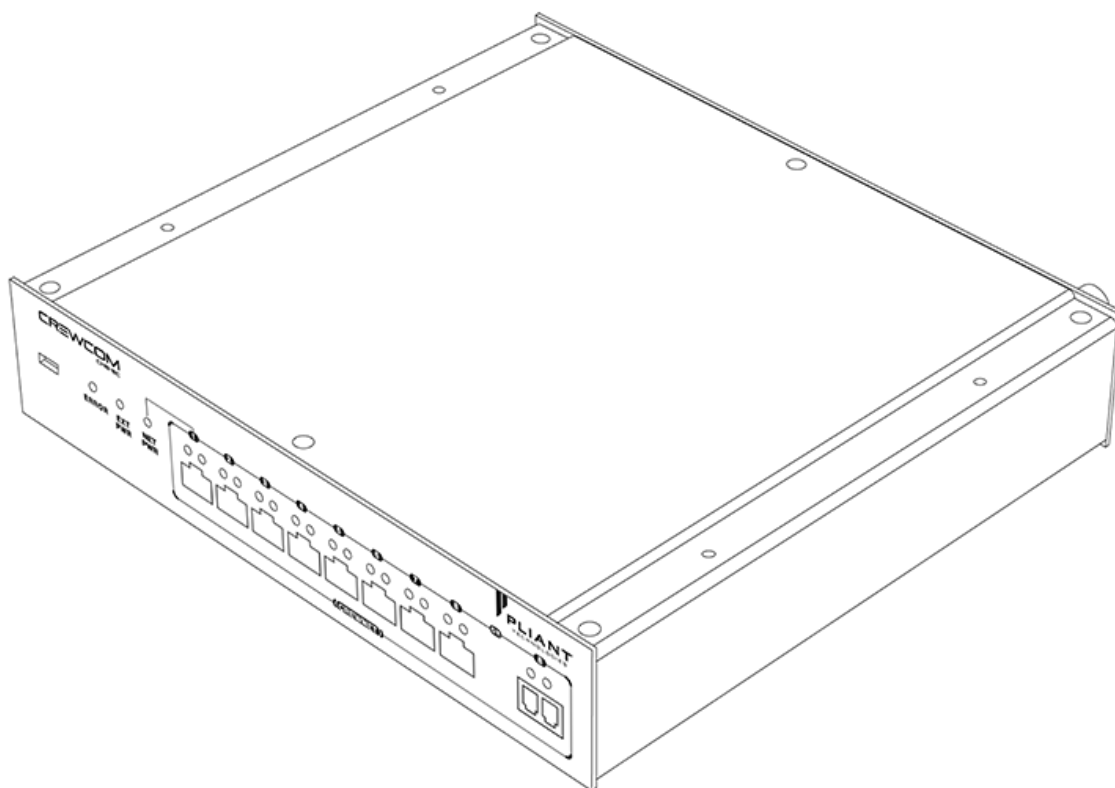


Hub

OPERATING MANUAL

Version 1.12



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 40.

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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 1.12.

This document applies to model CHB-8C, CHB-8C-02, and CHB-8F.

Document Reference: D0000217_J

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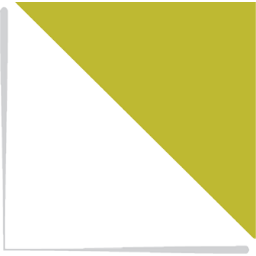
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CHAPTER 1

SAFETY INFORMATION

This chapter consists of the following sections:

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Safe Operation Recommendations	2
Safe Installation Recommendations	3
Power Information	3

Hub Safety Information

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



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



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

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

Safe Operation Recommendations

- Install and operate in accordance with manufacturer's instructions.
- Do not submerge the Hub 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.
- Ensure the device's cord remain free from areas of foot traffic. Do not allow cords to become crimped, twisted, or frayed.
- Clean only with a dry cloth. Do not spray household cleaners or water onto the cloth. Never spray household cleaners or water onto any part the Hub.
- Use only attachments/accessories that are specifically made for or certified by Pliant Technologies with the Hub. 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 Hub during periods of inclement weather and after use.

- Refer all Hub service to qualified Pliant Technologies service personnel. There are no user-serviceable parts inside the Hub. Opening the product may expose dangerous electrical components, which will result in product failure. Any attempt to self-service or self-repair the unit will void the product warranty.
- Service is required if the Hub 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 Hub 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 "[Hub Specifications](#)" on [page 38](#).
- 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 in inclement weather. When working outdoors or near water, always connect the system into a ground-fault interrupting circuit.

AC Power Connection Safety

- When using local power to power the Hub, always connect the power cord to the CrewCom Hub's external power supply before connecting to the outlet.
- CrewCom Hubs may be powered by an external power supply. The cord to connect the external 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?

- CrewCom Copper Hub (1) OR CrewCom Fiber Hub (1)
- USB A to Micro B Cable
- Cat 5e Cable, 6 ft. (1.8 m)
- Fiber Cable, 6 ft. (1.8 m) (Fiber Hub Only)
- Rubber Feet
- 48VDC External Power Supply*
- Product Overview Guide
- Warranty Extension Registration Card**



***Note:** Power Supplies vary by CrewCom Hub model, and they are not interchangeable. Always ensure your Hub uses a compatible power supply: PPS-48V-02 with CHB-8C-02 and CHB-8F; PPS-48V with CHB-8C.



****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 46.

Additional Items Required

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

- Control Unit (includes AC Power Cord; USB A to Micro B Cable; Cat 5e cable, 15 ft. (4.6 m); and USB Flash Drive)
- Radio Transceiver (includes USB A to Micro B cable; Cat 5e cable, 15 ft. (4.6 m); Mounting Hardware/Bracket; and 2 Omni-Directional Antennas)

- Radio Pack (includes Lithium-Polymer Rechargeable Battery, USB A to Micro B Cable, Multi Blade Worldwide Battery, and Charger/Power Supply)
- Headset

Optional Item(s)

- CrewCom-Hub-compatible rack ears (PAC-RMK-S and PAC-RMK-D) are available for purchase separately if needed.

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 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 14 and "[Profiles](#)" on page 14 for more information.

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

CrewCom Configuration File Defaults

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

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

Determining Which CCF is Active

The CCF that is currently active for the CrewCom system is named in the top banner of the Primary CU's main menu. The Primary CU will also have (Primary) next to the CCF name. If the system was configured using Auto Configuration, the CCF name will show as "AutoCfg." If the unit is a non-primary CU in a system, the CCF name will show as the Primary CU's name with (Non-Primary) at the end. For more information on adding a non-primary CU, see "[Add More CrewCom Devices](#)" on page 35.



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.

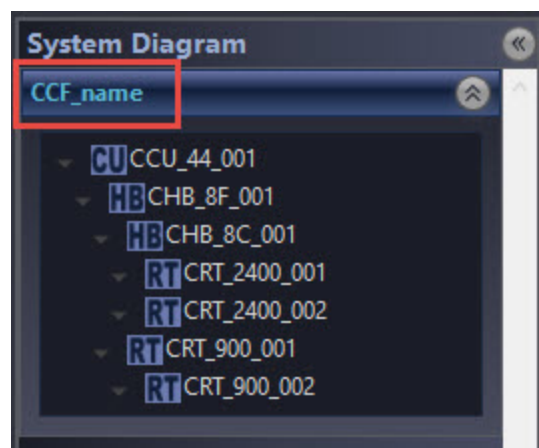


Figure 4 CCF Name in CrewWare

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

Profiles

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

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

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)

Pliant Technologies latest CrewCom firmware and software update, Version 1.10, adds a new major feature, High Density Operational Mode. 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.



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

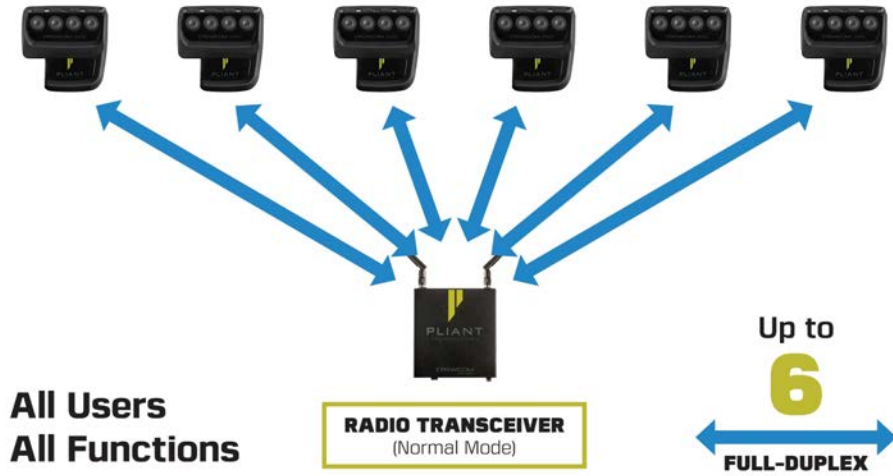


Figure 5 Normal Mode

HIGH DENSITY MODE

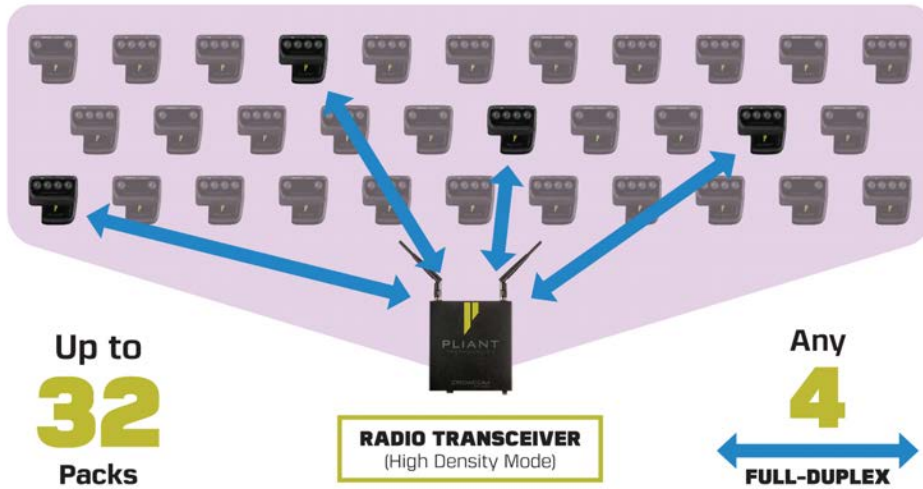
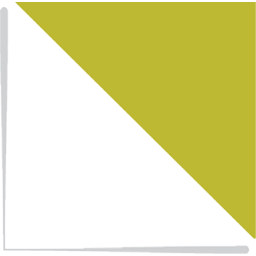


Figure 6 High Density Mode



CHAPTER 3

PRODUCT OVERVIEW

This chapter consists of the following sections:

Hub	20
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Fiber Hub	24

Hub

The CrewCom Hub operates on CrewNet and allows a variety of CrewCom devices to be interconnected. The Hub consists of CrewNet ports that enable users to add more CrewCom devices, such as Radio Transceivers, in order to extend the connection of their CrewCom system.

The Hub is a 1RU half-rack-mount capable device. A maximum of eight hubs (within up to four Hub layers) can be on a CrewCom system. See "[Hub Layers](#)" on [page 31](#) for more information.

There are two types of CrewCom Hubs: the Copper Hub and the Fiber Hub. You may mix both types of hub in a single CrewCom system.

Copper Hub

The Copper Hub (CHB-8C) has eight ports for copper connections and one fiber-optic port. Port 8 is an “either/or” connection. The eighth copper port and the fiber port cannot operate simultaneously; the user must choose one or the other. See ["Power Over CrewNet" on page 15](#) for more information about choosing between copper and fiber.



Note: The front and rear Copper Hub labels and LEDs are identical and display identical alerts. This allows for both front and/or rear face mounting. See the figure below.

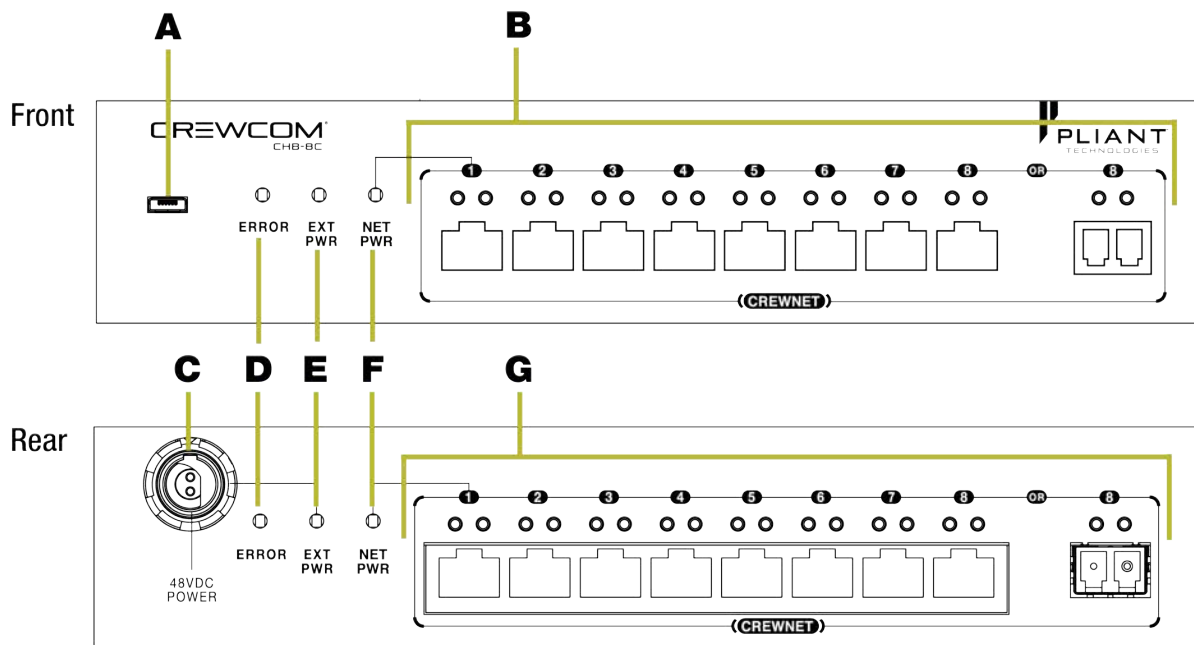


Figure 7 Copper Hub Front and Rear View

- A. **USB Connection:** Connects Hub to a computer to update firmware. See the CrewWare Manual for more information on updating firmware.
- B. **CREWNET Port Labels and Status LEDs for Ports 1–8:** The front and rear Copper Hub labels and LEDs are identical and display identical alerts. The port status LEDs indicate the CrewNet connection status. See ["Hub LEDs" on page 36](#) for more LED information.

C. **48VDC Power Connection:** Power connection for the Pliant 48VDC Power Supply (PPS-48V-02 included), which allows the Hub to receive external (local) power.

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.

D. **ERROR LED:** Device error status indicator. This LED function is currently not available. See ["Hub LEDs" on page 36](#) for more LED information.

E. **External (Local) Power (EXT PWR) LED:** Indicates that external (local) power is being provided via a Pliant 48VDC Power Supply. See ["Hub LEDs" on page 36](#) for more LED information.

F. **Network Power (NET PWR) LED:** Indicates the Hub is receiving PoC via Port 1. The LED indicates the presence and strength of this PoC. See ["Hub LEDs" on page 36](#) for more LED information.

The Hub must be connected to Port 1 via a Cat 5e (or greater) copper cable in order for it to receive PoC. If PoC is not used, the Hub must be powered externally by a Pliant 48VDC Power Supply.

- G. **CREWNET Ports 1–8 and Status LEDs:** The CrewNet ports allow the Hub to connect to the CrewCom Control Unit, Radio Transceivers, and other Hubs, supporting a proprietary network design where all devices are part of a CrewCom Configuration File that shares data, timing synchronization, and audio. Ports 1 through 7 are copper (RJ-45, Cat 5e or greater); Port 8 can be either the last copper port or the separate duplex LC Single Mode Fiber port, and only one may be used at a time. See ["Hub LEDs" on page 36](#) for more LED information.




Copper Hub Power Tips: Port 1 cannot power devices. It can only accept power, and this power is indicated with the NET PWR LED. Since Port 1 cannot source power to downstream devices, even if the Hub is locally powered, any device connected to this port will require its own local power supply. 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.

Each port's status LEDs indicate the status of the CrewNet connection. See ["Hub LEDs" on page 36](#) for more LED information.

Fiber Hub

The Fiber Hub (CHB-8F) functions identically to the Copper Hub, except it has eight ports for fiber optic connections and one copper port.

Port 1 is an “either/or” connection, and use of Port 1 is required for downstream operation of ports 2–8. The first fiber port and the copper port cannot operate simultaneously; the user must choose one or the other. See ["Power Over CrewNet" on page 15](#) for more information about choosing between copper and fiber.

 **Note:** The front and rear Fiber Hub labels and LEDs are identical and display identical alerts. See the figure below.

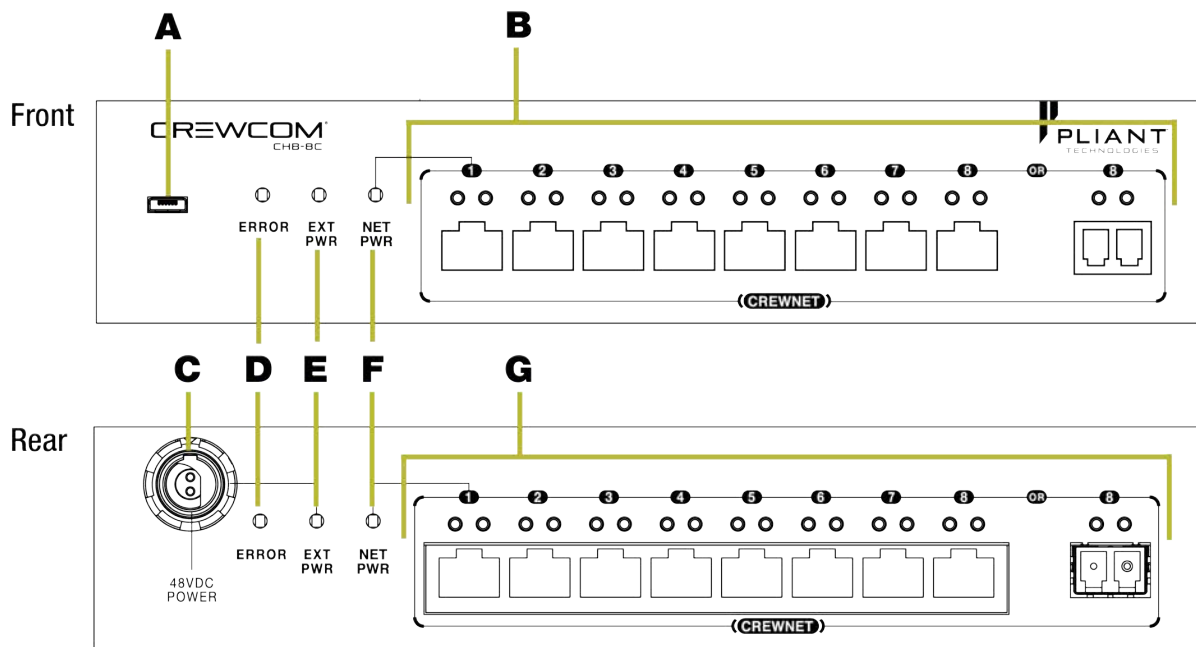


Figure 8 Fiber Hub Front and Rear View

- A. **CREWNET Port Labels and Status LEDs for Ports 1–8:** The front and rear Fiber Hub labels and LEDs are identical and display identical alerts. The port status LEDs indicate the CrewNet connection status. See ["Hub LEDs" on page 36](#) for more LED information.

B. **CREWNET Ports 1–8 and Status LEDs:** The CrewNet ports allow the Hub to connect to the CrewCom Control Unit and Radio Transceivers, supporting a proprietary network design where all devices are part of a CrewCom Configuration File that shares data, timing synchronization, and audio. Ports 2 through 8 are duplex LC Single Mode Fiber ports; Port 1 can be either the first fiber port or the copper (RJ-45, Cat 5e or greater) port, and only one may be used at a time. See "[Hub LEDs](#)" on [page 36](#) for more LED information.



Note: Port 1 (copper only) is only capable of PoC input, and Port 1 cannot supply PoC output. Either copper or fiber use of Port 1 is required for downstream operation of ports 2–8.



Fiber Hub Power Tips: Port 1 (copper only) cannot power devices. It can only accept power, and this power is indicated with the NET PWR LED. Either copper or fiber use of Port 1 is required for downstream operation of ports 2–8. Since Ports 1–8 cannot source power to downstream devices, even if the Hub is locally powered, any device connected to a Fiber Hub will require its own local power supply. 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.

Each port's status LEDs indicate the status of the CrewNet connection. See "[Hub LEDs](#)" on [page 36](#) for more LED information.

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) .

How to Install Hubs

Determine a location for your Hub.

- If rack-mounting, secure the Hub using its rack-mounting hardware. Hubs can be mounted either single or two side by side. (Mounting hardware, PAC-RMK-S and PAC-RMK-D, sold separately).
- Or place the device on a clean, flat surface. For your convenience, stick-on rubber feet are included with the Hub.

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.

How to Connect CrewNet to Hubs

When your system includes a Copper or Fiber Hub, it should also be connected to CrewNet via its available CrewNet ports.

CrewNet Connectivity

RJ-45 Copper Ports - Use the supplied 6.6 ft. (2 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 Power Over CrewNet (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. To ensure best performance, especially with larger CrewCom configurations and longer cable lengths, Pliant recommends utilizing the supplied 48VDC power supply (PPS-48V-02) to locally power each Hub. However, powering a Copper Hub and the devices connected to it via PoC may be advantageous in some smaller configurations. See "[Power Over CrewNet](#)" on page 15 for more information.

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).

Hub Layers

Any additional Hub cascaded from a previous Hub is considered a new Hub layer. Cascading can be direct from a previous Hub or through another CrewNet device. (See a diagram of some possible Hub configurations below.) A helpful way of determining Hub layers is to count how many Hubs you pass through to reach the primary CU, including the starting Hub.

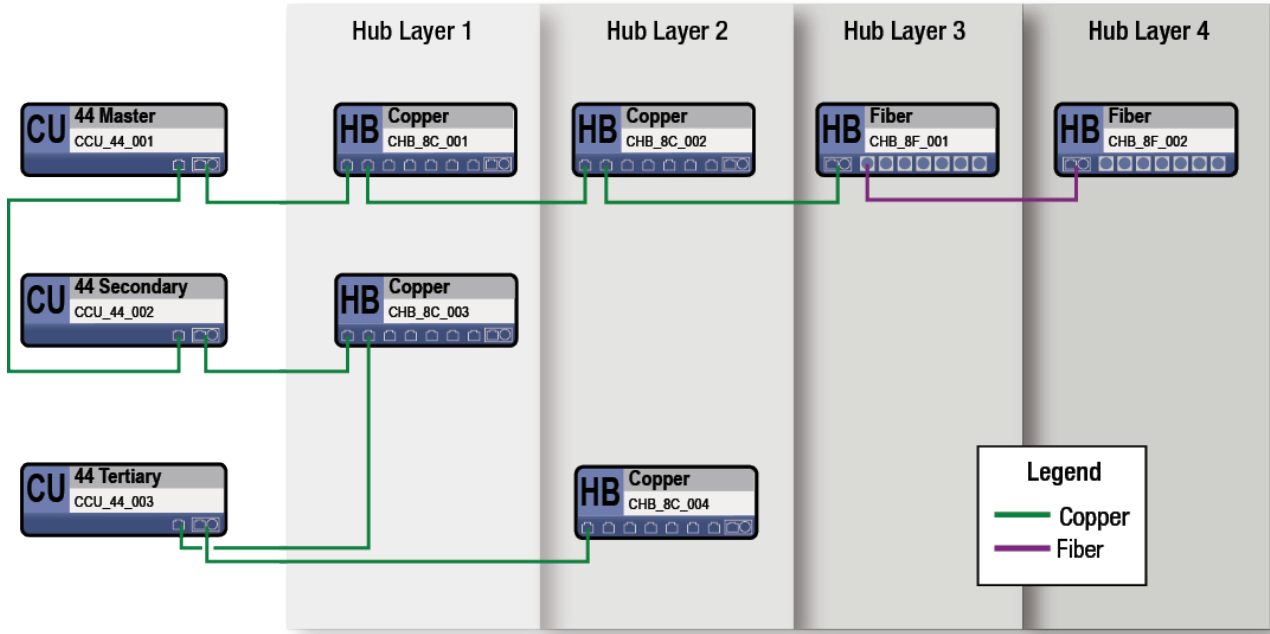


Figure 9 Hub Layer Examples

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 the [Control Unit Manual](#) for a walk-through of the CU prompts.



Note: Hubs cannot be Auto Configured.

- Load Configuration: You can load a CCF via USB drive. See the [Control Unit](#) and [CrewWare](#) Manuals 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 the [Control Unit Manual](#) 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 the [RP Manual](#) for instructions on setting up and using Radio Packs with your system.

Name a Device

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



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

Hub name customization can only be performed from CrewWare. Please refer to the [CrewWare Manual](#) for information about this process.



CHAPTER 5

OPERATION

This chapter consists of the following sections:

- Add More CrewCom Devices 35**
- Hub LEDs 36**

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:



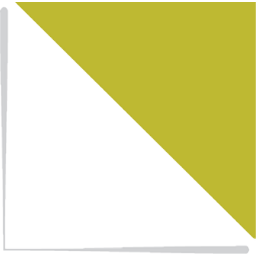
Note: To add more CrewCom devices to a system that has been Auto Configured, restore factory defaults on the CU and Auto Configure again with all devices connected. Up to 3 RTs can be Auto Configured; Hubs cannot be Auto Configured. See the [Control Unit Manual](#) . To add a non-primary CU to a system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

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 uploading the configuration file (CCF).)
2. Connect the additional CrewCom device(s) via an available CrewNet RJ-45 Copper or duplex LC Fiber port.

Hub LEDs

Each LED on the Front and Rear of the Hub display identical connection and power status information, allowing the user to monitor the device easily from both a free-standing or rack mount configuration.

Hub LED Descriptions		
Connection/LED	Description	
ERROR LED	This LED function is currently not available.	
EXT PWR LED	Green – External (local) power is present.	
	Off – No external (local) power is present.	
NET PWR LED	Green – Power-over-CrewNet (PoC) is adequate for operation with current connections.	
	Off – No PoC is present.	
CREWNET Status 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.



CHAPTER 6

PRODUCT SPECIFICATIONS

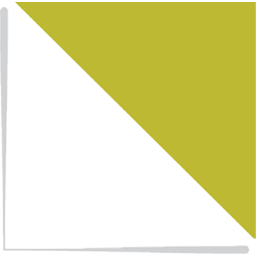
This chapter consists of the following sections:

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Hub Specifications

Hub Product Specifications		
Specification*	CHB-8C	CHB-8F
CrewNet Ports (8 total connections)	(7) RJ-45 for copper; (1) RJ-45 for copper or duplex LC for Single Mode Fiber	(7) duplex LC for Single Mode Fiber; (1) RJ-45 for copper or duplex LC for Single Mode Fiber
Maximum CrewNet Line Length	Copper 330 ft. (100 m); Fiber 32,800 ft. (10,000 m)	Copper 330 ft. (100 m); Fiber 32,800 ft. (10,000 m)
External Power In	48VDC Power Supply	48VDC Power Supply
Power-over-CrewNet (PoC) In	Port 1 (RJ-45)	Port 1 (RJ-45)
Power-over-CrewNet (PoC) Out	Sourced by PoC: Ports 2–8; Sourced by external power: Ports 2–8	N/A
Dimensions (L × W × H)	8.62 in. × 1.73 in. × 8.68 in. (21.9 cm × 4.4 cm × 22 cm)	8.62 in. × 1.73 in. × 8.68 in. (21.9 cm × 4.4 cm × 22 cm)
Weight	1.75 lbs (794 g)	1.75 lbs (794 g)
Operating Environment	-20° to 50° C (-4° to 122° F); 10% to 90% Humidity.	-20° to 50° C (-4° to 122° F); 10% to 90% Humidity.
Maximum Altitude	6,562 ft. (2,000 m)	6,562 ft. (2,000 m)
RoHS	Yes	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	40
Returning Equipment for Repair or Maintenance	40

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

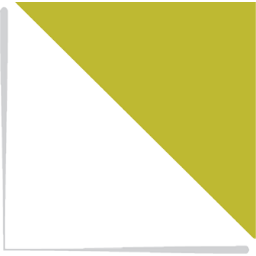
Visit www.plianttechnologies.com for product support, documentation, and live chat for help. (Live chat available 08:00 to 17:00 Central Time (UTC-06:00), Monday-Friday.)

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

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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.

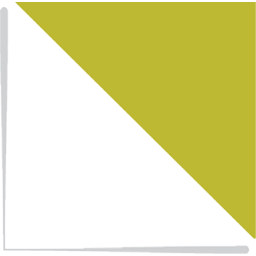
All electronic devices can be susceptible to particulate contamination. If yours are exposed to an extremely dusty environment, contact Pliant's Customer Service for internal cleaning.

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 Hub (CHB-8C, CHB-8F) complies with EMC requirement KN 32/35 and is labeled with the KC mark and RRA (Radio Research Agency) registration number.

CrewCom Compliance Numbers

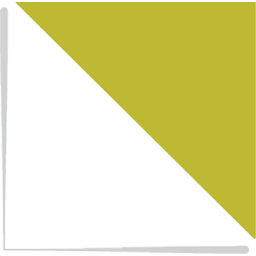
Model Numbers	Compliance Model No.
CHB-8C, CHB-8C-02	HB2520
CHB-8F	HB2521

CHAPTER 10

WARRANTY INFORMATION

This chapter consists of the following sections:

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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.