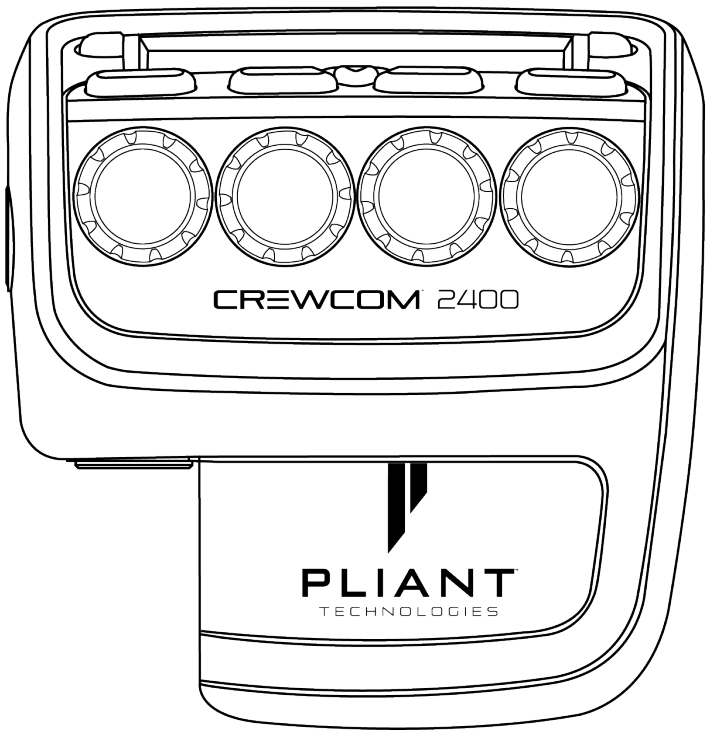
CREWCOM BY PLIANT

Radio Pack

OPERATING MANUAL

Version 1.14



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 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 (www.plianttechnologies.com) or contact Pliant's Customer Support Department. See "Product Support" on page 68.

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 Version 1.14.

This document applies to models CRP-12-900, CRP-12-900AN, CRP-22-900, CRP-22-900AN, CRP-44-900, CRP-44-900AN, CRP-12-2400, CRP-12-2400CE, CRP-22-2400, CRP-22-2400CE, CRP-44-2400, CRP-44-2400CE.

CRP-22-900 and CRP-44-900 models are only available in North America and operate within the 902–928 MHz frequency range.

CRP-22-900AN and CRP-44-900AN (Oceania) models are approved for use in Australia and New Zealand and operate within the 915–928 MHz frequency range.

CRP-44-2400CE and CRP-22-2400CE models meet the same specifications as the CRP-44-2400 and CRP-22-2400 models, and they comply with ETSI standards (300.328 v1.8.1). Non-CE models are non-compliant with some ETSI standards.

Document Reference: D0000215_H

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CHAPTER 1

SAFETY INFORMATION

This chapter consists of the following sections:

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Radio Pack Safety Information

The following section details important safety information related to the ownership and operation of the CrewCom 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 and Service

- Clean only with a dry cloth. Do not spray household cleaners or water onto the cloth. Never spray household cleaners or water onto any part the unit.
- Use only attachments/accessories that are specifically made for or certified by Pliant Technologies with the Radio Pack.
- Unplug the Radio Pack charger 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 Radio Pack service to qualified Pliant Technologies personnel. There are no user-serviceable parts inside the CrewCom Radio Pack. Opening the unit 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 Radio Pack receives any type of damage to any of its parts or if it does not operate normally. For example, if water or any other type of liquid has been spilled on the Radio Pack 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 the unit or if it has been dropped.

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

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What's in the Box?

- Radio Pack
- Lithium-Polymer Rechargeable Battery
- USB A to Micro B Cable
- Multi Blade Worldwide Battery Charger/Power Supply
- Product Overview Guide
- Warranty 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 77.

Additional Items Required

In addition to your Radio Pack, at least one of each of the devices listed below is required to complete your CrewCom System (sold separately with included components):

- Control Unit
- Radio Transceiver
- Headset

Firmware Release Notes

Find the latest CrewCom firmware release notes on the Pliant Technologies website. Download the latest firmware release from the Pliant Technologies downloads page.

CrewCom Overview

CrewCom is a versatile yet straightforward communications solution built on an intelligent wireless and wired network-based distributed system architecture. Innovative technologies have been specifically developed to facilitate intercom system growth and effortless adaptation, along with unparalleled digital wireless reliability for consistent operation, even in the most demanding production environments.

Decentralized Network Architecture

The CrewCom system utilizes a proprietary network backbone, known as CrewNet™, to coordinate and transport all system timing, audio, signaling, and controls. This efficient, decentralized resource network delivers increased flexibility over that of traditional technologies, using a distributed network-to-device intelligence within a modular building block structure. System components can easily be placed where they are needed or scaled to facilitate system growth, reconfiguration, and effortless adaptation to changing environments. For increased infrastructure flexibility, the CrewNet network is capable of operating over standard Cat 5e (or greater) and/or Single Mode Fiber (SMF) connections.

Flexible RF Platform

CrewCom's RF platform is vast and flexible to meet the needs of virtually any wireless communication challenge facing production and entertainment professionals worldwide. Each CrewCom wireless product is available in the 2.4GHz and 900MHz (North America, Australia, and New Zealand only) ISM bands and any combination of these frequency ranges may be simultaneously used on the same CrewCom system. CrewCom makes it easy to operate in challenging RF environments by combining support for multiple simultaneous frequency bands, while also allowing for simple system setup without the need for an RF engineer.

In addition, a more robust RF link enhances RF range and reliability through a newly developed dual carrier double-send transmission scheme that minimizes the adverse effects of inter-symbol interference. This innovation allows increased useful RF range and improved performance, especially in large, reflective environments.

Intuitive User Experience

CrewCom's family of products is designed around a system architecture that offers a high density of users with a more manageable infrastructure and lower cost per user than typically found in large-scale wireless installations. The CrewCom system not only consists of a range of wired and wireless

hardware products but also incorporates an intuitive software application, known as CrewWare, working together with the system hardware to enhance the experience of system administrators, designers, integrators, and users. Each device's user interface allows a quick learning curve with high functionality, and its ease of use is consistent across all frequency bands, types of users, and applications.

CrewCom Devices

The following is a list of available CrewCom devices. For more information on each of these products and their configuration capabilities, visit the specific device's overview pages linked below.

- Control Unit (CU) – the 1RU foundational element of the CrewCom system that establishes the CrewNet-based infrastructure while also providing external connections to common established intercom systems. Unlike traditional BaseStations, the CU contains no radio and is frequency agnostic, which sets the groundwork for a multi-frequency capable system. For maximum flexibility, any CU can access, control, and monitor any active device across CrewNet. The CU is available in a "CCU-22", "CCU-44", and "CCU-08" models, which simultaneously support up to (2) 2-Wire and (2) 4-Wire, (4) 2-Wire and (4) 4-Wire, or (8) 4-Wire intercom connections, respectively.

- Radio Pack (RP) – the direct portable wireless communication device connecting individual CrewCom users to the CrewCom system. Each RP provides full duplex audio communications and, through customized function buttons, and General Purpose Output (GPO) control. The RP requires a connected headset and access to a Radio Transceiver on the CrewCom system. Devices are available in 2.4GHz and 900MHz bands as well as one, two, and four volume/talk button configurations.

- Radio Transceiver (RT) – a CrewCom radio device that houses a transmitter and receiver (2.4GHz or 900MHz) and its corresponding antennas, enabling RF communications to CrewCom Radio Packs. Using the CrewNet network as the system's backbone, RTs can be positioned throughout a wide coverage area by being linked back to a Control Unit either directly or through a Hub(s). Connectivity is accomplished using either Cat 5e (or greater) or Single Mode Fiber (SMF).

- Copper Hub – a CrewNet-based device with eight ports to allow extended interconnection for a variety of CrewCom hardware. Ports one through seven are copper (RJ-45, Cat 5e, or greater); port eight can be either an additional copper port or a duplex LC Single Mode Fiber port, but only one may be used at a time. The Hub provides for extensive system expansion and flexibility.

- Fiber Hub – a CrewNet-based device with eight ports to allow extended interconnection for a variety of CrewCom hardware. Ports two through eight are duplex LC single-mode fiber ports; port one can be either an additional fiber port or a copper port (RJ-45, Cat 5e, or greater), but only one may be used at a time. The Hub provides for extensive system expansion and flexibility.

CrewWare

CrewCom includes CrewWare, a companion desktop software, to simplify the process of optimizing your CrewCom wireless system. CrewWare is used for monitoring and managing CrewCom wireless intercom systems. The software enables the user to create a CrewCom Configuration File offline and then load the settings to your system from a portable USB drive or from a connected computer. CrewWare provides an intuitive method of accessing all connected CrewCom devices and their associated peripherals. CrewWare allows a user to adjust critical settings from the computer, and only requires connection to your existing computer or computer network.

See the CrewWare Manual for a summary of CrewWare's functions.

CrewCom Configuration File (CCF)

The CrewCom system operates using a CrewCom Configuration File (CCF) to coordinate the processes and data that make up the system's operation. A default CCF is available for your CrewCom system out-of-the-box to provide your initial settings. You can use CrewWare to customize your configuration to meet your specific needs beyond the default settings. The CCF stores the settings for your Conferences and Profiles, intercom settings, and connection information for your 2-Wire, 4-Wire, and CrewCom devices. See "Conferences" on page 12 and "Profiles" on page 12 for more information.

Conferences and Profiles work together to create channels of communication between CrewCom users. They are defined for each user, stored in the CCF, and available each time you set up. For more information on building a system diagram and creating a Configuration File, see the How to Create a System Diagram Video Tutorial. For more information on using the Configuration File, see the Control Unit and CrewWare Manuals.

CrewCom Configuration File Defaults

Your system may be preconfigured at the factory. Consult the documentation provided with your system for your specific configuration details. Be sure to follow the hardware connections in your configuration; failure to do so may result in system errors.

If your system is not preconfigured, you may elect to use the Auto Configuration function. This function allows the user to configure a basic system (up to 3 RTs with no hubs) very quickly and without using the CrewWare software application. If more customization is required or a larger system needs to be deployed, the CrewWare application can be used to create a tailored system configuration specific to your application. For more information on how to Auto Configure, see the Control Unit Manual.

Determining Which CCF is Active

The CCF that is currently active for the CrewCom system is named in the top banner of the Primary CU's main menu. The Primary CU will also have (Primary) next to the CCF name. If the system was configured using Auto Configuration, the CCF name will show as "AutoCfg." If the unit is a non-primary CU in a system, the CCF name will show as the Primary CU's name with (Non-Primary) at the end. For more information on adding a non-primary CU, see the CrewWare Manual.

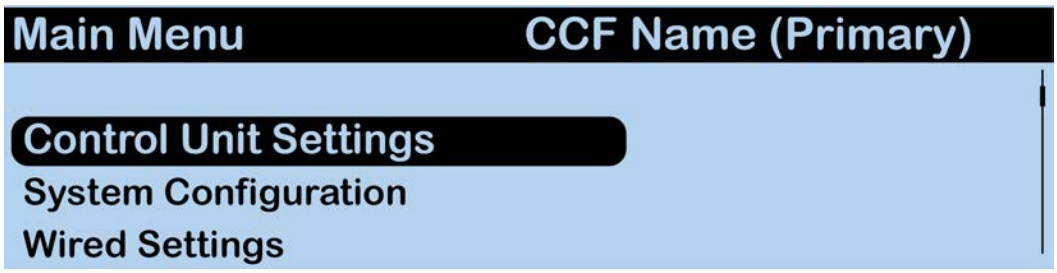

Figure 1 CCF Name in CU Main Menu

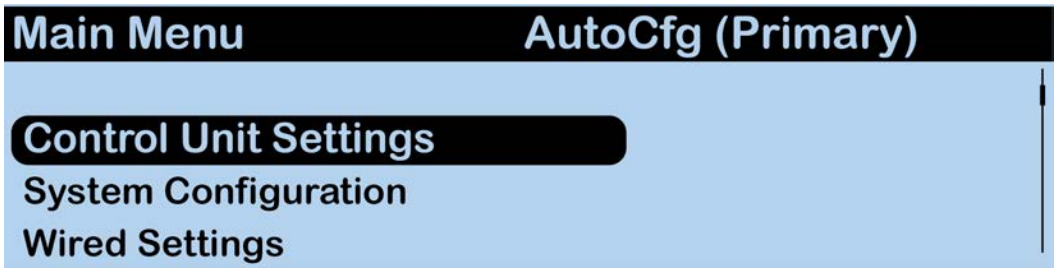

Figure 2 AutoCfg in CU Main Menu

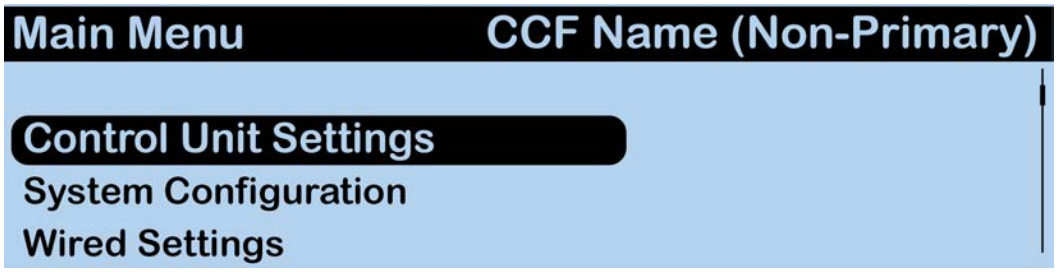

Figure 3 NoCfg in CU Main Menu

The active CCF is also named in CrewWare above the System Diagram left-hand panel.

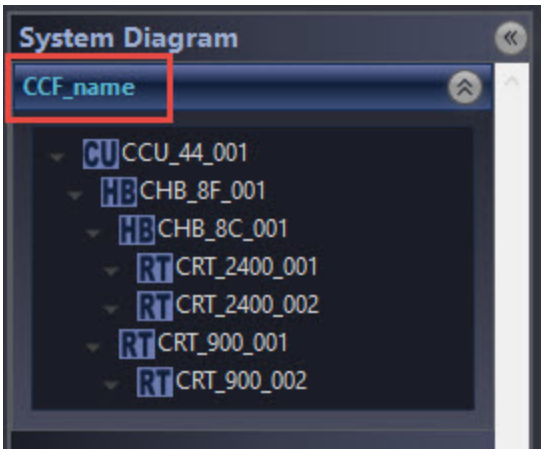

Figure 4 CCF Name in CrewWare

Conferences

A CrewCom Conference is an administrator-defined grouping of audio entities (inputs such as Radio Packs, wired intercom ports, etc.). Conferences are then created dynamically by mixing one or more audio entities and routing them to Conference subscribers accordingly. This method of subscription-based audio using Conferences is very powerful. Point-to-point associations may also be easily constructed using this method. Each association requires a separate, unique Conference. Conferences in CrewCom are full duplex (i.e. bidirectional) and there can be a maximum of 64.

Default Conferences are included as part of a system's "CrewCom Configuration File Defaults" on page 10. New Conferences can be created using CrewWare. (See the CrewWare Manual for more information.)

Profiles

Each CrewCom Radio Pack (RP) has a Profile that contains a variety of system settings that are defined as either global profile settings or user settings. An RP Profile determines the functionality of an RP's local controls, knobs, and buttons (including Conference assignments), and allows customization for user preferences, roaming, and operating mode. For more information on modes, see the Control Unit Manual.

- **Global Profile Settings** – These settings are part of the CrewCom Configuration File and are usually assigned by a system administrator through customization in CrewWare during setup. A global profile setting is one that assigns specific operational functions to an RP's Volume knobs, Talk buttons, and Function buttons, along with relay assignments and roaming options.
- **User Settings** – A user setting is one that is classified as being adjustable by the RP user and is limited to local device settings that do not alter the CrewCom Configuration File. The Profile can be used to determine these settings, but they can also be customized directly from an RP (after a Profile is loaded), the Control Unit's (CU's) menu, or CrewWare.

RP Profile Settings

A list of the specific functions within each setting type is provided in the table below.

Profile Management Settings	
Global Profile Settings	**Description**
Profile Name	Name assigned to the Profile

Profile Management Settings	
Global Profile Settings	**Description**
Radio Transceiver Scan List	Which Radio Transceiver each Radio Pack can log into and function with
Conference Assignments	Which Conferences are assigned to Volume knobs and corresponding Talk buttons
ISO	Enables selection of specific Profiles to include in a Conference ISO. This function is either Enabled or Disabled. (ISO must also be enabled for the Conference.)
Function Buttons	Functions such as Stage Announce, Call, or Relays are assigned to the Pack's F1 or F2 button
Button Mode	Determines the talk button behavior as either "Latch," "Momentary," "Disabled," or "Always On."
Operational Mode	Set to ***Normal*** by default. ***High Density*** is only available for systems upgraded to version 1.10.
User Settings	**Description**
Sidetone	Level adjustment that determines the amount of your own voice that you will hear in your headset.
Mic Gain	Adjusts the amount of microphone input gain into the Radio Pack.
Noise Gate	Adjusts the Noise Gate threshold on the input of the Radio Pack.
Min/Max Volume	Determines the minimum and maximum headset volume settings for the user.
Talk Tones	Enables or Disables a set of tones (single tone for talk press and double tone for talk release) when the talk button is pressed.
LCD Contrast	Increase or decrease the level of contrast in the CU's LCD.
LCD Brightness	Set the LCD backlight brightness level to ***High***, ***Med***, ***Low,*** or ***Off***.
LCD Timeout	Disabled, 3, 10, or 30 seconds
Battery Alert	Audible, Vibrate, Both, or Off
Mic Type	Auto-Detect, Dynamic, or Electret

For more information about managing user coverage and the CrewCom scan list, see the Managing User Coverage informational video.

Operational Modes (Normal and High Density)

High Density Operational Mode is supported in Version 1.10 or higher. High Density Mode is a selectable mode of operation for existing hardware that will allow user densities to increase by more than fivefold. When selected, this new mode of operation will allow for up to 32 Radio Packs (RPs) to log into a single Radio Transceiver (RT). In addition, users will have the flexibility to mix “Normal” Mode engaged RPs and RTs along with separate High Density Mode engaged RPs and RTs on the same system to allow for application specific setup with ultimate adaptability.

For best system performance with no interaction between Radio Transceivers (RTs) in a mixed (Normal & High Density) system it is recommended that Normal-mode RTs and High Density-mode RTs be separated by at least at 80 feet (24 meters) or greater for 900MHz products and 60 feet (18 meters) for 2.4GHz products. It is possible to operate with less physical separation; however, overall range may be affected as the distance of separation is decreased.

IMPORTANT: Normal Mode is the default setting for devices in CrewWare. In order for proper use of Operational Modes, applicable devices and conferences need to be set using the same mode. Specifically, RP profiles and RT RF modes need to be set appropriately, and for High Density mode, up to four conferences need to be assigned as High Density conferences.

To choose High Density Mode for RTs in CrewWare, double-click on a Radio Transceiver in the Device Management list view to access its **device view** and view/edit its settings. For more information on RT settings, see the CrewWare Manual. To choose High Density Mode for RP Profiles in CrewWare, double-click on a Profile in the Profile Management list view to access its **detail view** and view/edit its settings. For more information on RP Profiles, see the CrewWare Manual.

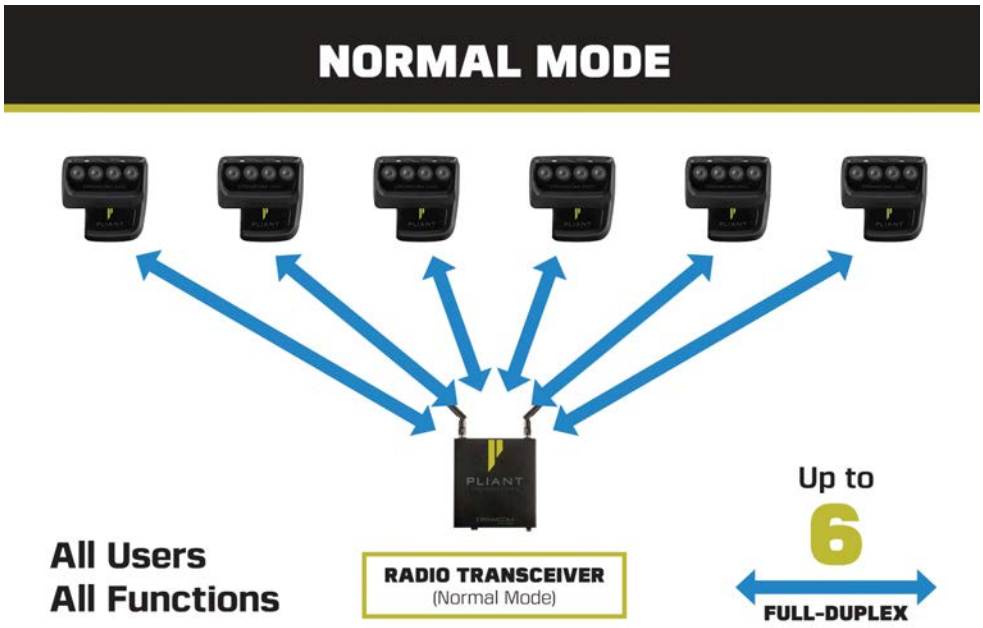

Figure 5 Normal Mode

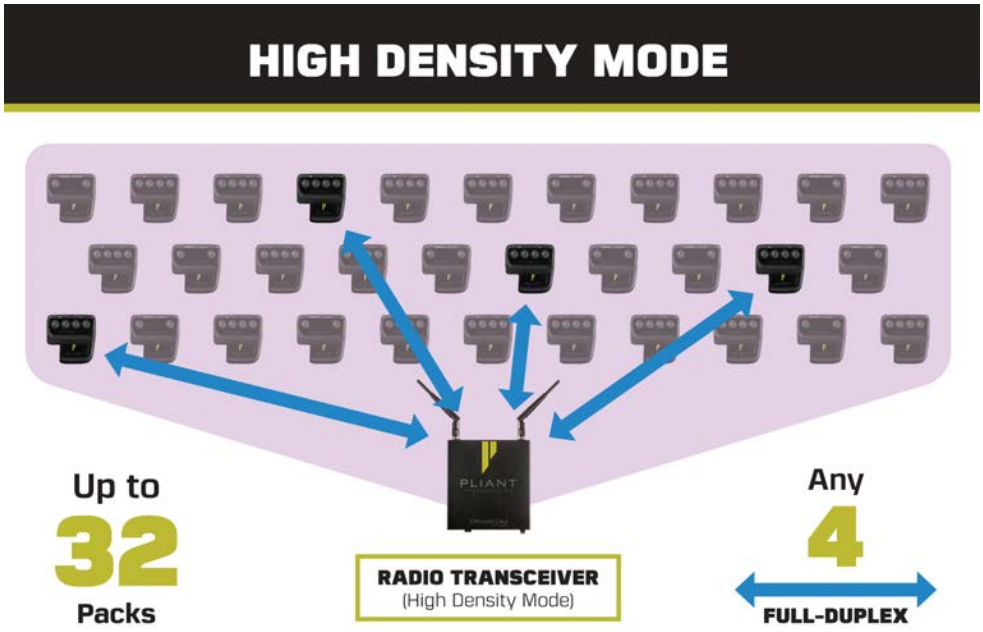

Figure 6 High Density Mode

CHAPTER 3

PRODUCT OVERVIEW

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Radio Pack Rear 19

CRP-22 Top 21

CRP-12 Top 23

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Secondary Operating Screen 26

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Radio Pack

The CrewCom Radio Pack is available in a 4Vol (CRP-44), a 2Vol (CRP-22), and a 1Vol (CRP-12) model and can be used with the CrewCom system in highly-varying applications and environments. Each of these models are identical, other than the number of controls and their related profiles.

CRP-44 Top

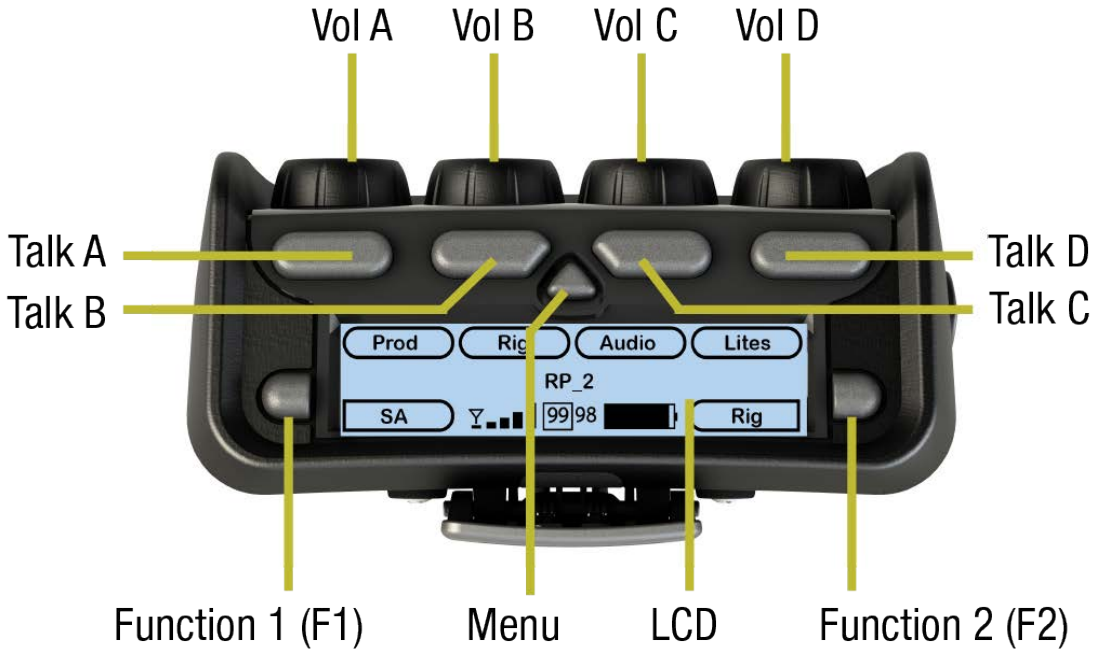

Figure 7 CRP-44 Top View

Volume Knobs/ISO Buttons

The volume controls adjust the listening volume of the connected headset for each of their respective assigned conferences. Turning the volume control clockwise increases the audio level, while turning the control counter-clockwise decreases the level.

When pressed, the volume knobs also serve as ISO buttons to allow selective talk around. ISO means that selected users can have an isolated conversation with other ISO-enabled users. While an ISO conversation occurs, the main conference audio can still be heard. ISO must be separately enabled on both the Conference and each desired Profile from CrewWare. (See "Wireless ISO" on page 55 for more information.)

Four volume knobs are available on the CRP-44 Radio Pack, and in CrewWare, they are named A, B, C, and D from left to right with the knobs facing away from you.

Talk Buttons

The talk buttons enable or disable the microphone for each of their respective assigned conferences. Talk buttons can be set (from the RP's Profile) to function with a "Latch" or a "Momentary" press or they can be "Always On" or "Disabled." When set to "Disabled," the Talk button has no function and allows for a listen-only conference on that pack.

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.

Four talk buttons are available on the CRP-44 Radio Pack, and in CrewWare, they are named A, B, C, and D from left to right with the knobs facing away from you.

Function Buttons (F1/F2)

The left (F1) and right (F2) function buttons can be programmed to assign a variety of functions such as Call, Stage Announce, and GPO Relays. Each function button's operation is set in the Radio Pack's profile, which can be customized via CrewWare. Every Radio Pack model has two function buttons. While in the menu, one short press of F1 returns you to the previous menu without saving any changes.

Menu Button

The Menu button provides multiple functions such as access to menu options or toggling between the home operating screen and the secondary operating screen.

- Short Press (less than one second) – Cycles the Radio Pack LCD from the Home Operating screen to the Secondary Operating screen and vice versa.
- Long Press (approximately 3 seconds) – Accesses the menu options of the Radio Pack to view Pack/System Information and make setting adjustments.
- Escape – While in the menu, one short press returns you to the previous menu without saving any changes.

LCD

Display for viewing real-time status of the Radio Pack, navigating menu options, and making subsequent setting adjustments.

Radio Pack Rear

Figure 8 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 Latch

Pressing the latch opens the Radio Pack's battery compartment door.

USB (Micro B) Connection

This USB connection is for connecting a Radio Pack to a Control Unit for pairing. The Radio Pack may also be connected to a PC for firmware updates via CrewWare. See the CrewWare Manual for more

information about the firmware update process.

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.

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

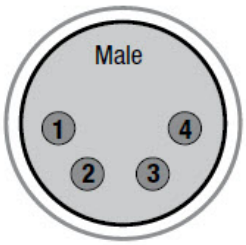

Figure 9 4-Pin Male XLR Pin Out

CRP-22 Top

The CRP-22 model has the same controls and functions as the CRP-44, with two exceptions: the talk buttons and volume knobs.

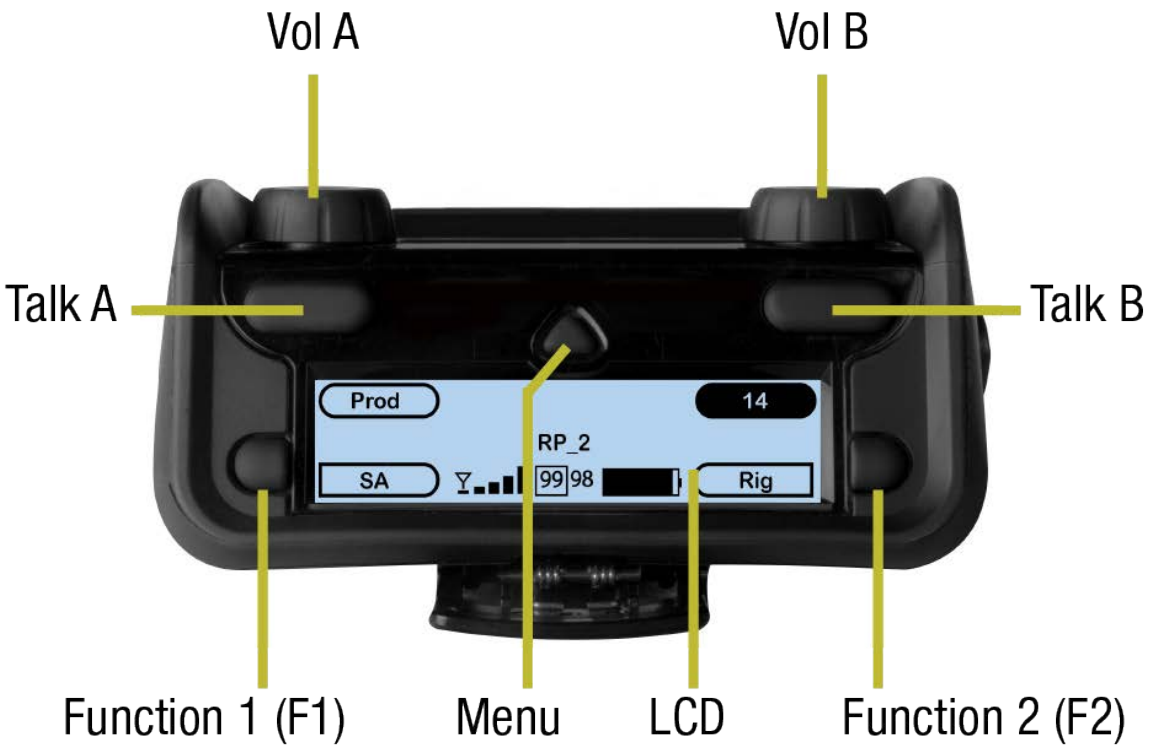

Figure 10 CRP-22 Top View

Volume Knobs/ISO Buttons

Two volume knobs are available on the CRP-22 Radio Pack, and they are named A and B from left to right in CrewWare.

When pressed, the volume knobs also serve as ISO buttons to allow selective talk around. ISO means that selected users can have an isolated conversation with other ISO-enabled users. While an ISO conversation occurs, the main conference audio can still be heard. ISO must be separately enabled on both the Conference and each desired Profile from CrewWare. (See "Wireless ISO" on page 55 for more information.)

Talk Buttons

Two talk buttons are available on the CRP-22 Radio Pack, and they are named A and B from left to right in CrewWare.

CRP-12 Top

The CRP-12 model has different controls than the CRP-22 and CRP-44, with two exceptions: the talk button and volume knob are located in the same location as last conference of those packs. For channel selection and single A/B button has been added.

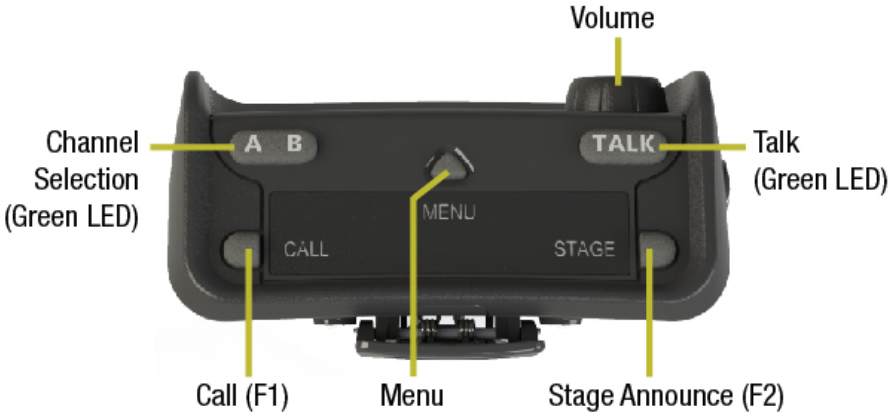

Figure 11 CRP-12 Top View

Volume Knob/ISO Button

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.

When pressed, the volume knobs also serves as an ISO button to allow selective talk around. ISO means that selected users can have an isolated conversation with other ISO-enabled users. While an ISO conversation occurs, the main conference audio can still be heard. ISO must be separately enabled on both the Conference and each desired Profile from CrewWare. ISO is indicated by the Talk Button rapidly flashing. (See "Wireless ISO" on page 55 for more information.)

Talk Button

The Talk button enables or disables the microphone for the selected channel. In the CU's menu, Talk buttons can be disabled or set to function with a “Latch” or a “Momentary” press. The Latch option is not available in High Density Mode.

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 CU's menu. The right (F2) function button serves as Stage Announce when enabled from the CU's menu.

Menu Button

The Menu button provides access to menu options.

- Press and hold the Radio Pack Menu button AND press and hold the CU's Menu button. When both Menu buttons are depressed for three seconds, the menu mode is enabled.
- Change the 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 Display

Note: The Radio Pack Display information does not apply to the CRP-12 as it does have a screen.

Home Operating Screen

Serves as the main operating screen to the user and displays the status of the Radio Pack as well as talk, volume, and function assignments

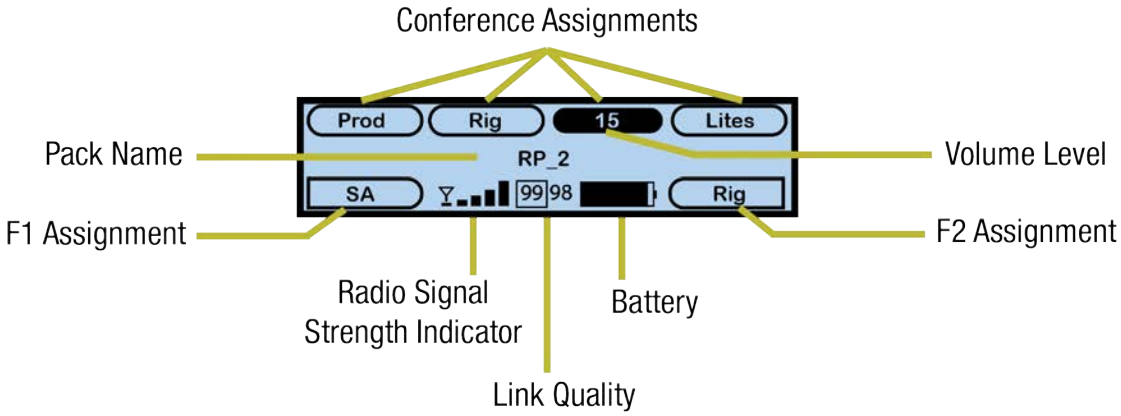

Figure 12 RP Home Operating Screen Overview

Note: The Link Quality Indicator (LQ) provides a diagnostic measurement of actual packet transmission from Radio Pack to Radio Transceiver and vice versa. The outlined LQ represents the Radio Transceiver's LQ. See "Link Quality" on page 42 for more about this topic. For more information on RSSI see "RSSI" on page 43.
Note: When using a High Density profile, the outlined LQ display will be blank until a talk button is pushed.

Secondary Operating Screen

Serves as a secondary operating screen to the user and displays additional information about the status of the Radio Pack. Short press the Menu button once to toggle between the Home and Secondary screens. After 60 seconds, the screen will timeout and revert back to the Home screen.

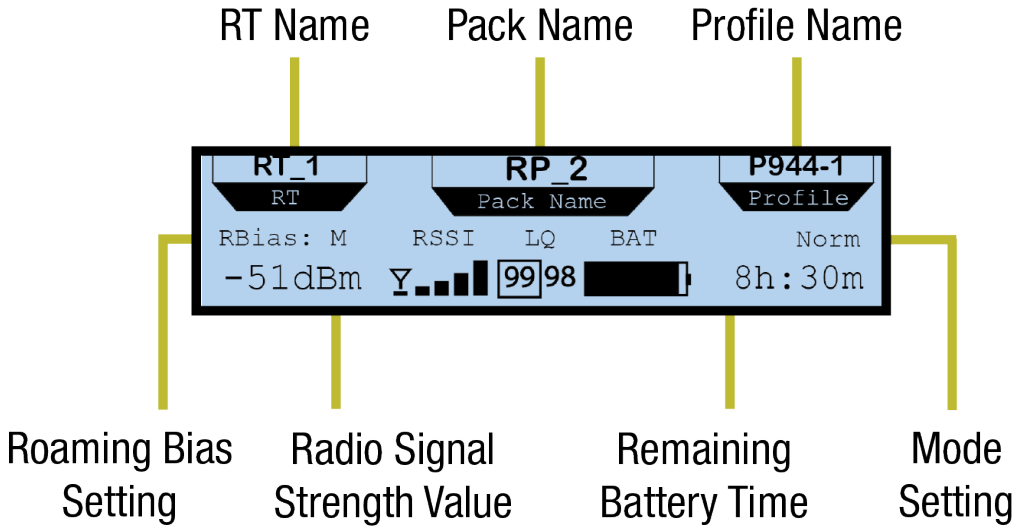

Figure 13 RP Secondary Operating Screen Overview

Note: Radio Signal Strength Value displays the actual value of the radio signal in dBm.
Note: When using a High Density profile, the outlined LQ display will be blank until a talk button is pushed.

Radio Pack Menu

The following menu tree displays all of the Radio Pack's menu options and settings. Access the RP Menu by pressing and holding the triangular menu button for approximately 3 seconds.

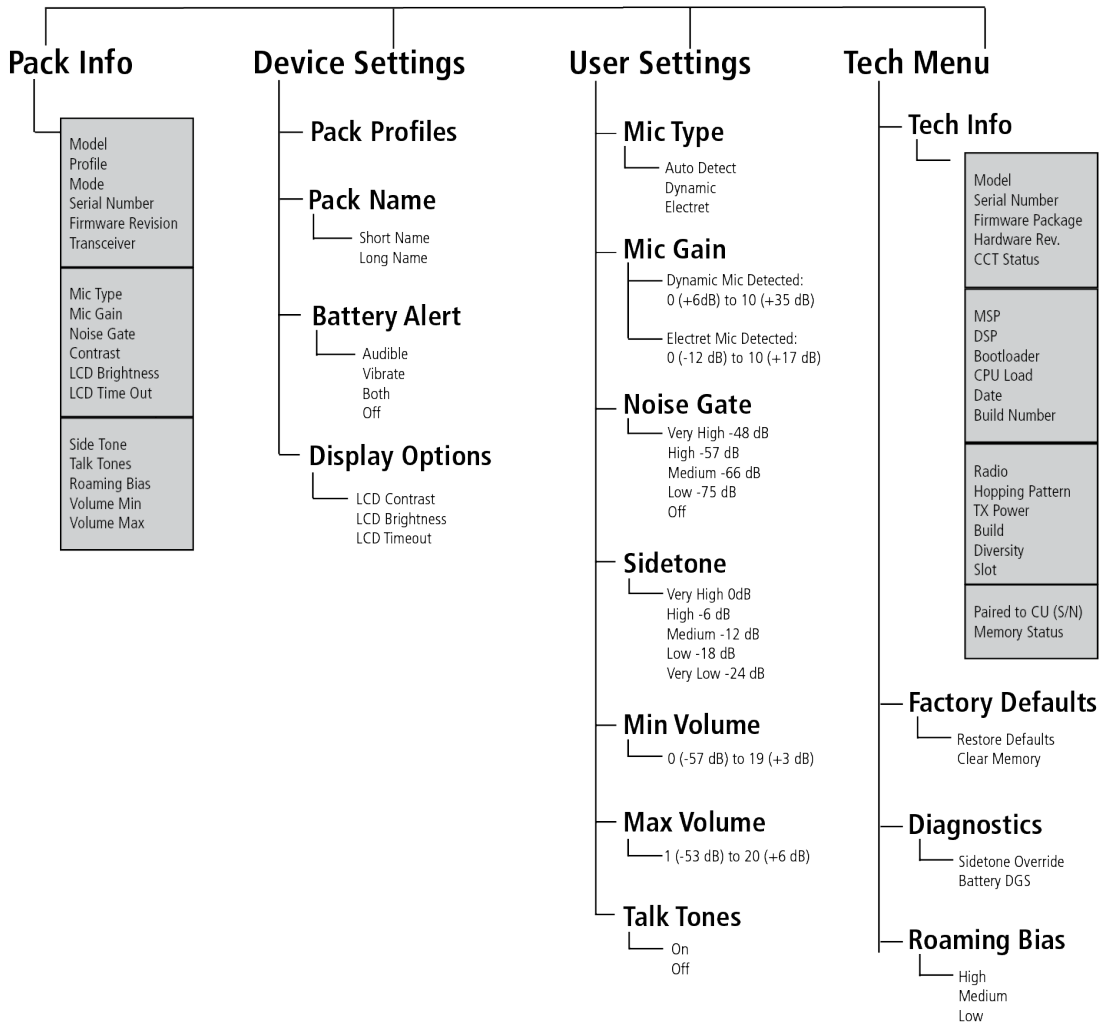

Figure 14 Radio Pack Menu

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. CoachComm 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 screen options 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.

CHAPTER 4

SETUP AND INSTALLATION

This chapter consists of the following sections:

Charge RP Batteries **30**

Using the RP Wall Charger 30

Using the USB Cable 30

Using the 6+6 Drop-In Radio Pack and Battery Charger 30

Install Radio Pack Batteries **32**

Pair Radio Packs **34**

Pairing Process 34

Name a Device **37**

Change RP Name from the RP: 37

Change Device Names from CrewWare 37

Start Communicating **38**

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 32 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, 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 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 15 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.
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 or three AA batteries.

   Note: Radio Packs (RP) are powered with one Lithium-Polymer rechargeable battery for more than 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 u, and then secure the door by pressing until it clicks. (Secure a 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 Control Unit; if it has not been paired it will indicate "No Pairing Information Available" on its display. In addition, the RP will not communicate if its CU and RTs are not yet online. Pliant recommends powering on CUs and RTs first before powering on RPs.

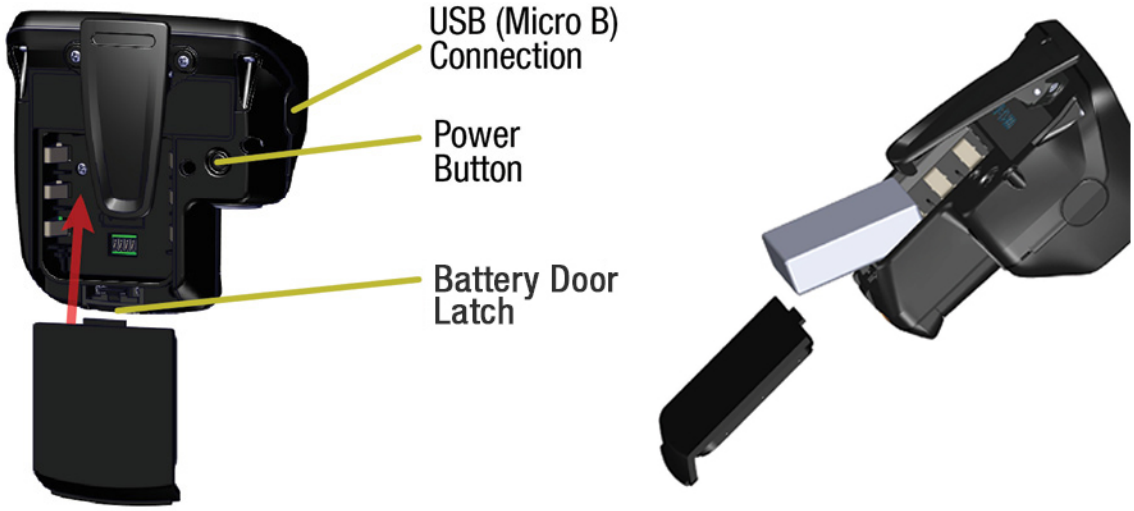

Figure 16 RP Rear and Battery Compartment Door

Pair Radio Packs

CrewCom Radio Packs (RP) must be paired to a Control Unit (CU) before they can operate on any CrewCom system. Once RPs are paired to a CU, this process does not need to be done again unless the RP is being paired to a new or different CU (for example, after a replacement is made for repairs).

A maximum of 255 RPs can be paired to a single CU; however only 18 of those RPs can be active at one time in Normal Operational Mode and only 64 in High Density Operational Mode. If having more active RPs is applicable, you will need another CU. The limit for active communicating RPs is 72 on four CUs in Normal Operational Mode and 256 on four CUs in High Density Operational Mode.

The Operation Mode must be changed in CrewWare for RPs and RTs to use High Density. For more information on modes, see the Control Unit Manual.

Pairing Process

A Radio Pack (RP) may be paired with or without installing a battery. The CU 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 CU.

During the pairing process, do not disconnect the RP until you are instructed to do so. Prior to step 1, be sure that your CCF contains profiles for the RP models being paired, be sure an RT is connected to the CU to which you are pairing, and be sure the RT and CU are powered on and the CCF has finished loading. To pair your RP, use the following steps:

Note: If the system has been Auto Configured, the RP profiles are set to the defaults created by the auto configuration process. See the Control Unit Manual for more information.

1. Connect a USB-to-Micro-USB cable from the CU 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 RP LCD. For the CRP-12, follow the prompts that display on the CU for all steps.

    - 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 CrewWare and connection to your PC. See the "How to Update Firmware via USB" tutorial and/or the CrewWare Manual for further detailed instructions on this process.
    - If the firmware is compatible, the pairing process will automatically continue.

3. When prompted, use the RP Volume knobs and Function button to select a Profile from the list of options that display on the RP LCD (use the CU navigation controls for choosing a CRP-12 Profile). (Only profiles that are compatible with the connected RP model will be displayed. Profiles based on operational mode (Normal/High Density) may not show up on the list if the RP is not within range of the appropriately set RT.)

    

    Note: RP Profiles are created in CrewWare and are stored in the system's CCF. An RP will not pair to a CU if no profile exists for that pack model. Your system may have been pre-configured at the factory or other source. Consult the documentation provided with your system for your specific configuration details. For more information on creating custom Profiles, see the CrewWare Manual and/or the "How to Add a Profile" video tutorial.

4. Wait for the Profile to load. The RP LCD will display a "Pairing Complete" message when finished.

5. Disconnect the USB cable from the RP; it will power off automatically after a few seconds.

6. Turn the RP back on and wait for it to log in to the system. When an RP is logged in, a signal indicator is visible on its Home screen.

7. Verify that the RP paired correctly and is displayed on the CU's Home screen as an RP indicator and in CrewWare (if connected). The RP is ready for use. Repeat steps 1–6 until every RP is paired.

Note: RP Pairing does not require a CU connection to CrewWare, but if you are using CrewWare, RPs can be paired while the program is offline or online. When online, you should see the RPs appear in CrewWare's real-time pack display as they are paired. CrewWare will not display newly paired RPs until the system is online.

Note: Remember that only 18 RPs can be actively used per CU in Normal Mode and only 64 in High Density Mode. Additional RPs can be paired to a CU, but only 18 (in Normal Mode) and 64 (in High Density Mode) may be active at a time. In multi-CU systems, take care to pair a maximum of 18 RPs (Normal Mode) or 64 RPs (High Density Mode) to each of the CUs.

Name a Device

CrewCom devices can be given a 16-character long name and an 8-character short name for display in the various CrewWare menus and diagrams.

Note: This is a different procedure than editing the RP Profile's name. (See the CrewWare Manual and/or the "How to Edit a Profile" video tutorial.)

Change RP Name from the RP:

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***Device Settings***. Press F2 (***ENT***).
2. Scroll and select ***Pack Name.*** Press F2 (***ENT***) to view a list of name options.
3. Scroll to select either ***Short Name*** or ***Long Name*** and press F2 (***ENT***) to enter edit mode.
4. Use the far left and far right talk buttons to navigate left or right through the characters of the name. Use the far-right volume knob to navigate up and down to change each character value.

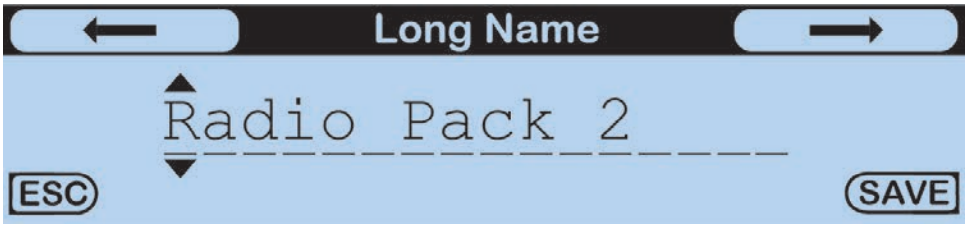

Figure 17 Radio Pack Name Screen

5. Press F2 (***SAVE***). Once saved, the screen will return to the previous menu.

Change Device Names from CrewWare

Please refer to the CrewWare Manual for information about this process.

Start Communicating

1. Plug a headset into each RP.
2. Adjust the headset listening volume by turning each conference's Volume control knob.
3. Press the Talk button to talk to others on the selected conference; you can listen and talk on multiple conferences at a time.
4. Confirm the desired conference and talk status by observing the RP's LCD.

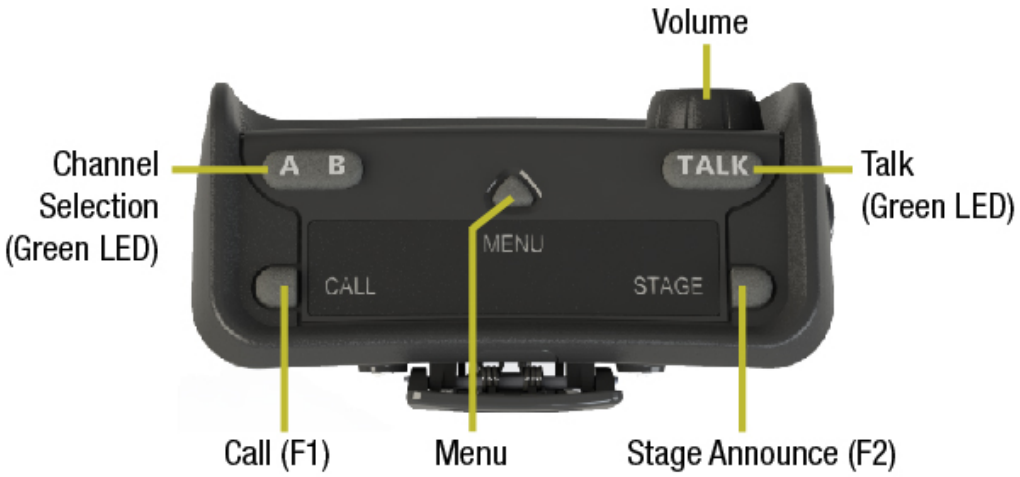

Figure 18 CRP-12 Top View

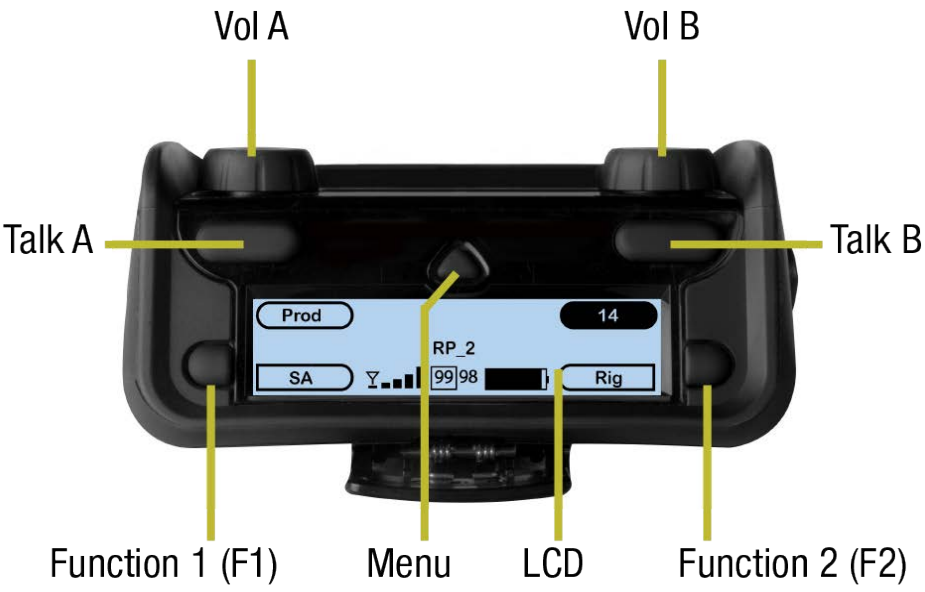

Figure 19 CRP-22 Top View

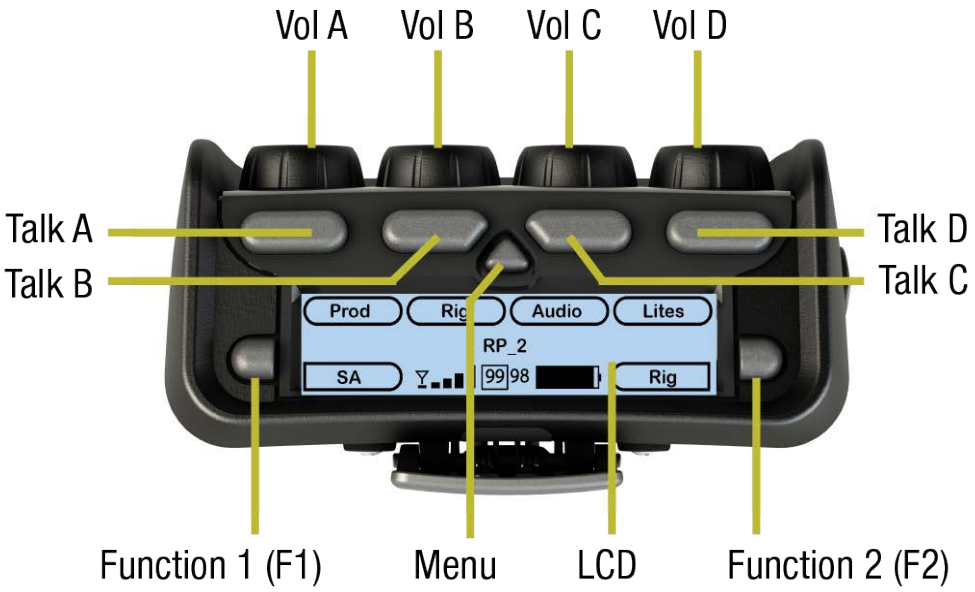

Figure 20 CRP-44 Top View

CHAPTER 5

OPERATION

This chapter consists of the following sections:

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RSSI **43**

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Selecting Radio Pack Profile 44

Editing Radio Pack Name 44

Customizing Battery Alert 44

Adjusting LCD Display Settings 45

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Adjusting Noise Gate 48

Adjusting Sidetone 49

Adjusting Volume Limit 50

Adjusting Talk Tones 51

Push a Profile **52**

Changing Profile Assignment from the Radio Pack 52

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System Access Rights 56
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Link Quality

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

- 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 RT and RP. The RP's on-screen LQ indicator with the box around it is the RT'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 transceiver, 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 RP.
- 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 RP or RT can have.
- What if the LQ on a single RP is below "99" at start-up? — This depends on where the RP is located at start-up, but if the other RPs on the same RT are at "99" this is a good indication that an isolated radio issue exists within that RP. If the LQ value has dropped considerably lower or if that unit is experiencing poor audio quality, it may require service.

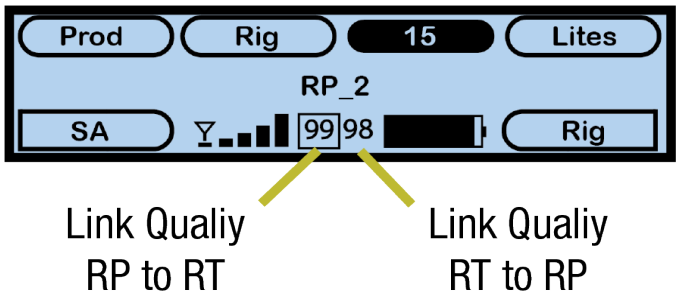

Figure 21 RP Primary Screen LQ Indicator

Note: When using a High Density profile, the outlined LQ display will be blank until a talk button is pushed.

RSSI

The Radio Signal Strength Indicator (RSSI) reflects the measurement of the RF power present in a received radio signal. The RSSI on the RP indicates the signal strength received at the RP. The RP's secondary operating screen displays the actual value of the RSSI in dBm. For more information about how RSSI is displayed on the RP, see "Radio Pack Display" on page 25.

On the RP LCD, the RSSI indicator contains an antenna symbol and signal strength bars when the RP is logged in. The antenna symbol is replaced with an "R" when the RP is roaming. It is replaced with a "J" to indicate a "join requested" status, when the RP has requested to join the system and is awaiting response from the RT.

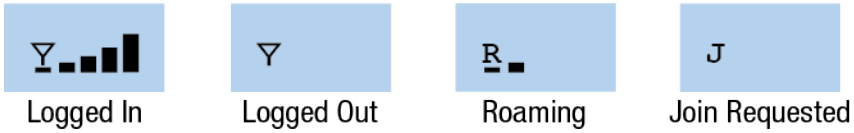

Figure 22 Possible RSSI Statuses

Device Settings Menu

The Radio Pack (RP) can be configured depending on user preferences. The following settings and processes can be found in the Radio Pack's menu under ***Device Settings.*** These settings can also be managed using CrewWare (see the CrewWare Manual for more information about Radio Pack Management.)

Selecting Radio Pack Profile

See "Push a Profile" on page 52.

Editing Radio Pack Name

See "Name a Device" on page 37.

Customizing Battery Alert

This sub-menu allows you to adjust the type of battery alert the Pack will give when reporting low lithium-polymer battery life. An audible alert sounds a tone in the connected headset when the battery life is low. A vibrate alert briefly vibrates the RP. To change your battery alert, do the following:

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***Device Settings***. Press F2 (ENT).
2. Scroll and select ***Battery Alert***. The current alert selection will be displayed on the right-hand side. Press F2 (ENT) to view a list of available alert options.

Figure 23 Customizing Battery Alert

3. Scroll and select from the following: ***Audible***, ***Vibrate***, ***Both***, or ***Off***.

4. Press F2 (SAVE). Once saved, the screen will return to the previous menu.

> **Note**: The RP Battery Alert only reflects battery life for lithium-polymer batteries; therefore, this alert will not be used when AA batteries are in use.

Adjusting LCD Display Settings

The Radio Pack's LCD has adjustable settings such as Contrast, Brightness, and Backlight Time Out. The following settings can be found in the Radio Pack's menu under ***Device Settings*** then ***Display Options***.

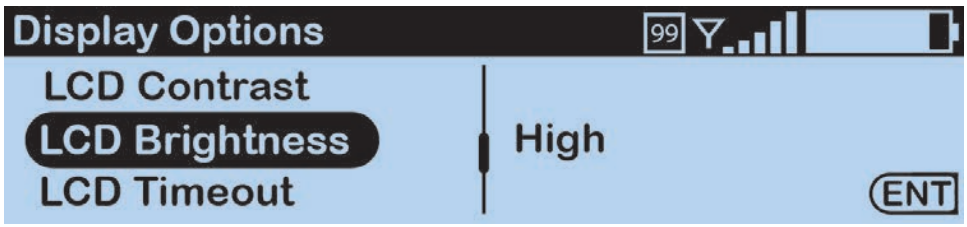

Figure 24 RP Display Options

- LCD Contrast – Allows adjustment to the LCD's contrast; use the volume knobs to increase or decrease the level of contrast. Select an option in the range from ***0–10.***
- LCD Brightness – Allows adjustment to the LCD's brightness; select from ***High***, ***Med***, ***Low***, or ***Off*** for brightness level.
- LCD Timeout – Enables users to set the amount of time the LCD's backlight will stay lit after engaging the Radio Pack's interface. Select from ***Disabled***, ***3***, ***10***, or ***30*** seconds.

User Settings Menu

The Radio Pack (RP) can be configured depending on user preferences. The following settings and processes can be found in the Radio Pack's menu under ***User Settings.*** These settings can also be managed using CrewWare (see the CrewWare Manual for more information about Radio Pack Management.)

Selecting Headset Mic Type

Select from ***Auto-Detect***, ***Dynamic***, or ***Electret*** mic type. If selecting ***Auto-Detect***, you must first have a headset connected to the RP for a microphone to be detected. 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.

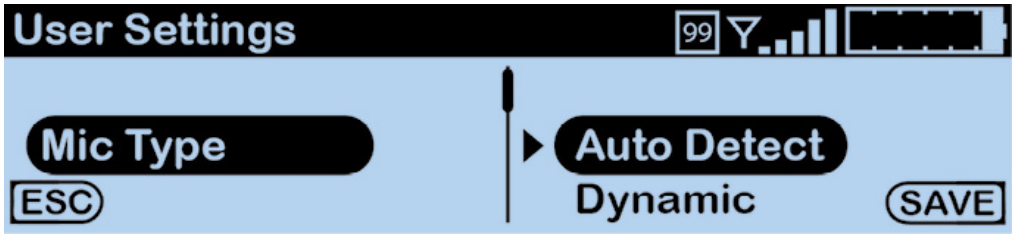

Figure 25 Selecting Mic Type

Adjusting 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.

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***User Settings***. Press F2 (***ENT***).
2. Scroll and select ***Mic Gain***. Press F2 (***ENT***).
3. Scroll and select either ***Dynamic Gain*** or ***Electret Gain***. The current mic gain setting will be displayed on the right-hand side. Press F2 (***ENT***) to view a list of available setting options.

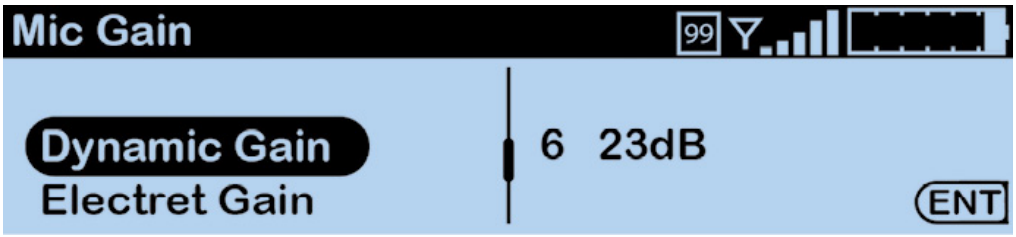

Figure 26 Adjusting Mic Gain

4. Use the far-right volume knob to increase or decrease the Mic Gain level. 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.
5. Press F2 (***SAVE***). Once saved, the screen will return to the previous menu.

Adjusting Noise Gate

The noise gate is used to set the minimum audio threshold necessary to allow audio to pass from the headset microphone through to the rest of the system. When the audio level from the microphone is below this threshold, the gate is closed and the audio is muted. When the audio level from the microphone is above this threshold, the gate is open and audio passes. Setting the noise gate threshold too high can cause the beginning of words to be cut off or make the audio sound choppy, so Pliant recommends setting the noise gate as low as possible.

Adjust your Radio Pack noise gate threshold using these steps:

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***User Settings***. Press F2 (***ENT***).

2. Scroll and select ***Noise Gate***. The current noise gate setting will be displayed on the right-hand side. Press F2 (***ENT***) to view a list of available setting options.

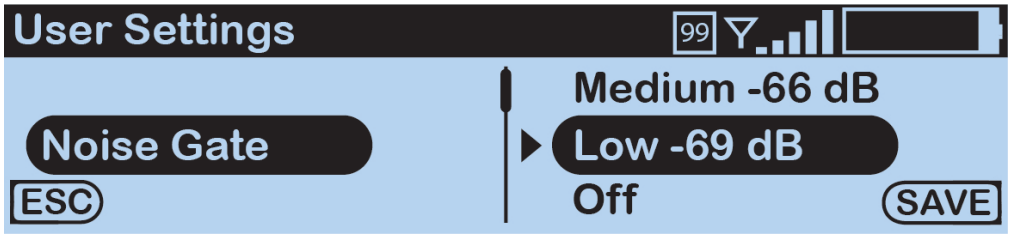

Figure 27 Adjusting Noise Gate

3. Scroll to select from the range of options: ***Very High -60***, ***High -63, Medium -66, Low -69***, and ***Off***. These options correspond to a range of levels from -60 dB (very high) to -∞ (off).

4. Press F2 (***SAVE***). Once saved, the screen will return to the previous menu.

Adjusting Sidetone

Speak into the headset microphone at a typical speaking level and adjust the sound of your own voice in your headset. Adjust your Radio Pack sidetone using these steps:

> **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.

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select User Settings. Press F2 (ENT).
2. Scroll and select Sidetone. The current sidetone setting will be displayed on the right-hand side. Press F2 (ENT) to view a list of available setting options.

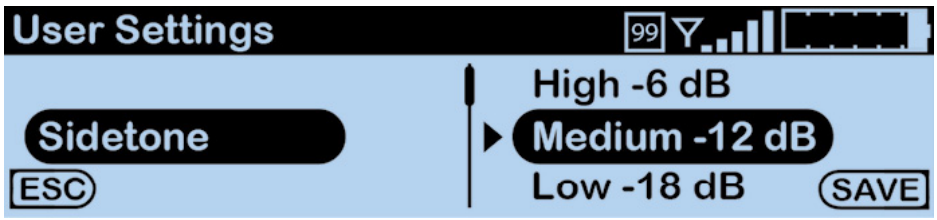

Figure 28 Adjusting Sidetone

3. Scroll 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.
4. Press F2 (SAVE). Once saved, the screen will return to the previous menu.

Adjusting Volume Limit

The Radio Pack is capable of adjusting a minimum and maximum volume limit for each conference assignment. Adjust your Radio Pack volume limit using these steps:

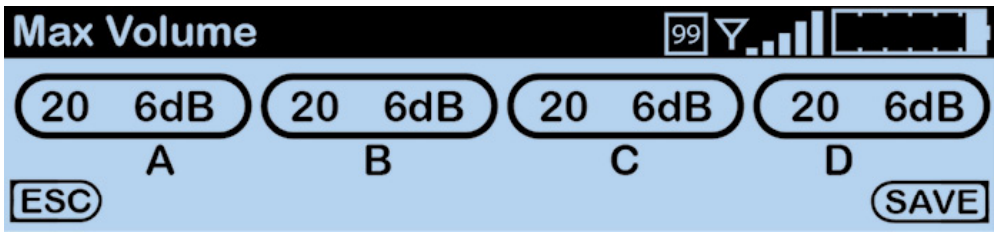

Figure 29 Adjusting Volume Limits

Minimum Volume

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***User Settings***. Press F2 (ENT).
2. Scroll and select ***Min Volume***. The current minimum settings for each volume knob will be displayed on the right-hand side. Press F2 (ENT) to view a list of available setting options.
3. Turn each corresponding volume knob to increase or decrease the volume level to your desired limit within a range of 0 to 19 with 0 being OFF. This range corresponds to a range from OFF (-57 dB) to +3 dB.
4. Press F2 (SAVE). Once saved, the screen will return to the previous menu.

Maximum Volume

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***User Settings***. Press F2 (ENT).
2. Scroll and select ***Max Volume***. The current minimum settings for each volume knob will be displayed on the right-hand side. Press F2 (ENT) to view a list of available setting options.
3. Turn each corresponding volume knob to increase or decrease the volume level to your desired limit within a range of 1 to 20. This range corresponds to a range from -53 dB to +6 dB.
4. Press F2 (SAVE). Once saved, the screen will return to the previous menu.

Adjusting Talk Tones

Enabling Talk Tones gives the user audible feedback when a talk button is pressed to talk on a conference. Adjust your Radio Pack talk tones using these steps:

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***User Settings***. Press F2 (ENT).
2. Scroll and select ***Talk Tones***. The talk tones setting will be displayed on the right-hand side. Press F2 (ENT) to view a list of available setting options.

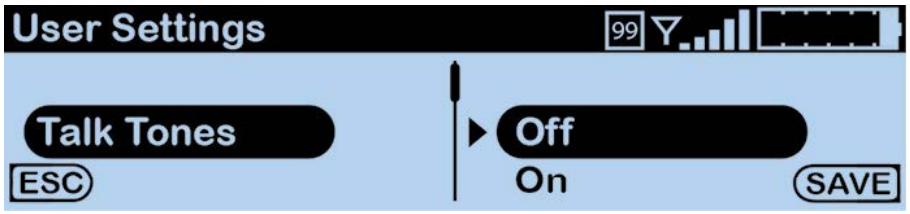

Figure 30 Adjusting Talk Tones

3. Scroll to select either ***On*** or ***Off***.
4. Press F2 (SAVE). Once saved, the screen will return to the previous menu.

Push a Profile

Each time a Radio Pack (RP) is paired to a CrewCom Control Unit (CU), you will be prompted to select a profile to assign to that Pack. RP profiles must match the type of RP, and thus only profiles specific to the RP model being paired or used will appear in the available list. In addition, only default profiles will be available until new (custom) profiles have been created using CrewWare. Default profiles are available as part of the CU's default CrewCom Configuration File (CCF).

During operation, the user may "push" a new profile assignment to a RP from the CU, from the RP, or from CrewWare.

Changing Profile Assignment from the Radio Pack

A Radio Pack stores only the profile currently assigned to it. To change a Radio Pack's assigned profile from the RP, use the following steps:

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***Device Settings***. Press F2 (ENT).

Figure 31 Profile Selection Screen

2. Scroll and select ***Pack Profiles***. Press F2 (ENT) to view a list of available profiles.
3. Scroll to the desired profile.
4. Press F2 (SAVE). A prompt will display, asking you to confirm your selection to overwrite user-level settings with profile settings. Upon saving the new profile, the RP will be updated with its most up-to-date profile settings. The RP will be operational with its new profile and settings when connected to a live system.

> **Note**: To edit profile-level settings, you will need to edit the profile in CrewWare. See the CrewWare Manual or the How to Edit a Profile video for more information.

Changing Profile Assignments from the Control Unit

See the Control Unit Manual for more information about this process.

Changing Profile Assignments from CrewWare

See the CrewWare Manual for more information about this process.

Call

Call signals may be initiated by entities across CrewNet. Each 2-Wire intercom port may be individually set to send and receive a CrewCom-generated call signal to or from a connected wired intercom system by enabling the Call function for that port. Disabling the Call function for that port prevents the signal from leaving CrewCom 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 each conference whose Talk button is currently active on that individual RP, or the user can elect to send a call signal to the RPs of a single assigned conference (regardless of the associated Talk button's status). When enabled for external hardwired intercom devices, a signal will be sent to any connected 2-wire devices associated with a conference whose Talk button is currently active on that individual RP (as long as outbound call is enabled for the CU port associated to the conference) or a signal will be sent to any connected 2-wire devices associated with that conference (as long as outbound call is enabled for the associated CU port). Call can be enabled for both wireless and hardwired devices or limited to only one type.
- **Call on Talk**: An RP Talk button function. When enabled, a call signal will remain active while the Talk button is active. This function is commonly used in applications where a two-way radio interface is connected.

In addition to enabling Call for the CU port(s), you will need to set up Call on the RP Profile. This is best done via CrewWare; refer to the CrewWare Manual for more information on this process.

Wireless ISO

Selective talk-around is possible with the wireless isolation (ISO) function. ISO means that selected users can have an isolated conversation with other ISO-enabled users. While an ISO conversation occurs, the main Conference audio can still be heard.

From the Radio Pack, ISO is used by pressing and holding the corresponding Volume Knob.

ISO must be separately enabled on both the Conference and each desired Profile. See "Set Up ISO" below for that process.

Set Up ISO

ISO means that selected users can have an isolated conversation with other ISO-enabled users. While an ISO conversation occurs, the main Conference audio can still be heard. Wireless ISO must be separately enabled on both the Conference and each desired Profile. Please refer to the CrewWare Manual for more information on this process. See "Wireless ISO" above for more information about using the feature.

Adjusting Access Rights

Access rights allow customized access for specific user types. CrewCom utilizes two levels of access (Admin and User) in two ways: Software Access Rights and System Access Rights.

Levels of Access

CrewCom provides users with two levels of system Access Rights: Admin and User.

- **Admin Level** – CrewCom default system access level and the least restrictive. Grants all users with access to enter the system and modify all available device and system settings. Does not require a passcode.
- **User Level** – Highest level of access restrictions. A passcode is required to modify all available system settings and all devices.

Software Access Rights

CrewWare utilizes a software-only access designation, which does not alter the System Access setting (i.e., does not alter access to the Control Unit (CU) and Radio Pack (RP) menus for those users).

CrewCom settings within CrewWare are "view only" when CrewWare is locked (i.e., set to "User Level").

While CrewWare is open, the access rights are considered “Administrator Level” and are therefore open for all changes.

System Access Rights

System Access rights determine access to edit settings in your system's device menus. CrewCom settings in the CU and RP menus are "view only" when the system is locked (i.e., set to "User Level").

A user who wishes to make a CrewCom Settings change to a locked system can choose one of three options:

1. Change the whole system level to "Admin" to allow settings changes throughout all devices;
2. Leave the System Level locked ("User Level"), but unlock CrewWare and make the setting change from CrewWare; OR
3. Navigate to the appropriate menu in the device, select the setting you wish to change, and enter the system passcode one time to access that particular setting. (In this case, the device will revert back to its "locked" state when you exit the menu or when the temporary access times out.)

Set System Access Level from Primary Control Unit

See the Control Unit Manual for more information about this process.

Set System Access Level from CrewWare

See the CrewWare Manual for more information about this process.

Setting Passcode

Set Passcode from Primary Control Unit

See the Control Unit Manual for more information about this process.

Set Passcode from CrewWare

See the CrewWare Manual for more information about this process.

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:

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***Tech Menu***. Press F2 (ENT).
2. Scroll and select ***Factory Defaults*** press F2 (ENT) to enter view reset options.
3. Scroll and select ***Restore Defaults*** or ***Clear Memory*** and press F2 (ENT).
4. Confirm your selection by selecting either ***Yes*** or ***No***.

The table below lists the settings that are affected when restoring RP factory defaults or clearing RP memory.

Note: Restore Defaults resets the RP to the default settings for the assigned profile. Clear Memory erases the RP pairing information and profile assignment from the device. After clearing memory, the pairing is still visible in the CCF, but since the RP has no Profile assignment, you must re-pair the RP to begin using it again. RP settings will default to those of the profile chosen during pairing. Exceptions to these are listed in the table below.

Radio Pack Factory Settings			
Radio Pack Setting	**Radio Pack Default**	**Reset by "Restore Defaults"**	**Reset by "Clear Memory"**
Pack Name (Long)	ESN#		X
Pack Name (Short)	ESN#		X
Battery Alert	Both	X	X
Contrast	7	X	X
Backlight Brightness	High	X	X
Backlight Time Out	30 seconds	X	X
Mic Type	Auto Detect	X	X
Mic Gain (Dynamic)	6 (+23 dB)	X	X

Radio Pack Factory Settings			
Radio Pack Setting	**Radio Pack Default**	**Reset by “Restore Defaults”**	**Reset by "Clear Memory"**
Mic Gain (Electret)	3 (-4 dB)	X	X
Noise Gate	Low (-75 dB)	X	X
Sidetone	Med (-12 dB)	X	X
Minimum Volume (all knobs)	0 (off)	X	X
Maximum Volume (all knobs)	20 (+6 dB)	X	X
Talk Tones	Off	X	X
User Rights	Admin	Set by System	Set by System
Roaming Bias	Medium	Resets to Medium	Resets to Medium

Roaming Bias

The Roaming Bias Radio Pack (RP) setting offers users the ability to set RPs to one of three different sensitivity levels for seamless roaming between compatible Radio Transceivers (RTs). These settings dictate how often an RP will initiate a scan to detect whether a stronger signal is available. If a stronger signal is not detected, the RP will remain with its current RT.

> **Note**: During a scan, an RP does not leave its current RT, and it continues to operate as normal.

The roaming bias option provides users the best possible wireless experience in light of operating environment differences, dependent on the venue and other spectrum conflicts.

- **High (Default)** - The “High” setting uses both Link Quality (LQ) and Radio Signal Strength Indicator (RSSI) as metrics in determining roaming behavior. When set to “High,” RPs will initiate a scan if LQ is less than or equal to 92 or if RSSI is less than or equal to -86.
- **Medium** - RPs, by default, are set to a roaming bias of "Medium." RPs set to “Medium” roaming bias use LQ only to determine their roaming behavior. When set to “Medium,” RPs will initiate a scan if LQ is less than or equal to 88.
- **Low** - RPs set to “Low” roaming bias use LQ only to determine their roaming behavior. When set to “Low,” RPs will initiate a scan if LQ is less than or equal to 85.

This setting can be found in the Radio Pack menu under ***Tech Menu***.

1. Press and hold the RP Menu button for 2 seconds; then, use the far-right volume knob to scroll and select ***Tech Menu***. Press F2 (ENT).
2. Scroll and select ***Roaming Bias***. The bias setting will be displayed on the right-hand side. Press F2 (ENT) to view a list of available alert options.

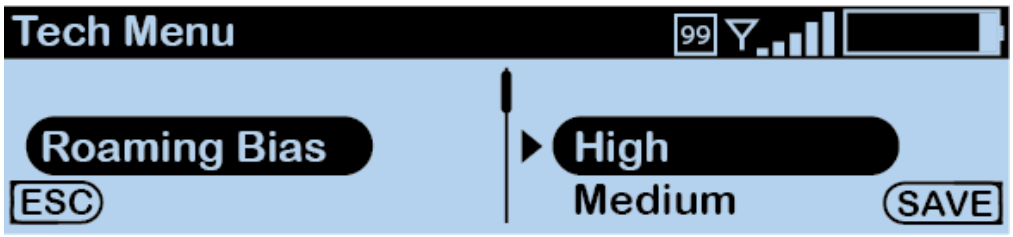

Figure 32 Customizing Roaming Bias

3. Scroll and select from the following: ***High***, ***Medium***, or ***Low***.

4. Press F2 (SAVE). Once saved, the screen will return to the previous menu.

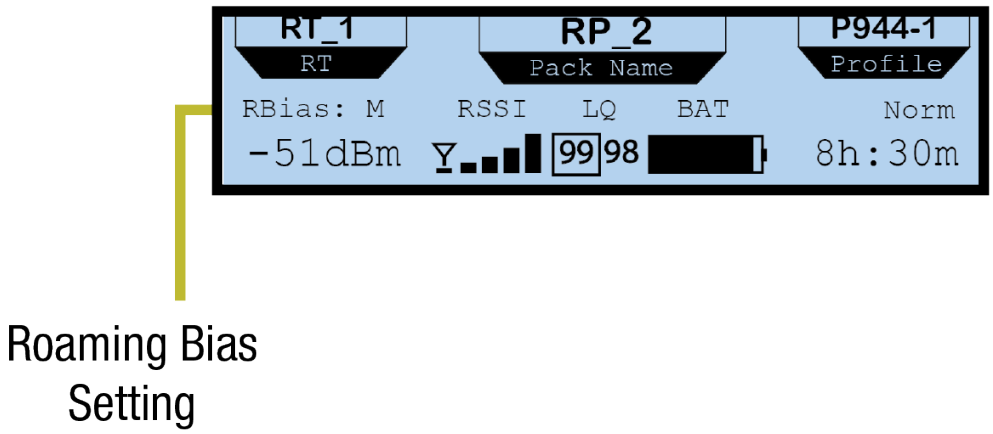

Figure 33 Roaming Bias Indicator on RP Secondary Screen

CHAPTER 6

PRODUCT SPECIFICATIONS

This chapter consists of the following sections:

Radio Pack Specifications **63**

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.	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	
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

Radio Pack Specifications		
Specification*	**CRP-12-900/ CRP-12-900AN****	**CRP-12-2400/ CRP-12-2400CE*****
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	IP65	

Radio Pack Specifications*				
Specification	**CRP-22-900/ CRP-22-900AN****	**CRP-44-900/ CRP-44-900AN****	**CRP-22-2400/ CRP-22-2400CE*****	**CRP-44-2400/ CRP-44-2400CE*****
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		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			
Conferences	2	4	2	4

Radio Pack Specifications*				
Specification	**CRP-22-900/ CRP-22-900AN****	**CRP-44-900/ CRP-44-900AN****	**CRP-22-2400/ CRP-22-2400CE*****	**CRP-44-2400/ CRP-44-2400CE*****
Simultaneous Listen Paths	True Dual Listen	True Quad Listen	True Dual Listen	True Quad Listen
Volume Knobs	2	4	2	4
Talk Buttons	2	4	2	4
Headset Connector	4-pin male XLR			
Microphone Type	Auto-Detect or Manual Select; Dynamic or Electret			
LCD Display	280 × 64 resolution			
Antenna	(2) 2dBi Dipole			
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	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)	369 g (13 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	IP65			

*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.

CE ***CRP-44-2400CE, CRP-22-2400CE, and CRP-12-2400CE models meet 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, CRP-22-900AN, and CRP-44-900AN (Oceania) models are approved for use in Australia and New Zealand and operate within the 915–928 MHz frequency range.

The CrewCom 2.4GHz Radio Pack (CRP-12-2400, CRP-22-2400, CRP-44-2400) complies with EMC requirement KN 301 489 1/17 and the Korean Radio Law RF and SAR requirements. The Radio Pack is labeled with the KC mark and RRA (Radio Research Agency) registration number.

CHAPTER 7

PRODUCT SUPPORT

This chapter consists of the following sections:

Product Support **68**

Returning Equipment for Repair or Maintenance 68

Product Support

Pliant Technologies, LLC support and service personnel are ready to help you with any issues you may have regarding products purchased from authorized dealers or authorized distributors. All requests and questions should be directed to our Customer Service department via phone, fax, or email. Support and service personnel may require that you provide proof of purchase from an authorized dealer or authorized distributor and the serial number, where applicable, for your product, and Pliant Technologies reserves the right to refuse to provide support or service without this information.

Pliant Technologies, LLC
Customer Service Department
Phone: +1.334.321.1160
Toll-Free: 1.844.475.4268 or 1.844.4PLIANT
Fax: +1.334.321.1162
Email: customer.service@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 **70**

Cleaning 70

Temperature and Humidity 70

Storage of your Lithium-Polymer Batteries 70

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 Transceiver is weather-resistant, including gaskets intended to prevent moisture entry from the top and sides. The Cat 5e cable connection on the bottom is not water tight. If it is to be used in an outdoor environment, protect the RT with a protective enclosure that will not interfere with the radio signals.

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.

Storage of your Lithium-Polymer Batteries

When stored, a battery gradually loses its overall charge time due to internal self-discharge, which may reduce its overall power. If storing batteries for two or more weeks, Pliant Technologies highly recommends storing them at a 40-50% charge level, which generally minimizes any permanent power capacity loss.

Unused lithium-polymer batteries may enter into a deep discharge state due to internal self-discharge. Once a battery has gone into deep discharge, its onboard circuit protections inhibit the charger from initiating the charge cycle. If a battery does not accept a charge and the LED displays red in the charger, the battery may be in deep discharge. An attempt to revive the battery can be made by repeatedly inserting and removing it several times from the 5-Bay Charger (PBT-5BAY-01).

Ambient temperature affects the rate at which lithium-polymer batteries degrade. Batteries also degrade and lose overall power capacity if stored (or used) at higher temperatures.

Proper Disposal of Old Lithium-Polymer Batteries

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/.

Battery Shipping Regulations

Rechargeable lithium-polymer batteries are subject to special U.S. and International regulations, particularly regarding transportation. The guidelines detailed in Pliant's Lithium-Polymer Battery Shipping Guidelines on the Pliant Service Information webpage comply with updated International Air Transport Association (IATA), International Civil Aviation Organization (ICAO), and U.S. Department of Transportation (DOT) Dangerous and Hazardous Goods regulations.

When shipping equipment to Pliant that includes batteries, it is the shipper's responsibility to ensure that batteries are properly packaged, labeled, and shipped according to local and international guidelines. "Shipper" is defined as the person or entity placing the equipment in the package and offering it to the carrier.

CHAPTER 9

LICENSE AND COMPLIANCE INFORMATION

This chapter consists of the following sections:

License Information **73**

License Information

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

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.

3. South Korea Notices

    A. The CrewCom Radio Pack (CRP-22-2400, CRP-44-2400) complies with EMC requirement KN 301 489 1/17 and the Korean Radio Law RF and SAR requirements. The Radio Pack is labeled with the KC mark and RRA (Radio Research Agency) registration number.

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.

CrewCom Compliance Numbers

Model Numbers	Compliance Model No.
CRP-22-2400	RP2500
CRP-22-2400CE	RP2500
CRP-22-900	RP2500
CRP-22-900AN	RP2500
CRP-44-2400	RP2500
CRP-44-2400CE	RP2500
CRP-44-900	RP2500
CRP-44-900AN	RP2500
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 **77**

Limited Warranty 77

Parts Limited Warranty 79

Warranty Information

Limited Warranty

Subject to the conditions of this 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 requires product registration on the Pliant web site. Register your product here: https://plianttechnologies.com/product-registration/

Subject to the conditions of this Limited Warranty, Tempest® professional products carry a two-year product warranty.

Subject to the conditions of this Limited Warranty, all headsets and accessories (including Pliant-branded batteries) carry a one-year warranty.

Date of sale is determined by the invoice date from an authorized dealer or authorized distributor to the end user.

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.

Unless applicable state law provides otherwise, Pliant Technologies extends this limited warranty to only the end user who originally purchased this product from an authorized dealer or authorized distributor. Pliant Technologies does not extend this warranty to any subsequent owner or other transferee of the product. This warranty is valid only if the original proof of purchase issued to the original purchaser by an authorized dealer or authorized distributor, specifying the date of purchase, and the serial number, where applicable, is presented with the product to be repaired. Pliant Technologies reserves the right to refuse warranty service if this information is not provided or if a product's serial numbers have been removed or effaced.

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.

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