the factory the unit will first perform the signaling event then send out the burst keying. Again, if this is the case, wait for the beeps to stop before talking. Also give a moment before immediately start talking after pressing one of the buttons even without the additional features as it does take a moment to send out the signaling tone. Specifically when you have an extended After Relay Delay programmed in.

- **Intercom Console with DTMF keypad:** The basic code features are the same as with the intercom with DTMF keypad with the exception of the Alert Codes. All other features are available. Also, if the user tried to disable the signaling feature it will always give a 1LB as it will not allow the user to turn signaling off when is a console.

NOTES: