

PosiCharge ProCore™

Installation Manual



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OWNER'S RECORD

Model:

PosiCharge ProCore

Serial number (s/n):

Purchase date:

Output power:

A NOTE ABOUT CUSTOMER SUPPORT

To ensure superior service, please write down the unit's serial number in the owner's record above and have it available when contacting Webasto customer support. The serial number can be found on the nameplate rating label on the left side of the unit.

Customer Service:

1.866.767.4242
customerservice@posicharge.com

For parts, email:
parts@posicharge.com

SAVE THESE INSTRUCTIONS!

This manual contains important instructions for the installation of the PosiCharge ProCore charger series.

CONTENTS

1	INTRODUCTION	1
1.1	Symbol Usage	2
1.2	General Safety Precautions	3
2	SYSTEM DESCRIPTION AND INSTALLATION PROCEDURE	5
2.1	About This Chapter	6
2.2	Introduction	6
2.3	Performance Ratings	7
2.4	Site Preparation	8
2.5	Unpacking the Product	10
2.6	Input Wiring	11
2.7	Installation	12
2.8	Battery Connection	16
2.9	Checklist	17
2.10	Configuration	17

CHAPTER 1

INTRODUCTION

1.1 SYMBOL USAGE

The PosiCharge ProCore is designed with safety as the highest priority. Installation must comply with all local codes and the following safety precautions must be read and observed.



DANGER

Indicates information about safety practices which, if not followed, may result in serious injury or death.



WARNING

Indicates information about safety practices which, if not followed, could result in personal injury, fire, or equipment overheating.



NOTE

Indicates helpful information for installation or usage, but does not contain personnel or equipment safety-related information.

1.2 GENERAL SAFETY PRECAUTIONS

BEFORE YOU BEGIN

- Read this entire manual and cautionary markings on the PosiCharge™ ProCore cabinet.
- Make sure you also read the IMPORTANT SAFETY INSTRUCTIONS below.
- Installing or servicing this charger must be done by qualified personnel ONLY.



DANGER

ELECTRIC SHOCK CAN KILL

Touching live electrical parts can cause fatal shocks or severe burns. The battery terminals are always electrically live, and the output circuit is live whenever the battery is connected or being charged. The input power circuitry and internal circuits are live whenever input power is on. An incorrectly installed or improperly grounded charger is a hazard.

1.2.1 IMPORTANT SAFETY INSTRUCTIONS

- Ground the unit properly with a grounding conductor of a size equal to or larger than that recommended by local electrical codes or the installation section of this manual.
- Do not touch the uninsulated portion of the output battery connector or an uninsulated battery terminal.
- Only qualified service personnel may remove the panels on the ProCore. There are no user serviceable parts inside. Refer all servicing to qualified service personnel. Opening the system or attempted installation or repair by other than qualified service personnel voids the warranty.
- Disconnect battery charger from input power and battery connections before servicing. Lockout/Tagout input power according to OSHA 29 CFR 1910.147.
- Do not expose to rain or perform installation/service/repair work when in standing water.
- Stop a charge by disconnecting the output cable connector or by pressing the stop button on the front panel. The ProCore automatically stops a charge event to prevent arcing or burning of the charger connections in the event of a hot disconnect.
- The charging cables must be sized for the full rated current of the ProCore and inspected frequently for wear, cuts and abrasion. Do not use worn, damaged, undersized, or poorly spliced cable.
- The ProCore charging connector is subject to normal wear and tear and may be damaged by misuse or abuse. Frequently inspect the connector for cracking, pitting of contacts, fraying of wires or signs of connector fatigue. Replace damaged charging connectors immediately



WARNING

OSHA INSTRUCTION STD 1-11.4
OCTOBER 30, 1978

“Battery charging” areas where power industrial truck batteries are charged only—no maintenance is performed, batteries are not removed from the trucks and no electrolyte is present in the area—are not subject to the requirement of 29 CFR 1910.178 (g) (2). The charging areas shall be in compliance with 29 CFR 1910.178 (g) (1), (8), (9), (10), (11) and (12).

Personal protective equipment shall be used when and where required.

- Do not install or place unit on, over or near combustible surfaces.
- Do not install unit near flammables.
- Do not block air intake or exhaust.
- Do not overload building wiring - be sure power supply system is properly sized, rated and protected to handle this unit. Use only on circuits provided with the minimum wire size specified in the installation section.
- Protective bollards or Armco barriers should be installed where charging equipment location is subject to damage from vehicle activity.
- Do not install unit where it will be exposed to direct sunlight.
- To avoid shock hazard, only install cables approved by PosiCharge™ for indoor use.
- Do not subject the cable or coupler to damage or stress. Do not step on the coupler cable.
- Do not hang from the coupler cable.
- Do not disassemble the ProCore.
- Follow the National Electrical Code (NEC) and local codes. NEC and local codes take precedence. If any instructions in this manual conflict with NEC or local codes, contact Webasto Inc. for further information.

**CONTACT POSICHARGE'S CUSTOMER SERVICE DEPARTMENT PRIOR
TO PERFORMING ANY SERVICE ON THE UNIT.**

1-866-767-4242

CHAPTER 2

SYSTEM DESCRIPTION AND INSTALLATION PROCEDURE

2.1 ABOUT THIS CHAPTER

This chapter is organized into nine sections:

- Introduction, a brief description of the product line and its capabilities.
- Performance
 - Ratings, a table of physical and performance parameters.
 - Parameters, a set of tables defining operational limits.
- Site preparation, a list of requirements to protect you and your product.
- Unpacking, a discussion of how to unpack your product.
- Input wiring, a discussion of setting up wiring that connects with your product.
- Physical installation, a list of steps for installing your product at your site.
- Battery connection, connecting the charger to the fork truck battery.
- Checklist, verification that all required actions have been performed properly.
- Configuration, programming the operational parameters for the product.

2.2 INTRODUCTION

The PosiCharge™ ProCore Series is a premium, intelligent charging family that ranges in power from 10kW for lower-duty vehicles to 30kW for the hardest-working forklifts. PosiCharge ProCore offers an extensive array of features, including charger and battery data management capability with Battery Monitor and Identifier Module (BMID), precise charging control, electrolyte temperature monitoring, “easy-service” power stage modules, and a dynamic equalization scheduler. ProCore models are based on Webasto’s robust, single-port architecture for maximum flexibility and modularity. The ProCore product line features a proven MOSFET technology, a broad power range, multi-voltage flexibility, and value-added options that can support most material handling and fork truck batteries. These systems are fully compatible with the PosiNet systems accessed via the PosiCharge Battery Rx™ (smart BMID).

Standard features of the PosiCharge ProCore series are:

- High frequency MOSFET technology
- Bluetooth technology
- Modular unit power stage for ease of service
- Energy saving mode for reduced power and blackout periods
- CEC compliant
- Universal battery type, brand, voltage, chemistry and Ah capacity
- Custom programmable charge algorithms
- Premium equalization scheduler
- Stack light and auto watering provided power (24vdc) and controls
- Maintains 1000 charge event logs
- Anti-arc disconnect
- Auto thermal shut down
- Color LCD display
- Wall or pole-mounted

The PosiCharge ProCore series is compatible with:

- Smart Battery Monitor and Identification Device (BMID)
- Electrolyte Immersed Thermistor
- Auto watering
- Stack lights
- CAN Interface
- PosiNet data reporting systems

Safety Compliance:

- CE, UL1564, CSA, RCM
- NEMA 1 Rated Enclosure

2.3 PERFORMANCE RATINGS

The table below provides the physical and performance parameters for each of the ProCore models.

Table 1: ProCore Physical and Performance Parameters

POWER RATING	10kW	15kW	20kW	30kW w/ single cable	30kW w/ single cable	30kW w/dual cable	30kW w/dual cable
Max Output Current 24/36/48V (A)	200/200/ 200	320/320/ 320	400/400/ 400	400/400/ 400	500/500/ 500	500/500/ 500	600/600/ 600
Max Output Current 60V (A)	167	250	320	320	500	500	500
Max Output Current 48/72/80V (A)	200/139/ 125	300/208/ 187	400/278/ 250	400/400/ 375	N/A	N/A	N/A
Max Output Current 100V (A)	100	150	200	300	N/A	N/A	N/A
Min. Input Conductor Size (AWG)	12	10	8	6	6	6	6
Min. Grounding Conductor Size (AWG)	12	10	8	8	8	8	8
Min. Input Wire Terminal Torque (in-lb)	30-33	30-33	30-33	30-33	30-33	30-33	30-33
Min. Ground Wire Terminal Torque (in-lb)	35-44	35-44	35-44	35-44	35-44	35-44	35-44
Circuit Breaker Rating 480VAC	20A	25A	40A	50A	50A	50A	50A
Connector Option	Euro	Euro	Euro	Euro	Rema	Euro	Euro SBX
Dimensions H x W x D (in)	28.5x20 x7	28.5x20 x11.5	28.5x20 x11.5	28.5x20 x16.5	28.5x20 x16.5	28.5x20 x16.5	28.5x20 x16.5
Weight (With Cables)	81 lbs.	129 lbs.	129 lbs.	173 lbs.	184 lbs.	197 lbs.	197 lbs.

Operating Temperature Range: -25°C to 45°C

Storage Temperature Range: -30°C to 65°C

2.4 SITE PREPARATION

Refer to the Important Safety Instructions above regarding the environmental considerations for the charging room where you are installing the charger. Figure 1: Mounting Template indicates the locations for the four mounting screws/bolts, where the horizontal distance is 18" on centers and the vertical distance is 29½" on centers.

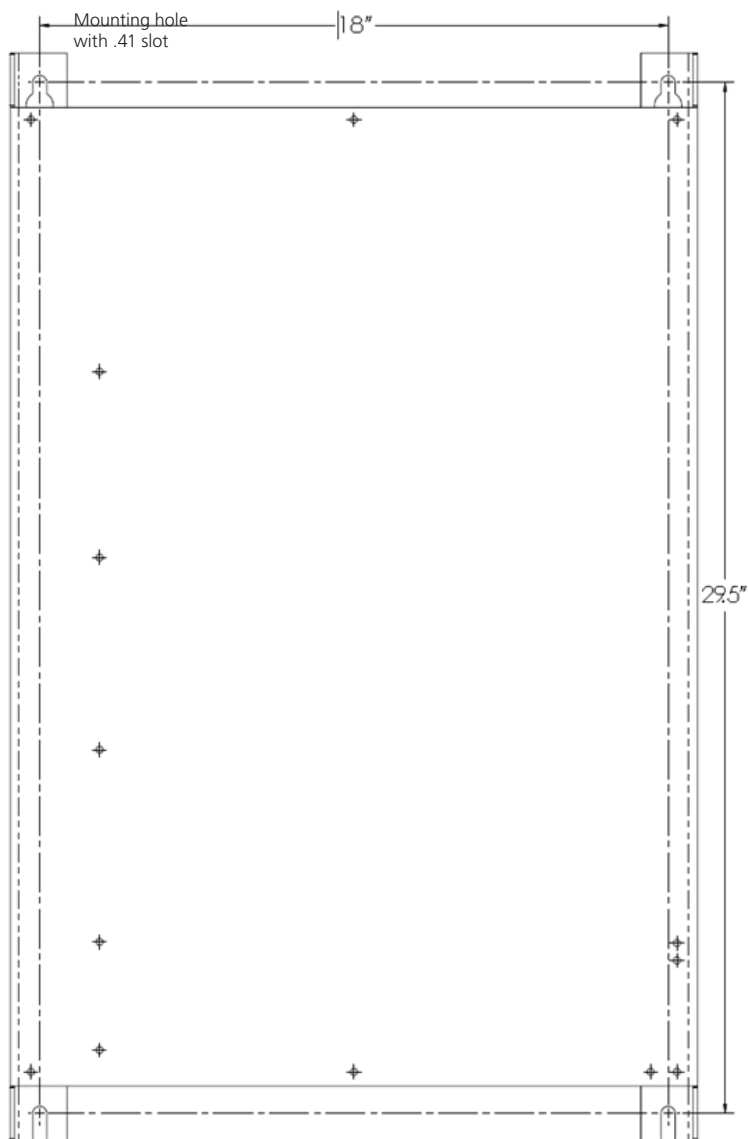


Figure 1: Mounting Template

2.4.1 WALL MOUNT

The chargers are designed for wall mounting. Refer to Table 1 above for your charger's weight to determine the correct mounting hardware.

The cabinets are built according to the number of charger modules required by your facility. Figure 2: Single and Triple Chargers below shows for a single module and multiple modules.

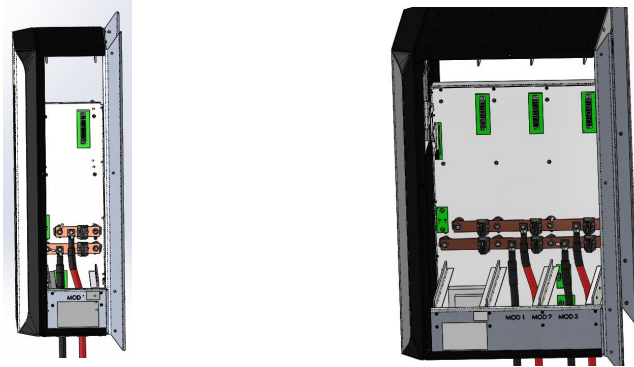


Figure 2: Single and Triple Chargers

Charger must not be mounted in such a manner that causes warpage, especially on the rear surface. The cabinet assembly and charger modules each ship in separate containers.

Charger minimum clearances are 1' to the left, 3' on the right for service access, 3' below, and 0 above.

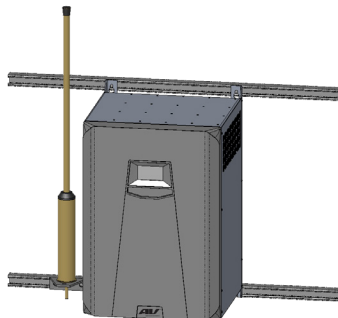


Figure 3: Wall Mount

If you are mounting the charger on a standard wall with studs and drywall covering where the studs are 16" on centers, use a stud finder to determine and mark stud locations. After locating the studs, mount two Unistrut® channels horizontally to accommodate the fastener holes in the cabinet. (See Figure 1). At a minimum, run the Unistrut horizontally across 3 studs. Use the same channels if you are mounting to concrete block walls. See Figure 3: Wall Mount.

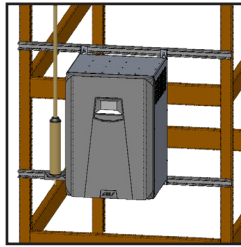


Figure 4: Rack Mount

Figure 4 above shows a rack mount, also using Unistruts.



NOTE

Do NOT mount to walls with steel studs and drywall covering if the steel studs are not structurally rated.

In Figures 3 and 4 above, the object next to the cabinet (called a “Pogo Stick”) is a spring-loaded cable support and retractor that keeps the cables off the floor. It allows the cables to be extended to reach a fork truck parked farther away from the charger. It is an optional item.

2.4.2 PEDESTAL MOUNT

ProCore chargers may also be mounted on pedestals, where each pedestal can accommodate two charger cabinets. Pedestals require only that they be mounted on flat concrete floors with enough physical clearance for safe vehicle operation and personnel safety. Pedestal mount installation is described in Section 2.7.2.

2.5 UNPACKING THE PRODUCT

Before opening the boxes, inspect the box for signs of any damage that may have occurred during shipping and, if so, contact the shipper immediately to file a claim.

Use a box knife set to the first notch to minimize the risk of damaging the cabinet or the modules when slicing the shipping tape. Carefully remove the box contents and set aside in a secure location free from dust and moisture prior to installation.



NOTE

Ensure that all shipping materials are removed from inside the cabinet.

Do not dispose of the shipping containers until installation and testing are complete.

2.6 INPUT WIRING

The input wiring is a 3-wire delta configuration, no neutral, and a ground wire. The cabinet has a 1 " diameter fitting on the bottom left of the cabinet (next to the output cables) to accept a $\frac{3}{4}$ " conduit. See Figure 5: Wiring Panel.

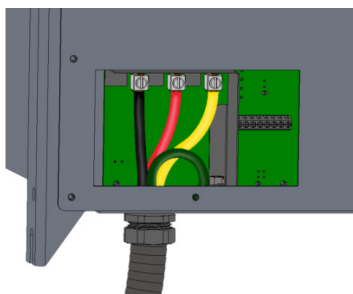


Figure 5: Wiring Panel

Cabinet has a knock-out of 1 " diameter fitting on the bottom left of the cabinet (next to the output cables) to accommodate $\frac{3}{4}$ " incoming AC conduit.

An access panel is located on the bottom left side of the unit for connecting the utility power and the output cables. Refer to Figure 6: Ground Connection.

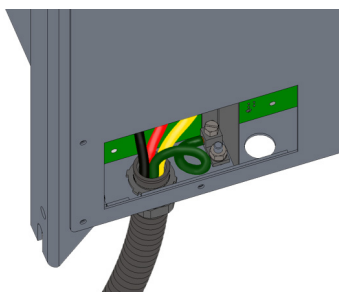


Figure 6: Ground Connection

AC utility power must be installed by an experienced and licensed electrician, subject to all applicable national and local electrical code requirements.



DANGER

Covers do NOT have interlocks that disable power when the covers are removed. AC power is always present in the cabinet unless the supply breaker is switched off or tripped. Battery voltage is also present in the charger whenever a vehicle is connected.

Charger **MUST** be connected directly to the breaker box via conduit. Use of plugs or cords is unsafe and not allowed.

2.7 INSTALLATION

This section discusses the installation procedures for wall-mounted and pedestal-mounted cabinets and charger modules, as well as pogo stick cable mounts and stack lights.

2.7.1 WALL MOUNT

Based on the planning you performed in Section 2.4, you are now ready to begin installation. If you are installing multiple chargers, remember the clearances required, and then begin your installations starting with the left-most unit; this leaves adequate space for installing the charger module(s) without any interference.

The wall mount kit (no pogo), (P/N# 24889) provides an upper strut channel of 24" length, a lower strut channel of 36" length and four pairs of spring clamping nuts and machine screws for fastening the cabinets to the strut channels.

1. Drill the holes as described in Section 2.4 for either cinder block, dry wall with wooden studs, or dry wall with strengthened metal studs. Mount the strut channels with fasteners appropriate for the wall material.
2. Next, mount the cabinets (you may need a helper) to the strut channels by inserting a spring clamping nut in the channel behind a cabinet mounting hole, then insert the machine screw through the hole and into the clamping nut. Tighten appropriately.
3. Repeat for remaining mounting holes.

2.7.2 PEDESTAL MOUNT

Refer to Figure 7. The pedestal mount is shipped with the horizontal mounting arms in place. Holes for mounting the Procore chargers on to the arms are pre-drilled and face forward. The kit includes all hardware for mounting the pedestal to the concrete floor and for securing the chargers to the pedestal arms.

The pedestal foot measures exactly 12 inches square, and the holes are set on an 11 inch square. Determine the location(s) for your pedestal(s), then complete the following steps.

1. Using standard industry practice, drill holes in the concrete to accommodate a concrete anchor wedge stud. The stud is a 3/8"x16x5", with a 3.125 thread length. When the holes are drilled, insert the studs.
2. Mount the pedestal on the studs, then place a flat washer over each stud and secure with a hex nut. Tighten the nut to secure each stud firmly in the concrete.
3. Mount the cabinet over the forward-facing holes in the support tubing (you may need a helper).
4. Insert a flange head machine cap screw (included with the kit) through the holes, place a flat washer over the screw inside the tubing, then secure the screw with a hex nut.
5. Repeat for the remaining mounting holes.
6. When complete, insert a square black tubing plug into the top of the pedestal and into the ends of the horizontal tubing.

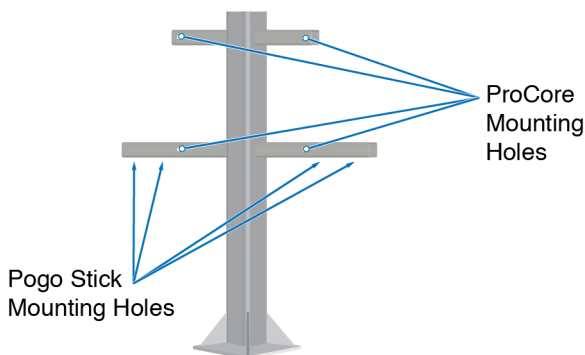


Figure 7: Pedestal Mount

2.7.3 POGO STICK WALL MOUNT

An optional kit allows pogo stick cable hangers to be mounted next to a charger. Refer to Figure 8 below.

1. From the kit, select the right angle mounting bracket, the spring clamping nut, the washers and the machine screw.
2. Place the nut in the channel, then orient the bracket with the smaller leg on the bracket and the larger leg facing up.
3. Place the lock washer on the screw, then the flat washer, and insert the screw through the bracket and into the clamping nut. Tighten firmly.
4. Remove the nut and any washer from the pogo stick threaded rod, insert the rod through the bracket leg, then place the mounting hardware back on the rod and tighten firmly.

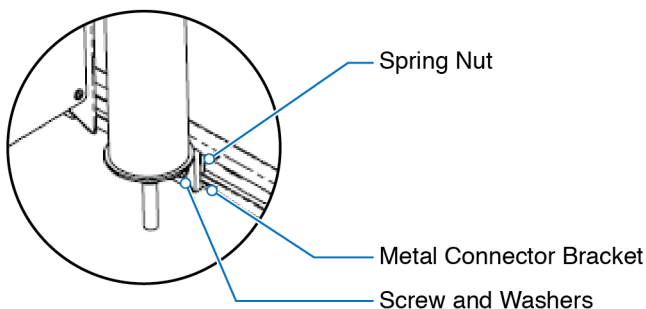


Figure 8: Pogo Stick Wall Mount

2.7.4 STACK LIGHT

1. See Figure 9. On the top of the cabinet, at the left rear corner, drill five holes at the locations shown with the hole dimensions as shown in Figure 10. Do not allow metal shavings to enter cabinet.
2. In order, secure the mount to the cabinet with the included hardware, run the stack light wires through the pole, secure the light to the pole with the lock, insert the wires into the cabinet, then insert the pole into the mount.

3. Use the crimp terminals (P/N# 05358) to splice the RED, YELLOW, VIOLET and BLACK wires to the stack light lead wires, as shown in Figure 11.
4. Insulate unused wires with heat shrink tubing (P/N# 02422).
5. Install four cable tie mounts (P/N# 03484) at the locations shown in Figure 10, then secure the wiring with the included cable ties.
6. Connect stack light wires to the TB1 terminal block on the backplane board according to Table 2. Terminals are numbered left-to-right.



Figure 9:Top Cabinet Stack Light Mounting Holes

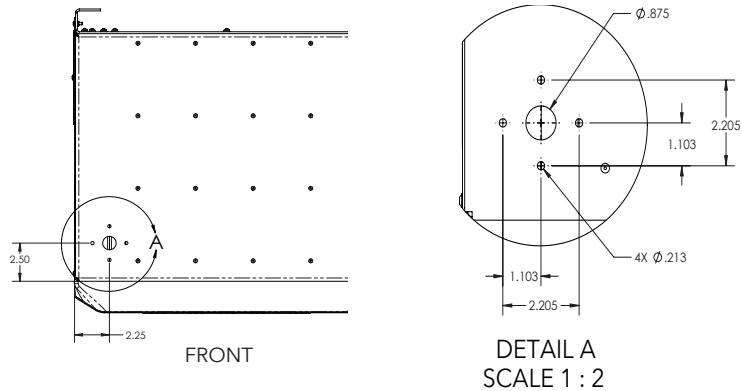


Figure 10: Stack Light Mounting Position and Dimensions

Table 2: Stack Light Wiring

FROM STACK LIGHT	TO TB1 TERMINALS
BLACK WIRE	TB1-5
RED WIRE	TB1-6
YELLOW WIRE	TB1-7
VIOLET WIRE	TB1-8

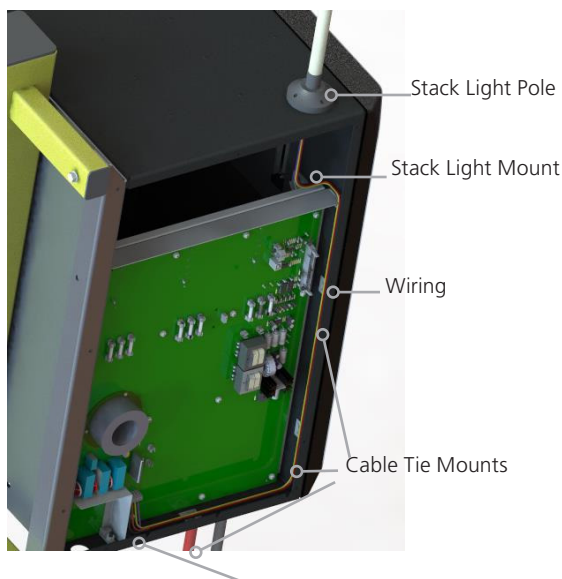


Figure 11: Stack Light Mounting and Wiring

2.7.5 CHARGER MODULE INSTALLATION

The cabinet can contain up to three charger modules. To install the charger modules, remove the cover plate from the right side of the cabinet. You may insert modules in the cabinet in any of the three positions—there are no requirements for the order or position in which they are installed. Slide each module into its slot until it is flush with the cabinet and has firmly seated in its backplane connector on the left side of the cabinet. Install cover plate. See .

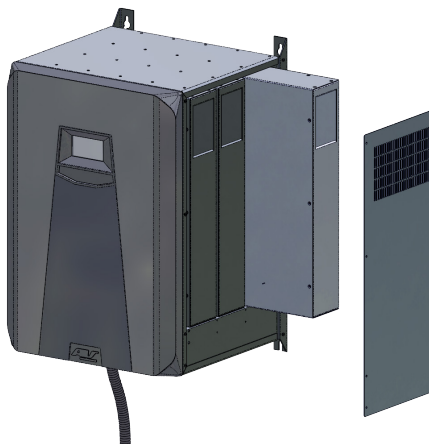


Figure 12: Module Insertion/Removal

2.8 BATTERY CONNECTION

Connect the charger to the battery by positioning the fork truck within the charging cable length, then grasp the connector handle and firmly insert the connector into the connector socket on the fork truck. See Figure 13: Charging Cable Connector below.



NOTE

The handle on the connector eliminates misorientation when inserting the connector into its socket.



Figure 13: Charging Cable Connector



Figure 14: Connected to Fork Truck

Figure 14 above shows the connector properly inserted into the charging socket on the fork truck. When you have finished making the wiring connections, go to 2.9 Checklist below and perform the steps shown in the Checklist to ensure the charger is in proper working order.

2.9 CHECKLIST

Perform the following steps in order after you have completed the utility-to-charger wiring connections.

At the charger:

1. Lockout utility breaker.
2. Confirm that utility breakers and wire gauge conform to requirements.
3. Confirm that charger is securely attached to its supports.
4. Confirm that utility cover plate is installed.
5. Confirm that power module is installed.
6. Confirm that power module cover panel is installed.
7. Turn on utility power.
8. Turn standby switch on left side of charger to ON.
9. Confirm that display lights up and shows "Connect Vehicle" message.

At the fork truck:

1. PosiCharge offers wiring kits for your fork truck:
*Contact your local PosiCharge representative for further details.
2. Charger charges batteries with a BMID without further configuration.
3. Charger charges batteries without a BMID using default settings, but optimum performance requires configuration using the ProCore Mobile App.

2.10 CONFIGURATION

Use the ProCore Mobile App on your iPhone or Android device to configure the charger, battery, and other parameters as required for your facility. Figure 15: Configuring the Charger below shows a technician using his ProCore mobile app to perform Charger Setup. It is through the mobile app on your cell phone where all setup and configuration is performed.

Refer to the ProCore Mobile Application User's Guide for information on downloading the mobile app and operating instructions.



Figure 15: Configuring the Charger

Once the charger is programmed and set up, connected to the battery, and in operation, the final result of the battery charge is shown in Figure 16: Charge Complete.



Figure 16: Charge Complete

INSTALLATION COMPLETE

