

Charles Universal Broadband Enclosure

CUBE-PM42712XXX

General Description and Installation

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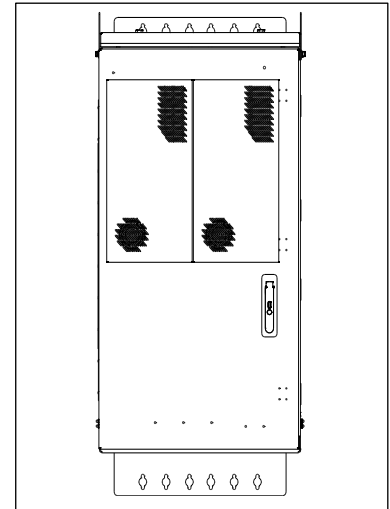


Figure 1 Closed Front View of the PM42712DNX

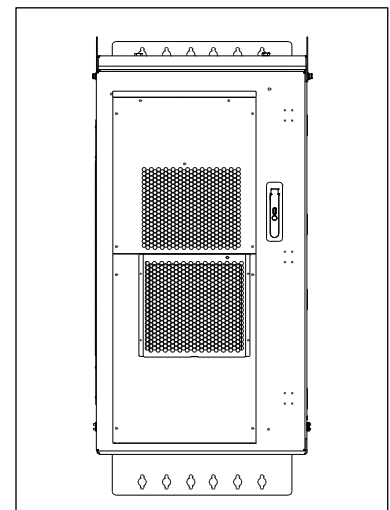


Figure 2 Closed Front View of the PM42712UNX

1. GENERAL INTRODUCTION

1.1. Document Purpose

This document provides general information for the CUBE-PM42712XXX family of the Charles Industries' Universal Broadband Enclosure (CUBE) product line. Supplemental documentation that ships with the CUBE contains more detailed information about the models. Figures 1 and 2 show closed front views of the enclosures.

-NOTE-

Hereafter, the Charles Universal Broadband Enclosure CUBE-PM42712DNX and CUBE-PM42712UNX will be referred to as "PM42712DNX," "PM42712UNX," or "CUBE."

1.2. Product Purpose

This CUBE consists of a protective enclosure for an integrated system of electronic components and equipment that can serve copper and fiber 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 CUBE is to be mounted on a pad, wall, or H-frame. The installer connects the power, fiber and copper connections. Detailed mounting and installation information is covered in Section 3.

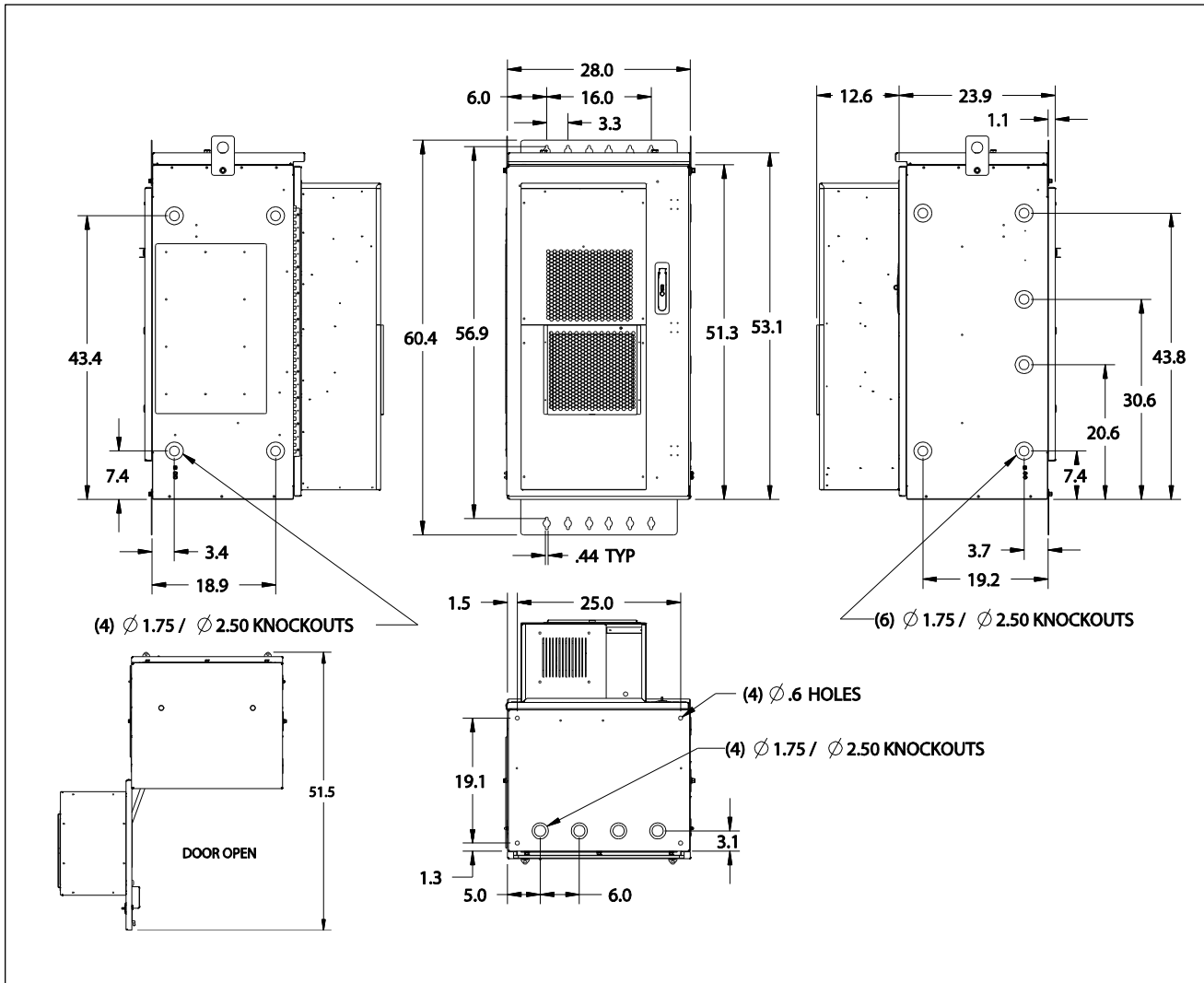


Figure 4 Dimensions of the PM42712UNX

3. INSTALLATION

3.1. Inspecting the Product

The CUBE is shipped mounted upright to a skid. Remove the bolts, unpack the unit, remove 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 CUBE.
- In windy conditions, be sure to engage the door latch to secure the door in a stationary position.

3.3. Obtaining Tools and Equipment

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

- Sufficient length and quantities of fiber cable (or pigtails)
- Cable scoring, opening, and cutting tools for cable sheathing, shields, wrappings, strength members and buffer tubes
- Wire strippers
- Crimpers
- Cable, tube, wire, and fiber cleaning materials
- Protective and/or insulated work gloves
- Safety glasses
- Tape measure
- Marking utensil
- #6 ground wire or rod and earth ground materials
- Bond strap (optional, from cable bond clamp to bond post)
- Any exterior cable strain relief, per company practice
- Slotted and Phillips screwdrivers
- Assorted cable ties, clips, or fasteners (optional)
- Can wrench (216 tool)
- Level
- Anchor hardware for mounting CUBE to a pad
- Derrick or crane

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 in front and to the left of each enclosure to ensure access for equipment installation and maintenance.
- 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, wall, or H-frame must be able to support the weight of the CUBE.
- Run all fiber and copper facilities to the site.

3.5. Lifting the CUBE

See the supplemental documentation for CUBE weights.

3.5.1. Required Equipment

- One derrick (crane) capable of lifting the CUBE
- One spreader bar
- Two lifting slings or chains with each having a 2,500 lbs. capacity
- Connecting links to attach slings to the CUBE's lifting brackets
- 75-ft. long tagline rope

Insert the lifting sling connecting links securely through each of the lifting brackets as shown in Figure 5.

3.5.2. Warnings and Safety Precautions

| | | |
|--|----------------|---|
| | WARNING | Improper hoisting equipment and unsafe lifting procedures can result in serious injury or death. |
|--|----------------|---|

Observe the following local safety procedures when performing the tasks in this section.

- Keep the CUBE away from any power lines.
- Keep bystanders away from the work operations at all times.
- Only trained operators shall operate the crane for lifting and setting the CUBE.
- Do not suspend loads over people or equipment.
- All persons working with crane equipment shall wear standard safety gear according to local practices including safety helmets and steel-toed shoes.
- Do not operate the crane until all stabilizers are extended and in firm contact with the ground or adequate support structure.
- Do not attempt to retract or extend the stabilizers while a load is suspended.

3.6. Mounting the CUBE

Enclosures can be mounted on a pad, H-frame or wall. Refer to Figures 3 and 4 for mounting dimensions for positioning mounting hardware. Charles recommends using a minimum SAE Grade 2, corrosion-resistant bolts, washers and nuts for all mounting applications. Use 1/2" diameter hardware for pad mounting applications, and use 3/8" diameter hardware for all other mounting styles. Bolts need to be of sufficient length depending on which type of mounting is used.

3.6.1. Mounting on a Pad

For pad-mounting on a new or existing precast concrete pad, remove or flip up the bottom lifting bracket before mounting. A loose gasket is provided inside the equipment compartment for placing the CUBE on the pad. Should the gasket become damaged during installation, a replacement can be ordered under part number 39-000469-0. Refer to Figure 6 for a view of installing the gasket.

The following steps are used for mounting the CUBE to a foundation pad:

1. Open the front door of the equipment compartment.
2. Clean any debris from the concrete pad.
3. Install the gasket and place into position on the mounting surface so that the gasket will be underneath the bottom of the CUBE when it is placed. Line up the gasket so that the cutouts are in position around the conduit opening and over the anchor bolts shown in Figure 6.
4. Dress the cable/conduit so that it will align with the CUBE as it is lowered onto the pad.
5. The CUBE must be parallel to the pad surface as it is placed onto the pad; make sure it lines up with the anchor bolts in the pad.
6. Place the CUBE onto the pad. Loosen the slings so that all the weight is on the pad. Check that the CUBE is properly aligned.
7. To secure the CUBE to the pad, use 1/2" anchor bolts. Tighten all bolts securely. The embedment depth of the anchor is not to exceed 3.5".
8. Once the CUBE is secured, remove the slings and the tagline

Charles kit 97-002244-A contains a plinth, mounting hardware, and documentation for mounting the CUBE on a 24" plinth

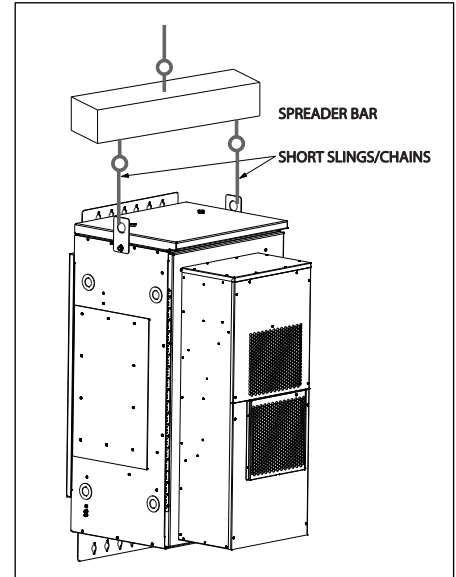


Figure 5 Lifting the CUBE

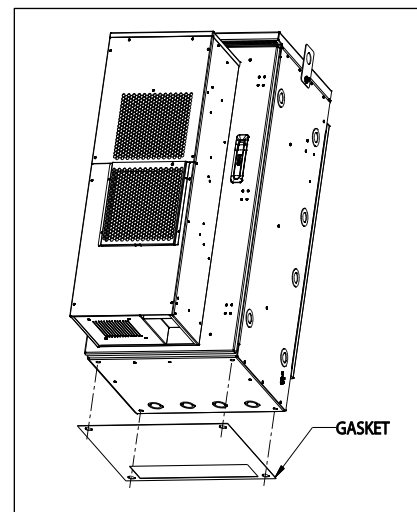


Figure 6 Gasket Installation

3.6.2. Mounting on a Wall or H-frame

The CUBE is equipped with two mounting brackets on top and bottom, as well as two lifting brackets, one on each side. For wall or H-frame mounting, the mounting brackets face toward the center and need to be reoriented prior to mounting as shown in Figures 3 and 4. Torque the mounting bracket screws to a value of 180 in-lbs.

A minimum of 3/4” thick plywood or similar surface is required for wall mounting. Since the rear door protrudes past the mounting brackets, add unistruts to the wall first, then mount the cabinet to the unistruts.

Charles kit 97-001971-A contains hardware for mounting to H-frame unistruts.

3.7. CUBE Wiring and Equipment

| | | |
|--|----------------|--|
| | WARNING | Perform all bonding and grounding connections prior to any electrical and communications connections. |
|--|----------------|--|

The installer provides the AC voltage connections per company practices and in accordance with all local codes. Connect the GFCI receptacle to a 120VAC source with a 15A disconnect. Electrical diagrams are in the supplemental documentation that ships with the CUBE.

In order to prevent condensation prior to being placed in service, do not remove the desiccant until turn-up.

3.7.1. Ground Connections

Use the two 2x8 position ground bars provided in the equipment compartment for all grounding of internal equipment. There are external two-conductor ground studs available on the both sides of the cabinet near the bottom for connecting a site ground wire.

3.7.2. Alarm Block Connections

A 10-position, labeled alarm block monitors components in the equipment compartment. See the electrical diagrams in the supplemental documentation for information about alarm connections. All alarm connections are normally closed and will open upon alarm.

3.7.3. Cable Entrance

The enclosure has six 1.75”/2.50” knockouts on the right side, four on the left side, and four on the bottom as shown in Figures 3 and 4. The 1.75” knockout accommodates 1.25” conduit fittings, and the 2.50” knockout accommodates 2” conduit fittings.

3.7.4. Conduit Seals

All conduit openings on the CUBE must be completely sealed with a duct seal compound to prevent moisture from entering the CUBE. 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 8. 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.

3.8. Verifying the Installation

Verify that the earth ground and all grounding and bonding are complete and functional. After verifying that all installer connections are secure and complete, turn on the circuit breakers and verify that the equipment turns up correctly.

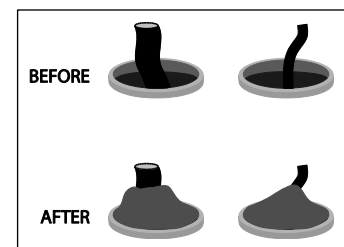


Figure 8 Applying Putty Seal

4. PERIODIC MAINTENANCE

In the event that the enclosure needs to be opened in freezing conditions, a narrow, blunt metallic object such as a screwdriver or chisel, along with a non-metallic device like a rubber mallet, may be used 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.

Reset the GFCI duplex receptacle periodically to ensure it is working. The unit meets UL-943, which requires an auto-monitoring (self-testing) feature. A flashing or solid red LED indicates a fault. If the unit continues to show a fault after resetting, replace the unit.

Heat exchangers (if equipped) require no scheduled maintenance other than cleaning the fans and heat exchanger core if they become contaminated with dust or residue. Remove the cover by removing the screws on the outside. Refer to the heat exchanger documentation supplied with the cabinet for more information. Refer to the air conditioner manual supplied with the air conditioner (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 at:

847-806-8500
 800-607-8500
 847-806-8556 (FAX)
techserv@charlesindustries.com (email)
http://www.charlesindustries.com/main/tech_support.htm

6. WARRANTY & CUSTOMER SERVICE

Charles Industries, Ltd. 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 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 at:

847-806-6300
 847-806-6653 (FAX)
mktserv@charlesindustries.com (email)
http://www.charlesindustries.com/main/telecom_sales_support.htm

7. SPECIFICATIONS

7.1. Regulatory Specifications

- UL listed
- GFCI: UL-943 listed

7.2. Product Specifications

| Physical | |
|---|---|
| Dimensions | 53"Hx28"Wx24"D |
| 23" Equipment Rack Space and Hole Spacing | 47" (27 RU) EIA spacing with tapped #12-24 holes |
| Color | Off-White |
| Material | .125" welded aluminum |
| Electrical | |
| Electric Outlet | One 15A GFCI outlet |
| Bonding and Grounding | Two 2x8 position ground bars |
| Cable Entrance | (14) 1.75"/2.50" knockouts (See Figures 3 and 4 for location) |
| Environmental | |
| Operating Temp. Range, Inside Enclosure | -40° to +149°F, -40° to 65°C |
| Operating Temp. Range, Outside Enclosure | -40° to +115°F, -40° to 46°C |
| Humidity | 0 to 95% (non-condensing) |
| Altitude | Up to 2,000 meters (6560') |
| Kits and Replacement Parts | |
| Touch-up Paint | 02-000290-0 |
| Replacement Gasket | 39-000469-0 |
| Mounting Plinth | 97-002244-A |
| H-frame Mounting Hardware Kit | 97-001971-A |

Table 1 CUBE Specifications