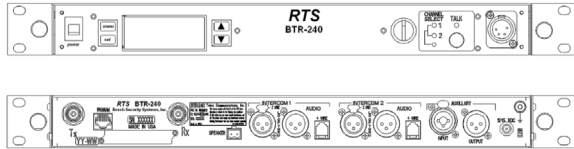

RTS Model BTR-240 Base Station



Owners / Users Manual (Preliminary Information)

General Description

The RTS model BTR-240 base station transceiver is a rack mountable, full-duplex, wireless intercom radio. The base station provides a central relay location which handles the audio traffic between the TR-240 belt packs.

A BTR-240 base station can be used to support up to eight full-duplex wireless TR-240 belt packs and many more for belt packs in push-to-transmit mode.

The BTR-240 uses the IEEE 802.11b technology to transmit / receive within one channel of the 1 – 11 (2.412 to 2.462 GHz) allowable channels of the 2.4 GHz ISM band. Operation of the BTR-240 is license free.

The typical line-of-sight distances for the system may be 300 feet.

The transmit and receive antennas are connected via unique reverse TNC connectors on the rear panel of the unit.

The BTR-240 is powered via a 12 – 15 VDC receptacle on the rear panel. A 12 VDC power supply is supplied with the BTR-240. The front panel LCD display and buttons allow the following menus to be obtained:

- RF operating channel
- Microphone gain
- Sidetone level
- Transmit squelch setting
- 2W / 4W intercom type settings and levels
- Auxiliary In / Out settings and levels.
- Speaker output setting and level.

The front panel also has an on/off power control. A talk button, talk light, channel select button, channel select lights, and volume are also available for a user at the base station local headset.

Controls and Connections



Figure 1
BTR-240 – Front Panel

1. **Power on/off switch** – turns the power on/off to the BTR-240.
2. **<Menu> button** – used to navigate the menu options on the LCD.
3. **<Set> button** – used to navigate the menu and select options on the LCD.
4. **Backlit Graphics LCD (liquid crystal display).**
5. **<Up> and <Down> buttons** – used to navigate the menu and select options on the LCD.
6. **<Volume> control knob** – controls the volume for the local headset.
7. **<Channel Select> button** – Controls the intercom to which the local headset is connected. Each press of the button changes the connection; channel 1, channel 2, both. The corresponding LEDs will be illuminated.
8. **<Talk> button** – Press to enable the audio path from the local headset. The green LED above the <Talk> button will be illuminated when active.
9. **Local Headset Connector** – Male XLR connector for Telex units, female XLR connector for RTS units. A dynamic or electret headset microphone is automatically detected.

Controls and Connections (cont.)

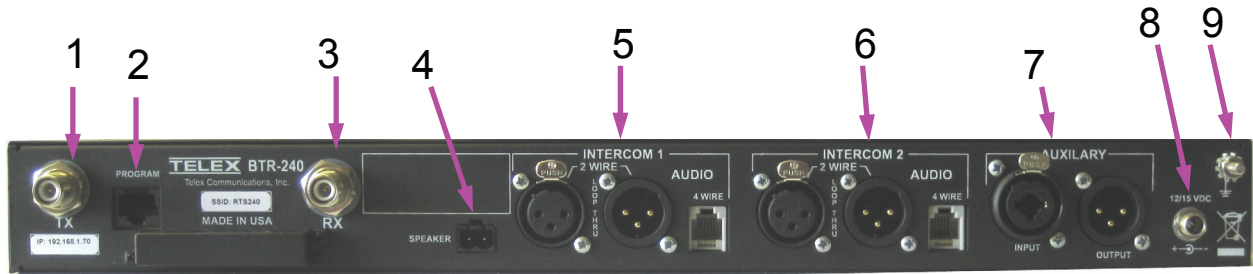


Figure 2
BTR-240 – Rear Panel

1. **Transmit Antenna** – reverse “TNC” connector.
2. **Program Input** – this RJ-45 jack is used for wired Ethernet connections, configuration, and to update programming in the unit if ever needed.
3. **Receive Antenna** – reverse “TNC” connector.
4. **Speaker Output** – one 2-pin connector to attach cables and a speaker (1W_{rms} max into 8Ohms).
5. **Intercom Channel 1 Input / Output** – Interface to wired intercom system 1.
 - 2-Wire** – male and female 3-pin XLR connectors wired in parallel. The connectors are switched to the appropriate intercom configuration via the menu options.
 - 4-Wire** – an RJ-11 jack compatible with “Matrix” type intercom systems.
6. **Intercom Channel 2 Input / Output** – Interface to wired intercom system 2.
 - 2-Wire** – male and female 3-pin XLR connectors wired in parallel. The connectors are switched to the appropriate intercom configuration via the menu options.
 - 4-Wire** – an RJ-11 jack compatible with “Matrix” type intercom systems.
7. **Auxiliary Input / Output** – One 3-pin female XLR / ¼ inch combination input connector and one 3-pin male XLR output connector.
8. **DC Input Jack** – Accepts 12-15 VDC, 2.0 Amps to power the base station from a D.C. source.
9. **Chassis Ground** – grounding point of the base station.

Operation

When the BTR-240 is turned on, the backlight of the LCD and menu buttons will illuminate to indicate power. The unit takes approximately 25 seconds to boot and its status is indicated with a progress bar on the LCD.

After the unit has booted successfully, the Start-up screen displays the unit model and software versions for approximately 3 seconds.

The Status Screen is the main information screen of the base station. It displays the current status of the system including:

- RF Channel of operation
- Association (how many full-duplex beltacks are associated with the base station)
- 2W / 4W intercom settings
- Auxiliary input / output settings
- Speaker setting indicator



Once the Status Screen is displayed, it is ready to act as an access point and TR-240 beltacks can be turned on. Once the TR-240 beltacks are on in “wireless” mode, they will associate with the RF channel selected at the base station.

1 Setting the RF Channel

The RF channel can be changed by two different methods:

- Manual RF Channel Selection
- ClearScan™

NOTE: The RF channel of operation setting is remembered and the unit will continue to boot on the same channel until it is set differently by the user.

NOTE: The RF channel of operation needs to be verified / set *before* turning on the TR-240 beltacks. If a beltack is already associated with a base station, it may not continue to associate once the channel is changed. If this occurs, the beltack will need to be rebooted.

1.1 Manual RF Channel Selection

To manually select an RF channel, navigate to the “RF Channel” menu item and press the <Set> button.



The current RF channel will be blinking indicating that the channel is in “set” mode and ready to be changed.

Using the <Up> and <Down> buttons, the RF channel is increased and decreased, respectively.

Once the desired RF channel has been identified and blinking, pressing the <Set> button will select it and save the settings. Once the channel is set, the display will stop blinking and the user can either press <Set> again to re-enter “set” mode and change it, or press <Menu> to go back a menu screen.

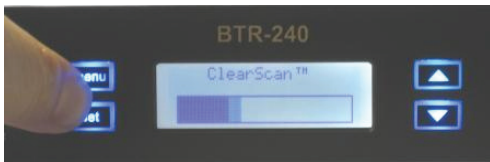
After navigating back to the Status Screen, the new current RF channel of operation is indicated.

NOTE: If the <Menu> button is pressed and held for approximately half a second, the LCD will abort any current changes if in “set” mode and immediately return to the Status Screen.

1.2 ClearScan™

A user may also run a ClearScan™ from the front panel to automatically select the most available RF channel for use.

A ClearScan™ is performed from by pressing the <Menu> + <Set> buttons on the front panel simultaneously for approximately 3 seconds.



Once the ClearScan™ operation is initiated, the scanning status is indicated by a progress bar on the LCD.

After the operation has been performed, the LCD returns to the Status Screen to indicate the current RF channel of operation.

NOTE: The RF channel of operation needs to be verified / set *before* turning on the TR-240 beltpacks. If a beltpack is already associated with a base station, it may not continue to associate once the channel is changed. If this occurs, the beltpack will need to be rebooted.

2 Local Headset Configuration

There are several ways to configure the local headset at the base station front panel. Settings for the local headset include the following:

- Talk Button
- Channel Select Button
- Local Headset Volume
- Microphone and Sidetone Levels

2.1 Talk Button

Pressing the <Talk> button on the front panel will enable and disable the audio path from the headset microphone. The green talk light will be illuminated when the microphone path is enabled. The green talk light will be off when the microphone path is disabled.

2.1.1 Momentary

Press and hold the <Talk> button for longer than ½ second and the microphone path will be enabled. The microphone path will be disabled when the <Talk> button is released.

2.1.2 Latch

Tap the <Talk> button for less than ½ second and the microphone path latch and remain enabled. Tap the <Talk> button again to turn off the latch and disable the microphone path.

2.2 Channel Select Button

Pressing the <Channel Select> button will select the intercom channel for the local headset. Each press of the button will cycle through the options; Intercom 1, Intercom 2, both. The green LEDs above the button will be illuminated for which intercom channel is currently active for the local headset.

2.3 Local Headset Volume

The local headset volume can be controlled from the front panel by turning the <Volume> knob clockwise and counterclockwise to increase and decrease the volume, respectively.

2.4 Microphone and Sidetone Levels

The microphone gain and sidetone level can be adjusted by navigating the menu on the LCD to the “Local Headset” option and pressing the <Set> button.



Once in the “Local Headset” menu option, the “Mic Gain” and “Sidetone” levels are available for adjustment.



Using the <Up> and <Down> buttons to navigate the cursor to the desired level to change. After pressing the <Set> button, the cursor and the level number will blink indicating that the base station is in “set” mode. Now, the <Up> and <Down> buttons can be used to increase and decrease the levels, respectively. Once the desired level is obtained, the setting is selected and saved by pressing the <Set> button again.

Once the microphone gain or sidetone level is set, the cursor and the level number will stop blinking. At this time a user can press <Set> again to re-enter “set” mode and change levels, press <Up> or <Down> to select a different level for adjustment, or press <Menu> to go back a menu screen.

Specifications

Technology.....	2.4 GHz, IEEE 802.11b
Power.....	12-15 VDC, external DC power supply
Current Draw.....	1.1 Amps (max)
RF Frequency Range.....	802.11 Channels 1 – 11 (2.412 to 2.462GHz)
Modulation Technology.....	CCK
Antennas.....	Reverse TNC jacks for external antennas
RF Output Power (Terminated).....	100mW (maximum peak)
Data rate.....	5.5 Mbps (locked into)
Sensitivity (Worst case).....	5.5Mbps, < -91dBm
Frequency Response.....	400 Hz to 3900 Hz
Dynamic Range.....	66 dB
Audio Output (headset).....	100mW, 300 Ohms (1% Distortion)
Beltpack Size.....	7.50L x 19W x 1.75H inches
Beltpack Weight.....	3 lb 7.5 oz
FCC License.....	No License Required

FCC

This device complies with Part 15 of FCC rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.
3. Use only the manufacturer or dealer supplied beltclip and/or accessories for this device.
4. This device must not be co-located or operated in conjunction with any other antenna or transmitter.

The beltpack is intended to be worn on the belt of the user. Placing the beltpack in other locations on the body may reduce performance and void the user's authority by the FCC to operate.

CAUTION: Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada

This device complies with Industry Canada RSS-210 rules. Operation is subject to the following conditions:

1. The device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.
3. Use only the manufacturer or dealer supplied beltclip and/or accessories for this device.
4. This device must not be co-located or operated in conjunction with any other antenna or transmitter.

The beltpack is intended to be worn on the belt of the user. Wearing the beltpack in other locations on the body may reduce performance and void the user's authority by Canada to operate.

CAUTION: Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industrie Canada

Cet appareil est conforme avec Industrie Canada RSS-210 des règles. Son fonctionnement est soumis aux conditions suivantes:

1. Le dispositif ne doit pas causer d'interférences nuisibles.
2. Cet appareil doit accepter toute interférence reçue, y compris les interférences qui peuvent perturber le fonctionnement.
3. Utilisez uniquement le fabricant ou le revendeur attache-ceinture fournie et / ou accessoires pour cet appareil.
4. Ce dispositif ne doit pas être co-implantés ou exploités en conjonction avec une autre antenne ou transmetteur.

La loco-commande est destiné à être porté à la ceinture de l'utilisateur. Le port de la loco-commande dans d'autres endroits sur le corps peut réduire les performances et annuler l'autorisation de l'utilisateur par le Canada de fonctionner.

ATTENTION: Tout changement ou modification non expressément approuvée par la partie responsable de la conformité pourraient annuler l'autorité de l'utilisateur à utiliser cet équipement.