

# Charles Universal Broadband Enclosure

## CUBE-SS4C215DB4

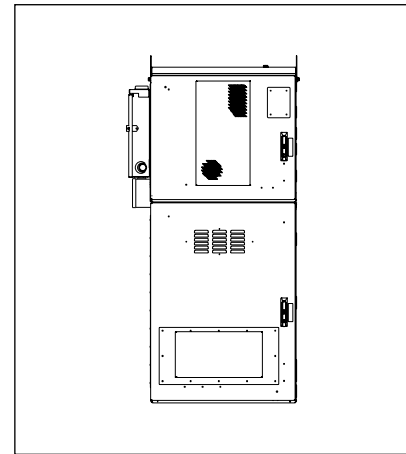
### General Description and Installation

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## 1 GENERAL INTRODUCTION

### 1.1 Document Purpose

This document provides additional information for the Charles Industries Universal Broadband Enclosure CUBE-SS4C215DB4 that is not included in the family document LT-SSXX215XXX. A closed front view of the CUBE-SS4C215DB4 is shown in Figure 1.



**Figure 1 Front View of the CUBE**

-NOTE-

*Hereafter, the Charles Industries Universal Broadband Enclosure CUBE-SS4C215DB4 will be referred to as the "CUBE."*

## 2 PRODUCT DESCRIPTION

The equipment compartment includes a 12-position AC load center, an AC surge suppressor, a Vertiv power system, and a 750W heat exchanger. The battery compartment supports three strings of customer supplied -48VDC NiCd batteries and has a direct air cooling system (DAC) with two fans. Figure 2 shows the main components of the CUBE.

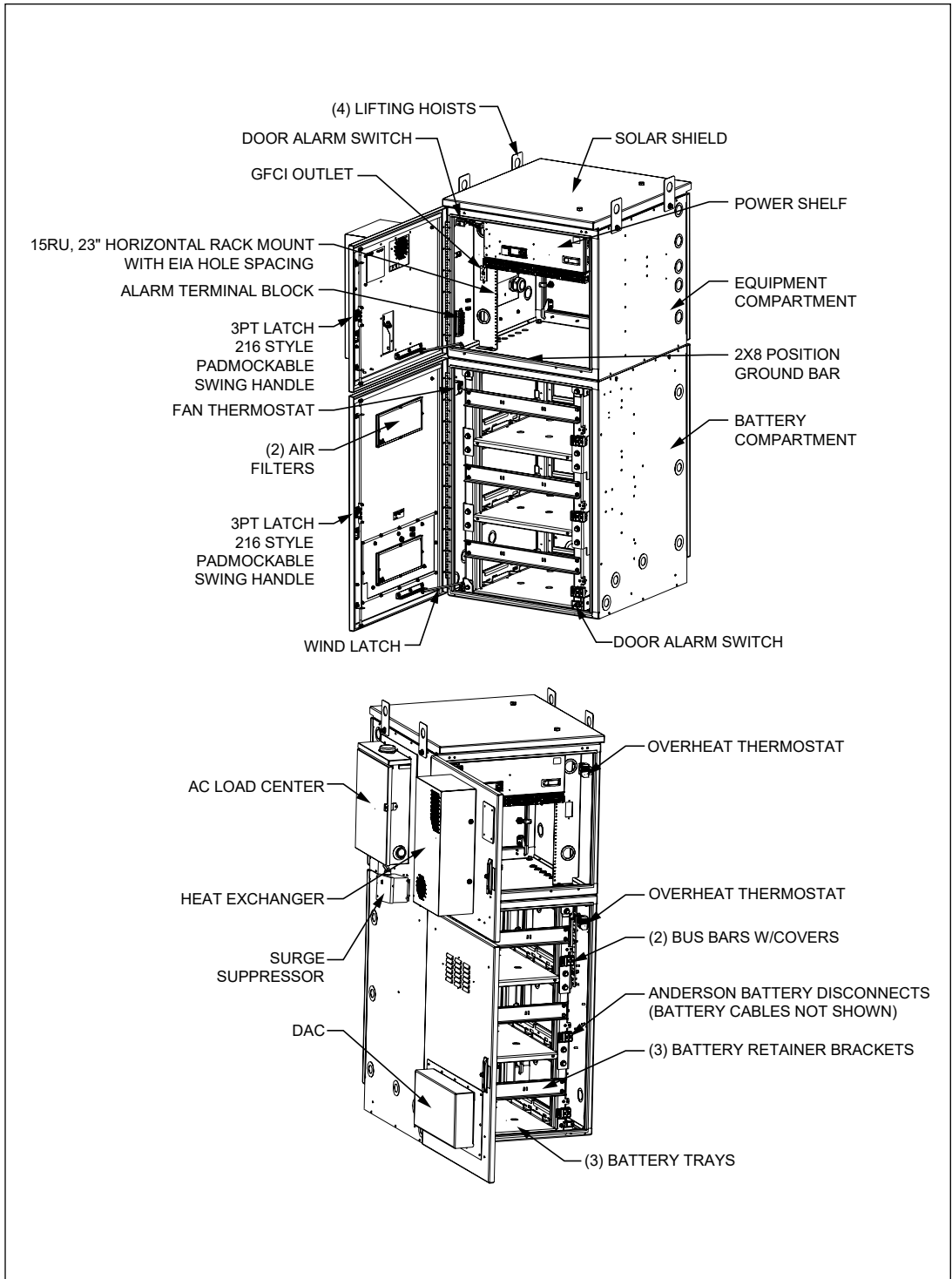


Figure 2 CUBE Components

### 3 CUBE WIRING AND EQUIPMENT

After the CUBE is properly mounted in the desired location, apply No-Ox where bus bar or 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.

In order to prevent condensation prior to being placed in service, do not remove the desiccant until power is applied to the CUBE. A basic electrical diagram is shown in Figure 3.

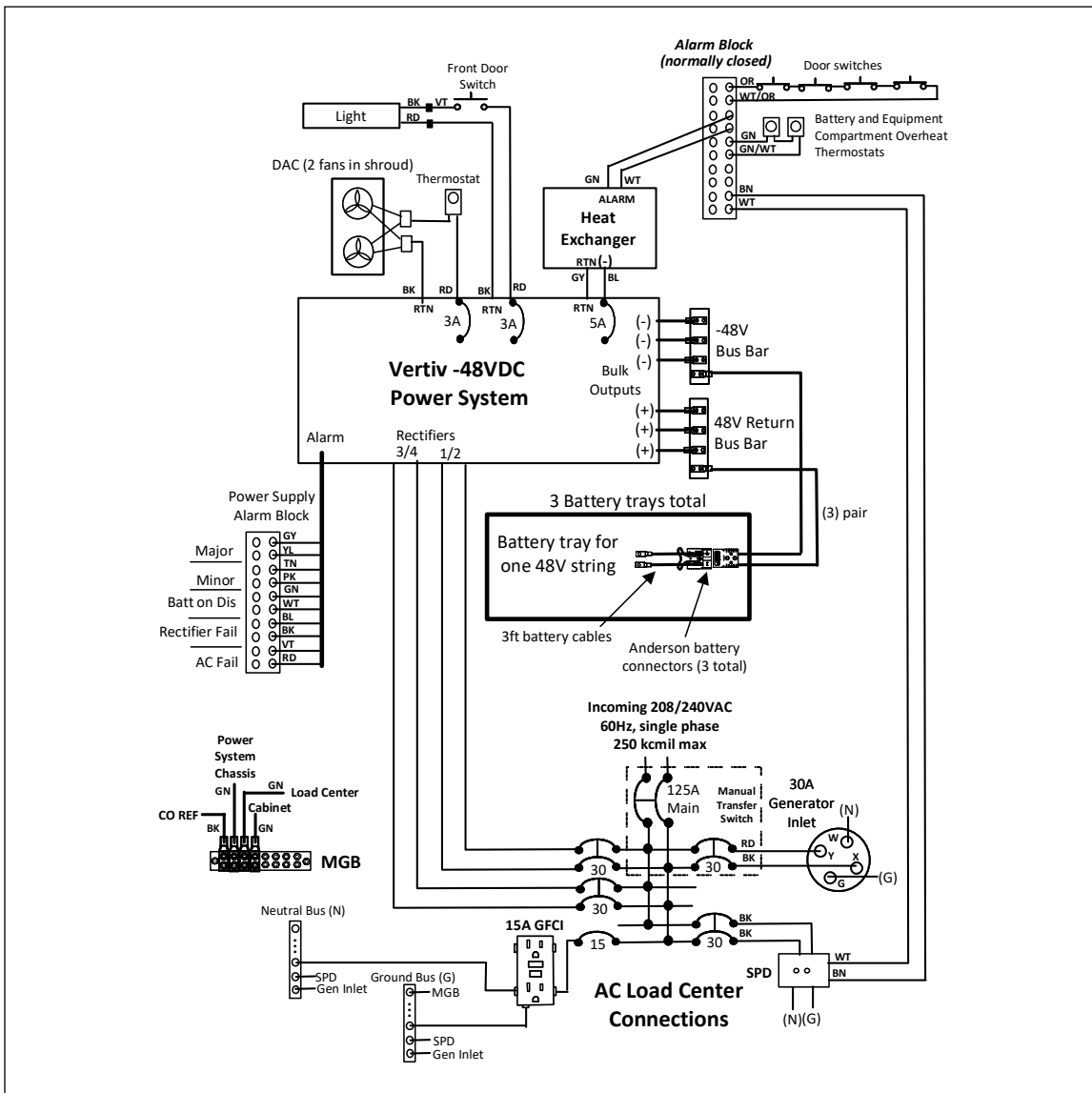


Figure 5 CUBE Electrical Diagram

### 3.1 AC Voltage Connections

The incoming voltage is single phase 208/240V at 60Hz. Incoming voltage is connected to the 125A main circuit breaker in the AC load center. The maximum wire size is 2/0AWG. The installer connects the two hot (line) wires to the breaker, the neutral wire to the neutral bus and the ground wire to the ground bus. Use wire that is sized per National Electrical Code NFPA70 table 310.16.

The AC load center is equipped with a 100kA surge suppressor.

### 3.2 -48VDC Power System

The CUBE is equipped with a 48VDC Vertiv NetSure power system with four rectifiers. The maximum load on the power system is 200A if using four rectifier slots or 400A if using eight rectifier slots.

Refer to the Vertiv power supply documentation located inside the CUBE for information regarding the power supply operation and configuration.

### 3.3 Heat Exchanger Operation

The 750W DC powered heat exchanger in the equipment compartment has a fan speed controller and includes an internal and an external fan. The fans' speed increases with increasing ambient temperature. Fan settings are defined below.

| Fan Setting         | Internal | External |
|---------------------|----------|----------|
| Turn-on Setting     | -40°C    | 30°C     |
| Medium Temp Setting | 30°C     | 40°C     |
| High Temp Setting   | 45°C     | 55°C     |

For more information, refer to the heat exchanger documentation found inside the CUBE.

**-NOTE-**

*Changing the speed controller default factory set points can lead to system performance issues, such as equipment failures, increased power use, unnecessary alarms, noise, condensation build up, fan failure caused by excessive runtimes and vibration. Avoid placing items in front of the heat exchanger's return and supply vents. Maintain a minimum of 2" clearance to enable proper air flow.*

### 3.4 DAC Operation

The DAC system consists of filtered louvers and a shroud with dual fans. The fans are connected to a control thermostat and power. The fan wiring is routed to the equipment compartment and connected to a circuit breaker on the -48VDC power system. The control thermostat is factory set at 30°C (±4°C). The thermostat turns the cooling fans on at the set point and turns them off when the temperature drops by 7°C.

**-NOTE-**

*Changing the thermostat set point from its factory default setting can lead to system performance issues, such as reduced battery life, condensation buildup, excessive runtimes, premature fan failure, and filter clogging, in addition to unnecessary power use, noise, and vibration.*

## 4 SPECIFICATIONS

| Physical                   |                                    |
|----------------------------|------------------------------------|
| Weight                     | Approx. 800 lbs. as shipped        |
| Electrical                 |                                    |
| Power System               | Vertiv NetSure 5100                |
| Rectifiers                 | (4) Vertiv Esure 582137200         |
| AC Load Center             | Square D QO124L125GRB, 24 position |
| Surge Suppressor           | 100kA Raycap AM2080-V-07-ALM       |
| Thermal                    |                                    |
| Heat Exchanger             | 750W, DC powered, Dantherm 707463  |
| Maximum Heat Dissipation   | 710W@19°C above ambient with solar |
| DAC                        | 48VDC, 200CFM, Delta PFB1248UHE-EP |
| Replacement Parts          |                                    |
| Replacement 48VDC DAC Fans | 18-950454-0                        |
| DAC On/Off Thermostat      | 99-004234-0                        |

**Table 1 CUBE Specifications**