



**EMC® CLARiiON®  
AX4-5 Series Hardware in  
NEBS-Compliant Environments**

**Installation Guidelines**

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The following CLARiiON® storage-system components have passed the GR1089 and GR63 level 3 suite of NEBS (Network Equipment Building System) compliance tests:

- ◆ AX4-5 disk processor enclosure (DPE-AX)
- ◆ 1000-W standby power supply (SPS)
- ◆ AX4-5 disk-array enclosure (DPE-AX)

These components met all Telcordia standards for equipment used in telco central offices (COs).

These products are suitable for installation as part of the common bonding network (CBN) or an isolated bonding network (IBN) or both.

These products are suitable for installation in network telecommunication facilities, locations where the National Electric Code applies, and in outside plants.

For test details, please contact your EMC representative.

This document provides the input power requirements you must meet and enclosure mounting points you can use to install EMC AX4-5 series systems in a NEBS environment. Topics include:

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## Documentation

The most recent versions of relevant documents are available in the **Technical Documentation and Advisories** section of the Powerlink® website -- <http://Powerlink.EMC.com>. If you do not already have a Powerlink account, we strongly recommend that you visit the site and set one up immediately.

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## Introduction

We used a commercially available 7' 0" unequal flange cable duct rack purchased from Hendry Telephone Products for level 3 NEBS-compliance testing. The rack complies with Telcordia requirements to support equipment in zone 4 seismic areas. To install our AX4-5 series enclosures in the Hendry rack, we produced customized mounting trays of 1/8" 1008-1018 cold-rolled steel (CRS).

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**Note:** To achieve test results similar to ours, an end user should produce mounting trays of comparable strength and function to those used in our tests, and install the AX4-5 series equipment in a rack that has characteristics similar to the Hendry rack. (Design files for the mounting trays used in these NEBS tests are available upon request from your EMC representative.)

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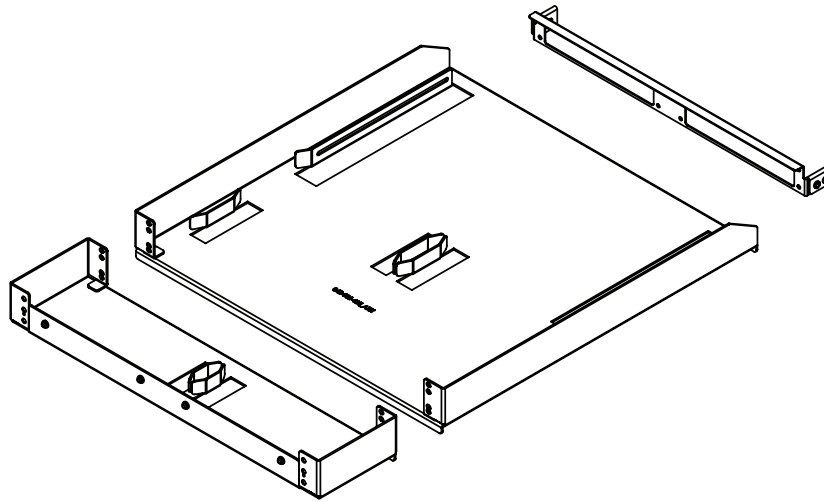
## Specifications for mounting locations

Figures 1 through 4 show example trays and detail the mounting locations for AX4-5 series enclosures and the standby power supplies.

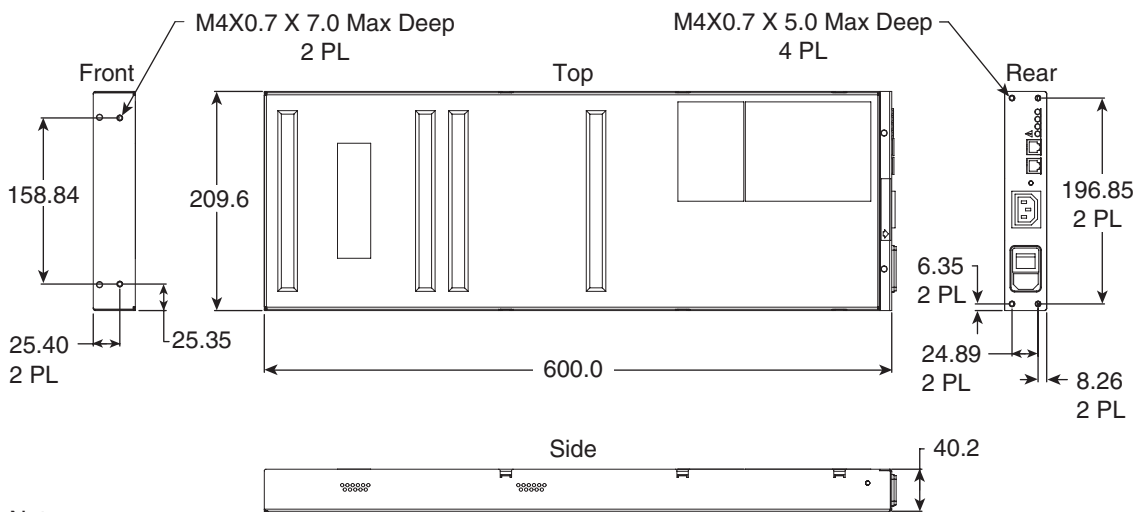
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### 1U standby power supply

Each AC-powered AX4-5 series system includes a standby power supply (SPS). One or two 1U, 1000-watt SPS units are mounted in two trays directly below the processor enclosure. [Figure 1](#) shows the EMC SPS tray design; [Figure 2](#) shows the SPS mounting locations.



**Figure 1** EMC mounting tray assembly for 1U SPS in a telco rack

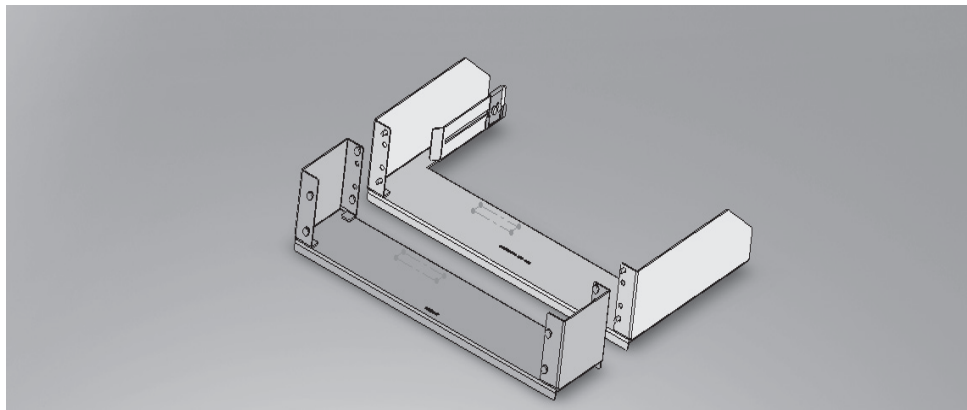


Note:  
All dimensions are in millimeters

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**Figure 2** 1000W SPS (AC-powered AX4-5) mounting locations

Figure 3 shows the EMC design for telco trays that support the DPE-AX and DAE-AX enclosures. Figure 4 details the mounting locations for the shared chassis.



**Figure 3** EMC mounting trays for 2U enclosure in a telco rack

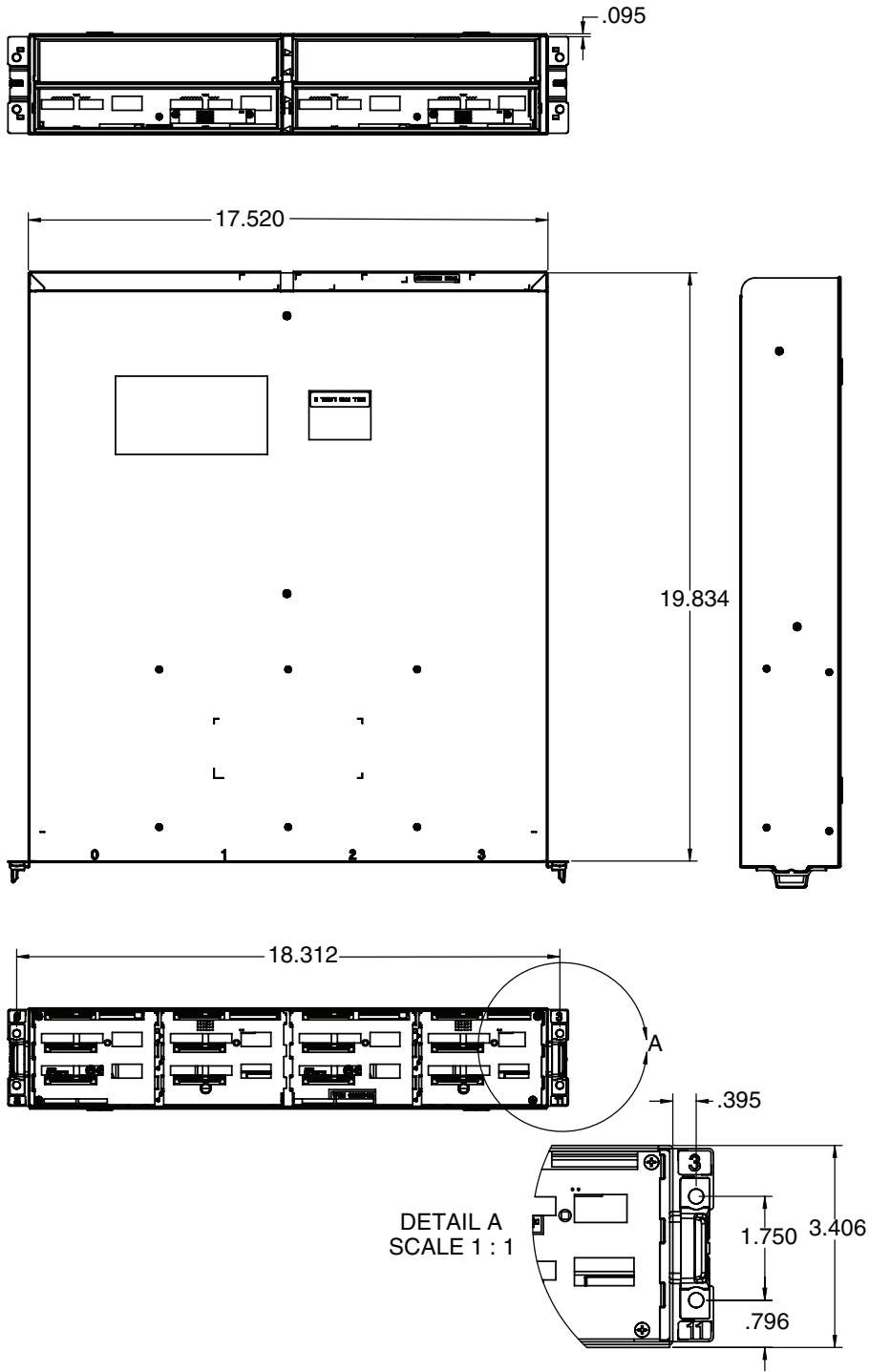


Figure 4 2U disk processor or disk-array enclosure mounting locations

## Guidelines for configuring storage-system components

Apply the technical specification information (see “Documentation” on page 2) to the following guidelines when configuring enclosures for a given environment, such as within a NEBS-compliant rack system:

- ◆ Provide two separate power distribution panels to deliver the proper voltage to each of the power supplies configured in each enclosure. Each enclosure should make one connection to each of the distribution panels to provide redundant AC connections back to their sources.
- ◆ Size each power distribution panel for the total line current requirement of all enclosures provided within the rack or cabinet, assuming full current is drawn through one power supply. This allows either power distribution panel to provide full power capability to the enclosures, should the other's AC source fail.
  - EMC CLARiiON technical specifications size maximum initial inrush current to be the sum of the individual power supply inrush currents on each of the distribution panels.

**Note:** Actual inrush current may be less than the above amount when the source impedance providing the current limits it, or when the input voltage is low. It is important nonetheless to consider the maximum potential inrush current when sizing power distribution circuit protection devices and uninterruptible power supplies (UPS's), as they may be sensitive to these inrush peaks.

- EMC CLARiiON technical specifications also size maximum surge current to be the sum of the individual power supply surge currents on each of the distribution panels.

**Note:** The source *must* meet this surge current requirement during startup of the enclosures. Limited current during this period of operation can cause inadequate voltage regulation within the power supply units, and they may fail to start. This is especially true for UPS sources, which must be capable of delivering this surge current during startup. If the source cannot satisfy this requirement, you may need to sequence the enclosure powerup through manual or automated means.

**Note:** The nominal AC voltages are either 100V, 120V, 200V, 230V or 240V, depending on location.

## Installation notes

- ◆ NEBS compliance for AX4-5i and AX4-5SCi systems requires a lightning surge suppressor (EMC model CX-NEBS2-KIT) installed on each iSCSI data port connection.
- ◆ NEBS compliance for all platforms requires use of shape thread rolling (sometimes called *trilobular*) screws to secure each chassis to cabinet/rack front channels. EMC model CX-NEBS-KIT includes four appropriate screws.
- ◆ NEBS compliance for all AC-powered platforms requires an external surge protection device (SPD) as part of the AC power network infrastructure.

**WARNING**

*Any intra-building port of a chassis is suitable for connection to intra-building or unexposed wiring or cabling only. Any intra-building port of a component **MUST NOT** be metallically connected to interfaces that connect to the outside plant or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed outside plant cabling. The addition of primary protectors is not sufficient protection when connecting these interfaces metallically to outside plant wiring.*

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