

# Charles Universal Broadband Enclosure

## CUBE-SS4B231VX1

### General Description and Installation

<b>1. GENERAL INTRODUCTION</b> .....	<b>1</b>
1.1. Document Purpose .....	1
<b>2. PRODUCT DESCRIPTION</b> .....	<b>1</b>
<b>3. CUBE WIRING AND EQUIPMENT</b> .....	<b>3</b>
3.1. HVAC Operation .....	4
3.2. Battery Temperature Probe.....	4
3.3. Alarm Terminal Panel.....	4
<b>4. PRODUCT SPECIFICATIONS</b> .....	<b>4</b>

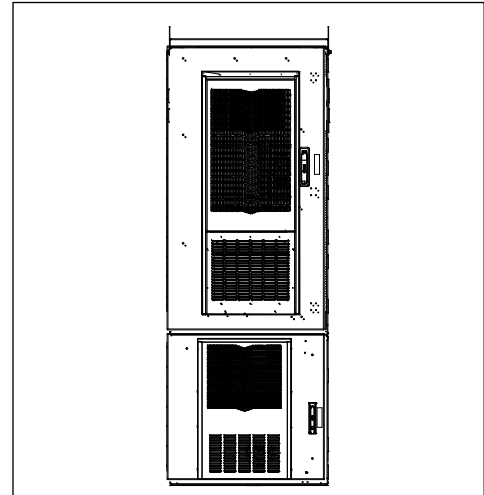
## 1. GENERAL INTRODUCTION

### 1.1. Document Purpose

This document provides additional information for the Charles Industries' Universal Broadband Enclosures CUBE-SS4B231VX1. It is intended as a supplement to the General Description and Installation document for this product family (LT-SSXX231XXX). A closed front view of the CUBE is shown in Figure 1.

-NOTE-

*Hereafter, the Charles Universal Broadband Enclosure CUBE-SS4B231VX1 will be referred to as the "CUBE."*



**Figure 1 Front View of the CUBE**

## 2. PRODUCT DESCRIPTION

The equipment compartment has 31RU of 23" rack spacing and two 12k BTU DC powered HVAC systems. The battery compartment is equipped with a 2kBTU HVAC and supports two strings of customer supplied VRLA batteries. Figure 2 shows the main components of the CUBE.

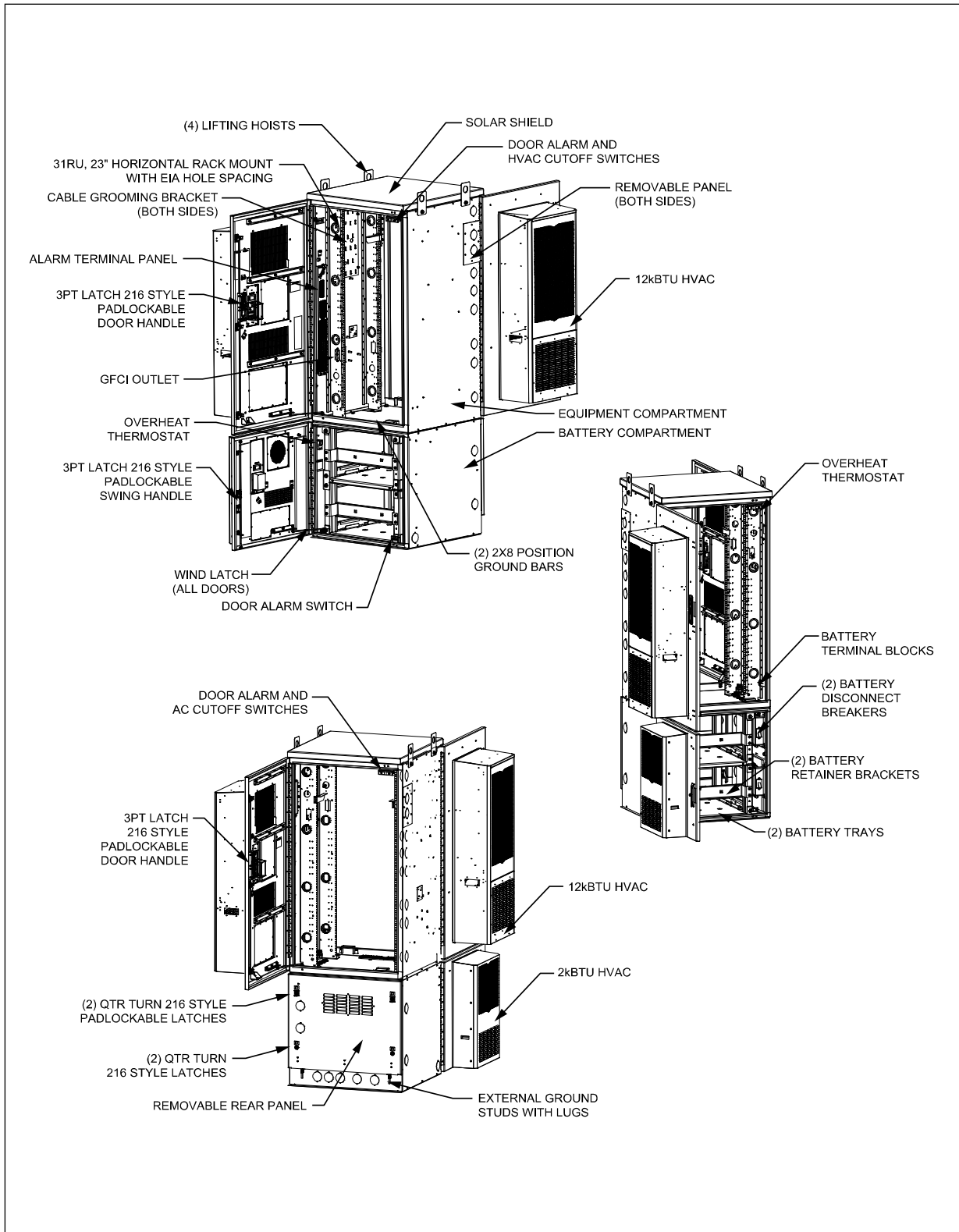


Figure 2 CUBE Components

### 3. CUBE WIRING AND EQUIPMENT

After the CUBE 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.

	<b>WARNING</b>	<b>Perform all bonding and grounding connections prior to any electrical and communications connections.</b>
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In order to prevent condensation prior to being placed in service, do not remove the desiccant until the CUBE is sealed and power is applied. A basic electrical diagram is shown in Figures 3.

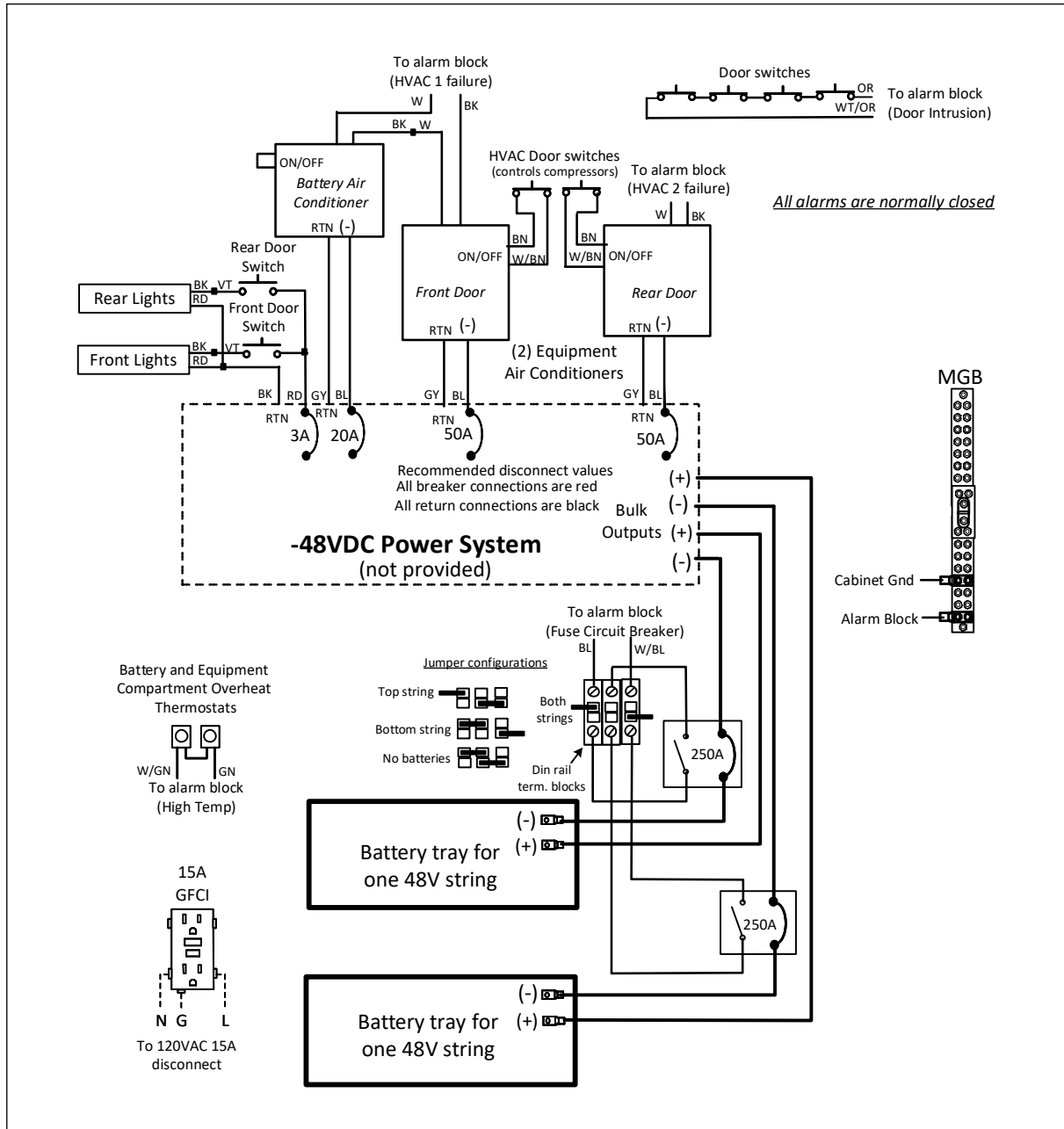


Figure 3 CUBE Electrical Diagram

### 3.1. HVAC Operation

All HVACs compressors and fans are PID (proportional integral derivative) controlled.

**Equipment Compartment.** The front compressor turns on at 33°C at low speed and will increase/decrease speed as needed to maintain this temperature. The compressor turns off when the internal temperature reaches 28°C. The rear compressor turns on at 38°C and turns off at 33°C. The internal fan is always on at low speed (30%) to continually circulate heat within the cabinet. The external fan turns on/off with the compressor. Both fans' speed increase as needed with increasing internal cabinet temperature. In addition, the HVAC includes a built-in 1000W heater for cold temperature operation. HVAC settings for the compressor, fans, heater, and temperature alarms are defined below and are based off the cabinet's interior temperature. The CUBE is equipped with cutoff switches that shut off the HVAC compressors when a door is opened to minimize condensation buildup on the coils.

The maximum airflow amount supplied to the equipment by the HVAC is 500CFM. For further information, refer to the HVAC documentation that ships with the CUBE

HVAC Compressor/Fans/Heater/Alarms Setting	Internal, Front	External, Front	Internal, Rear	External, Rear
Compressor Turn-on Setting	33°C	N/A	38°C	N/A
Compressor Turn-off Setting	28°C	N/A	33°C	N/A
Fan Turn-on Setting	-40°C	33°C	-40°C	38°C
Heater ON Setting (70% Fan Speed)	8°C	N/A	8°C	N/A
Heater OFF Setting	13°C	N/A	13°C	N/A
High Temp Alarm Setting	65°C	N/A	65°C	N/A
Low Temp Alarm Setting	0°C	N/A	0°C	N/A

**Battery Compartment.** The compressor turns on at 25°C at low speed and will increase speed as needed to maintain that temperature. The compressor turns off at 22°C. The internal fan is always on at low speed to continually circulate heat within the cabinet. The heating cycle turns on at 8°C and off at 13°C. The CUBE is equipped with a cutoff switch that shuts off the HVAC compressor when a door is opened to minimize condensation buildup on the coils. For further information, refer to the HVAC documentation that ships with the CUBE.

*-NOTE-*

*Changing the cooling or heating cycles' default factory set points can lead to system performance issues, such as equipment failures, increased power use, unnecessary alarms, noise, condensation build up, compressor or fan failure caused by excessive runtimes and vibration.*

*Avoid placing items in front of the HVAC's return and supply vents. Maintain a minimum of 6" clearance to enable proper air flow.*

### 3.2. Battery Temperature Probe

The CUBE includes two battery temperature probes, wired in series and connected to the power system. After installing the batteries, connect these probes to a battery on each battery shelf. Ensure that the power system is configured for VRLA batteries.

### 3.3. Alarm Terminal Panel

All alarm wiring is connected to the 40-position alarm panel. Refer to the family practice LT-SSxx231xxx for more information about the panel. The following table shows the macro alarm block wiring for this unit.

Alarm ID	Color	POS	Color	POS2
Door Intrusion	ORG	CC1	WHT/ORG	RET1
HVAC Failure	BLU	CC12	WHT	RET12
High Temp	GRN	CC13	WHT/GRN	RET13
Battery Breaker Alarm	BLU	CC23	WHT/BLU	RET23

## 4. PRODUCT SPECIFICATIONS

Physical	
Weight	Approx. 696 lbs. as shipped
Electrical	
Battery Breakers	18-908176-0
Thermal	
HVAC	(2) 12k BTU, 48VDC, Vikinor VAK-3000-DC (1) 2k BTU, 48VDC, Vikinor VAK-600-DC

**Table 1 CUBE Specifications (see family document for full list)**