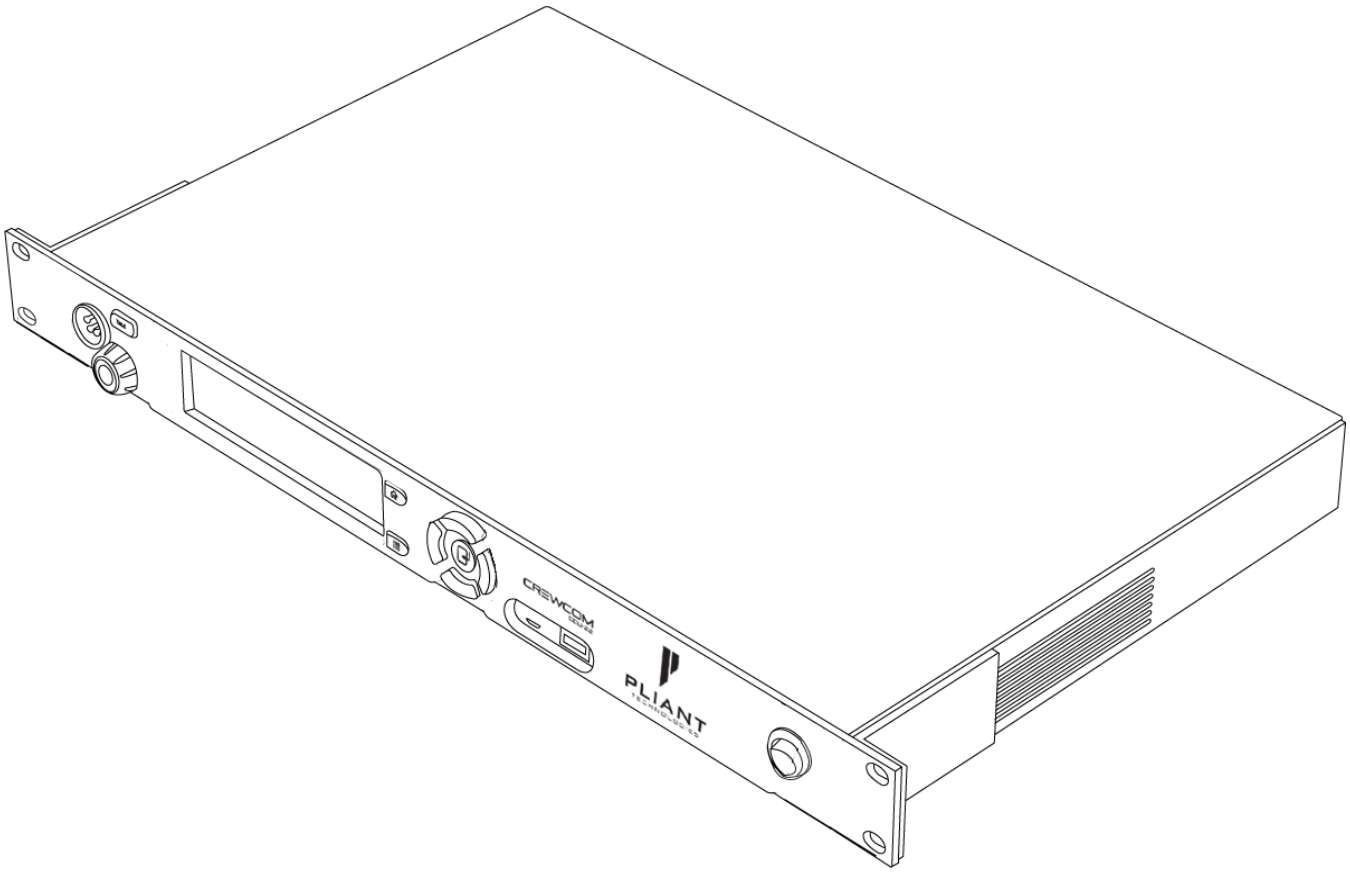
CREWCOM BY PLIANT

CB2 System

OPERATING MANUAL



THANK YOU

We at Pliant® Technologies want to thank you for purchasing CrewCom®. Pliant brings our experience, expertise, and commitment to quality technology with the new CrewCom CB2 System. In order to get the most out of your new CrewCom product, please take a few moments to read this manual completely so that you better understand the operation of this product. For questions not addressed in this manual, feel free to review the additional support documentation provided on our website or to contact Pliant's Customer Support Department:

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While Pliant makes every attempt to maintain the accuracy of the information contained in this manual, this information is subject to change without notice, and published device/system functions and features are subject to firmware version. Please check our website for the latest system specifications and certifications.

Model Information

This document applies to models CB2-900, CB2-2400, CB2-900AN, CB2-2400CE, CRP-12-900, CRP-12-2400, CRP-12-900AN, and CRP-12-2400CE.

Document Reference: 2020.10 D0000390_C

TABLE OF CONTENTS

CHAPTER 1

SAFETY INFORMATION

This chapter consists of the following sections:

System Safety Information

The following content details important safety information related to the ownership and operation of the CrewCom CB2 BaseStation and CRP-12 Radio Pack.

WARNING:Indicates a situation, which, when not avoided, has the potential to result in death or severe injury.

CAUTION:Indicates a situation, which, when not avoided, has the potential to result in minor injury or product failure or damage.

1. Read these instructions.
2. Follow all instructions.
3. Heed all warnings.

Safe Operation Recommendations

- Install and operate in accordance with manufacturer's instructions.
- Do not submerge the units in water.
- Do not set food, water, or other beverage containers on or near the units.
- Do not place units in areas where they will be exposed to weather.
- Plug the CB2 BaseStation's supplied 14VDC external power supply directly into an AC power inlet. Avoid using extension cords to power unit.
- Ensure the power cord remains free from areas of foot traffic. Do not allow power cord to become crimped, twisted, or frayed.
- Clean by using a dry cloth only. Do not spray household cleaners or water onto the cloth. Never spray household cleaners or water onto any part of the unit.

- Use only attachments/accessories that are specifically made for or certified by Pliant Technologies with the units. Any attempt to modify ports in order to use cables or wires that are not manufactured specifically for or certified for use on this system will void the product warranty.
- Unplug the BaseStation during periods of inclement weather and after use.
- Do not charge the Radio Pack outdoors. The charger is designed for indoor use only.
- Refer all CrewCom device service to qualified Pliant Technologies service personnel. There are no user-serviceable parts inside the CrewCom BaseStation or Radio Pack. Opening the product may expose dangerous electrical components, which will result in product failure. Any attempt to self-service or self-repair the unit will void the product warranty.
- Service is required if the units receive any type of damage to any of their parts or if they do not operate normally. For example, if water or any other type of liquid has been spilled on the unit or if it has been exposed to rain or moisture, then service is necessary. Service is also required if debris or other objects have fallen into a unit or if it has been dropped.
- This equipment is not suitable for use in locations where children are likely to be present.

Safe Installation Recommendations

- Elevated Operating Ambient Temperature - If the BaseStation is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified in "BaseStation Specifications" on page 78.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

Power Information

WARNING – DANGER! Users should exercise extreme care when working with electricity. Additional care should be used when working with electricity outdoors during inclement weather. When working outdoors or near water, always connect the system into a ground-fault interrupting circuit.

AC Power Connection Safety

- Always connect the power cord to the CB2 BaseStation's supplied 14VDC external power supply before connecting to the outlet.
- The cord to connect the BaseStation power supply to the mains supply must conform to the following specifications:
    - The mains power cord shall have an IEC C13 connector at one end and a mains power plug at the opposite end.
    - An IEC C13 plug has three pins. The center pin carries the earth/ground. The remaining two pins carry neutral and live circuits.
    - The conductors of the mains cords shall have adequate cross-sectional area for rated current consumption of the equipment.
    - The mains plug that connects to the mains supply must be approved for use in the country in which the equipment will be used.
    - The mains power cord must be an IEC mains 3-Wire grounding power cord complying with standard IEC60320; IEC320/C13.
    - Mains power cords used in the U.S. must also comply with standard UL817.

Battery Safety

WARNING:DANGER! EXPLOSIVE GASES RISK

- Battery explosion is possible if incorrect type is used. Use only batteries approved for use with CrewCom Radio Packs.
- Do not leave the battery unattended while charging. Immediately unplug unit if battery begins to swell or emit smoke while charging. If battery bursts or chemicals begin to leak out of battery housing, the chemicals will react with the air and cause a fire.
- Pliant Technologies recommends keeping a Class-D fire extinguisher available when charging lithium-polymer batteries. The chemicals inside lithium-polymer batteries are highly flammable.
- Do not allow batteries to overheat (reach temperatures of above140 degrees Fahrenheit (60 degrees Celsius)).
- Batteries that appear swollen, deformed or damaged, or that do not fit properly should never be used. Properly dispose of any batteries in this condition in accordance with the instructions provided by your local authorities. For more information and local drop-off sites, visit http://www.call2recycle.org/.

CHAPTER 2

INTRODUCTION

This chapter consists of the following sections:

What's included with the CB2 BaseStation?

- CB2 BaseStation
- 14 VDC External Power Supply (part number PPS-14V)
- Omni-Directional Antenna
- USB A to Micro B Cable
- Quick Start Guide
- USB Flash Drive that includes product documentation
- Warranty Extension Registration Card

Note: A one-year product warranty is standard with CrewCom products. Follow the product registration instructions on the Warranty Extension Registration Card and visit Pliant's Product Registration Page to extend your product warranty to two years at no charge. See "Warranty Information" on page 96.

What's included with the RP-12 Radio Pack?

- CRP-12 Radio Pack
- Lithium-Polymer Rechargeable Battery
- Multi Blade Worldwide Battery Charger/Power Supply
- USB A to Micro B Cable
- Radio Pack Product Overview Guide

Additional Items Required

In addition to your Radio Pack, a compatible headset is required to complete your CrewCom System (sold separately).

Firmware Release Notes

Download the latest CB2 System firmware release notes and firmware release from the Pliant Technologies downloads page.

System Overview

The CrewCom CB2 BaseStation and CRP-12 Radio Pack are wireless products that, together, create an economical wireless intercom system. These products are available in both 900 MHz and 2.4 GHz frequency options as well as a 900 MHz Oceania and 2.4 GHz CE-compliant model. As a system, the two are capable of providing customers with up to two communication channels as well as direct interconnectivity to external 2-Wire and 4-Wire intercom systems.

For more information on each of these products and their capabilities, visit the specific device's overview pages.

- "CB2 BaseStation" on page 12 – The 1RU BaseStation that establishes the wireless intercom while also providing external connections to common established wired intercom systems. As a system, together with the Radio Packs, the BaseStation provides up to two communication channels. Devices are available in 900 MHz and 2.4 GHz ISM bands.
- "Radio Pack" on page 17 (RP) – The portable wireless communication device connecting individual CrewCom users to the CrewCom system. Each RP provides full duplex audio communications and, through customized function buttons, Stage Announce, and Call capabilities. The RP requires a connected headset and pairing to the CB2 BaseStation. Devices are available in 900 MHz and 2.4 GHz ISM bands.

Firmware Updater Application

The CrewCom BaseStation and RP-12 system includes a companion desktop software for updating device firmware. See "Firmware Updater Application " on page 22 for more information.

CHAPTER 3

PRODUCT OVERVIEW

This chapter consists of the following sections:

CB2 BaseStation

The CrewCom CB2 BaseStation is a rack-mount wireless intercom device built to withstand the rigors of road use and rental applications. The BaseStation is a 4-intercom-port device with the ability to support (2) 2- Wire or (2) 4-Wire ports. The CB2-900 model provides RF communication via the 900MHz frequency band, and the CB2-2400 model operates via 2.4GHz.

CB2 BaseStation Front

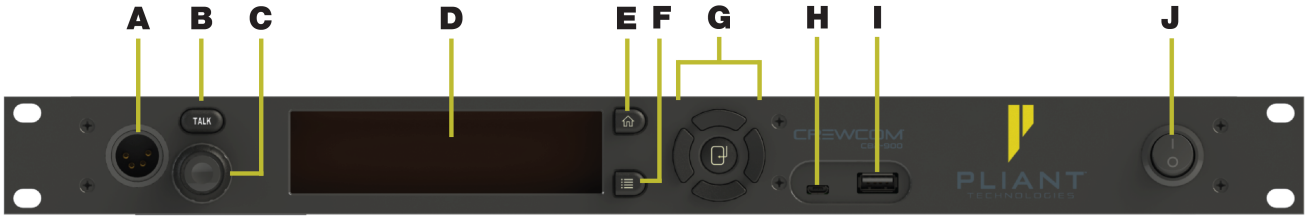


Figure 1 BaseStation Front

A. **Local Headset Connection:** The front panel headset connector is a 4-PIN XLR male. A compatible headset must be provided by the user. See "Local Headset" on page 70 for connection pinout and headset wiring information.

B. **Talk Button for Local Headset:** The Talk button works in conjunction with the Local Headset Connection. The Talk button enables or disables the microphone for the local headset. A white “TALK” LED will illuminate when the mic is enabled. This button has an intelligent latching function: one short press will latch the talk on; however, pressing and holding the talk button will cause the button to act as a momentary switch. (See "Local Headset" on page 70.)

C. **Local Volume/Channel Knob:** Turning the knob adjusts the listening volume of the local headset. Pressing the knob in selects the channel (A or B) for the local headset.

D. **LCD Screen:** Display for viewing real-time status of system, navigating menus, and making subsequent settings adjustments. The LCD screen is the focal point of the BaseStation's functionality. On the Home screen, the LCD displays the status of all wireless Radio Packs that are currently paired to the BaseStation. In the menu, the LCD shows the menu items or information. (See "BaseStation Display" on page 15.)

E. **Home Button:** If the user is currently viewing the Home operating screen, pressing this button toggles to the secondary operating screen. (See "BaseStation Display" on page 15.) If the user is currently viewing the CU menu, pressing this button returns them to the Home screen. This also serves as an escape button; no changes that may have been in process are saved if ***Home*** is pressed before saving.

F. **Menu Button:** Accesses the main menu system of the BaseStation. While in the menu system, one press acts as an escape to return the user to the previous menu without saving any changes. (See "BaseStation Menu" on page 16.)

G. **Navigational Controls:**
- Up – Moves the cursor or marker up on-screen; makes adjustments in edit mode.
- Down – Moves the cursor or marker down on-screen; makes adjustments in edit mode.
- Left – Moves the cursor or level setting to the left on-screen.
- Right – Moves the cursor or level setting to the right on-screen.
- Enter (Center) – Selects the current cursor position or saves the current setting adjustment.

H. **USB Micro B:** For connectivity to a PC for firmware updates via the Firmware Updater Application. (See "Update Firmware" on page 40 for more information about the firmware update process.)

I. **USB A:** For Radio Pack pairing, using a USB-to-Micro-USB cable.

J. **On/Off Switch:** Turns the power to the BaseStation on and off.

CB2 BaseStation Rear

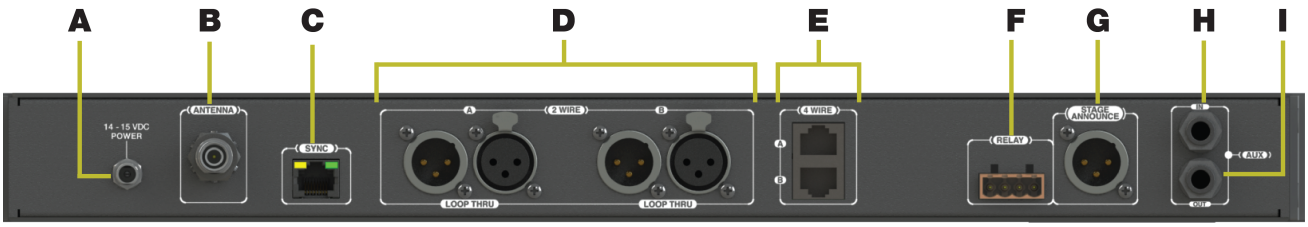


Figure 2 BaseStation Rear

A. **DC Power Connection:** 14 VDC, 1.2 A

B. **Antenna Connection:** RP-TNC (Connector)

C. **SYNC Port (RJ-45):** SYNC allows the BaseStation to receive and use a sync source from another CB2 BaseStation or from a separate CrewCom system. See "Sync Best Practices and Considerations" on page 36 for more information. Each Sync port's status LEDs indicate the status of the sync link. (See "BaseStation LEDs" on page 46.)

> **Important**: You can sync two CB2 BaseStations together with or without audio connected between the devices. You can sync one CB2 BaseStation to a CrewCom system for RF compatibility only; no audio connection will be made via the sync connector in this application.

D. **2-WIRE Intercom Port (x 2):** The Intercom Channel ports (A and B) allow the user to connect the BaseStation to 2-Wire external intercom systems. The XLR-3M/F 2-Wire intercom ports interface with Clear-Com, RTS, AudioCom (Balanced), and other compatible intercom systems. The pairs of XLR-3M and XLR-3F are electrically identical—including the grounds—but the grounds of the two channels are electrically isolated from each other. Each connector pair is transformer isolated. The 2-Wire Intercom settings can be adjusted under the ***Wired Settings*** menu. You must have external 2-Wire power for the 2-Wire port to work. (See "2-Wire Intercom Connectivity" on page 56.)

E. **4-WIRE Intercom Port (x 2):** The RJ-45 4-Wire Intercom ports (A and B) interface with 4-Wire intercom systems and devices. This is an audio-only port and does not support data transfer. The connector is balanced and transformer isolated. These connections do not use standard CAT-5e cables. The cables used must be wired per the CrewCom pin connections and per the device to which you are connecting. (See "More About the CB2 BaseStation 4-Wire / RJ-45 Connection" on page 60.) Nominal line level is +5 dBu. The 4-Wire Intercom settings can be adjusted under the Wired Settings menu. (See "4-Wire Intercom Connectivity" on page 60.)

F. **RELAY Connection:** The CB2 BaseStation includes a single Phoenix connector with 2 contact closures for interfacing with the Stage Announce (SA) Relay. The user has access to both the normally open and the normally closed contacts for each relay. Rated load for the contacts is: 0.3 Amp at 125VAC, 1 Amp at 30VDC. (See "Stage Announce Relay" on page 66.)

G. **STAGE ANNOUNCE (SA):** Stage Announce (SA) is used to output system audio to a dedicated audio output. SA uses an XLR-3M connector. The connector is balanced and transformer isolated. Nominal line level is +5 dBu. The SA output level can be adjusted under the ***Wired Settings*** menu. (See "Wired Settings Menu" on page 52.)

H. **Auxiliary Audio Input (Aux IN):** Aux IN is used to supply program or other audio sources to the BaseStation. The Aux IN connector is a 1/4 in. (6.35 mm) Tip/Ring/Sleeve jack. The Aux IN connector is balanced and transformer isolated. Nominal line level is +5 dBu. (See "Wired Settings Menu" on page 52.)

I. **Auxiliary Audio Output (Aux OUT):** Aux OUT is used to supply intercom audio sources from the BaseStation. The Aux OUT connector is a 1/4 in. (6.35 mm) Tip/Ring/Sleeve jack. The Aux OUT connector is balanced and transformer isolated. Nominal line level is +5 dBu. (See "Wired Settings Menu" on page 52.)

BaseStation Display

Home Operating Screen

Serves as the primary operating screen and displays the status of the BaseStation's connected Radio Packs.

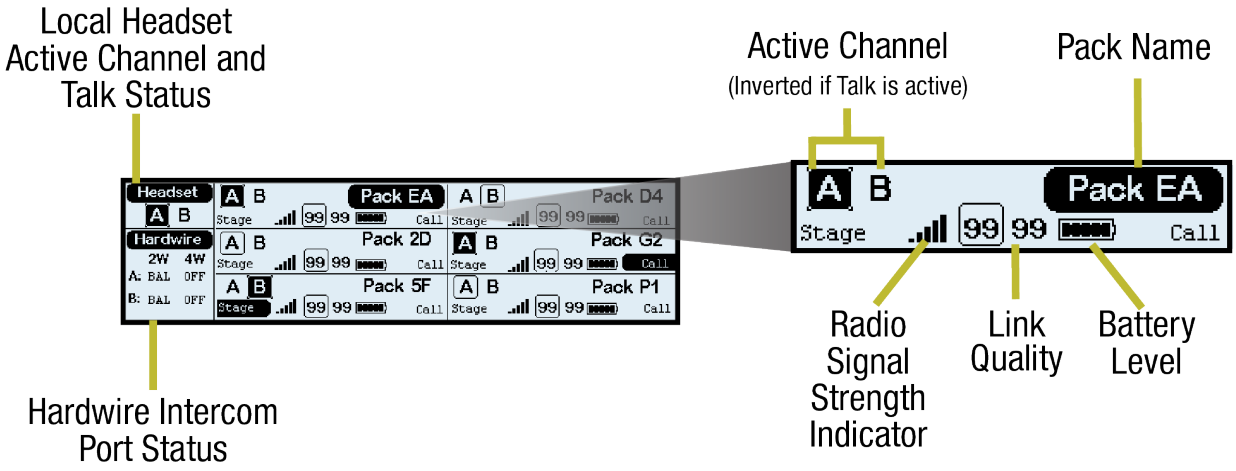


Figure 3 BaseStation Primary Operating Screen

Note: The Link Quality Indicator (LQ) provides a diagnostic measurement of actual packet transmission from Radio Pack to BaseStation and vice versa. (See "Link Quality" on page 74.)

BaseStation Menu

The following menu tree displays the BaseStation's primary menu options and settings:

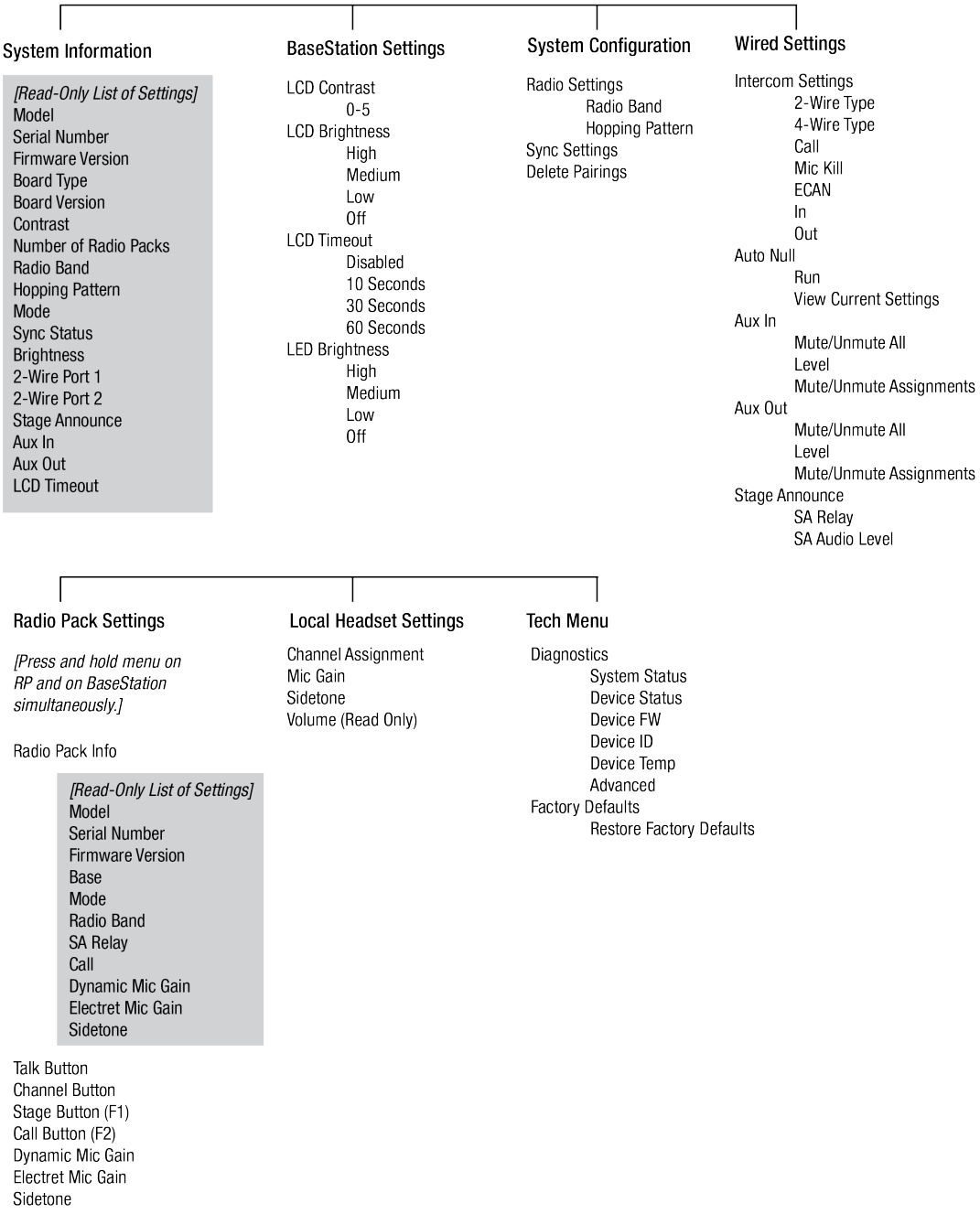


Figure 4 BaseStation Menu

Radio Pack

The CB2 BaseStation operates in conjunction with the CRP-12 Radio Pack and can be used in highly-varying applications and environments.

Radio Pack Top

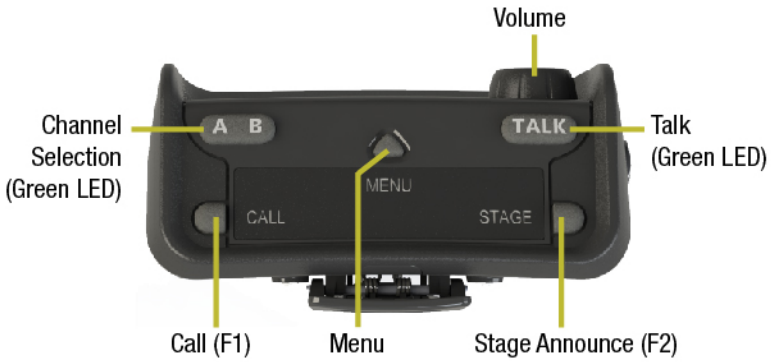


Figure 5 CRP-12 Top View

Volume Knob

The volume control adjusts the listening volume of the connected headset. Turning the volume control clockwise increases the audio level, while turning the control counter-clockwise decreases the level.

Talk Button

The talk button enables or disables the microphone for the selected channel. Talk buttons can be set (from the CB2 BaseStation's menu) to function with a "Latch" or a "Momentary" press.

In addition, CrewCom uses an intelligent latching method for talk buttons. When set to "Latch," one short press will latch the talk on; however, pressing and holding the talk button will cause the button to act as a momentary switch.

Channel Selection Button

The channel selection button switches between channel A and B for the Radio Pack. The LED for the selected channel will be illuminated. Radio Packs can be set up to access both Channels A and B (but only one at a time), only Channel A, or only Channel B.

Call and Stage Announce Buttons (F1/F2)

Each Radio Pack has two function buttons. The left (F1) function button serves as Call when enabled from the CB2 BaseStation menu. The right (F2) function button serves as Stage Announce when enabled from the CB2 BaseStation menu.

Menu Button

The Menu button provides access to menu options.

- Press and hold the Radio Pack menu button AND press and hold the BaseStation menu button. When both menu buttons are depressed for three seconds, the menu mode is enabled.
- Change RP's channel setting by pressing and holding the menu button AND (while holding) press the channel button to cycle through setting options ***A or B***, ***A only***, or ***B only***. The channel button LEDs will illuminate to indicate the active option. Once the desired option is displayed, release the menu button to select it. When ***A or B*** is selected, the RP user must use the Channel Selection button on his or her RP to switch between the channels. The LED for the selected channel will be illuminated.

Radio Pack Rear

Figure 6 Radio Pack Rear View (All RP models have identical rear views.)

Belt Clip

Secure and sturdy belt clip enables Radio Pack wearing via belt or lanyard.

Battery Compartment Door

Secures and protects the Radio Pack's Lithium-Polymer battery or 3 AA batteries. When the Battery Door Release is pressed, the battery door will release and detach from the Radio Pack.

Battery Door Magnetic Latch

Secures the Radio Pack's battery compartment door.

USB (Micro B) Connection

This USB connection is for connecting a Radio Pack to a BaseStation for pairing. The Radio Pack may also be connected to a PC for firmware updates via the Firmware Updater Application. See "Update Firmware" on page 40.

On/Off Button

The On/Off button powers the Radio Pack on and off when pressed for 3 seconds.

4-Pin Male XLR Headset Connector

Headset connector is a 4-PIN male XLR connection. A compatible headset must be provided by the user. See the SmartBoom PRO and SmartBoom LITE data sheets for the pin wiring information for Pliant's SmartBoom headsets.

Headset Connection Wiring	
XLR Pin #	**Description**
Pin 1	Mic −
Pin 2	Mic +
Pin 3	Speaker −
Pin 4	Speaker +

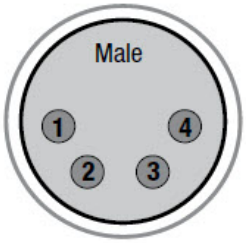


Figure 7 4-Pin Male XLR Pin Out

Radio Pack Batteries

Radio Packs are powered with (1) Lithium-Polymer rechargeable battery (PBT-LIP-01) for greater than 10 hours (2.4GHz) or 9 hours (900MHz).

The Radio Pack may also be powered by three (3) AA batteries. Pliant recommends that only major brand, standard batteries should be used for maximum reliability and effectiveness. The user should expect approximately 5 hours (2.4GHz) or 4.5 hours (900MHz) of operation using new AA batteries. Rechargeable AA batteries are not supported.

There are several considerations the user should take into account when using AA batteries. The RP's battery level and remaining battery time indicators only reflect battery life for lithium-polymer batteries; therefore, those indicators will not be used when AA batteries are in use. In cold weather, AA batteries do not release their stored energy completely, so the result is a dramatic reduction in operation time. It would not be uncommon to have an AA battery only last 50% of its original life when used in very cold situations.

CAUTION: If using AA batteries instead of lithium-polymer batteries, remove the AA batteries from the Radio Pack when not in use to avoid potential damage from leaking battery acid that can sometimes occur in these types of batteries.

Firmware Updater Application

Pliant created the Firmware Updater Application, a companion desktop software for PC, to optimize the process of updating CB2 system device firmware (CB2 BaseStations and CRP-12 Radio Packs). Additionally, this application allows users to update the firmware on Pliant 6+6 Drop-In Radio Pack and Battery Chargers (when applicable).

The Firmware Updater Application functions from a set of one-click navigation tabs and panes. The menu bars located on the top of the screen and the Internet Access status indicator in the lower right corner are static and remain available while the application is open. The large display in the center of the application screen varies depending on which tab is selected by the user. The image below provides an overview of the basic menus and indicators found throughout CrewWare.

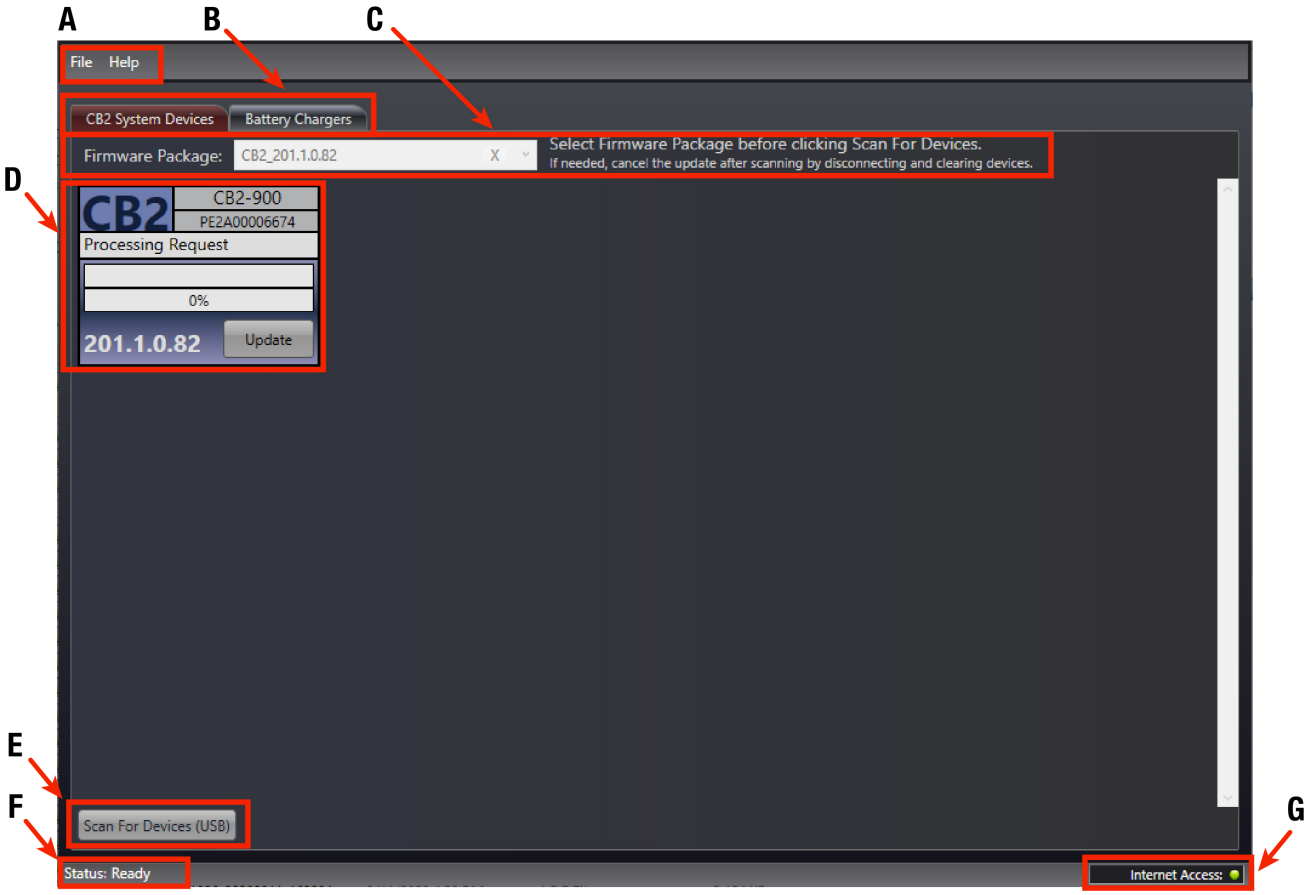


Figure 8 Functional Areas of CrewWare Program

Application Overview		
Label	**Field/Function**	**Description**
A	**Menu Bar**	Located in the top left corner of the screen, and contains command options typically found in most software packages: ***File*** and ***Help***.
B	**Tabs**	Located just below the menu bar, tabs allow users to easily navigate between the two operational views: ***CB2 System Devices*** and ***Battery Chargers***.
C	**Firmware Package Selector**	Located at the top of the selected tab, and will allow selection of a compatible firmware package to load to either CB2 System Devices or Battery Chargers. (CB2 System firmware is not compatible with CrewCom 6+6 Drop-In Radio Pack and Battery chargers.) Firmware package selection is limited to only those packages that have been installed with the application or imported separately. See "Adding and Removing Firmware Packages" on page 39 for more information about adding and removing firmware packages.

Application Overview		
Label	**Field/Function**	**Description**
D	**Scanned Device Tile**	When a CB2 BaseStation, CRP-12, or 6+6 Drop-In RP/Battery Charger is connected to the PC via USB, it will be represented by a tile upon user clicking the ***Scan for Devices*** button. This tile displays the current status of device's firmware update and provides interface for user to initiate and verify the update.
E	***Scan for Devices*** **Button**	Once a firmware package is selected via its selector, this button scans PC USB connections for compatible Pliant devices.
F	**Application Status**	Located in the bottom left corner of the screen, and displays current application status.

Application Overview		
Label	**Field/Function**	**Description**
G	**Internet Access Status**	Located in the bottom right corner of the screen, and displays the current Internet access status. When Internet access is available, the Firmware Updater application automatically updates available firmware packages at launch via secure Internet connection to a Pliant server and can assist the user with retrieving and downloading application updates when initiated from the ***File > Check for Application Update...*** menu. When no Internet access is available, the user may update devices with any previously installed firmware package or import a new firmware package via previously saved package file. See "Adding and Removing Firmware Packages" on page 39 for more information about adding and removing firmware packages

For more information on installing and using the Firmware Updater Application, see the following resources:

- "Firmware Updater Application Setup and Installation" on page 38,
- "Adding and Removing Firmware Packages" on page 39, and
- "Update Firmware" on page 40.

Firmware Updater Application Menu

The Firmware Updater Application's Menu Bar contains options that are typical to most software applications: ***File*** and ***Help***.

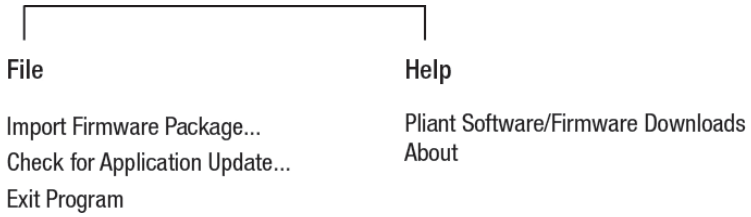


Figure 9 Firmware Updater Application Menu

CHAPTER 4

SETUP AND INSTALLATION

This chapter consists of the following sections:

Setup Procedures

To get started using your CB2 system, follow these procedures:

1. Place the BaseStation on a flat, dry surface, or in a desired rack-mounted location (rack screws not included). Wherever it is placed, ensure that the air input and output sections on the sides of the BaseStation are not restricted.

2. Connect the BaseStation to a compatible power source using provided power supply, but do not turn on power yet.

3. Attach the provided omni-directional antenna to the BaseStation. Follow these tips when determining a location for your BaseStation and antenna:

Antenna Positioning Tips:

- Every antenna has a certain pattern of coverage for which it is useful. The pattern of the BaseStation antenna needs to be focused in the desired coverage area to ensure best RF results.
    - When possible, centrally position the omni-directional antenna in the middle of the desired coverage area.
- Higher is almost always better when placing antennas.
    - Maintaining a direct line of sight from the antenna to the Radio Pack is the best possible antenna scenario.
    - The minimum acceptable application of this is to get the BaseStation antenna above head level.
- Always keep antennas away from the following:
    - Large metal objects. Stay at least two feet away from these.
    - Large containers of liquid. Most liquids are intense RF absorbers.
    - Confined spaces. Don't set up antennas in rooms or areas with RF obstacles. Wide open spaces are good. Stay two to four feet away from walls or ceilings.

4. Power ON the BaseStation via its power switch.
5. Power on your Radio Packs. If already paired, they will log in and be ready for use.
    - If your Radio Packs have not been paired to your BaseStation, see "Pair Radio Packs" on page 35 for instructions on setting up and using Radio Packs with your system.
    - If your Radio Packs do not have batteries installed, see "Install Radio Pack Batteries" on page 33. (You can also see "Charge RP Batteries" on page 31 for more information on that topic.)

6. Proceed with connecting any hardwire connections to the BaseStation, if applicable.

TIP: Always confirm that the non-Pliant intercom system and the CrewCom CB2 wireless system are functioning properly separately before connecting them together.

   - If connecting a 2-wire intercom system, connect it to the 2-wire intercom ports(s) on the back of the BaseStation. For full connection and configuration instructions, see "2-Wire Intercom Connectivity" on page 56.
   - If connecting a 4-wire intercom system, connect it to the 4-wire intercom port(s) on the back of the BaseStation. For full connection and configuration instructions, see "4-Wire Intercom Connectivity" on page 60.

Note: The 2-Wire and 4-Wire ports on a CB2 BaseStation cannot be used simultaneously.

Charge RP Batteries

Take care to insert the Radio Pack batteries with the contacts facing down into the Radio Pack and oriented such that the contacts on the battery will line-up with the contacts inside the Radio Pack battery compartment. See "Install Radio Pack Batteries" on page 33 for more on this procedure.

The PBT-LIP-01 battery can be charged either inside the Radio Pack with the provided RP Wall Charger, with the provided USB Cable, with the Pliant 5-Bay Battery Charger (PBT-5BAY-01), or with the Pliant 6+6 Drop-In Radio Pack and Battery Charger (PBT-RPC-66).

Using the RP Wall Charger

To charge the Radio Pack (RP), connect the plug-in battery charger (included with the RP) to a standard wall outlet and to the Micro-USB connector on the RP. The connector is located under the rubberized access cover on the side of the RP. The battery requires approximately 3 hours to charge from empty.

Using the USB Cable

The Radio Pack (RP) may also be charged by connecting the USB-A-to-Micro-B pairing cable to the USB port of a PC and to the Micro-USB connector on the RP. The connector is located under the rubberized access cover on the side of the RP. The battery requires approximately 3 hours to charge from empty.

Using the 5-Bay Battery Charger

Pliant offers a 5-bay battery charger (PBT-5BAY-01) for charging up to five (5) Pliant lithium-polymer batteries. Batteries require approximately 3 hours to charge from empty.

Figure 10 5-Bay Battery Charger

Using the 6+6 Drop-In Radio Pack and Battery Charger

The Pliant 6+6 Drop-in Radio Pack and Battery Charger charges up to six batteries in the Radio Pack and up to six stand-alone batteries simultaneously. An optional 3-position mounting bracket is available for flexible, secure charger positioning [PAC-PBT-MNT]. Batteries inside Radio Packs require approximately 4 hours to charge from empty; batteries alone require approximately 2.5 hours to charge from empty.

Figure 11 6+6 Drop-In RP and Battery Charger

CAUTION: The operating temperature for battery charging with the PBT-RPC-66 Drop-In Charger is 0°C to 45°C (32° F to 113° F). If charger(s) overheat, they need to be moved to a cooler area to charge batteries properly. As a lithium-polymer battery safety mechanism, the battery chargers include a safety circuit, which prevents charging of batteries if the ambient temperature is too hot.

Install Radio Pack Batteries

1. Hold the RP at about a 45-degree angle, pointing the bottom end down. Then, depress and hold the RP's belt clip down.

   (See Figure 12 below.)

2. Lift open the battery door and remove it.

3. While still holding the RP at an 45-degree angle and depressing the belt clip, install a fully-charged Pliant Lithium-Polymer rechargeable battery (PBT-LIP-01) or three AA batteries.

   Note: Radio Packs (RP) are powered with one Lithium-Polymer rechargeable battery for approximately 10 hours (2.4GHz) or 9 hours (900MHz), or they may be powered with three AA Alkaline batteries for approximately 5 hours (2.4GHz) or 4.5 hours (900MHz).

4. Place the battery door back on the RP, making sure to align and insert its tab at the top first, and then secure the door by pressing until it clicks. (Secure the magnetic door by pressing firmly until the magnet engages.)

5. Turn on the RP by pressing and holding the Power button on the back for three seconds.

   Important: The RP will not communicate unless it has been paired to a BaseStation; if it has not been paired, the Channel Button LEDs will indicate "No Pairing Information Available" by blinking once. In addition, the RP will not communicate if its BaseStation is not yet online. Pliant recommends powering on BaseStations first before powering on RPs.

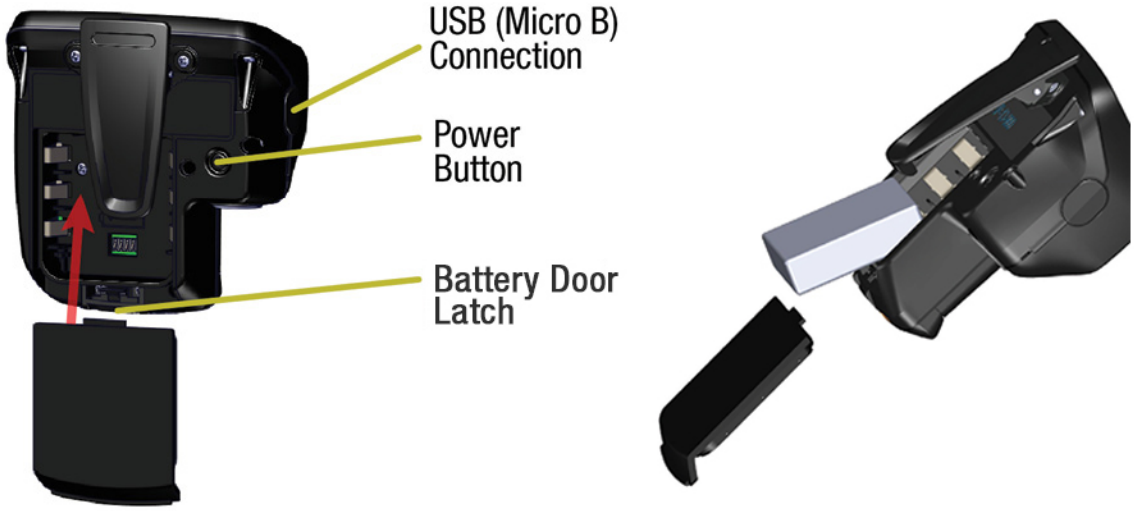


Figure 12 RP Rear and Battery Compartment Door

Pair Radio Packs

CrewCom Radio Packs (RPs) must be paired to a BaseStation before they can operate on a system. Once RPs are paired to a BaseStation, this process does not need to be done again unless the RP is being paired to a new or different BaseStation (for example, after a replacement is made for repairs) or unless the RP's radio settings have been changed (for example, radio band).

A maximum of six (6) RP-12s can be paired to a single BaseStation. If the maximum number of pairings is achieved, old pairings will need to be deleted at the BaseStation before new or replacement RP-12s may be paired.

Pairing Process

A Radio Pack (RP) may be paired without installing a battery. The BaseStation will provide power to the RP during the setup process. If no battery is installed, the RP will shut off as soon as it is disconnected from the BaseStation.

During the pairing process, do not disconnect the RP until you are instructed to do so. Prior to step 1, be sure that the antenna is connected to the BaseStation to which you are pairing, and be sure that the BaseStation is powered on. To pair your RP, use the following steps:

1. Connect a USB-to-Micro-USB cable from the BaseStation to the device (micro end goes into the RP's USB port beneath its rubber port cover). The RP will power on by itself.
2. Follow the prompts that display on the BaseStation LCD.
    A. Your RP must match the system firmware version. The system will check that the RP firmware version is compatible. If it is not, disconnect the RP and update its firmware using the Firmware Updater Application and connection to your PC.
    B. If the firmware is compatible, the pairing process will automatically continue.
3. Wait for the Pack settings to load. The BaseStation LCD will display a "Pairing Complete" message and the Pack's name (e.g., "Pack 01") when finished.
4. Disconnect the USB cable from the RP; it will power off automatically after a few seconds.
5. Turn the RP back on and wait for it to log in to the system. When an RP is logged in, it will display on the BaseStation home screen. The RP is ready for use. Repeat steps 1–5 until every RP is paired.

Sync Best Practices and Considerations

Up to two CB2 BaseStations, or a CB2 BaseStation and a separate CrewCom system, can be synchronized to co-exist when collocated. Pliant recommends the following best practices and considerations for setting up sync.

The SYNC port on the rear of the CB2 BaseStation allows it to receive and use a sync source from another CB2 BaseStation or from a separate CrewCom system.

> **Important:** Two CB2 BaseStations can sync RF and link audio (if desired); however, a CB2 BaseStation can only receive sync from a separate CrewCom system's CrewNet port.

If possible, avoid powering the sync source system off and on while other connected systems are in operation. Upon powering the sync source back on, the receiving system's Radio Packs (RPs) will experience a brief disruption of audio for approximately 1–2 seconds while sync is re-established.

- When possible, plug sync connection into both systems prior to powering on those systems.
- When syncing systems, it is critical that each system be configured within certain parameters. If the sync source is a separate CrewCom system, the CrewCom system operator should use the CB2 BaseStation's System Configuration Menu to coordinate hopping patterns and frequency bands between systems. See "System Configuration Menu" on page 49 for more information.
    - In CrewCom, once hopping patterns and radio band have been set for the systems, the Radio Packs will require a re-pair to their respective Control Unit.
    - With CB2, if radio band is adjusted, the RPs will require a re-pair to their respective CB2. Adjusting CB2 hopping patterns does not require a re-pair.
- For optimal spectrum management, determine the locations of one systems' antenna in relation to the other. One system's antenna should be as far from the other system as their application needs will allow.
- The SYNC port's left and right LEDs will be green when the connection is functioning properly. When the sync connection has a problem, the left LED will be red. If no sync connection is detected, both LEDs will be off.

- During normal operation, and where possible, one system's users should not stand too close to the other system's antenna in order to avoid desensing their Radio Pack’s receiver.

Firmware Updater Application Setup and Installation

Install the Application

A copy of the Pliant Firmware Updater Application is available from the USB drive included with your CB2 BaseStation or via Pliant's Downloads page.

The Application's installation file (“Pliant_FirmwareUpdater_Setup.exe”) includes both the Firmware Updater Application and the latest device firmware packages (for use with CB2 BaseStations, CRP-12 Radio Packs, and 6+6 Drop-In RP and Battery Chargers). To install or update the Firmware Updater Application, right-click on the ““Pliant_FirmwareUpdater_Setup.exe” file, then click ***Run As Administrator*** in the menu that displays. Follow the Windows installer instructions that appear in order to complete installation.

When using the Firmware Updater Application with any kind of Windows application, be sure to make an exception for the program in the Windows firewall and/or with your virus protection program.

Your Firmware Updater Application will automatically check for available application updates at launch (if Internet access is available). If you wish to download and install the updated version when prompted, follow the instructions in each application pop-up that displays. When Internet access is available, you may also click ***File*** and select ***Check for Application Update...*** from the menu to search for any applicable updates. (Users who wish to update their application but who have no Internet access to the Application's PC can download the installation file on another PC via the Pliant Downloads page. Manually save the installation file to the appropriate PC via USB drive, then run it to install the new version.)

Instructions for adding or removing firmware packages are included in "Adding and Removing Firmware Packages" on the next page. Instructions for updating device firmware are included in "Update Firmware" on page 40.

System Requirements

- Windows 7 or higher
- 4 GB system memory
- Intel Core2 Duo CPU @ 2.67 GHz or better
- 128-megabyte (MB) graphics card
- .NET version 4.5

Additional Recommendation

- XGA video screen; 1024 × 768 or greater resolution

Adding and Removing Firmware Packages

Internet-connected instances of the Firmware Updater Application will be automatically updated with any newly released firmware packages when launched. This update process happens automatically, and when complete, the new firmware package(s) are available for selection in the ***Firmware Package*** drop-down field.

Application instances that do not have Internet Access will not receive the automatic firmware package updates. In this case, the user should do the following:

1. Use a PC with Internet connection to download the relevant package files from the Pliant website's Downloads page.
2. Save the downloaded file to the PC where the Firmware Updater Application is installed.
3. Open the Firmware Updater Application (if not already open).
4. Click ***File***, select ***Import Firmware Package...***, then navigate to the location where the package file was saved and select it. The import will begin and a confirmation message will display when it is completed.

Update Firmware

The Pliant Firmware Updater Application gives the user the ability to update the firmware for all devices connected to the system.

> **IMPORTANT**: To work together as a system, all connected Radio Packs must have firmware that matches the version installed on the CB2 BaseStation.

Process Prerequisites

> **IMPORTANT:** Always follow any specific firmware update instructions delivered with the new release. Firmware release notes and any separately published update procedures supersede the information provided below.

- Make sure that the most recent version of the Firmware Updater Application is installed on your PC. See "Firmware Updater Application Setup and Installation" on page 38 for more information.
- Power on the CB2 BaseStation and allow it to initialize entirely.

Firmware Update Process

This process requires connecting devices directly to the PC USB for firmware updates. Update times may vary by device.

> **TIP**: You can utilize a USB hub in order to connect and update multiple devices at once; in this case, be sure all devices are connected prior to Step 3.

1. In the Firmware Updater Application, navigate to the appropriate device tab. Choose the “CB2 System Devices” tab if you are updating a CB2 BaseStation or CRP-12 Radio Pack. Choose the "Battery Chargers" tab if you are updating a Pliant 6+6 Radio Pack and Battery Charger (PBT-RPC-66).

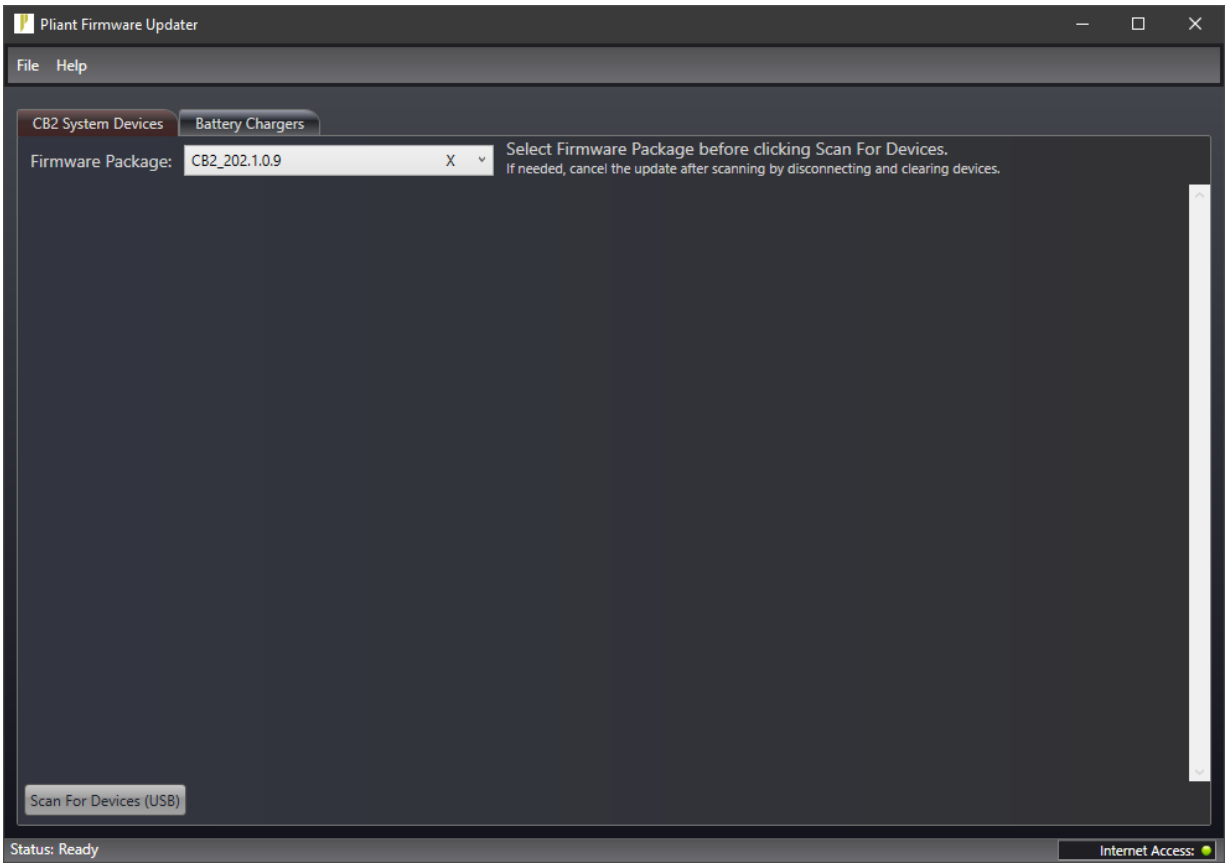


Figure 13 Firmware Updater Application - CB2 System Devices Tab

2. Select a firmware version to load to the device(s) via the ***Firmware Package*** drop-down field.
3. Connect a USB-to-Micro-USB cable from the PC to the device (micro end goes into the CB2 System Device).

> **IMPORTANT:** When updating the Pliant 6+6 Drop-In Radio Pack and Battery Charger (PBT-RPC-66), do not connect power to the Charger until AFTER you have completed Steps 1–3 above.

4. Click the ***Scan For Devices*** button at the bottom of the tab.

5. Each connected device will display on the tab along with their current firmware version.

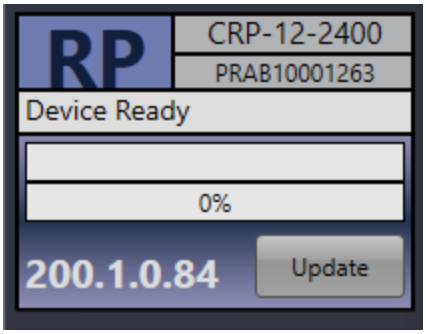


Figure 14 Connected Device

6. Click the ***Update*** button under each device to initiate its update. A progress bar will display.

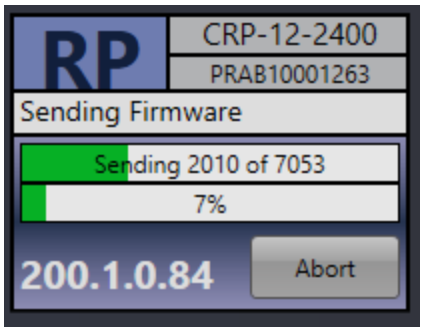


Figure 15 Firmware Update In Progress

7. Wait for the device to complete its update. DO NOT disconnect the device or click ***Abort*** until all of the device's updates are complete and an "Update Complete" message displays in the progress bar.

8. Click the ***Clear*** button(s) to remove the updated device(s) from the screen.

9. Verify the firmware installation by repeating steps 4 and 5 to rescan the devices. Confirm that the rescanned devices now display the new firmware version number in CrewWare.

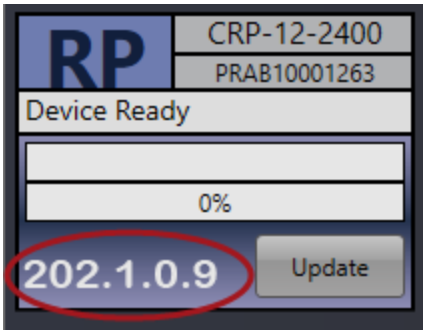


Figure 16 Rescanned Updated Device

10. Disconnect the USB cable from the device without clicking on anything in the Firmware Updater Application. Once the device is disconnected, click the ***Clear/Abort*** button to remove the device tile from the screen.

11. Repeat steps 2–10 above until each BaseStation, Radio Pack (RP), and Charger is updated.

CHAPTER 5

OPERATION

This chapter consists of the following sections:

BaseStation LEDs

Each LED on the rear of the BaseStation indicates a particular condition or status for the device. See the table below for details about each meaning.

BaseStation LEDs		
Port/LED	**Description**	
Sync LEDs	**Left**	**Green** – Sync connection is good.
		Red – Sync connection has a problem (e.g., when a CrewNet connection is made to the sync port of a secondary or tertiary BaseStation).
		Off – No Sync connection detected.
	Right	**On (Green)** – 1000 Mbps link is detected.
		Off – No Sync connection detected.

BaseStation Settings Menu

The BaseStation can be configured depending on user preferences. The following settings and processes can be found in the device's menu under ***BaseStation Settings.***

Adjusting LCD Display Settings

The LCD display has a few adjustable settings such as Contrast, Brightness, and Backlight Time Out.

LCD Contrast

Allows adjustment to the LCD's contrast; use the navigational controls to increase or decrease the level of contrast and press ***Enter*** to save your changes. The default setting for LCD contrast is ***3***.

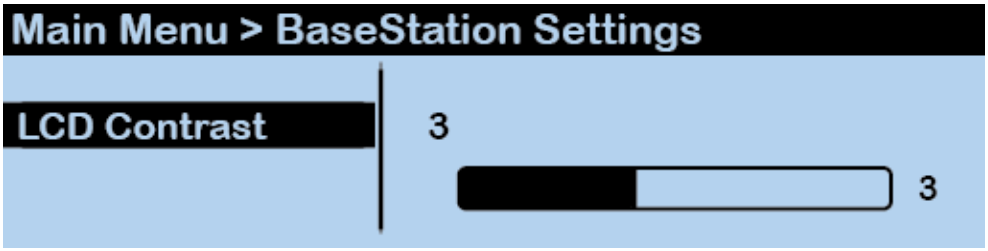


Figure 17 Edit BaseStation LCD Contrast

LCD Brightness

Allows adjustment to the LCD's brightness; select either ***High***, ***Med***, ***Low*** or ***Off*** for brightness level. The default setting for LCD backlight brightness is ***High***.

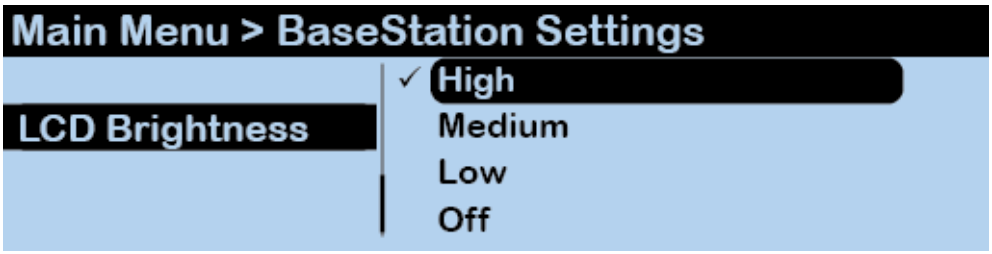


Figure 18 Edit BaseStation LCD Backlight Brightness

LCD Timeout

Enables users to set the amount of time the LCD's backlight will stay lit after engaging the BaseStation's interface. Select either ***60***, ***30***, or ***10*** seconds or disable the backlight timer entirely by selecting ***Disabled***. The default setting for LCD backlight time out is ***Disabled***.

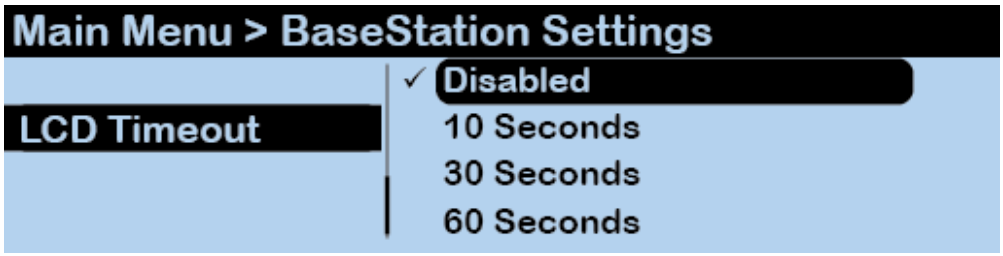


Figure 19 Edit BaseStation LCD Backlight Time Out

LED Brightness

Enables users to adjust the brightness of the BaseStation LED indicators (Talk LED for local headset on front of BaseStation). Select either ***High***, ***Medium***, ***Low***, or ***Off***. The default setting for LED brightness is ***High***.

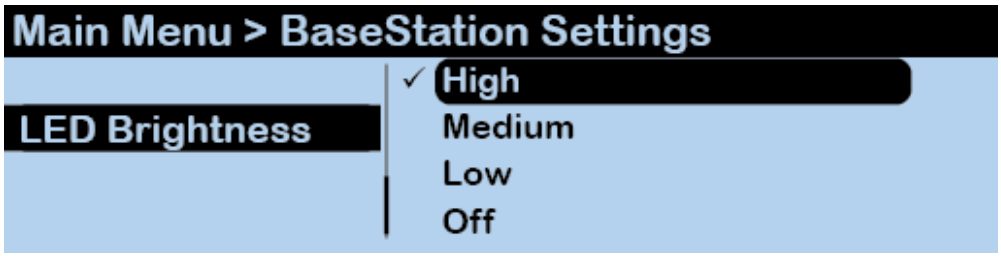


Figure 20 Edit BaseStation LED Brightness

System Configuration Menu

The CB2 wireless system's operation can be configured according to application needs. The following settings and processes can be found in the BaseStation's menu under ***System Configuration.***

Adjusting Radio Settings

Customize RF settings for the CB2 wireless system from this menu.

Radio Band

900 MHz Radio Band

Allows adjustment to the BaseStation's radio band; use the navigational controls to select from ***Full [902–928 MHz]***, ***Low [902–915 MHz]***, or ***High [915–928 MHz]***. Press ***Enter*** to save your changes. The default setting for Radio Band contrast is ***Full***.

> **Note**: Band options may be limited according to the model. CRP-12-900AN (Oceania model) is approved for use in Australia and New Zealand and operates only within the high band (the 915–928 MHz frequency range).

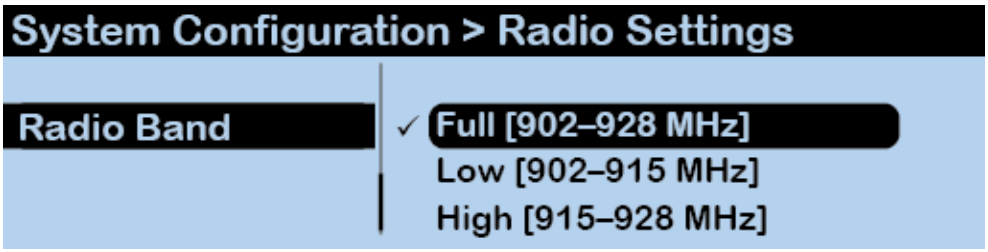


Figure 21 Edit BaseStation Radio Band (900 MHz)

2.4 GHz Radio Band

Allows adjustment to the BaseStation's radio band; use the navigational controls to select from ***Full [2400–2483 MHz]***, ***Low [2400–2442 MHz]***, or ***High [2440–2483.5 MHz]***. Press ***Enter*** to save your changes. The default setting for Radio Band contrast is ***Full***.

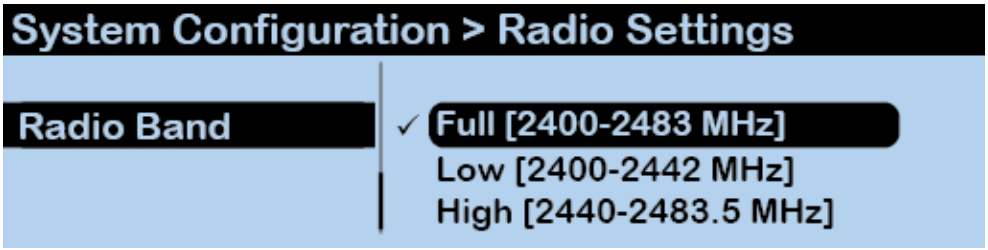


Figure 22 Edit BaseStation Radio Band (2.4 GHz)

Hopping Pattern

Allows adjustment to the BaseStation's hopping pattern; select either ***Pattern A*** or ***Pattern B***. The default setting for BaseStation hopping pattern is ***Pattern A***.

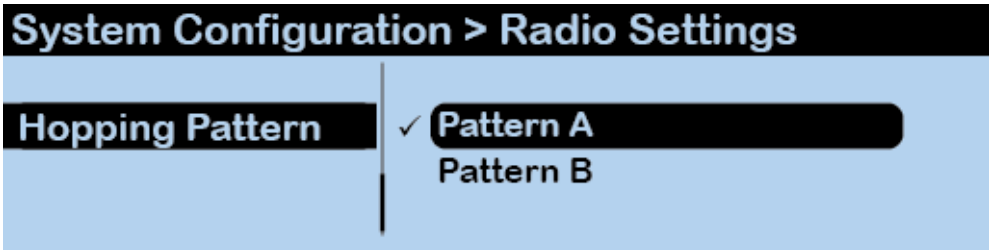


Figure 23 Edit BaseStation Hopping Pattern

Adjusting Sync Settings

Customize synchronization settings for the CB2 wireless system from this menu. Select either ***Sync RF Only*** or ***Link Audio and Sync RF***. The default sync setting is ***Sync RF Only***. See "Sync Best Practices and Considerations" on page 36 for more information.

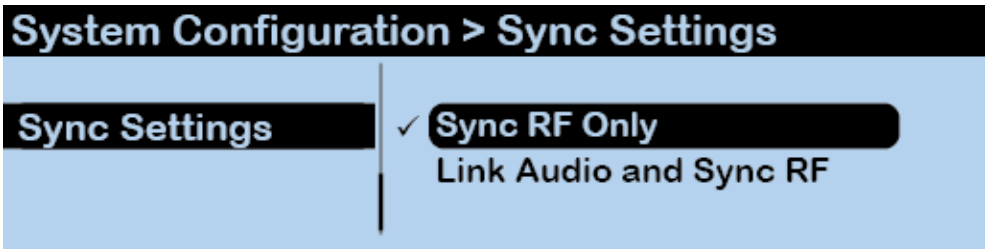


Figure 24 Edit BaseStation Sync Settings

Deleting Radio Pack Pairings

Delete Radio Pack pairings from this menu. Select to ***Delete All*** or choose an individual pack from the list to delete.

Wired Settings Menu

The CB2 BaseStation wired settings can be configured depending on user preferences. The following settings and processes can be found in the BaseStation's menu under ***Wired Settings***.

Intercom Settings Menu

This BaseStation menu option displays all the 2-Wire and 4-Wire settings on the BaseStation LCD. Due to LCD size constraints, only four ports are viewable at a given time. Use the Navigational Controls on the front of the BaseStation to scroll through devices and ports and move from setting to setting. Use the Enter button to select a setting for editing.

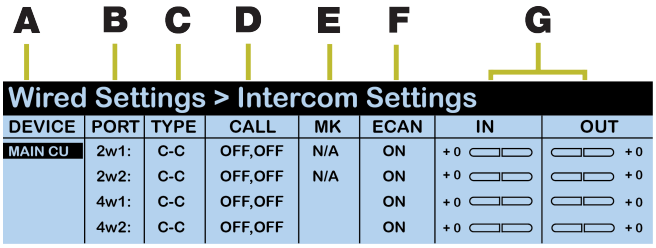


Figure 25 Intercom Settings LCD Display

A. **Device**: Displays the selected device's name.

B. **Port**: Displays the individual device ports for which intercom settings can be adjusted.

C. **Intercom Type**: Allows selection from the four possible intercom types: Off, RTS, AudioCom (Balanced), and ClearCom. The below types of intercom only affect 2-Wire operation and do not control 4-Wire operation. When connecting to a 4-Wire intercom system, you must enable the port (On/Off) before using. The default setting for Intercom Type is OFF. You must have external 2-Wire power for the 2-Wire port to work.

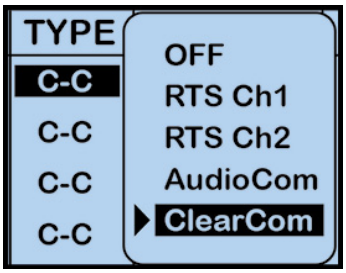


Figure 26 2-Wire Intercom Type Options

3-Pin Wiring Scheme			
Pin #	**Clear-Com**	**AudioCom**	**RTS**
1	Common	Common	Common
2	Power	Audio (-) & Power	Audio 1 & Power
3	Audio	Audio (+) & Power	Audio 2

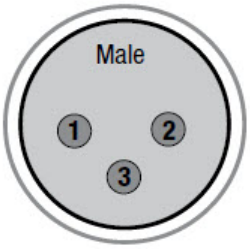


Figure 27 3-Pin Male XLR Pin Out

D. **Call**: Each wired intercom port (2-Wire only) can be individually set to send and receive a CB2-generated call signal to/from a connected wired intercom system. To do so, turn that port's Call function ***ON***. Turning the Call function ***OFF*** only prevents the signal from entering or leaving the BaseStation via the respective port. Call signals can still be generated and transmitted by entities among wireless users. The default setting for Call is ***OFF***. See "Call" on page 75 for more information.

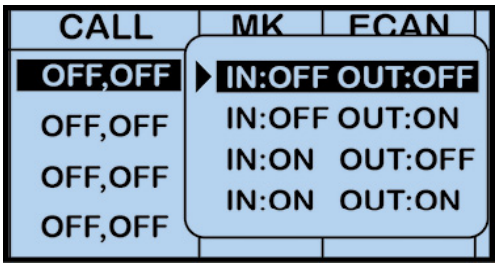


Figure 28 Intercom Type Options

E. **Mic Kill**: The Mic Kill function is not currently operational.

F. **Echo Cancellation (ECAN):** Echo Cancellation (ECAN) assists in reducing echo from 2-Wire and 4-Wire intercom connections.

   For 2-Wire ports, hardware connections need to be optimized with the null procedure to minimize echo in the physical link so that the software can reduce any residual echo. ECAN is on by default in 2-Wire (it is off by default in 4-Wire).

   If a port is never utilized in a system, ECAN can be turned off to ensure that it cannot create undesirable effects. This should not be necessary, though, and it is highly recommended that you keep ECAN on at all times for 2-Wire connections. It is better to leave ECAN off for 4-Wire connections unless it is necessary on a given port.

   ECAN is disabled while the BaseStation's Auto Null menu screen is active to ensure that the hardware is optimized for echo reduction.

G. **Intercom Audio In/Out:** The IN level control adjusts the incoming level (from the connected wired intercom) of the currently selected wired intercom channel. If an intercom port is disabled, the IN Level control is inactive. The default setting for 2-Wire Intercom In is "−6." The default setting for 4-Wire Intercom In is "0."

The OUT level control adjusts the outgoing level (from the CB2 wireless system) of the currently selected wired intercom channel. If an intercom port is disabled, the OUT Level control is inactive. The default setting for 2-Wire Intercom Out is "+4." The default setting for 4-Wire Intercom Out is "0."

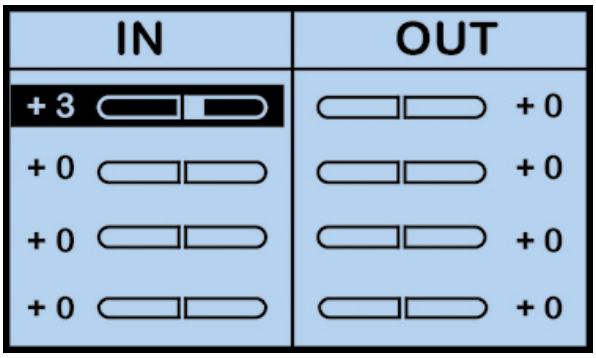


Figure 29 Intercom Type Options

2-Wire Intercom Connectivity

> **Note**: If you are *not* connecting a hardwire system, be sure the ***2-Wire Type*** is set to ***OFF*** or the system could experience termination-related issues and poor audio. See the procedure below for more information on how to change this setting.

Always confirm that the non-Pliant 2-Wire intercom system and the CB2 wireless system are functioning properly separately before connecting them together. Use the procedures below to configure the 2-Wire connection from the BaseStation's Wired Settings menu.

Under the ***Wired Settings*** menu, select ***Intercom Settings***:

1. Use the Navigational controls to navigate to the desired setting for a 2-Wire port.
    A. For intercom “Type,” press ***Enter*** to view the available list of compatible types: ***RTS Ch 1***, ***RTS Ch 2***, ***AudioCom (Balanced)***, or ***Clear-Com***. You can also select ***Off***. Use the navigation buttons to scroll through the list, and press ***Enter*** when the desired setting is highlighted.
    B. Determine if you would like to send and receive Call signals from the CB2 wireless system to the connected 2-Wire intercom system. Press ***Enter*** to view and select ***ON*** or ***OFF***. See the Call section of "Intercom Settings Menu" on page 52 for more information.
    C. The Echo Cancellation (ECAN) setting for the 2-Wire ports is on by default. Pliant highly recommends that ECAN remain on even if a 2-Wire system is not in use. If you wish to change this setting, press ***Enter*** to view and select ***ON*** or ***OFF***. See the Echo Cancellation section of "Intercom Settings Menu" on page 52 for more information.
2. Now that your settings are established, connect the 2-Wire intercom system to the appropriate ports via 3-pin XLR cables/connectors.
3. After connecting the 2-Wire intercom system, initiate Auto Null for the appropriate ports or all ports of this particular BaseStation. See "Nulling" on page 58 for more information.

4. Adjust IN/OUT audio levels between the CB2 wireless system and the 2-Wire intercom system as needed.
    A. With appropriate mic gain settings and expected nominal levels from the interfaced system, the 2-Wire settings you can expect to see for RTS, Clear-Com, and AudioCom are provided in the table below.

2-Wire Intercom Settings			
	RTS	**Clear-Com**	**AudioCom**
2W OUT	0	0	+3
2W IN	0	0	-3

Nulling

In order to minimize echo resulting from connection to an external 2-Wire system, it is necessary to optimize the hardware of the hybrid circuitry in the BaseStation to match line impedance. The CB2 BaseStation provides a user-initiated Auto Null feature that automatically optimizes the 2-Wire interface. Nulling only impacts 2-Wire hard wired intercom connections. Auto Null sends a series of tones to each of the 2-Wire intercom channel connections. Activate Auto Null for new connections or whenever the 2-Wire system changes, such as when additional non-CrewCom wired Packs are added or removed, or when cable lengths are changed.

During the nulling process, the BaseStation DSP monitors the echo and adjusts the line characteristics (Resistance, Inductance, and Capacitance) to optimize the interface to the external 2-Wire system. When Auto Null is initiated, all of the functions, including communication, of the intercom channel being nulled are interrupted. The nulling process takes approximately 10–15 seconds per channel. You may need to re-adjust the intercom levels to a proper level after the 2-Wire intercom lines have been nulled.

Optimize 2-Wire port hardware connections by nulling them in order to minimize echo in the physical link and to enable the software to remove any residual echo. You may null from the BaseStation's menu.

Auto Null from the BaseStation

During the Auto Null process, the BaseStation LCD will display each 2-Wire port's resistance (R), inductance (L), capacitance (C) and amplitude.

There are two options for auto nulling your CrewCom system – ***Null All*** and ***Null by Port***. The following steps detail how to initiate the Auto Null process from the BaseStation:

1. Turn off all Talk buttons on wired equipment. Since the BaseStation monitors a self-generated tone to adjust the null characteristics, any sounds entering through the wired intercom system will interfere with the nulling process.
2. On the BaseStation, press ***Menu*** to open the main menu.
3. Scroll through the menu options to the ***Wired Settings*** and select ***Auto Null***.

4. Select ***Null All*** to start the Auto Null process for all 2-Wire ports of the selected device. Normal functions will be interrupted for about 60 seconds during the Auto Null process (about 15 seconds per channel). An alert will display, asking you to confirm that you want to proceed.
    A. Auto Null will send a mic kill signal to connected AudioCom and RTS wired systems, but not to Clear-Com wired systems. Auto Null operation will mute the audio from CrewCom Radio Packs as it connects to connected wired systems; however, those wireless Radio Packs will still communicate with one another while the null is in progress.

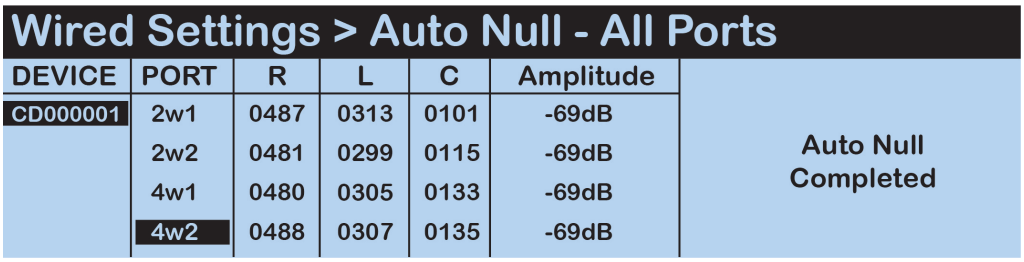


Figure 30 Auto Null in Process

    B. After you confirm to proceed, progress of the null process can be observed on the LCD Display. The display will indicate “Auto Null Complete” once the Auto Null process is completed.
5. If nulling “by port,” you will be prompted to select which ports after confirming your ***Null by Port*** selection.
6. Press the ***Home*** button to escape to the Home screen or press the ***Menu*** button to return to the previous screen.

4-Wire Intercom Connectivity

Always confirm that the non-Pliant 4-Wire intercom system and the CB2 wireless system are functioning properly separately before connecting them together. Use the procedures below to configure the 4-Wire connection from the BaseStation's Wired Settings menu.

Under the ***Wired Settings*** menu, select ***Intercom Settings***:

1. Use the Navigational controls to navigate to the desired setting for a 4-Wire port.
   A. For intercom type, press ***Enter*** to turn the port on or off; use the navigation buttons to scroll through the list, and press ***Enter*** when the desired setting is highlighted.
   B. If desired, enable Echo Cancellation (ECAN) for the 4-Wire ports. See the Echo Cancellation section of "Intercom Settings Menu" on page 52 for more information.
2. Now that your settings are established, connect the 4-Wire intercom system to the appropriate ports via RJ-45 cables/connectors.
3. Adjust in/out audio levels between the CrewCom System and the 4-Wire intercom system as needed.
   A. With appropriate mic gain settings and expected nominal levels from the interfaced system, the 4-wire settings you can expect to see for RTS, Clear-Com, and Riedel are provided in the table below.

4-Wire Intercom Settings			
	RTS	**Clear-Com**	**Riedel**
4W OUT	+2	-3	+1
4W IN	-2	+3	-1

More About the CB2 BaseStation 4-Wire / RJ-45 Connection

Wiring schemes vary, and it is important to ensure that the cable is wired correctly for proper system operation. The CB2 BaseStation utilizes RJ-45 jacks for connection to a 4-Wire port. Only two pairs of wires are utilized—one to send audio and one to receive audio. Any twisted pair wiring can be used to connect between the 4-Wire and the CB2 wireless system. See the table below for a list of the 4-Wire RJ-45 pin connection list.

Note: Pins 1 and 8 are tied, and pins 2 and 7 are tied.

4-Wire RJ-45 Connections	
RJ-45 Pin #	**CrewCom 4-Wire Pin #**
Pin 1	Pin 8
Pin 2	Pin 7
Pin 3	Audio Output (+)
Pin 4	Audio Input (+)
Pin 5	Audio Input (-)
Pin 6	Audio Output (-)
Pin 7	Pin 2
Pin 8	Pin 1

Auxiliary In

Aux IN (sometimes referred to as Program Audio) can be used to bring the program or other audio into the BaseStation. Audio from the Aux IN connection is routed only to CB2 wireless system devices and is not routed externally to other intercom systems.

Audio supplied to Aux IN can be muted or unmuted on either Channel A or Channel B or to both. The default setting for Aux IN Level is "0." The default setting for Aux IN mute setting is "Unmuted." Channel assignment changes and level adjustments can be performed via BaseStation menu.

The Aux IN connector is a 1/4 in. (6.35 mm) Tip/Ring/Sleeve jack. The Aux IN connector is balanced and transformer isolated. Nominal line level is +5 dBu.

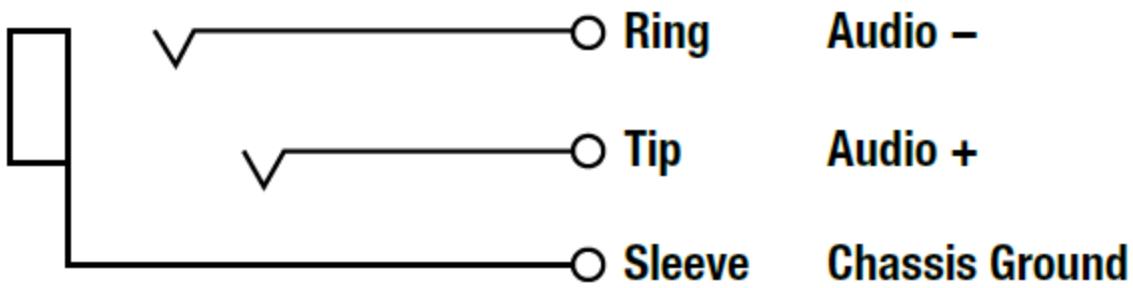


Figure 31 Auxiliary IN/OUT Audio Wiring Diagram

Aux In Connection

To connect Aux IN, connect an audio source to Aux IN via the 1/4 in. (6.35 mm) TRS jack. Then, configure the connection via the BaseStation's menu.

Audio supplied to Aux IN can be assigned to Channel A and/or Channel B. The default setting for Aux IN Level is "0." To adjust the Aux IN level and Channel assignments, press ***Menu*** to open the main menu, scroll through the menu options to the ***Wired Settings,*** and select ***Aux In.***

1. Use the navigation controls to scroll to the Master Level bar. Press ***Enter*** to select it.
2. Use the navigation controls to adjust the current value displayed on the LCD.

> **Note**: Individual Aux In assignment level adjustments are not currently supported.

3. Press ***Enter*** to save; or ***Menu/Home*** to escape without saving changes.

Audio levels are expressed as a numerical value from -10 to +10. Aux In assignments can be muted or unmuted from this menu as well.

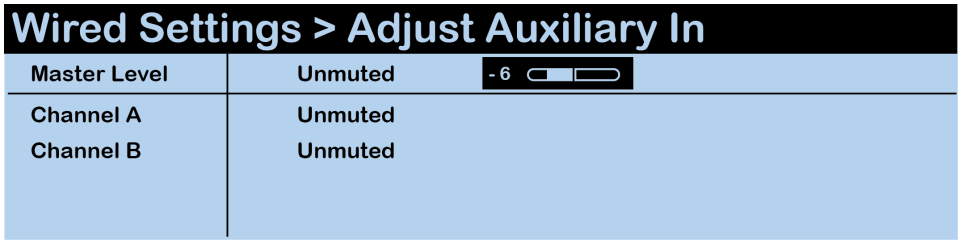


Figure 32 Aux IN Level

Auxiliary Out

Audio from the Aux OUT connection can be assigned from either Channel A or Channel B, but no audio sourced from the hard-wired intercom ports is routed to Aux OUT. Audio from the Aux OUT connection comes from any CB2 wireless system audio entity, such as Radio Packs and the local headset of a BaseStation. The default setting for Aux OUT Level is "0." Channel assignment changes and level adjustments can be performed via the BaseStation menu.

The Aux OUT connector is a 1/4 in. (6.35 mm) Tip/Ring/Sleeve jack. The Aux OUT connector is balanced and transformer isolated. Nominal line level is +5 dBu.

See Figure 31 for an Aux In/Out audio wiring diagram.

Aux Out Connection

To connect and configure Aux OUT, connect an external device to Aux OUT via the 1/4 in. (6.35 mm) TRS jack. Then, configure the connection via the BaseStation's menu.

Audio supplied from Aux OUT can be assigned from either Channel A or Channel B. The default setting for Aux OUT Level is "0." To adjust the Aux OUT level or the assigned Channel, press ***Menu*** to open the main menu, scroll through the menu options to the ***Wired Settings,*** and select ***Aux Out.***

1. Use the navigation controls to scroll to the Master Level bar. Press ***Enter*** to select it.

   Note: Individual Aux Out assignment level adjustments are not currently supported.

2. Use the navigation controls to adjust the current value displayed on the LCD.

3. Press ***Enter*** to save; or ***Menu/Home*** to escape without saving changes.

Audio levels are expressed as a numerical value from -10 to +10. The Aux Out assignment can be muted or unmuted from this menu as well.

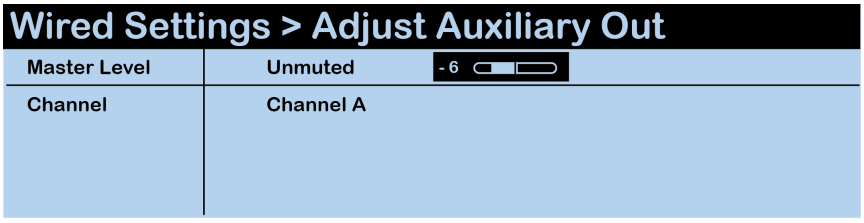


Figure 33 Aux OUT Level

Stage Announce

Stage Announce Relay

The CB2 BaseStation includes a single Phoenix connector with 2 contact closures for interfacing with the Stage Announce (SA) Relay. The user has access to both the normally open and the normally closed contacts for each relay. Rated load for the contacts is: 0.3 Amp at 125VAC, 1 Amp at 30VDC.

The following pinout is for the Phoenix connector on the rear of the BaseStation:

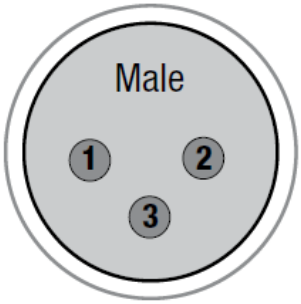
Relay Connection Wiring	
Pin #	**Description**
Pin 1	Not Connected
Pin 2	Common
Pin 3	Normally Open
Pin 4	Normally Closed

Stage Announce Audio

The Stage Announce (SA) function in the BaseStation is used to send a Radio Pack's (RP) microphone signal to a dedicated external audio output. When a user activates the SA function from an assigned button on an RP, their microphone is re-routed and is sent to the BaseStation's SA audio output.

Pressing the SA button enables the headset microphone, regardless of the status of the Talk buttons. If enabled, all RPs can access this feature. If more than one BaseStation is present, SA audio will be routed out both (or all) of the BaseStations' SA ports simultaneously. The SA audio is identical on all BaseStations system-wide.

The SA output connector is an XLR-3M. The SA connector is balanced and transformer isolated and outputs nominal line level audio on a numerical scale from -10 to +10. The default setting for SA Relay is "Enabled." The default setting for SA Audio is "0."



Pins	Connections
1	Ground
2	Audio +
3	Audio –

Figure 34 Stage Announce Audio Wiring Diagram

Stage Announce Connection

To connect Stage Announce (SA) audio, connect an audio destination to the SA output via the XLR-3M on the back of the BaseStation. To connect Stage Announce (SA) relay, connect a relay destination to the Relay output via the phoenix connector on the back of the BaseStation.

Configure Stage Announce via the BaseStation's Wired Settings menu.

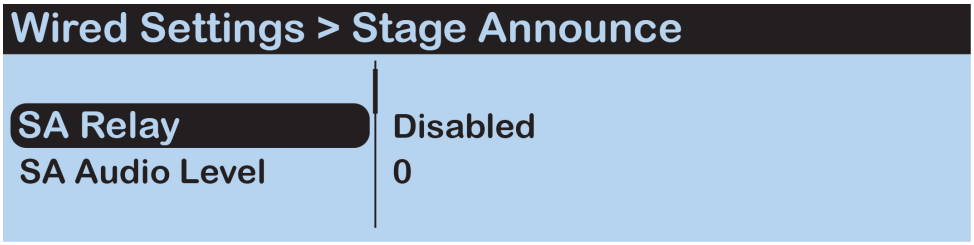


Figure 35 Stage Announce Settings

Radio Pack Settings Menu

The Radio Pack (RP-12) can be configured depending on user preferences. The following settings and processes can be found in the individual RP's settings menu (within the BaseStation's menu under ***Radio Pack Settings.***) To enter the RP's menu mode, press and hold the Radio Pack menu button AND press and hold the BaseStation menu button. When both menu buttons are depressed for three seconds, the menu mode is enabled.

Talk Button

Use the BaseStation's navigation controls to select either ***Momentary*** or ***Latch*** talk button behavior. When ***Momentary*** is selected, the RP user must press and hold the talk button when they wish to talk.

Channel Button

Use the BaseStation's navigation controls to select from ***A or B***, ***A only***, or ***B only***. When ***A or B*** is selected, the RP user must use the Channel Selection button on his or her RP to switch between the channels. The LED for the selected channel will be illuminated.

Call Button (F1)

Use the BaseStation's navigation controls to select either ***Enable*** or ***Disable*** to set the F1 button's function. When the Call button is enabled, the RP user must press the Call button on his or her RP to engage Call. See "Call" on page 75 for more information.

Stage Button (F2)

Use the BaseStation's navigation controls to select either ***Enable*** or ***Disable*** to set the F2 button's function. When the Stage button is enabled, the RP user must press the Stage button on his or her RP to engage Stage Announce. See "Stage Announce" on page 66 for more information.

Mic Gain

When the Mic Gain is set too high, it is possible to induce feedback or echo. When set too low, words can be clipped by the low level noise gate, or may sound too quiet to other listeners. Different models of headsets will require widely varying mic gain settings.

Dynamic Mic Gain

Use the BaseStation's navigation controls to increase or decrease the dynamic mic gain level; select from within a range of +6 to +35 dB (***0–10*** options in the menu).

Electret Mic Gain

Use the BaseStation's navigation controls to increase or decrease the electret mic gain level; select from within a range of -12 to +17 dB (***0–10*** options in the menu).

Sidetone

Speak into the headset microphone at a typical speaking level and adjust the sound of your own voice in your headset. Use the BaseStation's navigation controls to select from the range of options: ***Very High*** (0), ***High*** (-6), ***Medium*** (-12), ***Low*** (-18), and ***Very Low*** (-24). These options correspond to a range of levels from 0 dB to -24 dB.

Tip: Set this sidetone as low as comfortable for the user to insure best performance. Setting the sidetone too high will cause the user to speak softly and cause poor audio performance.

Local Headset

The following settings can be accessed by pressing the LOCAL button on the front panel of the BaseStation or by pressing ***Menu*** and navigating to ***Local Headset Settings***.

Selecting the Local Headset Channel

The BaseStation headset connector is a functional user communication point. The Front Panel Headset allows you to communicate on either Channel A or B. Change the active channel by pressing in on the Local Headset volume knob.

Changing the Local Headset Mic Gain

For dynamic microphones, select from within a range of +6 to +35 dB. For electret microphones, select from within a range of -12 to +17 dB. When the Mic Gain is set too high, it is possible to induce clipping, feedback, or echo. When set too low, words may sound too quiet to other listeners. Headsets by different manufacturers or different models of headsets will require widely varying Mic Gain settings.

The default setting for dynamic local mic gain is "6" (+23 dB). The default setting for electret local mic gain is "3" (–4 dB).

Selecting the Local Headset Mic Type

Select from ***Auto-detect***, ***Dynamic***, or ***Electret*** mic type. If you select a mic type that does not match the detected type of the connected mic, you will be prompted to accept the exception. It is highly recommended that the default ***Auto-detect*** is used.

Adjusting the Local Headset Sidetone

Sidetone value is expressed in dB. When adjusting sidetone, you will see a level indicator with a numeric value between 0 dB and -24 dB. The default setting for local headset sidetone is "Med" (-12 dB). Speak into the headset microphone at a typical speaking level and adjust the sound of your own voice in your headset. Press ***Enter*** to accept the changes.

Using the Local Headset

Talk and Volume Controls for the headset are located to the right of the connector.

A white “TALK” LED will illuminate when the mic is enabled. CrewCom uses an intelligent latching method for talk buttons. Quickly pressing and releasing TALK will cause the mic button to latch. The white “TALK” LED will stay lit and the microphone will remain enabled. Pressing and holding TALK will cause the button to act in a momentary fashion. The white “TALK” LED will remain lit and the microphone will remain enabled only as long as the button is pressed.

Local Headset Pinout and Wiring

Local Headset Connection Wiring	
XLR Pin #	**Description**
Pin 1	Mic −
Pin 2	Mic +
Pin 3	Speaker −
Pin 4	Speaker +

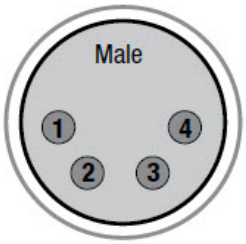


Figure 36 4-Pin XLR Male Local Headset Connection

See the SmartBoom PRO and SmartBoom LITE data sheets for the pin wiring information for Pliant's SmartBoom headsets.

Lock the BaseStation Front Panel

The Front Panel Lock function is intended to minimize the probability of unintentional adjustments to the system. The buttons and knobs on the front of the BaseStation will not function until unlocked, except for the power switch, which will power the unit off, and the Volume knob and Talk button, which will allow communication with a connected local headset. When the BaseStation is first powered ON, it is always unlocked. Lock and unlock the BaseStation front panel by pressing and holding the ***Home*** and ***Enter*** buttons simultaneously for five seconds.

Radio Pack LEDs

Each LED on the Radio Pack indicates a particular condition or status for the device. See the table below for details about each meaning.

Radio Pack LEDs		
LED	**Description**	
All Pack LEDs	On - Boot up indication	
	Blinking simultaneously - Pack is logged out	
	Brief simultaneous blinking - Profile update in progress	
Channel Button LEDs	A	On (**Green**) - Channel A enabled
		Off - Channel A disabled
	B	On (**Green**) - Channel B enabled
		Off - Channel B disabled
	1 Blink	Unpaired / No Pairing Found - The RP is not paired, either because it was unpaired or pairing was never found.
	2 Blinks	No CB2 Found - The RP could not find any of the CB2s in its scan list.
	Alternating Blinks	Firmware update in progress.
	A & B Continuous Blinking	Charging (blinking stops when charging completes)
Talk LED	On (**Green**) - Talk Enabled	
	Off - Talk Disabled	
	1 Blink - Unknown Error: An error was reported, but it was an unknown error.	
	2 Blinks - SKU/Radio Mismatch	
	3 Blinks - Band Configuration Error	
	4 Blinks - Invalid Scan List Entry	
	5 Blinks - Incompatible Radio Firmware	
	6 Blinks - Radio Hardware Error	
	7 Blinks - Calibration Error	
	8 Blinks - Radio Update Error	
	9 Blinks - Flash Locked	

Link Quality

The Link Quality (LQ) is a numeric value that provides a real-time metric on the quality of communication between the CB2 BaseStation and the Radio Pack. The LQ serves as a diagnostic tool for proper system operation and troubleshooting Radio Packs.

- The LQ value represents the number of successful audio packets of the last 100 transmissions—99 being the most, 0 being the least.
- With CrewCom, the receiving LQ signal is reported for both the CB2 BaseStation and Radio Pack. The Radio Pack's on-screen LQ indicator with the box around it is the BaseStation's LQ from the RP. If this LQ is lower than you typically experience in normal operation, then it is an indication that you may have an issue related to interference, the BaseStation, or a cable connection. If only the RP's LQ is low, it could be an indication that you may have an issue related to interference or the Radio Pack.
- What should the LQ value be during operation? — The LQ will not remain at an exact value during system operation. Depending on what degree of outside interference or attenuation (blocking) is present, the LQ will fluctuate during normal operation. Fluctuations in LQ can and will span a wide range of values. The lower the LQ, the poorer the audio quality will be during operation. During start-up, within adequate range and no outside influences present, the LQ should display "99" which is the highest LQ value a Radio Pack or BaseStation can have.
- What if the LQ on a single Radio Pack is below "99" at start-up? — This depends on where the Radio Pack is located at start-up, but if the other Radio Packs on the same BaseStation are at "99" this is a good indication that an isolated radio issue exists within that Radio Pack. If the LQ value has dropped considerably lower or if that unit is experiencing poor audio quality, it may require service.

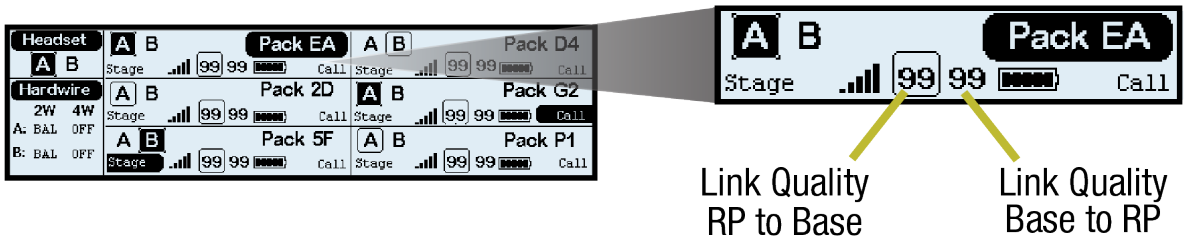


Figure 37 BaseStation Screen LQ Indicator

Call

Call signals may be initiated by entities across the CB2 wireless system. Each 2-Wire intercom port may be individually set to send and receive a CB2-wireless-system-generated call signal to or from a compatible connected wired intercom system by enabling the Call function for that port. Disabling the Call function for that port prevents the signal from leaving the CB2 wireless system via the respective port.

- **Call**: An RP Function button option. When enabled for wireless devices, the user can elect to send a call signal to the RPs of a single assigned channel. When enabled for external hardwired intercom devices, a signal will be sent to any connected 2-wire devices associated with the RP's channel (as long as outbound call is enabled for the associated BaseStation port). Call can be enabled for both wireless and hardwired devices or limited to only one type.

See "Set Up Call" below.

Set Up Call

Each BaseStation wired intercom port (2-Wire only) can be individually set to send and receive a CB2-wireless-system-generated call signal to/from a connected wired intercom system. To do so, turn that port's Call function ***ON***. Turning the Call function ***OFF*** only prevents the signal from entering or leaving the CB2 wireless system via the respective port. Call signals can still be generated and transmitted by entities across the CB2 wireless system. See "Intercom Settings Menu" on page 52 for more information about this process.

In addition to enabling Call for the BaseStation port(s), you will need to enable Call for each Radio Pack.

Enable Call on BaseStation 2-Wire Port

See "2-Wire Intercom Connectivity" on page 56 for more information.

Enable Call on Radio Pack

See "Radio Pack Settings Menu" on page 68 for more information.

Restore Factory Defaults

Users can choose to restore factory defaults for the device or system. When restoring factory defaults, these settings are reset to their original factory settings:

BaseStation Factory Settings		
BaseStation Setting	**BaseStation Default**	**Reset by "Restore Defaults"**
Contrast	3	X
LCD Brightness	High	X
LCD Timeout	10 Seconds	X
LED Brightness	High	X
Sync Settings	Sync RF Only	X
Delete Pairings	No Pairings	X
Operating Mode	Normal	X
Radio Band	Full	X
Hopping Pattern	A	X
Intercom Type	2-Wire: OFF 4-Wire: OFF	X
Intercom Call	OFF	X
Intercom Mic Kill	2-Wire: N/A 4-Wire: blank	X
Intercom Echo Can	2-Wire: OFF 4-Wire: OFF	X
Intercom IN (2w/4w)	2-Wire: −6 4-Wire: 0	X
Intercom OUT (2w/4w)	2-Wire: +4 4-Wire: 0	X
Auxiliary IN	0	X
Auxiliary OUT	0	X
Stage Announce (SA) Relay	Enable	X
Stage Announce (SA) Audio	0	X
Local Channel	Channel A	X
Local Mic Gain	Dynamic: 6 (+23 dB) Electret: 3 (-4 dB)	X
Local Sidetone	Med (-12 dB)	X
Local Volume	15	X

CHAPTER 6

PRODUCT SPECIFICATIONS

This chapter consists of the following sections:

BaseStation Specifications

BaseStation Specifications		
Specification*	**CB2-900**	**CB2-2400**
RF Frequency (MHz)	902–928 MHz (915–928 MHz)**	2400–2483 MHz
RF Scheme	FHSS with TDMA	
Effective Radiated Power	400 mW (+26 dBm)	100 mW (+20dBm)
Receiver Sensitivity	-100dBm at 10-5 BER	
Radio Certification	FCCID: HSW-CCT900 and IC: 4492A-CCT900	FCCID: HSW-CCT24 and IC: 4492A-CCT24
Transmission Range	200 m (approx. 650 ft.) under typical conditions; 600 m (approx. 1950 ft.) line of sight. Note: Functional range depends on many variables, including RF signal absorption, reflection, and external interference.	150 m (approx. 500 ft.) under typical conditions; 450 m (approx. 1500 ft.) line of sight. Note: Functional range depends on many variables, including RF signal absorption, reflection, and external interference.
Hardwired Intercom Audio Channels	2	
No. of Active Radio Packs Supported	6	
No. of Paired Radio Packs Supported (per CB2)	6	
USB Ports	(1) USB Type A; (1) Micro USB	
Front Panel LCD Display	512 × 128 resolution	
Stage Announce and Relay	1 Relay via Phoenix Connector	

BaseStation Specifications		
Specification*	**CB2-900**	**CB2-2400**
Sync Port (supports one connection)	(1) RJ-45	
2-Wire Intercom Connection	2 channels via XLR 3F with XLR 3M loop (2 ports)	
2-Wire Compatibility	Clear-Com, RTS, and AudioCom (Balanced)	
4-Wire Intercom Connection	2 Channels via RJ-45	
Stage Announce Output	XLR 3M, balanced, transformer isolated	
Aux IN	6.35 mm (1/4 in.) 3 conductor jack, 17.5 dBu max in (nominal line level +5 dBu), balanced, transformer isolated	
Aux OUT	6.35 mm (1/4 in.) 3 conductor jack, 17.2 dBu into 600 ohms (nominal line level +5 dBu), balanced transformer isolated	
Power Input/Connector	2.5 × 5.5 × 8 mm, 14 VDC, 1.2 A	
Dimensions (L × W × H)	1 RU, 48.26 cm × 4.39 cm × 29.67 cm (19.00 in. × 1.73 in. × 11.68 in.) metal enclosure	
Weight	2.7 kg (5.9 lbs)	
Operating Environment	-20° to 50° C (-4° to 122° F); 10% to 90% Humidity.	
Maximum Sync Line Length	CAT 5e (or greater) 100 m (330 ft.)	
Maximum Altitude	2,000 m (6,562 ft.)	
RoHS Compliant	Yes	
Compliance Model Number	B22545	

BaseStation Specifications		
Specification*	**CB2-900**	**CB2-2400**
Number of Antenna Connections per CB2	1	
Antenna Connector Type	RP-TNC	
Supplied Antenna	+2dBi Omni-directional (whip)	

***Notice About Specifications:** While Pliant makes every attempt to maintain the accuracy of the information contained in this manual, this information is subject to change without notice, and published device/system functions and features are subject to firmware version. Please check our website for the latest system specifications and certifications.

Radio Pack Specifications

Radio Pack Specifications		
Specification*	**CRP-12-900/ CRP-12-900AN****	**CRP-12-2400/ CRP-12-2400CE*****
RF Frequency (MHz)	902–928 MHz (915–928 MHz)**	2400–2483 MHz
RF Scheme	FHSS with TDMA	
Effective Radiated Power	400 mW (+26 dBm)	100 mW (+20 dBm)
Receiver Sensitivity	-100 dBm at 10-5 BER	
Radio Certification	FFCCID: HSW-CCT900 and IC: 4492A-CCT900	FFCCID: HSW-CCT24 and IC: 4492A-CCT24
Transmission Range	200 m (approx. 650 ft.) under typical conditions; 600 m (approx. 1950 ft.) line of sight. Note: Functional range depends on many variables, including RF signal absorption, reflection, and external interference.	150 m (approx. 500 ft.) under typical conditions; 450 m (approx. 1500 ft.) line of sight. Note: Functional range depends on many variables, including RF signal absorption, reflection, and external interference.
Audio Dynamic Range	Greater than 90 dB	
Audio Frequency Response	150 Hz–7 kHz	
Channels	2	
Volume Knobs	1	
Talk Buttons	1	
Headset Connector	4-pin male XLR	
Microphone Type	Auto-Detect; Dynamic or Electret	
Antenna	(2) 2dBi Dipole	

Radio Pack Specifications		
Specification*	**CRP-12-900/ CRP-12-900AN****	**CRP-12-2400/ CRP-12-2400CE*****
Battery Life, Rechargeable Lithium-Polymer	Greater than 9 hours	Greater than 10 hours
Charging Power Supply	Micro USB; 6W AC wall adapter	
Charge Time for Lithium-Polymer Battery (with supplied PSU)	Under 3 hours	
Optional Power	3 Standard AA batteries	
Battery Life, AA Batteries	Approximately 4.5 hours	Approximately 5 hours
Dimensions (L x W x H)	11.43 cm × 11.61 cm × 5.87 cm (4.50 in. × 4.57 in. × 2.31 in.)	
Weight (with Lithium-Polymer battery)	350 g (12.3 oz.)	
Material	Polycarbonate substrate with thermoplastic elastomer overmold	
Operating Environment	-20° to 50° C (-4° to 122° F); 10% to 90% Humidity. RP Power Supply is 0 to 40° C (32° to 104° F).	
Maximum Altitude	2,000 m (6,562 ft.)	
RoHS Compliant	Yes	
IP Rating	IP-65	

*Notice About Specifications: While Pliant makes every attempt to maintain the accuracy of the information contained in this manual, this information is subject to change without notice, and published device/system functions and features are subject to firmware version. Please check our website for the

latest system specifications and certifications. 900MHz products only available in North America, Australia, and New Zealand.

 ***CRP-12-2400CE model meets the same specifications and comply with ETSI standards (300.328 v1.8.1). Non-CE models are non-compliant with some ETSI standards.

**CRP-12-900AN (Oceania) model is approved for use in Australia and New Zealand and operates within the 915–928 MHz frequency range.

CHAPTER 7

PRODUCT SUPPORT

This chapter consists of the following sections:

Product Support

Pliant offers technical support via phone and email from 07:00 to 19:00 Central Time (UTC−06:00), seven days per week.

1.844.475.4268 or +1.334.321.1160
technical.support@plianttechnologies.com

Visit www.plianttechnologies.com for product support, documentation, and live chat for help. (Live chat available 08:00 to 17:00 Central Time (UTC−06:00), Monday–Friday.)

Returning Equipment for Repair or Maintenance

All questions and/or requests for a Return Authorization Number should be directed to the Customer Service department (customer.service@plianttechnologies.com). Do not return any equipment directly to the factory without first obtaining a Return Material Authorization (RMA) Number. Obtaining a Return Material Authorization Number will ensure that your equipment is handled promptly.

All shipments of Pliant products should be made via UPS, or the best available shipper, prepaid and insured. The equipment should be shipped in the original packing carton; if that is not available, use any suitable container that is rigid and of adequate size to surround the equipment with at least four inches of shock-absorbing material. All shipments should be sent to the following address and must include a Return Material Authorization Number:

Pliant Technologies Customer Service Department
Attn: Return Material Authorization #
205 Technology Parkway
Auburn, AL 36830-0500

CHAPTER 8

SYSTEM MAINTENANCE AND STORAGE

This chapter consists of the following sections:

System Maintenance and Storage

Cleaning

Generally, the CrewCom hardware should be cleaned only with a dry cloth. A soft cloth with rubbing alcohol may be used to wipe the devices if needed, but you should avoid using rubbing alcohol on plastic components. Never spray solvents or chemicals onto the devices.

All electronic devices can be susceptible to particulate contamination. If yours are exposed to an extremely dusty environment, contact Pliant's Customer Service for internal cleaning.

Temperature and Humidity

CrewCom components are designed to be very durable and can tolerate a wide range of environmental conditions; however, you should take all necessary precautions to keep your system devices safe, dry, and out of extreme conditions.

The Radio Packs are designed to work wherever people work. While the Radio Pack design is weather-resistant, Radio Packs should not be submerged in liquids unnecessarily. Protect the battery compartment from water when changing batteries. The battery compartment offers a route to the electronic circuitry.

CHAPTER 9

LICENSE AND COMPLIANCE INFORMATION

This chapter consists of the following sections:

License Information

Warning: Changes or modifications to this device not expressly approved by Pliant could void the user's authority to operate the equipment.

BaseStation License

1. FCC Notices
    A. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.
    B. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2. Canada, Industry Canada (IC) Notices
    A. This Class A digital apparatus complies with Canadian ICES-003.
    Cet appareil numerique de la classe A est conforme a la norme NMB-003 du Canada.
    B. Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.
    Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

C. This radio transmitter (FCCID: HSW-CCT24 & HSW-CCT900, IC: 4492A-CCT24 & 4492A-CCT900) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.
Le présent émetteur radio (FCCID: HSW-CCT24 & HSW-CCT900, IC: 4492A-CCT24 & 4492A-CCT900) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

   i. The following antenna types are approved for use with the BaseStation, and their required impedance is 50 ohms:
      - 2.4GHz Model :
        - 9dBi dipole
        - 14dBi corner reflector
        - 12dBi patch
        - 13.9dBi yagi
        - 4dBi pifa
        - 14dBi CP beam
      - 900MHz Model:
        - 5 dBi dipole
        - 4dBi pifa
        - 9 dBi yagi
        - 12 dBi panel

D. This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF-Exposure Statement

The CrewCom BaseStation has been designed for use as what the FCC calls a “mobile” device.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

BaseStation Compliance Numbers

Model Numbers	Compliance Model No.
CB2-900	B22545
CB2-900AN	B22545
CB2-2400	B22545
CB2-2400CE	B22545

Radio Pack License

1. FCC Notices
    A. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.
    B. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2. Canada, Industry Canada (IC) Notices
    A. This Class A digital apparatus complies with Canadian ICES-003.

        Cet appareil numerique de la classe A est conforme a la norme NMB-003 du Canada.

    B. Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

        Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

    C. This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

        Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF-Exposure Statement

CrewCom Radio Packs have been designed to be worn and used in close proximity to the human body—what the FCC calls a "portable" use.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment is in direct contact with the body of the user under normal operating conditions. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radio Pack Compliance Numbers

Model Numbers	Compliance Model No.
CRP-12-2400	RP2500
CRP-12-2400CE	RP2500
CRP-12-900	RP2500
CRP-12-900AN	RP2500

CHAPTER 10

WARRANTY INFORMATION

This chapter consists of the following sections:

Warranty Information

Limited Warranty

CrewCom and MicroCom products are warranted to be free from defects in materials and workmanship for a period of two years from the date of sale to the end user, under the following conditions:

- First year of warranty included with purchase.
- Second year of warranty for main models (CRP, CCU, CHB, CRT, CB2) requires product registration on the Pliant web site. Register your product here: http://plianttechnologies.com/customer/account/login/

Tempest professional products carry a two-year product warranty.

All headsets and accessories (including Pliant-branded batteries) carry a one-year warranty.

The sole obligation of Pliant Technologies, LLC during the warranty period is to provide, without charge, parts and labor necessary to remedy covered defects appearing in products returned prepaid to Pliant Technologies, LLC. This warranty does not cover any defect, malfunction, or failure caused by circumstances beyond the control of Pliant Technologies, LLC, including but not limited to negligent operation, abuse, accident, failure to follow instructions in the Operating Manual, defective or improper associated equipment, attempts at modification and/or repair not authorized by Pliant Technologies, LLC, and shipping damage. Products with their serial numbers removed or effaced are not covered by this warranty.

This limited warranty is the sole and exclusive express warranty given with respect to Pliant Technologies, LLC products. It is the responsibility of the user to determine before purchase that this product is suitable for the user's intended purpose. ANY AND ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE DURATION OF THIS EXPRESS LIMITED WARRANTY. NEITHER PLIANT TECHNOLOGIES, LLC NOR ANY AUTHORIZED RESELLER WHO SELLS PLIANT PROFESSIONAL INTERCOM PRODUCTS IS LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND.

Parts Limited Warranty

Replacement parts for Pliant Technologies, LLC products are warranted to be free from defects in materials and workmanship for 120 days from the date of sale to the end user.

This warranty does not cover any defect, malfunction, or failure caused by circumstances beyond the control of Pliant Technologies, LLC, including but not limited to negligent operation, abuse, accident, failure to follow instructions in the Operating Manual, defective or improper associated equipment, attempts at modification and/or repair not authorized by Pliant Technologies, LLC, and shipping damage. Any damage done to a replacement part during its installation voids the warranty of the replacement part.

This limited warranty is the sole and exclusive express warranty given with respect to Pliant Technologies, LLC products. It is the responsibility of the user to determine before purchase that this product is suitable for the user's intended purpose. ANY AND ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE DURATION OF THIS EXPRESS LIMITED WARRANTY. NEITHER PLIANT TECHNOLOGIES, LLC NOR ANY AUTHORIZED RESELLER WHO SELLS PLIANT PROFESSIONAL INTERCOM PRODUCTS IS LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND.