DIAD 6

Charge Rack and Wireless Charge Rack Manual

Models CN85-CR and CN85-WCR

Agency Information

USA

FC *FCC Part 15 Subpart B Class A*

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet helpful: "Something About Interference." This is available at FCC local regional offices. Any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified in this document are the responsibility of the user. The correction is the responsibility of the user.

Use only shielded data cables with this system.

⚠ Any changes or modifications made to this equipment may void the FCC authorization to operate this equipment.

Canadian Compliance

This Class A digital apparatus complies with Canadian ICES-003. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Conformit é à la r èglementation canadienne

Cet appareil num érique de la Classe A est conforme à la norme NMB-003 du Canada. Son fonctionnement est assujetti aux conditions suivantes : (1) Cet appareil ne doit pas causer de brouillage pr éjudiciable. (2) Cet appareil doit pouvoir accepter tout brouillage re çu, y compris le brouillage pouvant causer un fonctionnement ind ésirable.

Europe

CE In accordance with Article 10.2 in Directive 2014/53/EU(RED), this device can be operated in at least one Member State without infringing applicable requirements on the use of radio spectrum.

Table of Contents

Introduction

This document explains how to install, use, maintain, troubleshoot and service the DIAD 6 Charge Rack. Only designated personnel with an appropriate level of technical training should attempt to repair the Charge Rack.

Deployment Plan

A pre-alert notice will be sent to each site prior to the manufacturer sending the DIAD 6 Charge Rack. The rack will be sent to the site approximately eight weeks prior to the first operational date of use. The Charge Rack is to be installed no later than the weekend prior to the first operational date of use.

Technical Support

Call the local Technical Service Center (TSC) at 888-UPS-TECH (888-877-8324) for all problems or questions concerning the operation of the Charge Rack.

Definitions

DIAD Delivery Information Acquisition Device

The DIAD 6 is the sixth generation of the DIAD concept. This device is based on the Windows Mobile operating system and contains an internal battery that must be recharged on a daily basis.

DIAD 6 Charge Rack

The Charge Rack holds and charges the DIAD 6s. Each rack can contain up to thirty DIAD 6s. The DIAD 6 Charge Rack has the same exact footprint as the DIAD 5 Charge Rack, permitting quick installation and replacement of existing hardware.

DIAD 6 Charge Rack Wall Mounting Frame

A mounting frame is used to wall mount the Charge Rack on a variety of materials and surfaces. The mounting frame has a large number of slots open that allow maximum flexibility in meeting a variety of installation conditions.

DCS

DCS (DIAD Communication System) is a software program that runs on a computer within the operating center. This program controls the upload/download of the DIADs, queries and reports, and communication with other networked systems such as GTS, DIALs, etc.

DIAD Server

The software program allows the DCS program to communicate with the DIAD 6s utilizing an 802.11 wireless network.

How to Use this Manual

The following icons are used in this manual to identify special safety and operational concerns.

The **WARNING** icon identifies conditions or practices that could result in personal injury or loss of life.

The **CAUTION** icon identifies conditions or practices that could result in damage to the equipment or other property.

The **NOTE** icon is used to identify a special note or reminder.

The **APPROVED** icon is used to identify an approved and recommended procedure.

Specifications

Dimensions	
Height	15 1/4 inches (387 mm)
Width	47 3/4 inches (1213 mm)
Depth	6 3/4 inches (171 mm)
Depth (with Terminals and Side Guards)	11 inches (279 mm)
Weight	
Without DIADS	61.0 lbs (27.7 kg)
With Side Guards	68.2 lbs (30.9 kg)
With Side Guards and DIADS (30)	107.5 lbs (48.8 kg)
Input Power	
Input Voltage	90 - 264 VAC; 47 - 63 Hz
Current	3.5A @ 115VAC; 1.75A@230VAC
* Only 120 VAC 60Hz is approved for use in the United States (UL Listed) and Canada (CSA Certified).	
Temperature Range	
Operating Range	32 - 95 °F (0 - 35 °C)
Required Installation Location	In an office or climate-controlled environment that has a temperature range between 45 °F and 85 °F (7 ° and 29 °C).
RF Specification	
Operating Frequency	144KHz
Max. TX H-field	

Note *The ambient temperature of the mounting location must remain between 32 °F and 95 °F (0 °C and 35 °C). Charging is not guaranteed if the ambient temperature exceeds these limits.*

Model and Serial Numbers

A label is located on the far left side of the Charge Rack that contains the model and serial number.

**Serial
Number
Label**
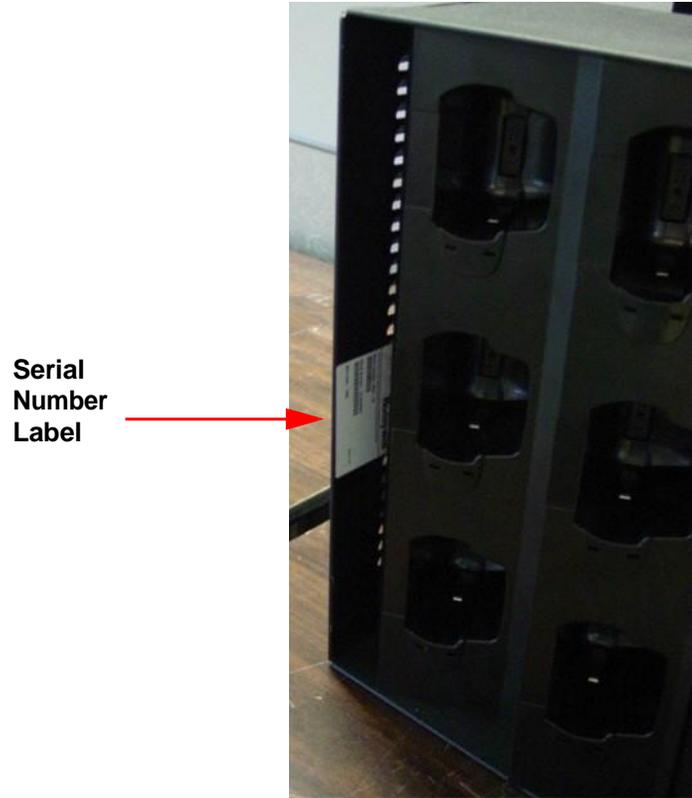
Safety

This section identifies safety considerations involved in assembling and operating the DIAD 6 Charge Rack.

Grounding

- **Avoid electric shock from any equipment used for the installation by supplying power from a properly grounded outlet.**

Hazardous Waste

- **Dispose of waste products properly, according to district procedure and federal, state and local regulations.**

Environment

- *This equipment is intended for installation in an area that is not normally subject to conductive dust or weather. Do not install near other equipment or machines that routinely produce conductive dust. Temperature extremes will affect the charging rates of the DIADs.*

Power Cords

- *The Charge Rack power must be supplied from a properly grounded outlet. The power outlet must be near the equipment and easily accessible after the equipment is installed.*

- *Power strips and extension cords should not be used.*

Servicing

- **Do not remove panels or attempt to service this equipment unless you are qualified to do so.**

- **After removing power from the rack, wait 15 minutes before servicing the unit to avoid shock.**

- *Pinched cables could cause serious damage to equipment. Always be aware of cable position while removing or replacing any parts.*

Stability

• *The Charge Rack must be firmly fastened to a wall with enough room remaining to allow easy access.*

Installing the Charge Rack

Inspection of the DIAD 6 Charge Rack

The DIAD 6 Charge Rack will be shipped by Honeywell Scanning and Mobility, approximately eight weeks prior to the center's first day use of DIAD 6s. Upon arrival the shipment needs to be inspected by Site/District coordinator for any shortages or damages.

Package Contents

Item (Quantity)	Part Number
DIAD 6 Charge Rack (1)	CN85-CR (wired) CN85-WCR (wireless)
Power Cord, US, IEC 320-C13 (1)	77900506E (with ferrite PN 10008320 attached)
Side Guard Kit (1) containing: 　Right Guard Panel (1) 　Left Guard Panel (1) 　Screw 8-32x1/2" (4)	99EX-CR-NRGUARDKIT
Regulatory Sheet (1)	n/a

Reporting Shortages or Damages

Immediately report any problems with the shipment to the District TSG Manager. District TSG should contact Julie Rutt via email (nat1jar@ups.com) with the following information:

• RRDDSLIC of the location that is missing equipment or received damaged parts.

• The serial number of the damaged/missing part(s).

• The tracking number for the missing/damaged equipment.

Receiving Replacement Parts

To obtain replacement parts for defective Charge Rack components, please refer to the following web site for information regarding part numbers and costs:
http://wss.inside.ups.com/sites/CRA/syse/Projects/DIAD V/Troubleshooting, FAQ, and Procedures/DIAD V Accessories and Charging Rack Part List.pdf

Charge Rack Installation

Scheduling the Installation

TSG, Plant Engineering, and the operating center need to coordinate the optimum time for Charge Racks to be installed utilizing the locations that were determined during the wireless site survey conducted by TSG. It is imperative that the DIAD 6 Charge Racks are installed in accordance with the location determined in the wireless site survey.

Installation can occur well before scheduled DIAD 6 deployment provided the users can be provided a safe place to put spare DIAD 5 racks until the cutover to DIAD 6 takes place. A number of DIAD 5 Charge Racks will remain in place to support the peak DIAD population.

Installation Methods

There are several methods to install the DIAD 6 Charge Rack:

• Remove the DIAD 5 Net Racks and replace them with the DIAD 6 Charge Racks.

or...

• Install DIAD 6 Charge Racks utilizing new mounting hardware in accordance with the locations agreed on during the wireless site survey conducted by TSG.

• *Do not install near other equipment or machines that routinely produce conductive dust.*

• *DIAD 6 battery charging can be negatively affected by temperature extremes.*

• *A fully loaded DIAD 6 Charge Rack weighs 107.5 lbs (48.8 kg). The DIAD 6 must be installed in a location that will support the weight of the racks when fully loaded.*

• *Vertical mounting of the Charge Rack is not recommended.*

• *The DIAD 6 Charge Rack should be installed in an interior location or climate-controlled environment that is not subject to excessive dust or moisture and is out of direct sunlight.*

• *The ambient temperature of the mounting location for DIAD 6 Charge Racks must remain between 32 °F and 95 °F (0 °C and 35 °C). Charging is not guaranteed if the ambient temperature exceeds these limits.*

Unpacking and Preparing the Work Area

This section explains how to unpack items and prepare the work area before assembling the Charge Rack. All Charge Rack parts, hardware, and tools must be close to the work area.

Requirements

All DIAD Charge Rack shipping containers and kits must be present. All required tools must be present. Refer to the following section for the list of required tools depending on the type of installation required.

- *The DCS computer **MUST** have all programs shut down and the computer **MUST** be powered off prior to disconnecting any DIAD 5 Charge Racks.*
- *Failure to do this will result in instability in the computer and will require TSG intervention.*

Procedure

1. Lay out and organize your tools in a clear area, preferably on an empty bench or table close to the work area.

2. Organize the containers of the various Charge Rack components for easy access. Place them at a comfortable distance so that unpacking them does not interfere with your work area.

3. Open all boxes and shipping containers. Take an inventory of the items received. Inspect hardware for damage. DIAD 6 equipment questions (damages, shortages, overages, and/or incorrect serial numbers received) should be emailed by district coordinator to Julie Rutt via email (nat1jar@ups.com). Please specify Region, District, SLIC and the serial numbers of any discrepancies.

4. Lay the units out in their intended locations to determine if any problems exist before installation, paying special attention to power cord lengths.

Replacement Charge Rack Installation

This section describes how to remove the existing DIAD 5 Charge Racks and replace with new DIAD 6 Charge Racks. The DIAD 6 Charge Rack is designed for horizontal wall mounting only. It has been manufactured to be a direct replacement to the existing DIAD 5 Charge Racks. The DIAD 5 and DIAD 6 Charge racks have the same footprint making utilization of existing mounting hardware possible.

- *Do not install near other equipment or machines that routinely produce conductive dust.*
- *DIAD 6 battery charging can be negatively affected by temperature extremes.*

- *A fully loaded DIAD Charge Rack weighs 107.5 lbs (48.8 kg). The DIAD 6 and DIAD 5 Charge Racks must be installed in a location that will support the weight of the racks when fully loaded.*

- *The DIAD 6 Charge Rack must be installed in an interior location or climate-controlled environment that is not subject to excessive dust or moisture and is out of direct sunlight.*

- *The ambient temperature of the mounting location for DIAD 6 Charge Racks must remain between 32 °F and 95 °F (0 °C and 35 °C). Charging is not guaranteed if the ambient temperature exceeds these limits.*

Required Parts and Hardware

The DIAD 6 Charge Rack Kit contains a Charge Rack and two side guards with sheet metal screws. The kit does not contain the four mounting bolts required. Use the existing bolts from your uninstall. The DIAD 6 Charge Rack is designed to mount on the previously installed DIAD 5 mounting frame.

Item (Quantity)	Part Number
DIAD 6 Charge Rack (1)	CN85-CR (wired) CN85-WCR (wireless)
Side Guard Kit (1)	99EX-CR-NRGUARDKIT

Tools

Before attempting to install the DIAD Charge Rack, you must have the following tools:

- 9/16" Wrench or socket

- Tape Measure

- Level

- Large Straight Blade Screwdriver

- Small Straight Blade Screwdriver

- Phillips Screwdriver

Replacement Installation Procedure

1. Locate the existing DIAD 5 Charge Racks within the facility. Ensure the Charge Rack is empty of DIAD units. Have UPS operations remove all existing DIAD 5s. Locate the ON/OFF toggle switch on the Charge Rack and turn to OFF. Unplug unit from electrical outlet. Disconnect all data cables from the unit using a small straight blade screwdriver and cover the cable ends with electrical tape.

2. Remove the top cover from the Base Station by unsnapping cover from slots located near rear wall of Base Station. For stacked multiple Base Station mountings, remove mid cover and upper Base Station and pry loose.

3. The following steps are easier to perform with two people. One person should hold the existing Base Station while the second person loosens the four 3/8-16 x 1" Hex Head Screws and 3/8" x 1 flat washers from the Base Station. Screws and washers are located on the vertical

plane of the back area of the Base Station at DIAD slot 4 and 12. Upon removal of screws, lift Base Station and remove.

4. With the existing Base Station removed, check the condition of existing mounting brackets. Ensure both the top and bottom u-channel brackets are level, square and properly secured to wall.   Check the condition and alignment of the u-channel spring nut. Properly align the existing four u-channel spring nuts to the match hole in the new DIAD 6 Charge Rack. Coil the existing communication cable and secure it away from the new Charge Racks. Coordinate with local Plant Engineering and TSG on the complete removal of cabling, if possible. Centers will no longer use DIAD 5 Charge Racks. DIAD 6 will become the peak device in all centers where DIAD 6 is deployed. DIAD 5 racks should be disposed of in accordance with established procedures.

5. Lift the new DIAD 6 Charge Rack into place on the existing mounting frame so that the tabs on the back of the Charge Rack support the weight during installation.

⚠ **The Charge Rack must be fastened to the wall with the hardware removed in Step 3. DO NOT use tabs to permanently mount the Charge Rack.**
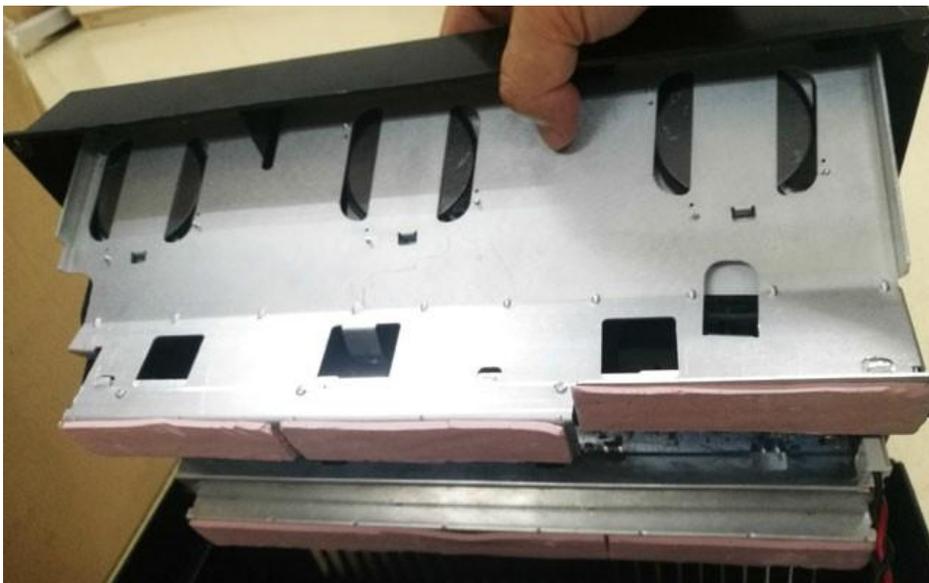
6. Use a Phillips screwdriver to remove the screws from the six-port charge bay on the right side of the Charge Rack and then remove the screws from the six-port charge bay on the left side of the Charge Rack.
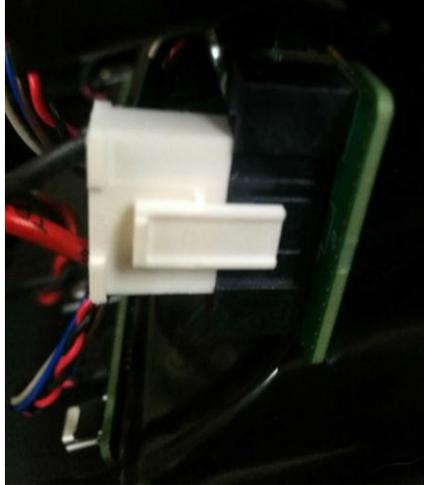

Pull the bay out and rotate it to the right to access cables.

CN85-CR (Wired)

CN85-WCR (Wireless)

7. Pull each six-port charge bay forward and disconnect the power cord to expose the mounting holes. Be sure to retain your Phillips screws to reinstall the six-port charge bays after the rack has been mounted.

Disconnect the power supply harness from the power distribution board and set the bays aside in a clean work area.

8. Attach the side guard rails to each side of the DIAD 6 Charge Rack using two Phillips screws and the 3M adhesive strips supplied with each guard rail.
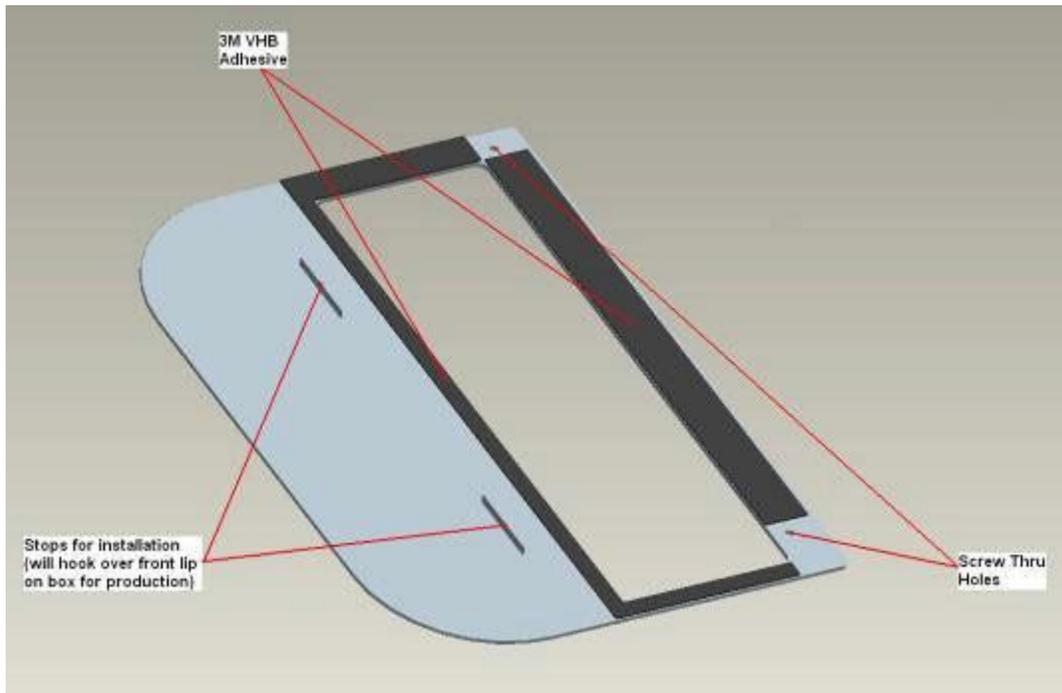
DIAD 6 Rack left side rail
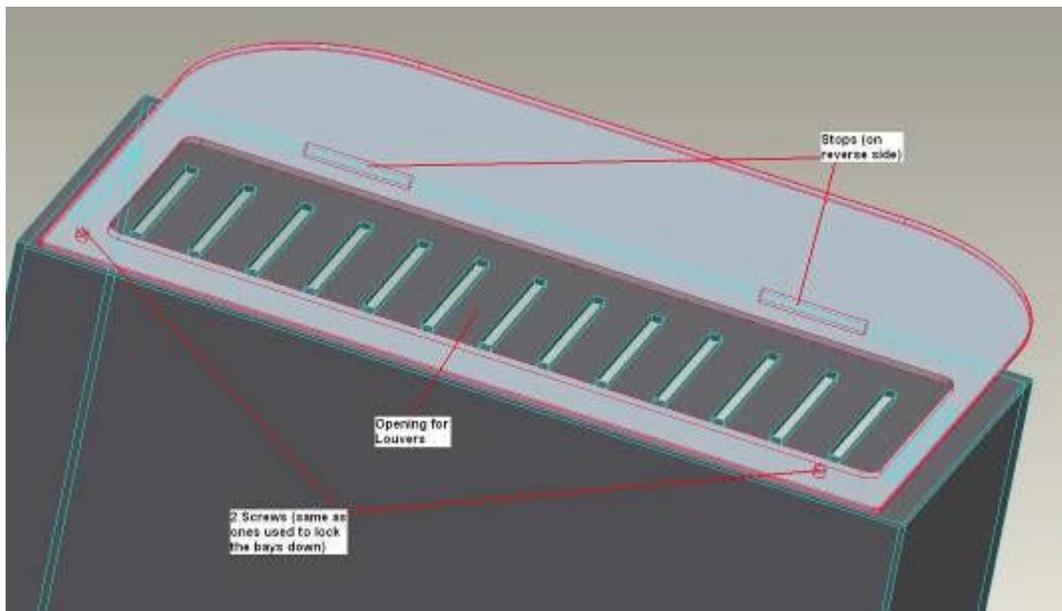
Left facing side rail/rack mounting position

9. Insert the four 3/8" x 1" Hex Head bolts through the 3/8" x 1 flat washers. Then place through the mounting holes in sections one and five of the Charge Rack and into the u-channel spring nut. Hand-tighten and repeat for all four locations, then torque down all bolts to 40 in lbs. with appropriate wrench or socket. Use care not to over-torque the bolts. Check to make sure the Charge Rack is level.

Charge Rack Mounting Holes

10. Reconnect the power cables to the six-port charge bays and reinstall them with the Phillips head screws retained earlier.
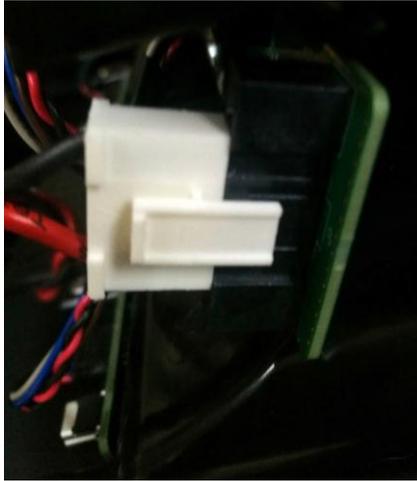
Screws   **Screws**

Do not pinch wires during reinstallation as this may damage the equipment.

Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.

New Charge Rack Installation

- *Do not install near other equipment or machines that routinely produce conductive dust.*

- *DIAD 6 battery charging can be negatively affected by temperature extremes.*

- *A fully loaded DIAD 6 charge rack weighs 107.5 lbs (48.8 kg). The DIAD 6 Charge Racks must be installed in a location that will support the weight of the racks when fully loaded.*

- *The Mounting Frame **MUST** be used to secure the DIAD 6 Charge Rack to the wall to prevent possible damage to the Charge Rack. Failing to use the Mounting Frame could result in issues charging/powering terminals within the rack.*

- *The DIAD 6 Charge Rack should be installed in an interior location that is not subject to excessive dust or moisture and is out of direct sunlight.*

- *The ambient temperature of the mounting location for DIAD 6 Charge Racks must remain between 32 °F and 95 °F (0 °C and 35 °C). Charging is not guaranteed if the ambient temperature exceeds these limits.*

This section describes how to mount the DIAD 6 Charge Rack where no rack was previously installed. The DIAD 6 Charge Rack is designed for horizontal wall mounting only. The mounting frame attaches to a wall that can structurally support the DIAD 6 Charge Rack. The mounting frame must be attached to structural supports within the wall. The DIAD 6 Charge Rack fastens to the mounting frame.

Required Parts and Hardware

All parts required to assemble DIAD 6 Charge Rack systems are pre-package as assembled groups or as bagged parts.

Item (Quantity)	Part Number
DIAD 6 Charge Rack Kit (1) *(kit does not contain 4 mounting bolts)*	CN85-CR (Wired) CN85-WCR (Wireless)
Side Guard Kit (1)	99EX-CR-NRGUARDKIT
Wall Mount Frame (1)	By Local P.E.
Channel Frame 3/8" Nut w/retainer (4)	By Local P.E.
1/8" - 16 1" Hex Head Screw (4)	By Local P.E.
3/8" - 2.5" Hex Lag Screw (6)	By Local P.E.
5/16" Toggle Bolt (4)	By Local P.E.
0.375"x1.6"x 0.125" Fender Washer (4)	By Local P.E.
0.265"x8.875"x 0.035" Fender Washer (4)	By Local P.E.

Item (Quantity)	Part Number
4/8"x1"x14 ga. Flat Washer (10)	By Local P.E.
1/4" Molly Bolt (4)	By Local P.E.
Use Existing Bolts from DIAD 5 Uninstall	From Uninstall

Tools

Before attempting to install the DIAD Charge Rack, you must have the following tools:

- 1/8" Blade, 2" Shaft Screwdriver
- 3/8" Drill and Appropriate Bit (see page)
- 9/16" Wrench or Socket
- Tape Measure
- Level
- Stud Sensor
- Large Straight Blade Screwdriver
- Phillips Screwdriver

New Installation Procedure

1. Determine the best mounting location for the installation. Check for the proper length from the Charge Rack to a power outlet. Allow sufficient space above the Charge Rack; minimum clearance between Charge Racks is 3 inches. In addition, allow sufficient space to the right of the Charge Rack to access the electrical connections. The Charge Rack will extend 2 1/4 inches past the end of the mounting frame on both ends.

Minimum distance between mounted DIAD 6 Charge Racks is 3" (7.62 CM)

Charge Rack Installation Specifications

2. Identify the locations of the structural supports within the wall designated for mounting the Charge Rack. Plant Engineering should verify and mark the correct structural mounting location.

3. The following steps are easier to perform with two people: one person should hold the mounting frame in place while the second person checks to make sure it is level and marks the hole locations with the tip of a mounting screw, pencil, or pen. Two or more screws support each channel of the mounting frame. If a second person is not available, use the mounting template to mark the mounting hole locations. Failing to install a mounting frame could damage the Charge Rack and result in issues charging/powering terminals located within the Charge Rack.

⚠ **Check with the responsible plant management group before drilling any holes through walls. Extreme caution should be used to avoid contacting power lines.**
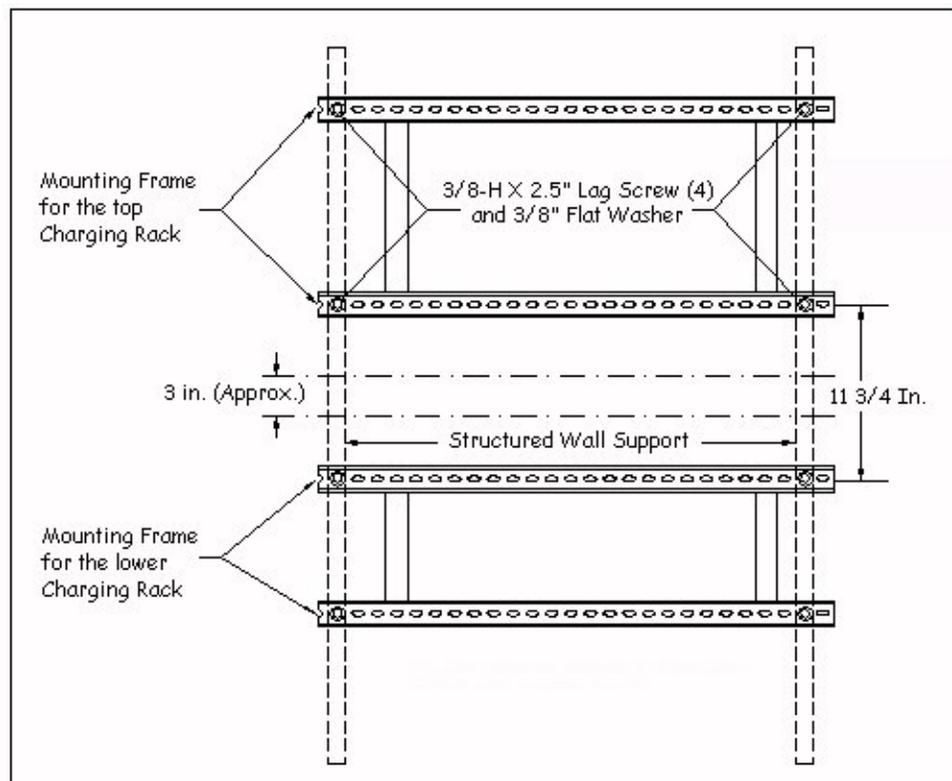
Single Charge Rack Install
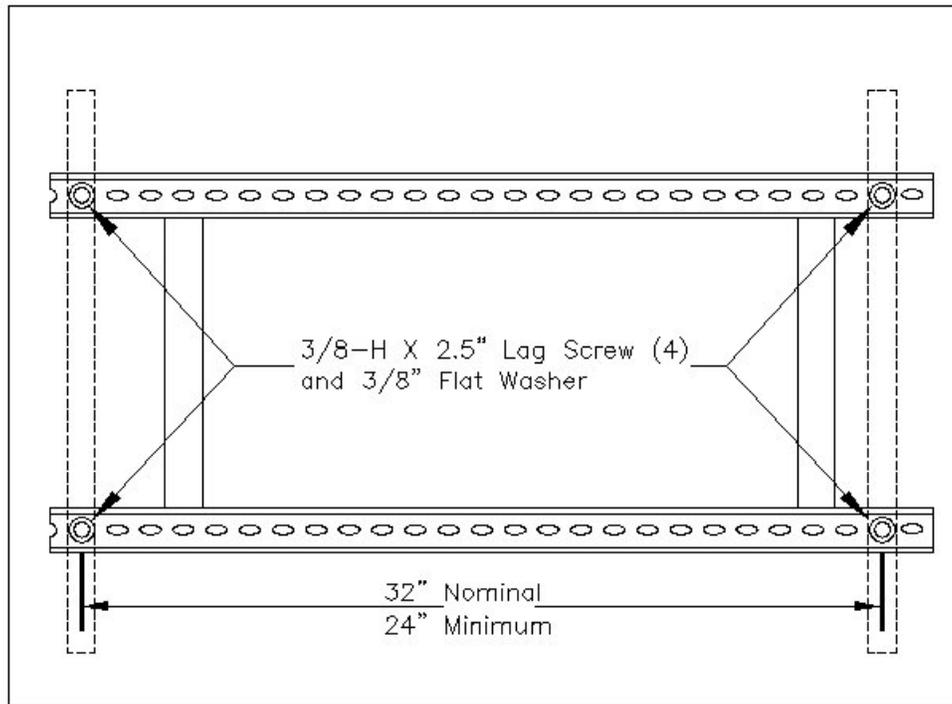
Single Charge Rack Mounting Specifications

Multiple Charge Rack Install

Multiple Charge Rack Mounting Specifications

4. Make an indentation or small hole in the intended hole locations. Drill an appropriate hole through the wall for each of the two, or more, 3/8" lag mounting screws. Refer to the following table for the appropriate drill size for the wall materials encountered. Make sure that the holes have penetrated the structural wall supports.

Hardware Mounting Recommendations			
Inner Wall Material	**Drill Sizes**	**Hardware**	**Washer**
Wood	9/32" (0.281") x 1/5" deep	Lag Screw	3/8" Flat
Steel (with hollow wall)	7/16" (0.437")	1/4" Molly Bolt of the Appropriate Length*	0.265"x 0.875" Fender
Cinder Block	7/16" (0.437)	1/4" Molly Bolt of the Appropriate Length	0.265"x 0.875" Fender
	7/8" (0.875")	5/16" Toggle Bolt**	3/8" Flat
Concrete, Solid	As Required	Lead Anchors	As Required
*For walls 5/8" to 1 - 1/4" thick ** Do not remove the bolts after inserting them into the wall.			

5. One person should hold the mounting frame in place while the second person screws the 3/8" lag screws and 3/8" flat washers into the prepared hold locations. Prior to tightening the screws completely, check that the mounting frame is level. Adjust as necessary and complete tightening the wall mounting screws.

> **Note** *Install all mounting frames with the sheared end (incomplete or partial right side) to ensure that the mounting hole locations align properly. This is especially critical in multiple stacked installations.*

6. Insert the channel frame nut with the retainer into the channel frame where the Charge Rack mounting hardware will be inserted, (see the following figure.) Insert the right nut with retainer 6 3/4 inches from the right end of each channel. The center of the left nut with retainer is installed 30 inches from the center of the right nut. Marking the front of the channel makes installation easier. These measurements will allow the Charge Rack to be installed centered on the mounting frame. The channel frame nuts can be installed to the left or right of these measurements if necessary. Keep in mind that access to the power cord is on the right side of the Charge Rack. This is especially important in a stacked installation.
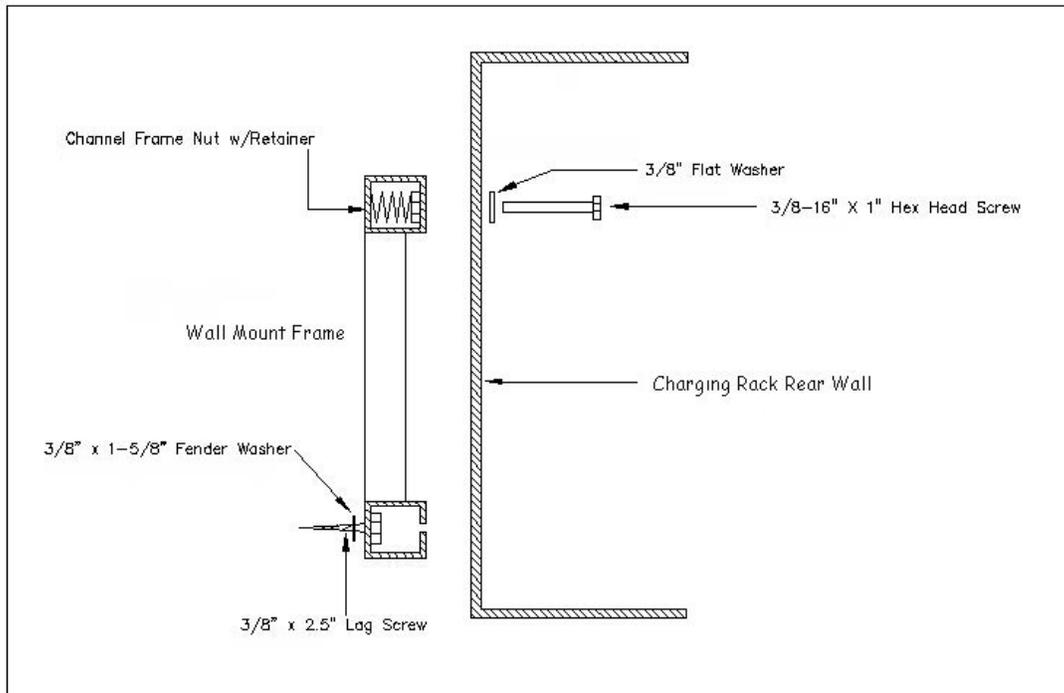
Attaching Charge Rack to Wall Mount Frame

7. Use a Phillips screwdriver to remove the screws from the six-port charge bay on the right side of the Charge Rack and then remove the screws from the six-port charge bay on the left side of the Charge Rack.

Pull the bay out and rotate it to the right to access cables.

CN85-CR (Wired)
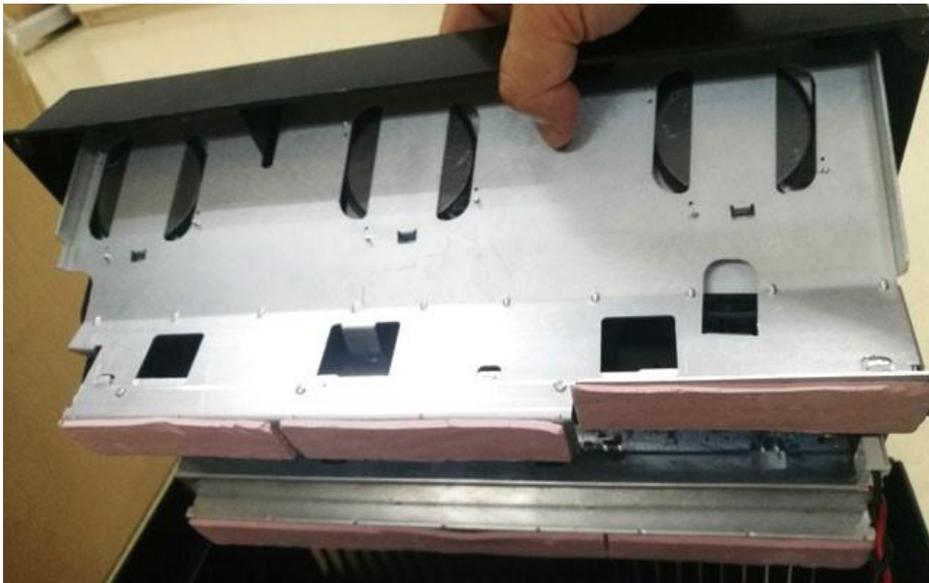
CN85-WCR (Wireless)

8. Pull each six-port charge bay forward and disconnect the power cord to expose the mounting holes. Be sure to retain your Phillips screws to reinstall the six-port charge bays after the rack has been mounted.

Disconnect the power supply harness from the power distribution board and set the bays aside in a clean work area.

9. Install the side guard rails. Attach the side guard rails to each side of the DIAD 6 Charge Rack using 2 Phillips screws and the 3M adhesive strips supplied with each guard rail.
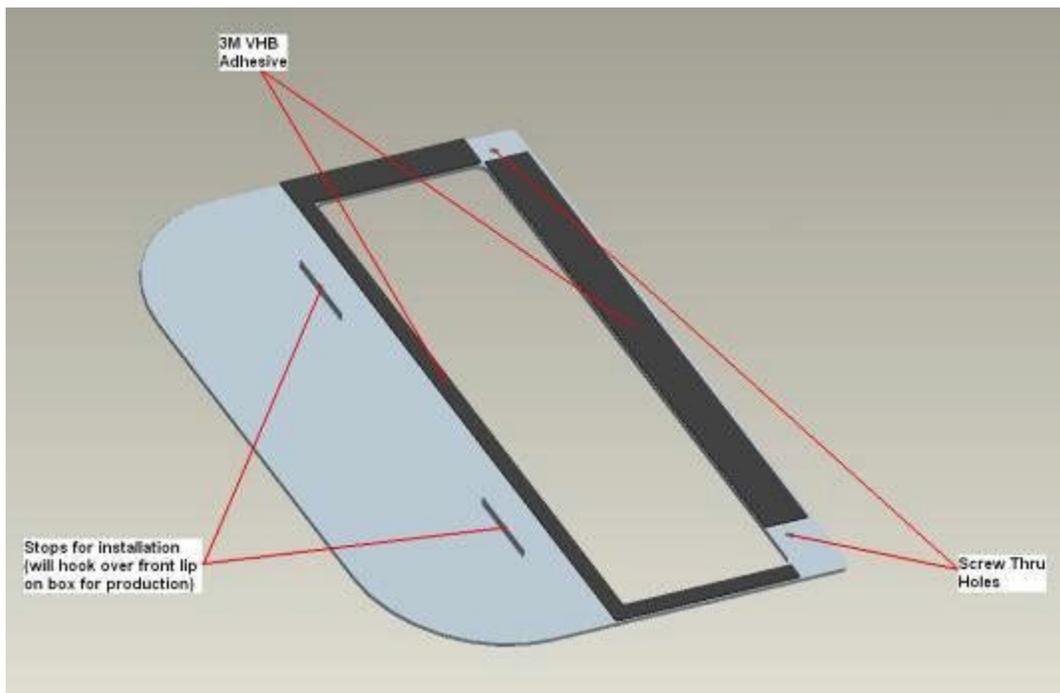
DIAD 6 Rack left side rail
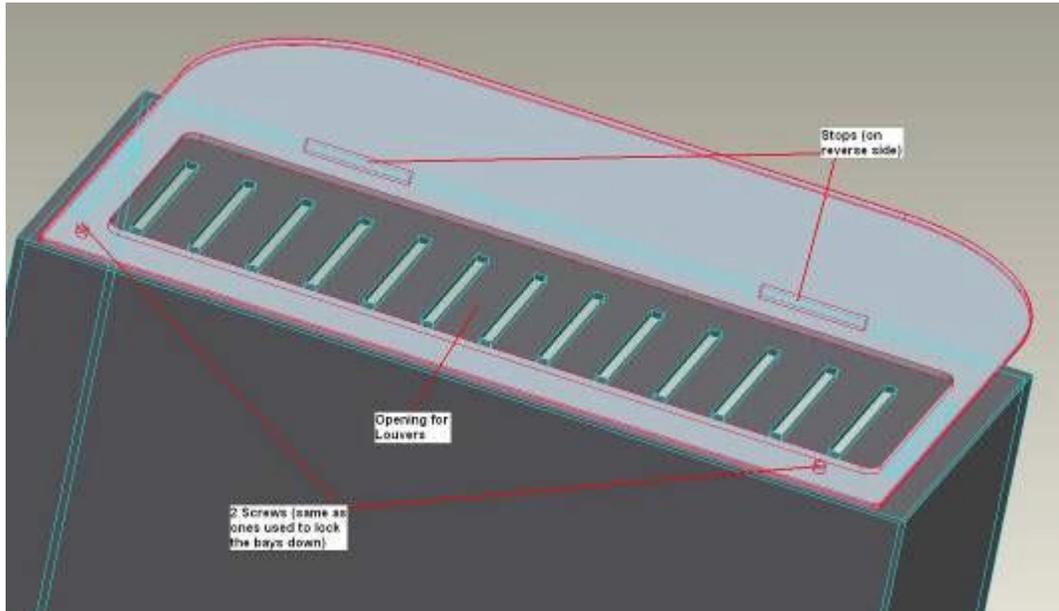
Left facing side rail/rack mounting position

⚠️ **The Charge Rack must be fastened to the wall with the approved hardware. DO NOT use the tabs to permanently mount the Charge Rack.**

10. Lift the Charge Rack into place on the mounting frame so that the tabs on the back of the Charge Rack support the weight during installation.

Insert the four 3/8" x 1" Hex Head bolts through the 3/8" x 1 flat washers. Then place through the mounting holes in sections one and four of the Charge Rack and into the u-channel spring nut. Hand-tighten and repeat for all four locations, then torque down all bolts to 40 in lbs. with appropriate wrench or socket. Use care not to over torque the bolts. Check to make sure the Charge Rack is level. Plug the power cord into the existing power source.

Charge Rack Mounting Holes

11. Reconnect the power cables to the six-port charge bays and reinstall them with the Phillips head screws retained earlier.

Screws   **Screws**
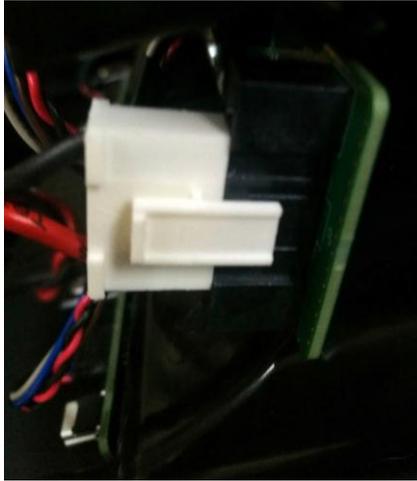
⚠️ CAUTION *Do not pinch wires during reinstallation as this may damage the equipment.*

⚠️ CAUTION *Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.*

Using the Charge Rack

Overview

You can power and charge the main battery in up to thirty DIAD 6 terminals using the Charge Rack.

Charge Time

The rack supplies power to the intelligent battery charging system in all DIAD 6 terminals, which senses when a full charge has been achieved and switches to a trickle charge to maintain the full charge. As battery packs charge, the charging circuitry follows the two-step charging process (CC-CV) that is recommended for Li-ion or Li-poly batteries. The process monitors changes in temperature, current, and voltage.

The rack completes a full charge of the DIAD 6's main battery pack in 6 hours.

Convenient Storage

Intelligent battery charging makes this rack a safe and convenient storage receptacle for your DIAD 6 terminal.

Capacity

The rack can hold up to thirty DIAD 6 terminals. Each charging well charges each terminal independently of the other wells.

Parts and Functions

Front and Side Panel

30 Terminal Wells

AC Power Jack
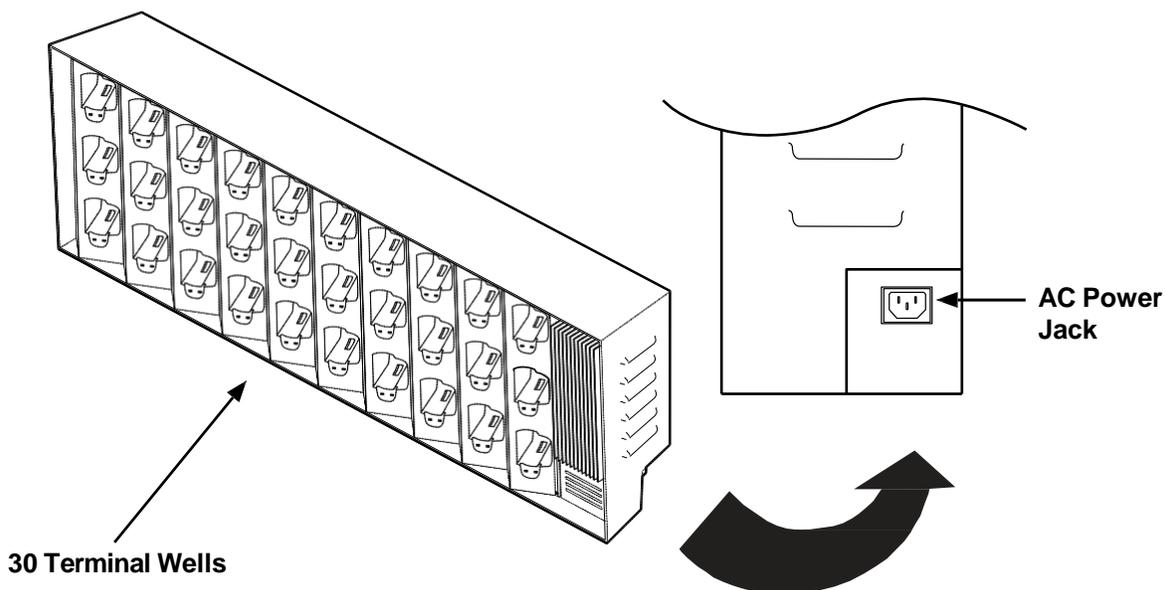
Side Guard
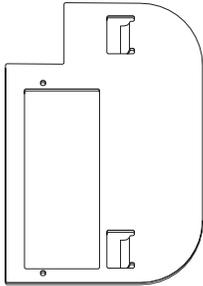
    Power Supply End   **Non-Power Supply End**
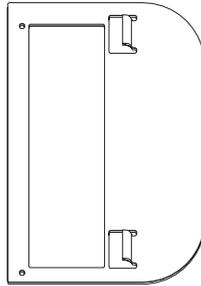
Terminal Wells

The rack contains thirty terminal wells. Place the DIAD 6 terminal in any one of the thirty wells to power the terminal and charge the installed battery pack. The rack completely charges the main battery in a DIAD 6 terminal in 6 hours.

AC Power Jack

Use the AC power cable that comes with the rack to supply power to this power jack. For more information, see Power on page 5-2.

> **Note** *A locally procured power cable is required for use outside the United States.*

Power

The rack requires 90 - 264 Volts AC, 3.5 Amps at 115 Volts to charge the DIAD 6 terminals. We recommend that you leave the rack connected to its power source at all times, so that it is always ready to use.

Connecting Power to the Rack

1. Plug the power cable into the power connector on the side of the rack, see AC Power Jack on page 5-2.

2. Plug the AC power cord into a standard wall outlet. The rack is now powered.

> **Note** *Power strips and extension cords should not be used.*

Charging the Main Battery

The rack provides power to the DIAD 6 terminals and allows the charging of the main batteries in the terminal. The intelligent battery charging system incorporated into all DIAD 6 terminals prevents overcharging, which means that DIAD 6 terminals may be stored in the rack indefinitely without damage to the terminals, battery packs, or the rack.

The rack supports a reduced power output to each terminal to allow simultaneous charging of all 30 units across the full temperature specification. The terminal will automatically reduce its power consumption in the rack by turning off its display and backlight. To communicate with the terminal, use the WLAN radio for the Charge Rack. The application software should turn off all other radios and features. If not, the operating temperature range may be reduced and/or the power supply overloaded, which may result in an extended charge time or no charging.
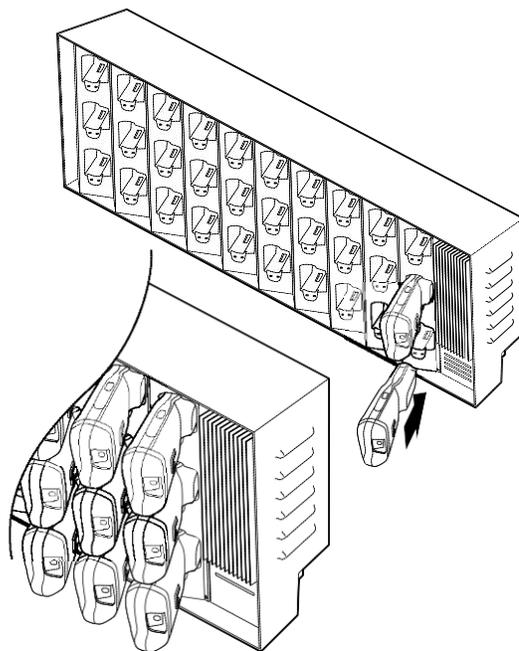
To Power a Terminal and Charge its Main Battery

1. Install the main battery pack in the terminal.

2. Slide the DIAD 6 terminal into one of the thirty terminal wells. The terminal screen turns off immediately when docked to conserve power. Charging begins immediately if required by the DIAD 6 terminal.

Charging Status Through Notification LEDs

The terminal will indicate the charging status through the notification LEDs at the top of the terminal. The LEDs operate as follows:

Solid Orange	Indicates that the terminal is docked in the rack and the battery is being charged.
Solid Green	Indicates that the terminal is fully charged.
Solid Red	Indicates that the terminal is docked in the rack and receiving power, but the battery appears to be worn out or defective.
Blinking Orange	Indicates that the terminal is docked and receiving power but is not charging because the battery is too hot or too cold.
Off	Indicates that the terminal is not docked in the rack, the terminal is defective, the rack is defective, or the rack is not receiving power.

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Part Replacement Procedures

Big Harness - 200004056CNRKIT

Part Name:	Big Harness	
Part #:	200004056CNRKIT	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

Note *Isolate screws by size as you remove them to ensure proper placement when reinstalling.*

1. Disconnect the AC cord from the power supply.

Power Supply

2. Remove the two screws from the power supply. Retain the screws for installation.
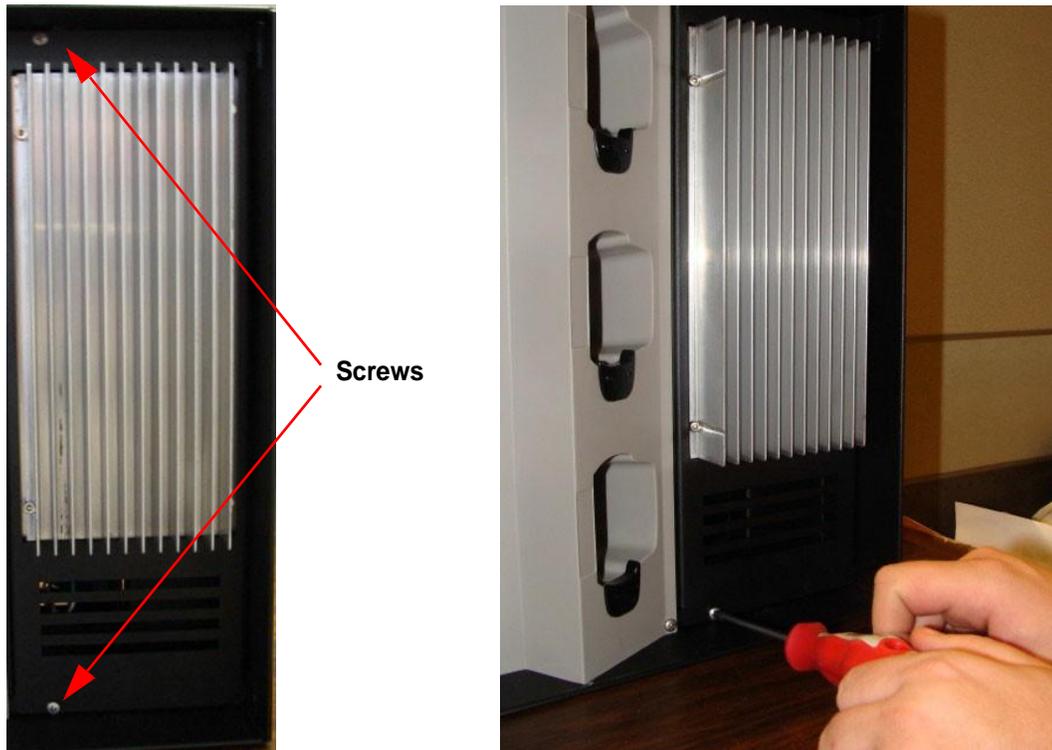
Screws

3. Pull the power supply straight out by holding onto the heat sink.

Heat Sink

4. Support the power supply with one hand and disconnect the main plug. Set the unit aside in a clean work area.
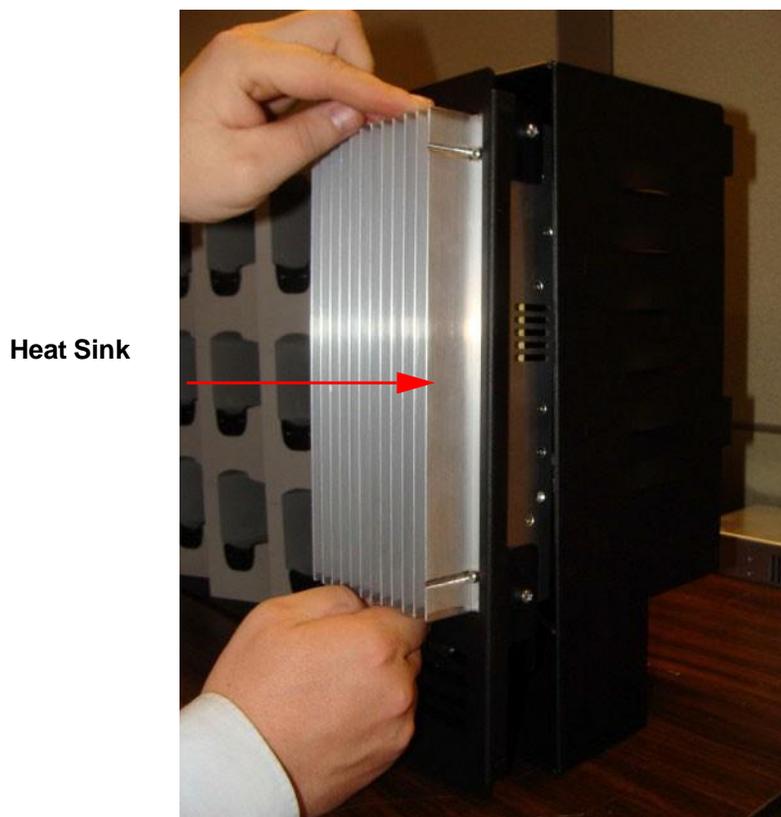
Main Plug

Support the power supply with one hand
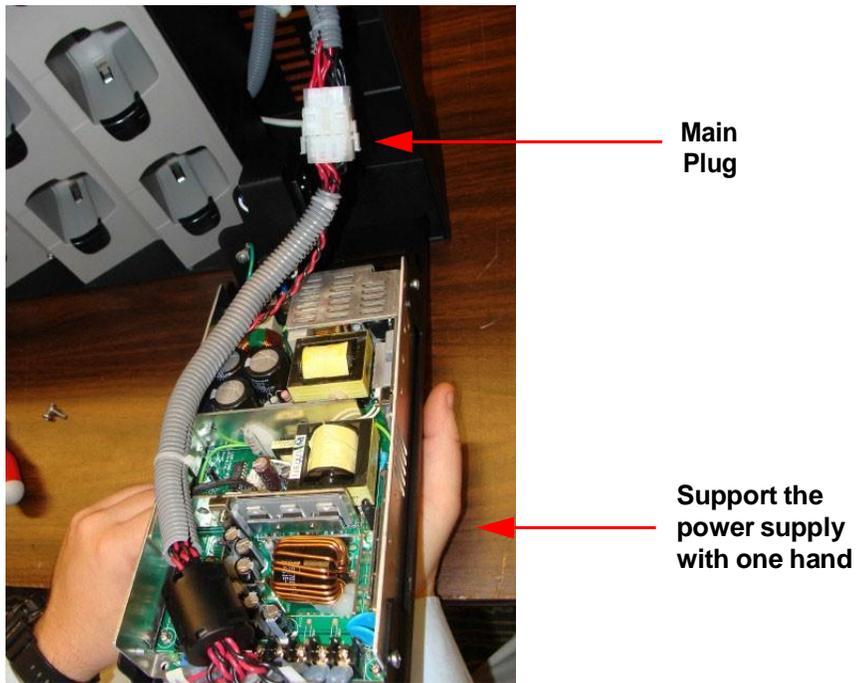
5. Remove each of the six-slot terminal bays (there are five bays). Begin by removing the four mounting screws that hold the bay to the sheet metal enclosure. Retain the screws for installation.

Screws   **Screws**

6. Pull the bay out and rotate it to the right to access the cables.

CN85-CR (Wired)
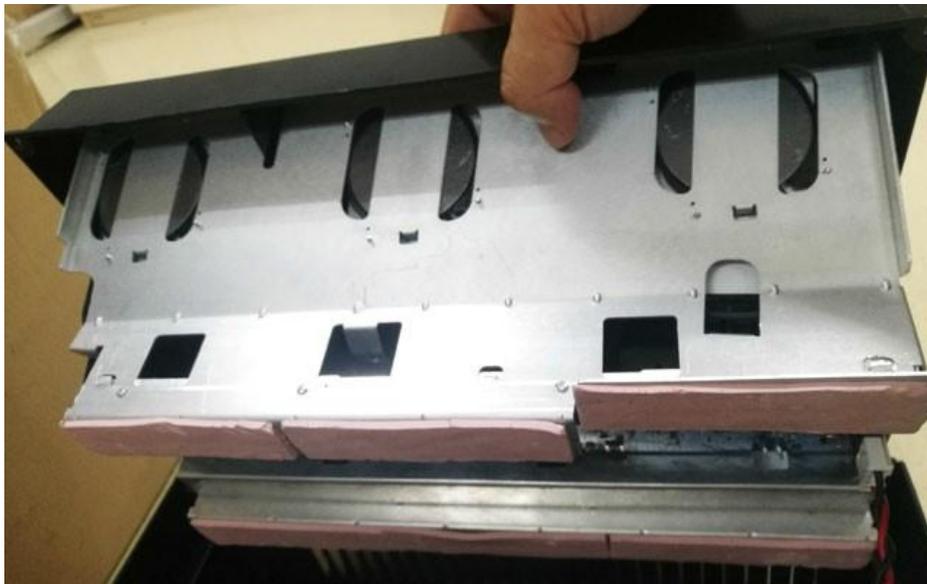
CN85-WCR (Wireless)

7. Disconnect the power supply harness from the power distribution board.
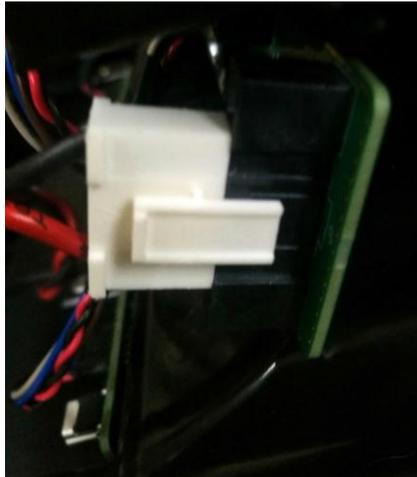
8. Repeat steps 5-7 for the four remaining bays.

9. To remove the big harness, begin by cutting the zip ties holding the harness to the sheet metal frame.
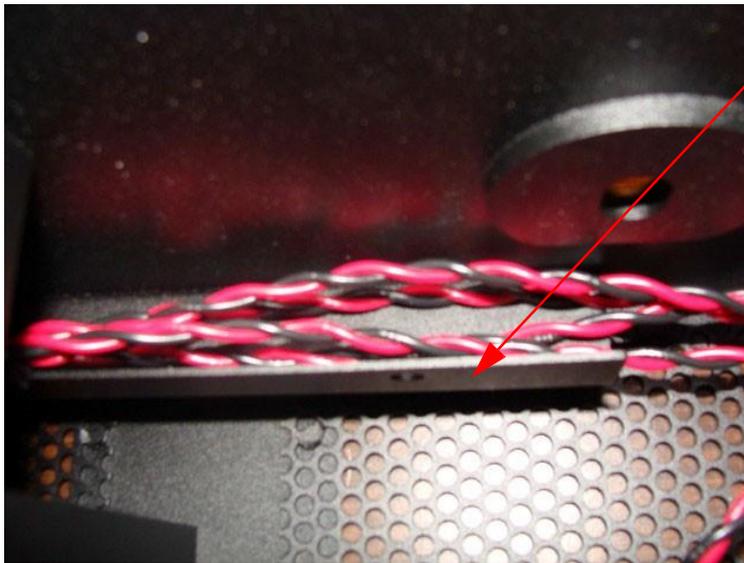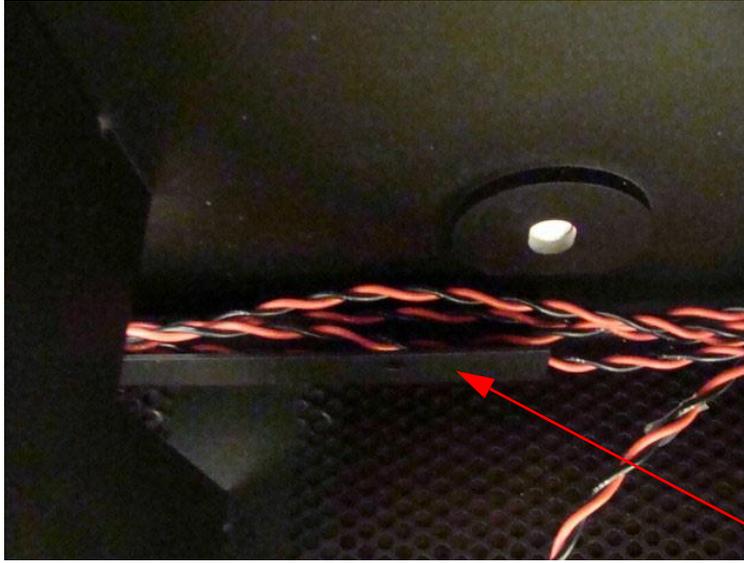
zip ties

10. Place the new harness into the wiring channel in the rear of the enclosure and add the zip ties that were provided in the kit.
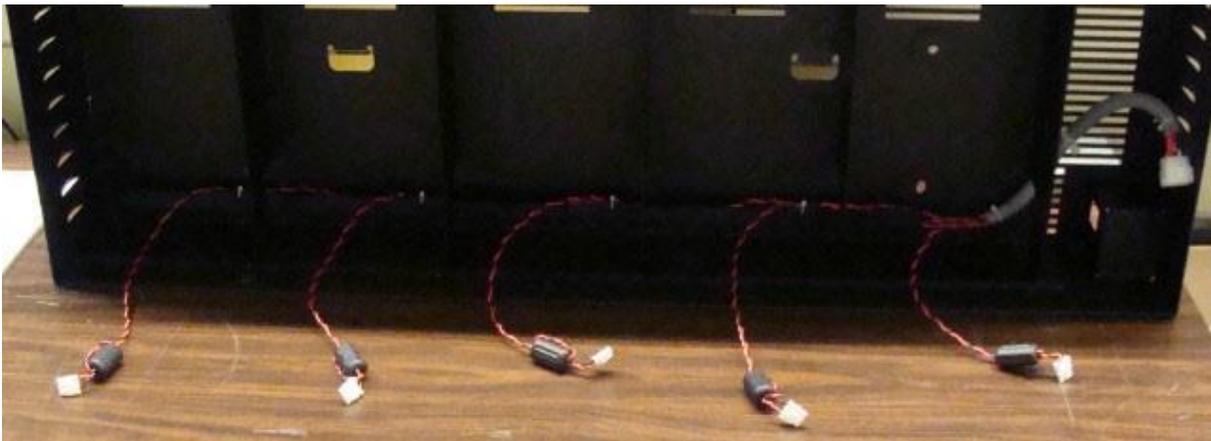
Don't forget to pull each lead out for each bay.
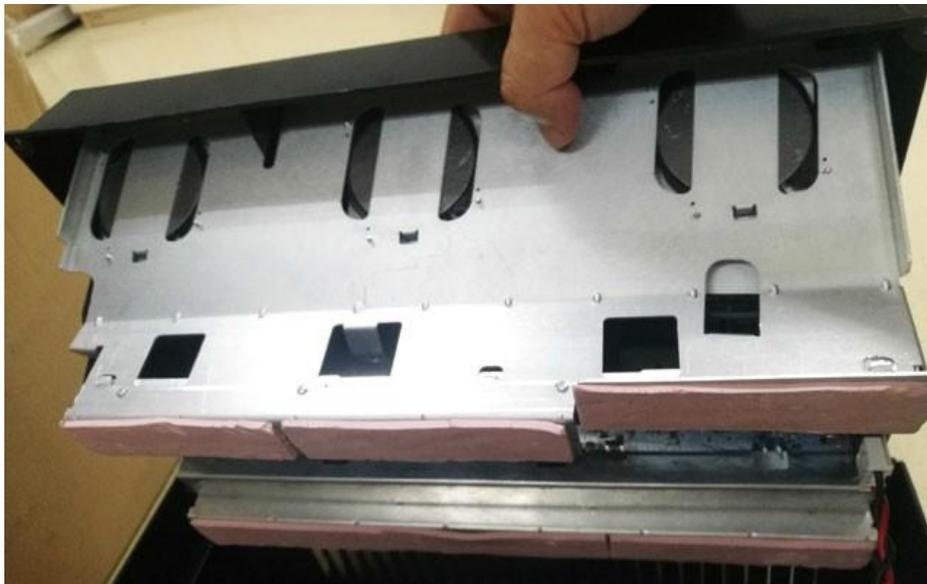
Wiring Channel
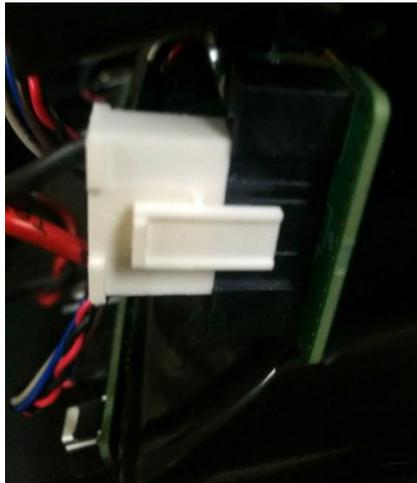
11. Take the bay to the rack.
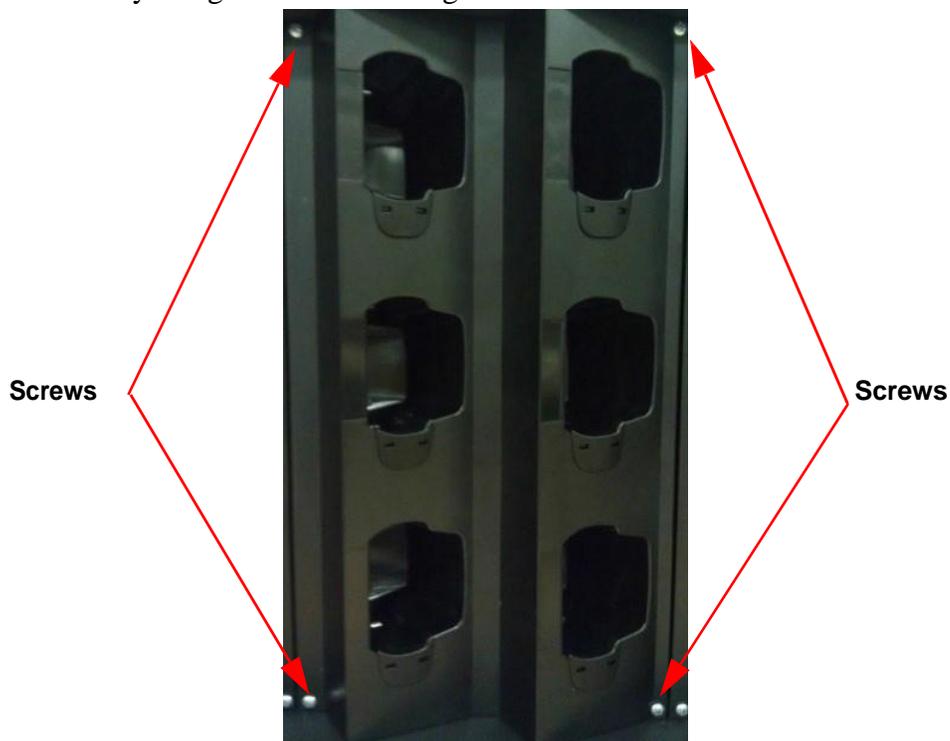

CN85-CR (Wired)

CN85-WCR (Wireless)

12. Connect the power cable.

⚠ *Do not pinch wires during reinstallation as this may damage the equipment*

13. Re-install the bay using the four mounting screws.

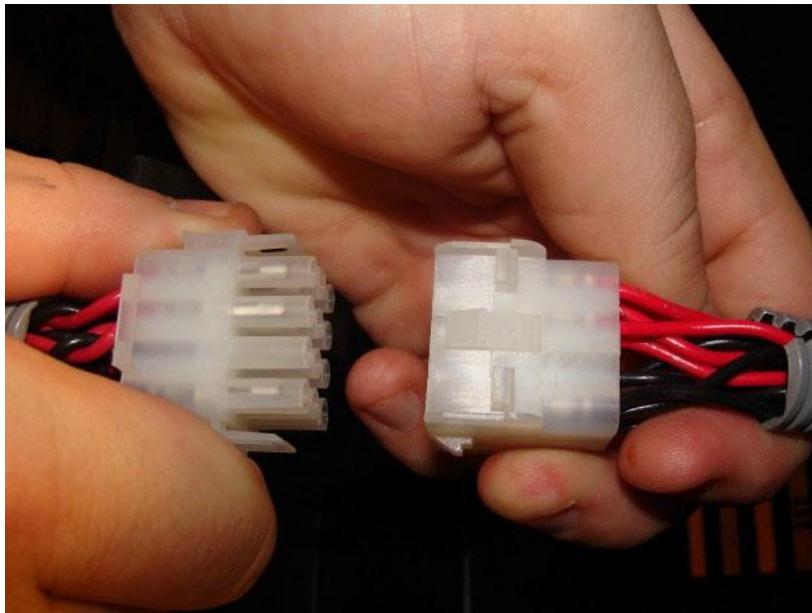**Screws**   **Screws**

⚠ *Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.*

14. Repeat steps 11-13 for the other four bays.
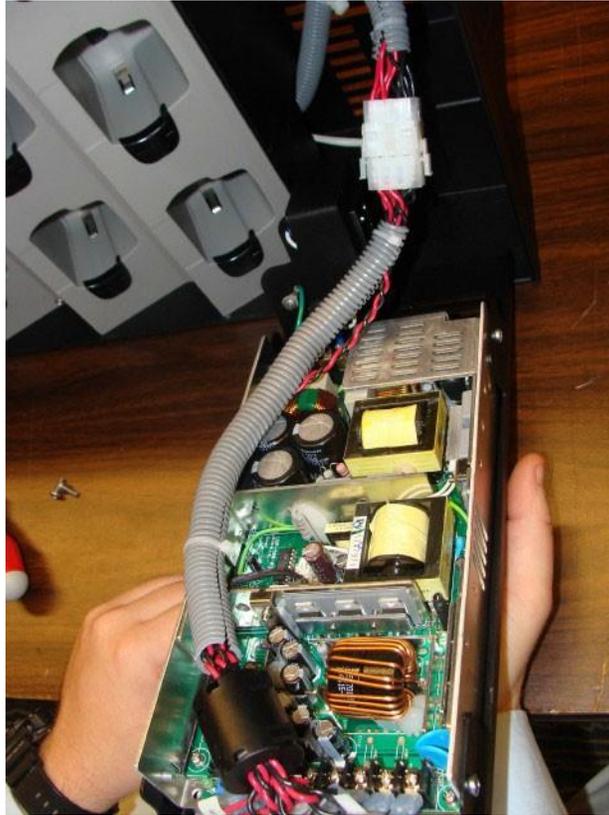
15. Take the power supply to the Charge Rack and connect the main plug.

⚠ *Do not pinch wires during reinstallation as this may damage the equipment.*

16. Remount the power supply into place.

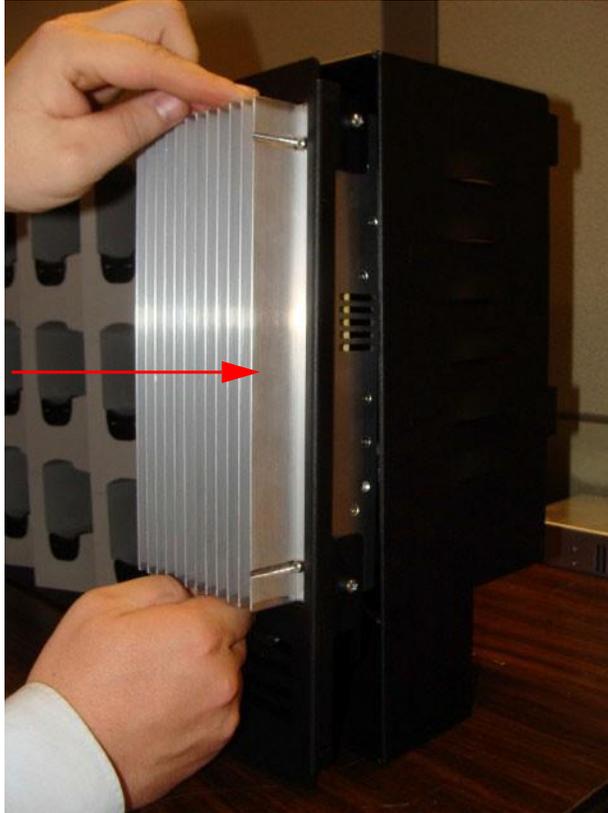17. Using the heat sink, place the power supply back into the main unit.

Heat Sink

18. Re-install the two screws.

Screws

19. The installation should be complete. Re-install the AC cord and test for functionality.

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NyoGel® 760G Lubricant Procedure

1. Remove power from the Charge Rack.

2. Remove all screws of the six-slot terminal bay. Retain the screws for installation.

Screws   **Screws**
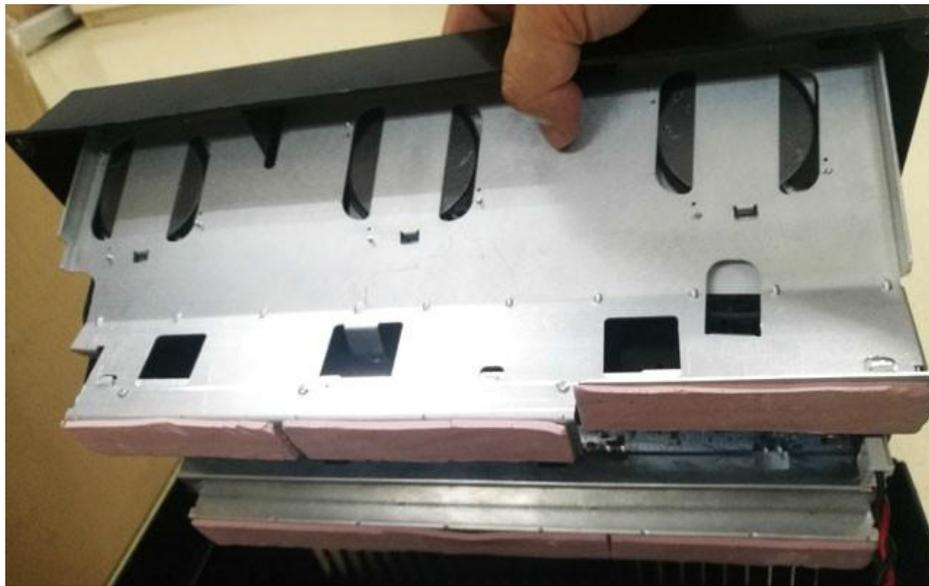
3. Disassemble the cable from the power distribution board. by pulling the bay out and rotating it to the right to access the cables.

CN85-CR (Wired)

CN85-CR (Wired)

4. Disconnect the power supply harness from the power distribution board.
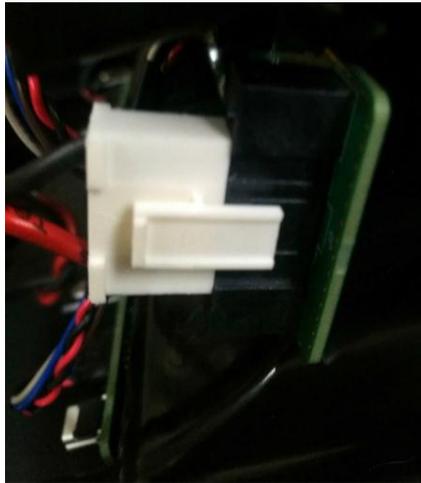
5. Fully fill the first and fourth positions of the connector with NyoGel lubricant.

6. Insert the wire harness into the board connector.

7. Re-install the bay using the four mounting screws.

Screws   **Screws**

8. Stick the "Lubricant Applied" label on the rack as indicated below.

LUBRICANT APPLIED

I/O Board Cable - 50142485-001FRE

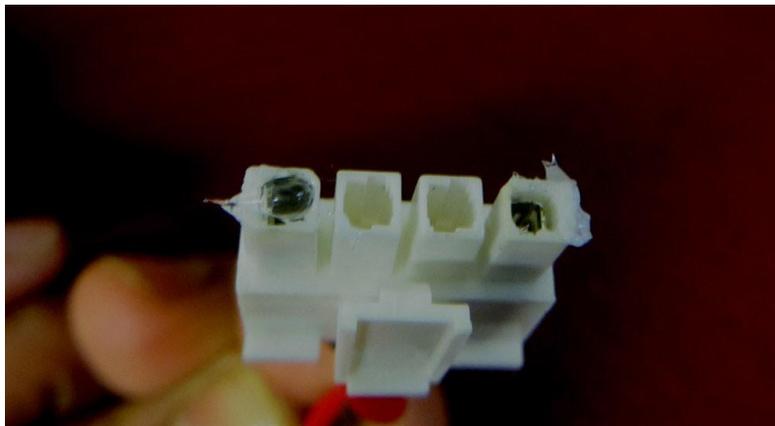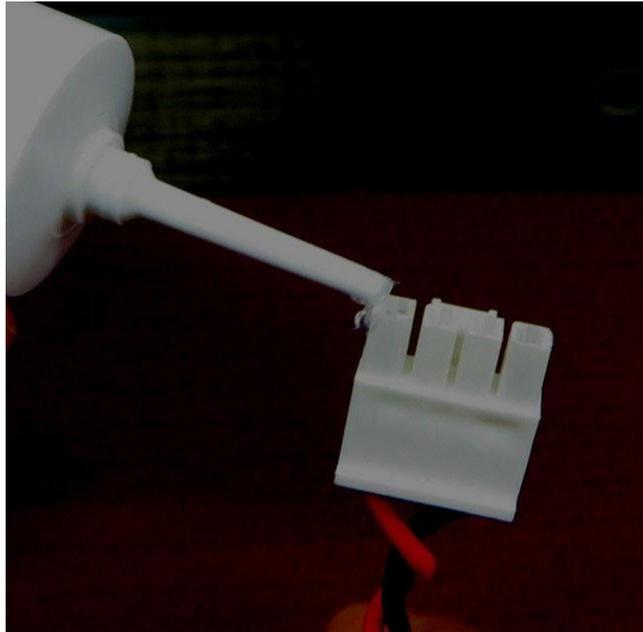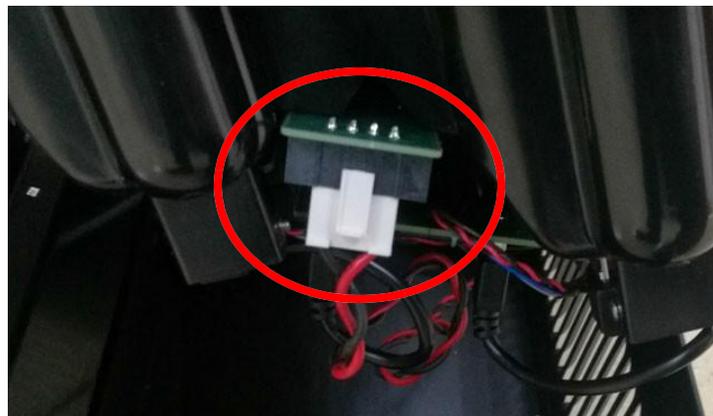| Part Name:	I/O Board Cable	
Part #:	50142485-001FRE	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠️ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠️ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

1. Remove the 6-slot bay from the Charge Rack.

2. There are 6 cables on the 6-slot bay. Disconnect the broken one and replace it with the new cable.

3. Reload the 6-slot bay into the Charge Rack.

⚠️ *Do not pinch wires during reinstallation as this may damage the equipment*

⚠️ *Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.*

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I/O Board - 50142380-001FRE

Part Name:	I/O Board	
Part #:	50142380-001FRE	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

Note *Isolate screws by size as you remove them to ensure proper placement when reinstalling.*

1. Remove the 6-slot bay from the Charge Rack.
2. Disconnect the cable between the I/O board and the power board.
3. Remove the two screws between the board and the bays.

4. Separate the board from the bay.

5. Replace the broken board with the new one.

6. Reload the 6-slot bay into the Charge Rack.

Do not pinch wires during reinstallation as this may damage the equipment

Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.

Power Distribution - Board 50142378-001FRE

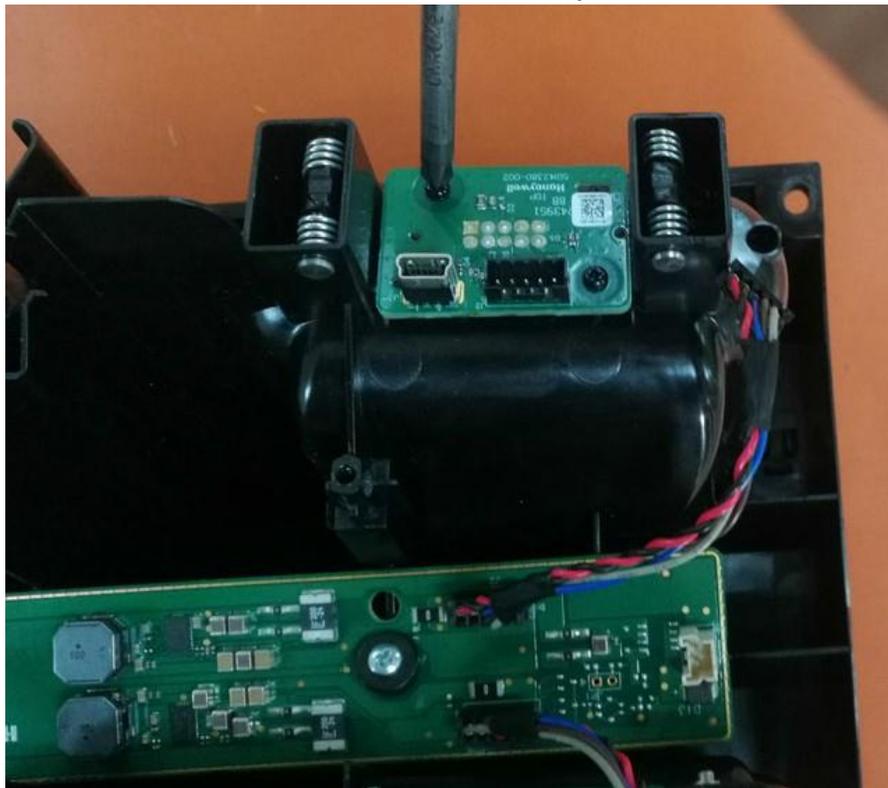| Part Name:	Power Distribution Board	
Part #:	50142378-001FRE	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠️ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠️ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

Note *Isolate screws by size as you remove them to ensure proper placement when reinstalling.*

1. Remove the 6-slot bay from the Charge Rack.

2. Disconnect the 6 cables from the I/O board.

3. Remove the two screws between the power board and the 6-slot bay.

4. Separate the power board from the bay.

5. Replace the broken board with the new one.

6. Reload the 6-slot bay into the Charge Rack.

Do not pinch wires during reinstallation as this may damage the equipment

Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.

Power Supply with PS-Harness Assembly - 100008187CNRKIT

Part Name:	Charge Rack Power Supply with PS-Harness Assembly	
Part #:	100008187CNRKIT	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

1. Disconnect the AC cord from the power supply.

Power Supply

2. Remove the two screws from the power supply. Do not retain screws. (Use the screws pro-
    vided in the kit for replacement.)

Screws

3. Pull the power supply straight out by holding onto the heat sink.

Heat Sink

4. Support the power supply with one hand and disconnect the main plug. Set the unit aside in a clean work area.

Main Plug

Support the power supply with one hand

5. Take the new power supply to the Charge Rack and connect the main plug.
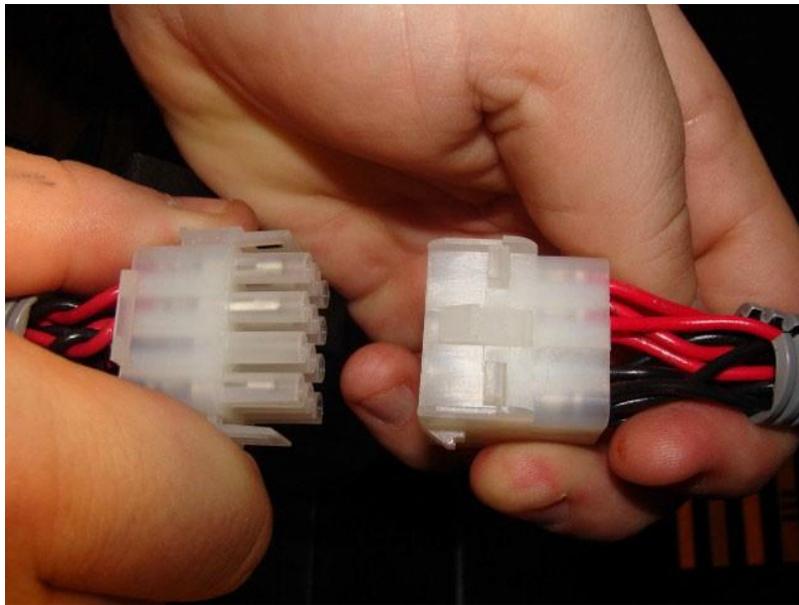
6. Remount the power supply into place.

⚠ *Do not pinch wires during reinstallation as this may damage the equipment.*

7. Using the heat sink, place the power supply back into the main unit.

Heat Sink

8. Install the two new screws supplied in the kit.

Screws

9. The installation of the power supply should be complete. Re-install the AC cord and test for functionality.

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6-Slot Terminal Bay - 50143872-001FRE

Part Name:	6-Slot Terminal	
Part #:	50143872-001FRE	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠️ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠️ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

Note *Isolate screws by size as you remove them to ensure proper placement when reinstalling.*

1. Remove the 6-slot bay from the Charge Rack.

2. Disconnect the 6 cables between the I/O and power boards.

3. Remove all of the screws and then remove all of the boards.

4. Replace the 6-slot bay with the new one.

5. Install all boards and connect all of the cables on the 6-slot bay.

6. Reload the 6-slot bay into the Charge Rack.

⚠️ *Do not pinch wires during reinstallation as this may damage the equipment*

⚠️ *Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.*

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Power Board (Wireless) - 50145763-001FRE

Part Name:	Power Board (Wireless)	
Part #:	50145763-001FRE	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

Note *Isolate screws by size as you remove them to ensure proper placement when reinstalling.*

1. Remove the 6-slot bay from the Charge Rack.

2. Remove the screws between the board and the frame.

3. Use a soldering tool to disconnect the soldering wires on the board.

4. Separate the board from the frame.

5. Replace the board with the new one and install the board into the 6-slot bays.

6. Reload the 6-slot bay into the Charge Rack.

> ⚠ **CAUTION** *Do not pinch wires during reinstallation as this may damage the equipment*

> ⚠ **CAUTION** *Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.*
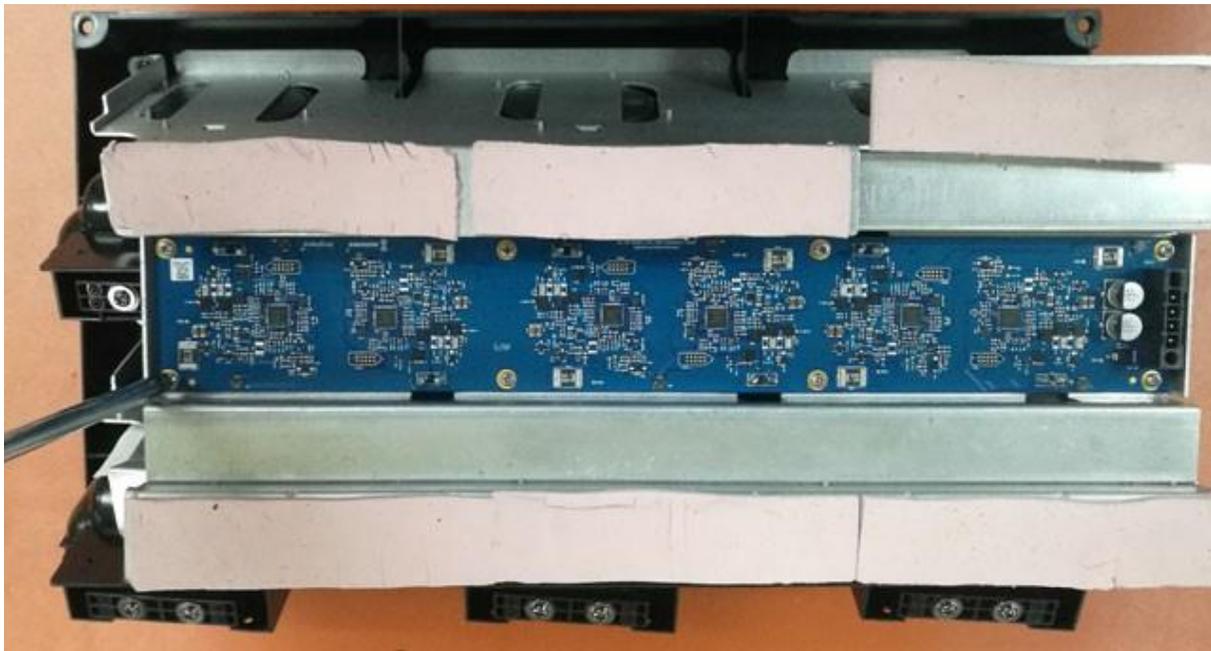
Core Module (Wireless) - 50145761-001FRE

Part Name:	Core Module (Wireless)	
Part #:	50145761-001FRE	
Tools Required:	1 medium #2 Phillips head screw driver	

⚠ **Before working on the Charge Rack, always disconnect the AC cord from the power supply.**

⚠ **After removing power, wait 15 minutes before servicing the unit to avoid shock.**

Note *Isolate screws by size as you remove them to ensure proper placement when reinstalling.*
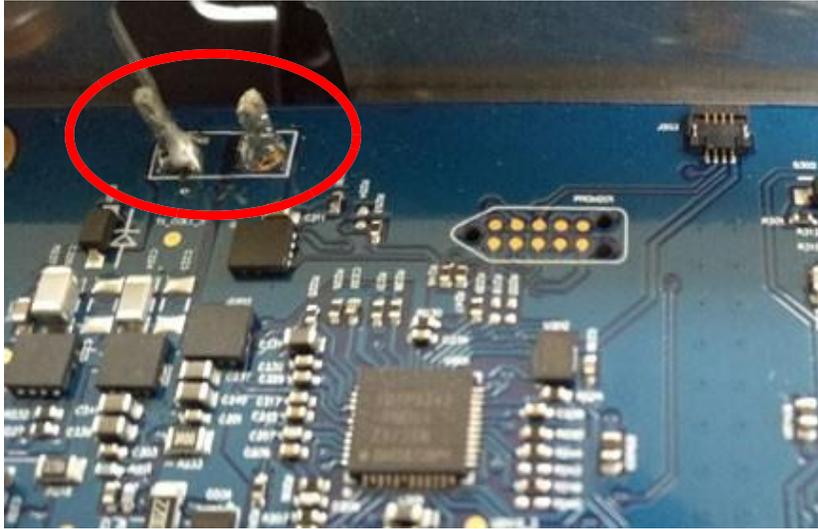
1. Remove the 6-slot bay from the Charge Rack.

2. Remove the power board from the 6-slot bay.

3. Remove the **silver** screws between the frames. Please note that the screws are on both sides of the frame.

4. Remove the **black** screws between the frames and plastic bay cover.

5. Remove the four screws between the coil module and the frame.

6. Replace the coil module with new one and re-install it on the frame.

7. Re-install the frame and power board on the 6-slot bay.

8. Reload the 6-slot bay into the Charge Rack.

Do not pinch wires during reinstallation as this may damage the equipment

Be careful not to over-tighten the screws, which could damage the 6-Slot Bay and prevent the component from being adequately secured.

Maintenance

It is important to keep the outer case of the Charge Rack clean and free of debris. Regular cleaning will help prevent dirt from being transferred to the rack as well as protecting the terminal from excess scratches and damage.

Cleaning

DO NOT:	• DO NOT place coffee, soft drinks, or other materials in or on the Charge Rack. • DO NOT clean the Charge Rack with unapproved solvents. • DO NOT spray or pour cleaning solutions directly onto the equipment. • DO NOT use any pressure washers or hoses to clean the equipment.
DO:	• Use only approved cleaning materials. • Clean the Charge Rack once a week. • Protect eyes when pouring or spraying the cleaning solution.

Approved Cleaner

• Plasti-Kleen* (Oasis PN 2200105656 or 490630)

• FilmFree* (Oasis PN 15361)

• Water

• Common dish soap and water

• Ammonia-free glass cleaner

• Thermal Printer Clean-Penn (Oasis PN 105950-035)

*Recommended cleaner.

Cleaning Procedure

1. Protect eyes when pouring or spraying solution.

2. Apply the cleaning solution to the cleaning towelette. **DO NOT** spray or pour the solution directly onto the equipment. Avoid excess quantities of cleaner (i.e., cloth should not be over-saturated and dripping).

3. Gently wipe the outer case and terminal slots, including side clips, and I/O connector surface as necessary with the moistened towelette. The Thermal Printer Clean-Penn can be used to clean any contaminants from the tips of the charging pins. To use, gently wipe the tip of the charging pin with the tip of the Clean-Penn, taking care to avoid damaging or bending the charging pins.

4. Do not use the bay without first wiping it with a dry towelette or allowing it to air dry.

Other Maintenance

Whenever a six-slot terminal bay is open, apply NyoGel 760G lubricant to the connector on the distribution board to the power supply cable (see page 6-15).

Troubleshooting

Symptoms	Cause	Suggested Action
Terminal LED not illuminated on a single bay.	Terminal not seated properly	Verify that the terminal is pressed firmly into the bay.
	Defective terminal	Verify that the terminal LEDs do not illuminate in a known good bay. If necessary, send the terminal for repair.
	Dirty I/O pins and/or terminal charge contacts	Inspect the I/O pins and terminal charge contacts for dirt. Clean the pins and terminal charge contacts using the approved cleaning method (see page 7-1).
	Broken I/O pins	Inspect the I/O pins for damage. If necessary, replace the I/O board with kit part #50142380-001FRE (see page 6-21).
	I/O board power cable failure	Verify that the I/O cable is properly inserted. If necessary, replace the I/O cable with kit part #50142485-001FRE (see page 6-19).
	I/O board failure	Replace the I/O board with kit part #50142380-001FRE (see page 6-21).
	Power distribution board failure	Replace the power distribution board with kit part #50142378001FRE (see page 6-23).
Terminal LED not illuminated on an entire bank of six bays.	Big harness failure/connection issue	Verify that the big harness is properly connected to the power distribution board. If necessary, replace the big harness with kit part #200004056CNRKIT (see page 6-1).
	Power distribution board failure	Replace the power distribution board with kit part #50142378001FRE (see page 6-23).

Symptoms	Cause	Suggested Action
Terminal LED not illuminated on all 30 bays (all five banks).	Charge rack is not receiving power	Verify that the power cord is not damaged and is properly plugged into the rack and outlet.
		Verify the outlet has power. Check the fuse or circuit breaker.
		If a power strip or surge protector is used, verify that it is turned on and functioning properly.
	Big harness failure/connection issue	Verify that the big harness is properly connected to the power supply. If necessary, replace the big harness with kit part #200004056CNRKIT (see page 6-1).
	Power supply failure	Replace the power supply with kit part #100008187CNRKIT (see page 6-25).
Terminal fits loosely in a single bay.	Terminal not seated properly	Verify that the terminal is pressed firmly into the bay.
Terminal LED begin flashing in the middle of charging.	Terminal's battery has stopped charging due to excessive heat or cold	Allow the terminal to return to normal temperature, then retest. It may be necessary to operate the rack in a temperature-controlled environment.
	Terminal battery failure	If charging does not resume after the terminal has returned to normal temperature, send the terminal in for repair.
	Defective terminal	Send the terminal in for repair.
	Poor contact between connector on distribution board to power supply cable	If all 6 bays are flashing, remove the 6-bay module, add NyoGel 760 lubricant (see page 6-15).

Parts List

The following tables list the contents of each DIAD 6 Charge Rack service kit.

Note *Please disregard the color of Printed Circuit Boards (PCBs) as they may vary.*

Part Number	Kit Description	Component Description	Qty
50143872-001FRE	Kit, Terminal Bay, CN85-CR/NR, Mod Unit	Plastic Docking Section, CN85 CR/NR	1
		Screw, 99EX, PHP, 8-32X1/2"	4
100008187CNRKIT	Kit, Power Supply, CN85CR/NR, Mod Unit	Power Supply, CN85, Meanwell USP-500-12 Including Harness	1
		Screw, 99EX, PHP, 8-32X1/2"	2
		Starwasher	2
50142378-001FRE	Kit, Power Distribution PCBA, CN85 CR/NR	PCBA, CN85, Power Distribution	1
		Screw, 3 X 9MM, PHIL, PAN, TF, CS, Zinc	2
		Grommet, 99EX, Rubber Washer	2
50142380-001FRE	Kit, I/O PCBA, CN85-CR	PCB S/A, CN85-CR I/O	1
		Cable, 3Pin Power Dist, I-O	1
		Screw, 3 X 9MM, PHIL, PAN,TF,CS, Zinc	2

Part Number	Kit Description	Component Description	Qty
50142485-001FRE	Kit, Cable, I/O PCBA to Power Dist. PCBA 	Cable, 3 Pin Power Dist, I-O	1
200004056CNRKIT	Kit, Cable, DC PS to Power Dist PCBA 	Harness, 99EX, PS Output Cable to PD PCB	1
		Wire Tie	6
50123883-001	NyoGel lubricant	760G-30CC-WH WHITE SYRINGE	1
50145763-001FRE	FRE, Board, 6UP1, CN85 30Bay WC 	Board, 6UP1, CN85 30Bay WC	1
		M2x5, Machine Self-Tapping Screws, CN85	8
50145761-001FRE	FRE, Coil, 6UP1, CN85 30Bay WC 	Coil, 6UP1, CN85 30Bay WC	
		M2x5, Machine Self-Tapping Screws, CN85	4

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