



Installation Manual

SeaPower™

KPPS016 Charger Documentation

Document Version History

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1 Introduction

This guide provides detailed instructions for the physical installation of the **SeaPower™ KPPS016 Charger**, designed specifically for use with SeaPower high voltage battery systems. It covers mechanical setup, cable connections, and power integration required to prepare the charger for operation. Software configuration, graphical user interface (GUI) usage, and charging procedures are addressed separately in *SeaPower – KPPS016 – D003 Operator's Manual*.

The KPPS016 charger is a 15 kW, ruggedized charging system built into a shock-protected, 19" portable case. It supports direct connection to power-communication rails (PCR) connecting multiple batteries in parallel and includes integrated fault prevention, thermal protections, and resistive discharge capability.

This document is intended for technical users involved in charger integration, installation, or pre-deployment validation, including system integrators, field technicians, and engineering or QA personnel. All installation activities should be carried out by qualified personnel trained in high-voltage system safety. Use of the KPPS016 charger is authorized only with Kraken SeaPower batteries.



Figure 1 – KPPS016 Charger connected to 4 batteries via a PCR

2 Safety and Handling Precautions

Installation of the KPPS016 charger must be performed by trained personnel familiar with high-voltage systems and battery safety protocols. The following precautions are mandatory before and during installation.

2.1 General Safety Requirements

- **Qualified personnel only:** Installation, cable connection, and power-up procedures must be carried out by individuals with appropriate electrical safety training.
- **High voltage warning:** The charger interfaces directly with high-power battery systems. Treat all power connectors as live unless verified otherwise.
- **Connections:** Battery cables must only be connected or disconnected while the charger is Powered off

 Do not connect/disconnect under load. Improper handling may result in arc faults or connector damage.

2.2 Handling

- **Inspect connectors and cables before each use.** Look for signs of damage, corrosion, or deformation.
- **Keep the charger on a stable, level surface** to prevent tipping during handling or transport.
- **Do not block airflow.** Maintain clear space around intake/exhaust areas (rear panel and around the resistive discharge unit fans).
- **Protect from moisture and contamination.** Avoid installing the charger in wet or corrosive environments unless additional protective measures are in place.
- **Allow for proper cooling:** If the charger is used in high-power charge/discharge cycles, ensure ambient temperatures stay within the operational range defined in the charger's ICD.
- **Recommended practice:** For prolonged operation, especially in high-load scenarios, submerge connected batteries in a water basin to maintain acceptable thermal conditions.

2.3 Emergency Protocols

The main power switch doubles as an emergency shutoff. Flip to **OFF** to immediately cut power to the system. Never bypass software or hardware safety interlocks. These are in place to prevent unsafe operating states.

3 Installation and Set-up

The **KPPS016 charger** is delivered in a ruggedized, shock-protected transit case with removable front and rear lids. Before installation, ensure the work area is properly prepared and the unit is safely unpacked.

3.1 Recommended Site Conditions

- **Surface:** Use a flat and level platform that supports the weight of the charger and allows access from all sides.
- **Clearance:** Maintain at least 30 cm (12 in) of open space around the rear of the unit for ventilation and cable clearance.
- **Ventilation:** Ensure that airflow is not obstructed around the rear panel fans or resistive discharge unit.
- **Lighting:** The area should be well-lit to allow for inspection of cable connections and component labeling.

3.2 Environmental Considerations

Avoid installing the charger in locations exposed to:

- Rain or direct spray
- Dusty or corrosive atmospheres
- High vibration or shock
- Ensure the area is protected from unauthorized access during installation and subsequent operation.

3.3 Opening the Transport Case

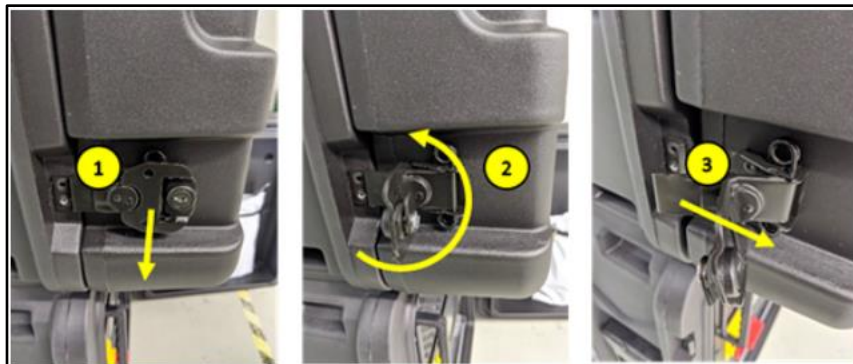


Figure 2 - Opening the transport case

1. Place the charger upright on a flat, stable surface.
2. Release the **quick-release fasteners** on the front and rear lids:
 - Flip each tab open.
 - Rotate counter-clockwise to release the clamps.
 - Pull the lid away from the case.
3. Set the lids aside in a safe, dry area. Lids can be folded open or fully removed as needed.

3.4 Installing the Wheels

The charger is delivered with four removable wheels to support mobility:

1. **Push the button** on each wheel to unlock the spring-loaded pin.
2. **Slide each wheel into the mounting socket** on the bottom corners of the charger case.
 - Slide the wheel in and release the button. A click will confirm proper engagement.



Figure 3 - Installing the wheels

 **Ensure each wheel is fully seated before moving the charger.**

3.5 Locking the Wheels

Once in position, the wheels must be locked to prevent unintended movement:

1. Press the **brake lever** on each wheel to engage the lock.
2. Verify that the unit does not shift or roll when gently pushed.

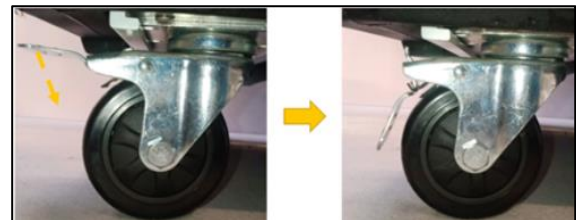


Figure 4 - Locking wheels

To unlock:

1. Lift the brake plate to release the wheel lock before transport.



Figure 5 - Unlocking wheels

3.6 Final Positioning Notes

- The **front panel** (operation selector, monitor, cable ports) should face the user access area.
- Leave a **rear clearance** for exhaust fans and discharge unit cooling.
- Avoid placing the charger where cables will create a tripping hazard or be under strain.



Figure 6 – KPPS016 front (left) and rear (right)

4 Charger Layout

Familiarity with the physical layout of the KPPS016-IOG charger is essential for correct installation and cable connection. This section describes key components accessible from the **front** and **rear** sides of the unit.

4.1 Front Panel Components



Figure 7 - KPPS016 Front Panel

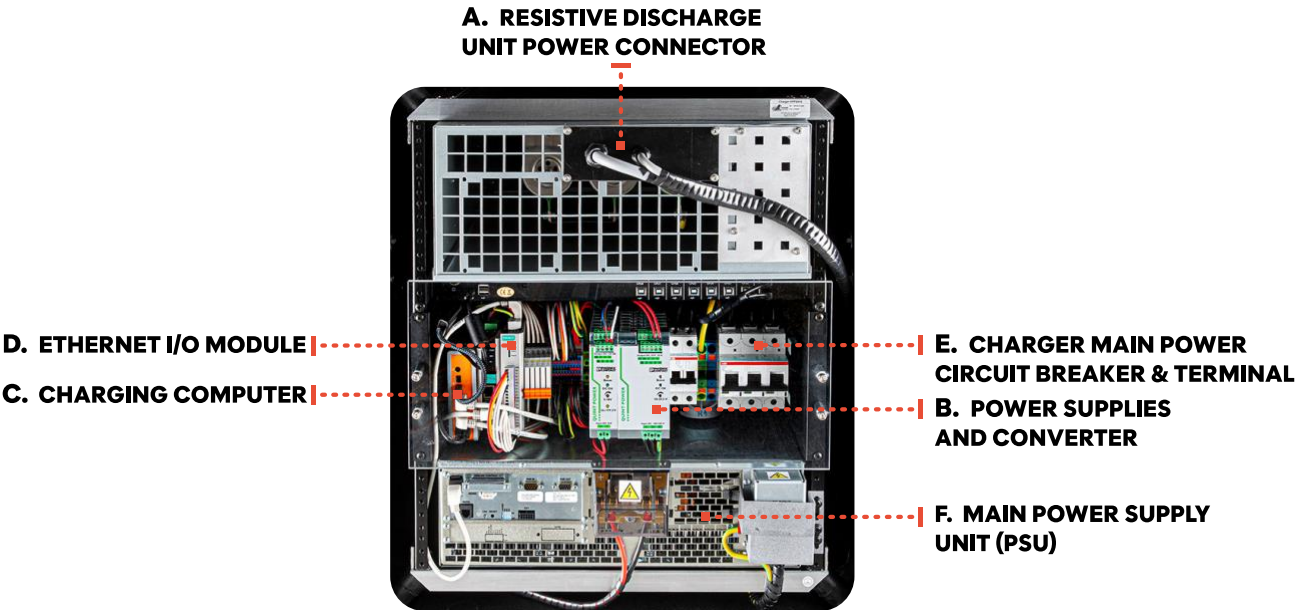
The front panel serves as the primary user interface, featuring all connection ports, control switches, the operation selector, and an integrated monitor with keyboard.

Label	Component	Description
A	Resistive Discharge Unit	Internal load bank used during battery discharge. Requires rear ventilation.
B	Extendable Monitor + Keyboard	For GUI access during software operation.
C	Main Power Switch	Primary AC power control for the entire unit.
D	Battery Power Connector	High-current output connector to battery system (labeled BATT_PWR).
E	Battery Communication Connector	Serial communication interface to battery system (labeled COM).

F	Operation Selector Switch	Three-position rotary switch for selecting Standby (0), Charge (1), or Discharge (2) modes.
G	USB Port	For file transfer and logging (software-related, not used during physical setup).
H	Power Supply Unit (PSU)	Internal AC/DC power supply module for charging function.
I	PSU Power Switch	Should remain in the ON position at all times; controlled indirectly by main power switch.
J	PSU Rotary Navigation	Navigates between and within screens; scrolls through functions and selects numerical values; adjusts output parameters in real-time. Momentary-action switch that selects functions and enters numerical values.
K	PSU Output Switch	Momentary switch that toggles the output power ON/OFF, and closes/opens the output isolation relay.

4.2 Rear Panel Components

The rear panel houses power supply input, control electronics, and cooling infrastructure.



Label	Component	Description
A	Resistive Discharge Unit Power Connector	Input connector powering the discharge load bank.
B	Power Supplies and Converter	AC-DC power conversion modules.
C	Charging Computer	Embedded PC running charger control software. Boots automatically with main switch.
D	Ethernet I/O Module	Network and I/O interface (not connected during installation).
E	Main Power Circuit Breaker & Terminal	External AC input and breaker protection.
F	Power Supply Unit (PSU)	Internal AC/DC power supply module for charging function.

⚠ Clear identification of these components is critical before proceeding with cable connection and power-up. Improper handling or misconnection may result in equipment damage.

5 Cables & Connections

This section describes the correct installation of all external connections to the KPPS016-IOG Fast Charger, including the **battery power cable**, **battery communication cable**, and **internal AC power integration**. These steps must be performed before powering on the charger.

5.1 General Connection Requirements



Do not connect or disconnect any cables while under load.



Always ensure the charger is either **powered OFF**.



Inspect the connectors for mechanical damage, cracked insulation, or bent pins before each use.

5.2 Electrical Safety

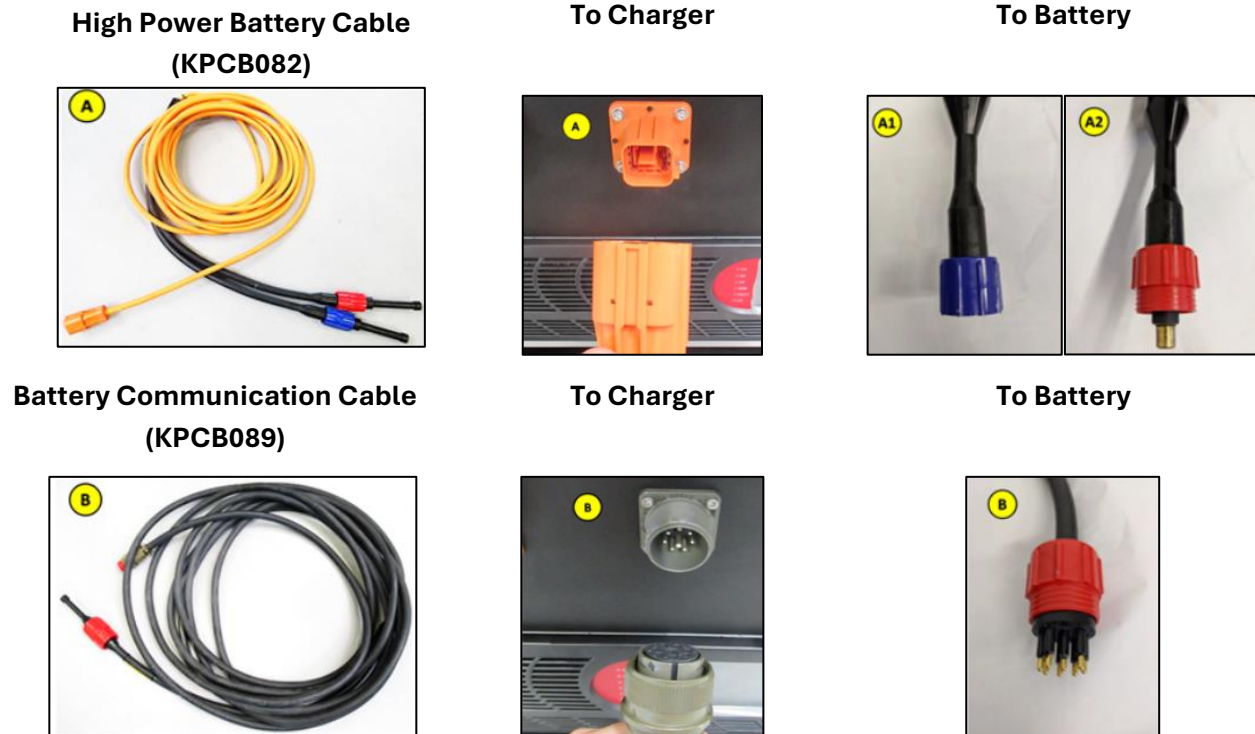
- **Do not energize the charger** while battery connectors are being attached or removed.
- **All wiring must comply with local electrical codes** and safety standards.
- If the system fails to power on or any fault is detected, discontinue use and consult Kraken technical support.

5.3 Cable Kit Overview

The charger is delivered with a labeled cable set for use with SeaPower batteries:

Image	Cable Type	Connections
A	High Power Battery Cable (KPCB082)	Transfers power from the charger to the PCR for charging and discharging the battery bank.
B	Battery Communication Cable (KPCB089)	Enables communication between the charger and the PCR for monitoring and controlling the battery bank.

Each cable has a **battery side** and **charger side**. Ensure the correct orientation is maintained throughout installation.



5.4 Cable Connection

The sequence below will ensure safe setup and proper cable engagement prior to powering the unit on.

Step 1: Verify Charger State

- Confirm that the **Operation Selector (F)** is in **Position 0 (Standby)**.
- Ensure the **Main Power Switch (C)** is **OFF**.
- The **PSU Power Switch (I)** should remain in the **ON** position.



Figure 8 – Operation selector (left) and main power switch (right)

Step 2: Connect Battery Communication Cable

 **Never force the connectors.** They are keyed to prevent polarity reversal.

- Remove the protective cap from the **Battery Communication Connector (E)**.
- Align the cable connector's **guide key (green cable end)** with the **Battery Communication Connector**.
- Insert fully and rotate the **locking sleeve clockwise** until it locks.
- Repeat at the battery-side communication port (**red cable end**).

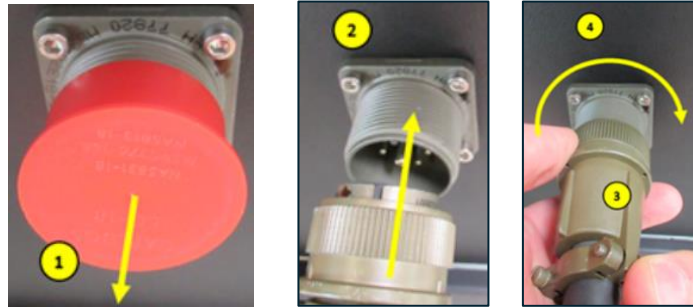


Figure 9 – Battery Communication Cable

5.5 Step 3: Connect Battery Power Cable (A)

- Align the **Battery Power Cable Connector** with the **Battery Power Connector** on the front panel.
- Push the plug into the socket until the **black latch audibly clicks**.
- At the battery side, connect the cable's **BATT_PWR** and **BATT_GND** to its matching terminals.

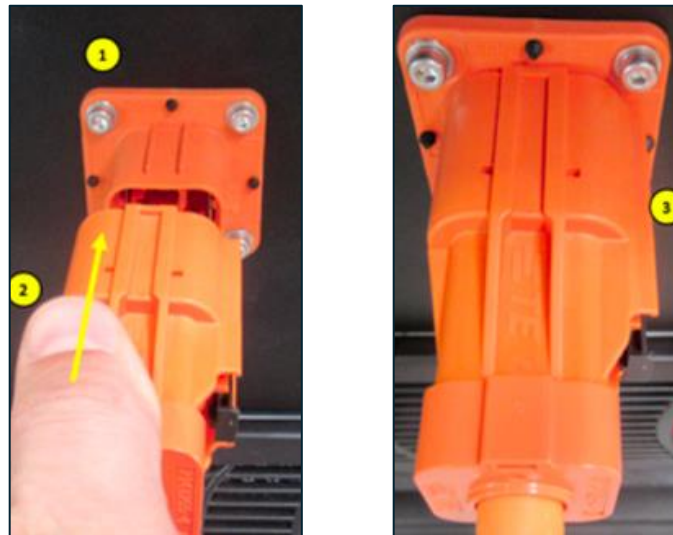


Figure 10 – Battery Power Cable

6 Pre-Power Checks

Before powering the KPPS016 charger or initiating any system-level operation, perform the following verification steps to ensure that all hardware has been installed correctly and safely.

6.1 Connector and Cable Verification

1. Confirm that all connectors are fully seated and latched:
 - **Communication cable:** sleeve fully rotated and locked.
 - **Power cable:** latch engaged and cannot be pulled out.
 - Check that no cables are under mechanical stress, pinched, or sharply bent.
 - Visually inspect for **connector damage or misalignment**.
 - Ensure no equipment pinch points or tripping hazards.

6.2 Operation Selector Position

1. Ensure the **Operation Selector** is set to **Position 0 (Standby)**.
 - **This is the only safe position for cable connection or disconnection.**
 - Charging and discharging are disabled in **Standby** mode.

6.3 Wheel and Case Security

1. Verify that **all four wheels are locked** using the brake levers.
2. Confirm the charger is resting on a **flat, stable surface** with no rocking or shifting.
3. Ensure **lids and case hardware** are stored safely and not obstructing access or airflow.

6.4 Environmental Readiness

1. Confirm **rear panel ventilation is unobstructed** (discharge unit cooling).
2. Verify that **ambient temperature is within acceptable limits** as defined in the battery's ICD.
3. Ensure the charger is placed in a dry location, protected from water spray and excessive moisture.

6.5 Ready for Power-On

At this stage:

- The charger is physically installed and stabilized.
- All cables are connected safely.
- Power input is confirmed.
- The unit is ready to proceed to system-level configuration and operation, if applicable.

The charger is now physically connected and ready to be powered **ON** via the **Main Power Switch (C)**.

Proceed with the following:

1. Turn the **Main Power Switch (C)** to **ON**.
 - The charger GUI will automatically start.
2. Refer to KPPS016 – D003 *Operator's Manual*.

7 Shutdown and Storage Preparation

After installation or use, the KPPS016 charger must be safely powered down and stored to prevent damage and ensure readiness for future deployment. This section outlines the correct procedures for shutdown, cable removal, and physical protection.

 **Inspect all cables and connectors for signs of wear before storing.**

7.1 Safe Power-Down Procedure

To shut down the charger:

1. **Ensure the Operation Selector is set to Position 0 (Standby).**
2. If the charger's user interface is running:
 - Close the software using the **X** button (if visible).
 - Proceed to shut down the **operating system** via standard menu.
3. Once the display is dark and shutdown is complete:
 - Turn the **Main Power Switch** (front panel) to **OFF**.
 - Leave the **PSU Power Switch** **ON**.



Figure 11 - PSU Power Switch

7.2 Disconnecting Battery Cables

 **Never disconnect any battery cable while under load.**

1. **Disconnect the Power Cable:**
 - Press the black latch to release the connector.
 - Withdraw the plug evenly - do not twist.



Figure 12 - Power Cable

2. **Disconnect the Communication Cable:**

- Rotate the locking sleeve counter-clockwise until loose.
- Pull connector straight out from the port.

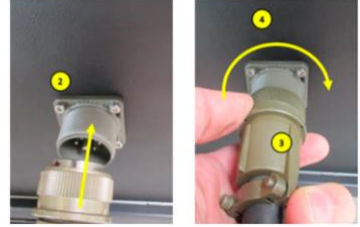


Figure 13 – Communication Cable

7.3 Lid Reinstallation and Case Closure

1. Align the front and rear transport lids with the chassis.
2. Secure each lid using the quick-release fasteners:
 - Seat the lid fully.
 - Engage the draw clamps by turning clockwise.
 - Lock the tabs down to complete closure.

7.4 Storage and Transport Notes

- **Store indoors** in a clean, dry environment.
- Avoid prolonged exposure to direct sunlight, salt spray, or vibration.
- Protect cable ends with their original dust caps or insulation covers.

If storing for transport:

- Ensure **all wheels are locked** or removed.
- Avoid stacking heavy objects on the charger lid.

8 Legal Notices & Contact Information

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8.2 Disclaimer

- Kraken must be consulted regarding the proper **integration, calibration, and configuration** of any Kraken-designed system.
- This document is intended as **supplementary information only**. Any modifications to system integration or configuration must be discussed with Kraken Robotics.
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