

This document lists the AX4-5 storage-system technical specifications, operating limits, and shipping and storage requirements.

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AX4-5 technical specifications

Technical specifications include storage-system power requirements, size, drive, interface, environment, and standards.

AC power requirements

The input current, power (VA), and dissipation per storage system listed in this document are based on the maximum capability of the power supplies and cooling system to provide internal regulated power. Typical values will be less, depending on the number of disk modules. These values represent either

- ♦ the values for a single power supply line cord, or
- ♦ the sum of the values shared by the line cords of two power supplies in the same enclosure, with the division between the line cords and supplies at the current sharing ratio (approximately 50% each).

With two power supplies, a failure of one supply leaves the remaining supply and cord supporting the full load. Any cabinet you use for mounting storage systems must have ac power distribution. The main branch ac distribution must be able to handle the requirements for all AX 4 systems connected to it.

Table 1 AX4-5 DPE power specifications

| Requirement | Storage system |
|-----------------------|---|
| AC line voltage | 100–240 Vac \pm 10%, single phase, 47 to 63 Hz |
| AC line current | 4.5 A max at 100 Vac, 2.3 A max at 200 Vac |
| Power consumption | 490 VA (450 W) max |
| Power factor | .98 min at full load, low voltage |
| Heat dissipation | 1.62×10^6 J/hr, (1,535 BTU/hr) max |
| In-rush current | 17 A max for $\frac{1}{2}$ line cycle per power supply at 240 Vac 8.5 A max for $\frac{1}{2}$ line cycle per power supply at 120 Vac |
| Startup surge current | 20 A rms max for 100 ms at any line voltage |

| Requirement | Storage system |
|-------------------|--|
| AC protection | 12 A fuse on each power supply, both phases |
| AC inlet type | IEC320-C14 appliance coupler, per power supply |
| Ride-through time | 21.2 ms min |
| Current sharing | ±10% of full load, between power supplies |

Table 2 AX4-5 DAE power specifications

| Requirement | Storage system |
|-----------------------|---|
| AC line voltage | 100–240 Vac ± 10%, single phase, 47 to 63 Hz |
| AC line current | 3.6 A max at 100 Vac, 1.9 A max at 200 Vac |
| Power consumption | 390 VA (360 W) max |
| Power factor | .98 min at full load, low voltage |
| Heat dissipation | 1.30x 10 ⁶ J/hr, (1,228 BTU/hr) max |
| In-rush current | 17 A max for ½ line cycle per power supply at 240 Vac 8.5 A max for ½ line cycle per power supply at 120 Vac |
| Startup surge current | 20 A rms max for 100 ms at any line voltage |
| AC protection | 12 A fuse on each power supply, both phases |
| AC inlet type | IEC320-C14 appliance coupler, per power supply |
| Ride-through time | 21.2 ms min |
| Current sharing | ±10% of full load, between power supplies |

Table 3 AX4-5 Standby Power Supply power specifications

| Requirement | Storage system |
|--|--|
| AC line voltage | 100 V AC to 240 V AC -10%/+10% single-phase, 47 Hz to 63 Hz; auto-ranging |
| AC line current, internal and pass-through | 0.2 A max @ 100 V AC, internal current consumption (up to 10 A max at 100 V AC, pass-through to AC outlets) 0.1 A max @ 200 V AC, internal current consumption (up to 5 A max @ 200 V AC, pass-through to AC outlets) |
| Internal power consumption | 60 VA (40W) peak in high-charge mode 10 VA (6W) float charge mode |
| Power factor | NA for pass-through load 0.67 pf for internal 10 VA load |
| Heat dissipation | 21.6 x 10 ³ J/hr (21 BTU/hr) steady state |
| In-rush current | 6 A max for 1/2 line cycle @ 240 V AC |
| AC protection | 15 A fuse, both phases |
| AC inlet type | IEC 320-C14 appliance coupler with switch |
| AC outlet type | EC 320-C13 appliance coupler, quantity 2 |
| Charge times | After full power outage, 75 minutes maximum, (45 minutes typically). After offline storage, 2 hours approximately |
| AC failure detect time | 12 ms max |
| Transfer time | 28 ms max |

Size and weight

The size and weight of the DPE-AX are listed in Table 4 and the DAE-AX and SPS size and weight are listed in Table 5.

Table 4 DPE-AX dimensions

| Dimension | DPE-AX |
|------------------|--|
| Height | 88.9 mm (3.5 in), 2 NEMA units including mounting hardware |
| Width | 44.45 cm (17.5 in) |
| Depth | 50.8 cm (20 in) |
| Weight | 27 kgs (60 lb) dual-SP system with 12 disks |
| | 26 kg (57 lbs) single-SP system with 12 disks |
| | 0.61 kg (1.35 lbs) per disk module |
| | 2.72 kg (6 lbs) per power supply |

Table 5 DAE-AX and SPS dimensions

| Dimension | DAE-X | SPS |
|------------------|--|--|
| Height | 88.9 mm (3.5 in), 2 NEMA units including mounting hardware | 1 NEMA unit, including mounting hardware |
| Width | 44.45 cm (17.5 in) | 44.45 cm (17.5 in) |
| Depth | 50.8 cm (20 in) | 60.96 cm (24 in) |
| Weight | 24.5 kg (54 lbs) with 12 disks | 11 kg (24 lb) per SPS unit |
| | 0.61 kg (1.35 lbs) per disk module | 4.5 kg (10 lb) tray |
| | | |

Drive type

The disk drives used in AX 4 storage systems are standard 8.75 cm (3.5 inches) x 2.54 cm (1.0 inch) drives.

Drive module power is approximately 16 W maximum per drive slot.

SP optical cabling

Fibre Channel storage systems use optical cables from the storage processor's SFP (Small Form Factor pluggable) LC transceivers to the external Fibre Channel environment.

Table 6

| | | |
|-------------|--|--|
| type | 50 μm or 62.5 μm , multi-mode, dual LC | |
| length | 50 μm @2.125 Gbit | 2 m (6.6 ft) min to 300 m (985 ft) maximum |
| | 62.5 μm @2.125 Gbit | 2 m (6.6 ft) min to 150 m (492 ft) maximum |
| | 50 μm @4.25 Gbit | 2 m (6.6 ft) min to 150 m (492 ft) maximum |
| | 62.5 μm @4.25 Gbit | 2 m (6.6 ft) min to 70 m (230 ft) maximum |
| bend radius | 3 cm (1.2 in) min | |

The maximum length for either the 62.5 μm or 50 μm cable (noted in the table above) includes two connections or splices between source and destination.



CAUTION

EMC does not recommend mixing 62.5 μm and 50 μm optical cables in the same link. In certain situations you can add a 50 μm adapter cable to the end of an already installed 62.5 μm cable plant. Contact your service representative for details.

SP network cabling

iSCSI storage systems use standard Ethernet LAN cables from the iSCSI ports (RJ45 connectors) on each storage processor to the external network environment. For distances up to 100 meters, Category 5E cables are the commonly used gigabit Ethernet standard; the system also supports CAT 5 and CAT 6 cables. EMC recommends CAT 6 LAN cables whenever possible.

AX4-5 operating limits

The ambient temperature specification is measured at the front bezel inlet. The site must have air conditioning of the correct size and placement to maintain the specified ambient temperature range listed below:

| Requirement | Description |
|----------------------|---|
| Ambient temperature | 10 °C to 40 °C (50 °F to 104 °F) |
| Temperature gradient | 10 °C/hr (18 °F/hr) |
| Relative humidity | 20% to 80% noncondensing |
| Elevation | 2438 m (8,000 ft) at 40 °C, 3048 m (10,000 ft) at 37 °C |

For systems mounted in a cabinet, the operating limits listed above must not be exceeded inside the closed cabinet. Equipment mounted directly above or below the storage system must not restrict the front to rear airflow of the storage system. The cooling airflow through the storage system is approximately 45 cubic feet per minute for the DAE and approximately 42 cubic feet per minute for the DPE. Cabinet doors must not impede the front to rear airflow. Exhaust temperatures will be about 12° C (21.6° F) above the intake temperatures in a typical system.

Environmental recovery

If the storage system exceeds maximum ambient temperature by approximately 10°C/18°F, the storage processors will begin an orderly shutdown that saves cached data, shuts off the SPs, and powers down the disks.

Shipping and storage requirements

| Requirement | Description |
|----------------------|--------------------------------|
| Ambient temperature | -40°C to 65°C (-40°F to 149°F) |
| Temperature gradient | 25 °C/hr (45°F/hr) |
| Relative humidity | 10% to 90% noncondensing |
| Elevation | 7620 m (25,000 ft) |

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