

Charles Universal Broadband Enclosure

CUBE-BB48A1GV2

General Description and Installation

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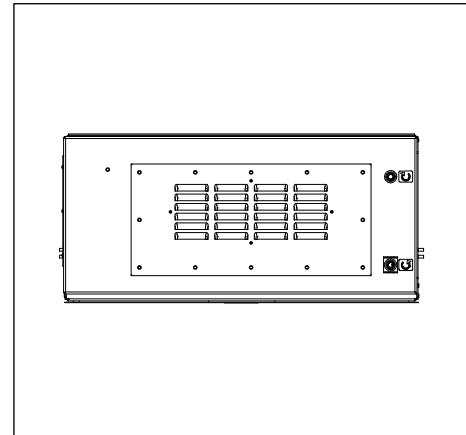


Figure 1 Front View of the BB

1. GENERAL INTRODUCTION

1.1. Document Purpose

This document provides general information for the CUBE-BB48A1GV2 of the Charles Industries’ Universal Broadband Enclosure (CUBE) product line. Figure 1 shows a closed front view of the enclosure.

-NOTE-

Hereafter, the Charles Battery Backup Enclosure CUBE-BB48A1GV2 will be referred to as the “BB.” The Charles Universal Broadband Enclosure CUBE-PM639158N2 will be referred to as the “CUBE.”

1.2. Product Purpose

The BB consists of a protective enclosure for an integrated system of electronic components and equipment that can serve fiber and copper interfaces.

1.3. Product Mounting and Location

This enclosure is suitable for outside plant-type (OSP) locations and those that may require NEC compliance. The outdoor, weather-resistant BB is to be mounted on a concrete pad. The installer connects the power, fiber, and copper connections. Detailed mounting and installation information is covered in Section 3.

The BB is mounted underneath a CUBE to provide battery support for the equipment in the CUBE.

2. PRODUCT DESCRIPTION

The BB supports one string of customer supplied Saft Tel.X 180Ah NiCd batteries.

Figure 2 shows the BB dimensions. Figure 3 shows the main components of the BB.

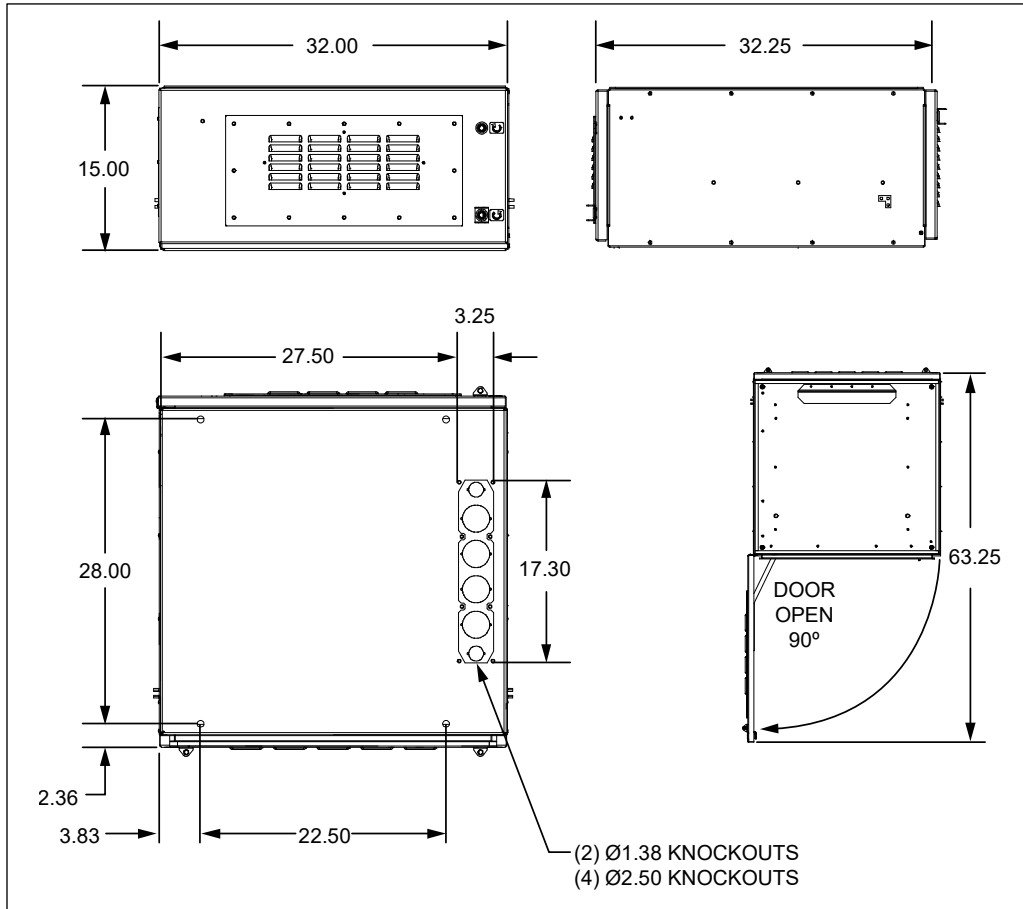


Figure 2 BB Dimensions (in inches)

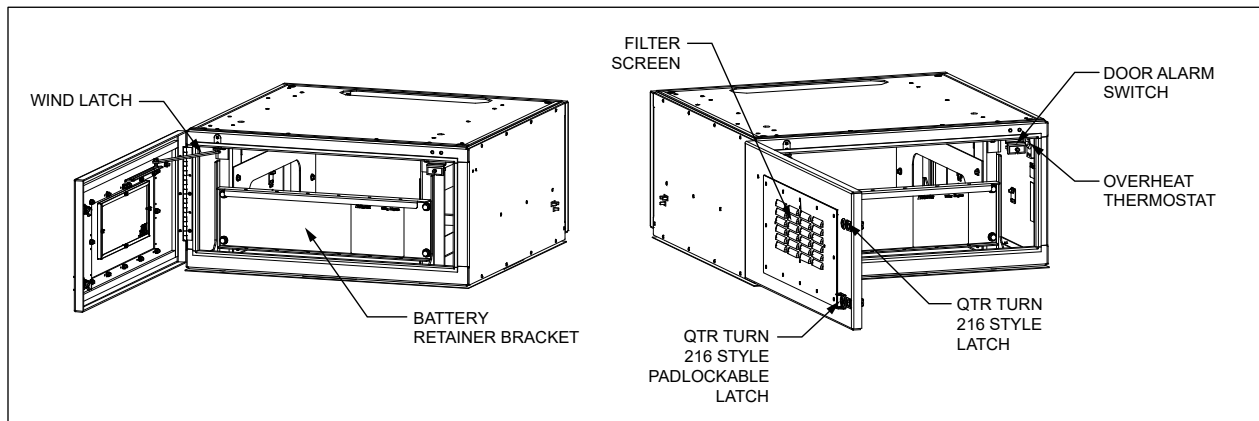


Figure 3 BB Components

3. INSTALLATION

3.1. Inspecting the Product

The BB is shipped mounted upright on a skid. Remove the bolts, unpack the unit, and dispose of the packaging material.

-INSPECTION NOTE-

Visually inspect the unit for damages prior to installation. If the equipment was damaged in transit, immediately report the extent of the damage to the transportation company.

3.2. Following and Using Safety Precautions

Read the following site and safety tips, cautions, and warnings, then proceed with the paragraphs that follow.

- For installation, follow all National Electrical Codes (NEC) ANSI/NFPA 70, local, environmental, workplace, and company codes, safety procedures, and practices.
- Minimum spacing between the accessories and components and the housing for ITE equipment shall be maintained for safe operation of the equipment when installed in accordance with NEC ANSI/NFPA 70.
- Read all instructions, warnings and cautions on the equipment and in the documentation shipped with the product.
- Always connect ground connections first.
- Do not place this product on weak or unstable surfaces which may allow the product to fall, resulting in potentially serious damage(s) to persons or product.
- Only authorized trained personnel shall install the BB.
- In windy conditions, be sure to engage the door latches to secure the door in a stationary position.

3.3. Obtaining Tools and Equipment

Obtain the following recommended or needed items for installing the BB.

- Protective and/or insulated work gloves
- Safety glasses
- #6 ground wire or rod and earth ground materials
- Any exterior cable strain relief, per company practice
- Slotted, hex, and Phillips screwdrivers
- Torque wrench
- Assorted cable ties, clips, or fasteners (optional)
- Can wrench (216 type tool)
- Derrick for lifting
- Level

3.4. Preparing the Installation Site

Observe the following site preparation recommendations.

- Leave adequate horizontal and vertical space between multiple installations to allow for proper cable access, as well as enough room around the enclosure to open the door(s).
- The site must meet minimal personnel and equipment safety requirements.
- The distance from the cable entry point should be consistent with local installation practices.
- The pad must be able to support the weight of the BB and the CUBE.
- Run all fiber and copper facilities to the site.

3.5. Lifting the BB

See Table 1 for CUBE weight. Charles recommends using a hand truck or similar lifting equipment when transporting the BB. Use two people when positioning the BB.

3.6. Mounting the BB

See the documentation that ships with the CUBE for information about the concrete pad requirements.

The BB ships with a mounting gasket affixed to the bottom for placing the BB on a concrete pad. If the gasket becomes damaged, order a new one under Charles part number 80-006918-A.

3.6.1. Torque Requirements

Torque all hardware as shown below (unless otherwise noted). These values apply to SAE Grade 1 & 2 Low Carbon Steel, ASTM A307 Low Carbon Steel, and Stainless Steel Grade 18-8.

Thread Size	In-lbs	Ft-lbs
4-40	4±10%	
6-32	8±10%	
8-32	16±10%	
10-32	26±10%	
12-24	50±10%	
1/4-20/M6	60±5%	5±5%
5/16-18	125±5%	10.4±5%
3/8-16	180±5%	15.0±5%
1/2-13	500±2%	41.7±2%
5/8-11	1000±1%	83.3±1%

3.6.2. Attaching the BB to the CUBE

Prior to mounting on the concrete pad, mount the CUBE onto the top of the BB.

1. Locate the cross brace hardware in the CUBE (Figure 4). Remove this hardware from the CUBE.
2. Place the CUBE on top of the BB (see the CUBE documentation for proper lifting and handling instructions).
3. Secure the CUBE to the BB using hardware that ships with the BB:
 - a. Replace the cross brace hardware. Each hardware stack includes one 3/8-16 (1.5” long) hex bolt with one 3/8” lock washer and two 3/8” flat washers. Secure from underneath (inside the BB) with a 3/8-16 nut.
 - b. Secure the four corners of the CUBE. Each hardware stack includes one 3/8-16 (1.5” long) hex bolt with one 3/8” lock washer and one 3/8” flat washer.

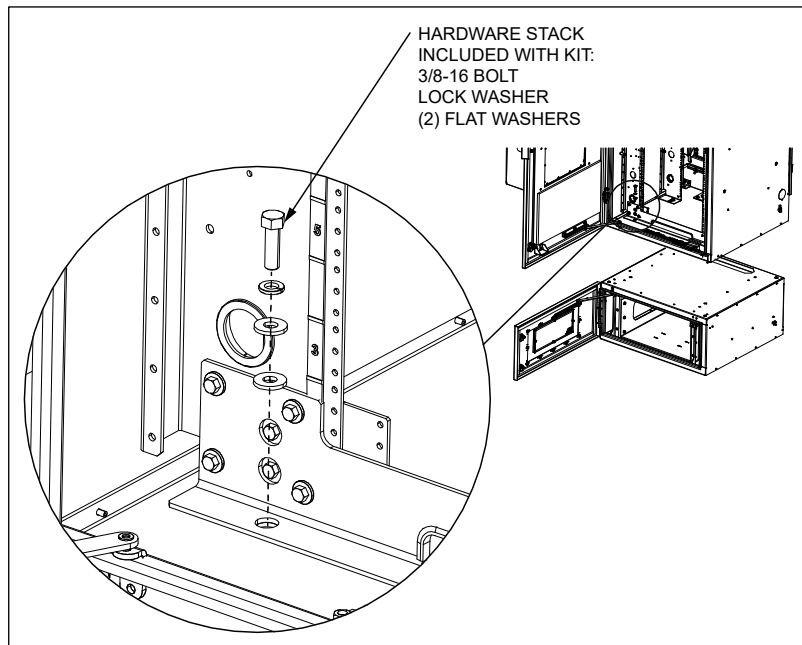


Figure 4 Replace Cross Brace Hardware

3.6.3. Mounting the BB and CUBE on a Pad

Four customer supplied, corrosion resistant, 1/2"-13 hex head bolts with anchors are required for mounting the BB to the concrete pad.

See the documentation that ships with the CUBE for instructions on transporting the BB/CUBE assembly.

1. Layout, drill, and set the 1/2" anchors per manufacturer's recommendations. The embedment depth is not to exceed 3.5". See Figure 2 for mounting hole dimensions.
2. Clean any debris from the concrete pad.
3. Open the BB front door to allow access to mounting holes.
4. Ensure that the BB/CUBE assembly is parallel to the pad surface as it is placed onto the pad and that it aligns with the holes in the pad. Dress the cable/conduit so that it aligns with the BB openings as it is lowered onto the pad.
5. Place the assembly on the pad. Loosen the slings so that all the weight is on the pad. Check that the CUBE is properly aligned.
6. Secure the CUBE to the pad using the 1/2"-13 hex head bolts. Tighten all bolts securely.
7. Once the CUBE is secured, remove the slings and tagline. Close all doors.

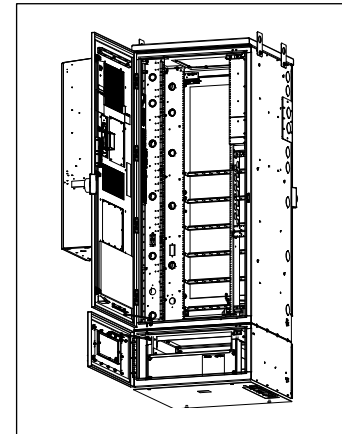




Figure 5
Pad Mounting

3.7. BB Wiring and Equipment

After the BB is properly mounted in the desired location, apply No-Ox where bus bar and other 2-hole lug connections will be made. Install ground and power connections. Always ground the equipment first, before making any other connections.

	WARNING	Perform all bonding and grounding connections prior to any electrical and communications connections.
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3.7.1. Battery Connection

	WARNING	Always turn off power to the BB prior to servicing batteries.
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Verify the polarity of the cables prior to terminating them to the batteries. Ensure the battery terminations are properly insulated to avoid shorting prior to terminating to the batteries.

1. Disconnect power to the BB.
2. Remove the battery retainer bracket by removing the hardware.
3. If replacing batteries, disconnect battery cables from terminals and loosen the battery retaining strap(s).
4. Remove the interconnecting straps from the batteries. Remove batteries.
5. Carefully position the new batteries on the battery tray. Connect the interconnecting straps to each battery string.
6. Connect the battery cables to the appropriate terminals.
7. Secure the battery retaining straps and reinstall the battery retainer brackets using hardware from step 2.
8. Properly manage the battery cables.
 - o Ensure that the bending radius is not less than 5x the cable diameter (e.g. 4/0 battery cable = 4 inch bend radius).
 - o Use as few bends as possible between the two termination points.
 - o Do not bend the cable at the termination points.
9. Reconnect power.

Notes:

- NiCd batteries require nickel plated lugs. Charles cables are equipped with the correct nickel plating.
- Ensure back up battery amperage is inputted into the power system controller per power system guidelines.
- Ensure float voltage is set per power system and battery guidelines.
- Ensure all battery terminations and bus bars have No Ox applied.
- Refer to the battery manufacturer's documentation for proper battery installation and maintenance information.

3.7.2. Overheat Thermostat

The BB is equipped with an overheat (high temperature) alarm thermostat in the compartment that provides a normally closed connection. The overheat alarm is factory set at 60°C and opens the connection if this temperature is exceeded. The customer connects the overheat thermostat wires in series with the overheat thermostat wires in the CUBE to the alarm block.

<p><i>-NOTE-</i> Changing the overheat (high-temp) thermostat default factory set points can lead to unnecessary alarms or system performance issues, such as equipment failures as a result of unreported alarms.</p>
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3.7.3. Fiber and Copper Entry

The BB has multiple Ø1.38” and Ø2.50” knockouts on the bottom that accommodate Ø1.00” and Ø2.00” conduit fittings, respectively. See Figure 2 for knockout locations.

3.8. Conduit Seals

All internal and external conduit openings on the BB and CUBE must be completely sealed with a duct seal compound to prevent moisture from entering the equipment compartment. The BB battery compartment must be internally sealed from the CUBE equipment compartment to prevent outgassing from the batteries into the equipment compartment. Use a moldable, flame-retardant putty style duct seal material. Do not use an expanding foam seal. Mold the putty so that the open space around the wire or conduit is completely sealed, as shown in Figure 6. If the openings must be accessed at any time, remove the putty and set it aside. When work is complete, re-mold the putty to re-seal the opening.

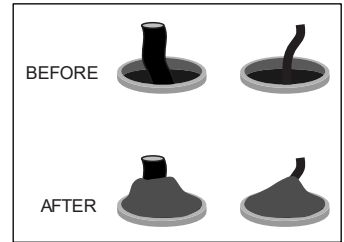


Figure 6 Applying Putty Seal

4. PERIODIC MAINTENANCE

In the event that the enclosure must be opened in freezing conditions, use a narrow, pointed metallic object such as a screwdriver or chisel, along with a non-metallic device like a rubber mallet, to remove excessive ice buildup around the door and locking mechanism. A commercial aerosol de-icer spray can be used to free up locks and latches if needed. Use protective gloves and safety glasses when applying de-icer sprays.

Periodic cleaning of the filter screens is important to maintain proper ventilation. To clean the filter screens, remove the four nuts on each screen and take out the screens. Use a soft brush or hose to remove any debris from the screen. Once clean, replace the screens using the four nuts removed previously.

5. TECHNICAL ASSISTANCE AND REPAIR SERVICE

For questions on product repair or if technical assistance is required, contact Charles Technical Support.

847-806-8500
techserv@charlesindustries.com (email)
<http://www.charlesindustries.com/techserv.htm>

6. WARRANTY & CUSTOMER SERVICE

Charles Industries LLC offers a one-year warranty on the CUBE product. The Charles warranty is limited to the operation of the CUBE hardware as described in this documentation and does not cover equipment that may be integrated by a third party. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract. For questions on warranty or other customer service assistance, contact your Charles Customer Service Representative.

847-806-6300
mktserv@charlesindustries.com (email)
http://www.charlesindustries.com/main/telecom_sales_support.htm

7. SPECIFICATIONS

Physical	
Dimensions	15"Hx32"Wx32"D
Weight	Approx. 150 lbs. as shipped
Battery Tray Size	11.5"Hx21"Wx27"D
Maximum Supported Weight	Battery Tray: 120 lbs.
Materials	0.125" aluminum
Color	Off-white
Electrical	
Supported Batteries	Saft Tel.X 180Ah NiCd
Cable Entry	See Figure 2
Environmental	
Operating Temp. Range, Outside Enclosure	-40° to +115°F, -40° to 46°C
Operating Temp Range, Inside Enclosure	-40° to +149°F, -40° to 65°C
Humidity	0 to 95% (non-condensing)
Altitude	Up to 2,000 meters (6560 feet)
Kits and Replacement Parts	
Touch-up Paint	02-000290-0
216 Type Security Tool	07-002070-0
Replacement Gasket	80-006819-A
Shim Kit for Leveling	97-000010-0
1/4 Turn Latch	39-000142-0
1/4 Turn Latch with Padlock Hasp	39-000311-0
2-Wire Door Alarm Switch	17-400329-0
Overheat Thermostat	99-004548-0

Table 1 CUBE Specifications