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

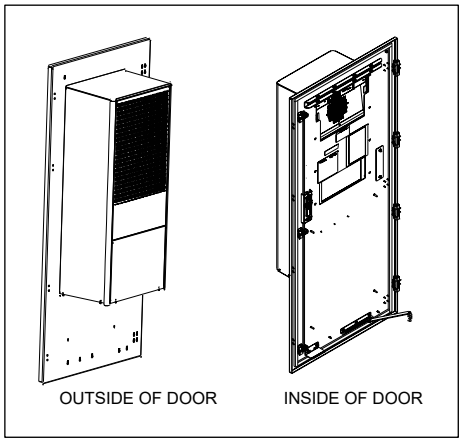

Figure 1 Front Door Kit Example

1. GENERAL INTRODUCTION

1.1. Document Purpose

This document provides general information for the replacement door kits for the BB, PM639xx, SSxx231, and SSxx228 families of the Charles Industries' Universal Broadband Enclosure (CUBE) product line. Figure 1 shows a replacement door kit example.

-NOTE-

Hereafter, the Charles Universal Broadband Enclosure CUBE-BB, CUBE-PM639xx, CUBE-SSxx231, or 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. Some kits have a thermal system mounted on the door. The differences among the kits are summarized in Table 2.

Some kits have a thermal system (HVAC, heat exchanger, thermosiphion, or direct air cooling system [DAC]) mounted on the door. For the PM639 series, rear doors are shorter than front doors, so the rear door kits are not interchangeable with front door kits. Additionally, kits intended for one CUBE family cannot be installed on other CUBEs.

In this document, a front door kit is used in all views. The hinges on all kits mount in the same manner as the one shown. The exceptions are the 97-002995-A, 97-SS4B228VENT, and 97-002452-A, 97-3500CTMPMDKT, 97-3500CTMSSDKT kits, which do not ship with hinges. The entire hinge from the CUBE must be re-used.

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 thermal system is left lying down, then the compressor oil can flow out of its reservoir, which will impair the system 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. Keep the kit upright when transporting.

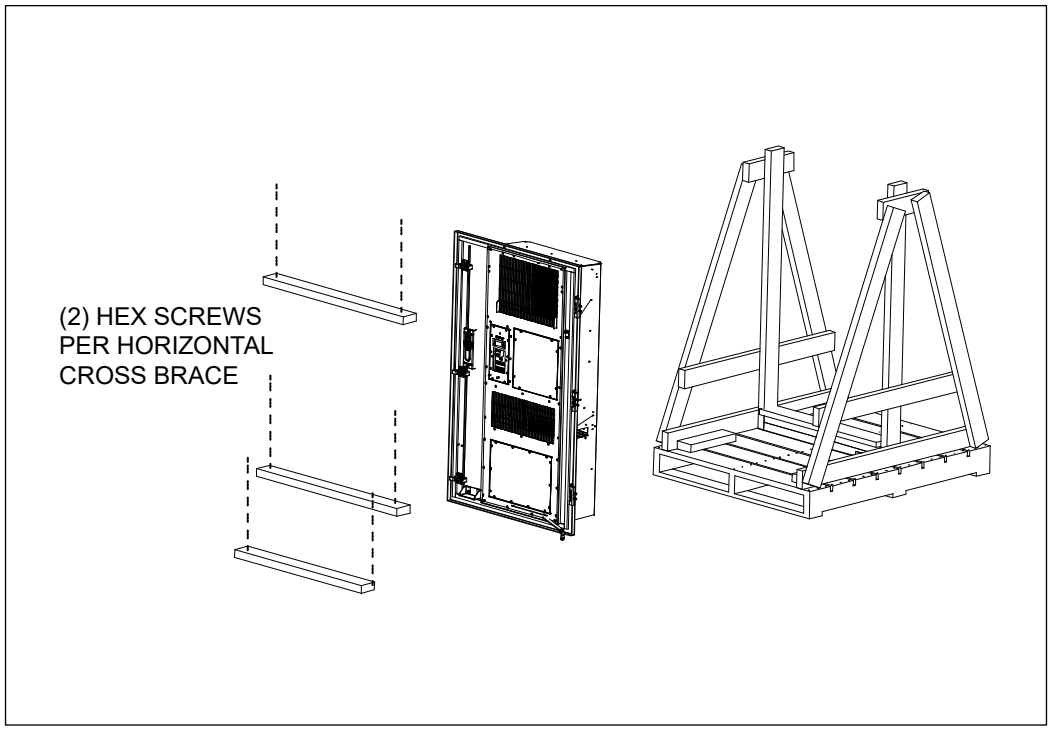

Figure 2 Location of Cross Brace Screws

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, hex, and Phillips screwdrivers
- Torque wrench
- Can wrench (216 tool)
- 7/16 and 11/32 socket and wrench
- Wrench for 1/4”-20 nuts
- Hammer or mallet

3.5. Installing the Kit

⚠	**WARNING**	**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 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. Removing the Existing Door

1. Remove power and alarm wiring from the thermal device on the existing CUBE 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. Locate the hinge pin (Figure 3). Remove the retainer clip and lift the hinge pin to its highest position (Figure 4). A hammer or mallet may be necessary to move the pin upward.
5. Remove the door from the CUBE (Figure 5). The hinge plate and hinge knuckle remain attached to the door. The hinge base with the hinge pin remains attached to the CUBE door frame (Figure 4).
6. **97-002995-A, 97-SS4B228VENT, and 97-002452-A, 97-3500CTMPMDKT, 97-3500CTMSSDKT:** Remove the hinge plate and knuckle from the CUBE door and keep for use in installing the new door.
7. Using a permanent marker, 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. Discard or store the removed door according to local practice.

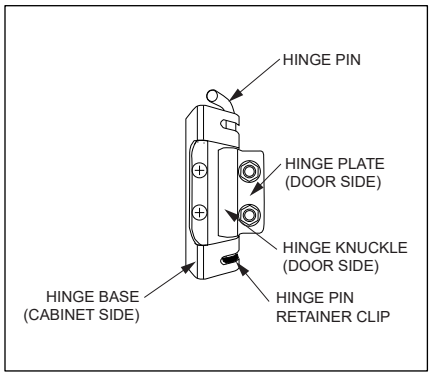

Figure 3 Hinge Assembly

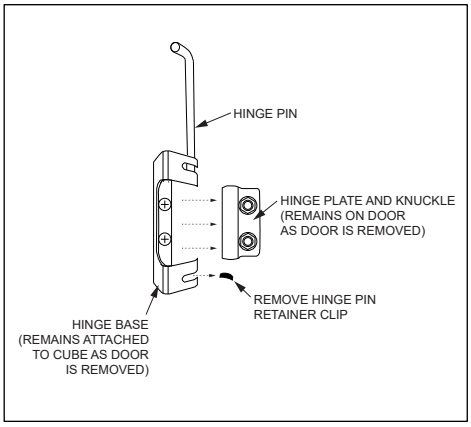

Figure 4 Hinge Separation

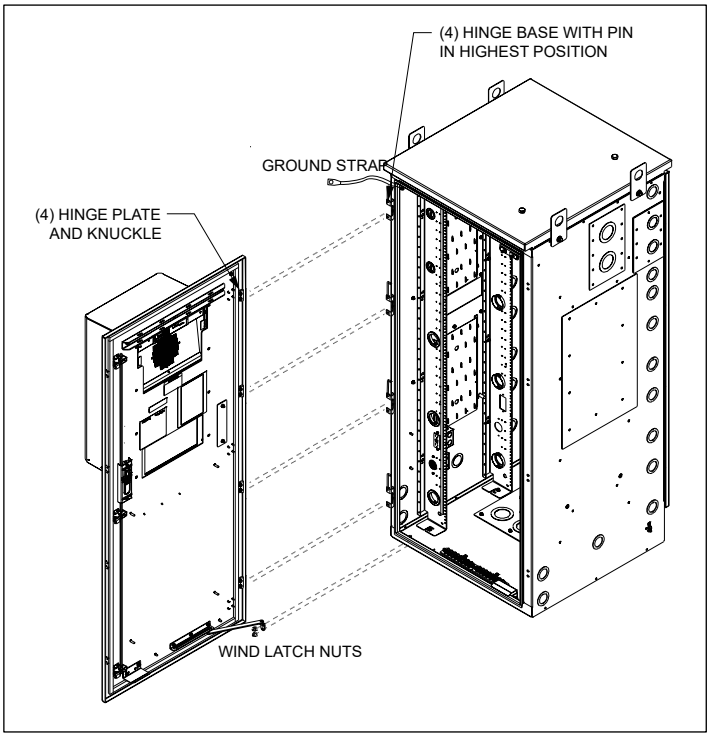

Figure 5 Door Removal and Mounting

3.5.3. Mounting the Kit onto the CUBE

1. **97-002995-A, 97-SS4B228VENT, and 97-002452-A, 97-3500CTMPMDKT, 97-3500CTMSSDKT:** Mount the hinge plates and knuckles onto the replacement door.
2. For each hinge on the replacement door, lift the hinge pin into its highest position and remove the hinge base from the hinge plate. The hinge plate and hinge knuckle remain on the replacement door. Discard or store the hinge base and hinge pin according to local practice. Use local safety practice for lifting the door.
3. Move the replacement door into position so that the hinge knuckles on the replacement door line up with the hinge pin holes on the hinge base on the CUBE door frame (Figure 4). Use local safety practice for lifting the door. Charles recommends using two people to support the weight and a third person to maneuver the hinges into position.
4. While supporting the door weight, secure the door into position by lowering the hinge pins through the hinge knuckles into the lowest pin position. A hammer or mallet may be necessary to lower the hinge pin all the way through the knuckle. Secure the pin by placing the retainer clip in the bottom position (Figure 2).
5. Connect the wind latch on the replacement door to the CUBE door frame using hardware removed previously.
6. Connect the grounding strap to the replacement door using hardware removed previously.

3.6. Connecting the Thermal Unit

Once the replacement door is mounted on the CUBE, connect the new thermal unit (if equipped). 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. This information does not apply to the kits with no thermal unit included.

Kit	Thermal Unit	Connection Information
97-002323-A	10k BTU HVAC, 208-240VAC powered	Connect to a 2-pole 15A breaker on the AC power source and plug the HVAC into an L6 receptacle (remove the HVAC plug if CUBE is not equipped with an L6 receptacle).
97-002325-A	12k BTU HVAC, -48VDC powered	Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC, 50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole lug to the 48V return bus.
97-002442-A	12k BTU HVAC, -48VDC powered	Connect to a 50A breaker on the main power system. Breaker and 8AWG wiring included with the kit.
97-002452-A	2k BTU HVAC, 48VDC powered	Connect to a 20A breaker on the main power system.
97-002995-A	DAC (2 fans), -48VDC powered	Connect red wire to a 3A disconnect on the main power system, black wire to -48VDC return.
97-004600-A	10k BTU HVAC, -48VDC powered	Connect to a 30A breaker on the main power system.
97-3500CTMPMDKT	3500W thermosiphion, 48VDC powered	Connect to a 30A breaker on the main power system.
97-3500CTMSSDKT	3500W thermosiphion, 48VDC powered	Connect to a 30A breaker on the main power system.
97-3500WDK3LOHG	12k BTU HVAC, 48VDC powered	Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC, 50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole lug to the 48V return bus.
97-3500WDK4LOHG	12k BTU HVAC, 48VDC powered	Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC, 50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole lug to the 48V return bus.
97-4000WDKLO644	14k BTU HVAC, 48VDC powered	Connect the blue wire to the (-) terminal block and connect the 2-hole lug to a 48VDC, 50A DC breaker. Connect the gray wire to the (+) terminal block and connect the 2-hole lug to the 48V return bus.
97-4KDCPM524DKT	4k BTU HVAC, 48VDC powered	Connect to a 15A breaker on the main power system.
97-SS4B23112KDK	12k BTU HVAC, 230VAC powered	Connect to a 2-pole 15A breaker on the AC power source and plug the HVAC into an L6 receptacle (remove the HVAC plug if CUBE is not equipped with an L6 receptacle).
97-PM639U12KDK	12k BTU HVAC, 230VAC powered	Connect to a 2-pole 15A breaker on the AC power source and plug the HVAC into an L6 receptacle (remove the HVAC plug if CUBE is not equipped with an L6 receptacle).
97-BB48E2V22KDK	2k BTU HVAC, 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).

Note: The HVAC units can be connected to a cutoff switch that will shut off the HVAC compressor if the CUBE door is opened. If the HVAC will not be connected to a cutoff switch, then use a jumper on the HVAC terminal block to bypass the cutoff switch. On kits with Dantherm HVAC units, place the jumper at positions 8 and 9. On kits with Vikinor HVAC units, place the jumper at the On and Off positions.

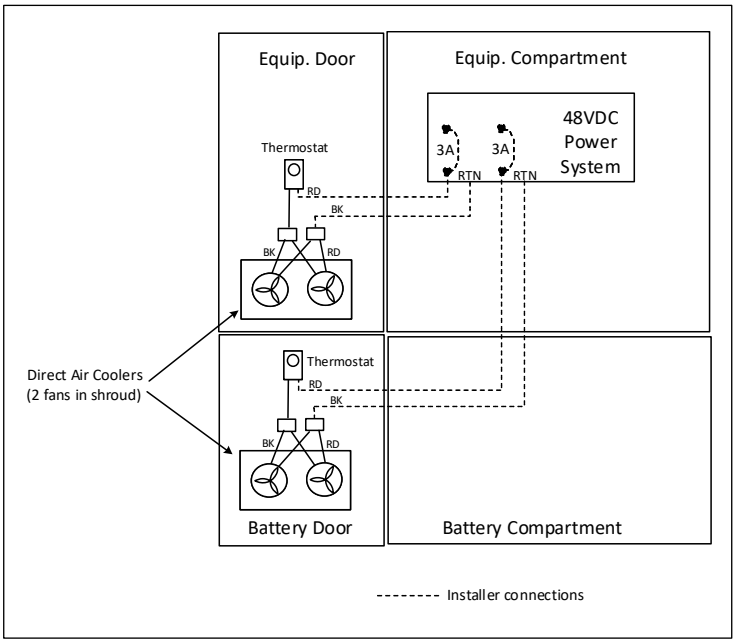

Figure 6 97-SS4B228VENT Electrical Diagram

3.7. Mounting the Cutoff Switch

If the kit includes an HVAC unit, and it is replacing a door that had a heat exchanger, then it might be necessary to install an HVAC cutoff switch on the CUBE. In this case, the kit ships with the cutoff switch and a new mounting plate that holds both the cutoff switch and the original door intrusion switch. **If the purchased kit does not include an HVAC cutoff switch, then skip this section.**

The replacement switch mounting plate has positions for the two switches, shown in Figure 7. The existing 4-wire door intrusion switch fits into the opening at the right side of the plate, and the new HVAC cutoff switch fits into the left opening.

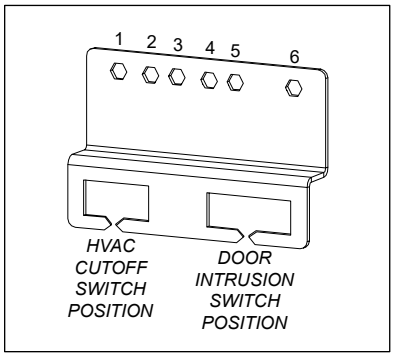

Figure 7
Mounting Hole Positions

1. Open the front door, verify the breaker for the door lights is off, and remove the intrusion alarm and light wiring from the door intrusion switch by pulling the connectors. Remove the switch from the existing mounting plate (Figure 8). Set the switch aside for re-installation.
2. Remove the two nuts from the studs at the back of the mounting plate. Keep the nuts. Store or discard the mounting plate per company practice.
3. Push the door intrusion alarm switch (removed previously) into the right side opening in the new mounting plate until it clicks. Push an HVAC 2-wire cutoff switch into the left side opening (Figure 9).
4. Use the two nuts removed previously to mount and secure the new plate onto the same pair of studs that the old plate occupied (Figure 9, studs are on the inside of the door frame). Use mounting hole positions 5 and 6 (Figure 7).
5. If the CUBE has a rear door, then repeat this procedure for the rear door intrusion switch.

Note: The mounting plate must be mounted as close as possible to the center of the CUBE. If the plate is mounted symmetrically on the studs or too close to the side, then there will be interference between the latching hardware and the switches.

3.7.1. Wiring the Cutoff Switch

Use the wires that ship with the kit to connect to the new HVAC cutoff switch as shown in Figure 10.

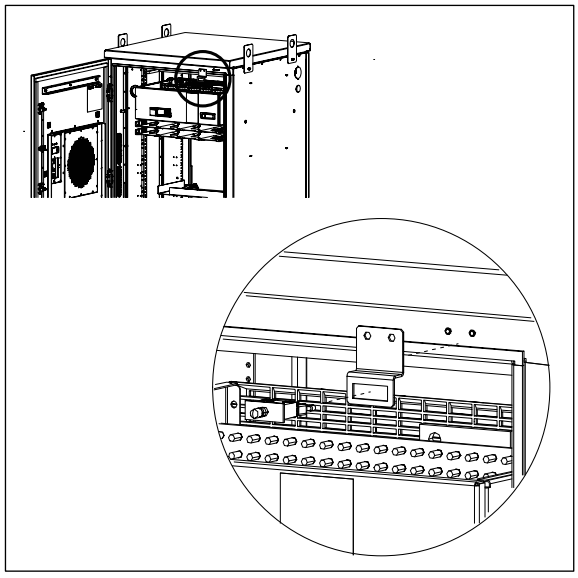

Figure 8 Remove Mounting Plate from CUBE

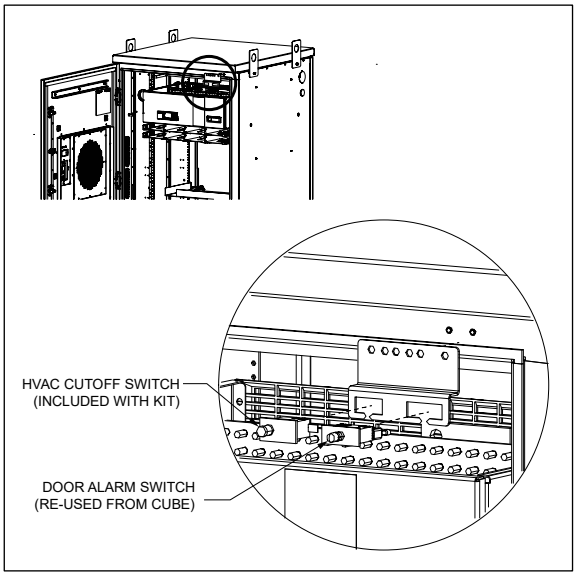

Figure 9 Attach Kit Mounting Plate

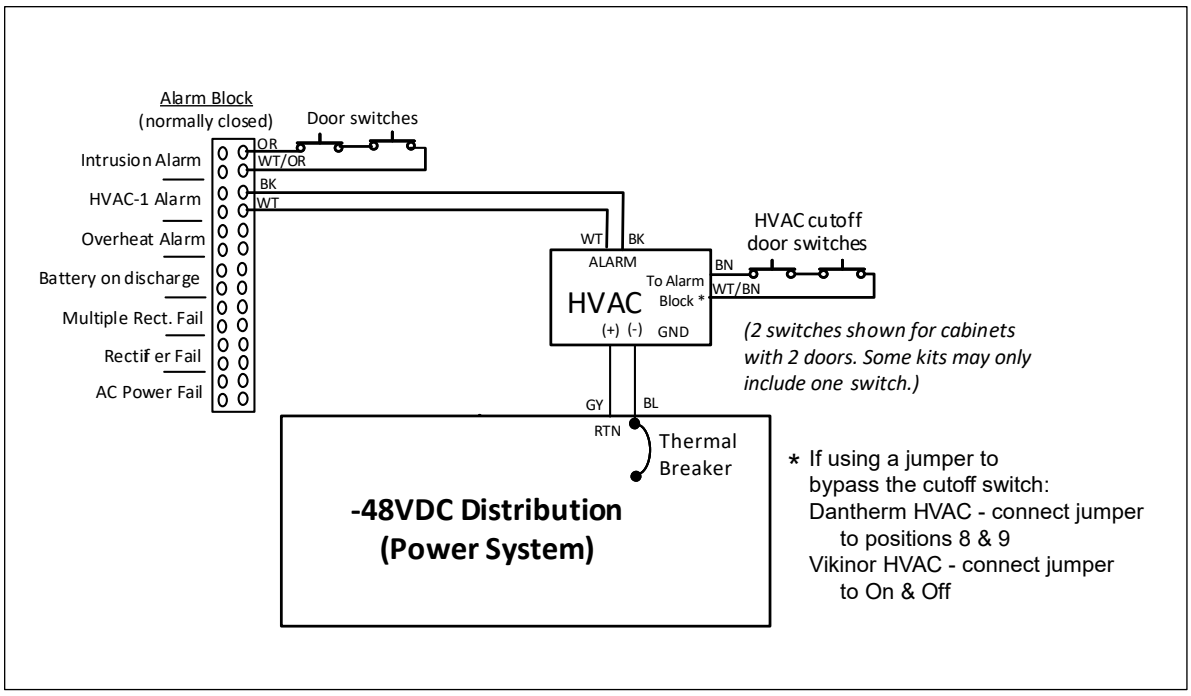

Figure 10 HVAC Cutoff Switch Wiring

3.8. 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. This information does not apply to the 97-002369-A kit.

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 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
mktserv@charlesindustries.com (email)
http://www.charlesindustries.com/main/telecom_sales_support.htm

7. SPECIFICATIONS

7.1. Product 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 1 Kit Specifications

7.2. Model Numbers and Descriptions

Part Number	Description	Thermal Unit Manuf. Part Number	Weight (lbs.) As Shipped
97-002323-A	PM639 Front Door Assembly with 10k BTU HVAC, 208/240VAC powered	Dantherm 708347	219
97-002325-A	PM639 Front Door Assembly with 12k BTU HVAC, 48VDC powered	Vikinor VAK-3000-DC	350
97-002369-A	PM639 Rear Door Assembly	none	104
97-002442-A	PM639 Front Door Assembly with 12k BTU HVAC, DC powered	Vikinor VAK-3000-DC	168
97-002452-A	BB48E2XVA Front Door Assembly with 2k BTU HVAC, 48VDC powered (5 battery strings)	Vikinor VAK-500-DC	136
97-002995-A	PM639 Front Door Assembly with DAC (two 243CFM fans)	Delta PFB1248UHE-EP	51
97-003001-A	SSxx228 Front Door Assembly with mounting holes for a 320W/K thermosiphon, opens to left side	none	23
97-003002-A	SSxx228 Front Door Assembly with mounting holes for a 320W/K thermosiphon, opens to right side	none	23
97-004600-A	SSxx228 Front Door Assembly with 10k BTU HVAC, 48VDC powered	Dantherm 708349	138
97-3500CTMPMDKT	PM639 Front Door Assembly with 3500W thermosiphion, 48VDC powered	Vikinor VHT-325-DC	167
97-3500CTMSSDKT	SS4B231 Front Door Assembly with 3500W thermosiphion, 48VDC powered	Vikinor VHT-325-DC	161
97-3500WDK3LOHG	SS4B228PX1 Front Door Assembly with 12k BTU HVAC, 48VDC powered	Vikinor VAK-3000-DC	152
97-3500WDK4LOHG	SS4C228PX1 Front Door Assembly with 12k BTU HVAC, 48VDC powered	Vikinor VAK-3000-DC	152
97-4000WDKLO644	PM644 Front Door Assembly with 14kBTU HVAC, 48VDC powered	Vikinor VAF-4000-DC	259
97-4KDCPM524DKT	PM524 Front Door Assembly with 4k BTU HVAC, 48VDC powered	Dantherm 708345	125
97-SS4B23112KDK	SS4B231 Front Door Assembly with 12k BTU HVAC, 230VAC powered	Vikinor VAK-3000-AC	144
97-PM639U12KDK	PM639 Front Door Assembly with 12k BTU HVAC, 230VAC powered	Vikinor VAK-3000-AC	156
97-BB48E2V22KDK	BB48E2 Front Door Assembly with 2k BTU HVAC, 115VAC powered	Vikinor VAK-600-AC	136

Table 2 Kit Descriptions