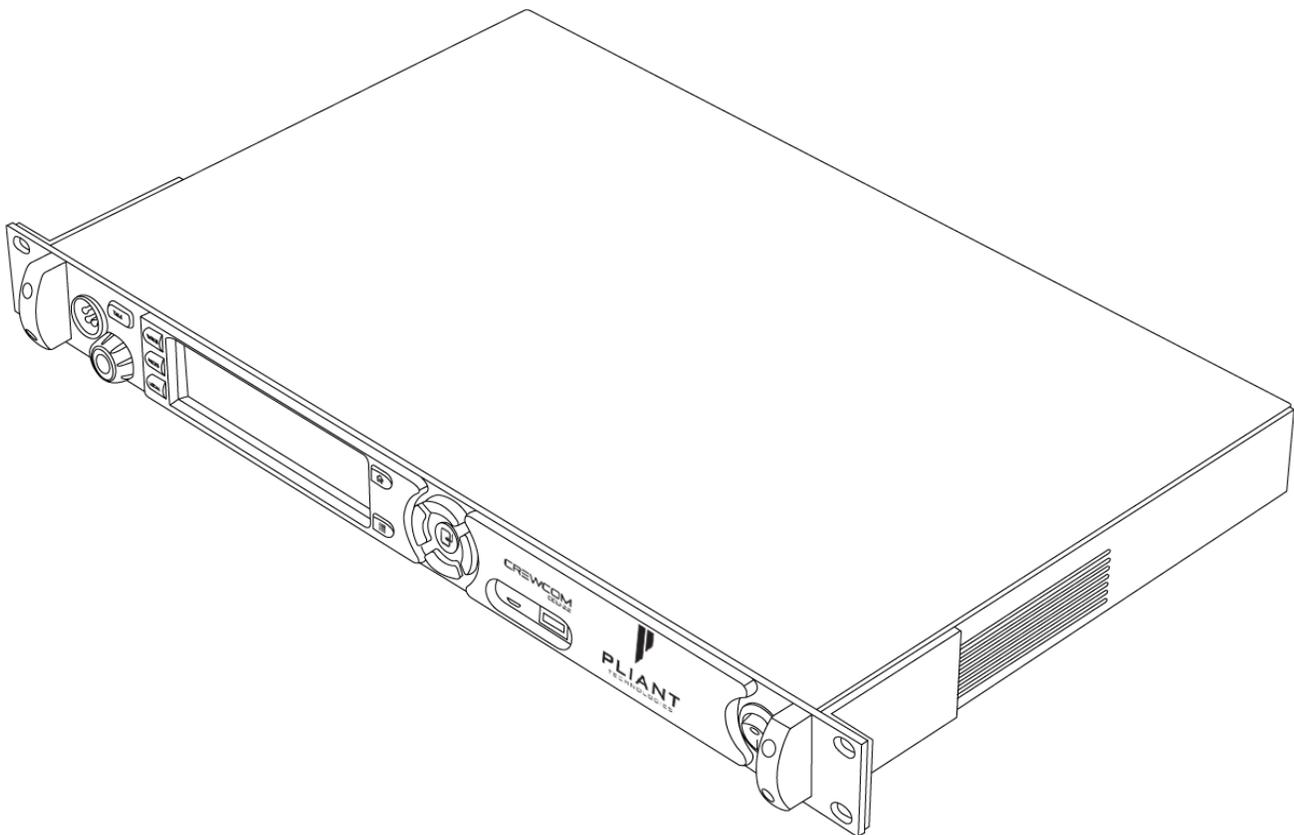


Control Unit

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 105.

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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 Version 1.14.

This document applies to models CCU-22, CCU-44, and CCU-08.

Document Reference: D0000214_I

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CHAPTER 1

SAFETY INFORMATION

This chapter consists of the following sections:

- Control Unit Safety Information** 2
- Safe Operation Recommendations 2
- Safe Installation Recommendations 3
- Power Information 3

Control Unit Safety Information

The following content details important safety information related to the ownership and operation of the CrewCom Control Unit.



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/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 Control Unit in water.
- Do not set food, water, or other beverage containers on or near the unit.
- Do not place unit in areas where it will be exposed to weather.
- Plug the Control Unit 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 Control Unit. 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 Control Unit during periods of inclement weather and after use.

- Refer all Control Unit service to qualified Pliant Technologies service personnel. There are no user-serviceable parts inside the CrewCom Control Unit. 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.



CAUTION: To Service Person: Double Pole/Neutral Fusing hazards exist within the CU's internal power supply.

- Service is required if the Control Unit 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 Control 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 the unit or if it has been dropped.

Safe Installation Recommendations

- Elevated Operating Ambient Temperature - If 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 (T_{ma}) specified in "[Control Unit Specifications](#)" on page 102.
- 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 CrewCom Control Unit before connecting to the outlet.
- CrewCom Control Units are powered by an internal power supply. The cord to connect the internal 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.

CHAPTER 2

INTRODUCTION

This chapter consists of the following sections:

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What's in the Box?

- Control Unit
- AC Power Cord
- USB A to Micro B Cable
- Cat 5e cable, 15 ft. (4.6 m)
- 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 111.

Additional Items Required

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

- Radio Transceiver
- Radio Pack
- 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 13](#) and ["Profiles" on page 13](#) 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 ["Upload Configuration File \(CCF\)" on page 38](#).

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 ["Power On the System" on page 36](#) and ["Auto Configure" on page 48](#).

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 ["Add More CrewCom Devices" on page 44](#).



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.

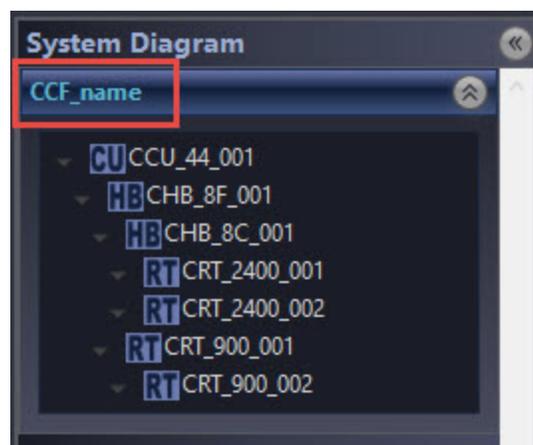


Figure 4 CCF Name in CrewWare

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 11](#). New Conferences can be created using CrewWare. (See the [CrewWare Manual](#) for more information.)

Viewing Conference Information from the CU

Users can view details about each Conference on the system from the Control Unit LCD by accessing the Control Unit's **System Configuration** menu. Because a system supports up to 64 Conferences, you can sort Conferences (alphanumerically) by Name or by Type. CrewWare is required to create or edit Conferences, but the CU menu does allow you to assign a selected conference to a hardwire port or Aux In/Out from this menu.

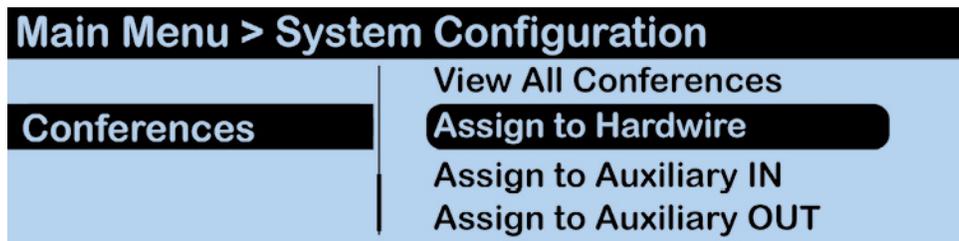


Figure 5 Conferences CU Menu Item

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 "[Operational Modes \(Normal and High Density\)](#)" on [page 17](#).

- **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.

Viewing Profile Information from the CU

Users can view details about each Radio Pack Profile on the system from the CU LCD by accessing the CU's **System Configuration** menu. Because a system supports up to 64 Profiles, you can sort Profiles (alphanumerically) by Name or by Type. CrewWare is required to create or edit Profiles.

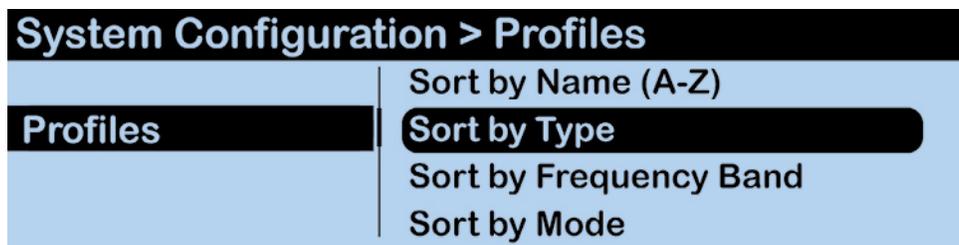


Figure 6 Profiles CU Menu Item

Power Over CrewNet

What is Power-over-CrewNet?

Power-over-CrewNet (PoC) is a proprietary network protocol that carries operating voltage and current to CrewNet-compatible devices connected to the Control Unit via RJ-45 connections (Cat-5e or greater.) Control Units must receive AC power via the supplied power cord in order to operate and provide necessary PoC to connected CrewNet-compatible devices. In addition, PoC can be supplied to devices downstream from a locally powered CrewCom Hub or RT.

- **RJ-45 Copper Ports** - Use the supplied 15 ft. (4.6 m) Cat 5e cable, or your own Cat 5e (or greater) cable (up to 330 ft. (100 m) in length). Any CrewCom device connected to CrewNet via a Cat 5e (or greater) cable will receive PoC from the CU via the CrewNet port. In some situations, there may be too many connected devices or the cable lengths may be too long for the PoC to adequately power all devices, and this will be indicated with the NET PWR LED lighting red. In this case, one or more additional Pliant 48VDC power supplies must be used (PPS-48V-02 included with Hub; sold separately with all other devices).
- **Fiber (Optical) Ports** - For a fiber CrewNet port, a Single Mode Fiber cable (duplex LC connector) will be required (up to 32,800 ft. (10,000 m) in length). Any CrewCom device connected to CrewNet via fiber port must receive power via a Pliant 48VDC power supply (PPS-48V-02 included with Hub; sold separately with all other devices).

Powering Downstream Devices

In most cases, powering an RT and any daisy-chained RTs downstream via PoC is acceptable. However, depending on cable lengths and number of RTs in your CrewCom configuration, you may need to utilize the 48VDC power supply (PPS-48V, sold separately) to provide local power where needed. Under optimal conditions, seven connected RTs may be powered from a locally powered RT; however, this number can vary greatly depending on the line lengths and the number and configuration of those connected RTs.

To ensure best performance, especially with larger CrewCom configurations and longer cable lengths, Pliant recommends utilizing the supplied 48VDC power supply to locally power each Hub. However, powering a Hub and the devices connected to it via PoC may be advantageous in some smaller configurations.

Power for Fiber Devices

Fiber connections will not transfer power to a CrewCom device. For CrewNet-compatible devices using fiber connectivity, local power must be supplied to that device using a Pliant 48VDC power supply (PPS-48V-02 included with Hubs, sold separately for all other devices). Once local power is supplied to the device, downstream devices may receive power via PoC (subject to limitations, depending on the line lengths and the number and configuration of those connected devices.)

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](#).

NORMAL MODE

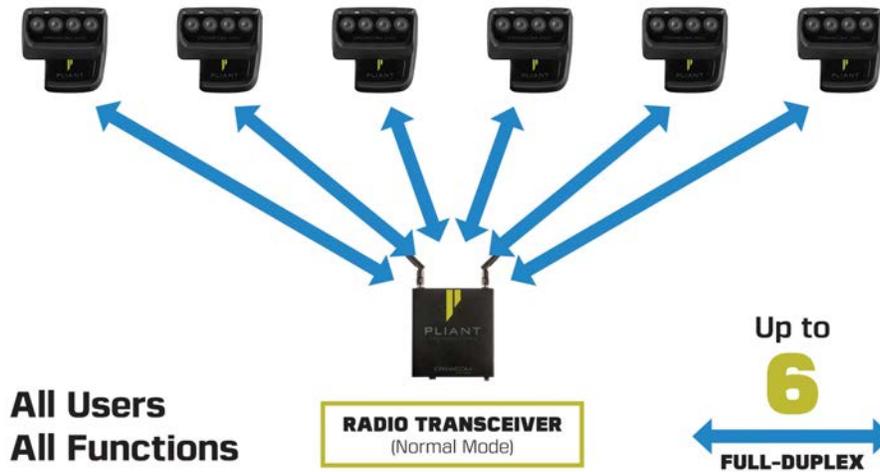


Figure 7 Normal Mode

HIGH DENSITY MODE

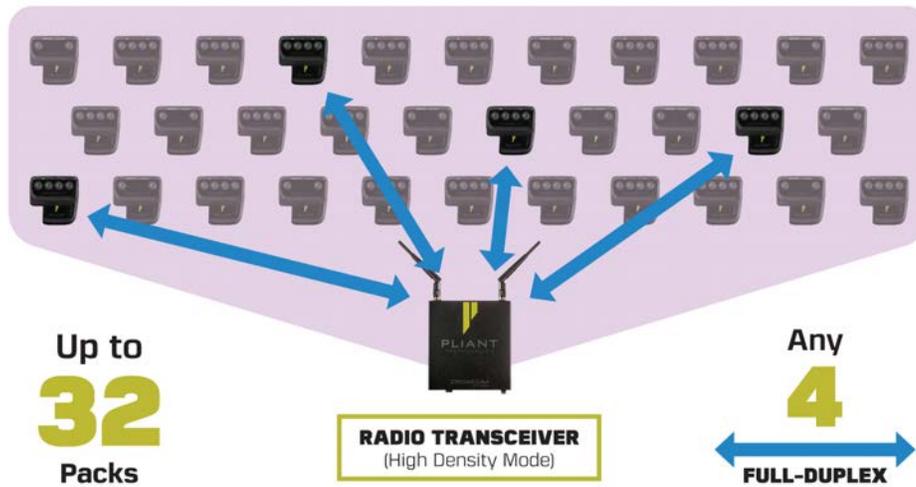


Figure 8 High Density Mode

CHAPTER 3

PRODUCT OVERVIEW

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Control Unit

The CrewCom Control Unit (CU) is a rack-mount device built to withstand the rigors of road use and rental applications. It is the foundation for CrewNet. The CCU-44 is an 8-intercom-port CU with the ability to support (4) 2-Wire and (4) 4-Wire ports simultaneously, providing eight intercom inputs/outputs. The CCU-22 is a 4-intercom-port CU with the ability to support (2) 2-Wire and (2) 4-Wire ports simultaneously, providing four intercom inputs/outputs. The CCU-08 is an 8-intercom-port CU with the ability to support (8) 4-Wire ports simultaneously, providing eight intercom inputs/outputs. A separate Radio Transceiver (RT) is required for RF communications. The CU is capable of supporting all models of CrewCom RTs at the same time (2.4GHz or 900MHz).

Control Unit (All Models) Front

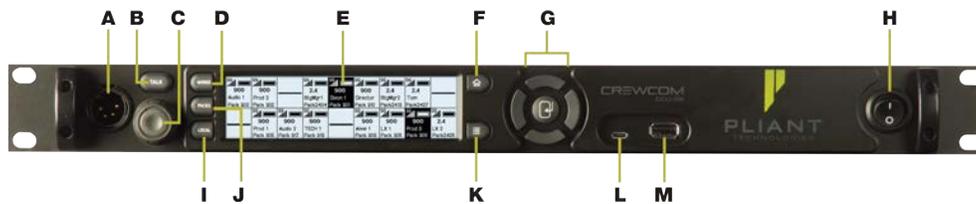


Figure 9 Control Unit Front

- A. **Local Headset Connection:** The front panel headset connector is a 4-PIN XLR male. Use the Local button (letter I in the figure above) to adjust local headset settings from the CU. A compatible headset must be provided by the user. See "[Local Headset](#)" on page 91 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 91.)
- C. **Headset Volume Knob:** Turning the Volume control adjusts the listening volume of the local headset.
- D. **Wired Intercom Access Button:** When pressed, the Control Unit LCD displays the Wired Settings screen. (See "[Wired Settings](#)" on page 71.)

- E. **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 CU functionality. On the Home screen, the LCD displays the status of all Normal Operational Mode enabled wireless Radio Packs (RPs) that are currently paired to the CU. In the menu, the LCD shows the menu items or information. (See "[Control Unit Display](#)" on page 26.)
- F. **Home Button:** If the user is currently viewing the Home operating screen, pressing this button toggles to the secondary operating screen. (See "[Control Unit Display](#)" on page 26.) 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.
- 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. **On/Off Switch:** Turns the power to the CU on and off.
- I. **Local Button:** Opens the local headset settings on top of the current screen display, allowing for adjustments to the local headset settings. Press a second time to return to the previous menu.
- J. **Radio Packs Button:** Switches the Home screen to a selectable mode that allows selection of a (wireless) RP to edit its settings (via the navigational controls). This list of connected RPs includes details of each RP's model, frequency, and mode.
- K. **Menu Button:** Accesses the main menu system of the CU. While in the main menu system, one press acts as an escape to return the user to the previous menu without saving any changes. (See "[Control Unit Menus](#)" on page 28.)
- L. **USB Micro B:** For connectivity to a computer when updating device firmware. (See the [CrewWare Manual](#) for information on updating device firmware.)

- M. **USB A:** For RP pairing, using a USB-to-Micro-USB cable, and for updating CrewCom Configuration files (CCF) via an external USB flash drive. (See ["Upload Configuration File \(CCF\)" on page 38](#) for more information.)



Note: The CrewCom CU is currently compatible with FAT and FAT32 formatted USB thumb drives (up to 16 TB drive size). Some operating systems (e.g., Windows 10) promote NTFS format, but only allow FAT32 formatting up to 32 GB. For help with formatting larger USB thumb drives, contact Pliant customer support at +1.334.321.1160 (option 3 for Service and Support).

CCU-44 Rear

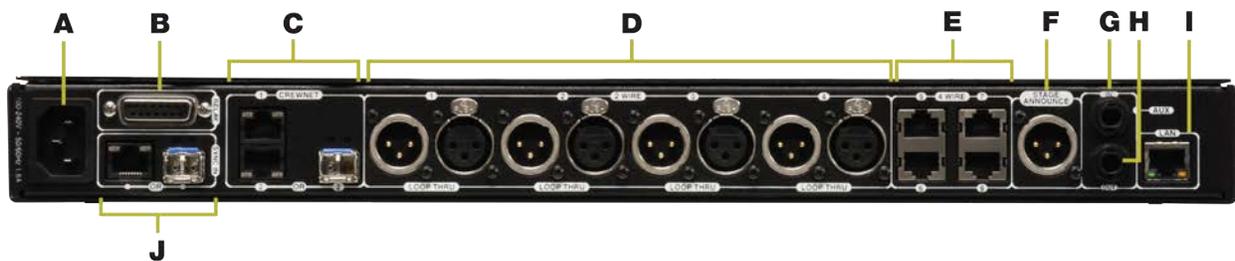


Figure 10 CCU-44 Rear

- A. **AC Power Connection:** 100–240V, 50/60 Hz 0.8A (complies with standard IEC60320; IEC320/C13)
- B. **RELAY Connection:** CrewCom includes five General Purpose Output (GPO) contact closures for interfacing with other external devices (the Stage Announce (SA) Relay and four additional GPO relays). The user has access to both the normally open and the normally closed contacts for each relay. Rated load for all relay contacts: 0.3 Amp at 125VAC, 1 Amp at 30VDC. (See ["Relays" on page 87.](#))

- C. **CREWNET Ports (RJ-45 or Fiber):** The CrewNet ports allow the CU to connect to other CrewCom devices, supporting a proprietary network design where all devices are part of a CrewCom Configuration File that shares data, timing synchronization, and audio. Up to two CrewNet connections are supported per CU using either two RJ-45 copper (Cat 5e or greater) ports or an RJ-45 copper and Single Mode Fiber (duplex LC connector) port. Any CrewCom device connected to CrewNet via a Cat 5e (or greater) cable will receive Power-over-CrewNet (PoC) from the CU via the CrewNet port. (See ["Power Over CrewNet" on page 15.](#)) Each CrewNet port's status LEDs indicate the status of the CrewNet link. (See ["Control Unit LEDs" on page 65.](#))

- D. **2-WIRE Intercom Port (x 4):** The Intercom Channel ports (1, 2, 3, and 4) allow the user to connect the CU 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 four 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 or via CrewWare. (See ["2-Wire Intercom Connectivity" on page 75.](#))

- E. **4-WIRE Intercom Port (x 4):** The RJ-45 4-Wire Intercom ports (5, 6, 7, and 8) 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 the standard wiring of CAT-5e network 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 CrewCom 4-Wire / RJ-45 Connection" on page 79.](#)) Nominal line level is +5 dBu. The 4-Wire Intercom settings can be adjusted under the **Wired Settings** menu or via CrewWare. (See ["4-Wire Intercom Connectivity" on page 78.](#))

- F. **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 or via CrewWare. (See ["Wired Settings" on page 71.](#))

- G. **Auxiliary Audio Input (Aux IN):** Aux IN is used to supply program or other audio sources to the CU. 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" on page 71.](#))

- H. **Auxiliary Audio Output (Aux OUT):** Aux OUT is used to supply intercom audio sources from the CU. 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](#)" on page 71.)
- I. **Local Area Network (LAN) Port:** The LAN port allows the CU to connect to a network for configuration, control, and monitoring purposes using CrewWare. (See "[Local Area Network \(LAN\) Settings](#)" on page 93) The LAN port's LEDs indicate the status of the LAN link. (See "[Control Unit LEDs](#)" on page 65.)
- J. **SYNC IN Port (RJ-45 or Fiber):** SYNC IN allows the CU to receive and use a sync source (available CrewNet connection) from another CrewCom system, but this connection is not required to be part of any system configuration. This particular connection can support either an RJ-45 copper (Cat 5e or greater) port or a Single Mode Fiber (duplex LC connector) port, but not both at the same time. See "[Synchronization of Multiple Systems](#)" on page 57 for more information.

Important: Sync is not accomplished by connecting between two CUs' SYNC IN ports; rather, it is done by connecting between a sync source's CREWNET port and the receiving system's SYNC IN port.

Important: No audio or controls are shared between synced systems.

Each Sync In port's status LEDs indicate the status of the sync link. (See "[Control Unit LEDs](#)" on page 65.)

CCU-08 Rear

The CCU-08 model has the same controls and functions as the CCU-44, with two exceptions: eight 4-Wire Intercom Connections and no 2-Wire, which are outlined below.

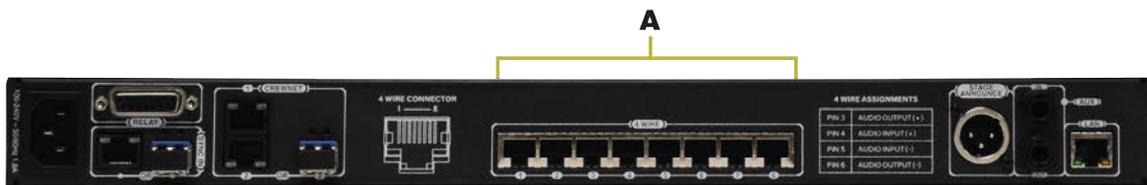


Figure 11 CCU-08 Rear

- A. **4-WIRE Intercom Port (x 8):** The RJ-45 4-Wire Intercom ports (1 - 8) 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 the standard wiring of CAT-5e network 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 CrewCom 4-Wire / RJ-45 Connection"](#) on page 79.) Nominal line level is +5 dBu. The 4-Wire Intercom settings can be adjusted under the **Wired Settings** menu or via CrewWare. (See ["4-Wire Intercom Connectivity"](#) on page 78.)

CCU-22 Rear

The CCU-22 model has the same controls and functions as the CCU-44, with two exceptions: the 2-Wire and 4-Wire Intercom Connections, which are outlined below.

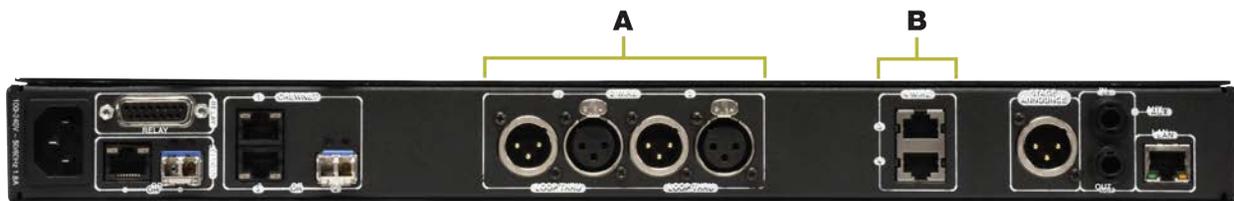


Figure 12 CCU-22 Rear

- A. **2-WIRE Intercom Port (x 2):** The Intercom Channel ports (1 and 2) allow the user to connect the CU 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 or via CrewWare. (See ["2-Wire Intercom Connectivity"](#) on page 75.)
- B. **4-WIRE Intercom Port (x 2):** The RJ-45 4-Wire Intercom ports (3 and 4) interface with 4-Wire intercom systems and devices. These are audio-only ports and do not support data transfer. The connector is balanced and transformer isolated. These connections do not use the standard wiring of CAT-5e network 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 CrewCom 4-Wire / RJ-45 Connection"](#) on page 79.) Nominal line level is +5 dBu. The 4-Wire Intercom settings can be adjusted under the **Wired Settings** menu or via CrewWare. (See ["4-Wire Intercom Connectivity"](#) on page 78.)

Control Unit Display

Home Operating Screen

Serves as the primary operating screen and displays the status of the Control Unit's (CU's) connected Radio Packs (RPs).



Note: Currently, High Density enabled RPs do not show on the front panel of any CUs. These packs can be seen in CrewWare.

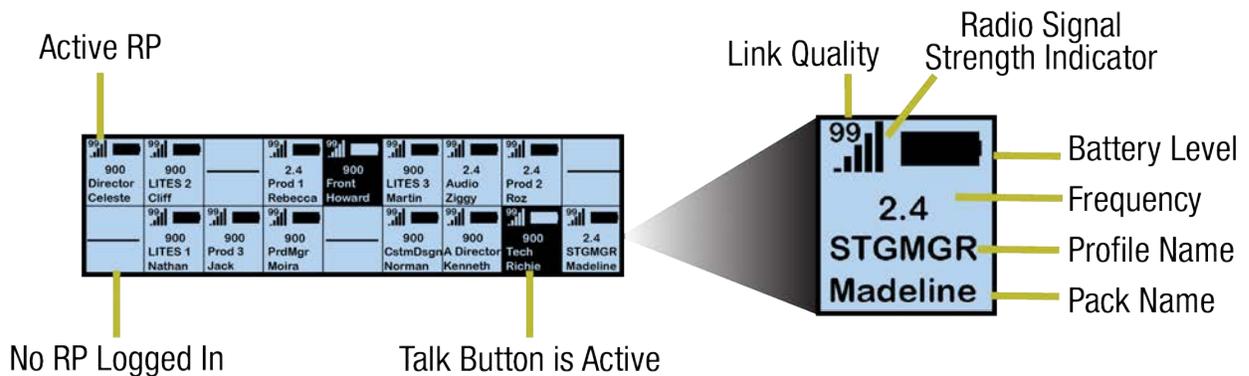


Figure 13 Control Unit Primary Operating Screen



Note: The Link Quality Indicator (LQ) provides a diagnostic measurement of actual packet transmission from RP to RT and vice versa. The LQ value on the CU LCD represents the lowest LQ value of the two possibilities. To discover more about which value is displaying on your device, you would need to consult the individual RP or CrewWare. (See "Link Quality" on page 69.)

Secondary Operating Screen

Displays additional information about the status of the CU's connected RPs. Press the Home button once to toggle between the Primary and Secondary screens. After 60 seconds, the screen will time out and revert back to the Home screen.

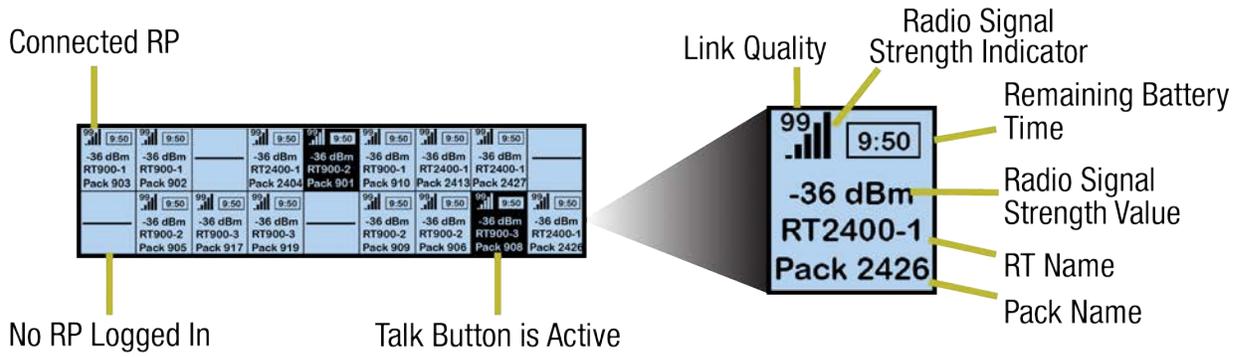


Figure 14 Control Unit Secondary Operating Screen



Note: Radio Signal Strength Value displays the actual value of the radio signal in dBm.

Control Unit Menu

The following menu tree displays the Control Unit's menu options upon first power on or factory default restored:

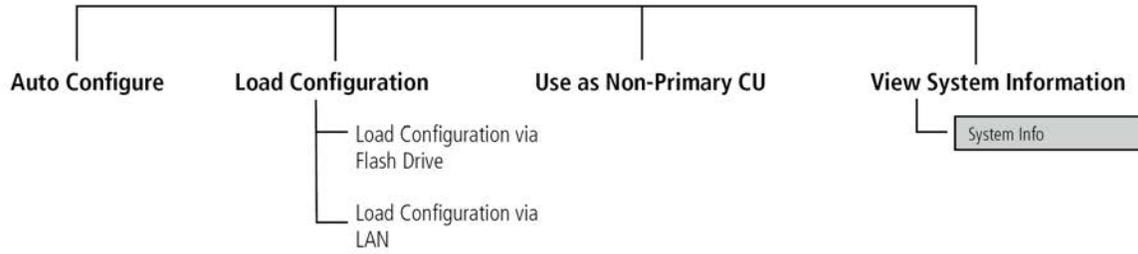


Figure 15 Control Unit First Power On Menu

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

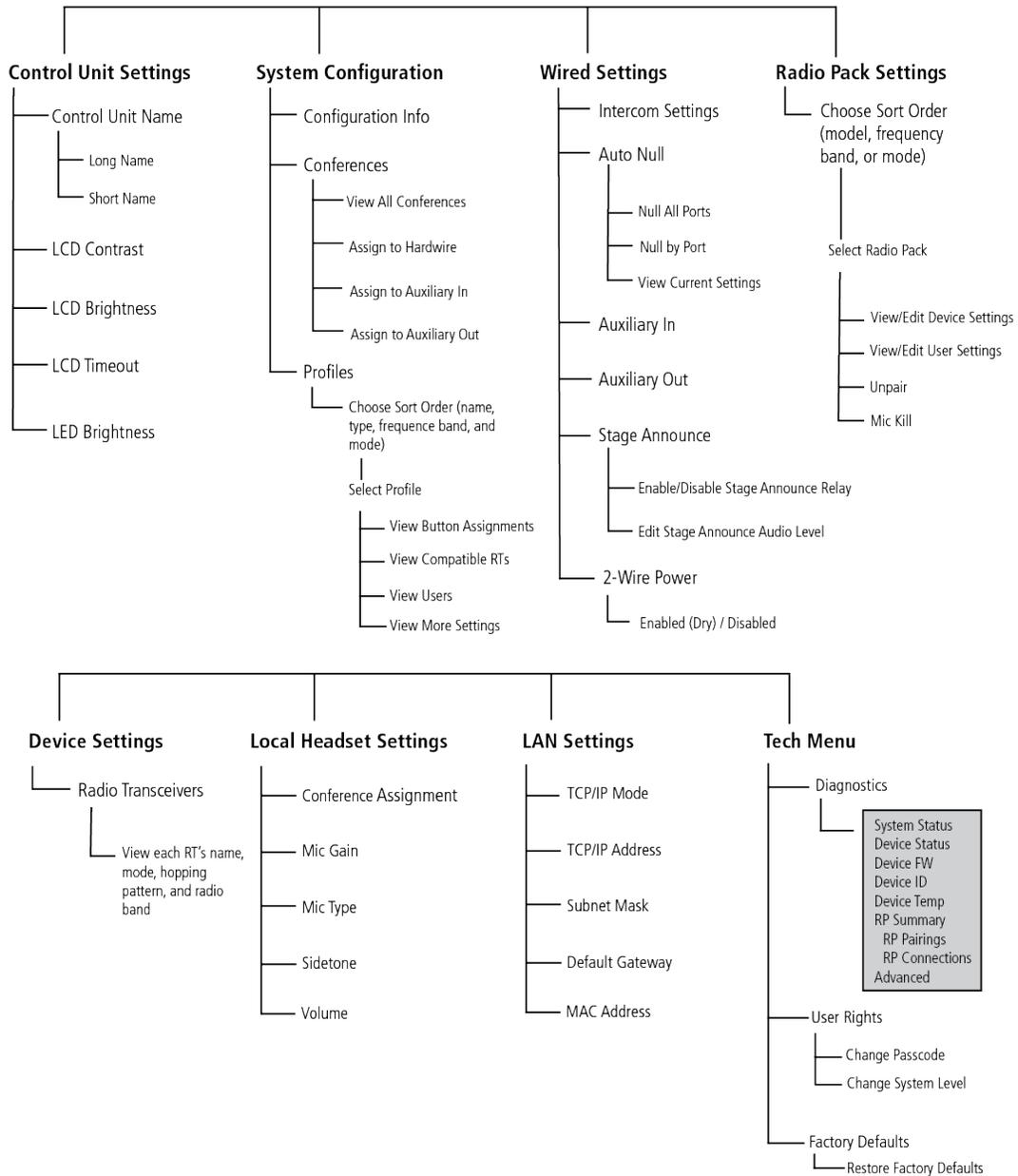


Figure 16 Control Unit Menu

CHAPTER 4

SETUP AND INSTALLATION

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Plan Coverage Area

Before installation begins, it is a good idea to plan your coverage area so that equipment is positioned in the best possible locations.

Planning Tips

- Map out the site and identify the most critical areas where communication is needed.
- Consider cable length limitations during planning. Copper: 330ft. (100 m). Fiber: 32,800 ft. (10 km).
- Locate antennas in open spaces and avoid obstructions (especially metal).
- If using omni-directional antennas, position antennas in the center of the coverage area and as high as possible.

Determine if you have a CCF.

Your Control Unit (CU) may have been pre-configured with a CrewCom Configuration File (CCF) at the factory or other source—consult the documentation provided with your system for your specific configuration details, then proceed to ["Position Devices" on the next page](#). (If you have no configuration documentation or printed system diagram, contact the person who provided your CrewCom system for assistance or contact Pliant Customer Support.)

If your CU has not been pre-configured with a CCF (and if you do not have a saved CCF on a USB drive to load to your CU), you will need to either Auto Configure your system or install CrewCom's software application, CrewWare, to create one. If you choose to Auto Configure, continue to ["Position Devices" on the next page](#). If you choose to create a CCF, you will create the CCF before continuing to ["Position Devices" on the next page](#). (For more information on building a system diagram and creating a Configuration File, see the [How to Create a System Diagram Video Tutorial](#).)



Note: Auto Configure is only available for systems upgraded to Version 1.10.

Position Devices

After you plan your coverage area and determine if you have a CCF, you can begin positioning your Control Units (CUs), Radio Transceivers (RTs), and Hub(s) (if applicable).

How To Install Control Units

1. Place the CU 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 CU are not restricted.
2. Connect the CU to a compatible power source using provided AC power cord, but do not turn on power yet. If you are Auto Configuring your system, skip to ["Power On the System" on page 36](#).

Connect to CrewNet

Connect your CrewCom system's devices via their available CrewNet RJ-45 Copper or duplex LC Fiber ports.



Note: If you choose to Auto Configure your system, the CU will prompt you to plug in devices after you have powered on the CU. Hubs cannot be Auto Configured.



Important! Device port connections must match your CCF's system diagram in order to operate. Pliant recommends making all cable connections from the CU to other CrewCom devices prior to powering on the system. However, CrewCom devices (such as RTs) that are already present in the CCF may be connected or replaced while the system is operating. When hot-swapping devices, Pliant recommends waiting at least 10 seconds between disconnecting and reconnecting the device.

CrewNet Connectivity

RJ-45 Copper Ports - Use the supplied 15 ft. (4.6 m) Cat 5e cable, or your own Cat 5e (or greater) cable (up to 330 ft. (100 m) in length). Any CrewCom device connected to CrewNet via a Cat 5e (or greater) cable will receive (PoC) via the CrewNet port. (See "[Power Over CrewNet](#)" on page 15 for more information.) In some situations, there may be too many connected devices or the cable lengths may be too long for the PoC to adequately power all devices, and this will be indicated with the NET PWR LED lighting red. In this case, one or more additional Pliant 48VDC power supplies must be used (PPS-48V-02 included with Hub; sold separately with all other devices).

Fiber (Optical) Ports - For a fiber CrewNet port, a Single Mode Fiber cable (duplex LC connector) will be required (up to 32,800 ft. (10,000 m) in length). Any CrewCom device connected to CrewNet via fiber port must receive power via a Pliant 48VDC power supply (PPS-48V-02 included with Hub; sold separately with all other devices).

Power On the System

How to Power On and Configure the System

1. Turn ON the power switch on the front of the CU.
 - If your Control Unit (CU) was pre-configured with a CrewCom Configuration File (CCF) at the factory or other source, wait for the configuration file (CCF) to load on the system. The CU will display a progress bar during the load process. A “CCF Loaded” message and a configuration file summary will display when the load is complete. Once the message completes, the home screen will display on the front of the CU. Skip to Step 3.
2. If your Control Unit (CU) was not pre-configured, select the appropriate CCF option on the CU menu and follow the prompts on the screen.
 - Auto Configure: See ["Auto Configure" on page 48](#) for a walk-through of the CU prompts.
 - Load Configuration: You can load a CCF via USB drive. See ["Upload Configuration File \(CCF\)" on page 38](#) for more information about this process.
 - Use as Non-primary CU: The CU will prompt you to connect to a configured system.



Note: In a multi-CU system, only the primary CU requires a CCF to be loaded. (See ["Connecting Multiple Control Units" on page 45](#) for more information about CU priority.)

3. Verify that your RTs and Hubs (if applicable) are receiving power by checking that their Power LEDs are green. Under optimal conditions, seven additional connected RTs can be powered from one locally powered RT; however, this number can vary greatly depending on the line lengths and the number and configuration of those connected devices.
4. See ["Pair Radio Packs" on page 52](#) for instructions on setting up and using Radio Packs with your system.



Configuration Troubleshooting: Once the system is powered on, you can tell that a configuration error has occurred with an RT if its TX LED is not lit. The configuration error may be present in the RT or other device upstream. You may need to connect to CrewWare to identify the specific configuration errors needing resolution. In addition, if a device does not have compatible firmware, you will need to update its firmware using CrewWare. (See the [CrewWare Manual](#) for more information about the firmware update process.)

Upload Configuration File (CCF)

Each CrewCom system uses a configuration file (.ccf file extension) to direct the operation of all processes and data. The CCF contains hardware device configuration, Conference and Profile settings, 2-wire port and 4-wire port intercom settings, and all other CrewNet information for all connected CrewCom devices.

When CrewWare is connected to your system, toggling to "live" mode allows you to interact with the currently uploaded CCF. Only one CCF may be active (live) on a given system. Some configuration updates may be made via the front LCD of the Control Unit (CU); however, more advanced customization and control requires the CrewWare program. CCFs can be created or edited offline using CrewWare on your PC and then uploaded to the primary CU via CrewWare or via a portable USB drive at the front USB port of the CU.

Loading a CrewCom Configuration File via USB

Follow the procedure below to load a new CrewCom Configuration File (CCF) to your system.



Important! Be sure you have saved a backup copy of your current configuration file prior loading a new one, in case you need to revert to it for any reason. (See "[Save Configuration File \(CCF\)](#)" on page 70.)



Note: The CrewCom CU is currently compatible with FAT and FAT32 formatted USB drives (up to 16 GB drive size). Some operating systems (e.g., Windows 10) promote NTFS format, but only allow FAT32 formatting up to 32 GB. For help with formatting larger USB drives, contact Pliant customer support at +1.334.321.1160 (option 3 for Service and Support).

If First Power On or After Factory Default Reset

1. Navigate down the list of menu options until **Load Configuration** is highlighted and press the primary CU's enter button. Press enter again to select **Load Configuration via Flash Drive**.

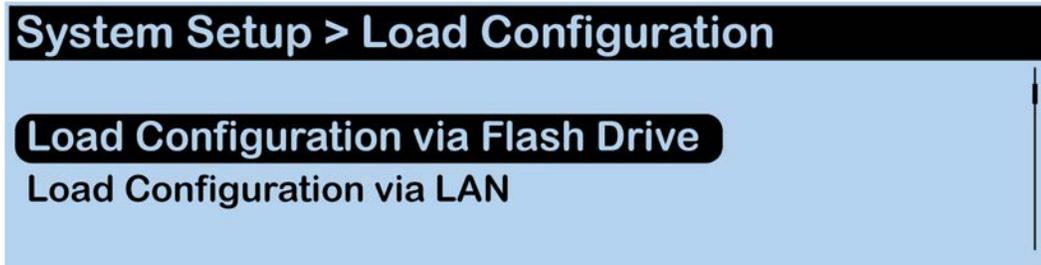


Figure 17 CU LCD Load Configuration File via Flash Drive

2. Plug the USB drive into the front of the primary CU. Scroll until you find the configuration file you wish to use, then press enter to select it.



Figure 18 CU LCD List of Available Configuration Files



Note: Only CCFs that have been properly named with 8 characters or less will be available for selection from this list. See "[Save Configuration File \(CCF\)](#)" on page 70 for more information.

3. Confirm your selection when prompted by selecting **Yes**.
4. The primary CU screen will display a progress message while the new configuration file loads.

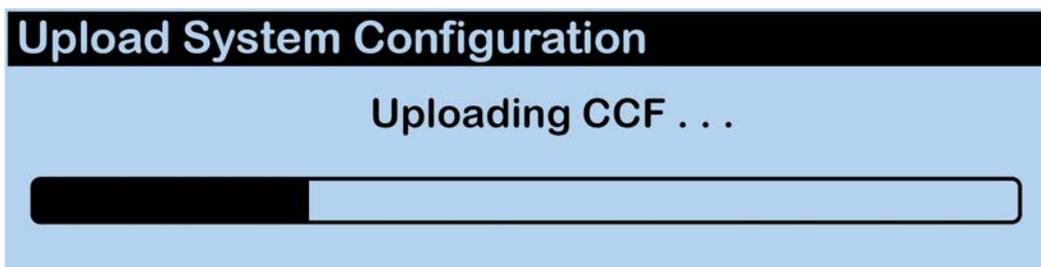


Figure 19 CU LCD: Sample CCF Upload In Progress Screen

- Once the configuration file has finished loading, the primary CU will display a "CCF Upload Complete" message along with a configuration summary. Remove the USB flash drive.



Figure 20 CU LCD Configuration File Summary Screen

- The CU will automatically reboot.

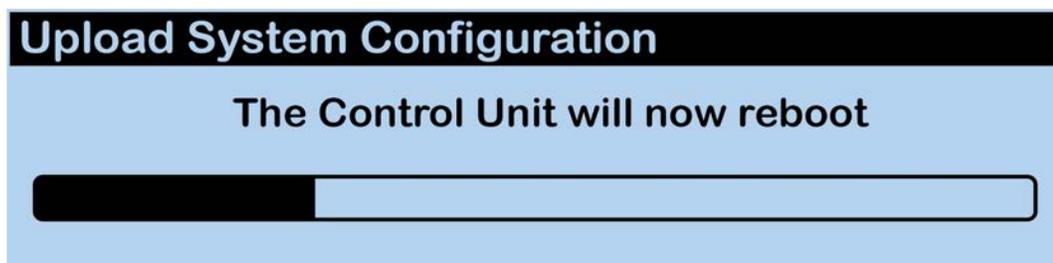


Figure 21 CU LCD Reboot

- Upon startup, the new configuration file will load and be in use.

If a CCF is Already Loaded onto the CU

- Restore factory defaults or delete the configuration file via the steps in "[Delete Configuration File \(CCF\)](#)" on page 43 before continuing with uploading a new CCF.



Caution: Loading or having a previously loaded CCF on any CU other than the primary CU will cause a configuration malfunction.

2. Plug the USB drive into the front of the primary CU. An External USB Drive menu screen will display on the CU LCD. Navigate down the list of menu options until **Upload System Configuration** is highlighted.



Figure 22 CU LCD Upload Configuration File Prompt

3. Press the primary CU's enter button and scroll until you find the configuration file you wish to use, then press enter to select it.



Figure 23 CU LCD List of Available Configuration Files



Note: Only CCFs that have been properly named with 8 characters or less will be available for selection from this list. See "[Save Configuration File \(CCF\)](#)" on page 70 for more information.

4. Confirm your selection when prompted by selecting **Yes**.
5. The primary CU screen will display a progress message while the new configuration file loads.

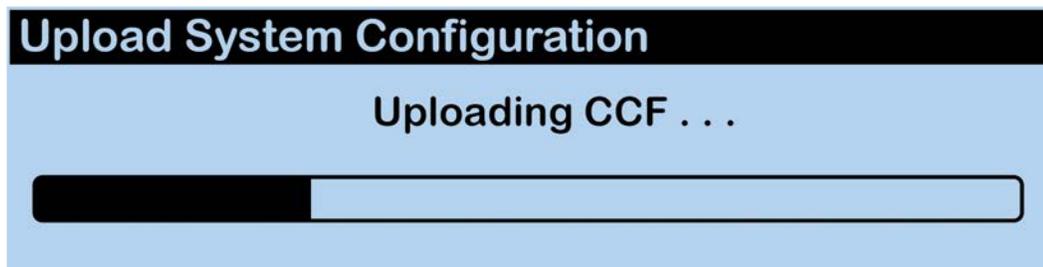


Figure 24 CU LCD: Sample CCF Upload In Progress Screen

- Once the configuration file has finished loading, the primary CU will display a "CCF Upload Complete" message along with a configuration summary. Remove the USB drive.



Figure 25 CU LCD Configuration File Summary Screen

- The CU will automatically reboot.

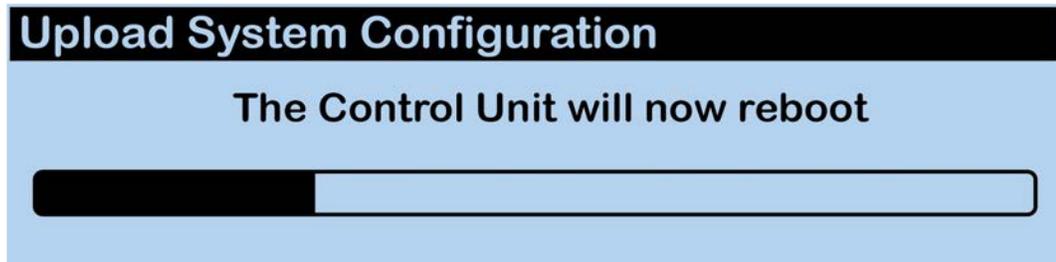


Figure 26 CU LCD Reboot

- Upon startup, the new configuration file will load and be in use.

Uploading a CrewCom Configuration File via CrewWare

See the [CrewWare Manual](#) for more information about this process.

Delete Configuration File (CCF)

If you plan to connect a Control Unit (CU) as a non-primary device, you should make sure that no CCF is currently saved on the CU to conflict with the one saved on the primary CU of your system. You will either need to Restore Factory Defaults on the CU (see ["Restore Factory Defaults" on page 99](#)) or delete the CU's CCF by doing the following:

1. Make sure the primary CU is powered on and has completed loading the current configuration file, then plug the USB thumb drive into the front of the primary CU. An External USB Drive menu screen will display on the CU LCD.
2. Navigate down the list of menu options until **Delete System Configuration** is highlighted. Confirm your selection when prompted by selecting **Yes**.



Figure 27 CU LCD Delete System Configuration

3. The primary CU screen will display a progress message while the configuration file is deleted. Once the configuration file has finished deleting, the primary CU will display a "CCF Deleted" message. Remove the USB flash drive.
4. The CU will automatically reboot.
5. The primary CU will power on and display a "No CCF found" message. Click enter to confirm **OK**. Continue with steps in ["Upload Configuration File \(CCF\)" on page 38](#).

Add More CrewCom Devices

If you need to add additional CrewCom devices (e.g., a Hub, RT, or additional CUs) after you've applied your CrewCom Configuration File, you'll need to do the following:



Note: To add more CrewCom devices to a system that has been Auto Configured, restore factory defaults on the CU and Auto Configure again with all devices connected. Up to 3 RTs can be Auto Configured; Hubs cannot be Auto Configured. See "[Auto Configure](#)" on [page 48](#). To add a non-primary CU to a system that has been Auto Configured, use steps below.

1. Add the device(s) to your system diagram in CrewWare, then save the Configuration File change and apply the new Configuration File to your system. (Remember, you cannot make System Diagram changes while CrewWare is "live.") (See the [CrewWare Manual](#) for information on building a system diagram , and see "[Upload Configuration File \(CCF\)](#)" on [page 38](#) for more information on that topic.)
2. Connect the additional CrewCom device(s) via an available CrewNet RJ-45 Copper or duplex LC Fiber port.

Connecting Multiple Control Units

Every CCF must contain one primary CU. By default, the first Control Unit (CU) added to the CCF is automatically assigned as the primary CU. Any additional CUs will need to be added through CrewWare and CCF loaded to CUs or auto configured on the non-primary CU. Up to 3 non-primary CUs can be added to a system. See diagrams below steps and [the CrewWare Manual](#) for more information on building system diagrams in CrewWare.

1. Restore Factory Defaults on the non-primary CU. See ["Restore Factory Defaults" on page 99](#) for more information.



Caution: Loading or having a previously loaded CCF on any CU other than the primary CU will cause a configuration malfunction. You may also Delete System Configuration from the External USB Drive menu; see ["Delete Configuration File \(CCF\)" on page 43](#)

2. Once the non-primary CU has powered on, select **Use as Non-primary CU**.

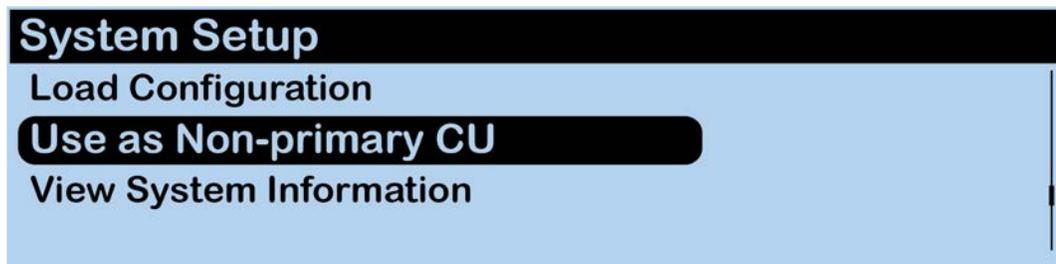


Figure 28 CU LCD Use as Non-primary CU

3. Connect the non-primary CU to a configured system. Make sure to connect the non-primary CU exactly as drawn in the system's configuration file.

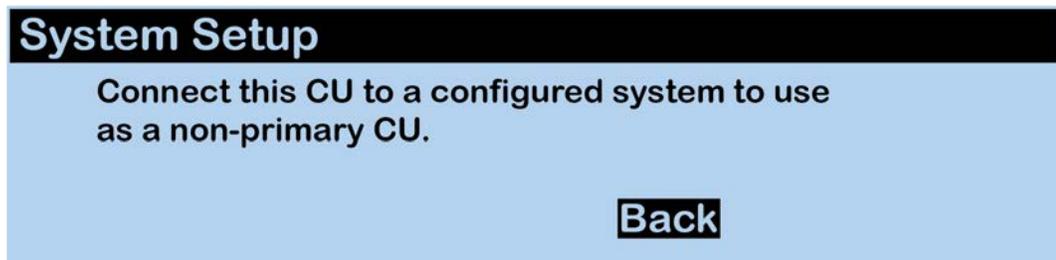


Figure 29 CU LCD Connect to Configured System

4. Once connected, the CU will automatically begin loading the CCF.

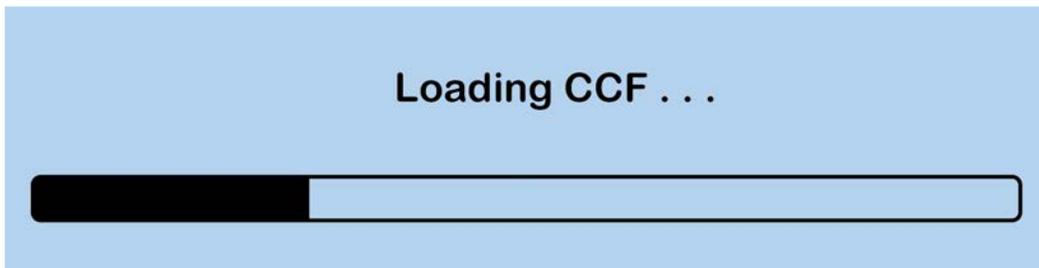


Figure 30 CU LCD Loading CCF

5. The CU will show a blank home screen when the CCF loading is complete.

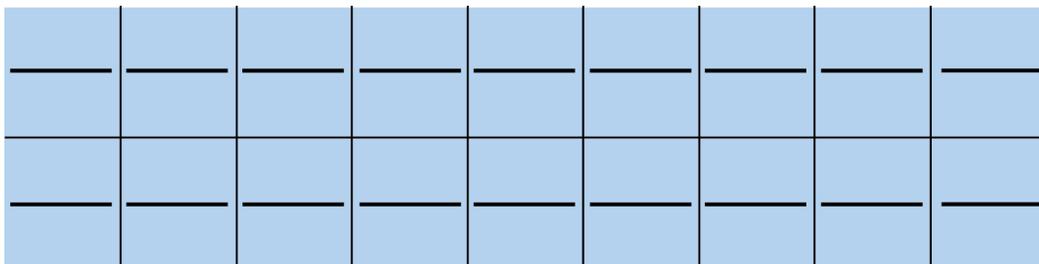
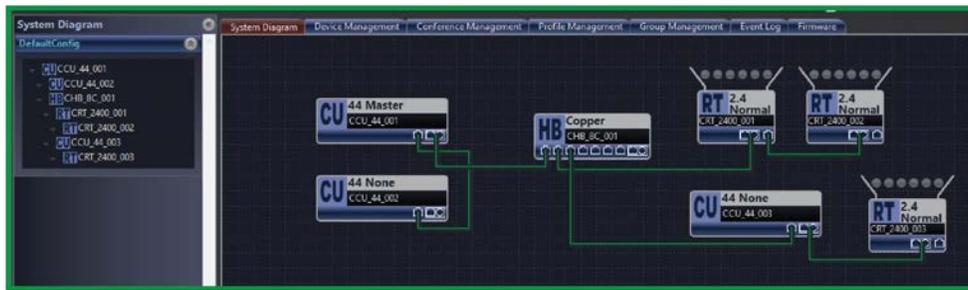


Figure 31 CU LCD Home Screen

CrewNet supports up to 4 CUs. These additional CUs can be connected to the network via an available CrewNet port on another CU or a CrewCom Hub. No CU additions can be made via an RT's CrewNet or Loop ports. Multiple Control Units may only be connected together (i.e., daisy-chained) when they are connected directly from the primary CU. A single CU may be connected from a CrewCom Hub; this configuration is not considered to be daisy-chaining the CUs. See the images below for examples of acceptable and unacceptable multi-CU system diagrams. See [the CrewWare Manual](#) for more information on building system diagrams in CrewWare.

Acceptable



Unacceptable

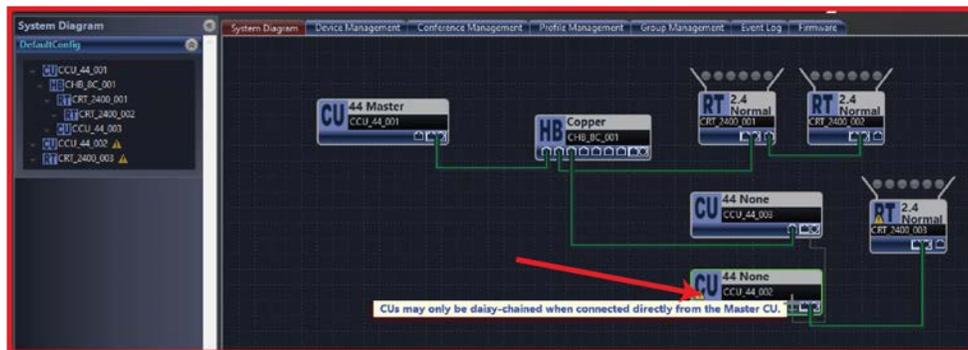


Figure 32 Control Unit Configuration Limitations

Auto Configure

This functions allows the user to put together a system very quickly and without using the CrewWare software application. Upon initial power on, the CU will display the menu shown in "[Control Unit Menus](#)" on page 28. The following is a step-by-step of the CU Auto Configure process.



Note: Auto Configure will only configure the system for Normal Operational Mode. 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.



Note: To connect non-primary CUs, see "[Add More CrewCom Devices](#)" on page 44. Up to 3 non-primary CUs can be added to a system. See below diagrams and [the CrewWare Manual](#) for more information on building system diagrams in CrewWare.

1. Select **Auto Configure**.

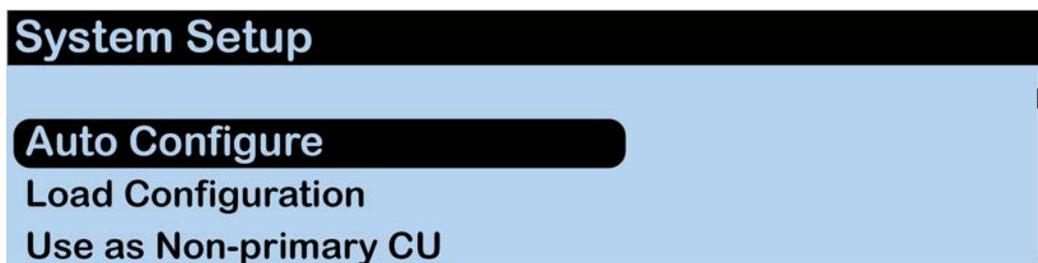


Figure 33 CU LCD: Auto Configure

2. Connect and power on up to three Radio Transceivers. Select **OK**.

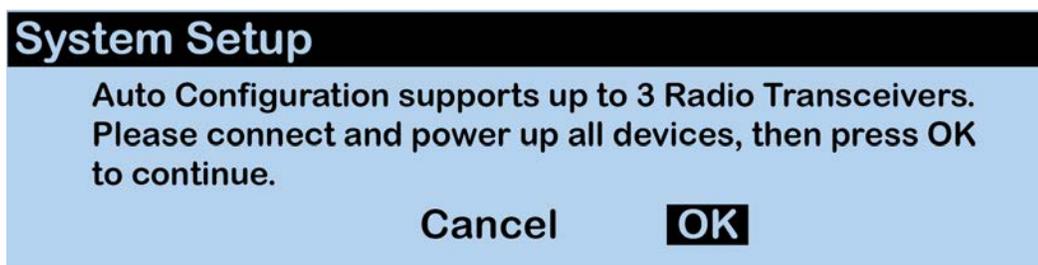


Figure 34 CU LCD: Power On Devices

- The CU LCD will indicate how many RTs have been detected. Once all RTs have been detected, select **OK**.

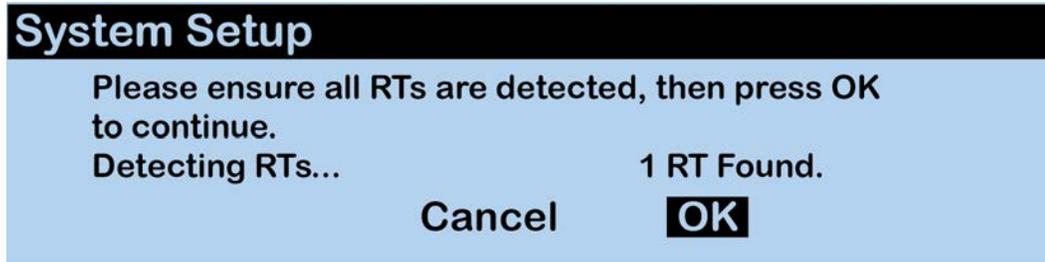


Figure 35 CU LCD: Radio Transceivers Detected

- Select **Yes** to Auto Configure the system.

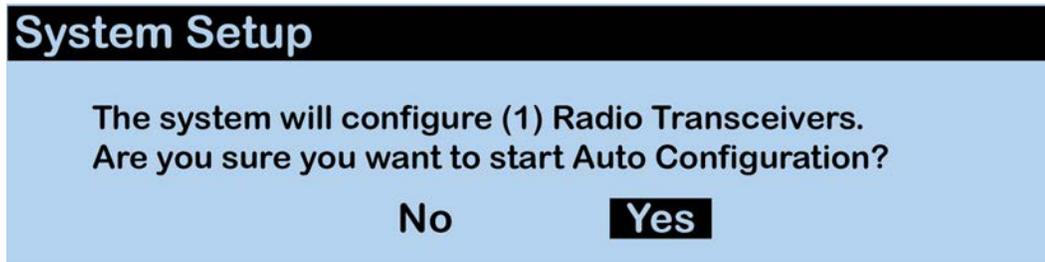


Figure 36 CU LCD: Configure Radio Transceivers

- The CU LCD will show a progress bar for configuring.

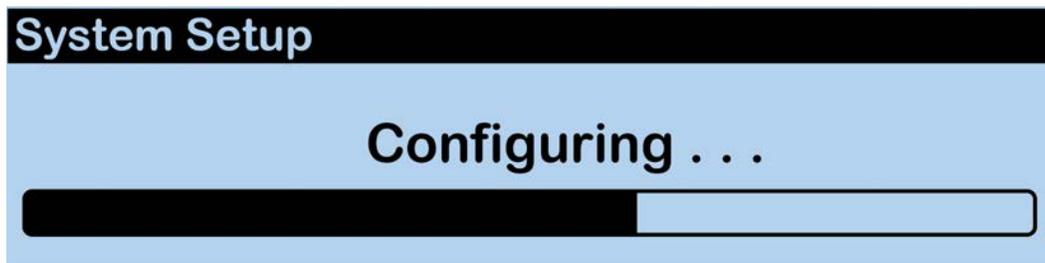


Figure 37 CU LCD: Configuring System

6. Upon completion, the CU LCD will show the message below. Select **OK**.

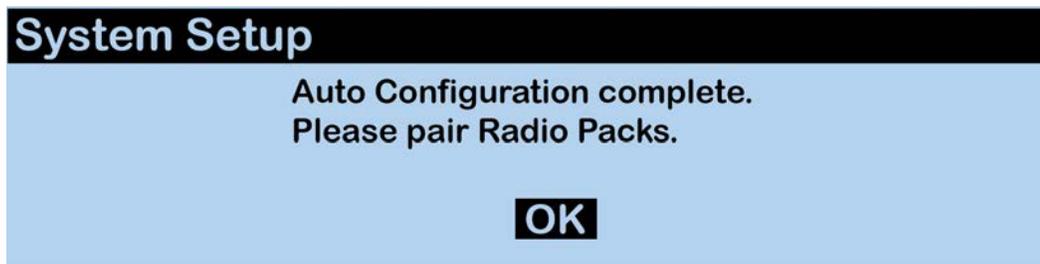


Figure 38 CU LCD: Auto Configuration Complete

7. The empty CU Home screen will show.

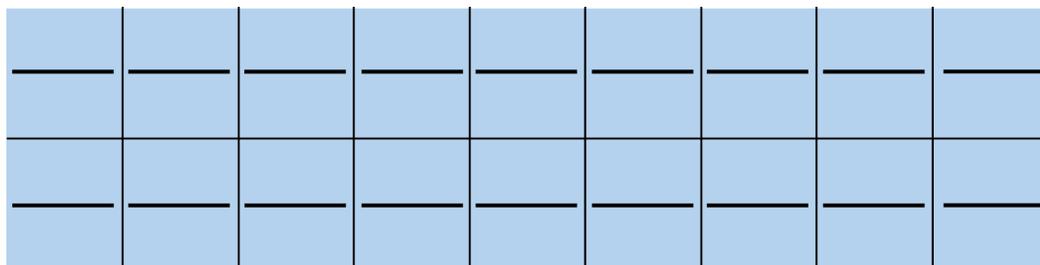


Figure 39 CU LCD: CU Primary Screen after Auto Configure

8. Continue to pair Radio Packs. See "[Pair Radio Packs](#)" on page 52 for instructions on setting up and using Radio Packs with your system.

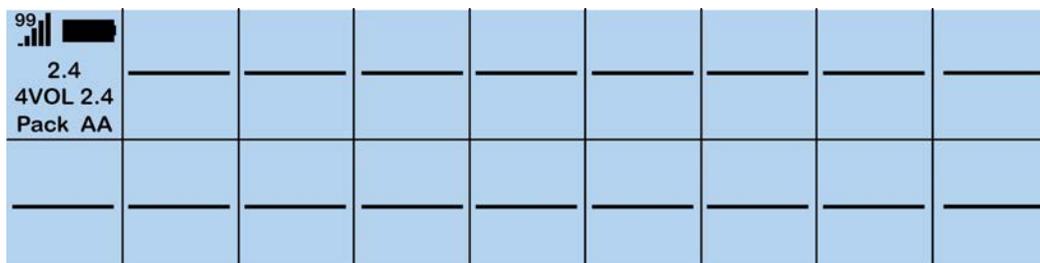


Figure 40 CU LCD: Radio Pack Paired with Auto Configured System

Auto Configure Default CCF

The default settings created by the auto configuration process for Conferences and Profiles are shown in the figures below.

Conference Name	Short Name	ISO Allowed	High Density Enabled	Call	Mic Kill
Conference1	Conf1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Call	Mic Kill
Conference2	Conf2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Call	Mic Kill
Conference3	Conf3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Call	Mic Kill
Conference4	Conf4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Call	Mic Kill
Stage Announce	SA	<input type="checkbox"/>	<input type="checkbox"/>	Call	Mic Kill

Figure 41 Auto Configure Default Conferences

26	4 VOLUME 2.4	4VOL 2.4	CRP-44-2400	Normal	5/25/2023 3:24:06 PM	
	Button A	Conference1	Function Button 1: None			
	Button B	Conference2	Function Button 2: None			
	Button C	Conference3				
	Button D	Conference4				
27	2 VOLUME 2.4	2VOL 2.4	CRP-22-2400	Normal	5/25/2023 3:23:58 PM	
	Button A	Conference1	Function Button 1: None			
	Button B	Conference2	Function Button 2: None			
28	RP12 2.4	RP12 2.4	CRP-12-2400	Normal	5/25/2023 3:28:05 PM	
	Button A	Conference1	Function Button 1: Call			
	Button B	Conference2	Function Button 2: Stage Announce			
29	4 VOLUME 900	4VOL 900	CRP-44-900	Normal	5/25/2023 3:26:05 PM	
	Button A	Conference1	Function Button 1: None			
	Button B	Conference2	Function Button 2: None			
	Button C	Conference3				
	Button D	Conference4				
30	2 VOLUME 900	2VOL 900	CRP-22-900	Normal	5/25/2023 3:26:24 PM	
	Button A	Conference1	Function Button 1: None			
	Button B	Conference2	Function Button 2: None			
31	RP12 900	RP12 900	CRP-12-900	Normal	5/25/2023 3:27:51 PM	
	Button A	Conference1	Function Button 1: Call			
	Button B	Conference2	Function Button 2: Stage Announce			

Figure 42 Auto Configure Default Profiles

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 "[Operational Modes \(Normal and High Density\)](#)" on page 17.

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 "[Auto Configure](#)" on page 48 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.

Connect and Configure Hardwire Ports

After all Radio Packs are paired to their Control Unit(s), proceed with connecting any hardwire connections to the CU, if applicable.



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

Process Details

- If connecting a 2-wire intercom system, connect it to the 2-wire intercom ports(s) on the back of the CU. For full connection and configuration instructions, see ["2-Wire Intercom Connectivity" on page 75](#).
- If connecting a 4-wire intercom system, connect it to the 4-wire intercom port(s) on the back of the CU. For full connection and configuration instructions, see ["4-Wire Intercom Connectivity" on page 78](#).



TIP: Both 2-Wire and 4-Wire ports can be used simultaneously.

- See ["Relays" on page 87](#) if applicable.
- See ["Stage Announce" on page 88](#) if applicable.
- See ["Auxiliary In" on page 81](#) if applicable.
- See ["Auxiliary Out" on page 83](#) if applicable.

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. The default setting for CU Name is the device's electronic serial number.



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 CU Name from the CU:

1. Scroll through the CU Settings options and select Control Unit Name to enter "edit" mode.
2. Use the CU's up/down navigation buttons to scroll to each desired letter. Then, use the right/left navigation buttons to move to each letter of the name.
3. Press Enter to save your changes.



Figure 43 Control Unit Name

Change Device Names from CrewWare

Please refer to the [CrewWare Manual](#) for information about this process.

Synchronization of Multiple Systems

What is Sync?

All complex digital systems require synchronization of the various elements for proper operation. In the Pliant Technologies CrewCom system, this is accomplished via a sync packet that is transmitted at regular intervals by the primary Control Unit and is consequently received by all other devices on a proprietary network (CrewNet.) This sync packet contains critical information for each device to be able to operate correctly and stay in synchronization with all other devices on the network. Without a correct and robust sync signal, the CrewCom system will not function properly. Since CrewCom, CrewCom CB2, and X-System are designed on the same platform, their respective sync signals can be passed from one to the other (via cabling) in order to coexist and avoid interfering with one another.

Hopping Pattern and Frequency Band Coordination

When syncing systems, it is critical that each system be configured within certain parameters. Primarily, hopping patterns and frequency bands should be coordinated between systems.

Hopping Patterns

Hopping patterns are automatically assigned to each Radio Transceiver on a system as a system's configuration file is designed. However, these hopping patterns can be manually adjusted if necessary, by going to each transceiver's detail view in CrewWare. The configuration file, once updated, will have to be re-uploaded to the system for changes to take effect. (See "[Upload Configuration File \(CCF\)](#)" on page 38.)

When two systems are being synchronized, it is imperative that those systems within the same frequency band are utilizing different hopping patterns. Failure to do so can result in poor wireless performance. Each CrewCom wireless product is available in 2.4GHz and 900MHz models, however it is not necessary to coordinate hopping patterns across these models.

Frequency Bands

When possible, set all systems to the same radio band when syncing between systems.



Important: When making changes to hopping patterns or radio band (splits), this must be performed offline via CrewWare. Once those changes have been made, the configuration file (.ccf) will need to be re-loaded to the system and any radio packs previously paired must be re-paired to the system. (See "[Upload Configuration File \(CCF\)](#)" on page 38.)

Be sure you have saved a backup copy of your current configuration file prior loading a new one, in case you need to revert to it for any reason. (See "[Save Configuration File \(CCF\)](#)" on page 70.)

CrewCom Hopping Patterns by Frequency Band and Model

	900	900AN	2400	2400CE
Full Band	1-14	N/A	1-38	1-38
High Band	1-7	1-7	1-19	1-19
Low Band	1-7	N/A	1-19	1-19

Sync CrewCom Systems

The sync signal of CrewCom inherently exists on every system, so there is no need to enable or disable this feature. By connecting two or more CrewCom systems, sync is seamlessly shared via the CrewNet network topology. However, only one system should ever serve as the sync source while others will receive the sync signal via the "Sync In" port on the rear of a CU. To sync two CrewCom systems, follow the instructions below.

1. Connect Cable to System A (sync source).
 - A system serving as the sync source will pass the sync signal out of any CrewNet port available on the system.
 - This can be from any device, such as a CU, radio transceiver (RT Loop), or a hub (ports 2-8).
 - Up to two CrewNet connections are supported per CU using either two RJ-45 copper (Cat 5e or greater) ports or an RJ-45 copper and Single Mode Fiber (duplex LC connector) port depending on which ports are available both on the source system and the receiving system or systems.

2. Connect Cable to System B (receiving sync).

- A system that is receiving the sync signal must connect the sync cable into the “Sync In” port on the rear of a primary Control Unit within that system’s configuration.
- The “Sync In” port can support either an RJ-45 copper (Cat 5e or greater) port or a Single Mode Fiber (duplex LC connector) port, but not both at the same time.

See the images below for examples of sync connections between CrewCom systems.

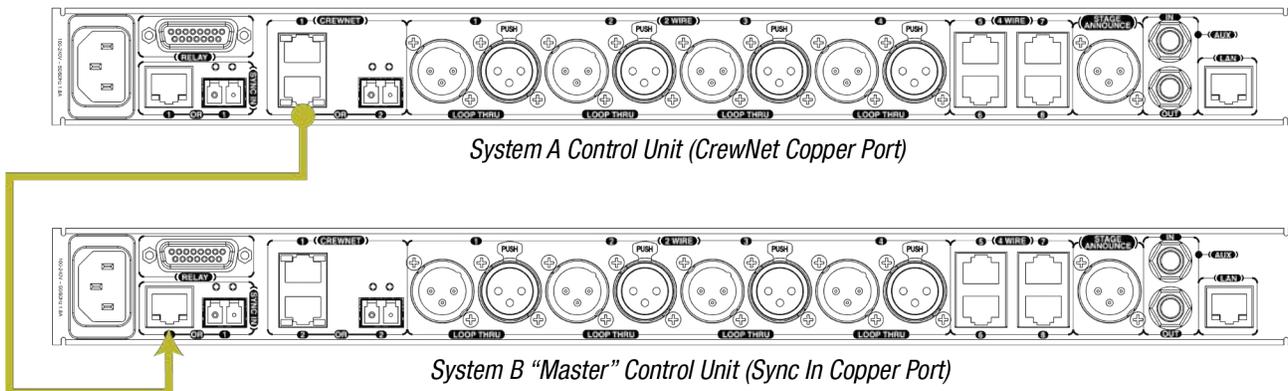


Figure 44 CrewCom Control Unit as Sync Source via Cat 5e

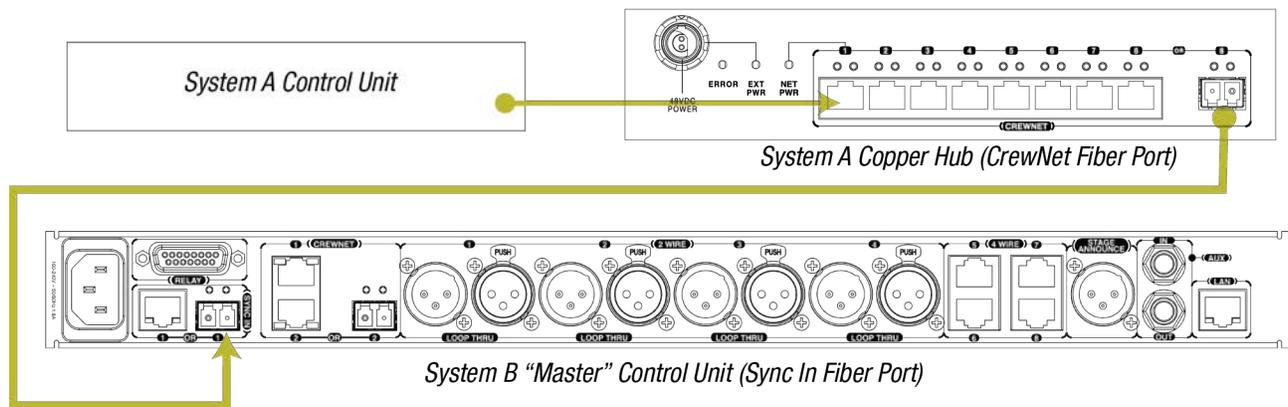


Figure 45 CrewCom Hub as Sync Source via Fiber

Sync CrewCom to a CoachComm X-System

As noted previously, CrewCom can be synchronized with the CoachComm X-System. X-Systems are designed and pre-configured for coexistence between Home and Away football teams; therefore, CrewCom will typically be required to make certain adjustments to its system parameters prior to using in a game environment where one or more X-Systems are in use.

If you are a CrewCom user planning to operate at a college or high school football game, it is highly recommended you reach out to the Home team prior to the event and determine what type of system they use for their coaches' communications. In addition, the Home team may be aware of what system the Away team is utilizing or be able to provide contact information for the Away team. Proper planning and gaining approval in advance of game day is critical to the success of any sync efforts.

Sync In Indicators

Sync In Status can now be viewed on the CU primary operating screen and in CrewWare with version 1.10 or higher. See the images below for Sync In Indicators on the CU primary operating screen, System Diagram View, CU Management Tab, and top right with the Mini View Toggle and CrewWare Access Rights Lock.



Figure 46 Sync In Indicator on CU Primary Operating Screen

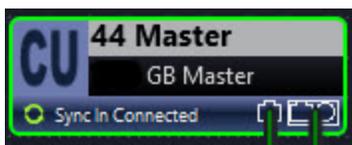


Figure 47 Sync In Indicator on System Diagram CU



Figure 48 Sync In Indicator on CU Management Tab



Figure 49 Sync In Indicator on Top Right

Sync Best Practices and Considerations

Multiple CrewCom systems, in addition to CoachComm X-Systems, can be synchronized to operate properly when collocated. Pliant recommends the following best practices and considerations for syncing two CrewCom systems together.

(For more on sync connections, see the Sync port description here: ["CCU-44 Rear" on page 22.](#))



Important: Sync is not accomplished by connecting between two Control Units' SYNC IN ports; rather, it is done by connecting between a sync source's CREWNET port and the receiving system's SYNC IN port.

- It is highly recommended you reach out to others operating systems in the same venue to determine what type of system they use for communications.
- 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 CrewCom and X-Systems prior to powering on those systems.
- When syncing systems, it is critical that each system be configured within certain parameters. Primarily, hopping patterns and frequency bands should be manually coordinated between systems.
 - Radio band settings are configured using CrewWare's Radio Transceiver Management Tab. See the [CrewWare Manual](#) for more information.
 - 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.
- If proper sync settings and connections are not used, the systems will not be synchronized and may potentially interfere with each another.
- For optimal spectrum management, determine the locations of one systems' Radio Transceivers (RTs) in relation to the other. One system's RTs should be as far from the other system as their application needs will allow.
- The SYNC IN port's left and right LEDs will be green when the connection is functioning properly. When the sync connection has a problem (e.g., when a CrewNet connection is made to the sync port of a non-primary CU), the left LED will be red. If no sync connection is detected, both LEDs will be off.



Note: The left LED on the Sync In copper connection will be lit on the Primary CU only. In a multi-CU system all other non-primary Sync In LEDs will not be lit, indicating they do not accept a Sync (CrewNet) Input.

- CrewCom CRTs should be as far from the X-System as their application needs will allow. At a minimum, CRTs should not be located within or behind the designated team box on either sideline.
- During normal operation, CrewCom users should not stand too close to an X-System's RTs in order to avoid desensing their Radio Pack's receiver.
- During normal operation, and where possible, one system's users should not stand too close to the other system's RTs in order to avoid desensing their Radio Pack's receiver.

CHAPTER 5

OPERATION

This chapter consists of the following sections:

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Control Unit LEDs

Each LED on the rear of the Control Unit (CU) indicates a particular condition or status for the device. See the table below for details about each meaning.

Control Unit's LEDs		
Port/LED	Description	
CrewNet LEDs	Left	Green – CrewNet connection is good.
		Off – No CrewNet connection detected.
	Right	On (Green) – 1000 Mbps link is detected.
		Blinking (Green) – Activity is detected.
		Off – No CrewNet connection detected.
		Off – No CrewNet connection detected.
LAN LEDs	Left	Green – LAN link is connected.
		Off – No LAN connection detected.
	Right	Blinking (Amber) – LAN activity is detected.
		Off – No LAN activity detected.
Sync LEDs (Copper)	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 non-primary CU).
		Off – No Sync connection detected.
	Right	On (Green) – 1000 Mbps link is detected.
		Off – No Sync connection detected.
		Off – No Sync connection detected.
Sync LEDs (Fiber)	Left	Not used
	Right	On (Green) – Sync connection is good.
		Off – No Sync connection detected.



Note: The left LED on the Sync In copper connection will be lit on the Primary CU only. In a multi-CU system all other non-primary Sync In LEDs will not be lit, indicating they do not accept a Sync (CrewNet) Input.

Lock the Control Unit 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 Control Unit (CU) 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 CU is first powered ON, it is always unlocked. Lock and unlock the CU front panel by pressing and holding the Home and Enter buttons simultaneously for five seconds.

Control Unit Settings Menu

The Control Unit (CU) can be configured depending on user preferences. The following settings and processes can be found in the CU's menu under **Control Unit Settings**. These settings can also be managed using CrewWare. (See the [CrewWare Manual](#) for more information.)

Naming a Control Unit

See "Name a Device" on page 56.

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**.

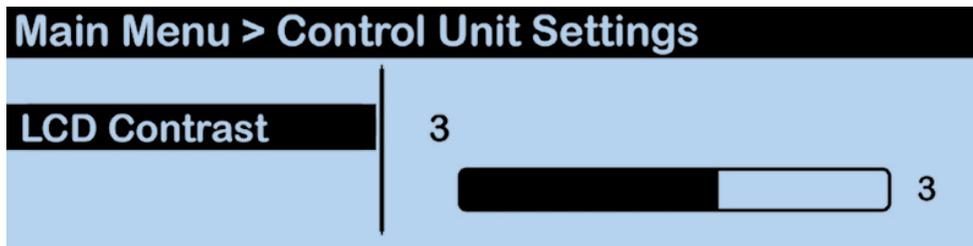


Figure 50 Edit Control Unit LCD Contrast

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**.

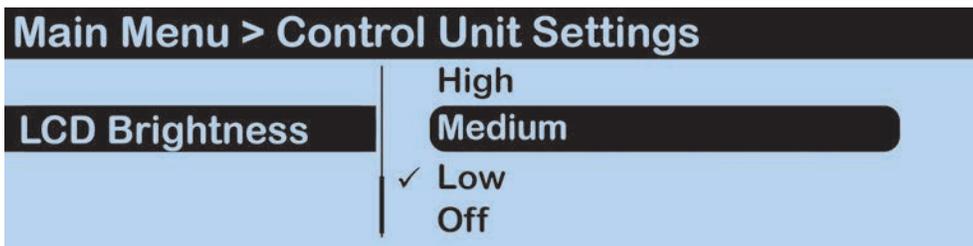


Figure 51 Edit Control Unit LCD Backlight Brightnes

LCD Timeout

Enables users to set the amount of time the LCD's backlight will stay lit after engaging the CU'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**.

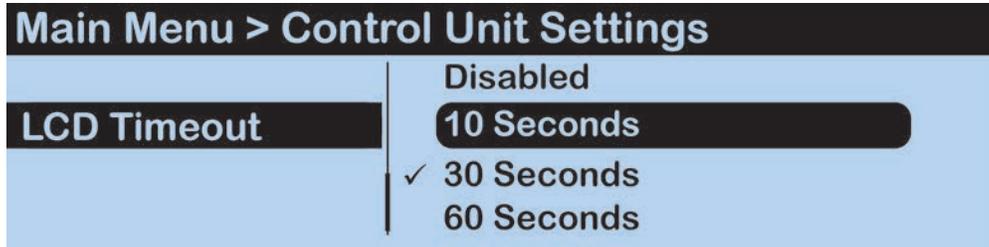


Figure 52 Edit Control Unit LCD Backlight Time Out

LED Brightness

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

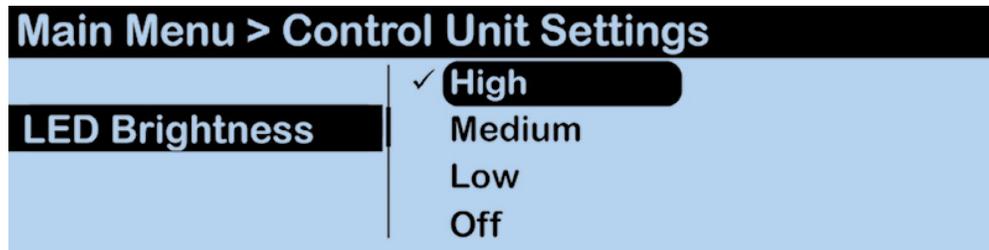


Figure 53 Edit Control Unit LED Brightness

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.

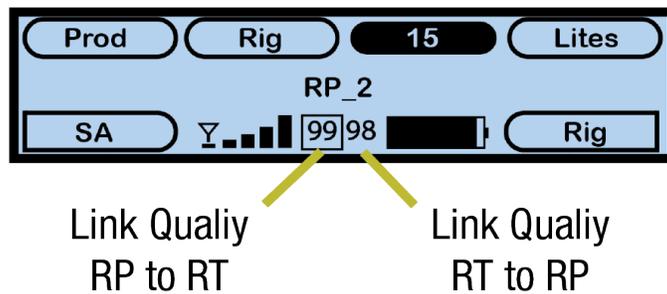


Figure 54 RP Primary Screen LQ Indicator



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

Save Configuration File (CCF)

Changes to the configuration during operation will be saved in real-time. However, if you wish to save a copy of the configuration file for later use, follow these procedures using CrewWare.

1. Make sure your Control Unit(s) are powered on.
2. Launch CrewWare and connect to your CU(s).
3. Go to **File** and click **Save File As...** and save your file to your desired file location.



Saving to USB drive: The required file name format for a CCF uploaded via USB drive is 8 characters or less with no spaces or special characters (e.g., "12345678.ccf"). Also, make sure the USB drive you are saving to has enough available space to save the file (at least 50 KB).



Saving to PC: A CCF can be saved to your PC with a longer name (or even renamed outside of CrewWare) and uploaded to your primary CU via CrewWare. However, the file name displays as a truncated version (the first 16 characters) in CrewWare and in the CU LCD main menu.

4. See "[Upload Configuration File \(CCF\)](#)" on page 38 for more information about how to load the saved file onto a system.

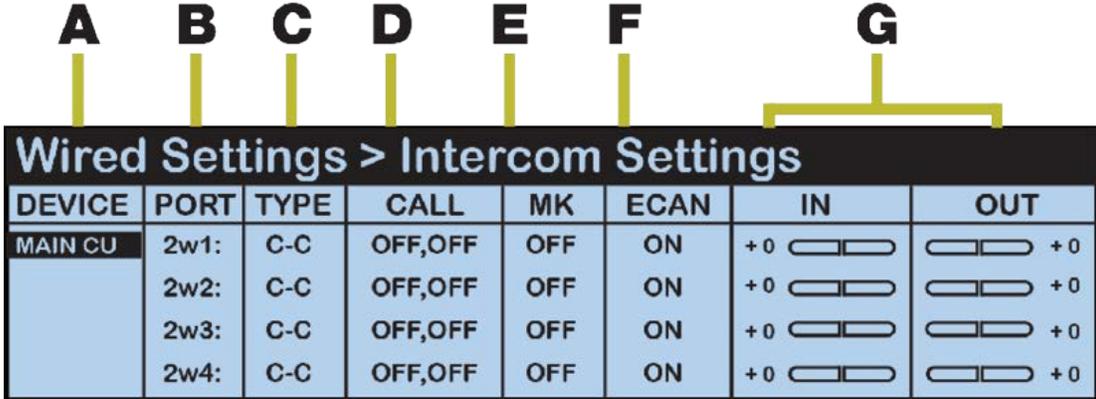
Wired Settings

The CrewCom wired settings can be configured depending on user preferences. The following settings and processes can be found in the Control Unit's (CU's) menu under **Wired Settings**. (You can access this area of the menu by pressing the Wired button on the front of the CU.)

 **Tip:** These settings can also be managed using CrewWare. (See the [CrewWare Manual](#) for more information.)

Intercom Settings Menu

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



The screenshot shows the LCD display titled "Wired Settings > Intercom Settings". Above the display, callouts A through G point to specific elements: A points to the device name, B to the port, C to the type, D to the call settings, E to the MK setting, F to the ECAN setting, and G to the IN and OUT settings.

DEVICE	PORT	TYPE	CALL	MK	ECAN	IN	OUT
MAIN CU	2w1:	C-C	OFF,OFF	OFF	ON	+0 <input type="text"/>	<input type="text"/> +0
	2w2:	C-C	OFF,OFF	OFF	ON	+0 <input type="text"/>	<input type="text"/> +0
	2w3:	C-C	OFF,OFF	OFF	ON	+0 <input type="text"/>	<input type="text"/> +0
	2w4:	C-C	OFF,OFF	OFF	ON	+0 <input type="text"/>	<input type="text"/> +0

Figure 55 Intercom Settings LCD Display

 **Tip:** If you wish to edit the intercom settings via CrewWare, use the CU Management tab.

- 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.

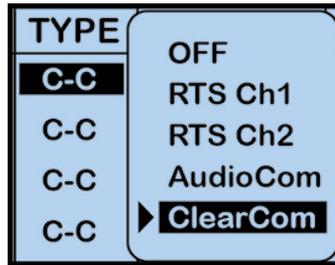


Figure 56 2-Wire Intercom Type Options

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

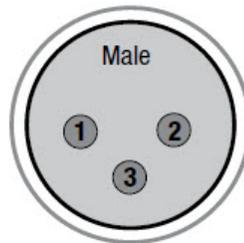


Figure 57 3-Pin Male XLR Pin Out

D. **Call:** Each wired intercom port (2-Wire only) can be individually set to send and receive a CrewCom-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 CrewCom via the respective port. Call signals can still be generated and transmitted by entities across CrewNet. The default setting for Call is **OFF**. See "[Call](#)" on page 96 for more information.

CALL	MK	FCAN
OFF,OFF	IN:OFF	OUT:OFF
OFF,OFF	IN:OFF	OUT:ON
OFF,OFF	IN:ON	OUT:OFF
OFF,OFF	IN:ON	OUT:ON

Figure 58 Intercom Type Options

E. **Mic Kill:** Each wired intercom port (2-Wire only) is capable of receiving a mic kill signal from a connected wired intercom system. Each port is capable of sending a mic kill signal to connected RTS and AudioCom systems. The mic kill signal is passed through to any Conference associated with the intercom port where the signal came through. Turning the Mic Kill signal **OFF** only prevents external mic kill signals from entering or leaving CrewCom via the respective port. Mic Kill signals can still be generated and transmitted by entities across CrewNet. The default setting for Mic Kill is OFF.



Note: CrewCom does not send Mic Kill signals to Clear-Com 2-Wire systems.

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 CU'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 "0." The default setting for 4-Wire Intercom In is "0."

The OUT level control adjusts the outgoing level (from CrewCom) 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 "0." The default setting for 4-Wire Intercom Out is "0."

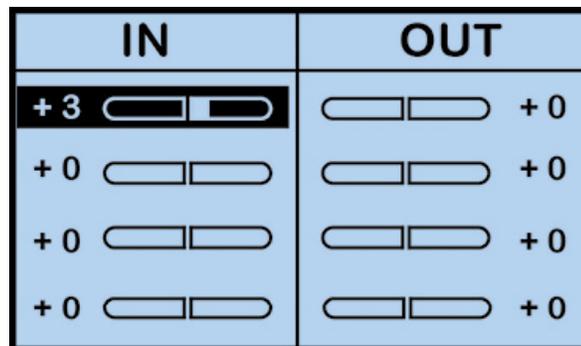


Figure 59 Intercom Type Options

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.

Connect to the Control Unit

Connect a 2-Wire intercom system to the Control Unit's (CU) 2-Wire intercom ports (labeled 1–2 on CCU-22 and labeled 1–4 on CCU-44). Then, configure the connection either via CU or CrewWare.

Configure a 2-Wire Connection via Control Unit

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



Tip: See "[Intercom Settings Menu](#)" on page 71 for more information about navigating this CU menu.

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

- Use the Navigational controls to navigate to the desired setting for a 2-Wire port (CCU-22 ports 1 and 2; CCU-44 ports 1 through 4).
 - 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.
 - Determine if you would like to send and receive Call signals from CrewCom 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 71 for more information.
 - If desired, set Mic Kill to send and receive signals from a connected 2-Wire intercom system. Press Enter to view and select **ON** or **OFF**. See the Mic Kill section of "[Intercom Settings Menu](#)" on page 71 for more information.



Note: CrewCom does not send Mic Kill to Clear-Com 2-Wire systems.

- 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 71 for more information.
- Now that your settings are established, connect the 2-Wire intercom system to the appropriate ports via 3-pin XLR cables/connectors.
 - After connecting the 2-Wire intercom system, initiate Auto Null for the appropriate ports or all ports of this particular CU. See "[Nulling](#)" on page 85 for more information.
 - Adjust IN/OUT audio levels between the CrewCom System and the 2-Wire intercom system as needed.
 - 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

- If you need conferences for 2-Wire other than the default conferences, you will need to create new conferences in CrewWare and assign the new conferences to the wired ports. (See the [CrewWare Manual](#) for more information about creating and assigning Conferences from CrewWare.)

Configure a 2-Wire Connection via CrewWare

See the [CrewWare Manual](#) for more information about this process.

4-Wire Intercom Connectivity

Connect to the Control Unit

Connect a matrix intercom system to the CU's 4-Wire intercom ports (labeled 3–4 on CCU-22, labeled 5–8 on CCU-44, and labeled 1-8 on CCU-08). Then, configure the connection either via CU or CrewWare.

Configure a 4-Wire Connection via Control Unit

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



TIP: See "[Intercom Settings Menu](#)" on page 71 for more information about navigating this CU 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 (CCU-22 ports 3 and 4; CCU-44 ports 5 through 8; CCU-08 ports 1 through 8).
 - 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.
 - If desired, enable Echo Cancellation (ECAN) for the 4-Wire ports. See the Echo Cancellation section of "[Intercom Settings Menu](#)" on page 71 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.
 - 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

4. If you need conferences for 4-Wire other than the default conferences, you will need to create new conferences in CrewWare and assign the new conferences to the wired ports. (See the CrewWare Manual for more information about creating and assigning Conferences from CrewWare.)

Configure a 4-Wire Connection via CrewWare

See the [CrewWare Manual](#) for more information about this process.

More About the CrewCom 4-Wire / RJ-45 Connection

Wiring schemes vary, and it is important to ensure that the cable is wired correctly for proper system operation. CrewCom 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 CrewCom 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 (-)

4-Wire RJ-45 Connections	
RJ-45 Pin #	CrewCom 4-Wire Pin #
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 Control Unit (CU). Audio from the Aux IN connection is routed only to CrewCom devices and is not routed externally to other intercom systems.

Audio supplied to Aux IN can be assigned to any combination of up to 10 possible Conferences. The default setting for Aux IN Level is "0." Conference assignment changes and level adjustments can be performed via CU menu or CrewWare.

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.

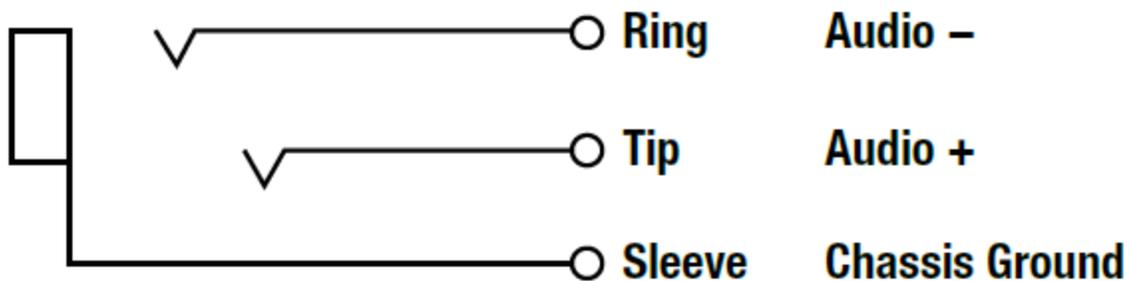


Figure 60 Auxiliary IN/OUT Audio Wiring Diagram

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 using either the CU or CrewWare.

Configure Aux In via Control Unit

Audio supplied to Aux IN can be assigned to any combination of up to 10 possible Conferences under the CU's **Wired Settings** menu.

The default setting for Aux IN Level is "0." To adjust the Aux IN level, 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.



Note: Individual Aux In 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. Aux In assignments can be muted or unmuted from this menu as well.

Wired Settings > Adjust Auxiliary In		
Master Level	Unmuted	-6
Conference 1	Unmuted	-6
Conference 2	Unmuted	-6
Conference 3	Unmuted	-6

Figure 61 Aux IN Level

Configure Aux In via CrewWare

See the [CrewWare Manual](#) for more information about this process.

Auxiliary Out

Audio from the Aux OUT connection can be assigned from any single Conference other than Stage Announce, but no audio sourced from the hard-wired intercom ports is routed to Aux OUT. Audio from the Aux OUT connection comes from any CrewCom audio entity such as Radio Packs (RPs) and the local headset of a Control Unit (CU). The default setting for Aux OUT Level is "0." Conference assignment changes and level adjustments can be performed via CU menu or CrewWare.

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 60](#) 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 using either the CU or CrewWare.

Configure Aux Out via Control Unit

Audio supplied from Aux OUT can be assigned from any single Conference under the **Wired Settings** menu.

The default setting for Aux OUT Level is "0." To adjust the Aux OUT level, 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.

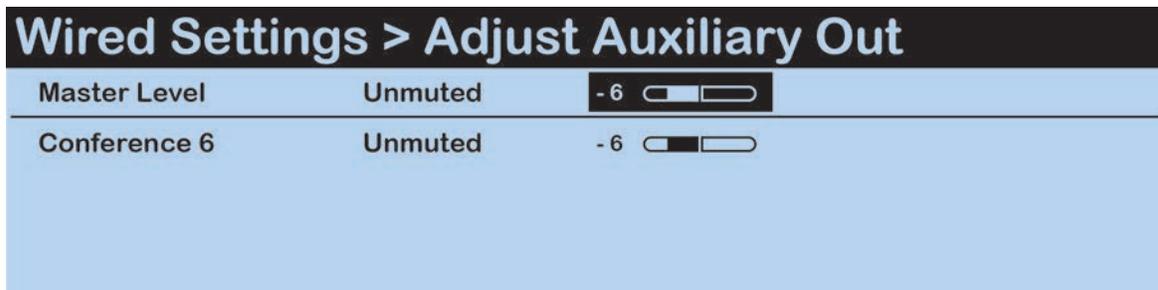


Figure 62 Aux OUT Level

Configure Aux Out via CrewWare

See the [CrewWare Manual](#) for more information about this process.

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 Control Unit (CU) to match line impedance. CrewCom 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 CU 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 CU or from CrewWare.

Auto Null from the Control Unit

During the Auto Null process, the CU 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 CU:

1. Turn off all Talk buttons on wired equipment. Since CrewCom 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 CU, 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.
 - Auto Null with CrewCom 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 RPs as it connects to connected wired systems; however, those wireless RPs will still communicate with one another while the null is in progress.

Wired Settings > Auto Null - All Ports					
DEVICE	PORT	R	L	C	Amplitude
CD000001	2w1	0487	0313	0101	-69dB
	2w2	0481	0299	0115	-69dB
	2w3	0480	0305	0133	-69dB
	2w4	0488	0307	0135	-69dB

Auto Null Completed

Figure 63 Auto Null in Process

- 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.

Auto Null from CrewWare

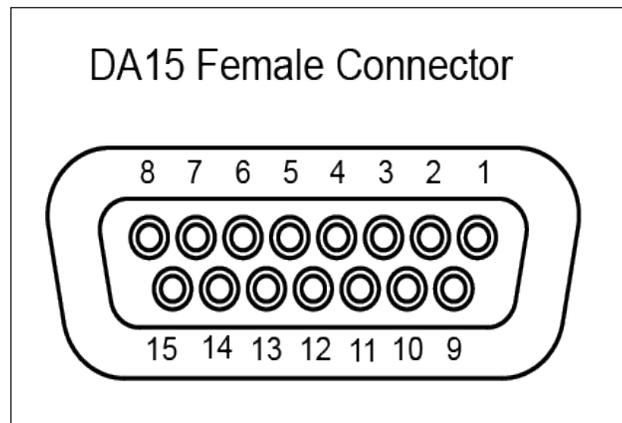
See the [CrewWare Manual](#) for more information about this process.

Relays

CrewCom includes five General Purpose Output (GPO) contact closures for interfacing with other external devices (the Stage Announce (SA) Relay and four additional GPO relays). The user has access to both the normally open and the normally closed contacts for each relay. The rated load for all relay contacts is 0.3 Amp at 125VAC, 1 Amp at 30VDC.

The following pinout is for the DA-15 connector on the rear of the CU:

Pins	Connections
1	Relay 1 Normally Closed*
2	Relay 1 Normally Open*
3	Relay 2 Common
4	Relay 3 Normally Closed
5	Relay 3 Normally Open
6	Relay 4 Common
7	Relay 5 Normally Closed
8	Relay 5 Normally Open
9	Relay 1 Common*
10	Relay 2 Normally Closed
11	Relay 2 Normally Open
12	Relay 3 Common
13	Relay 4 Normally Closed
14	Relay 4 Normally Open
15	Relay 5 Common



*Relay 1 is Stage Announce Relay (Pins 1, 2, and 9)

Figure 64 Relay Pin Diagram

Relay Setup

To connect and enable relays to external General Purpose Output (GPO), connect any (or all) of the relays via the DA-15 Relay connection on the back of the CU. Then, configure the connection via CrewWare.

Configure Relays via Control Unit

Only the Stage Announce relay may be enabled/disabled from the CU's **Wired Settings** menu. (See ["Stage Announce" on the next page](#) for more information about this menu.)

Configure Relays via CrewWare

See the [CrewWare Manual](#) for more information about this process.

Stage Announce

The Stage Announce (SA) function in the Control Unit (CU) 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 from any selected Conferences and is sent to each connected CU's SA audio output.

In addition, a relay closure contact is available via the Relay connector on the CU. 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 CU is present, SA audio will be routed out both (or all) of the CUs' SA ports simultaneously. The SA audio is identical on all CUs 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."

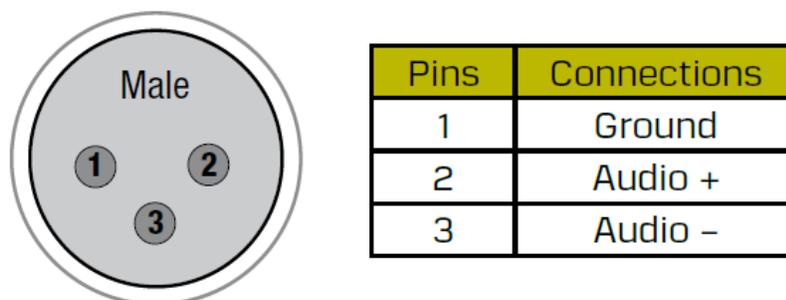


Figure 65 Stage Announce Audio Wiring Diagram

Stage Announce Setup

To connect Stage Announce (SA), connect an audio destination to the SA output via the XLR-3M on the back of the CU. Then, configure the connection either via CU or CrewWare.

Configure Stage Announce via Control Unit

Configure and set the SA audio level via the CU's **Wired Settings** menu.

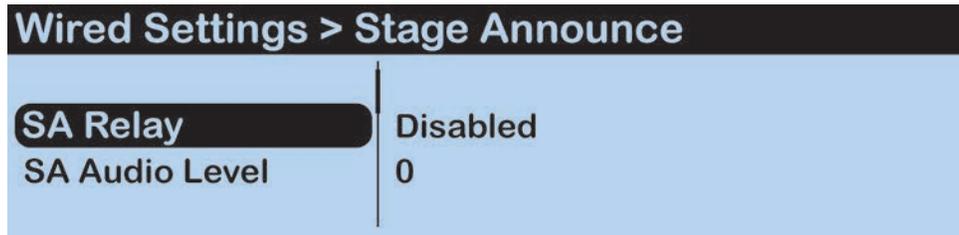


Figure 66 Stage Announce Settings

Configure Stage Announce via CrewWare

See the [CrewWare Manual](#) for more information about this process.

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 Assignments from the Control Unit

1. Determine the CU that the RP is paired to. Profile assignments from the CU can only be performed on RPs that are paired to that CU.
2. Access the CU's **Radio Pack Settings** menu. (Do this quickly by pressing the **Packs** button on the front of the CU.)
3. Choose a method by which to sort the paired RPs (e.g., Sort by Name, Sort by Type, etc.)
4. Select the RP from the list, then select **Device Settings** to view its device settings options.
5. Select **Radio Pack Profile** to view a list of available profiles.
6. Scroll to the desired profile and press Enter to select it.



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 Assignment from the Radio Pack

See the [Radio Pack Manual](#) for more information about this process.

Changing Profile Assignments from CrewWare

See the [CrewWare Manual](#) for more information about this process.

Local Headset

The following settings can be accessed by pressing the Local button on the front panel of the Control Unit (CU) or by pressing Menu and navigating to **Local Headset Settings**.

Selecting the Local Headset Conference

The CU headset connector is a functional user communication point, designed primarily for setup and troubleshooting. The Front Panel Headset allows you to communicate on any one of the Conferences at a time. Select a Local Headset Conference from the list available in this menu option. The default Local Headset Conference setting is "None."

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 +

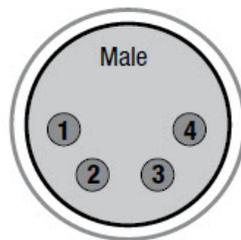


Figure 67 4-Pin XLR Male Local Headset Connection

See the [SmartBoom PRO and SmartBoom LITE data sheets](#) for the pin wiring information for Pliant's SmartBoom headsets.

Local Area Network (LAN) Settings

Dynamic Host Configuration Protocol (DHCP) is a system that allows each component on a computer network to automatically obtain the network address information required for Network Interface Devices to communicate with one another. The CrewCom system can utilize DHCP if it is enabled on your Local Area Network (LAN). To use DHCP, the CrewCom Control Unit (CU) will need to be configured as a DHCP client. If DHCP is not enabled on your LAN, then the CrewCom system can be configured to use static IP Addresses. After the CrewCom system is fully booted-up, and the CU is assigned an IP Address (either through DHCP or manually), CrewWare can connect to the CU.

LAN Configuration via Control Unit

The following settings and processes can be found in the Control Unit's menu under **LAN Settings**. When changing LAN settings from the CU front panel, changes will be immediate. A reboot is no longer required before operation.

TCP/IP Mode

Select either **DHCP Client** or **Manual**.

- **DHCP Client:** Enables automatic LAN communication for the CU. In this mode, when the CU is powered on, it automatically receives an IP Address from the DHCP server (must be connected to the server for it to receive an IP address). Once booted, use this assigned IP address in CrewWare's Login window to connect CrewWare to your CU.
- **Manual:** You'll be required to manually set the IP Address, Subnet Mask, and Default Gateway between your PC and CU to meet the needs of your LAN installation.

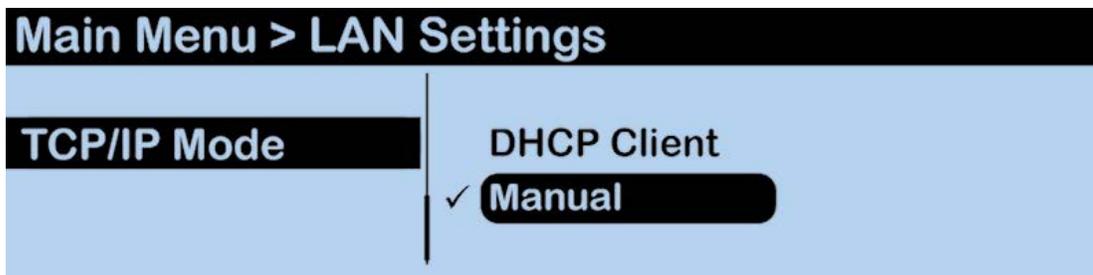


Figure 68 LAN Settings

TCP/IP Address

In DHCP mode: take note of the CU's assigned IP address from this menu, and use it to connect to CrewWare. In Manual mode, input your desired TCP/IP Address on this screen using the CU's navigation buttons. Press the CU's enter button when done to save changes.

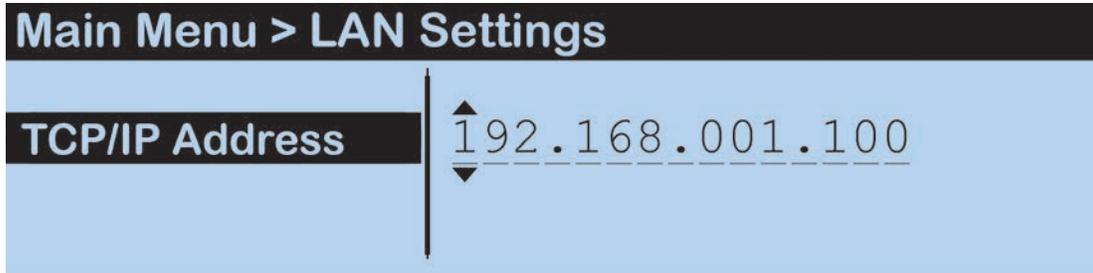


Figure 69 TCP/IP Address Input

Subnet Mask

Input the appropriate Subnet Mask address using the CU's navigation buttons.

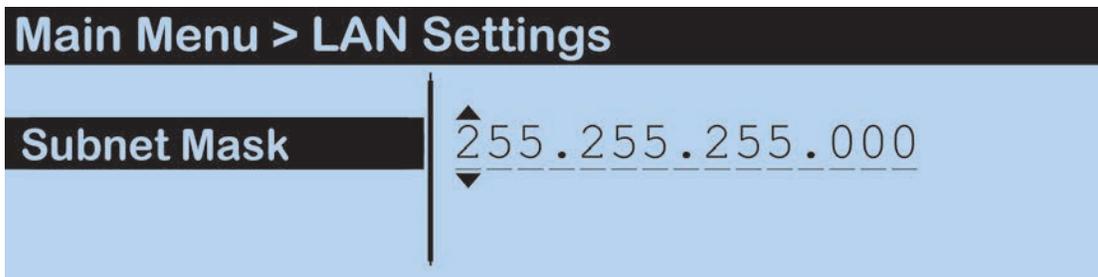


Figure 70 Subnet Mask Input

Default Gateway

Input the appropriate Default Gateway address using the CU's navigation buttons.

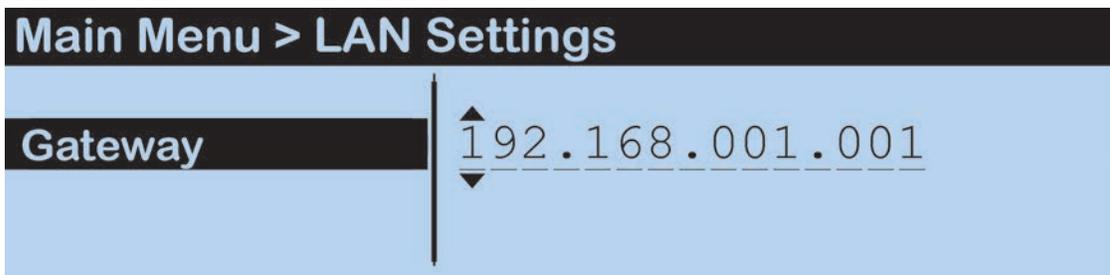


Figure 71 Gateway Input

MAC Address

Reference the MAC Address screen if needed for setting up your LAN connection.

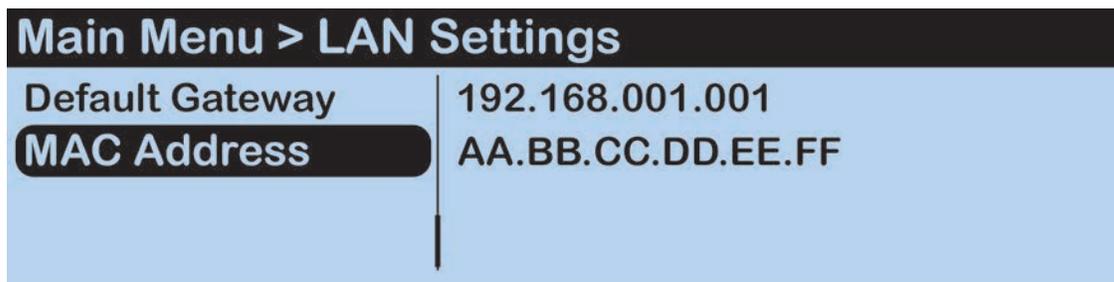


Figure 72 MAC Address Read-Only Screen

Port Number

The default Port value to connect to a CU is **2017**. This setting is not currently viewable from the CU menu, but it is visible from CrewWare.

LAN Configuration via 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.

See ["Set Up Call"](#) below.

Set Up Call

Each CU wired intercom port (2-Wire only) can be individually set to send and receive a CrewCom-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 CrewCom via the respective port. Call signals can still be generated and transmitted by entities across CrewNet. See ["Intercom Settings Menu"](#) on page 71 for more information about this process.

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; see the [CrewWare Manual](#) for the process details.

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

You can lock/unlock the access to your system's device menus from the primary CU menu by selecting **Tech Menu** and then **User Rights** using the CU's front-panel navigation buttons. Select **Change System Level** and then choose either **Admin** or **User**.

Set System Access Level from CrewWare

See the [CrewWare Manual](#) for more information about this process.

Setting Passcode

Set Passcode from Primary Control Unit

Set your system passcode from the primary CU menu by selecting **Tech Menu** and then **User Rights** using the CU's front-panel navigation buttons. Select **Change Passcode** and then use the Up, Down, Left, and Right buttons to enter a new four-digit passcode for your system.



Note: Transitioning from User Level to Admin Level does not require a passcode if you set the passcode to "0000." Doing so is considered "disabling" user access rights.

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:

Control Unit Factory Settings		
Control Unit Setting	Control Unit Default	Reset by "Restore Defaults"
CU Name (Long)	CCU_xx_01	X
CU Name (Short)	CCU_xx_01	X
Contrast	3	X
Backlight Brightness	High	X
Talk LED Brightness	High	X
Sync Priority	Master	X
Intercom Type	OFF	X
Intercom Call	OFF	X
Intercom Mic Kill	OFF	X
Intercom Echo Can	ON (2-Wire); OFF (4-Wire)	X
Intercom IN (2w/4w)	2W: 0 4W: 0	X
Intercom OUT (2w/4w)	2W: 0 4W: 0	X
Auxiliary IN	0	X
Auxiliary OUT	0	X
SA Relay	Enable	X
SA Audio	0	X
Local Conference	None	
Local Mic Type	Auto Detect	X
Local Mic Gain (Dynamic)	6 (+23 dB)	X
Local Mic Gain (Electret)	3 (-4 dB)	X
Local Sidetone	Med (-12 dB)	X
TCP/IP Mode	Manual	X
Access Rights	Admin	X *

*Resets only if system was Auto Configured; does not reset if CCF was uploaded.



Note: Restoring CU factory defaults, as well as clearing an RP's memory, erases RP pairing information. If you have saved the CCF (See "[Save Configuration File \(CCF\)](#)" on [page 70](#)), the pairing is still visible in the CCF. For information about clearing RP memory, see the [RP Manual](#).



CHAPTER 6

PRODUCT SPECIFICATIONS

This chapter consists of the following sections:

Control Unit Specifications **102**

Control Unit Specifications

Control Unit Specifications		
Specification*	CCU-22	CCU-44
Hardwired Intercom Audio Channels	4	8
Active Radio Packs (per CU)	Normal Operational Mode: 18 (requires use of at least 3 RTs.) High Density Operational Mode: 64 (requires use of at least 2 RTs.)	
Total No. of Active Radio Packs Supported (per system)	Normal Operational Mode: 72 High Density Operational Mode: 256	
No. of Paired Radio Packs Supported (per CU)	255	
USB Ports	(1) USB Type A; (1) Micro USB	
Front Panel LCD Display	512 × 128 resolution	
Stage Announce and GPO Closures	5 Relays via DA-15	
CrewNet Ports (supports two connections)	(2) RJ-45 for copper; (1) duplex LC for Single Mode Fiber	
Sync In Ports (supports one connection)	(1) RJ-45 for copper; (1) duplex LC for Single Mode Fiber	
2-Wire Intercom Connection	2 ports via XLR 3F with XLR 3M loop (2 ports)	4 ports via XLR 3F with XLR 3M loop (4 ports)
2-Wire Compatibility	Clear-Com, RTS, and AudioCom (Balanced)	
4-Wire Intercom Connection	2 ports via RJ-45	4 ports 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	
LAN Port	(1) RJ-45 10/100 BASE-T 802.3 compliant	
Power Input/Connector	100–240V ~ 50–60 Hz, 0.8A	

Control Unit Specifications		
Specification*	CCU-22	CCU-44
Dimensions	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)	2.9 kg (6.5 lbs)
Operating Environment	-20° to 50° C (-4° to 122° F); 10% to 90% Humidity.	
Maximum CrewNet Line Length	Copper 100 m (330 ft.); Fiber 10,000 m (32,800 ft.)	
Maximum Altitude	2,000 m (6,562 ft.)	
RoHS Compliant	Yes	

***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.



CHAPTER 7

PRODUCT SUPPORT

This chapter consists of the following sections:

Product Support	105
Returning Equipment for Repair or Maintenance	105

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** 107
- Cleaning 107
- Temperature and Humidity 107

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.



CHAPTER 9

LICENSE AND COMPLIANCE INFORMATION

This chapter consists of the following sections:

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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 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 meets all requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareillage numérique de la classe A répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement.

3. South Korea Notices

A. The CrewCom Control Unit (CCU-22, CCU-44, CCU-08) complies with EMC requirement KN 32/35 and is labeled with the KC mark and RRA (Radio Research Agency) registration number.

CrewCom Compliance Numbers

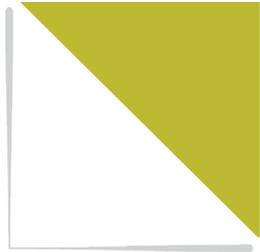
Model Numbers	Compliance Model No.
CCU-22	CU2510
CCU-44	CU2510

CHAPTER 10

WARRANTY INFORMATION

This chapter consists of the following sections:

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Parts Limited Warranty	113



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.

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.