FIGURE 26. BTR-30N Rear View

Base Station Link

This pair of RJ-45 jacks allow the passage of WTA, WTA termination control voltage, and CAN bus data between multiple base stations. Up to eight (8) base stations may be connected with the base station link. If just using WTA between bases, up to 16 base stations can be connected together. The pinout of the IN jack and OUT jack may be seen in Figure 27 and Figure 28

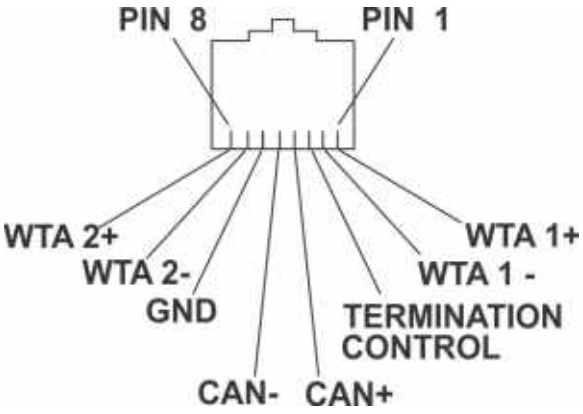


FIGURE 27. Base Station Link IN RJ-45 Jack Pinout

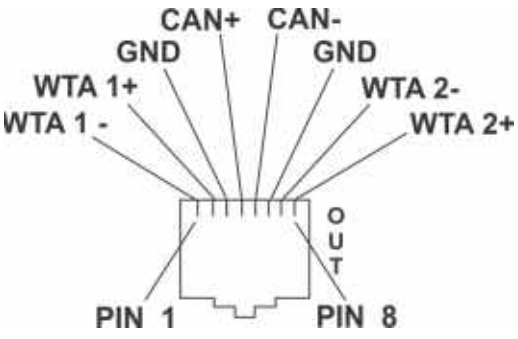


FIGURE 28. Base Station Link OUT RJ-45 Jack Pinout

Stage Announce (SA)/Relay

The Stage Announce 3-pin XLR connector (see Figure 26) is where audio exits the base when a beltpack user presses the SA button. The pinout of the plug connector is shown in Figure 29.

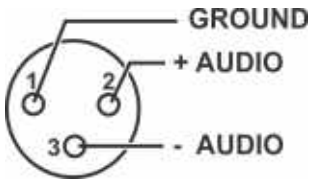


FIGURE 29. Stage Announce Pinouts

The stage announce output is balanced audio at line level. The output level is configured in the software.

A relay contact closure also activates when a beltpack user presses the SA button. The contacts are normally open (N.O.). The relay schematic is shown in Figure 30. The rating of the relay is 1 Amp at 24 volts AC or DC maximum.

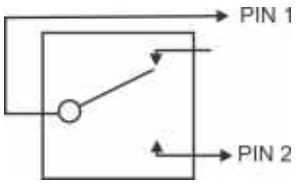


FIGURE 30. Relay Output Schematic (Normally Open)

A **Phoenix** type connector (supplied) plugs into the relay contact port on the rear of the base station. This connector provides a screw-type closure for an easy connection to wires. See Figure 31.

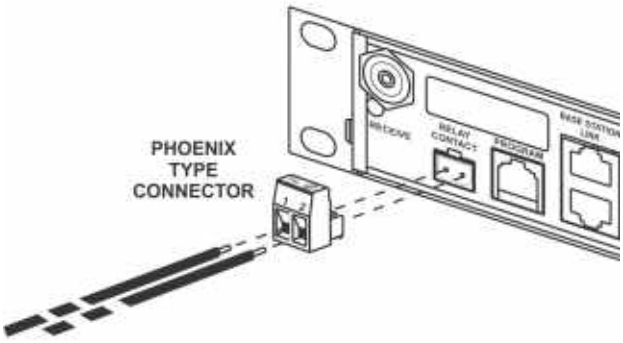


FIGURE 31. Screw Terminal Adapter

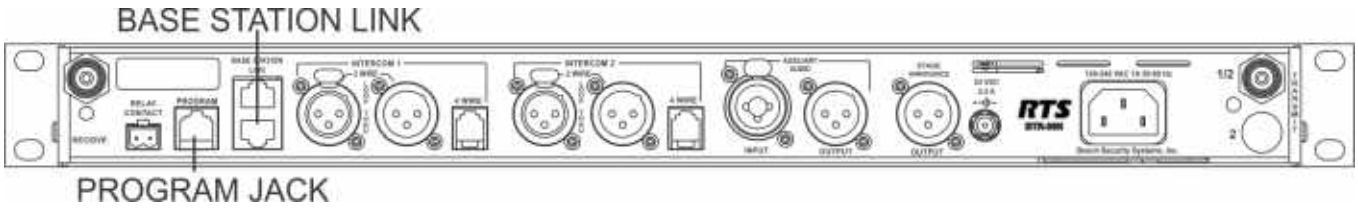


FIGURE 32. BTR-30N Base Station Link Jack and Program Jack

Base Station Link Jack

WTA 1 and WTA 2 in the BTR-30N are two (2) independent 2-wire intercom channels. Up to 16 base stations may be connected together to share WTA audio. Do not confuse WTA audio with CAN bus data, as only eight (8) bases may be connected to share CAN bus data. Not only does the WTA Link cable pass both channels of WTA audio, it passes a logic level so the 1st base station in the chain is the only one providing a termination of the WTA intercom channels. Care must be taken to connect cables between base stations from the OUT of base one (1) to the IN of base two (2) and so forth. If the WTA link cable is passed from OUT to OUT or IN to IN, the WTA audio may terminate in multiple places and cause the WTA audio level to be greatly reduced.

The base station link jacks can interface with other base stations via two (2) different types of cables:

- Base Link Cable (BLC)
  - Straight through cable. Passes CAN data, WTA audio, and WTA termination signal.
- CAN Bus Termination Cable (CTC)
  - Passes WTA audio and WTA termination signal, but does not pass CAN data. Acts as a termination of the CAN networks on either side of it.

Detailed information on the pinout and operation of these cables can be found in “Connection of Multiple Base Stations with the Link Cables” on page 40.

Program Jack

This jack is only used for updating the internal software of the base station. It is typically used only by the manufacturer and service centers.

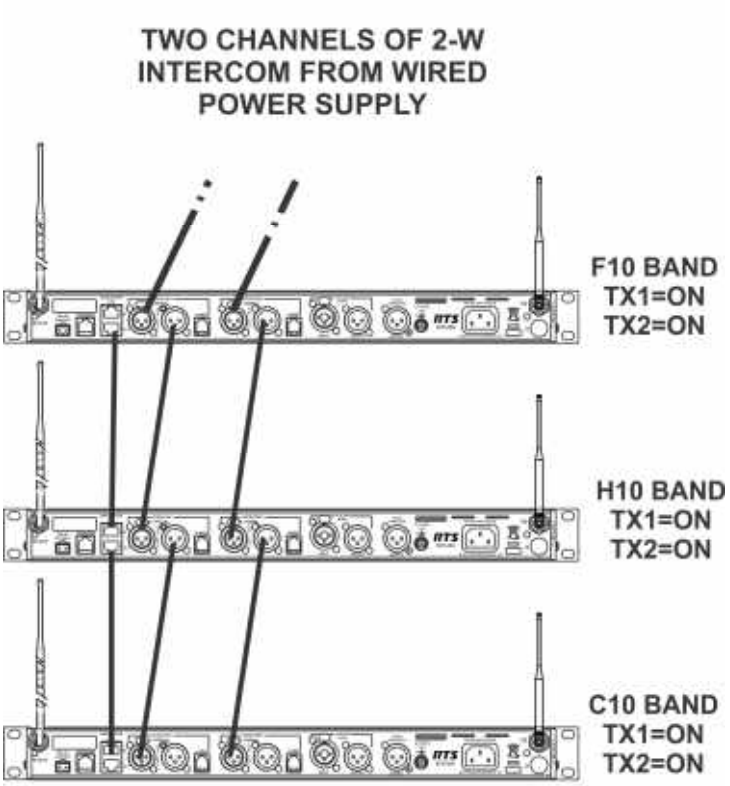


FIGURE 33. Multiple Base Stations Connected via 2-Wire Cables Sharing WTA Audio

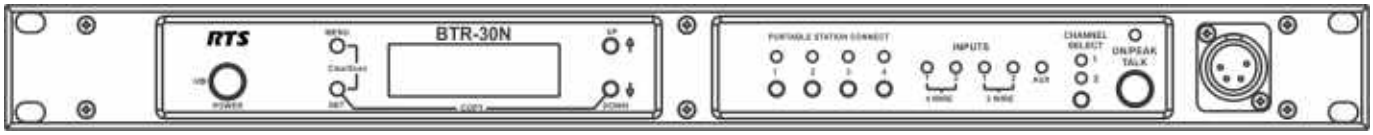


FIGURE 34. BTR-30N - Front Panel

Powering the Base Station

The base station may be powered two (2) different ways:

- Line power at the IEC receptacle. Accepts 100–240VAC, 1A max., 50 or 60Hz.
- 24 VDC Power. Accepts a 5.5mm by 2.5mm screw on plug. Source must supply at least 2.5 Amps.

To **power on the base station**, do the following:

> Press the **POWER button** located on the far left of the base station front panel.

To **power off the base station**, do the following:

> Press and hold the **POWER button**.

Both line power and DC power can connect to the base station at the same time. If AC line voltage drops, the base draws power from the DC input automatically. When the AC line power is restored, the base automatically switches back to AC power. There is no interruption in the base operation during these transitions.

CAUTION: Do not power up a base station within three (3) seconds of the unit being turned off. Voltages within the unit need time to drop below a threshold. If powered up within the above time, the unit may boot as the wrong frequency band.

WARNING: Even with the unit powered down via the power switch, some circuits within the base remain energized. To completely remove power to the unit, disconnect the power cord.

Start Up Screen

When the BTR-30N powers up, the first screen displayed is the **Start Up** splash screen. It displays for about three (3) seconds. This screen contains both the software version number and band ID of the base. Figure 35 shows a screen indicating software version sb2145L and a F10 band unit.

FIGURE 35. Start Up Screen

After three (3) seconds the status screen appears.

NOTE: A complete screen flowchart of the base station is available in *Additional Resources*.

Status Screen

The **Status** screen is the main information screen of the base station. It displays a number of system items:

- Frequency Group
- Band of Base Station
- Mode of Base Station
- Transmitter 1 Power Setting
- Transmitter 2 Power Setting
- Beltpack Current Activity
- Battery Life
- Base Receiver Status

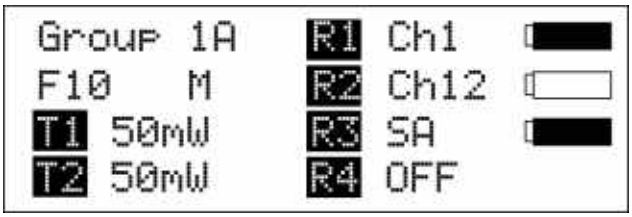


FIGURE 36. Status Screen

RSSI Screen

RSSI stands for Received Signal Strength Indicator. This screen displays the detected signal strength of each of the four (4) receivers in the base.

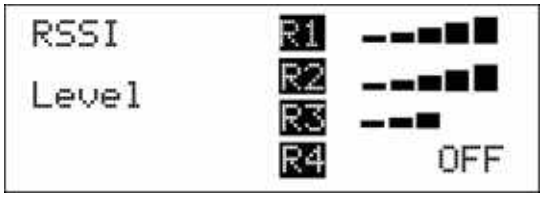


FIGURE 37. RSSI Screen

The following are the approximate receive levels indicated by the bars after each receiver.

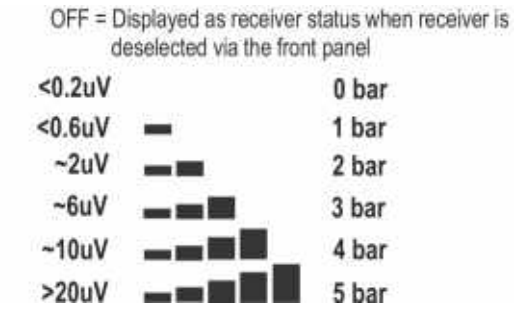


FIGURE 38. Receive levels indicated by bars.

If no beltpacks are operating, an RSSI level of two (2) bars or above may indicate interference on that frequency. A different receive channel should be selected.

To **access the RSSI screen**, do the following:

> From the status screen, press and hold **MENU** for two (2) seconds.

To **exit the RSSI screen**, do the following:

> press **MENU** to arrive back at the status screen.

Group/Channel Select Screen

The group/channel, group/frequency, and frequency edit screens allow the user to set the frequencies of the base station. Each screen has a slightly different way to set frequencies.

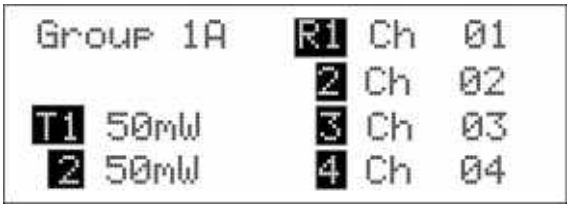


FIGURE 39. Group/Channel Screen

The **Group/Channel** screen displays the group number and the channel assigned to each of the four (4) receivers. Each channel is a unique base receive frequency. The frequencies of factory - defined groups 1A to 18 can only be selected from a set number of predetermined channels.

User-defined groups 18u to 30u may be changed by the user to any frequency within range of the base.

Group/Channel Screen

To **select the group and channel**, do the following:

1. From the status screen, press **MENU**.
   GP_CH select, Base Main, Intercom Settings, and Aux Settings appear in the main selection screen.
2. Using the UP/DOWN arrow buttons, select **GP_CH Select**.
3. Press **SET**.
   The Group/Channel Select screen appears. The Group flashes.
4. Using the UP/DOWN arrows, select a **group**.
5. Press **SET**.
   The change is accepted and Channel starts to flash.
6. Using the UP/DOWN arrows, select a **channel**.
7. Press **SET**.
   The change is accepted and the focus moves to the next receiver. After the last receiver channel is set, the unit changes to the group and channels selected, and then returns to the main screen.

Group/Frequency Screen

The **Group Frequency** screen displays the group number and frequencies assigned to each of the four (4) receivers. It is just like the Group/Channel screen except the receive channels are displayed as frequencies. Also, the transmit frequencies are displayed.

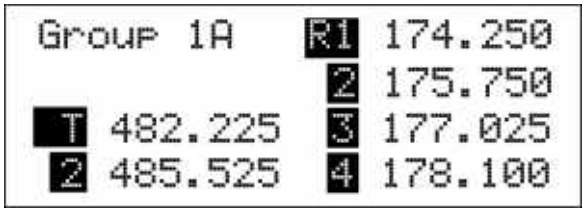


FIGURE 40. Group/Frequencies Screen

To **select the group and frequency**, do the following:

1. From the status screen, press **MENU**.
   GP_CH select, Base Main, Intercom Settings, and Aux Settings appear in the main selection screen.
2. Using the UP/DOWN arrow buttons, select **GP_CH Select**.
3. Press **MENU** again in the Group/Channel screen.
   The Group/Frequency Select screen appears. The Group flashes.
4. Using the UP/DOWN arrows, select a **group**.
5. Press **SET**.
   The change is accepted and Frequency starts to flash.
6. Using the UP/DOWN arrows, select a **frequency for the channel**.
7. Press **SET**.
   The change is accepted and the focus moves to the next frequency. After the last receive frequency is set, the unit displays the group and frequencies selected, and then returns to the main screen.

Frequency Edit (User-Defined Groups Only)

The **Frequency Edit** screen is similar to the Group Frequency Select screen, but allows the complete editing of each transmit and receive frequency.

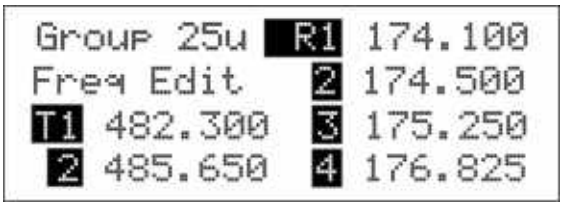


FIGURE 41. Frequency Edit Screen

To **edit the frequency screen**, do the following:

1. From the status screen, press **MENU**.
   GP_CH select, Base Main, Intercom Settings, and Aux Settings appear in the main selection screen.
2. Using the UP/DOWN arrow buttons, select **GP_CH Select**.
3. Press the **MENU button** twice.
   The Frequency Edit screen appears. The Group flashes.
4. Using the UP/DOWN arrow buttons, select a **frequency**.
5. Press **SET**.
   The changes are accepted and the focus moves to the next transmitter. After transmitter 2 is set, the channel 1 receiver frequency begins to flash.
6. Using the UP/DOWN arrow buttons, select a **frequency**.
7. Press **SET**.
   The change is accepted and the focus moves to the next channel. After the last receive channel frequency is set, the unit sets itself to the frequencies and returns to the main selection screen.

   NOTE: Press MENU at anytime and the unit changes to the group and frequencies selected.

Base Main Settings

Settings contained in the base main menu are the following:

- Local headset microphone gain
- Local headset volume
- Transmit power level
- Squelch setting for each receiver
- Stage Announce (SA) audio level setting
- Receive antenna bias T power
- Base Number...Master or Servant

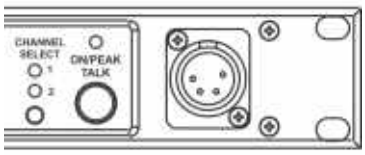


FIGURE 42. Local Headset Area of Front Panel

TALK Button

To **enable the audio path from the headset microphone**, do the following:

> Press the **TALK button**.
  The talk light activates when the TALK button is active.

This light has two (2) functions:

Green - Indicates activation of the TALK button.

Red or flashing red - Indicates input audio too strong (Peak)

Peak Light	Microphone Gain
Light flashes on loudest speech	Okay
Light flashes on all speech	Too high
Light never flashes on normal speech	Too low

Channel Select Button

The **Channel Select** button selects the intercom channel for the local headset. Each press of the button cycles through the options: intercom one, intercom two, or both, and then back to intercom one (1). The LEDs above the button indicate what channel is currently connected to the local headset.

Local Headset Volume and Gain

The **Local Headset Volume and Microphone Gain** are set in the following software screen.

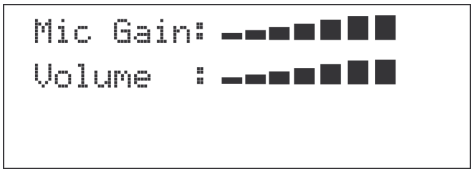


FIGURE 43. Microphone Gain/Volume

To **access the microphone gain and volume level**, do the following:

1. From the status screen, press **MENU**.
2. Using the UP/DOWN arrow buttons, select **Base Main**.
3. Using the UP/DOWN arrow buttons, select **Local Headset**.
4. Press **SET**.
   The microphone gain flashes.
5. Using the UP/DOWN arrow buttons, adjust the **gain**.

   NOTE: Each press of the button is about a 3dB step increase or decrease in gain.
6. Press **SET**.
   The volume flashes.
7. Using the UP/DOWN arrows, adjust the **volume**.

   NOTE: Each press of the button is about a 3dB step increase or decrease in volume.
8. Press **SET**.
   The base menu selection menu screen appears.
9. Press **MENU** twice to go back to the status screen.

   NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

Base Transmitter Power

The base station has the following transmit power settings for both transmitters:

- Off
- 10mW
- 50mW (Default)
- 100mW
- 249mW

The user may also set which transmitter is on or off. The default is both transmitters on

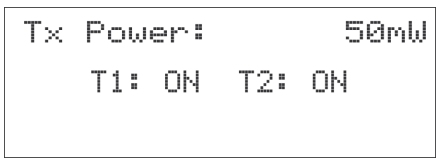


FIGURE 44. TX Power

To **access the transmit power settings**, do the following:

1. From the main status screen, press **MENU**.
2. Using the UP/DOWN arrow buttons, select **Base Main**.
3. Press **SET**.
4. Using the UP/DOWN arrow buttons, select **TX-Power**.
5. Press **SET**.
   The transmit power level starts flashing.
6. Using the UP/DOWN arrow buttons, adjust **the leve**l.
7. When finished, press **SET**.
   The transmitter's on/off indicators flash.
8. Using the UP/DOWN arrows buttons, select **ON** or **OFF**.
9. When finished, press **SET**.
   The Base Main select menu screen appears.
10. Press **MENU** twice.
    The base menu select menu screen appears.

    NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

Squelch Settings

Each of the four (4) receivers of the base station has four (4) adjustable squelch levels. These levels are equivalent to a SINAD level to open squelch for a receiver. The higher the squelch level number, the quieter the receiver is before it squelches; however, the RF range is slightly less than a receiver with a lower number.

00 = OPEN (for testing only, do not use)

01 = 12dB SINAD

02 = 20dB SINAD (Default)

03 = 24dB SINAD

CAUTION: Do not use Squelch Setting 00! A squelch level of 00 turns off all squelch gating. This can allow loud white noise into the audio of a base station if no transmitter is on the RF frequency or the portable select button is on. This setting is for test purposes only.

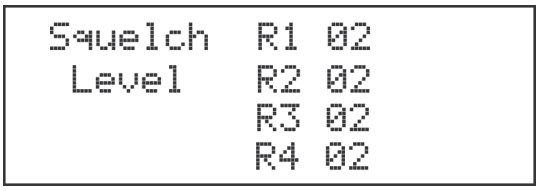


FIGURE 45. Squelch Setting

To **set the squelch setting**, do the following:

1. From the status screen, press **MENU**.
2. Using the UP/DOWN arrow buttons, select **Base Main**.
3. Press **SET**.
4. Using the UP/DOWN arrow butts, select **Squelch Settings**.

5. Press **SET**.
   The receiver 1 squelch setting starts flashing.
6. Using the UP/DOWN arrow buttons, adjust **the setting**.
7. When finished, press **SET**.
8. Repeat **steps six (6) and seven (7)** to set the remaining receivers.
9. When finished, press **SET**.
   The Base Main selection menu appears.
10. Press **MENU** twice.
    The base menu select menu screen appears.

    NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

The base employs two (2) different types of squelches. A fast acting noise type squelch and a slower data squelch. For audio to be received by the base, both a good signal-to-noise audio signal (with a noise threshold set via the user squelch settings above) and a valid data stream must be detected.

Stage Announce Level

The **Stage Announce** software option allows the user to adjust the audio output level of the rear panel stage announce jack.

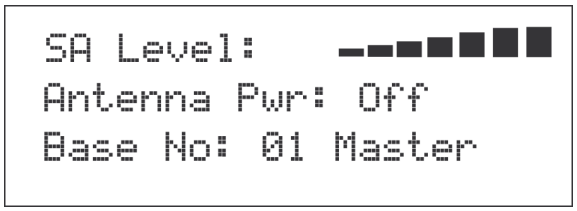


FIGURE 46. Stage Announce

To **set the stage announce level**, do the following:

1. From the status screen, press **MENU**.
2. Using the UP/DOWN arrow buttons, select **Base Main**.
3. Press **SET**.
4. Using the UP/DOWN arrow buttons, select **MORE...** .
5. Press the **DOWN arrow button**.
   The stage announce level flashes.
6. Using the UP/DOWN arrow buttons, adjust **the setting**.

   NOTE: Each press of the button is a 6dB step increase or decrease of volume.
7. When finished, press **SET**.
8. Step through the other settings in the screen by pressing **SET**.
   After the last option on the screen, the base main selection menu appears.
9. Press **MENU** twice to go back to the status screen.

   NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

Antenna Power

Antenna Power can be enabled or disabled. If antenna power is enabled, 9VDC is placed on the center pin of the receive antenna. The purpose of this voltage is to power in-line low noise amplifiers on the receive coaxial cable in order to compensate for excessive RF signal loss due to long cable runs.

Specifications of the power on the antenna jack:

Options:	On/Off (Off=Default)
Voltage:	9VDC
Current:	100mA max.
Protection:	Current is limited to 100mA Base can withstand a continuous short to ground without damage.

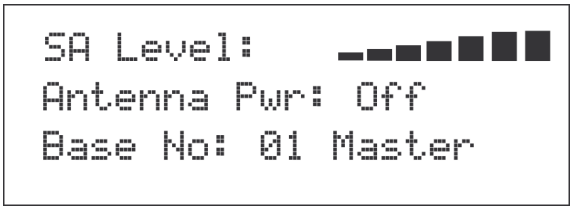


FIGURE 47. Antenna Power

To **enable or disable the antenna power**, do the following:

1. From the status screen, press **MENU**.
2. Using the UP/DOWN arrow buttons, select **Base Main**.
3. Press **SET**.
4. Using the UP/DOWN arrow buttons, select **MORE...** .
5. Press the **DOWN arrow button**.
   The stage announce level starts flashing.
6. Press **SET** until Antenna Power flashes.
7. Using the UP/DOWN arrows, adjust **the setting**.
8. When finished, press **SET**.
9. Step through the other settings in the screen by pressing **SET**.
   After the last option on the screen, the base main selection menu appears.
10. Press **MENU** twice to go back to the status screen.

NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

CAN Bus Number

The **CAN Bus Number** for a base station must be set only in multiple base station configuration and only if the operator wishes to have the following features shared among multiple base stations:

- First-On-Latch – Out of receiver channels (Push to transmit)
- Automatic beltpack TX power control
- Automatic beltpack user ID assignment
- Beltpack TX and Talk shutdown via the base front panel

Table 1 lists valid base number settings. Please see “Connection of Multiple Base Stations with the Link Cables” on page 40.

TABLE 1. Valid Base Number Settings

Base Number	Function
01	Master
02	Servant
03	Servant
04	Servant
05	Servant
06	Servant
07	Servant
08	Servant
09	Unassigned (Default)

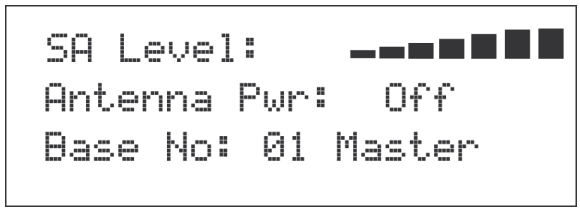


FIGURE 48. Base Number

To **set the CAN bus number**, do the following:

1. From the status screen press **MENU**.
2. Using the UP/DOWN arrow buttons select **More...**
3. Press the **DOWN arrow button**.
4. Press **SET** until the Base Number option flashes.
5. Using the UP/DOWN arrow buttons, set **the number**.
6. When finished, press **SET**.
7. Step through the other settings in the screen by pressing **SET**.
   After the last option on the screen, the base main selection menu appears.
8. Press **MENU** twice to go back to the status screen.

NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

Intercom Settings

There are multiple parameters to set in the Intercom Setting menu:

- 2-wire intercom type: Telex, RTS, Clear-Com, Off
- Only intercom 1 active, only intercom 2 active, both
- 2-wire intercom input/output levels
- 4-wire intercom on/off
- 4-wire intercom input/output levels

2-Wire Intercom

The screens below show the progression of setting 2-wire parameters.

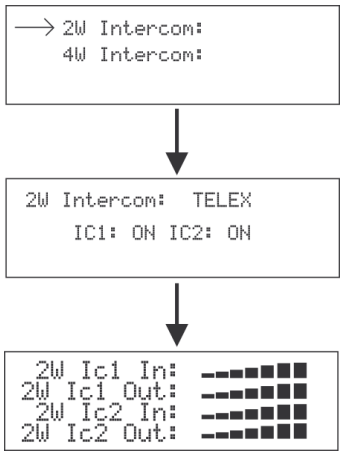


FIGURE 49. 2-Wire Intercoms

To **adjust the 2-wire intercom settings**, do the following:

1. From the status screen, press the **MENU** button.
2. Using the UP/DOWN arrow buttons, select **Intercom Settings**.
3. Press **SET**.
4. Using the UP /DOWN arrow buttons, select **2-W**.
5. Press **SET**.
   The 2-wire intercom type flashes.
6. Using the UP/DOWN arrow buttons, set the **intercom type**.
7. When finished, press **SET**.
   The intercom channel flashes.

   NOTE: If off is selected, the 2-W/4-W menu options appear.
8. Using the UP/DOWN arrow buttons, select the **intercom setup**–intercom 1, intercom 2, or both.
9. Press **SET**.
   The intercom input level flashes.
10. Using the UP/DOWN arrow buttons, select the **input level**.
11. When finished, press **SET**.
12. Proceed through the **intercom settings**.
    Once finished, the screen display returns to the 2-W/4-W selection menu.
13. Press **MENU** twice to go back to the status screen.

    NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

4-Wire Intercom

The screens below show the progression of setting 4-wire parameters.

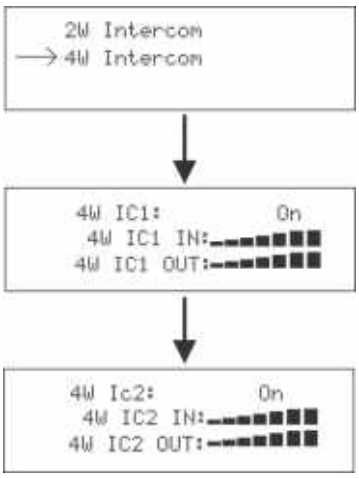


FIGURE 50. 4-Wire Intercoms

To **adjust the 4-wire intercom settings**, do the following:

1. From the status screen, press the **MENU** button.
2. Using the UP/DOWN arrow buttons, select **Intercom Settings**.
3. Press **SET**.
4. Using the UP /DOWN arrow buttons, select **4-W**.
5. Press **SET**.
   The intercom one 4-wire on/off selection flashes.
6. Using the UP/DOWN arrow buttons, select **on or off**.
7. When finished, press **SET**.
   The intercom input level flashes.

   NOTE: If off is selected, the screen skips to the intercom two screen.
8. Using the UP/DOWN arrow buttons, select the **intercom setup**–intercom 1, intercom 2, or both.
9. Press **SET**.
   The intercom input level flashes.
10. Using the UP/DOWN arrow buttons, select the **input level**.
11. When finished, press **SET**.
12. Proceed through the **intercom output settings** in a similar manner.
    Once finished, the intercom two 4-wire on/off selection flashes.
13. Repeat **steps 6-12** for intercom two.
    Once finished, the screen display returns to the 2-W/4-W selection menu.
14. Press **MENU** twice to return to the status screen.

    NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

Auxiliary Settings

The parameters to configure in the auxiliary setting menu are as follows:

- Intercom 1 Auxiliary mode: *Local, Global,* or *Off*
- Intercom 2 Auxiliary mode: *Local, Global,* or *Off*
- Auxiliary input/output levels

The auxiliary setting for Local, Global, and Off are defined as the following:

Local Any audio placed into the auxiliary input port is routed only to the base's local headset and beltpack(s). Any audio heard out of the auxiliary output port is only from the base's local headset and beltpack(s).

Global Any audio placed into the auxiliary input port is routed not only to the base's local headset and beltpack, but also to any wired 2-wire or 4-wire system connected to the base station. Any audio heard from the auxiliary output is not only from the base's local headset and beltpack, but also from any wired 2-wire or 4-wire system connected to the base station.

Off The auxiliary input and output for the intercom channels is disabled.

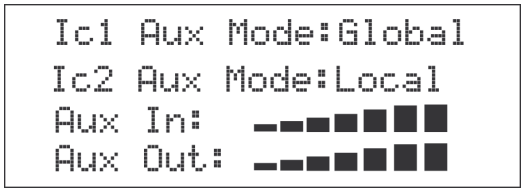


FIGURE 51. Auxiliary Input/Output

To **configure the auxiliary settings**, do the following:

1. From the status screen, press the **MENU** button.
2. Using the UP/DOWN arrow buttons, select **Aux Settings**.
3. Press **SET**.
   The Intercom 1 auxiliary local, global, or off selections start flashing.
4. Using the UP/DOWN arrow buttons, select **the option** you desire.
5. When finished, press **SET**.
6. Repeat **steps 1 through 5** for Intercom 2.
7. When finished, press **SET**.
   The auxiliary input level flashes.This level is applied to both intercom channels.
8. Using the UP/DOWN arrow buttons, set the **input level**.
9. When finished, press **SET**.
   The auxiliary output level flashes.
10. Using the UP/DOWN arrow buttons, set the **output level.**
11. When finished, press **SET**.
12. Press **MENU** twice to go back to the status screen.

NOTE: The base defaults back to the status screen if no action is taken after five (5) minutes.

ClearScan

When **ClearScan** activates, the base shuts down its transmitters and begins scanning receive frequencies. The frequencies scanned are those in its factory-defined groups and any user-defined groups with at least one (1) frequency defined. The result is a screen like the one shown in Figure 52. The scan groups appear in order from the highest number of clear receive channels available to the least number of clear channels available.

To **start ClearScan**, do the following:

> Press and hold **MENU** + **SET** for three (3) seconds.

NOTE: This process can take up to 24 seconds to complete. It depends on how many user-defined groups are configured. The more groups, the longer the scan takes.

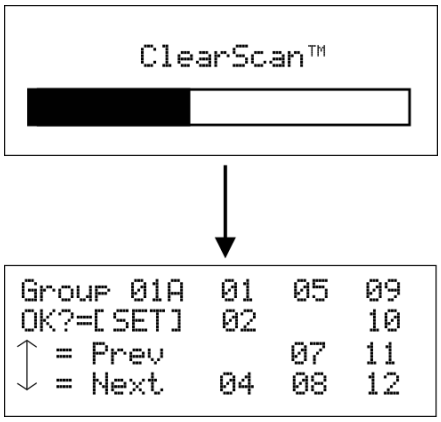


FIGURE 52. Clear Scan Results Screen

NOTE: The base is not set to the displayed ClearScan result if the user presses the MENU button to abort.

Lockout

Lockout is used to keep a user from changing any options at the base station, except local headset microphone gain and volume.

To **enable Lockout**, do the following:

> Press and hold **UP+DOWN** for two (2) seconds to lock or unlock the base station.
A padlock appears on the status screen if the base is locked out.

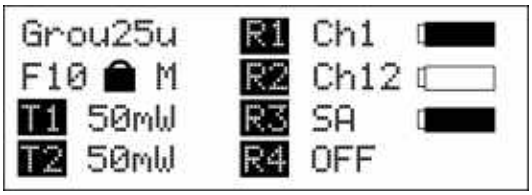


FIGURE 53. Status Screen with Lockout Active

Copy

Copy allows the user to select a factory-defined group and copy it to a user-programmed group. This allows a user to edit the group if desired.

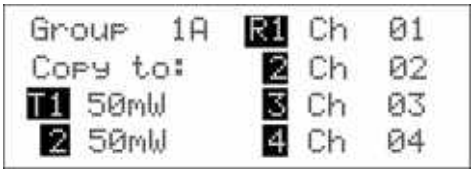


FIGURE 54. Copy Screen

To **use Copy**, do the following:

> Press and hold the **SET+DOWN** buttons for 2 seconds in the group/channel select screen (see Figure 54).

1st Use Defaults

1st Use Defaults is used to set the base station to Group 01A, channels 1, 2, 3, 4, and RETAIN any user-defined groups in memory. It sets the unit to factory-defined parameters.

To **set the base station to 1st Use Defaults**, do the following:

1. Press and hold the **MENU** button while turning on the base station.
2. When Factory Setup displays on the screen, release **MENU**.

Factory Default

Factory Default is used to set the base station to Group 01A, channels 1, 2, 3, 4, and ERASES any user-defined groups in memory. it sets the unit to factory-defined parameters.

To **set the base station to Factory Default**, do the following:

> Press and hold **MENU** + **SET** + **UP**+ **DOWN** for two (2) seconds.
The screen in Figure 55 displays before the unit reboots.

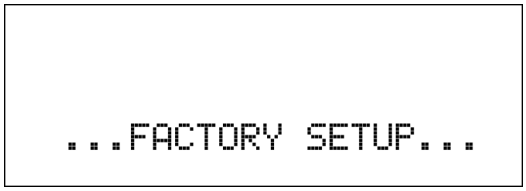


FIGURE 55. FACTORY SETUP Display

Connection of Multiple Base Stations with the Link Cables

This section discusses various configurations of multiple base stations using link cables. Multiple base stations may be connected via standard 2-wire and 4-wire intercoms without additional link cables between them. They still transmit and receive intercom 1 and intercom 2 audio normally from the beltpacks.

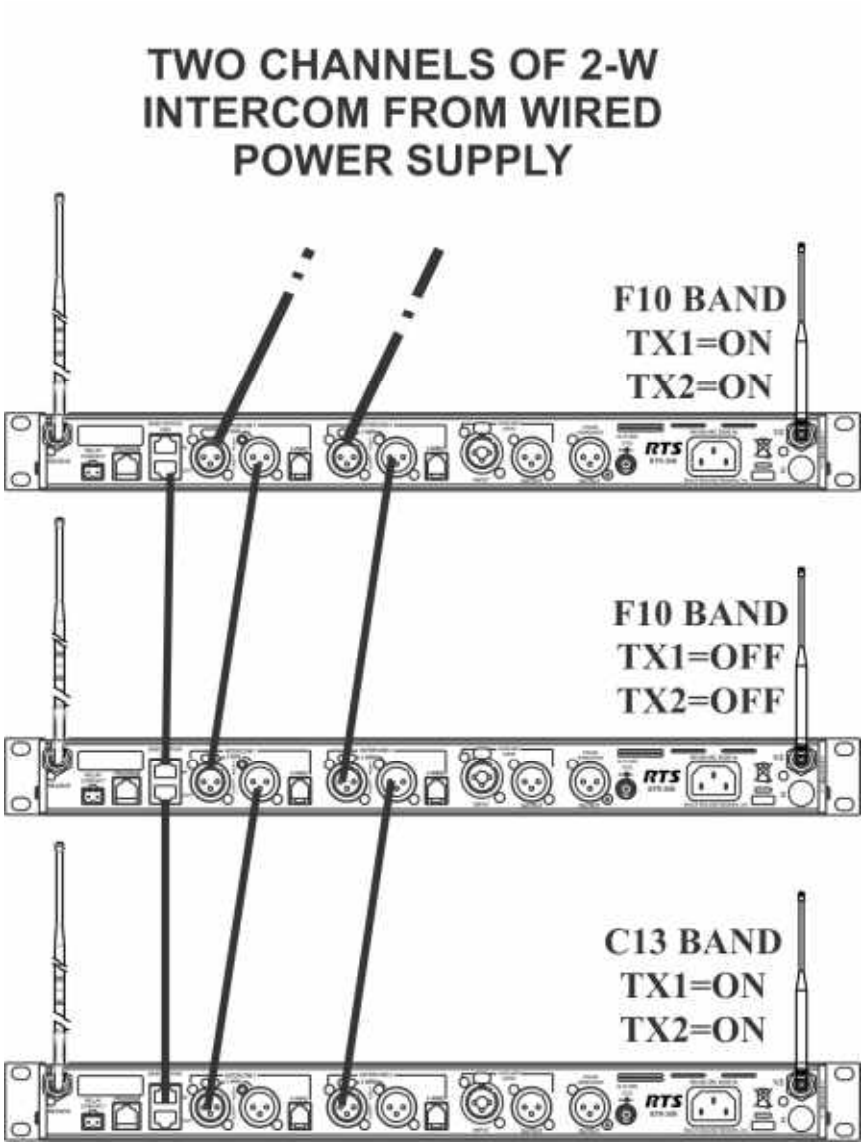


FIGURE 56. Multiple base stations with only 2-wire intercom channels 1 and 2 connected between them

However, by connecting multiple bases together via link cables, in addition to any 2-wire or 4-wire audio connections in use, the feature set of a single base becomes available to the whole system. This feature set also includes base stations that have their transmitters off in order to conserve RF spectrum.

These features are:

- (WTA) Wireless talk-around channels 1 and 2 shared between base stations.
- First-On-Latch-Out of beltpacks extended to base stations with their TXs off (when beltpacks are in push-to-transmit mode).
- Automatic beltpack TX power control extended to base station with their TXs off.
- Automatic beltpack user ID assignment extending to base stations with their TXs off.
- Beltpack TX and Talk shutdown via the base front panel extended to base stations with their TXs off (when beltpacks are in push-to-transmit mode).
- Beltpack Talk shutdown via the base front panel extended to base stations with their TXs off (when beltpacks are in push-to-talk mode).

Before presenting the configurations, we believe an explanation of RF data links plus master and servant base stations helps in understanding the multiple base arrangements.

Over-the-Air Data Links

There are two (2) RF data communication links within a BTR-30N system.

- Beltpack-to-base conveys:
  - Current button(s) selected
  - Battery level
  - Beltpack ID set confirmation
- Base-to-beltpack conveys
  - Beltpack User ID
  - Beltpack TX power level
  - Beltpack TX and/or Talk Shutdown
  - First-On-Latch-Out

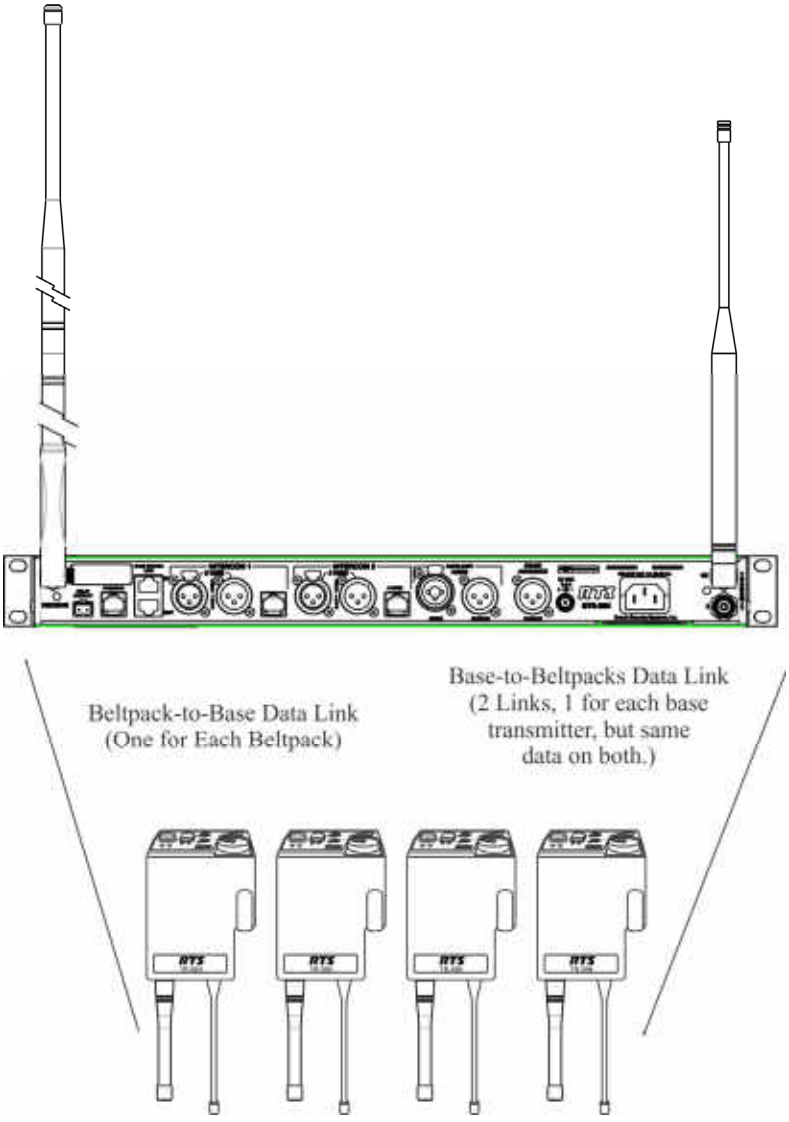


FIGURE 57. Base-To-Beltpack and Beltpack-To-Base RF Data Links

These two (2) data paths are intact when there is only one (1) base communicating to beltpacks. They are also intact when many base stations on different TX and RX frequencies are communicating to their beltpacks.

However, in a system with one (1) or more base stations with their transmitters off, the base-to-beltpack data link is lost for those beltpacks

A wired data link is needed to communicate the base-to-beltpack information from the base stations with their transmitters off to the base with its transmitters on.

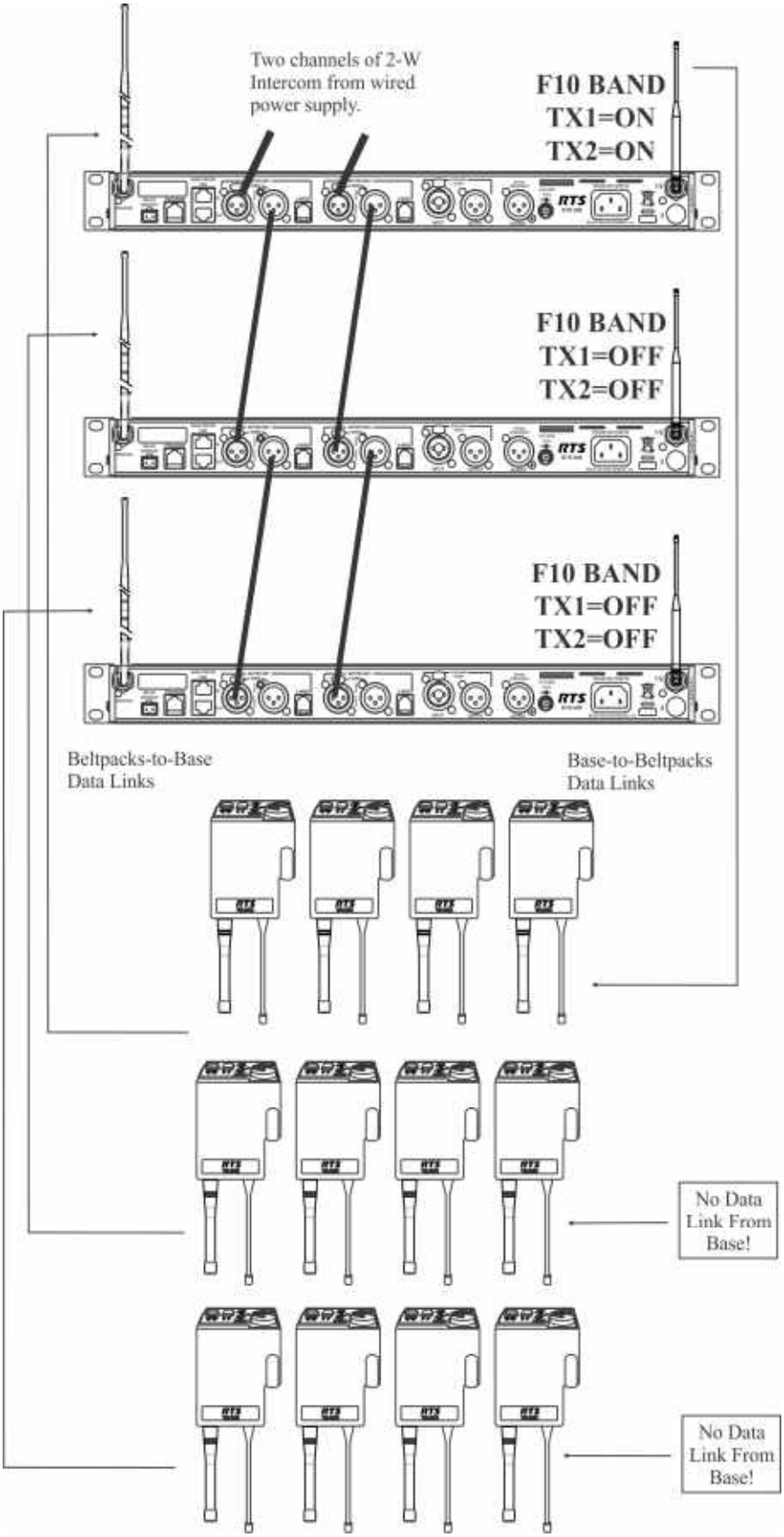


FIGURE 58. Three (3) base stations connected via 2-wire intercom only
Two (2) bases have their transmitter off; one has its transmitters on

Master and Servant Base Stations

A master base station is one that the user has set its base number to 01(Master) and has its transmitters on. A master base conveys base-to-beltpack data to its beltpacks and via a base station link cable, relays the base-to-beltpack data from

base stations that have their base transmitters off. A master may support up to seven (7) additional base stations with their transmitters off.

IMPORTANT: There can be only one (1) master base station in a network of base stations.

A master base automatically sets a 09 (default) base to a unique 02 to 08 servant number. If a base is already a servant the master leaves it at that same number.

TABLE 2. Valid Base Number Settings

Base Number	Function
01	Master
02	Servant
03	Servant
04	Servant
05	Servant
06	Servant
07	Servant
08	Servant
09	Unassigned (Default)

FIGURE 59. Status screen of a master designated base station

NOTE: Any time base stations are changed to be a master base station, it must be power cycled for the change to take affect.

A servant base station is one that has its transmitters off and is connected to a master base. Since servant base stations have their transmitters off, base-to-beltpack information can only get to beltpacks via link cables connected to a master base station.

There can be up to seven (7) servants working with one (1) master.

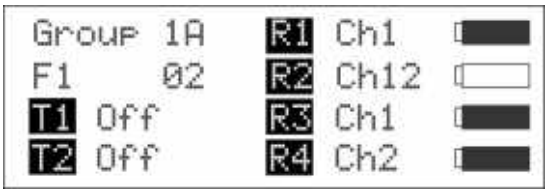


FIGURE 60. Status Screen of the Servant Base Station

A servant or master base is set via the Base Main menu screen in the base station.

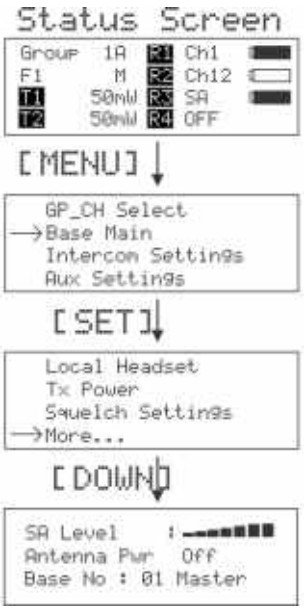


FIGURE 61. How to get to the master/servant selection screen

From the factory, base station are set to base number 09. This is an unassigned base. The base can be left as 09 if not in a linked system. It works as normal with all features.

If the unassigned base is connected to a master base station, the master automatically assign a valid, unique, servant ID to it the first time the networked system is powered-up.

The master base must always power-up after the servant bases in order to detect servant units to control. If all the units are on a common power strip, this is controlled by a built in delay on master base station. The master base station always boots slower than servant units.

CAN bus

A **CAN** (Controlled Area Network) bus is the data protocol used over the BTR-30N's base station link cable. This balanced protocol is a robust standard used the world over in high noise, extreme environments. It requires the use of 120 Ohm terminators at the beginning and end of a CAN bus network.

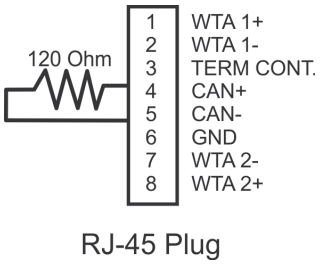


FIGURE 62. CAN Bus 120 Ohm termination (CAN-T) and base pin functions.

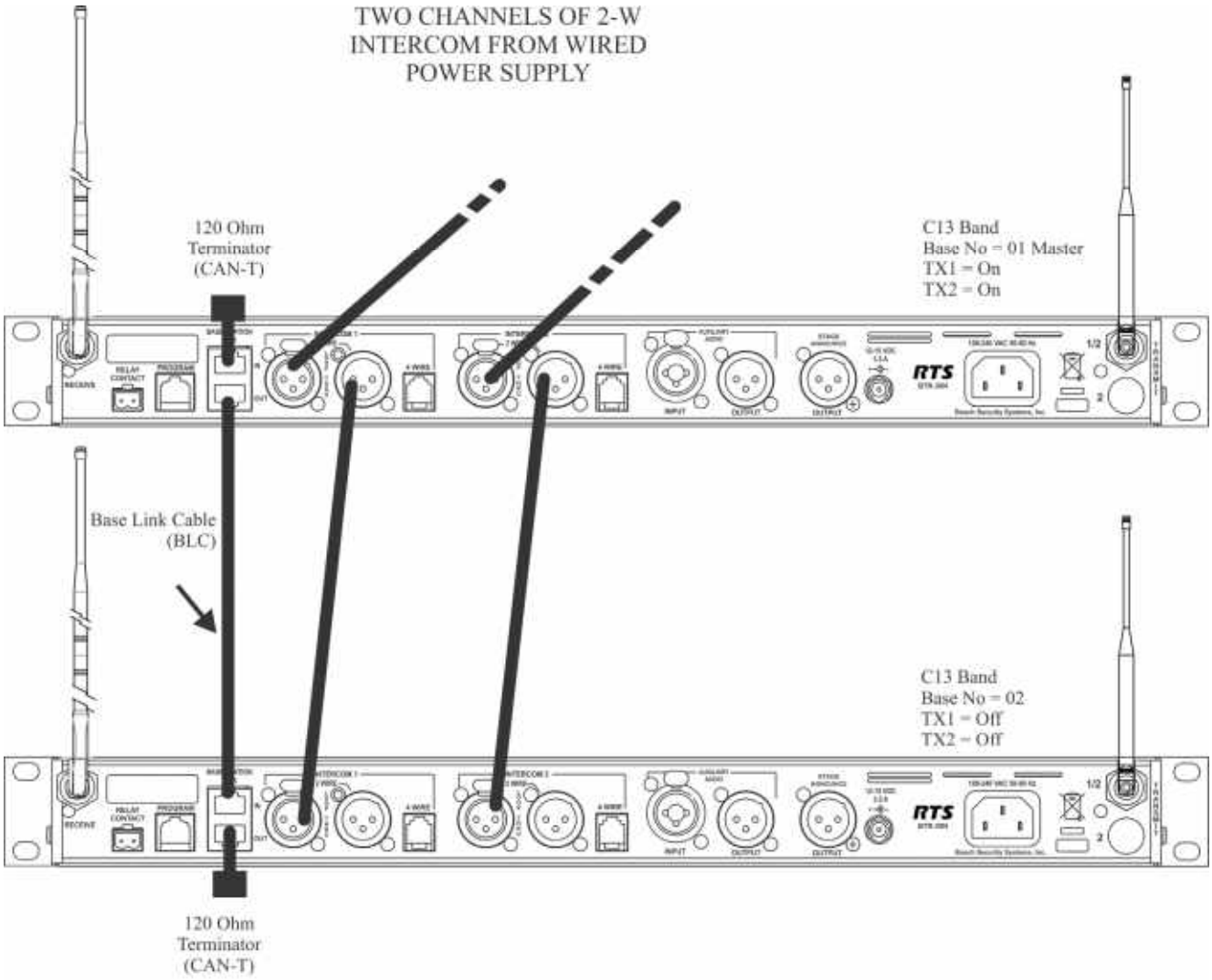


FIGURE 63. A base link cable connected system with terminators on both ends

Base Station Link Configurations

Multiple base station networks may be connected in different ways. Using the rear panel base station link jacks, a user has three (3) different connection options.

These options are:

- WTA (Wireless Talk-Around) Audio Only
  - Bases connected via 2-wire and/or 4-wire audio links
  - All bases share WTA audio
  - They do NOT share CAN bus data
- WTA and a SINGLE CAN Bus Network
  - Bases connected via 2-wire and/or 4-wire audio links
  - All bases share WTA audio
  - All bases are ON A SINGLE CAN BUS NETWORK
- WTA and Several CAN Bus Networks
  - Bases connected via 2-wire and/or 4-wire audio links
  - All bases share WTA audio
  - There is MORE THAN ONE CAN BUS NETWORK

Wireless Talk-Around Audio Only

These base stations are connected to share WTA channel 1 and WTA channel 2 audio but do not share the CAN bus data.

Link Overview

WTA 1 and WTA 2 in the BTR-30N are two (2) independent 2-wire intercom channels. The WTA intercom channels are very similar to AudioCom types of intercom channels except they are dry and are meant to only pass audio between BTR-30N base stations.

Up to 16 base stations may be connected together with base link cables (BLC) depending on cable length and conductor size. The BLC passes both channels of WTA audio. It also passes a logic level so the 1st base station in the chain is the only one that provides a termination of the WTA intercom channels. This pin is labeled “TERM CONT” on the RJ-45 plug pinouts in this section.

Care must be taken to connect cables between base stations from the OUT of base one (1) to the IN of base two (2) and so forth, unit to unit.

If the WTA link cable passes from OUT to OUT or IN to IN, the WTA audio terminates in multiple places and causes the WTA audio levels to be greatly reduced/distorted.

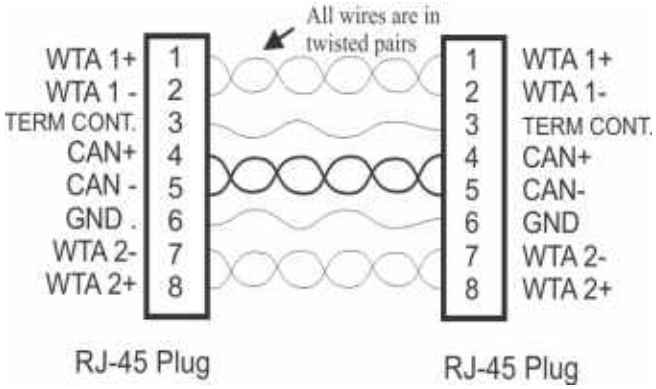


FIGURE 64. BLC (Base Link Cable) and pin functions. (Not Supplied)

If base stations are farther apart than the 12” (30.48cm) BLC, then 568-A or 568-B Ethernet cables of CAT-5E or above may be used to connect base stations up to 300 feet apart. These Ethernet cables contain four (4) twisted pairs like the BLC cable.

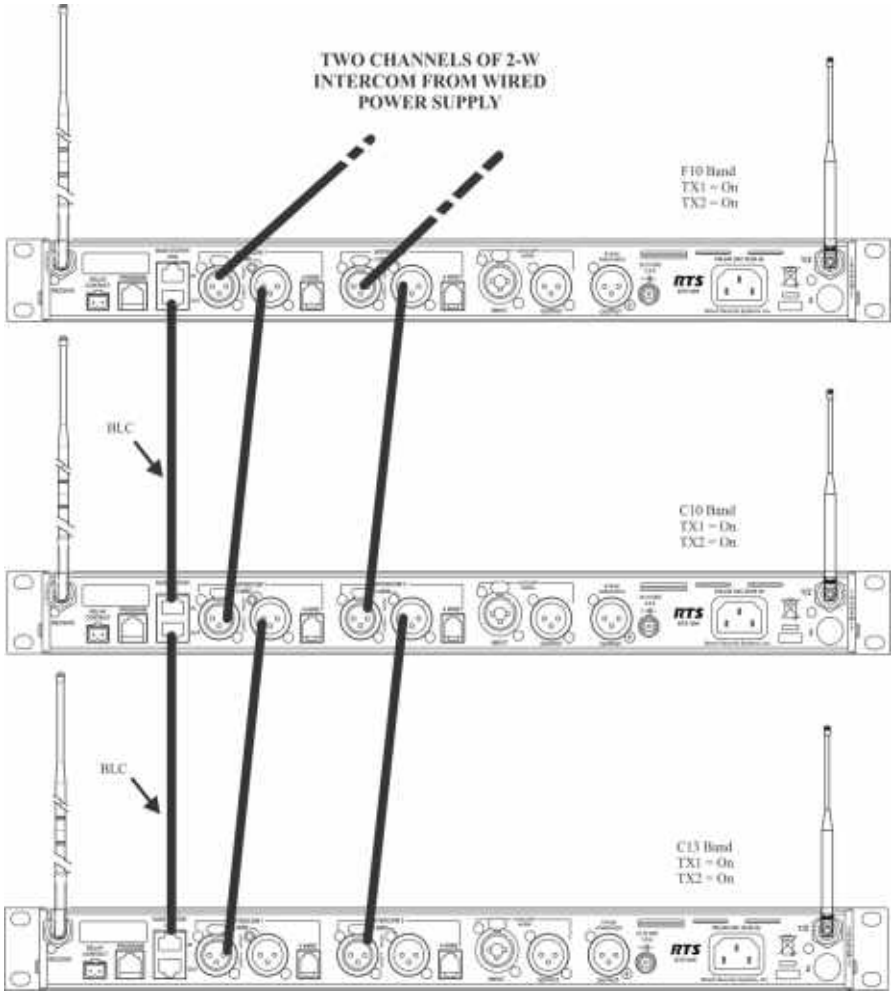


FIGURE 65. Multiple base stations connected via 2-wire audio cable and WTA through via BLCs

Do not set base stations to the base number 01 (Master), because CAN bus is connected to the other base stations with a BLC, as seen in Figure 65. If there are no masters on the CAN bus system, there is no activity on the CAN bus line and no need for terminations.

IMPORTANT: The **master base must always power-up after the servant bases** in order to detect servant units to control. If all units are on a common power strip, this is controlled by a built in delay on the master base station. The master base station always boots slower than servant units.

Setup

1. Connect the **power cords** to the base stations.

   IMPORTANT: *Do not* power up the base stations.

2. Connect the **transmit and receive antennas** to the base stations.

   NOTE: The color dots on the rear of the base should match the color rings of the antennas.

3. Connect the **main intercom audio channel(s) to the base stations**.

   NOTE: This may be 2-wire intercom. This could also be 4-wire intercom via a matrix type wired system.

4. Connect the **Base Link Cable** between base stations.

   NOTE: Verify the OUT of the first base station connects to the IN of second base station and follow the same connection pattern forward.

5. Power-up **all the base stations**.

   NOTE: The base stations should be set to all unique transmit and receive frequencies.

6. Setup via the BTR-30N software menus the **intercom, local headset, auxiliary, stage announce, etc.** as detailed in BTR-30N Operation.

   NOTE: All the base station numbers should be left as 09 (default).

7. Turn on **only one (1) beltpack**.

   NOTE: Try to keep the beltpack at least 6’ (2 meters) away from the base’s antennas.

8. Set the beltpack on the **appropriate group and channel** for its base station.
   As each beltpack is set to its group and channel, an hourglass symbol appears on the base display in the location normally occupied by the battery symbol. A beltpack is assigned an ID number by the base in this time. Finally, a normal battery symbol is displayed, indicated the beltpack has been assigned its ID number.

9. Once the beltpack has an ID number, turn the **beltpack** off.

10. Turn on the **next beltpack.**

11. Repeat **steps 8-9** for each additional beltpack.

12. Power up the **beltpacks**.

WTA and a SINGLE CAN Bus Network

These base stations connect via 2-wire and/or 4-wire audio links and also by the Base Link Cable (BLC). The BLC cable passes WTA audio and CAN bus data information. The CAN bus connected base stations form a Network.

Link Overview

There are two (2) RF data communication links with a BTR-30N system. The beltpack-to-base links convey information such as current button(s) selected, battery level, etc. The base-to-beltpack links convey beltpack user ID, beltpack TX shutdown, beltpack talk shutdown, and other information.

The two (2) paths are intact when there is only one (1) base communicating to beltpacks and when many base stations on different TX and RX frequencies communicate to the beltpacks. However, when one (1) or more base stations with their transmitters off are connected to a base station with its transmitters on, the base-to-beltpack data link is lost for those beltpacks.

Care must be taken to connect cables between base stations from the Out of base one (1) to the IN of base two (2) and so forth.If the WTA link cable is passed from OUT to OUT or IN to IN, the WTA audio terminates in multiple places and causes the WTA levels to be greatly reduced/distorted.

IMPORTANT: The **master base must always power-up after the servant bases** in order to detect servant units to control. If all units are on a common power strip, this is controlled by a built in delay on the master base station. The master base station always boots slower than servant units.

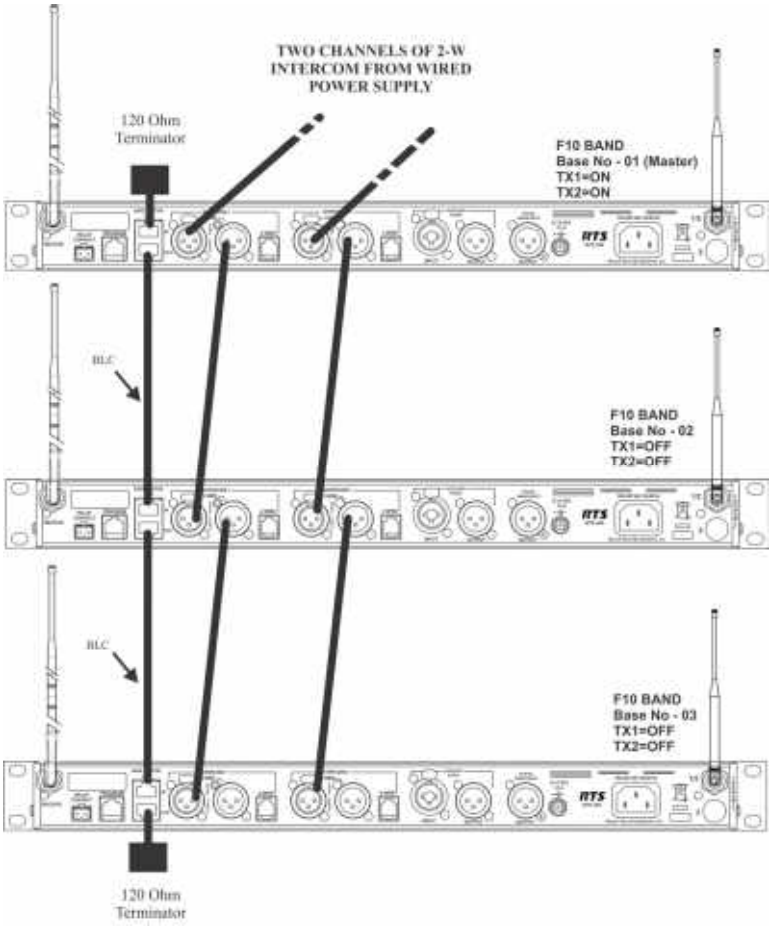


FIGURE 66. Multiple base stations connected via 2-wire audio cable and WTA plus CAN through via BLCs

Setup

1. Connect the **power cords** to the base stations.

   IMPORTANT: *Do not* power up the base stations.

2. Connect the **transmit and receive antennas** to the base stations.

   NOTE: The color dots on the rear of the base should match the color rings of the antennas.

3. Connect the **main intercom audio channel(s)** to the base stations.

   NOTE: This may be 2-wire intercom. This could also be 4-wire intercom via a matrix type wired system.

4. Connect the **Base Link Cable** between base stations.

   NOTE: Verify the OUT of the first base station connects to the IN of second base station and follow the same connection pattern forward.

5. Place **CAN bus termination plugs (CAN-T)** at the beginning and end of the networked base stations.
6. Power-up **all base stations**.
7. Set all base stations to factory defaults via a four-button reset; **MENU + SET + UP + DOWN**.
8. Power-down **all the base stations.**
9. Power-up **the first servant base station**.
10. Set the **servant base station** to all unique receive frequencies.
    The transmitters switch off automatically when the master base station takes control of them.

    NOTE: Leave the base number at the default of 09.

11. Setup via the BTR-30N software menus the **intercom, local headset, auxiliary, stage announce, etc.** as detailed in BTR-30N Operation.

    NOTE: Leave the base station powered-up.

12. Power-up **the master base station**.
13. Set **the master base station** to all unique transmit frequencies.
14. Setup via the BTR-30N software menus the **intercoms, local headset, auxiliary, stage announce, etc.**, as detailed in BTR-30N Operation.
15. Set **the master base station** with its transmitters on to master base number 01.

16. Cycle **the power of the master base** while leaving the single servant base powered-up.
The master base, on boot, takes control of the servant base and assign it the base ID of 02 and turn its transmitters off.
17. If there are additional servant base stations to configure, turn off the **master base station**.
18. Power-up **the next servant base station**.
19. Repeat **steps 10-12 and 16-18** for each additional servant base.

NOTE:

- Always leave the previously assigned servant base stations powered-up when going on to the next base.
- The **master base must always power up after the servant bases** in order to detect servant units to control.
- If all the units are on a common power strip, this is controlled by a built in delay in the master station. The master station always boots slower than servant units.

20. Repeat **steps 9-19** for each additional network.
21. Turn on **only one (1) beltpack**.

NOTE: Try to keep the beltpack at least 6' (2 meters) away from the base's antennas.

22. Set **the beltpack** on the appropriate group and channel for its base station.
As each beltpack is set to its group and channel, an hourglass symbol appears on the base display in the location normally occupied by the battery symbol. A beltpack is assigned an ID number by the base in this time. Finally, a normal battery symbol displays, indicating the beltpack has been assigned its ID number.
23. Once the beltpack has an ID number, turn the **beltpack** off.
24. Turn on the **next beltpack**.
25. Repeat **steps 22-23** for each additional beltpack.
26. Power up the **beltpacks**.

WTA and Several CAN Bus Networks

These base stations may be connected via 2-wire and/or 4-wire audio links. They are also connected together via the Base Link Cable (BLC) and a new cable called the CAN Bus Termination Cable (CTC).

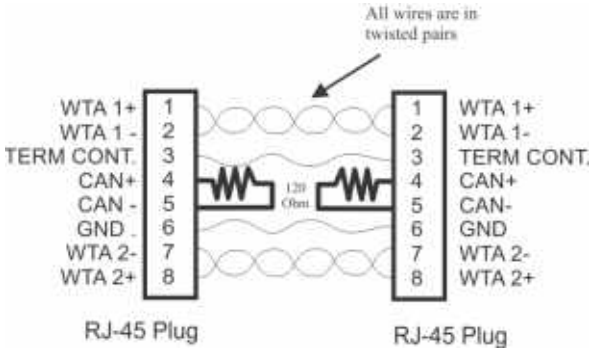


FIGURE 67. CAN Bus Termination Cable (CTC). (Not Supplied)

Link Overview

Multiple masters on the same CAN bus are not allowed. The two different cables solve this issue. The BLC passes WTA audio and CAN bus data information. The CTC passes WTA audio and also functions to terminate the CAN network on either side of it. This allows many separate CAN networks to share the same two (2) WTA audio channels.

Care must be taken to connect cables between base stations from the OUT of base one (1) to the IN of base two (2) and so forth, unit to unit. If the WTA link cable passes from OUT to OUT or IN to IN, the WTA link cable terminates in multiple places and cause the WTA audio levels to be greatly reduced/ distorted.

The **master base must always power-up after the servant bases** in order to detect servant units to control. If all units are on a common power strip, this is controlled by a built in delay in the master base station. The master base station always boots slower than servant units.

Setup

Setup is the same as the previous "WTA and a SINGLE CAN Bus Network" section, with the exception of a CTC cable between the two CAN networks.

1. Connect the **power cords** to the base stations.

IMPORTANT: *Do not* power up the base stations.

2. Connect the **transmit and receive antennas** to the base stations.

NOTE: The color dots on the rear of the base should match the color rings of the antennas.

3. Connect the **main intercom audio channel(s) to the base stations**.

   NOTE:

   - This may be 2-wire intercom. This could also be 4-wire intercom via a matrix type wired system.
   - If using a party line to connect audio channels, the party line needs to be terminated by a connected PSU or a load XLR plug (P.N. TP-3 or TP-3R). See Figure 68.

4. Connect the **(BLC) Base Link Cable** between base stations within a CAN network.

   NOTE: Verify the OUT of the first base station connects to the IN of second base station and follow the same connection pattern forward.

5. Connect the **CAN Bus Termination Cable (CTC)** BETWEEN the CAN networks.

   NOTE: Remember to connect from the OUT of the base station to the IN of the next base station.

6. Place **CAN bus termination plugs (CAN-T)** at the beginning and end of the networked base stations.
7. Power-up **all base stations**.
8. Set all base stations to factory defaults via a four-button reset; **MENU + SET + UP + DOWN**.
9. Power-down **all the base stations**.
10. For the first network of base stations, power-up **the first servant base station**.
11. Set **the servant base station** to all unique frequencies. *The transmitters switches OFF automatically when the master base takes control of them.*

    NOTE: Leave the base number at the default of 09.

12. Setup via the BTR-30N software menus the **intercoms, local headset, auxiliary, stage announce, etc.**, as detailed in BTR-30N Operation.

    NOTE: Leave the servant base station powered-up.

13. Power-up **the master base station**.
14. Set **the master base station** to all unique transmit and receive frequencies.
15. Setup via the BTR-30N software menus the **intercoms, local headset, auxiliary, stage announce, etc.**, as detailed in BTR-30N Operation.
16. Set **the master base station** with its transmitters on to the master base number 01.
17. Cycle **the power of the master base,** while leaving the single servant base powered-up.
    The master base, on boot, takes control of the servant base and assign it the base ID of 02 and turn its transmitters off.
18. If there are additional servant base stations to configure, turn off the **master base station**.
19. Power-up **the next servant base station**.
20. Repeat **steps 11-13 and 17-18** for each additional servant base.
    Always leave the previously assigned servant base stations powered-up when going on to the next base.

IMPORTANT: The **master base must always power-up after the servant bases** in order to detect servant units to control. If all units are on a common power strip, this is controlled by a built in delay in the master base station. The master base station always boots slower than servant units.

21. Repeat **steps 10-20** for each additional network.
22. Turn on **only one (1) beltpack** on the first network system.
    Try to keep the beltpack at least 6' (2 meters) away from the base's antennas.
23. Set the **beltpack** on the appropriate group and channel for its base station.
    As each beltpack is set to its group and channel, an hourglass symbol appears on the base display in the location normally occupied by the battery symbol. A beltpack is assigned an ID number by the base in this time. Finally, a normal battery symbol displays, indicating the beltpack has been assigned its ID number.
24. Once this first beltpack has an ID number, turn off the **beltpack**.
25. Turn on **the next beltpack**.
26. Repeat **steps 23-24** for each additional beltpack.
27. Power up the **beltpacks**.

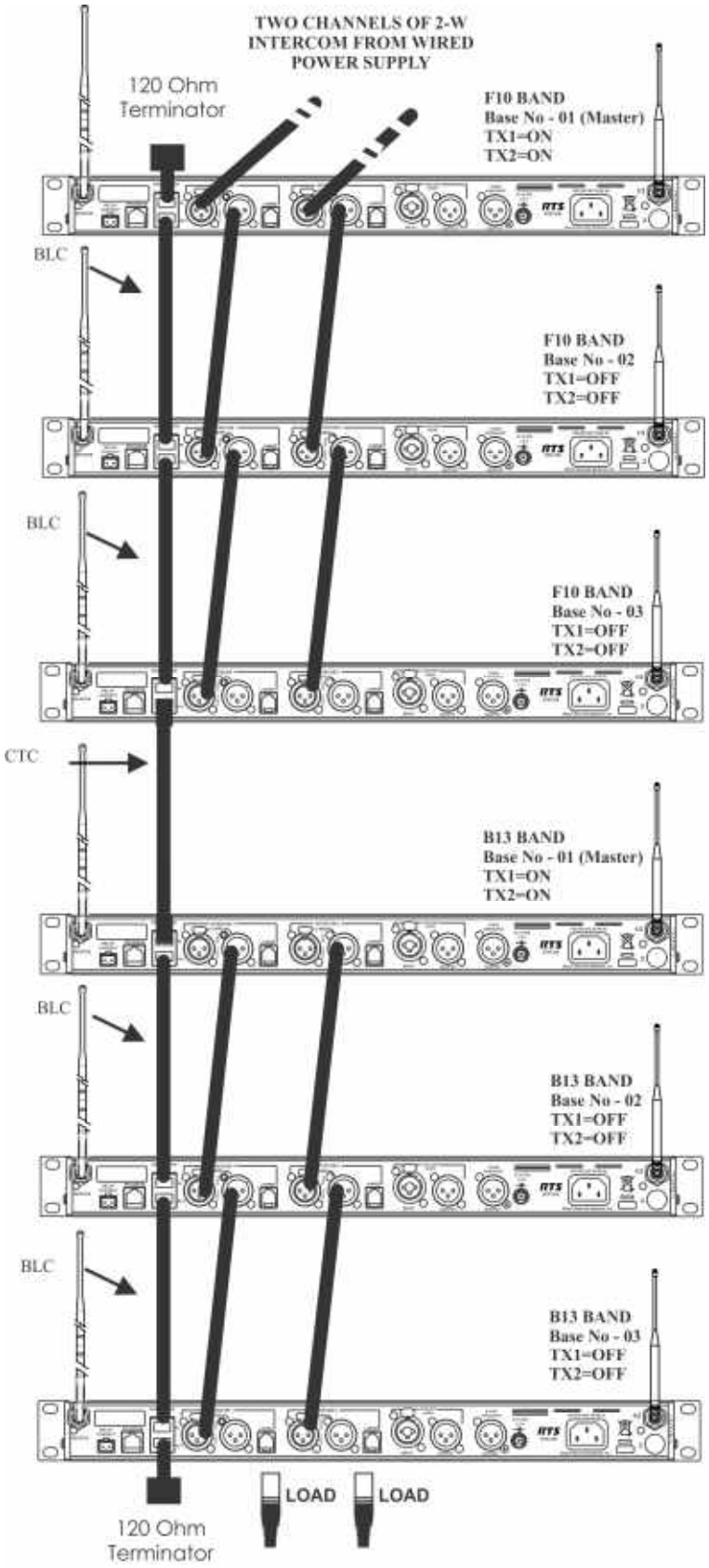
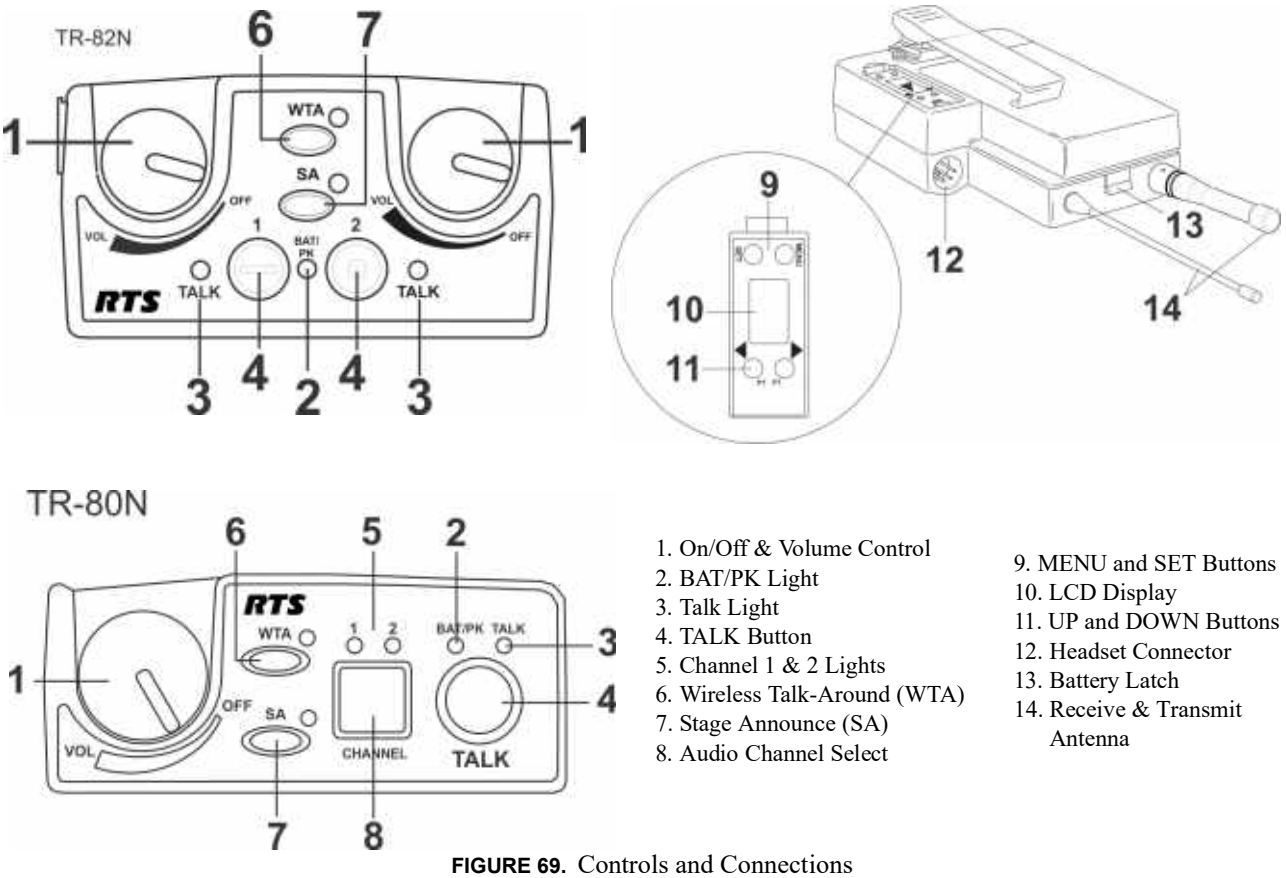


FIGURE 68. Multiple base stations connected via 2-wire audio cable and two CAN Bus networks.

TR-30N/32N



1. On/Off & Volume Control
2. BAT/PK Light
3. Talk Light
4. TALK Button
5. Channel 1 & 2 Lights
6. Wireless Talk-Around (WTA)
7. Stage Announce (SA)
8. Audio Channel Select
9. MENU and SET Buttons
10. LCD Display
11. UP and DOWN Buttons
12. Headset Connector
13. Battery Latch
14. Receive & Transmit Antenna

FIGURE 69. Controls and Connections

Basic Operational Description

The TR-30N/32N is a full-duplex (simultaneous talk and listen) beltpack. It works in conjunction with a BTR-30N base station. The beltpack allows a user, via a headset attached to the beltpack, to communicate with other wireless or wired users. Other base stations and/or wired systems connect to the beltpack's base station. The base station allows the audio path interconnections for the beltpack audio.

The TALK, WTA (wireless talk-around), and SA (stage announce) buttons on a beltpack turn the beltpack's microphone input on or off. They also select the audio paths for the beltpack's audio in the base.

System Quick Start

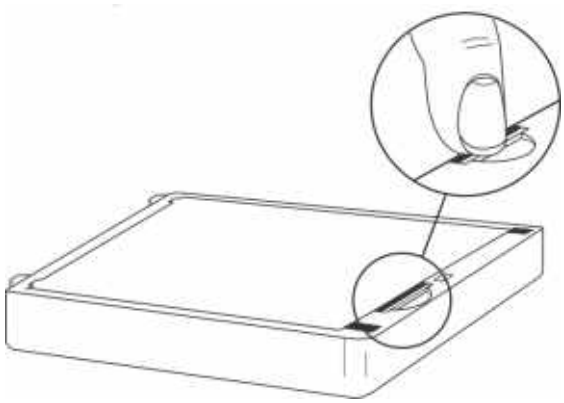
The following is a list to quickly get a base station and beltpacks operating.

1. Unpack **the base**.
2. Connect **the power cord and antennas** to the base.
3. Connect **the base** to audio interfaces, such as: 2-wire, 4-wire, SA, Auxiliary, or local headset.
4. Press and hold **the MENU button**, while powering-up the base station.
5. When the base station displays...FACTORY SETUP..., release **the MENU button**.
6. Press and hold **the MENU button**, while powering-up the beltpack(s).
7. On the base station, use the UP and DOWN arrow buttons to change **the channel** to an unoccupied receive channel.
8. Press **SET** twice to set channel and group.
   The base should now display the audio channel of the beltpack and a battery symbol appears shortly.
9. Plug a **headset** into each beltpack.
10. Adjust the **software menu** for microphone gain so the over modulation light flashes only on some of the words at normal speech levels.

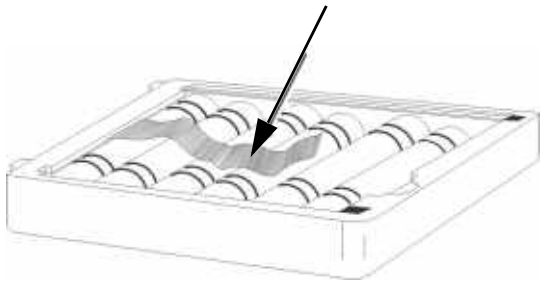
Battery Installation

Ensure the On/Off volume control knob is turned off. Press down and hold down the battery release latch, then slide the battery pack about 1/8 inch back toward the latch until it stops. Lift the battery pack out. Replace batteries as follows:

1. Open the **battery pack** by inserting fingernail and lifting



2. Pull **battery strap** to remove low or dead batteries.

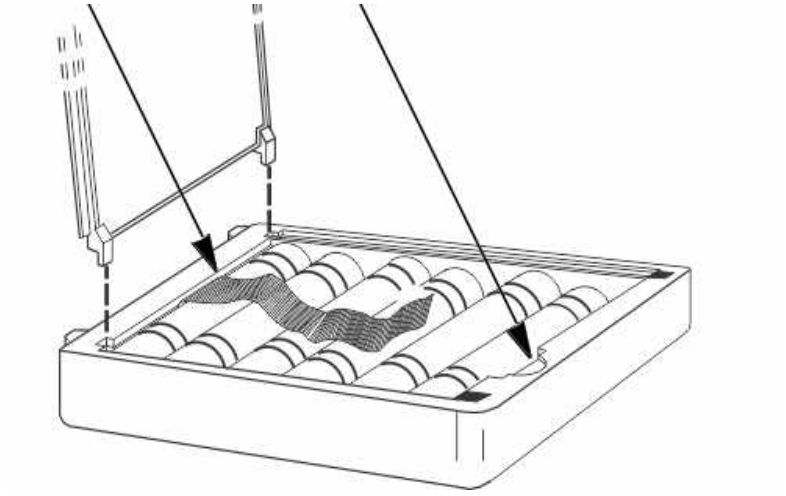


3. Load **new batteries** following the polarity shown in the battery case.

NOTE:

- Start loading at the end of the case where the strap is attached to the case.
- Be sure strap goes under batteries.

4. Tuck end of strap under door when placing the battery cover back on the case.



WARNING:
Do not place an alkaline TR battery pack in any battery charger. Severe charger and battery pack damage may result.

FIGURE 70. Battery Installation

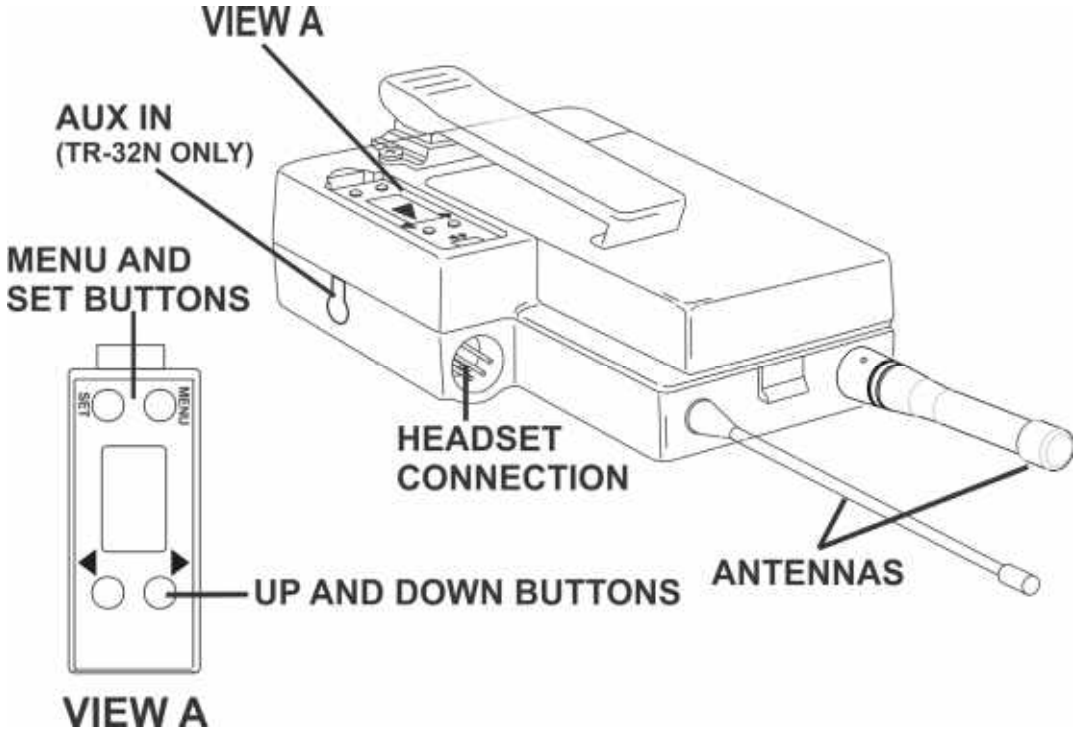


FIGURE 71.
TR-30N/32N Controls

Headset Connection

The Headset Connector is a XLR type connector. Four (4) or five (5) pin headset connectors may be installed in the unit. See the TR-30N/32N Controls and Connectors section for more information on the pinouts. A dynamic or electret headset microphone is automatically detected by the beltpack and a bias voltage supplied if needed.

Sidetone

Sidetone is the amount of the user's voice fed back to their headphone. The sidetone level in the beltpack and base station is fixed. It cannot be adjusted.

Antenna Connection

The beltpack comes with two detachable, screw type 1/4 wave antennas. Attach the two (2) antennas by screwing the antennas into the receptacles at the bottom of the beltpack. The color dot on the screw end of the antenna must match the color dot on the antenna receptacle.

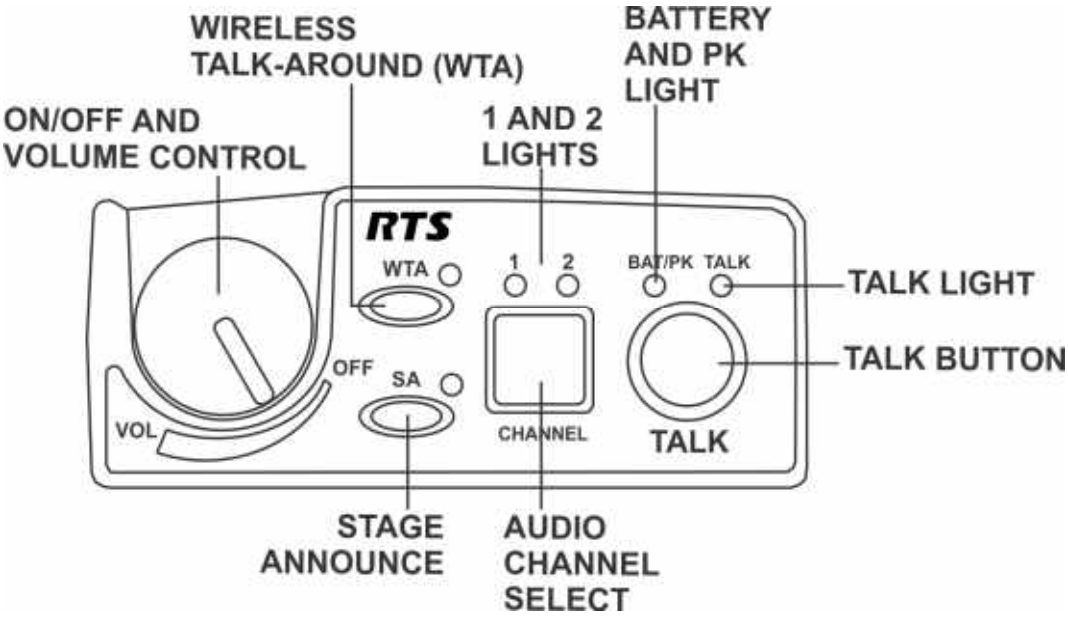


FIGURE 72.
TR-30N Top Panel Controls

On/Off and Volume Control

To **turn the beltpack power on**, do the following:

> Rotate the **On/Off Volume Control knob(s)** CW.

To **adjust the volume to the headset**, do the following:

> Rotate the **On/Off Volume Control knob** as required for a comfortable listening volume.

	Batt/PK LED Status	
Battery	Light flashes on power up	=Battery OK
	Light on continuously	=Battery Low
	Light does not flash/power on	=Battery Dead
Over modulation	Light flashes on some speech	=Gain OK
	Light flashes on all speech	=Gain too high
	Light never flashes on speech	=Gain too low

TALK Button

To **enable the audio path from the headset microphone**, do the following:

> Press the **TALK button**.
The talk light activates when the TALK button is active.The TALK button has three (3) software selectable modes that can be seen via the LCD display of the beltpack.

To **select the TALK button mode**, do the following:

1. Press and hold **SET** while pressing the **TALK button**.
The current mode of the TALK button displays the first time the TALK button is hit. Pressing the TALK button a second time changes the mode of the button.
2. Release **SET** to accept the currently displayed setting.

Selectable Modes: TALK		
	tb off	Talk disabled
	tb Ptt	Push-to-talk
	tb LAt	Push-to-latch

Audio Channel Select Button

To **select which intercom system the headset connects to**, do the following:

1. Press and hold **SET** while pressing the **CHANNEL select button**.
The current mode of the CHANNEL select button displays the first time the button is hit. Pressing the button a second time changes the mode of the button.
2. Release **SET** to accept the currently displayed setting.

Selectable Modes: Audio CHANNEL Button		
	12 on	Channels 1 and 2 available
	1 on	Only channel 1
	2 on	Only channel 2

Stage Announce (SA)

To **route audio from the beltpack directly to the stage announce connector on the back of the base station**, do the following:

> Press the **SA button**.
The base station's SA relay is also closed. The beltpack sidetone is lost as an indication that stage announce is activated. The other beltpacks and wired users do not hear this beltpack's audio when SA is pressed. The button is non-latching and activates the nearby red LED when pressed.

To **enable or disable Stage Announce**, do the following:

1. Press and hold **SET** while pressing the **SA button**.
The current mode of the SA button displays.
2. Still holding **SET**, press the **SA button** again to turn SA on or off.
3. Release **SET** to accept the displayed setting.

Wireless Talk Around (WTA)

To **disconnect the beltpack audio from the wired intercom, auxiliary input/output, and the base station's local headset**, do the following:

> Press the **WTA button**.
Other beltpack users on that audio channel can hear the user as normal. The WTA button activates the nearby red LED as well as the appropriate talk LED when pressed.

To **enable or disable Wireless Talk-Around options**, do the following:

1. Press and hold **SET** while pressing the **WTA butto**n.
The current WTA mode displays. Pressing WTA a second time changes modes. Available options are: Off, On, and Lon (Latch on).
2. Release **SET** to accept the displayed setting.

Groups and Channels

The first LCD screen the beltpack displays is the Group/ Channel screen. This screen shows the currently selected receive group followed by the beltpack transmit channels.

To **edit groups and channels**, do the following:

1. Push **SET** to edit the transmit channel.
   The channel number flashes.
2. Using the UP/DOWN arrow buttons, select **the desired transmit channel**.
3. Push **SET** to accept the channel.
   The receive group flashes.
4. Using the UP/DOWN arrow buttons, select **the desired receive group**.
5. Push **SET** to accept the receive group.
   The new group containing the selected channel is now set.

NOTE:

- To escape out of the editing without any changes, Press MENU.
- Factory group frequencies cannot be changed. User group frequencies (Group 19u to 30u) can be changed.

Transmit Frequency

The **Transmit Frequency** screen displays the beltpack transmitter frequency in MHz. The frequency is not changeable in factory-determined groups, but it is changeable in user-defined groups.

To **edit the TX frequency (User Groups Only)**, do the following:

1. Set **the unit** to the desired user-defined group and channels.
   See Groups and Channels Instructions. The menu structure in Figure 73 indicates how to get to the transmit frequency screen.
2. Push **SET** to edit the TX frequency.
   The frequency flashes.
3. Using the UP/DOWN arrow buttons, select the **desired frequency**.
   The frequency can be changed in 25 kHz steps.
4. Push **SET** to place the unit on the new transmit frequency.

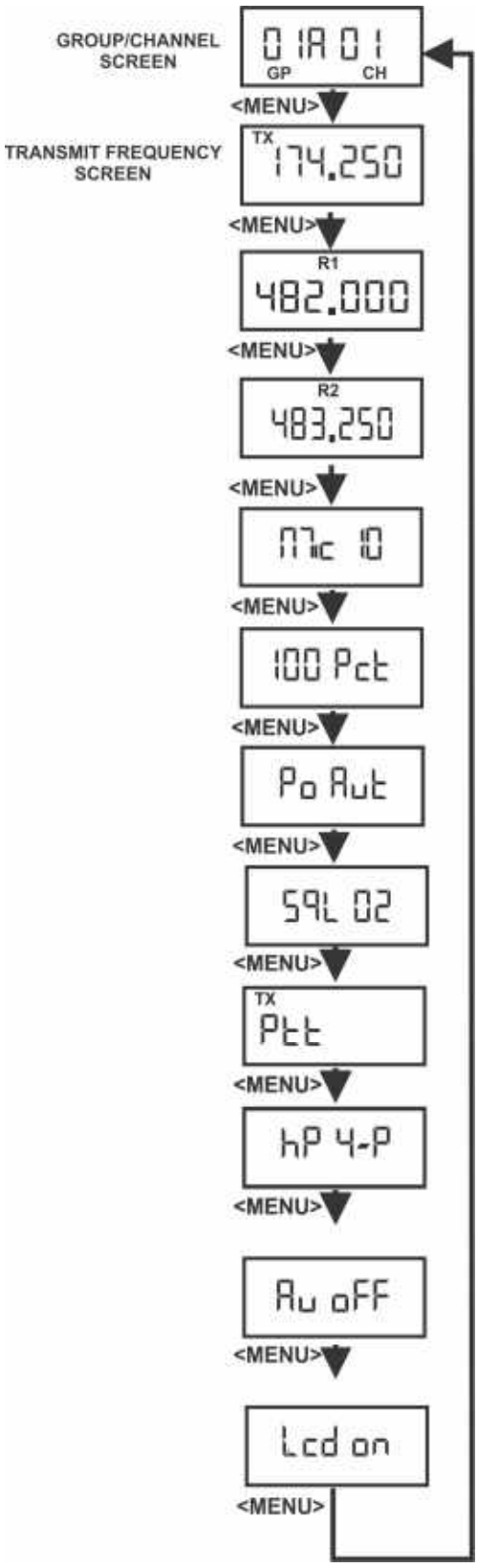


FIGURE 73.
Group/Channel & Transmit Frequency Screen

Receive Frequency

The **Receive Frequency** screen displays the beltpack receiver frequencies in MHz. The frequency cannot be changed in factory-defined groups, but can be changed in user-defined groups.

To **edit the RX frequency (User Groups Only)**, do the following:

1. Set the **unit** to the desired user-defined group and channels. *See Groups and Channels Instructions. The menu structure in Figure 74 indicates how to get to the receive frequency screen.*
2. Push **SET** to edit the RX frequency. *The frequency flashes.*
3. Using the UP/DOWN arrow buttons**,** select the **desired frequency**. T*he frequency can be changed in 25 kHz steps.*
4. Push **SET** to place the unit on the new receive frequency.

Microphone Gain

The **Microphone Gain** screen displays the beltpack microphone gain setting. There are 16 possible settings. The number zero (0) indicates minimum microphone gain, the number 15 is maximum. Each step is about three (3) dB.

To **adjust the microphone gain**, do the following:

1. Push **SET** at the microphone gain screen. *The number flashes.*
2. Using the UP/DOWN arrow buttons, select the **desired gain**.
3. Push **SET** to place the unit at the indicated microphone gain.

Battery Display

The **Battery Display** screen indicates the current percentage of battery remaining.

Battery Percentages

100 Pct. = Fresh Battery
75 Pct. = 75% Life Left
50 Pct. = 50% Life Left
25 Pct. = 25% Life Left
10 Pct. = 10% Life Left. Low Battery Light
0 Pct. = Battery Dead. Unit will lose communication at any time

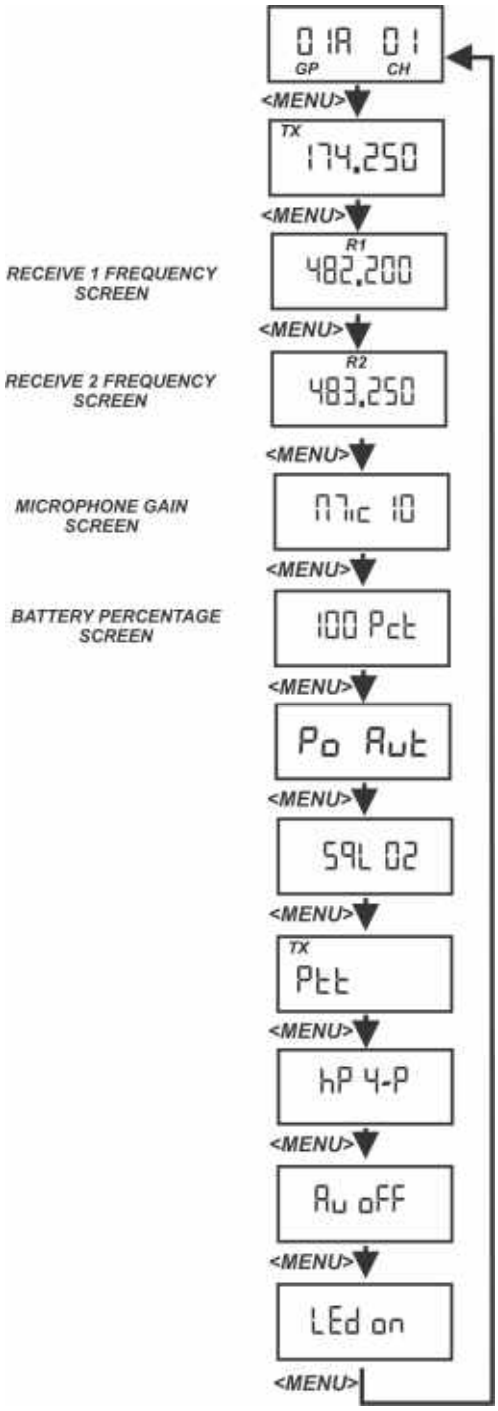


FIGURE 74. Receive Frequencies Microphone Gain/Battery Percentages Screen