

# Charles Universal Broadband Enclosure Replacement Door Kits with Piano Hinges General Description and Installation

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Figure 1 View of Kit

# 1.1. Document Purpose

1. GENERAL INTRODUCTION

This document provides general information for using the replacement door kits for the BB, RL, PM, and SS family of the Charles Industries' Universal Broadband Enclosure (CUBE) product line. Figure 1 shows a replacement door kit.

-NOTE-

Hereafter, the Charles Universal Broadband Enclosure CUBE-BB, CUBE-RL, CUBE-PM639xx, PM624xx, and CUBE-SSxx228 will be referred to as the "CUBE." The replacement door kits will be referred to by individual part numbers or collectively as the "kit."

## 1.2. Product Purpose

The kit includes a replacement door for a CUBE.

## 2. PRODUCT DESCRIPTION

Each kit includes a front or rear door, as well as appropriate hardware for mounting the kit to an existing in the field. The differences among the kits are summarized in Table 3.

Some kits have a thermal system (HVAC, heat exchanger, or direct air cooling system [DAC]) mounted on the door. For the PM series, rear doors are shorter than front doors, so the rear and front door kits are not interchangeable. Additionally, kits intended for a one CUBE family cannot be installed on other CUBEs.

Availability of features and technical specifications herein are subject to change without notice. Charles is a registered trademark of Charles Industries.

# 3. INSTALLATION

## 3.1. Inspecting the Product

For those kits shipped lying down on a pallet, remove the bolts, unpack the unit, and dispose of the packaging material. If the purchased kit includes an HVAC unit, make sure the replacement door has been upright for 24 hours prior to powering up the HVAC.

For those kits shipped upright, follow the instructions in the next section to unpack the unit.

-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.** Disassembling the Packaging

**CAUTION: Keep the door kit upright at all times.** If the HVAC system is left lying down, then the compressor oil can flow out of its reservoir, which will impair the HVAC operation when it is turned on.

Instructions:

- 1. Locate the cross braces on the back of the kit replacement door. Figure 2 shows three cross braces. The number of cross braces may vary, depending on the size of the kit.
- 2. Support the kit so that it remains upright while removing the screws that hold the cross braces in place (two screws per cross brace).
- 3. When all cross braces have been removed, use proper lifting equipment to move the kit off the pallet. Do not move the kit into a horizontal position when transporting.



Figure 2 Location of Cross Brace Screws



## 3.3. 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.
- 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 kit.

### **3.4.** Obtaining Tools and Equipment

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

- Wire strippers
- Protective and/or insulated work gloves
- Safety glasses
- Slotted and Phillips screwdrivers
- Can wrench (216 tool)
- 7/16 and 11/32 socket and wrench
- Drill with 5/32 cobalt steel drill bit
- Marking utensil
- Torque wrench

#### 3.5. Installing the Kit

 Marking
 Improper hoisting equipment and unsafe lifting procedures can result in serious injury or death.

 Charles recommends at least two people to lift the kit. Follow local safety practices.

 Turn off all power connections to the CUBE before beginning this procedure.

#### 3.5.1. 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<br>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% |

#### 3.5.2. Available Cabinets

The kits are made for Charles BB, PM, RL, and SS CUBEs. An example of each style CUBE is shown in Figure 2.

In the rest of this section, the images show a front door kit and a PM series CUBE. The interior of each series CUBE may look different than what is pictured. The hinges on all kits mount in the same manner as the one shown.



Figure 2 CUBE Examples



## 3.5.3. Removing the Existing Door – Piano Hinge

If the existing door has a pin hinge, proceed to the next section. If the existing door has a piano hinge, follow these steps.

- 1. Remove power and alarm wiring from the thermal device on the existing door. Depending on the CUBE model, the alarm wires may need to be removed from the alarm terminal block.
- 2. Remove the two nuts that connect the wind latch to the CUBE. Save the nuts for later use.
- 3. Disconnect the grounding strap from the door. Save the nut for later use.
- 4. Remove the existing door by drilling out the rivets (5/32 cobalt steel drill bit is recommended).
- 5. Copy identifying information from the label on the existing door (e.g. part number, serial number, etc.) onto the blank label on the replacement door, if available, or directly onto the door surface using permanent marker. Discard or store the existing door according to local practice.



Figure 3 Remove Existing Door



## 3.5.4. Removing the Existing Door – Pin Hinge

If the existing door has a pin hinge, then follow this procedure to remove the door and prepare the CUBE for mounting a piano-style door kit.

- 1. Remove power and alarm wiring from the thermal device on the existing door. Depending on the CUBE model, the alarm wires may need to be removed from the alarm terminal block.
- 2. Remove the two nuts that connect the wind latch to the CUBE. Save the nuts for later use.
- 3. Disconnect the grounding strap from the door. Save the nut for later use.
- 4. Move the hinge pin upward (Figure 4, hinge pin shaded in gray). A hammer or mallet may be needed to move the pin. The red hinge clip will pop out when the pin is raised.
- 5. Remove the door.
- 6. Copy identifying information from the label on the existing door (e.g. part number, serial number, etc.) onto the blank label on the replacement door, if available, or directly onto the door surface using permanent marker. Discard or store the existing door and hinge parts according to local practice.
- 7. Use the hinge template included with the kit and a permanent marker to mark the holes needed for the new door (Figure 5). Ensure that the template is flush against the top and side of the CUBE door frame before marking.
- 8. Drill the holes in the marked locations. Use touch-up paint on the insides of the holes to prevent corrosion.



Figure 4 Remove Existing Door



Figure 5 Use Drilling Template



## 3.5.5. Mounting the Kit onto the CUBE

- 1. Lift the kit into position as shown in Figure 6. Use local safety practice for lifting the door. Charles recommends using two people to support the weight and a third person to maneuver the hinge into position.
- 2. While supporting the door weight, attach the door onto the cabinet using the #8 hardware provided. The sealing washer and hex nut are mounted to the inside of the cabinet. Continue supporting the weight of the door until enough screws are fastened to hold the door in place.
- 3. Connect the wind latch on the replacement door to the CUBE door frame using hardware removed previously.
- 4. Connect the grounding strap to the replacement door using hardware removed previously.



Figure 6 Attach Door Kit to CUBE



# 3.6. Connecting the Thermal Unit

Once the replacement door is mounted on the CUBE, connect the new thermal unit. See the list below for connection information for the thermal units included in the kit family. Some kits include the breaker, while for others, the breaker is customer supplied.

| 10k BTU HVAC,                    | Connect to a 2 hole 1EA breaker on the AC newer source and plug the UVAC interact C  |
|----------------------------------|--|
| 230VAC powered                   | receptacle (remove the HVAC plug if CUBE is not equipped with an L6 receptacle).   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 1.7k BTU HVAC,<br>48VDC powered  | Connect to a 20A breaker on the main power system.   |
| 1.7k BTU HVAC,<br>48VDC powered  | Connect to a 20A breaker on the main power system.   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 14k BTU HVAC,<br>48VDC powered   | Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC,<br>50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole<br>lug to the 48V return bus.   |
| 14k BTU HVAC,<br>48VDC powered   | Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC,<br>50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole<br>lug to the 48V return bus.   |
| 14k BTU HVAC,<br>48VDC powered   | Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC,<br>50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole<br>lug to the 48V return bus.   |
| 14k BTU HVAC,<br>48VDC powered   | Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC,<br>50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole<br>lug to the 48V return bus.   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 4k BTU HVAC,<br>48VDC powered    | Connect to a 15A breaker on the main power system.   |
| 12k BTU HVAC,<br>48VDC powered   | Connect to a 50A breaker on the main power system.   |
| 1880W HX<br>48VDC powered        | Connect to a 7.5A breaker on the main power system.  |
| 4k BTU HVAC,<br>48VDC powered    | Connect to a 15A breaker on the main power system.   |
| 14k BTU HVAC,<br>48VDC powered   | Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC,<br>50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole<br>lug to the 48V return bus.   |
| Heat Exchanger,<br>48VDC powered | Connect the black wire on the heat exchanger cable to the (−) output of the power supply.<br>Connect the (+) output of the power supply to the thermostat by inserting the wire<br>(14awg max) into the open slot and tighten down with a straight screwdriver. Use a 3A<br>fuse.  |
| 2k BTU HVAC,<br>115VAC powered   | Connect to a 2-pole 10A breaker on the AC power source and plug the HVAC into an L5 receptacle (remove the HVAC plug if CUBE is not equipped with an L5 receptacle).   |
| 4k BTU HVAC,<br>48VDC powered    | Connect to a 15A breaker on the main power system.   |
| 1.7k BTU HVAC,<br>48VDC powered  | Connect to a 20A breaker on the main power system.   |
| 4k BTU HVAC,<br>48VDC powered    | Connect to a 15A breaker on the main power system.   |
| 12k BTU HVAC<br>48VDC powered    | Connect to a 50A breaker on the main power system.   |
|                                  | 300 AC, powered         2k BTU HVAC,         8VDC powered         7k BTU HVAC,         8VDC powered         2k BTU HVAC,         8VDC powered         2k BTU HVAC,         8VDC powered         4k BTU HVAC,         8VDC powered         2k BTU HVAC,         8VDC powered         k BTU HVAC,         8VDC powered         k BTU HVAC,         8VDC powered         k BTU HVAC,         8VDC powered |

Table 1Electrical Information

For both Dantherm and Vikinor HVAC rear door units (see Table 3), it is advisable to raise the cooling set point to 5 degrees above the default setting. This ensures that the second HVAC will not run if the front door HVAC has successfully lowered the temperature inside the CUBE. See the HVAC documentation that ships with the kit for instructions.



## **3.7.** Completing the Installation

Connect the new alarm wires to the alarm block using the same terminals used by the previous thermal device. If the kit provides a second thermal unit for the CUBE, then use the next set of terminals on the alarm block (HVAC2) for alarm connections if available. If the HVAC2 terminal are not available, then connect the HVAC in series with the existing thermal device. When alarm wiring is complete, apply power to the CUBE.

# 4. PERIODIC MAINTENANCE

In the event that the enclosure needs to be opened in freezing conditions, a narrow, pointed metallic object such as a screwdriver or chisel, along with a non-metallic device such as a rubber mallet, may be used to remove excessive ice buildup around the door and locking mechanism. Use a commercial aerosol de-icer spray to free up locks and latches if needed.

Refer to the thermal unit manual supplied with the unit (if equipped) for periodic maintenance requirements.

## 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 door kit product. The Charles warranty is limited to the operation of the kit hardware as described in this documentation and does not cover equipment which 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 <u>mktserv@charlesindustries.com (email)</u> http://www.charlesindustries.com/main/telecom\_sales\_support.htm

## 7. SPECIFICATIONS

| Physical                   |                |  |  |  |
|----------------------------|----------------|--|--|--|
| Materials                  | 0.125 aluminum |  |  |  |
| Color                      | Off-White      |  |  |  |
| Kits and Replacement Parts |                |  |  |  |
| Touch-up Paint             | 02-000290-0    |  |  |  |
| Lift-Up Handle             | 39-000335-0    |  |  |  |
| Lift-Up Rod Latch          | 39-000336-0    |  |  |  |

Table 2Product Specifications



| Part Number     | Description  | Thermal Unit<br>Manuf. Part Number | Weight (lbs)<br>As Shipped |
|-----------------|--|------------------------------------|----------------------------|
| 97-002222-A     | PM639 Front Door Assembly with 10k BTU HVAC, 230VAC powered                                    | Dantherm 708347                    | 219                        |
| 97-002314-A     | PM639 Front Door Assembly with 12k BTU HVAC, 48VDC<br>powered                                  | Vikinor VAK-3000                   | 219                        |
| 97-002316-A     | PM639 Rear Door Assembly with 12k BTU HVAC, 48VDC powered                                      | Vikinor VAK-3000                   | 200                        |
| 97-002444-A     | SSxx231 Front Door Assembly with 12K BTU HVAC, 48VDC powered                                   | Vikinor VAK-3000                   | 153                        |
| 97-002446-A     | PM639 Front Door Assembly with 12k BTU HVAC, 48VDC powered                                     | Vikinor VAK-3000                   | 155                        |
| 97-002448-A     | PM639 Front Door Assembly with mounting holes for a 12k BTU<br>HVAC, opens to left side        | none                               | 33                         |
| 97-002450-A     | SSxx215 Front Door Assembly with 1.7k BTU HVAC, 48VDC<br>powered                               | Vikinor VAK-500                    | 126                        |
| 97-002451-A     | BB48E2xxx Front Door Assembly with 1.7k BTU HVAC, 48VDC powered (5 battery strings)            | Vikinor VAK-500                    | 136                        |
| 97-002999-A     | PM639 Front Door Assembly with mounting holes for a 320W/K thermosiphon, opens to left side    | none                               | 34                         |
| 97-003000-A     | PM639 Front Door Assembly with mounting holes for a 320W/K thermosiphon, opens to right side   | none                               | 34                         |
| 97-003003-A     | SSxx228 Front Door Assembly with mounting holes for a 320W/K thermosiphon, opens to left side  | none                               | 25                         |
| 97-003004-A     | SSxx228 Front Door Assembly with mounting holes for a 320W/K thermosiphon, opens to right side | none                               | 25                         |
| 97-6391212KRDKT | PM639 Rear Door Assembly with 12k BTU HVAC, 48VDC powered (3500W)                              | Vikinor VAK-3000                   | 211                        |
| 97-4000SS4BPHDK | SSxx228 Front Door Assembly with 12K BTU HVAC,48VDC<br>powered                                 | Vikinor VAK-3000                   | 150                        |
| 97-4000WDKLO639 | PM639 Front Door Assembly with 14k BTU HVAC, 48VDC<br>powered                                  | Vikinor VAF-4000                   | 257                        |
| 97-4000WDKPH639 | PM639 Front Door Assembly with 14k BTU HVAC, 48VDC powered                                     | Vikinor VAF-4000                   | 257                        |
| 97-4000WEKPH639 | PM639 Front Door Assembly with 14k BTU HVAC, 48VDC<br>powered                                  | Vikinor VAF-4000                   | 257                        |
| 97-4000WPKPH639 | PM639 Front Door Assembly with 14k BTU HVAC, 48VDC<br>powered                                  | Vikinor VAF-4000                   | 257                        |
| 97-PM4274KDOORK | PM427 Front Door Assembly with 4k BTU HVAC, 48VDC powered                                      | Dantherm 708345                    | 130                        |
| 97-PM53012KDCDK | PM530 Front Door Assembly with 12K BTU HVAC,48VDC<br>powered                                   | Vikinor VAK-3000                   | 155                        |
| 97-PM624RDRKTHX | PM624 Rear Door Assembly with 1880W Heat Exchanger, 48VDC powered                              | Dantherm 705882                    | 96                         |
| 97-PM624RDKT4K  | PM624 Rear Door Assembly with 4k BTU HVAC, 48VDC powered                                       | Dantherm 708345                    | 190                        |
| 97-PM639ECNOKT  | PM639 Front Door Assembly with 14k BTU HVAC, 48VDC powered                                     | Vikinor VAF-4000                   | 257                        |
| 97-RL200DRTHTX  | RL2000 Front Door Assembly with 17W/F Heat Exchanger, 48VDC powered                            | Dantherm 706841                    | 35                         |
| 97-SS231BATTDK  | SS231 Battery Compartment Door Assembly with 2k BTU HVAC,<br>115VAC powered                    | Vikinor VAK-600-AC                 | 75                         |
| 97-SS4B223DRKT  | SSxx223 Front Door Assembly with 4k BTU HVAC, 48VDC<br>powered                                 | Dantherm 708345                    | 120                        |
| 97-SS4B600WPDRK | SS4B228PX1 Battery Door Assembly with 1.7K BTU HVAC,<br>48VDC powered                          | Vikinor VAK-500                    | 129                        |
| 97-SS4C2154KDKT | SS4C2156 Front Door Assembly with 4k BTU HVAC, 48VDC powered                                   | Dantherm 708345                    | 115                        |
| 97-SSRDRKIT10KD | SSxx228 Rear Door Assembly with 12k BTU HVAC, 48VDC<br>powered                                 | Vikinor VAK-3000                   | 275                        |

Table 3Kit Descriptions