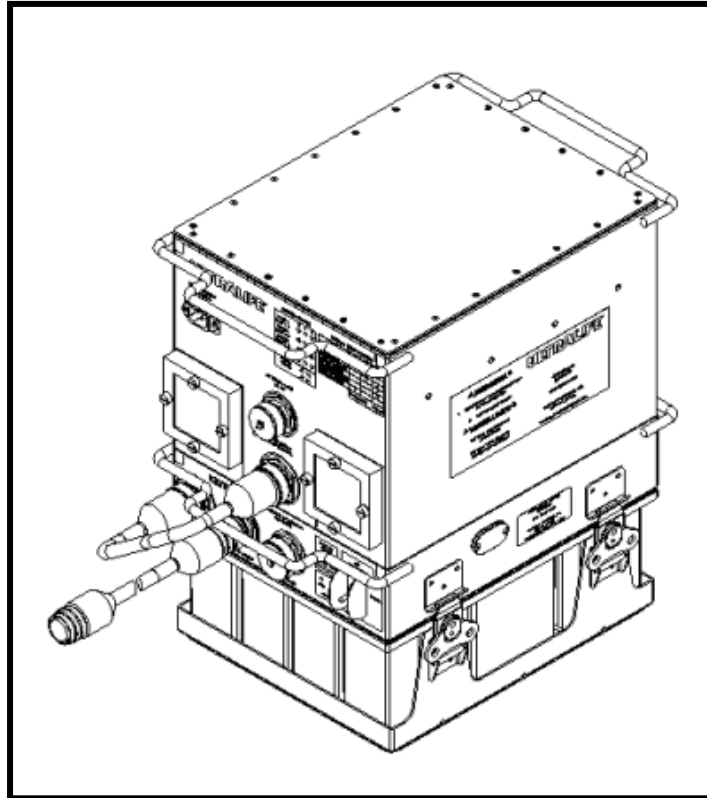


UKT0011 CH0028/CH0027 Battery Box / Charger System Operation Manual



Equipped with **SMART**  **CIRCUIT**® Technology

Ultralife Corporation
2000 Technology Parkway, Newark, NY 14513 USA

Telephone (315) 332-7100 FAX (315) 331-7800

E-MAIL: sales@ulbi.com

<http://www.ultralifecorporation.com>

Copyright

Copyright © 2009, Ultralife Corporation. All Rights Reserved.

Trademark Information

Ultralife, the Ultralife logo design, SmartCircuit Technology and the SmartCircuit logo design are trademarks or registered trademarks of Ultralife Corporation.

Disclaimer of Liability

Information and descriptions contained in this manual are the property of Ultralife Corporation. Distribution and/or reproduction in part or in whole are expressly forbidden without written consent.

Ultralife Corporation believes that information in this publication is accurate as of its publication date. Ultralife Corporation reserves the right to change the contents without prior notice and is not responsible for any inadvertent errors.

Ultralife Corporation
2000 Technology Parkway
Newark, New York 14513
Phone: (315) 332-7100
Fax: (315) 331-7800
Email: sales@ulbi.com
<http://www.ultralifecorporation.com>

CONTENTS	2
1 ABOUT THIS MANUAL	4
1.1 SYMBOLS USED	4
1.2 CERTIFICATIONS	4
1.3 STANDARDS	4
1.4 GENERAL SAFETY INSTRUCTIONS.....	5
2 PRODUCT DESCRIPTION	6
2.1 EQUIPMENT PROVIDED.....	6
2.2 FUNCTIONAL DESCRIPTION	6
3 CH0027 / CH0028 SYSTEM SETUP	7
4 CH0027 SHORE POWER DIRECT SETUP.....	15
5 MAINTENANCE.....	16
5.1 CLEANING CHARGER AIR FILTER.....	16
5.2 CLEANING UNITS	16
5.3 FIRMWARE UPGRADE	16
5.4 BATTERY CONDITIONING	16
6 SHIPPING	17
6.1 CH0028 BATTERY BOX.....	17
6.2 BATTERIES	17

1 ABOUT THIS MANUAL

Please be sure to read the sections of this chapter in their entirety before proceeding further.

1.1 Symbols Used

The symbols shown in this section appear throughout this manual, the first one shown being the *NOTE* symbol, below, which is self-explanatory.



NOTE: Note statements contain important information that may affect how you use this product.

The other symbols represent *important safety advice*, and they appear throughout this manual in the form of *WARNINGS* and *CAUTIONS* against possible hazards to people or equipment, respectively. These safety *WARNINGS* and *CAUTIONS* must be followed at all times. They are flagged by use of a triangular alert icon shown just to the left of the cautionary advice given, as shown below:



WARNING: Warning statements mean danger. They identify practices, procedures or conditions such as high voltage that could result in injury or loss of life and which, therefore, require extreme care before proceeding.



CAUTION: Caution statements denote a hazard. They identify practices, procedures or conditions that could result in damage to or destruction of this product or other equipment or property.

Ultralife Batteries assumes no liability for the customer's failure to comply with these *WARNINGS* and *CAUTIONS*.

1.2 Certifications

FCC Code of Federal Regulations 47; "Telecommunications", Part 15 Class A

1.3 Standards

Standard	Description
MIL-STD-810F	Environmental Engineering Considerations and Laboratory Tests
MIL-STD-1275C	Characteristics of 28 Volt DC Electrical Systems in Military Vehicles
SAE-J1455	Surface Vehicle Recommended Practice

1.4 General Safety Instructions



WARNING: This manual contains important safety and operating instructions for the UKT0011. Before using the UKT0011, read all instructions in this manual and cautionary markings, if any, on the device. Specifically:

- Do not operate the UKT0011 if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified repair technician for servicing.
- Do not disassemble the UKT0011; take it to a qualified repair technician when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- To reduce risk of electric shock, unplug the UKT0011 from its power source before attempting any maintenance or cleaning. Turning off controls will not eliminate this risk.
- Use only approved batteries (UBBL10, UBBL13) in Battery Box
- Do load equal numbers of batteries in each bank in Battery Box.
- Use only approved cables with the Battery Box and Charger Box system.
- Do not use cables that are frayed or damaged in any way.
- Do not use batteries that appear damaged in any way.
- Do not stand on the Battery Box or Charger Box as injury may occur
- The Battery Box is greater than 50 lbs and lifting precautions should be followed.
- Do not mix battery models in Battery Box (i.e. use only all UBBL10 or only UBBL13 batteries).
- If there are any questions regarding the maintenance or Safety of use issues pertaining to the UKT0011 please contact our service department at:

Service Department
Ultralife Corporation
(PHONE) (315) 332-7100 (FAX) (315) 331-7800
(Email) ucs@ulbi.com

2 PRODUCT DESCRIPTION

The UKT0011, Battery Box and Charger System, is designed to be a source of power for end use devices that runs on a 120VAC or 22-33VDC input voltage. The UKT0011 consists of a CH0028 Battery Box and a CH0027 Charger Box that provides a portable power system that will deliver primary 24 to 33VDC power through the system, while keeping the batteries at full charge to provide backup power (81.8Ah @ 250W) from the Battery Box in the event of a primary power failure.

2.1 Equipment Provided

- UKT0011
 - CH0027 - CHARGER, 12 POSITION BATT BOX
 - CH0028 - BATTERY, BOX, 12 POSITION
 - UCA0042 - CABLE, BATT CHARGE, A-KEY
 - Contact Ultralife for additional available accessories

2.2 Functional Description

The CH0028 utilizes twelve smart UBI-2590 (i.e. UBBL10) style batteries to provide the end user with accurate state of charge information via a 2-digit display on the battery box front panel. The use of the Ultralife Smart Batteries also enables a user software application access to the battery state-of-charge and status information through an Ethernet interface.

The CH0027 Charger system accepts either AC or DC input power and provides both battery charge and shore power capabilities to the CH0028. If shore power is not being provided (no external load on the CH0028 battery box) the charger will fast charge a fully depleted battery box populated with twelve Ultralife Smart Batteries in less than 6 hours. If the shore power is being used, the charger will provide shore power through the battery box and provide a trickle charge to the battery box, charging it fully in under 12 hours.

If a Battery Box is in use without connection to a powered Charger Box, the Battery Box will go into power conservation mode 5 minutes after reaching a 0% state of charge.

Contact Ultralife for information on cable options and accessories.

3 CH0027 / CH0028 SYSTEM SETUP

CH0027 and CH0028 components are shown in Figure 3-1 and referenced in the list below:

- Item 1: Battery Box (CH0028)
- Item 2: Battery Latching Tray
- Item 3: UBBL10 Batteries (12 pieces Shown Installed)
- Item 4: UCA0043 Output Cable (Optional)

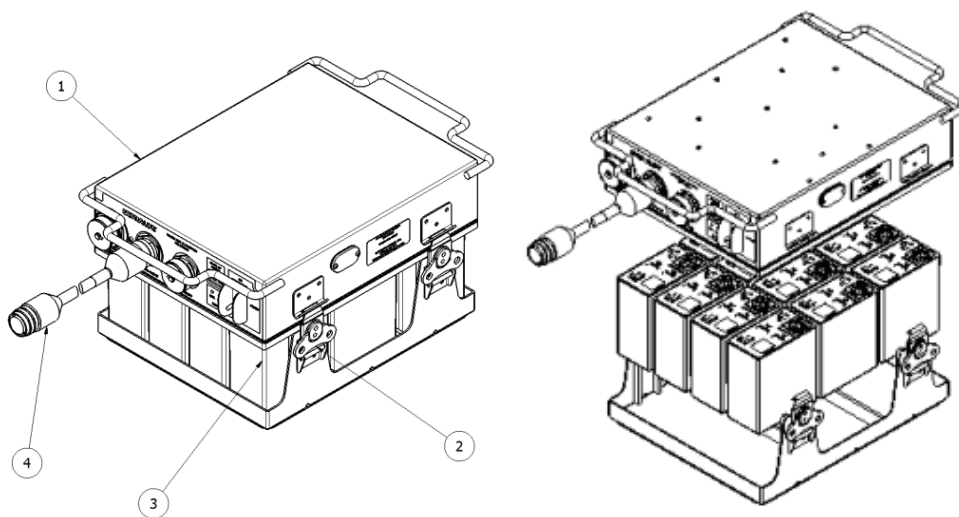


Figure 3-1 Battery Box (CH0028) Components

Follow the step-wise procedure listed below to complete CH0027/CH0028 system setup:

1. Place the Battery Box on a flat surface capable of supporting at least 100 lbs with the battery connectors facing up. There will be identifying engravings identifying battery position by bank (A or B) and battery number within each bank. See Figure 3-2 for guidance.

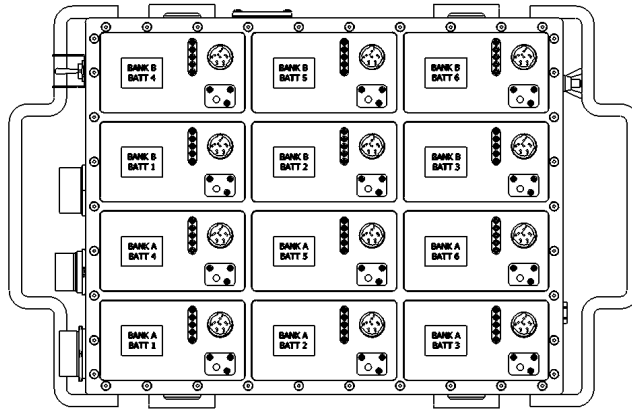


Figure 3-2 Battery Box shown with Connectors Facing Up



CAUTION: The Battery Box loaded with batteries weighs 54 lbs. Use caution when lifting and carrying.



NOTE: Be sure all connectors and pogo pins are clean and free of debris prior to inserting batteries. Only Ultralife Smart 2590 lithium ion rechargeable batteries can be used in this system. Ensure that the connector and the 8 flat contacts on the UBBL10 battery are clean and free of debris.

2. Ensure battery is completely seated with a strong push. See figure 3-3 for guidance.

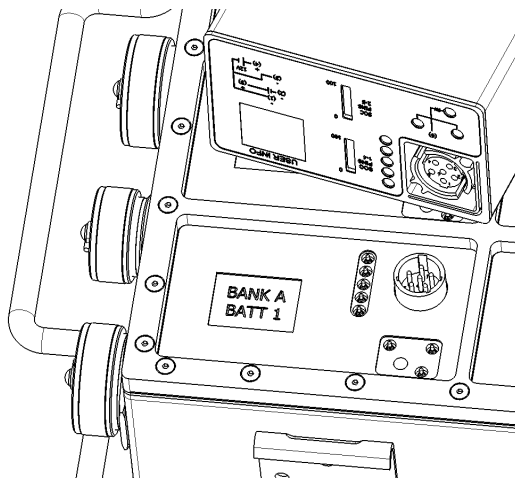


Figure 3-3 Battery Orientation

- Place batteries into each position in the Battery Box. It is recommended that all positions be populated in the box at all times. If less than 12 batteries are available, be sure to load equal quantities of batteries in banks A and banks B, as both banks are required for the final output voltage. For best results always use 12 Batteries. Also, for best results use Batteries with similar SOC.
- Mechanical robustness of the final assembly is maintained if batteries are loaded in the corners and center of the unit first, leaving gaps in other areas. See Figure 3-4 for suggested partial loading sequences. Expected performance and battery life requires 12 batteries to be loaded into the unit. The Battery Box state of charge is based upon all twelve positions being populated and will reflect lower values if partial population is used. Note that an equal number of cells are loaded on each side of the Battery Box. Besides distributing the weight batteries are required in both banks for the Battery Box to function.

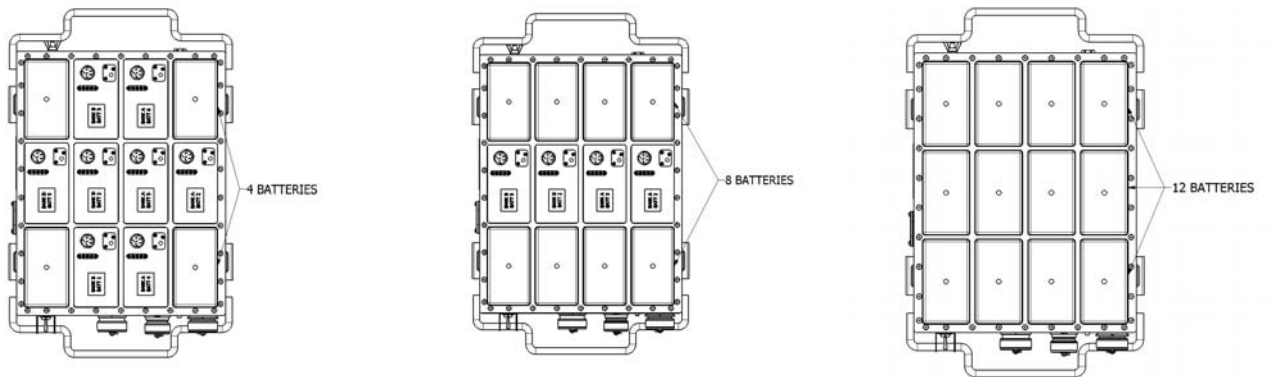


Figure 3-4 Battery Placement



WARNING: This unit is designed for Rechargeable Batteries only. Do not attempt to place primary batteries in this unit.

- Once the batteries are installed in the unit, place the Battery Latching tray on the unit. Secure the four latches in place by twisting the buckle clockwise and folding towards base of the unit to lock. See figure 3-5 for guidance.

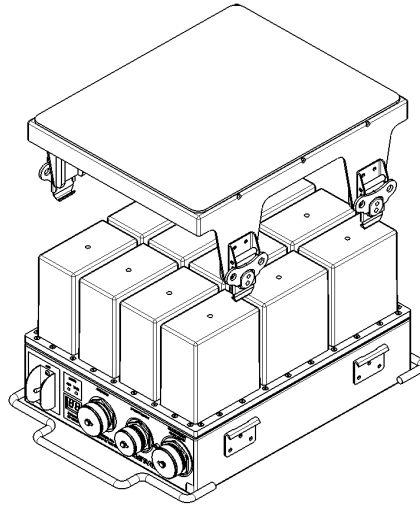


Figure 3-5 Battery Installation

6. The unit can now be placed upright in normal operating position, with the handle up and the non skid pad on the battery tray down to the mounting surface. The front panel with the connectors will now be above the batteries and in front towards the operator. See Figure 3-6 for a front panel overview.

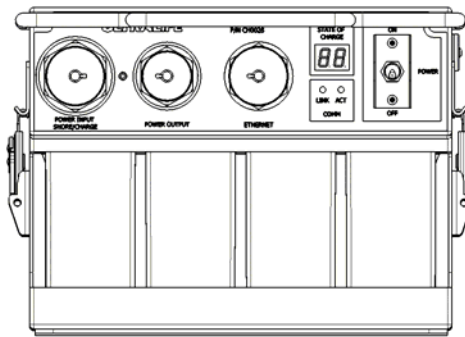


Figure 3-6 Loaded Battery Box

7. System can be used without grounding but if the unit is to be grounded to earth or other ground, connect ground stud on rear of unit at this time. A 12AWG wire or larger is recommended for earth grounding. Figure 3-7.

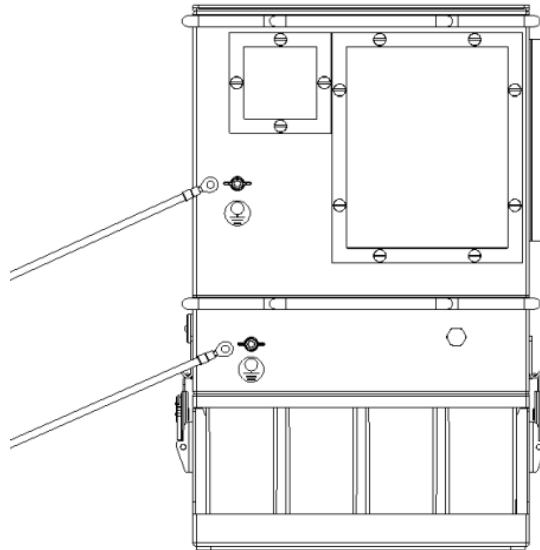


Figure 3-7 System Ground Lugs

8. Connect the output cable to the CH0028 Battery Box and connect to the target device. It is recommended that the Battery Box be powered on (and Charger Box) prior to powering the end device. If the CH0027 Charger Box and shore power unit is being used, stack the Charger Box on top of the Battery Box or place within cable reach. The Charger Box is designed to stack on top of the Battery Box. See Figure 3-8.



Figure 3-8 System Stack with Charger Cable



NOTE: All cables (optional) have a color code that matches a color swatch near the correct mating connector to ease cable connection. Cables are keyed to prevent any misconnection.

9. Attach the charger output cable to the Charger Box output connector and the other end to the Battery Box charge input connector as shown in Figure 3-9. Note the callouts as follows:

- Item 1: CH0027 Charger Box.
- Item 2: UCA0042 Battery / Shore Power Cable.

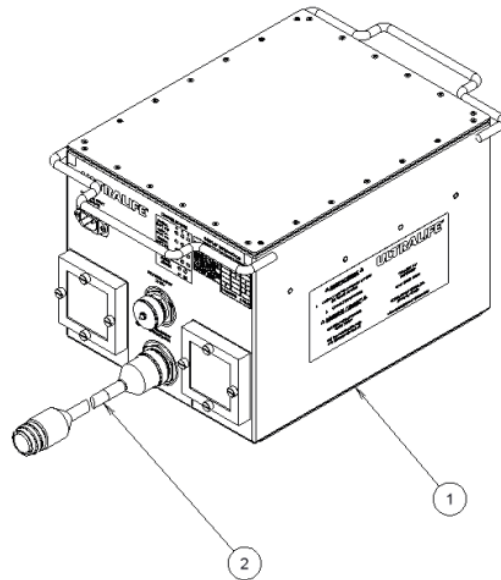


Figure 3-9 Charger Box with Charge Cable

10. See figure 3-10 for a finished view of what these connections should look like.

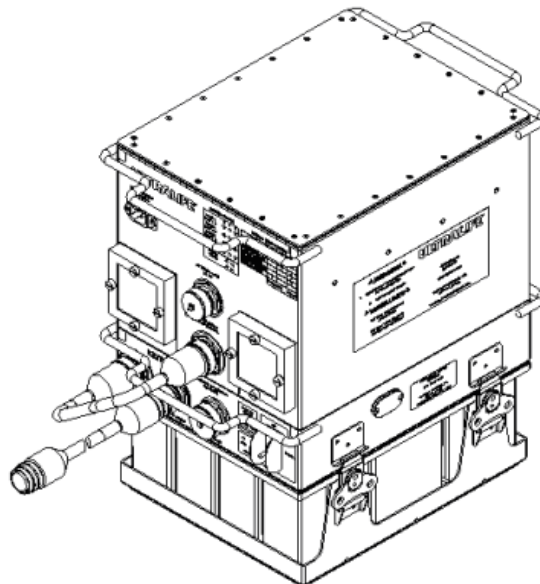


Figure 3-10 System Stack-Up



NOTE: Batteries will not charge when the temperature is at or above 50°C or if below 0°C.

11. If the Charger Box is to be grounded to Earth then connect the ground stud on rear of unit to Earth ground now. A 12AWG wire or larger is recommended for grounding. See Figure 3-7
12. The CH0027 requires convection cooling and has a series of vents in the back. It is recommended that a 6" space is available at the rear of the unit from the vents to facilitate cooling.
13. Secure the units as necessary prior to operation.
14. Power the charger by attaching the AC or DC power input cables and applying power. The power source LED should illuminate on the front panel of the charger. See figure 3-11 for overview.

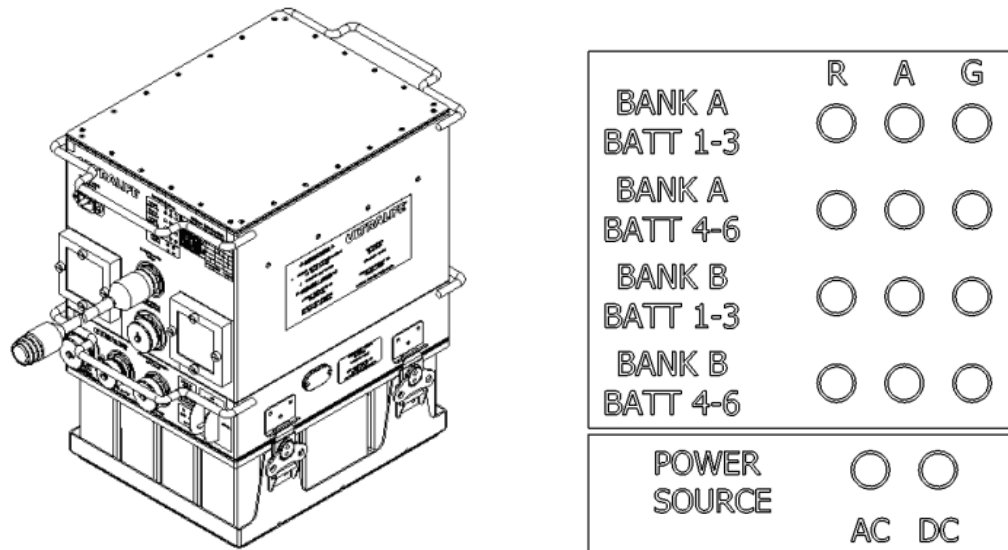


Figure 3-11 LED Display

15. The Battery Box can now be turned on by switching the toggle switch to the on position. The State of Charge 2-digit display will show rotating digit while battery state of charge is gathered. Within 60 seconds, the state of charge should be displayed. The state of charge is based on a fully loaded box of 12 batteries, and is based upon whichever Bank (A or B) has a lower SOC. For example, if the 6 batteries of Bank A are at 50% state of charge and the 6 batteries of Bank B are at

100% state of charge, the box will display 50% state of charge maximum. If the UBBL13 model batteries are installed the state of charge will continue to be accurate due to use of smart battery technology.



NOTE: For best results, when installing the battery cells at different states of charge, discharge the battery prior to charging.

16. The Battery Box has Ethernet communication output that requires an RJ-45 style network cable. The Battery Box uses this interface to broadcast information to an end use device, including state of charge information, runtime alarms, battery and system status. This cable must be attached between the Battery Box and the end device to properly function. If the Battery Box is attached to a device that utilizes this information, connect this cable at anytime. Contact supplier or Ultralife Batteries for additional information on this interface and supported functionality. Contact Ultralife for more detail on Ethernet communication data and commands.

4 CH0027 SHORE POWER DIRECT SETUP

CH0027 and CH0028 components are shown in Figure 4-1 and referenced in the list below:

- Item 1: CH0027
- Item 2: UCA0042 Battery / Shore Power Cable

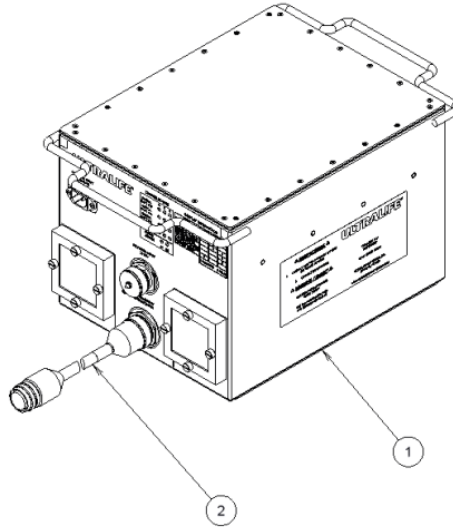


Figure 4-2 CH0027 Shore Power Components

1. Place the CH0027 on a firm surface with the no skid pad down. Secure unit as necessary.
2. The CH0027 requires convection cooling and has a series of vents in the back. It is recommended that a 6" space is available at the rear of the unit from the vents to facilitate cooling.
3. Connect the direct power cable to the Charger Box output connector and connect to the target end device.
4. If the CH0027 charger is desired to be grounded, attach a ground wire to the ground stud on the rear of unit. A 12AWG wire or larger is recommended. See figure 3-7
5. Connect the Charger Box to AC or DC power. The Charger Box will then supply power to the end use device directly at 31-33VDC.

5 MAINTENANCE

Maintenance for this product is described in the following sections.

5.1 Cleaning Charger Air Filter

Remove Air Filters by unscrewing captive thumb screws. Spray off filter with air or water and thoroughly dry filter. Re-attach filter(s) to assembly.

Extreme Dust: If excessively dusty conditions are encountered the unit will shut down due to and air flow restriction. In this situation:

- Remove the filters from the Charger Box and blow out from the back side.
- Power up charger box so fans are active.
- Gently blow off equipment and power supply from the front of the box without extending into the Charger Box.
- Re-attach cleaned filters to charger box and use.

Note: Do not add any additional filtering. It may prevent the unit from operating correctly.

5.2 Cleaning Units

If the unit requires cleaning, it is suggested to use a mild cleaner and water solution and to wipe with a damp cloth. Do not submerge unit in cleaning solution. If connectors require cleaning on the Battery Box, charger, or batteries, use a contact cleaner designed for electronics interfaces such as CAIG DEOXIT or PROGOLD.
www.caig.com

5.3 Firmware Upgrade

If firmware for the Battery Box requires updates, there is a manufacture access panel to a USB port on the side of the unit. If a Firmware upgrade is required contact Ultralife Corp.

5.4 Battery Conditioning

Under normal use the batteries should not require conditioning. If the Battery Box is used to partial depth of discharge frequently, performing a full discharge followed by full charge will re-calibrate and condition the battery.

6 SHIPPING

Shipping information is provided in this chapter.

6.1 CH0028 Battery Box

The CH0028 Battery Box with batteries installed has not been approved for transport per UN Transportation Testing ST/SG/AC.10/11/Rev.4 and therefore is FORBIDDEN to be transported by motor vehicle, rail car, vessel, passenger or cargo aircraft. It can be shipped without restriction if no individual batteries (UBBL10) are installed.

6.2 Batteries

The individual batteries (UBBL10 / UBBL13) MUST be shipped separately from the CH0028 Battery Box as Class 9 cargo and are FORBIDDEN to be transported on passenger aircraft. In order to be transported by motor vehicle, rail car, vessel or cargo aircraft they MUST be shipped in the exact packaging as received from Ultralife Batteries. The total packaged weight may NOT exceed 35 kg when shipping on cargo aircraft and all packaging MUST be affixed with UN and US DOT specified warning labels and cautionary statements.