

DSA E-Series

E2600, DE1600, DE6600



BOSCH

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1 About This Guide

This guide contains site preparation information and defines the hardware, power, and environmental requirements that must be met prior to the installation of the following products:

- The E2600 controller-drive tray
- The DE1600 drive tray
- The DE6600 drive tray

Use this guide prior to delivery and installation to make sure that the appropriate and required preparation tasks are completed. This guide does not explain procedures for installing the hardware trays or for installing and configuring the software.

This guide helps you make decisions about ventilation, electrical power, floor loading, and network configuration. Conduct a power survey to make sure that the storage array's input power is free of noise, spikes, and fluctuations.

Refer to the SANtricity ES Storage Manager manual for any updated information regarding hardware, software, or firmware products that might not be covered in this guide.

Intended Readers

This guide is intended for system operators, system administrators, and technical support personnel who are responsible for installation and setup of the storage array. They must have the following skills:

- Familiarity with computer system operations
- Understanding of disk storage technology, Redundant Array of Independent Disks (RAID) concepts, networking, and Fibre Channel, Infiniband, and iSCSI technologies
- Basic knowledge of storage area network (SAN) hardware functionality (controllers, drives, and hosts) and SAN cabling

Related Publications

The following manuals have information that is related to the site preparation process.

- Quick Installation Guide E2600
- Installation Manual E2600
- Quick Installation Guide DE1600
- Installation Manual DE1600
- SANtricity ES Storage Manager V 10.80 Initial Configuration and Software Installation

The manuals can be downloaded from the Online Product Catalog on:

[http:// www.boschsecurity.com](http://www.boschsecurity.com) > **Video** > **Digital Recording and Storage** > **Disk Arrays (Network Attached)** > **DSA – Disk Arrays** > **DSA E-Series iSCSI Disk Arrays**

(The navigation path is subject to change.)

2 Specifications of the E2600 Controller-Drive Tray

2.1 Device views

The E2600 controller-drive tray is available in a rackmount model with a capacity of 12 drives.

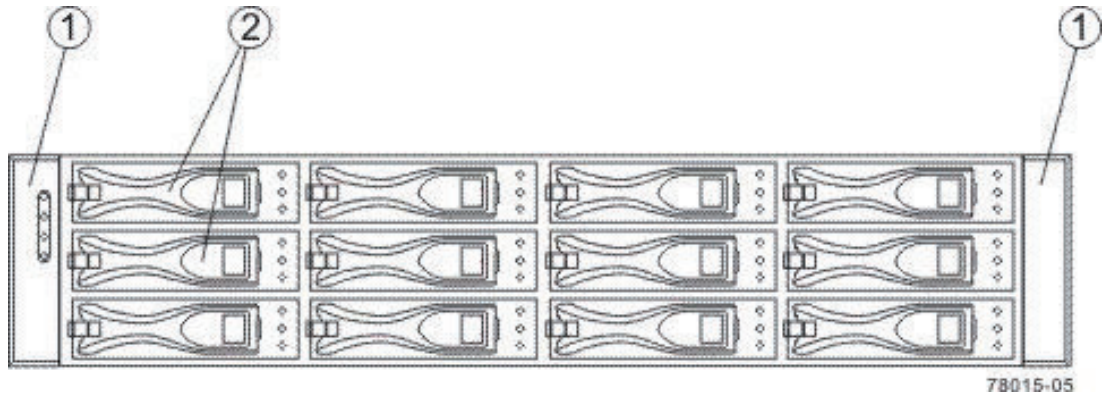


Figure 2.1: Front View - 12 Drives

1	End Caps (the Left End Cap Has the Controller-Drive Tray Summary LEDs)
2	Drive Canisters

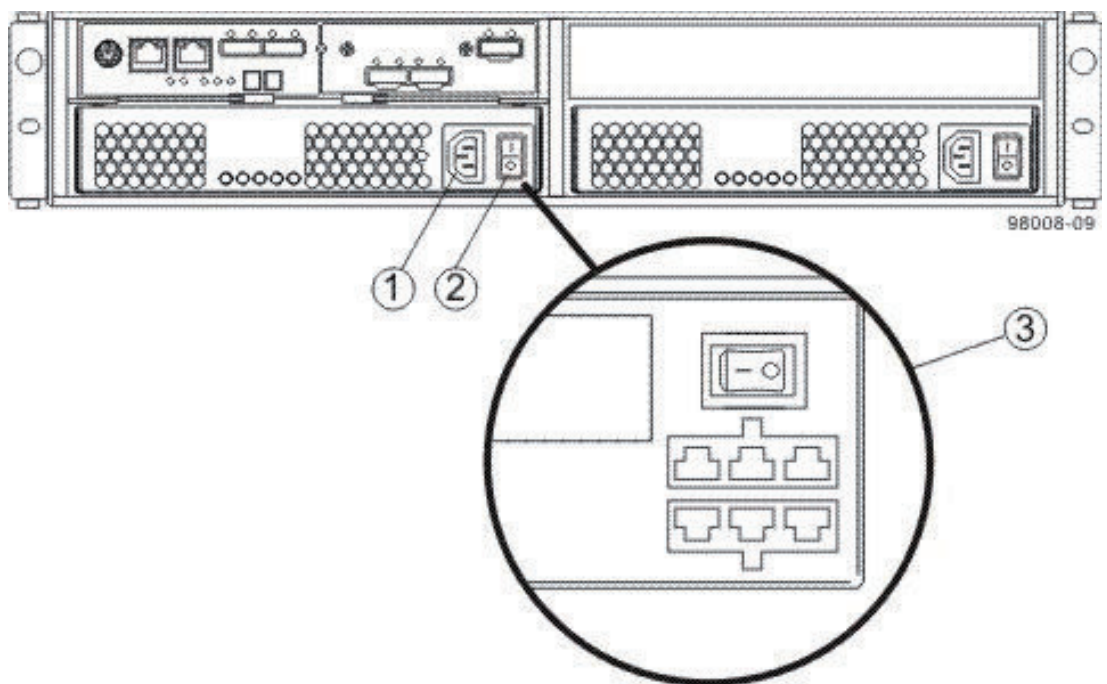


Figure 2.2: Rear View - Simplex Configuration

1	AC Power Connector
2	AC Power Switch
3	Optional DC Power Connector and DC Power Switch

2.2 Dimensions

The E2600 controller-drive tray conforms to the 48.3-cm (19.0-in.) rack standard.

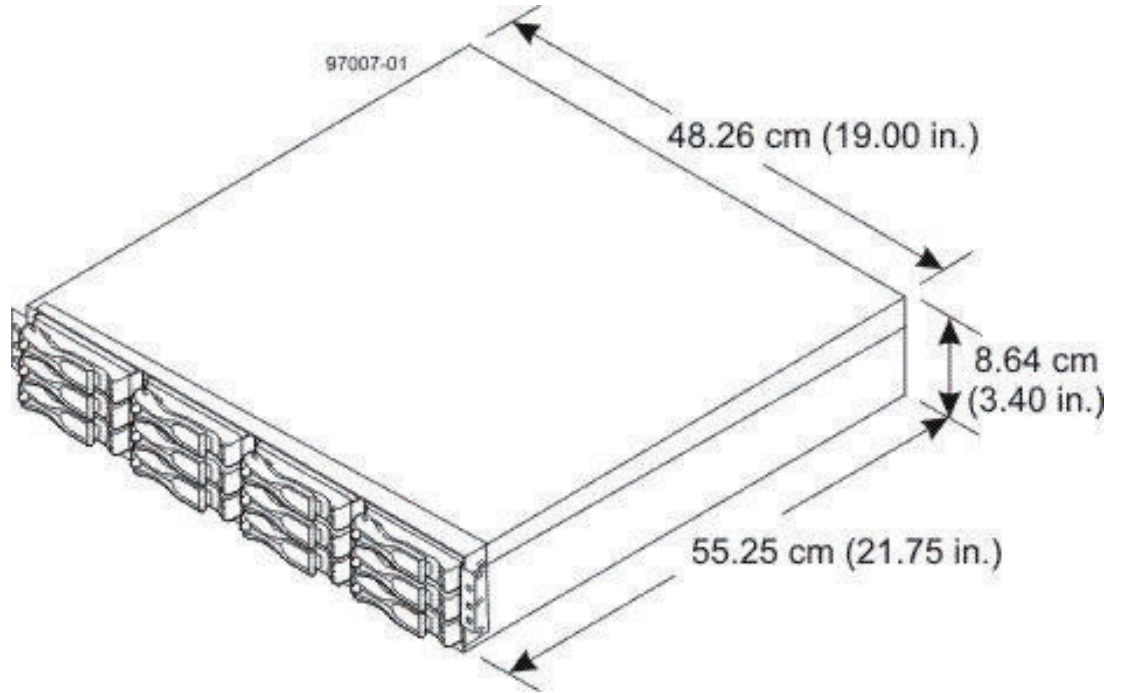


Figure 2.3: Dimensions

2.3

Weight

Unit	Weight		
	Maximum*	Empty**	Shipping***
Controller-Drive Tray, with twelve 8.89-cm (3.5-in.) drives	27 kg (59.52 lb)	18.60 kg (41.01 lb)	31.75 kg (70.0 lb)
<p>* Maximum weight indicates a controller-drive tray with all of its drives and other components installed. Because drive weights can vary greatly, this value can vary from the value specified as much as either 0.3 kg (0.66 lb) times the maximum number of drives per controller-drive tray for 3.5-in. SATA drives.</p> <p>** Empty weight indicates a controller-drive tray with the controller canisters, the power-fan canisters, and the drives removed.</p> <p>*** Shipping weight indicates the maximum weight of the controller-drive tray and all shipping material.</p>			

Table 2.1: Weights

Component	Weight
Controller canister	2.131 kg (4.70 lb)
Power-fan canister	2.500 kg (5.51 lb)
2.5-in. SATA drive	0.3 kg (0.66 lb)
3.5-in. SATA drive	1.0 kg (2.2 lb)

Table 2.2: Component Weights

2.4 Shipping Dimensions

Height	Width	Depth
24.13 cm (9.5 in.)*	63.50 cm (25 in.)	58.42 cm (23 in.)
* Controller-Drive Tray with twelve 3.5-in. drives.		

Table 2.3: Shipping Carton Dimensions

2.5 Temperature and Humidity

Condition	Parameter	Requirement
Temperature	Operating range (both cabinet and subsystem)	10°C to 35°C (50°F to 104°F)
	Maximum rate of change	10°C (50°F) per hour
	Storage range	-10°C to 50°C (14°F to 122°F)
	Maximum rate of change	15°C (59°F) per hour
	Transit range	-40°C to 60°C (-40°F to 140°F)
	Maximum rate of change	20°C (68°F) per hour
Relative humidity (no condensation)	Operating range (both cabinet and subsystem)	20% to 80%
	Storage range	10% to 90%
	Transit range	5% to 90%
	Operating gradient	10°C (50°F) per hour maximum
	Storage gradient	15°C (59°F) per hour maximum
	Transit gradient	20°C (68°F) per hour maximum
	Maximum dew point	26°C (79°F)
	Maximum gradient	10% per hour
* If you plan to operate a system at an altitude between 1000 m to 3000 m (3280 ft to 9842 ft) above sea level, lower the environmental temperature 1.7°C (3.3°F) for every 1000 m (3280 ft) above sea level.		

Table 2.4: Temperature Requirements and Humidity Requirements

2.6 Altitude Ranges

Environment	Altitude
Operating	30.5 m (100 ft) below sea level to 3000 m (9840 ft) above sea level
Storage	30.5 m (100 ft) below sea level to 3000 m (9840 ft) above sea level
Transit	30.5 m (100 ft) below sea level to 12,000 m (40,000 ft) above sea level

Table 2.5: Altitude Ranges

2.7 Airflow and Heat Dissipation

Airflow goes from the front of the unit to the rear of the unit. Allow enough clearance for service clearance, ventilation, and heat dissipation.

Clearance in front of the unit (at least)	76 cm (30 in.)
Clearance behind the unit (at least)	61 cm (24 in.)

Table 2.6: Recommended Clearance

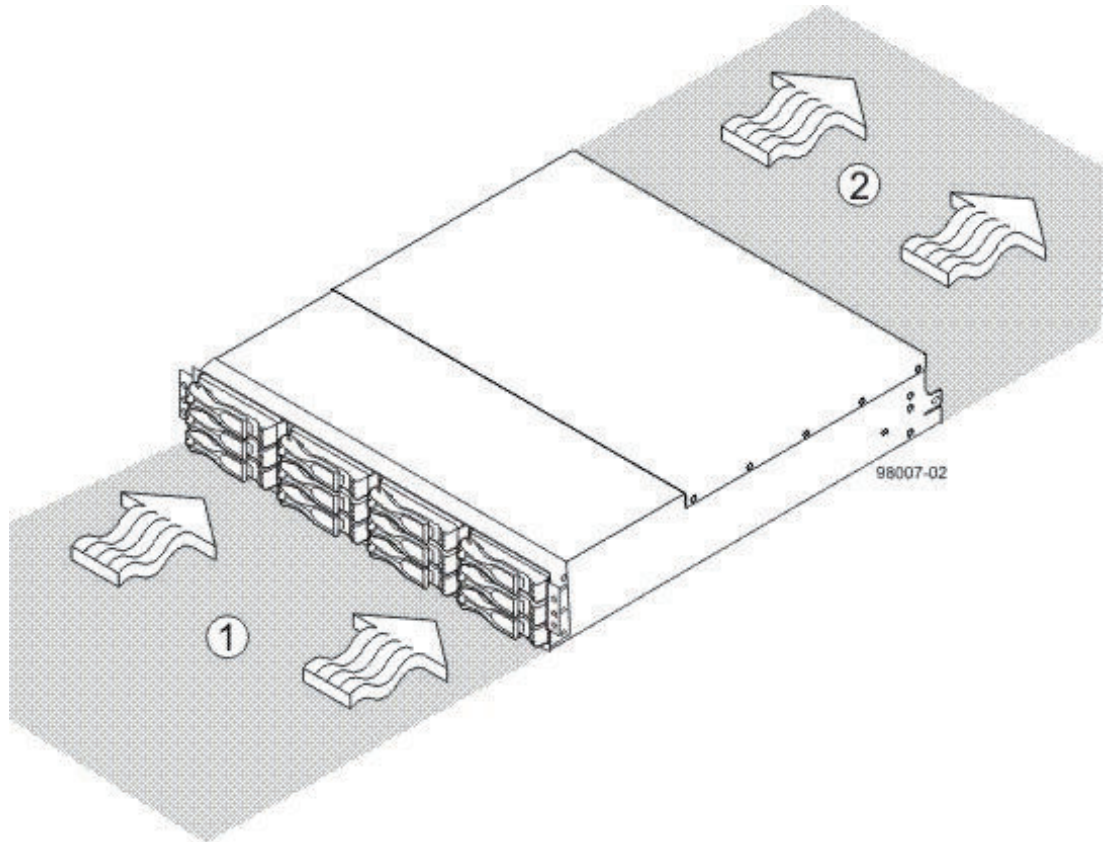


Figure 2.4: Airflow Through the Controller-Drive Tray with 12 Drives – Front View

1	76 cm (30 in.) clearance in front of the cabinet
2	61 cm (24 in.) clearance behind the cabinet

Component	KVA	Watts (AC)	Btu/Hr
Controller canisters with two power-fan canisters and 12 drives	0.400	399	1366

Table 2.7: Power and Heat Dissipation

2.8 Acoustic Noise

Measurement	Level
Sound power (standby operation)	6.5 bels maximum
Sound pressure (normal operation)	65 dBA maximum

Table 2.8: Acoustic Noise at 25°C

2.9 Site Wiring and Power

The unit uses wide-ranging, redundant power supplies that automatically accommodate voltages to the AC power source or the optional –48 VDC power source. The power supplies meet standard voltage requirements for both North American (USA and Canada) operation and worldwide (except USA and Canada) operation. The power supplies use standard industrial wiring with line-to-neutral or line-to-line power connections.

Note:

Power for the optional –48 VDC power configuration is supplied by a centralized DC power plant instead of the AC power source in the cabinet. Refer to the associated manufacturer’s documentation for specific DC power source requirements.

Keep this information in mind when you prepare the installation site:

- **Protective ground** – Site wiring must include a protective ground connection to the AC power source or the optional –48 VDC power source.

Note:

Protective ground is also known as safety ground or chassis ground.

- **Circuit overloading** – Power circuits and associated circuit breakers must provide enough power and overload protection. To prevent damage to the unit, isolate its power source from large switching loads, such as air-conditioning motors, elevator motors, and factory loads.
- **Power interruptions** – The unit can withstand these applied voltage interruptions:
 - **Input transient** – 50 percent of the nominal voltage
 - **Duration** – One-half cycle
 - **Frequency** – Once every 10 seconds
- **Power failures** – If a total power failure occurs, the unit automatically performs a power-on recovery sequence without operator intervention.

2.10 Power Input

2.10.1 AC Power Input

Each power supply contains one 10 A slow-blow fuse.

Parameter	Low Range	High Range
Nominal voltage	100 VAC	240 VAC
Frequency	50 to 60 Hz	50 to 60 Hz
Idle current	3.97 A*	1.63 A**
Maximum operating current	4.25 A*	1.68 A**
Sequential Drive Group Spin Up	4.27 A	1.76 A
Simultaneous Drive Spin Up	6.13 A	2.71 A

Parameter	Low Range	High Range
System Rating Plate Label	7.0 A	2.9 A
<p>* Typical current: 100 VAC, 60 Hz at 0.87 power supply efficiency and 0.99 power factor. These numbers can vary significantly, depending upon the drives tested in the particular configuration.</p> <p>** Typical current: 240 VAC, 60 Hz at 0.87 power supply efficiency and 0.99 power factor. These numbers can vary significantly, depending upon the drives tested in the particular configuration.</p>		

Table 2.9: AC Power Requirements

2.10.2 DC Power Input

Nominal input voltages for the DC power source are as follows:

- Low range: -42 VDC
- High range: -60 VDC

The maximum operating current is 21.7 A.

2.11 Power Factor Correction

Power factor correction is applied within the power supply, which maintains the power factor of this unit at greater than 0.95 with nominal input voltage.

2.12 AC Power Cords and Receptacles

Each E2600 controller-drive tray is shipped with two AC power cords. Each AC power cord connects one of the power supplies in a controller-drive tray to an independent, external AC power source, such as a wall receptacle or a UPS.

If you have a cabinet with internal power cabling, such as a ladder cord, you do not need the AC power cords that are shipped with the controller-drive tray.

DC power is an option that is available for use with your controller-drive tray and drive trays. For more information, see *Optional DC Power Connector Cables and Source Wires, 11*.

2.13 Optional DC Power Connector Cables and Source Wires

The E2600 controller-drive tray is shipped with -48 VDC power connector cables if the DC power option is ordered. The -48 VDC power connector cable plugs into the DC power connector on the rear of the controller-drive tray. The three source wires on the other end of the power connector cable connect the controller-drive tray to centralized DC power plant equipment, typically through a bus bar above the cabinet.



Warning!

Risk of electrical shock

This unit has more than one power source. To remove all power from the unit, all DC MAINS must be disconnected by removing all power connectors (item 4 below) from the power supplies.

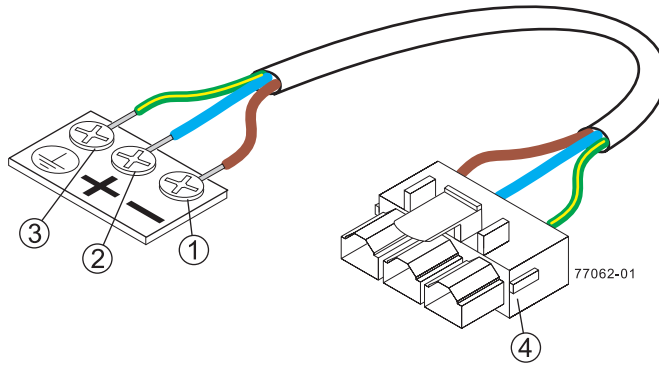


Figure 2.5: Power cable

1	Supply (Negative), Brown Wire, -48 VDC
2	Return (Positive), Blue Wire
3	Ground, Green and Yellow Wire
4	DC Power Connector



Warning!

Risk of bodily injury

A qualified service person is required to make the DC power connection according to NEC and CEC guidelines.

Two (or, optionally, four) DC power connector cables are provided with each controller-drive tray. Two DC power connectors are on the two DC power supplies on the rear of each controller-drive tray if additional redundancy is required.

Note:

It is not mandatory that you connect the second DC power connection on the DC power supplies of the controller-drive tray. The second DC power connection is provided for additional redundancy only and can be connected to a second DC power bus.

2.14

Preparing the Network for the Controllers

If you plan to use Ethernet connections from the storage management station to the controllers, you will use the out-of-band management method. For this configuration, meet with your network administrator before you order and install the equipment so that you can prepare for the setup and management of the devices on the IP network. Each controller uses its Ethernet management ports to connect to the IP network and communicate with the other devices on the IP network (often requiring a special application to set up the protocol). Your network administrator can pre-assign the addresses that you need to manage the communication between the devices on the IP network.

Depending on your storage configuration, you will need the following addresses:

- Up to two network IP addresses for each controller
- Up to two subnet mask addresses for each controller
- Either two IPv4 addresses (one static and one dynamic) or one IPv6 address for each controller
- A Dynamic Host Configuration Protocol (DHCP) address for each controller

If switches are used in your storage environment, you must know if zoning will be used, and how it will be configured.

3 Specifications of the DE1600 Controller-Drive Tray

3.1 Device views

The DE1600 drive tray contains Serial Attached SCSI (SAS) drives. Each DE1600 drive tray contains these components:

- A maximum of 12 drives
- One or two power-supply fan canisters
- One or two environmental services monitor (ESM) canisters

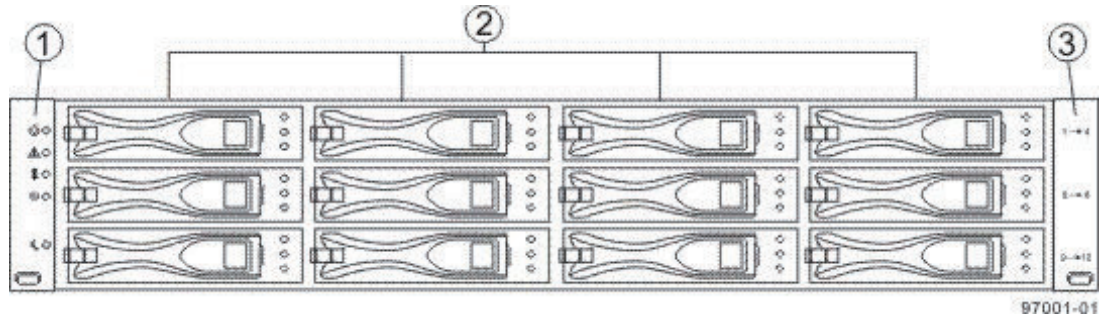


Figure 3.1: Front View

1	End Caps (the Left End Cap Has the Drive Tray LEDs)
2	Drives
3	Right End Cap

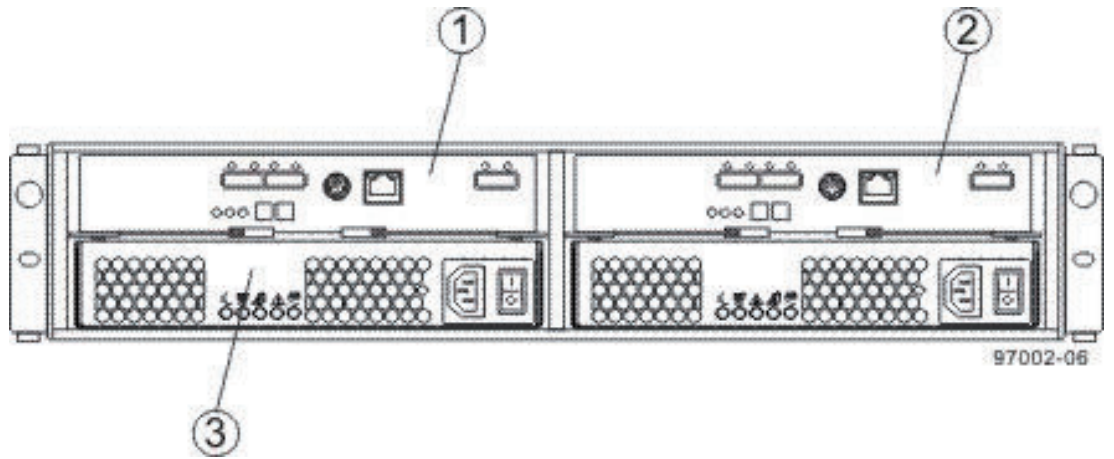


Figure 3.2: Rear View

1	ESM A Canister
2	ESM B Canister
3	Power-Fan A Canister

Usually, an AC power source supplies power to the power-fan canister. A DC poweroption is also available.

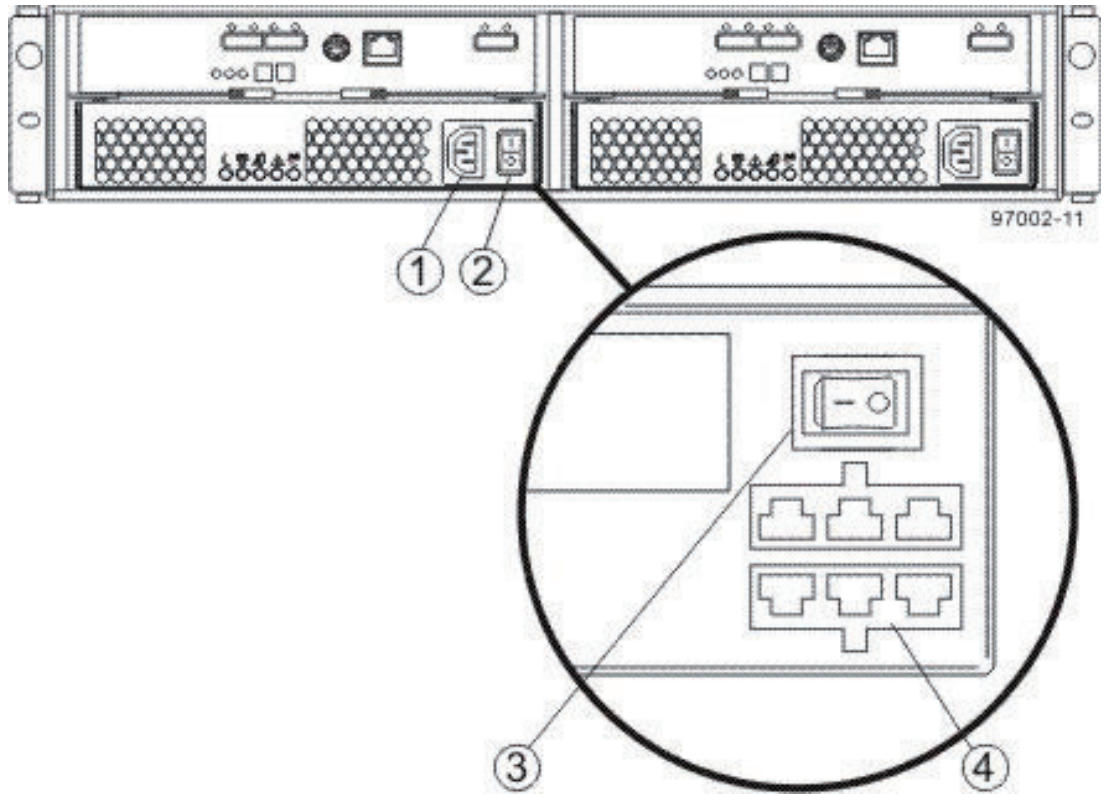


Figure 3.3: Power Source Options - Rear View

1	AC Power Connector on the AC Power-Fan Canister
2	AC Power Switch
3	DC Power Switch on an Optional DC Power-Fan Canister
4	Optional DC Power Connector and DC Power Switch

3.2 Dimensions

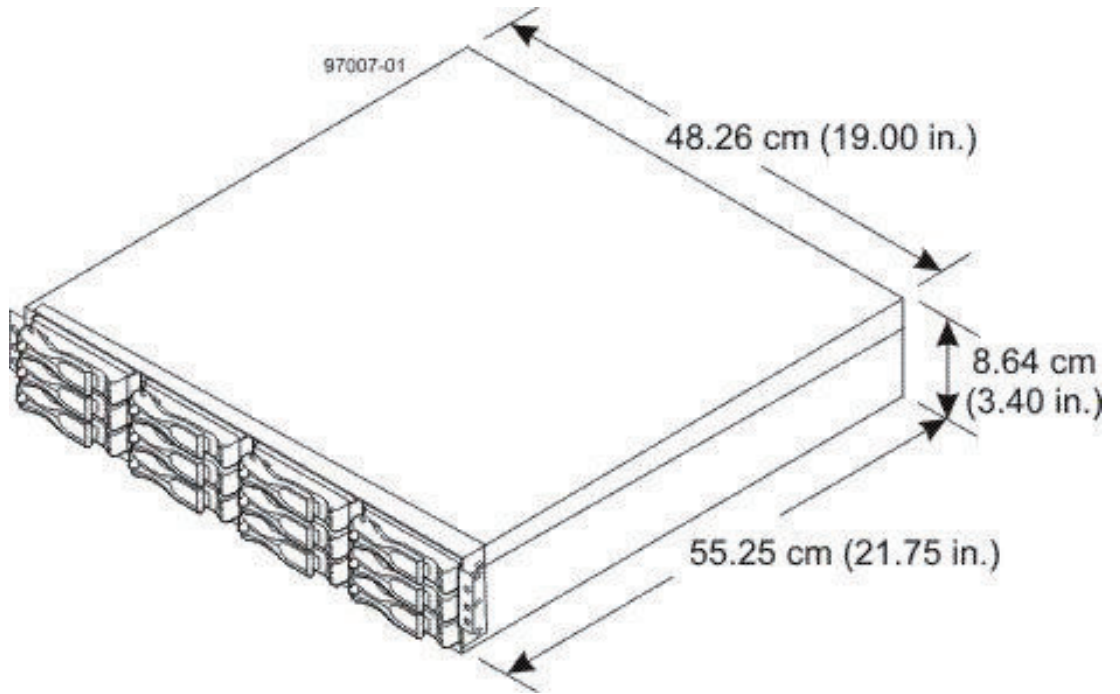


Figure 3.4: Dimensions

3.3 Weight

Unit	Weight		
	Maximum*	Empty**	Shipping***
DE1600 drive tray	27 kg (59.52 lb)	18.60 kg (41.01 lb)	31.75 kg (70.0 lb)

* Maximum weight indicates a drive tray with all of its drives and other components installed. Because drive weights can vary greatly, this value can vary from the value specified as much as 0.3 kg (0.6 lb) times the maximum number of drives per drive tray for 3.5-in. SAS drives.

** Empty weight indicates a drive tray with the ESM canisters, the power-fan canisters, and the drives removed.

*** Shipping weight indicates the maximum weight of a fully-populated drive tray and all shipping material.

Table 3.1: Weights

Component	Weight
ESM canister	1.75 kg (3.86 lb)
Power-fan canister	2.5 kg (5.51 lb)
3.5-in. SAS drive	1.00 kg (2.20 lb)

Table 3.2: Component Weights

3.4 Shipping Dimensions

Height	Width	Depth
24.13 cm (9.5 in.)	58.42 cm (23.00 in.)	68.58 cm (27 in.)

Table 3.3: Shipping Carton Dimensions

3.5 Temperature and Humidity

Condition	Parameter	Requirement
Temperature	Operating range (both cabinet and subsystem)	10°C to 40°C (50°F to 104°F)
	Maximum rate of change	10°C (50°F) per hour
	Storage range	-10°C to 50°C (14°F to 122°F)
	Maximum rate of change	15°C (59°F) per hour
	Transit range	-40°C to 60°C (-40°F to 140°F)
	Maximum rate of change	20°C (68°F) per hour
Relative humidity (no condensation)	Operating range (both cabinet and subsystem)	20% to 80%
	Storage range	10% to 90%
	Transit range	5% to 90%
	Operating gradient	10°C (50°F) per hour
	Storage gradient	15°C (59°F) per hour
	Transit gradient	20°C (68°F) per hour
	Maximum dew point	26°C (79°F)
	Maximum gradient	10% per hour
* If you plan to operate a system at an altitude between 1000 m to 3000 m (3280 ft to 9842 ft) above sea level, lower the environmental temperature 1.7°C (3.3°F) for every 1000 m (3280 ft) above sea level.		

Table 3.4: Temperature Requirements and Humidity Requirements

3.6 Altitude Ranges

Environment	Altitude
Operating	30.5 m (100 ft) below sea level to 3000 m (9840 ft) above sea level
Storage	30.5 m (100 ft) below sea level to 3000 m (9840 ft) above sea level
Transit	30.5 m (100 ft) below sea level to 12,000 m (40,000 ft) above sea level

Table 3.5: Altitude Ranges

3.7 Airflow and Heat Dissipation

Airflow goes from the front of the unit to the rear of the unit. Allow enough clearance for service clearance, ventilation, and heat dissipation.

Clearance in front of the unit (at least)	76 cm (30 in.)
Clearance behind the unit (at least)	61 cm (24 in.)

Table 3.6: Recommended Clearance

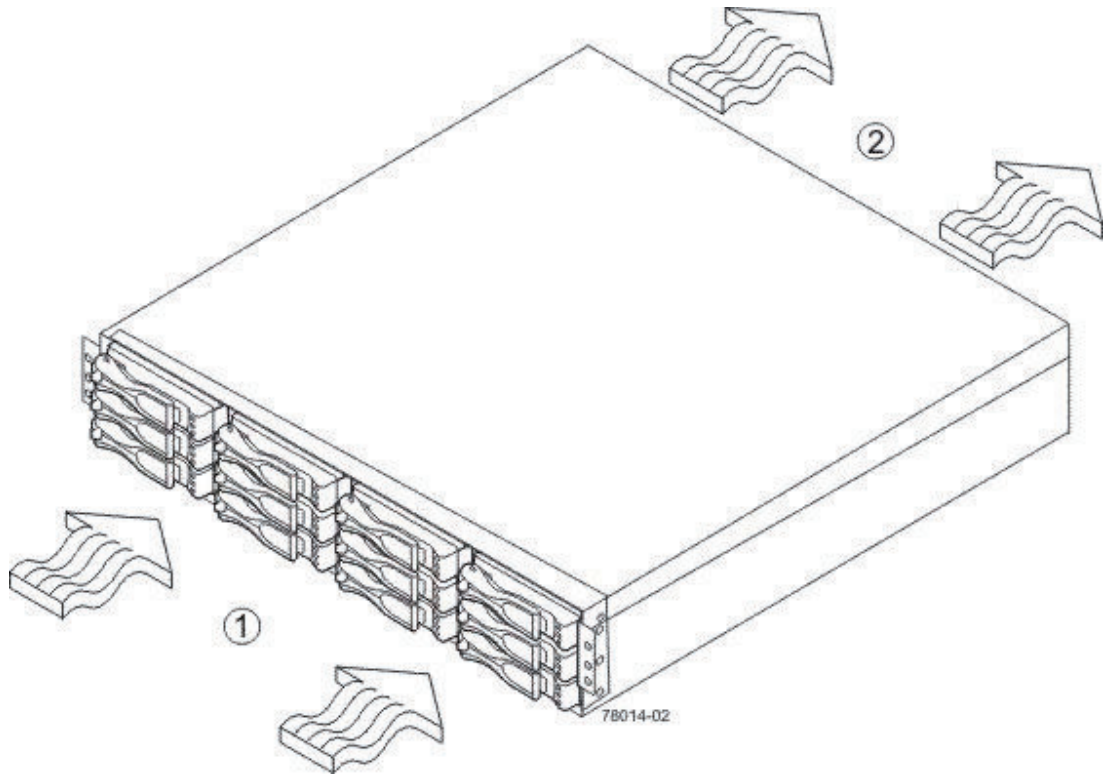


Figure 3.5: Airflow Through the Drive Tray – Front View

1	76 cm (30 in.) clearance in front of the cabinet
2	61 cm (24 in.) clearance behind the cabinet

The tabulated power and heat dissipation values in the following table are the maximum measured operating power.

Unit	KVA	AC Watts	Btu/Hr
DE1600 drive tray	0.276	276	945

Table 3.7: Power Ratings and Heat Dissipation

3.8 Acoustic Noise

Measurement	Level
Sound power (standby operation)	6.5 bels maximum
Sound power (normal operation)	6.8 bels maximum

Table 3.8: Acoustic Noise at 25°C

3.9 Site Wiring and Power

The unit uses wide-ranging, redundant power supplies that automatically accommodate voltages to the AC power source or the optional –48 VDC power source. The power supplies meet standard voltage requirements for both North American (USA and Canada) operation and worldwide (except USA and Canada) operation. The power supplies use standard industrial wiring with line-to-neutral or line-to-line power connections.

Note:

Power for the optional –48 VDC power configuration is supplied by a centralized DC power plant instead of the AC power source in the cabinet. Refer to the associated manufacturer's documentation for specific DC power source requirements.

Keep this information in mind when you prepare the installation site:

- **Protective ground** – Site wiring must include a protective ground connection to the AC power source or the optional –48 VDC power source.

Note:

Protective ground is also known as safety ground or chassis ground.

- **Circuit overloading** – Power circuits and associated circuit breakers must provide enough power and overload protection. To prevent damage to the unit, isolate its power source from large switching loads, such as air-conditioning motors, elevator motors, and factory loads.
- **Power interruptions** – The unit can withstand these applied voltage interruptions:
 - **Input transient** – 50 percent of the nominal voltage
 - **Duration** – One-half cycle
 - **Frequency** – Once every 10 seconds
- **Power failures** – If a total power failure occurs, the unit automatically performs a power-on recovery sequence without operator intervention.

3.10 Power Input

3.10.1 AC Power Input

The AC power sources must provide the correct voltage, current, and frequency specified on the tray and serial number label.

Parameter	Low Range	High Range
Nominal voltage	100 VAC	240 VAC
Frequency	50 to 60 Hz	50 to 60 Hz
Idle current	2.96 A*	1.23 A**
Maximum operating current	3.03 A*	1.26 A**
Sequential Drive Group Spin Up	4.23 A	1.76 A
Simultaneous Drive Spin Up	4.43 A	1.83 A

Parameter	Low Range	High Range
System Rating Plate Label	7.0 A	2.9 A
<p>* Typical current: 100 VAC, 60 Hz at 0.87 power supply efficiency and 0.99 power factor. These numbers can vary significantly, depending upon the drives tested in the particular configuration.</p> <p>** Typical current: 240 VAC, 60 Hz at 0.87 power supply efficiency and 0.99 power factor. These numbers can vary significantly, depending upon the drives tested in the particular configuration.</p>		

Table 3.9: AC Power Requirements

3.10.2 DC Power Input

Nominal input voltages for the DC power source are as follows:

- Low range: -42 VDC
- High range: -60 VDC

The maximum operating current is 21.7 A.

3.11 Power Factor Correction

Power factor correction is applied within the power supply, which maintains the power factor of this unit at greater than 0.95 with nominal input voltage.

3.12 AC Power Cords and Receptacles

Each DE1600 drive tray is shipped with two AC power cords, which use standard AC outlets in the destination country. Each AC power cord connects one of the power supplies in the drive tray to an independent, external AC power source, such as a wall receptacle, or to any uninterruptible power supply (UPS).

DC power is an option that is available for use with your DE1600 drive tray. For more information, see *Optional DC Power Connector Cables and Source Wires, 19*.

3.13 Optional DC Power Connector Cables and Source Wires

The DE1600 drive tray is shipped with -48 VDC power connector cables if the DC power option is ordered. The -48 VDC power connector cable plugs into the DC power connector on the rear of the drive tray. The three source wires on the other end of the power connector cable connect the drive tray to centralized DC power plant equipment, typically through a bus bar above the cabinet.



Warning!

Risk of electrical shock

This unit has more than one power source. To remove all power from the unit, all DC MAINS must be disconnected by removing all power connectors (item 4 below) from the power supplies.

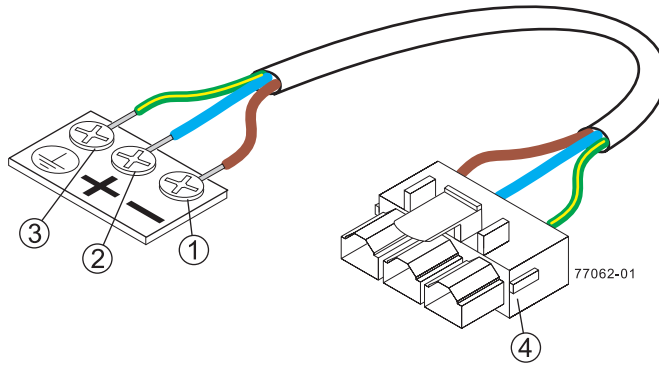


Figure 3.6: Power cable

1	Supply (Negative), Brown Wire, -48 VDC
2	Return (Positive), Blue Wire
3	Ground, Green and Yellow Wire
4	DC Power Connector



Warning!

Risk of bodily injury

A qualified service person is required to make the DC power connection according to NEC and CEC guidelines.

Two (or, optionally, four) DC power connector cables are provided with each drive tray. Two DC power connectors are on the two power-fan canisters on the rear of each drive tray if additional redundancy is required.

Note:

It is not mandatory that you connect the second DC power connection on the power-fan canister of the drive tray. The second DC power connection is provided for additional redundancy only and can be connected to a second DC power bus.

4 Specifications of the DE6600 Controller-Drive Tray

4.1 Device views

The DE6600 drive tray is a high-density SAS 2.0 (6Gb/s) drive enclosure with 60 near-line 3.5" SAS drives, housed in five drawers with 12 drives each. The DE6600 drive tray contains these components:

- Up to 60 SAS drives
- Two power canisters
- Two fan canisters
- Two environmental services monitor (ESM) canisters

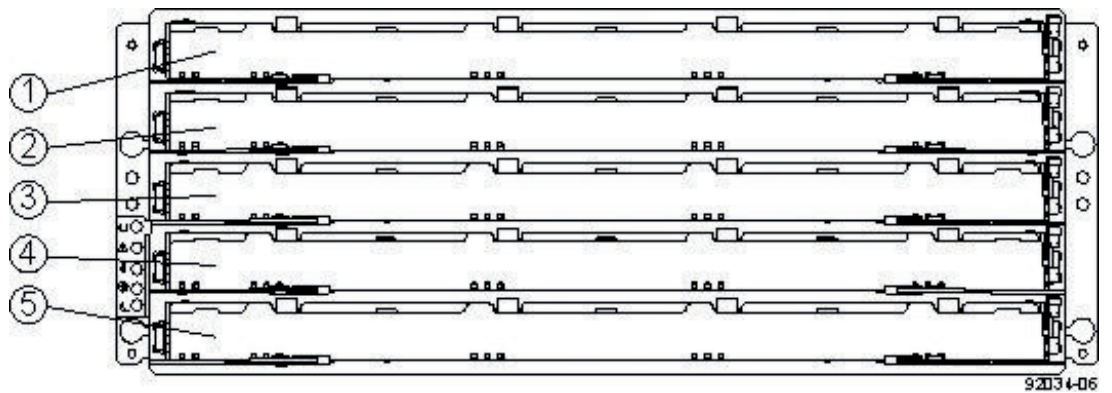


Figure 4.1: Front View with Bezel Removed

1	Drive Drawer 1
2	Drive Drawer 2
3	Drive Drawer 3
4	Drive Drawer 4
5	Drive Drawer 5

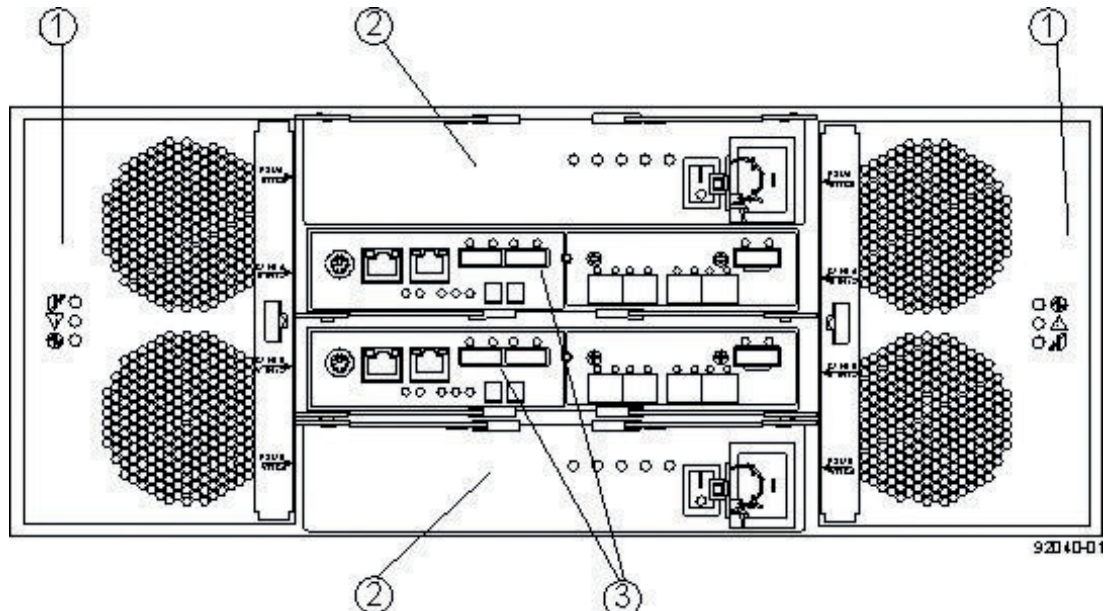


Figure 4.2: Rear View

1	Fan Canisters
2	Power Canisters
3	ESM Canisters

An AC power source supplies power to the power canister.

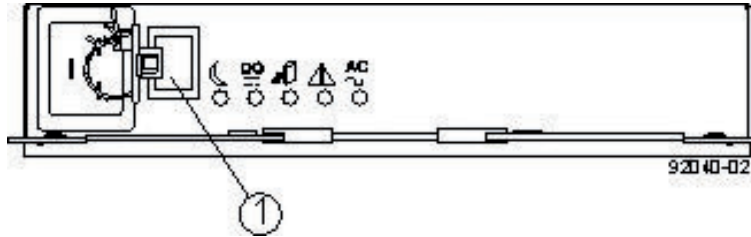


Figure 4.3: Power Source Options – Rear View

1	AC Power Switch on the Power Canister
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The drive trays come with drive interface ports that enable you to establish up to four drive channels when using the CE7900 controller tray for your disk storage solution.

4.2

Dimensions

The DE6600 drive tray is only available as a rackmount model that conforms to the 100-cm (40.0-in.) rack depth.

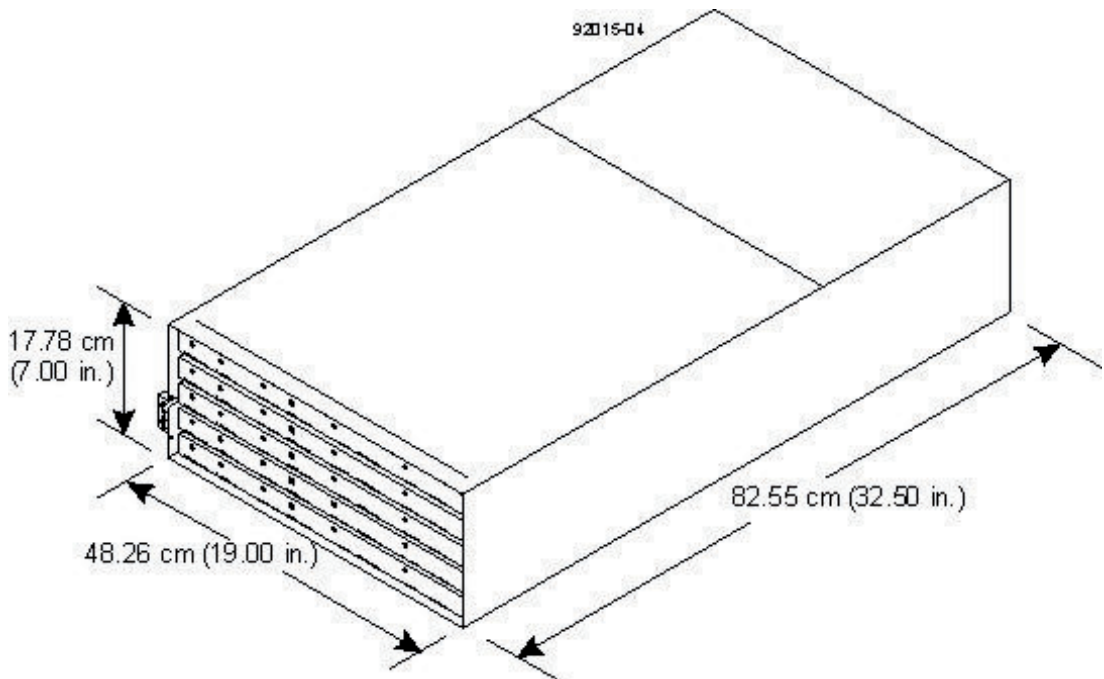


Figure 4.4: Dimensions

4.3 Weight

Unit	Weight		
	Maximum*	Empty**	Shipping***
DE6600 drive tray	105.2 kg (232 lb)	59.8 kg (132 lb)	193.2 kg (426 lb)

* Maximum weight indicates a drive tray with all of its drives and other components installed. Because drive weights can vary greatly, this value can vary from the value specified as much as 0.3 kg (0.6 lb) times the maximum number of drives per drive tray for drives weighing 0.725 kg (1.6 lb).

** Empty weight indicates a drive tray with the ESM canisters, the power canisters, the fan canisters, and the drives removed.

*** Shipping weight indicates the empty weight of a drive tray and all shipping material, as well as the weight of the 60 drives that are shipped separately in multipack cartons.

Table 4.1: Weights

Component	Weight
ESM canister	1.65 kg (3.64 lb)
Power canister	2.5 kg (5.5 lb)
Fan canister	Approximately 1 kg (2.16 lb)
Drive	0.74 kg (1.64 lb)

Table 4.2: Component Weights

4.4 Shipping Dimensions

Height	Width	Depth
48.26 cm (19 in.)	60.96 cm (24.00 in.)	100.97 cm (39.75 in.)

Table 4.3: Shipping Carton Dimensions

4.5 Temperature and Humidity

Condition	Parameter	Requirement
Temperature*	Operating range	0°C to 35°C (32°F to 95°F)
	Maximum rate of change	10°C (95°F) per hour
	Storage range	-10°C to 50°C (95°F to 122°F)
	Maximum rate of change	15°C (59°F) per hour
	Transit range	-40°C to 60°C (-40°F to 140° F) without the battery
	Maximum rate of change	20°C (68°F) per hour
Relative humidity (no condensation)	Operating range	20% to 80%
	Storage range	10% to 90%
	Transit range	5% to 95%
	Maximum dew point	26°C (79°F)

Condition	Parameter	Requirement
	Maximum gradient	10% per hour
* If you plan to operate a system at an altitude between 1000 m to 3000 m (3280 ft to 9842 ft) above sea level, lower the environmental temperature 1.7°C (3.3°F) for every 1000 m (3280 ft) above sea level.		

Table 4.4: Temperature Requirements and Humidity Requirements

4.6 Altitude Ranges

Environment	Altitude
Operating	30.5 m (100 ft) below sea level to 3000 m (9840 ft) above sea level
Storage	30.5 m (100 ft) below sea level to 3000 m (9840 ft) above sea level
Transit	30.5 m (100 ft) below sea level to 12,000 m (40,000 ft) above sea level

Table 4.5: Altitude Ranges

4.7 Airflow and Heat Dissipation

Airflow goes from the front of the unit to the rear of the unit. Allow enough clearance for service clearance, ventilation, and heat dissipation.

Clearance in front of the unit (at least)	81 cm (32 in.)
Clearance behind the unit (at least)	61 cm (24 in.)

Table 4.6: Recommended Clearance

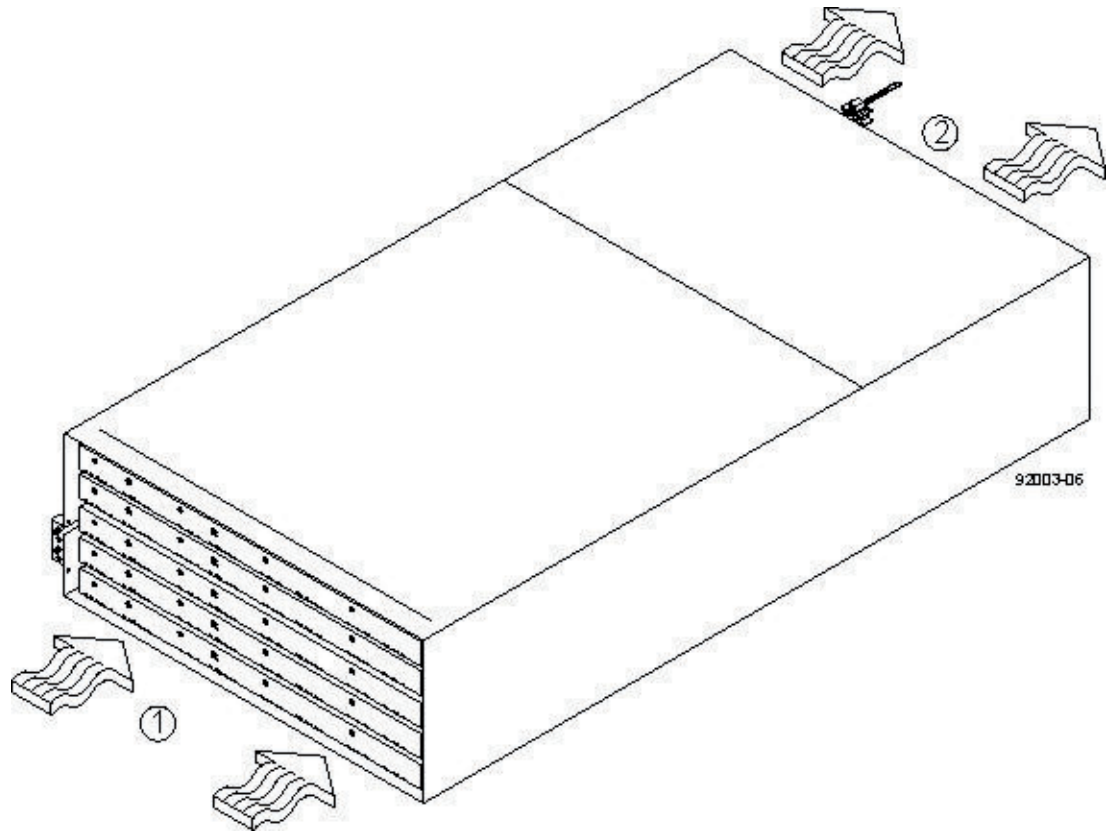


Figure 4.5: Airflow Through the Drive Tray – Front View

1	81 cm (32 in.) clearance in front of the cabinet
2	61 cm (24 in.) clearance behind the cabinet

The tabulated power and heat dissipation values in the following table represent the maximum measured operating power.

Unit	KVA	Watts (AC)	Btu/hr
DE6600 drive tray with two power supplies, two ESMs, 60 drives (Seagate 2000-Gb SAS drives and controllers), and two fan canisters, full speed	1.268	1222	4180

Table 4.7: Power Ratings and Heat Dissipation

4.8 Acoustic Noise

Measurement	Level
Sound power (standby operation)	6.5 bels
Sound power (normal operation)	6.8 bels
Sound pressure	68 dBA

Table 4.8: Sound Levels

4.9 Site Wiring and Power

The agency ratings for the DE6600 drive tray are 7.56 A at 200 VAC and 6.3 A at 240 VAC. These ratings are the overall maximum AC currents for this system.

The unit uses wide-ranging, redundant power supplies that automatically accommodate voltages to the AC power source or the optional –48 VDC power source. The power supplies meet standard voltage requirements for both North American (USA and Canada) operation and worldwide (except USA and Canada) operation. The power supplies use standard industrial wiring with line-to-neutral or line-to-line power connections.

Keep this information in mind when you prepare the installation site:

- **Protective ground** – Site wiring must include a protective ground connection to the AC power source.

Note:

Protective ground is also known as safety ground or chassis ground.

- **Circuit overloading** – Power circuits and associated circuit breakers must provide enough power and overload protection. To prevent damage to the unit, isolate its power source from large switching loads, such as air-conditioning motors, elevator motors, and factory loads.
- **Power interruptions** – The unit can withstand these applied voltage interruptions:
 - **Input transient** – 50 percent of the nominal voltage
 - **Duration** – One-half cycle
 - **Frequency** – Once every 10 seconds
- **Power failures** – If a total power failure occurs, the unit automatically performs a power-on recovery sequence without operator intervention.

4.10 Power Input

Each power supply contains one 15 A slow-blow fuse.

Parameter	High Range
Nominal voltage	200 to 240 VAC
Frequency	50 to 60 Hz
Idle current	6.0 A
Maximum operating current	7.56 A
Maximum surge current	8.0 A

Table 4.9: AC Power Requirements

4.11 Power Factor Correction

Power factor correction is applied within the power canister of each DE6600 drive tray, which maintains the power factor of the drive tray at no less than 0.95 with at all input voltage levels.

4.12 AC Power Cords and Receptacles

Each DE6600 drive tray is shipped with two AC power cords, which fit the standard AC outlets in the destination country. Each AC power cord connects one of the power canisters in the drive tray to an independent, external AC power source, such as a wall receptacle, or to any uninterruptible power supply (UPS).

Caution!

Possible risk of equipment failure

To ensure proper cooling, the DE6600 drive tray always uses two power supplies.

5 Regulatory Compliance Statements

5.1 FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Bosch is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Bosch. It is the user's responsibility to correct interference caused by such unauthorized modification, substitution, or attachment.

5.2 Laser Products Statement

This equipment uses Small Form-factor Pluggable (SFP) optical transceivers, which are unmodified Class 1 laser products pursuant to 21 CFR, Subchapter J, Section 1040.10. All optical transceivers used with this product are required to be 21 CFR certified Class 1 laser products. For outside the USA, this equipment has been tested and found compliant with Class 1 laser product requirements contained in European Normalization standard EN 60825-1 1994+A11. Class 1 levels of laser radiation are not considered to be hazardous and are considered safe based upon current medical knowledge. This class includes all lasers or laser systems which cannot emit levels of optical radiation above the exposure limits for the eye under any exposure conditions inherent in the design of the laser products.

Bosch is not responsible for any damage or injury caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Bosch. It is the user's responsibility to correct interference caused by such unauthorized modification, substitution, or attachment.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classé A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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