NEC

NEC Storage M120/M320/M320F
Disk Array Unit Installation Guide

GZS-000917-002-00

Contents

1 Introduction

1.1 Preface

Thank you for purchasing the NEC Storage M120/M320/M320F disk array unit.
This installation guide presents guidelines that should be kept in mind during installation so that your NEC Storage series unit can be used properly.

After reading this guide, store it carefully where you can quickly reference whenever necessary.

Rev.1.1, May.2018

1.2 Safety Instructions for Installation (Precautions)

Notation Used in this Document

The following symbols are used in this document.

Display Types	
Type	Description
	Indicates that failure to follow directions could result in damage to equipment or data.
	Provides clarifying information or specific instructions
	Provides additional information.

Safety Guidelines

To ensure safety, read and understand these "Safety Guidelines" before using this product.

Explanation of Symbol

This symbol indicates a warning icon determined by the Japanese Electronic Industry Development Association (JEIDA).

Since it indicates guidelines of particular importance when using this product, be sure to read the accompanying text before use.

Always obey the precautions indicated by this symbol.

If you ignore these instructions when handling the product, the danger indicated by the warning icon may occur.

Warning icons are classified into two levels represented by the accompanying word.

Warning Display Types	
Type	Description
 Warning	Indicates that there is a risk of death, serious injury, or burns.
 Caution	Indicates that there is a risk of injury and/or loss of assets.

	Indicates that smoking and/or ignition may occur.
	Indicates that you may be electrically shocked.
	Indicates proper procedure for safety.
	Indicates that the plugs of power cords should be removed for safety.
	Indicates general prohibitions.
	Indicates that fire should not be brought near devices for safety.
	Indicates that devices are prohibited from being disassembled for safety.

2 Installation Environment

This section describes precautions that should be kept in mind when installing the disk array unit and installation conditions.

⚠ Caution

Use the disk array unit in an environment with an ambient temperature range of 5°C to 40°C (recommended range).
In particular, for 24-hour operation, make sure that air conditioning schedules (nights or holidays) are appropriate to keep the disk array unit within the specified temperature range.
If this temperature condition is not satisfied, it may cause electronic components to malfunction or breakdown, or may shorten their replacement intervals.

- For 24-hour operation particularly during summertime, make sure that air conditioning is also provided in the nights and on holidays as needed so that the temperature range does not exceed 40°C.

- Regulate the heating during wintertime to prevent the temperature from rising more than 15°C per hour so that condensation does not occur.

Be sure to satisfy the following installation conditions when operating the disk array unit. If the disk array unit is operated in an environment that does not satisfy these conditions, it may cause the unit to breakdown or may significantly shorten its replacement period.

- Temperature (5°C to 40°C: recommended range)
  Do not install the disk array unit where it would be exposed to direct sunlight or subjected to severe temperature conditions. Also, since sudden temperature changes will negatively affect the parts of the disk array unit and may cause them to breakdown, the ideal increase in temperature should not exceed 10°C per hour. Avoid an environment in which the temperature increases more than 15°C per hour.
  Use at the place where the reach of 15 ℃-25 ℃ of room temperature can be kept is recommended.

- Humidity (10% to 80% RH: recommended range)
  If the disk array unit is installed in a high-humidity environment, interactions with corrosive toxic substances and dust may cause it to breakdown. Since high humidity also negatively affects magnetic media, use air conditioning to regulate the humidity.

3 Installation Specifications

The following table shows the installation specifications.

Table 3.1 NEC Storage M120 Product Specifications

Product Name			NEC Storage M120 Disk Array Unit			
Configuration			2.5" (24HDD model)		3.5" (12HDD model)	
			Min	Max	Min	Max
Storage capacity *1 *2	SAS HDD configuration	300GB disk drive	282GB	60.8TB	-	-
		600GB disk drive	571GB	122.3TB	-	-
		600GB encrypted disk drive	571GB	122.3TB	-	-
		1.2TB disk drive	1.16TB	249.1TB	-	-
		1.8TB disk drive	1.75TB	373.9TB	-	-
		2.4TB disk drive	2.33TB	498.3TB	-	-
	NL-SAS HDD configuration	4TB disk drive	-	-	3.90TB	833.7TB
		4TB encrypted disk drive	-	-	3.90TB	833.7B
		8TB disk drive	-	-	7.81TB	1667TB
		12TB disk drive	-	-	11.7TB	2501TB
	SAS SSD configuration	400GB drive	389GB	83.4TB	389GB	83.4TB
		400GB encrypted drive	389GB	83.4TB	389GB	83.4TB
		1.6TB drive	1.51TB	324.3TB	1.51TB	324.3TB
		3.2TB drive	3.03TB	648.8TB	3.03TB	648.8TB
		3.2TB encrypted drive	3.03TB	648.8TB	3.03TB	648.8TB
	RI SAS SSD configuration	3.84TB drive	3.79TB	809.8TB	3.79TB	809.8TB
		7.68TB drive	7.59TB	1619TB	7.59TB	1619TB
Chassis dimensions (W×D×H)	Disk array controller (U count)	without Front Bezel	482×568×88mm(2U)			
		with Front Bezel	483×606×88mm(2U)			
	Disk enclosure (U count)	without Front Bezel	482×517×88mm(2U)			
		with Front Bezel	483×555×88mm(2U)			
Weight	Disk array controller		≦ 30kg		≦ 32kg	
	Disk enclosure		≦ 26kg		≦ 28kg	
	Accessories (Rails for rack mount, cables)		≦ 3.5kg			
Power Supply			100V to 240V AC, single phase 50/60Hz *3			
Power consumption	Disk array controller *4	SAS HDD configuration (2.5" 15Krpm)	410W/415VA	585W/595VA	-	-
		SAS HDD configuration (2.5" 10Krpm)	410W/415VA	585W/590VA	-	-
		NL-SAS HDD configuration (3.5" 7.2Krpm)	-	-	425W/430VA	550W/555VA
		SAS SSD configuration (2.5"/3.5")	425W/430VA	690W/700VA	425W/430VA	540W/545VA
	Disk enclosure	SAS HDD configuration (2.5" 15Krpm)	-	325W/330VA	-	-
		SAS HDD configuration (2.5" 10Krpm)	-	325W/325VA	-	-
		NL-SAS HDD configuration (3.5" 7.2Krpm)	-	-	-	285W/290VA
		SAS SSD configuration (2.5"/3.5")	-	425W/430VA	-	280W/280VA
Inrush current (peak)	Main chassis		AC:10Ao-p/AC line			
	Disk enclosure		AC:10Ao-p/AC line			
Temperature / Humidity conditions			During operation : +5C to +40C / 10% to 80% During storage : -10C to +60C / 5% to 80%			
Redundancy			Main components such as controller, cache, power supply, and fan are duplicated			

Numbers in the table are calculated based on 1 GB = 1,000,000,000 bytes and 1TB = 1,000,000,000,000 bytes.

Table 3.2　NEC Storage M320 Product Specifications

Product Name			NEC Storage M320 Disk Array Unit			
Configuration			2.5" (24HDD model)		3.5" (12HDD model)	
			Min	Max	Min	Max
Storage capacity *1 *2	SAS HDD configuration	300GB disk drive	282GB	170.3TB	-	-
		600GB disk drive	571GB	342.5TB	-	-
		600GB encrypted disk drive	571GB	342.5TB	-	-
		1.2TB disk drive	1.16TB	697.5TB	-	-
		1.8TB disk drive	1.75TB	1047TB	-	-
		2.4TB disk drive	2.33TB	1395TB	-	-
	NL-SAS HDD configuration	4TB disk drive	-	-	3.90TB	1667TB
		4TB encrypted disk drive	-	-	3.90TB	1667TB
		8TB disk drive	-	-	7.81TB	3335TB
		12TB disk drive	-	-	11.7TB	5002TB
	SAS SSD configuration	400GB drive	389GB	233.6TB	389GB	166.8TB
		400GB encrypted drive	389GB	233.6TB	389GB	166.8TB
		1.6TB drive	1.51TB	908.2TB	1.51TB	648.7TB
		3.2TB drive	3.03TB	1816TB	3.03TB	1297TB
		3.2TB encrypted drive	3.03TB	1816TB	3.03TB	1297TB
	RI SAS SSD configuration	3.84TB drive	3.79TB	2267TB	3.79TB	1619TB
		7.68TB drive	7.59TB	4535TB	7.59TB	3239TB
Chassis dimensions (W×D×H)	Disk array controller (U count)	without Front Bezel	482×568×88mm(2U)			
		with Front Bezel	483×606×88mm(2U)			
	Disk enclosure (U count)	without Front Bezel	482×517×88mm(2U)			
		with Front Bezel	483×555×88mm(2U)			
Weight	Disk array controller		≦ 30kg		≦ 32kg	
	Disk enclosure		≦ 26kg		≦ 28kg	
	Accessories (Rails for rack mount, cables)		≦ 3.5kg			
Power Supply			100V to 240V AC, single phase 50/60Hz *3			
Power consumption	Disk array controller *4	SAS HDD configuration (2.5" 15Krpm)	515W/520VA	700W/710VA	-	-
		SAS HDD configuration (2.5" 10Krpm)	515W/520VA	700W/705VA	-	-
		NL-SAS HDD configuration (3.5" 7.2Krpm)	-	-	530/535VA	660W/670VA
		SAS SSD configuration (2.5"/3.5")	425W/430VA	805W/815VA	425W/430VA	655W/660VA
	Disk enclosure	SAS HDD configuration (2.5" 15Krpm)	-	325W/330VA	-	-
		SAS HDD configuration (2.5" 10Krpm)	-	325W/325VA	-	-
		NL-SAS HDD configuration (3.5" 7.2Krpm)	-	-	-	285W/290VA
		SAS SSD configuration (2.5"/3.5")	-	425W/430VA	-	280W/280VA
Inrush current (peak)	Main chassis		AC:10Ao-p/AC line			
	Disk enclosure		AC:10Ao-p/AC line			
Temperature / Humidity conditions			During operation : +5C to +40C / 10% to 80% During storage : -10C to +60C / 5% to 80%			
Redundancy			Main components such as controller, cache, power supply, and fan are duplicated			

Numbers in the table are calculated based on 1 GB = 1,000,000,000 bytes and 1TB = 1,000,000,000,000 bytes.

Table 3.3　NEC Storage M320F Product Specifications

Product Name			NEC Storage M320F Disk Array Unit	
Configuration			2.5" (24HDD model)	
			Min	Max
Storage capacity *1 *2	SAS SSD configuration	400GB drive	389GB	233.6TB
		400GB encrypted drive	389GB	233.6TB
		1.6TB drive	1.51TB	908.2TB
		3.2TB drive	3.03TB	1816TB
		3.2TB encrypted drive	3.03TB	1816TB
	VRI SAS SSD configuration	3.84TB drive	3.79TB	2267TB
		7.68TB drive	7.59TB	4535TB
Chassis dimensions (W×D×H)	Disk array controller (U count)	without Front Bezel	482×568×88mm(2U)	
		with Front Bezel	483×606×88mm(2U)	
	Disk enclosure (U count)	without Front Bezel	482×517×88mm(2U)	
		with Front Bezel	483×555×88mm(2U)	
Weight	Disk array controller		≦ 30kg	
	Disk enclosure		≦ 26kg	
	Accessories (Rails for rack mount, cables)		≦ 3.5kg	
Power Supply			100V to 240V AC, single phase 50/60Hz *3	
Power consumption	Disk array controller *4		425W/430VA	805W/815VA
	Disk enclosure		-	425W/430VA
Inrush current (peak)	Main chassis		AC:10Ao-p/AC line	
	Disk enclosure		AC:10Ao-p/AC line	
Temperature / Humidity conditions			During operation : +5C to +40C / 10% to 80% During storage : -10C to +60C / 5% to 80%	
Redundancy			Main components such as controller, cache, power supply, and fan are duplicated	

Numbers in the table are calculated based on 1 GB = 1,000,000,000 bytes and 1TB = 1,000,000,000,000 bytes.

*1: Minimum capacity when using SAS/NL-SAS/SSD disk drive: RAID-TM.
However, at least three disk drives must be installed at the beginning of the main chassis in the disk array unit.
*2: Maximum capacity when using SAS/NL-SAS/SSD disk drive: RAID-5 (8+P).
*3: AC input power inlet corresponds to IEC320 C-14.
*4: At host interface FC 32G, other interface is different.

4 Installation Area

Figure 4.1 shows the required installation area.

- Be sure to provide a work area as shown below in order to connect cables and perform necessary maintenance of installed equipment.
  - At least 1.0 m in the front and rear of the rack
  - At least 0.6 m to the left and right of the rack (when racks are coupled, to the left and right of the coupled unit)
  - At least 0.4 m from the top of the rack to the ceiling

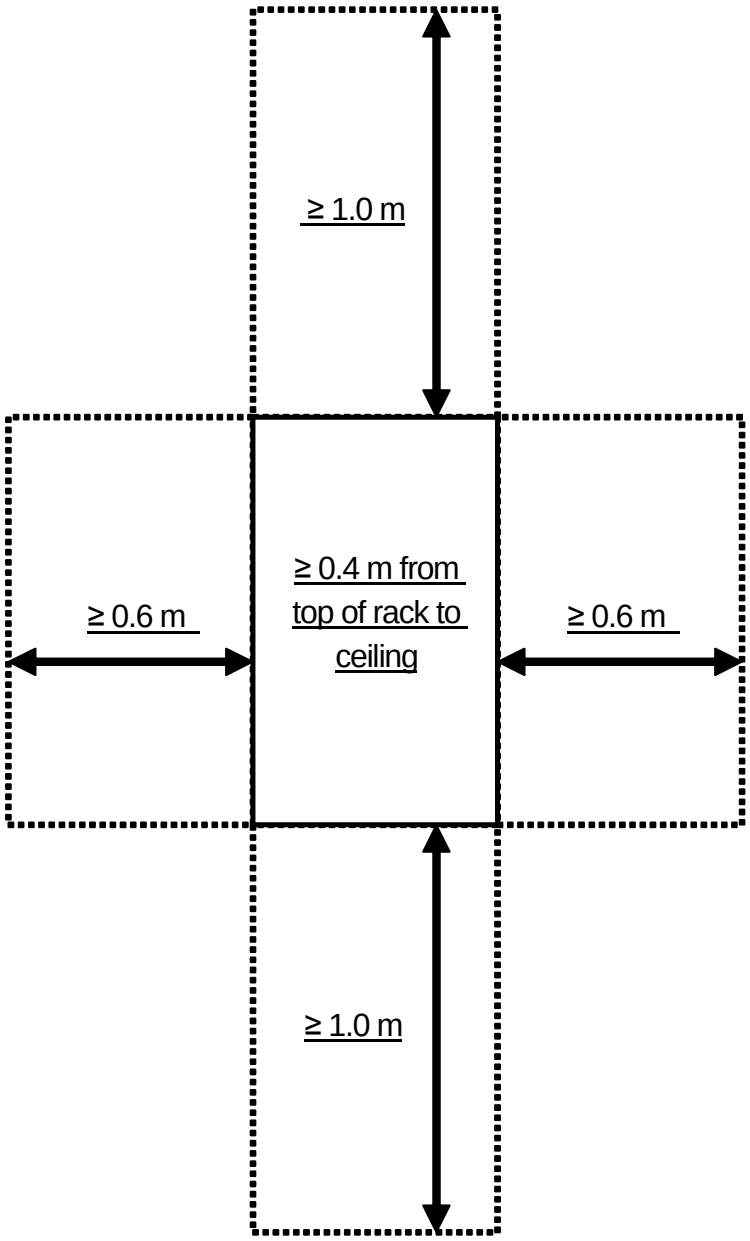


Figure 4.1 Installation Area

Service Area

Figure 4.2 shows the required service area.

- A service area of at least 1.0 m is required in the front and rear of the disk array unit.

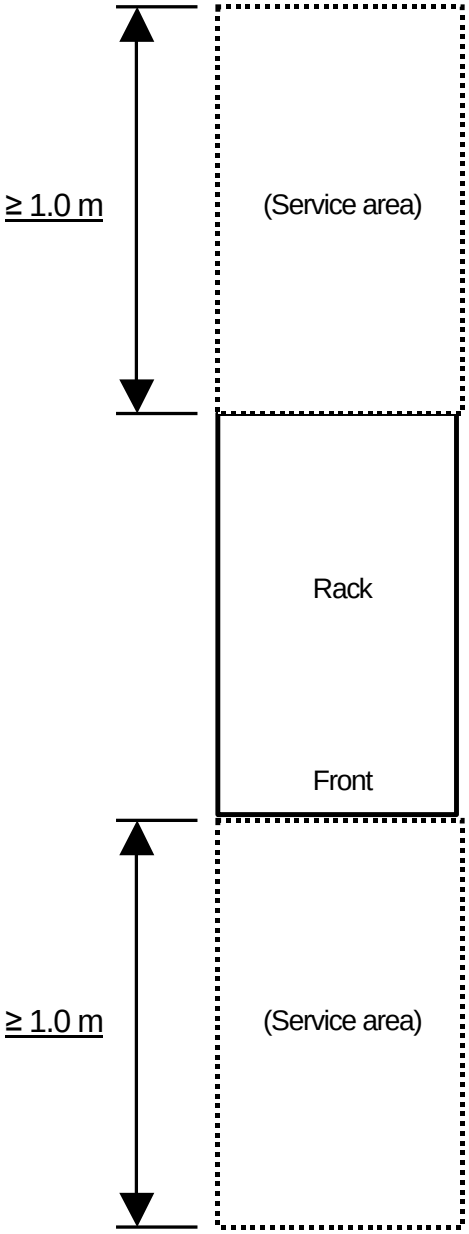


Figure 4.2 Service Area

5 Installation of the Disk Array Unit

5.1 Check the Floor Load

- Verify that no floor loading problem will occur when the disk array unit is installed in the rack.
  - Although the floor load is approximately 300kg/m^2 in an ordinary office and approximately 500 kg/m^2 in a computer room, check the floor strength of the actual installation location and reinforce it if necessary.
  - Check the load carrying capacity of the floor taking into consideration the disk array units installed in the rack. Also, the weight that can be installed differs according to the rack that is used. Discuss this with the operations or maintenance personnel in charge.

- Sample calculation of the weight on the floor where the rack is located

  Assumed conditions --- M120 1DAC (3.5") + 9 DE (3.5") case
  Rack weight: 170 kg
  Total weight of disk array units: (32kg+3.5kg) + (28kg+3.5kg) x 9 = 319kg
  Installation area when a standalone rack is installed: 5.4 m^2

Total weight (Rack weight + Weight of installed units)		Installation area (Including work area)		Unit load
(170 kg + 319kg)	÷	5.4 m^2	=	90.56 kg/m^2

  Therefore, since this is less than 300 kg/m^2, this configuration can be installed even in an ordinary office.

Installation area

- Area for standalone installation: 5.4 m^2

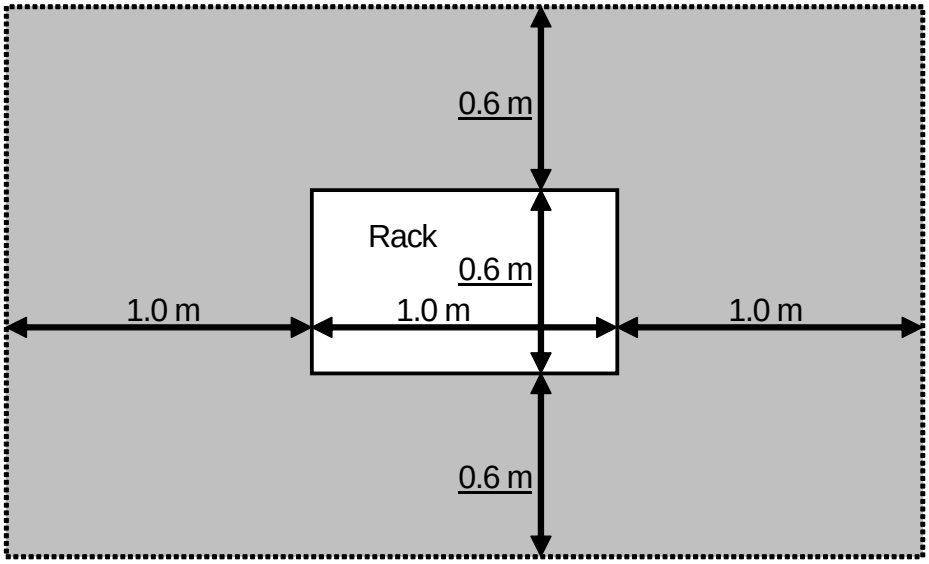


Figure 5.1.1 Standalone Installation

- Area for coupled installation: 1.2 m^2

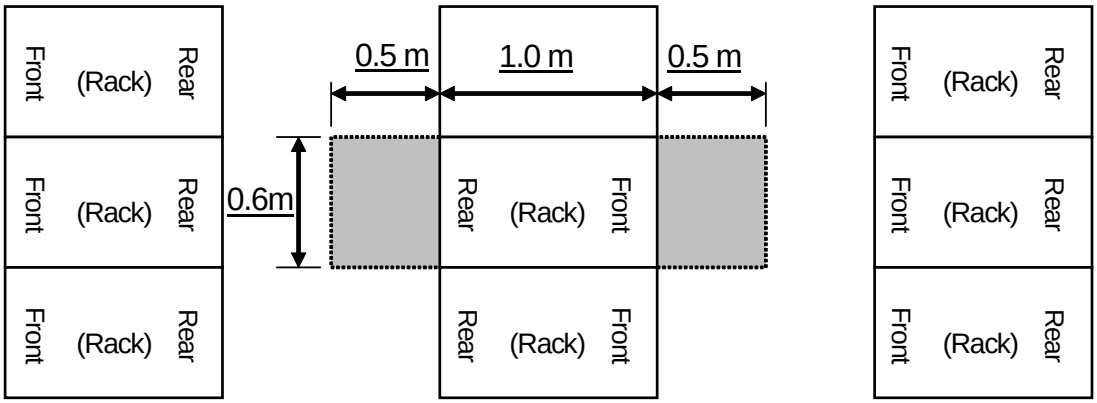


Figure 5.1.2 Coupled Installation

5.2 Means of Preventing Rack from Tipping Over

- Fasten the rack to the floor.
  Use an appropriate method of fastening the rack to the floor so that mounting disk array units in the rack does not cause the entire rack to become unstable.
  - Be careful not to injure yourself when mounting disk array units in the rack.
  - Do not mount disk array units in a rack that would become physically unstable.
  - The weight of the disk array controller for the maximum configuration M120/M320/M320F (Disk array controller + Accessory) is approximately 35.5 kg.

- If an appropriate method cannot be found to fasten the rack to the floor, attach a stabilizer.
  Someone might be injured if vibration caused the rack to tip over.

5.3 Rack Mounting Rules

- To prevent the entire rack from becoming unstable when disk array units are mounted in the rack, mount heavier units at the bottom and lighter units at the top.
- If a rack in which disk array units are mounted has an empty area where no units are installed, attach a closing plate (blank panel) to prevent a breeze from circulating within the rack.
  - There is a risk that air circulating in the rack may prevent the ambient environmental conditions of the disk array unit specifications from being satisfied.

5.4 Air Flow

- When mounting disk array units in the rack, take the installation specifications into consideration so that ambient environmental conditions can be satisfied while operating the disk array units.
- When installing units in a rack with a door or a rack equipped with multiple units, take the following points into consideration when the units are operating.
  - Take air flow into consideration so that the temperature requirement of the ambient environmental conditions is not exceeded.
  - Make every effort to prevent the temperature inside a rack in which disk array units are operating from exceeding 40°C. Use at the place where the reach of 15 °C-25 °C of room temperature can be kept is recommended.

- A constant volume of air is required for the disk array units to operate safely.
  When mounting units in the rack, make sure that no object blocks the air vents at the front and rear of the disk array unit and that the air vents are not closed.

- Note the following points so that rack mounted equipment has a front intake and rear exhaust.
  - Take measures regarding wind direction such as installing air conditioning so that cool air flows onto the front of the rack.
  - For under-floor air conditioning, since there are no intake vents in the rack floor, install louvered vents in the floor in front of the equipment so that a greater volume of cool air flows in than the exhaust from the installed equipment.
  - When installing multiple racks, take into consideration the intake air of the racks and install them so that the fronts are facing each other and the backs are facing away from each other.
  - Take measures such as installing an exhaust duct above the rear of the rack so that the exhaust does not flow around to the front of the rack or stay confined at the rear of the rack.

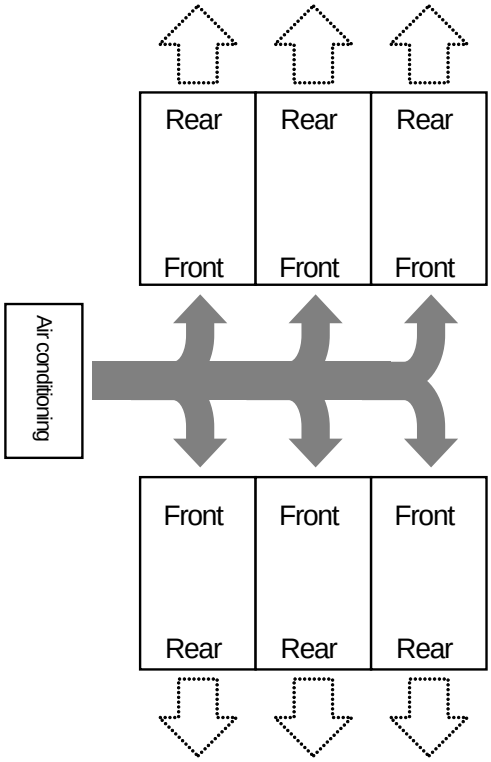


Figure 5.4 Air Flow (When Multiple Racks are installed)

5.5 Uninterruptible Power Supply (UPS)

(1) Selection of UPS

- Use of a UPS is recommended to minimize power outages or momentary voltage drops (flickers) of commercial power due to lightning strikes.
- Select a power supply such as a line interactive UPS so that the momentary voltage drop that occurs when switching to battery operation does not fall below the flicker tolerance(10ms) of the disk array unit.
- Installing a UPS for each redundant power supply of the disk array unit is recommended to limit the effect of a UPS equipment failure.
- If one unit of a redundant power supply fails, the total power load is supplied from the other power supply. Therefore, the total power load must be able to be supplied even if the UPS electric power selection is supplied to one unit of a redundant power supply.
- Select a UPS that satisfies the requirements for both the total apparent power (VA) and the total effective power (W) of the disk array unit.
- Since the starting current (inrush current) of the disk array unit flows to the UPS, select a UPS that permits this current.

- The disk array unit is equipped with switching power supplies and an X/Y capacitor to counter EMI at its input. When numerous devices are connected to the UPS, the leading phase current due to the capacitor increases. Since a large oscillating current may occur in some UPS devices due to this leading phase current causing the circuit breaker between the UPS and disk array unit to burnout, check with the UPS manufacturer to make sure that this will not be a problem. Note that this has been verified for UPS devices manufactured by NEC and NEC Fielding.

(2) Setup

- For a UPS that allows the power fault detection sensitivity to be switched and the permissible voltage to be set, use manual switches and automatic running software such as EMSPRO/AC Enterprise to set the recommended sensitivity (high sensitivity) and recommended voltage according to the UPS and automatic running software user's guides.
- If a UPS is installed for each redundant power supply of the disk array unit, set each UPS so that both devices will be on almost simultaneously (within one minute). If the times in which the two UPS devices are on differ significantly, a power fault may be detected in the disk array unit.

6 Precautions

6.1 Precautions When Mounting Disk Array Units in an Unauthorized Rack

This section presents safety precautions when installing disk array units in an unauthorized rack.
These precautions are presented to ensure safety when disk array units are installed in an unauthorized rack. However, proper operation of the disk array units cannot be guaranteed if they are installed in an unauthorized rack. For information about authorized racks, contact your sales representative.

6.2 pleaasDirections for Safe Mounting

- When mounting disk array units in a rack, take the installation specifications into consideration so that ambient environmental conditions can be satisfied while the disk array units are operating.
  When installing units in a rack with a door or a rack equipped with multiple units, take the following points into consideration when the units are operating.
  - Take air flow into consideration so that the temperature requirement of the ambient environmental conditions is not exceeded.
  - The temperature inside a rack in which disk array units are operating must not exceed 40°C. Use at the place where the reach of 15 °C-25 °C of room temperature can be kept is recommended.

- A constant volume of air is required for the disk array unit to operate safely.
- When mounting units in the rack, make sure that no object blocks the air vents at the front and rear of the disk array unit and that the air vents are not closed.

- Fasten the rack to the floor.
  Use an appropriate method of fastening the rack to the floor so that mounting disk array units in the rack does not cause the entire rack to become unstable.
  - Be careful not to injure yourself when mounting disk array units in the rack.
  - Do not mount disk array units in a rack that would become physically unstable.
  - For the maximum configuration of disk array units, the weight of the M120/M320/M320F disk array controller is approximately 32 kg and the weight of the disk enclosure is approximately 28 kg.

- Connecting the power cord of a disk array unit to a power strip or the service outlet of another unit may subject the connected power strip or power cord of the other unit to a high load.
  Verify that the total current rating of units including the disk array unit does not exceed the current rating of the connected power strip or service outlet of the other unit.

- Always ground a unit that is mounted in a rack.
  Be particularly careful if the power cord of the disk array unit is not directly connected to a power distribution board (such as when using a power strip).

⚠Warning

Always ground the disk array unit before connecting the power cord.
Connecting all the power cords of disk array units to a single power distribution board will result in a large leak current flowing in the ground wires of the power cords, which may cause an electric shock. Always connect each power cord to a separate power distribution board.
If the power cord of the disk array unit is not directly connected to a power distribution board, use a power strip with an industrial plug.

6.3 Precautions When Installing or Moving a Disk Array Unit

Note the following precautions when installing or moving a disk array unit.

⚠Warning ⃠ Prohibited

- Do not place the disk array unit in a location that is high in humidity, dust, or oily smoke, a poorly ventilated location, or any location with fire. This will cause the disk array unit to fail, catch fire, or cause an electric shock.

- Do not use any other power cord than the one supplied with the disk array unit. Using another power cord may cause a fire to occur.

- Do not use the disk array unit with a voltage other than the one shown on the nameplate. Also, do not overload the electrical circuit. Failure to follow these prohibitions may cause a fire or electric shock to occur.

- Do not insert or remove the power plug with wet hands. Failure to follow this prohibition may cause an electric shock to occur.

- D A temperature gradient makes standard as 10 ℃ at the operation of within /h. And 15 ℃ at the storage of within /h. A sudden temperature fluctuation has a bad influence on the part of which equipment is composed, and causes a breakdown.

⚠Warning

- Always ground a unit that requires grounding before turning it on.
  If grounding is not possible, contact your sales representative or maintenance personnel. If there is a short circuit, a fire or electric shock may occur.

⚠ Caution Prohibited

- When removing the power plug from the electrical outlet, always grasp the plug. Do not pull the power cord. Pulling the power cord may expose or disconnect the core wires and cause a fire or electric shock to occur.

- Do not place any object on the disk array unit. Also, do not drop any object onto the disk array unit or crash any object into it.
  Failure to follow these prohibitions may cause the disk array unit to become unbalanced and tip over or fall. It may also cause the disk array unit to fail or malfunction.

⚠ Caution Instruction

- Select an installation location for the disk array unit that satisfies the product specifications as well as the following conditions. Otherwise, the unit may be damaged, data may be lost, or the life of the unit may be shortened.
  - Do not place the disk array unit in a location that is high in humidity, dust, or oily smoke, a poorly ventilated location, or any location with fire.
  - Do not use the disk array unit in an area subject to salt-air damage.
  - Do not use the disk array unit in a bathroom, shower room, or any other room where water is used.
  - Install the disk array unit in a location that is not exposed to direct sunlight.
  - Install the disk array unit in a location with little dust and low humidity.
  - Install the disk array unit in a flat, stable location where severe vibrations do not occur. A location subject to severe vibrations or an unstable location such as an inclined surface may cause the unit to fall or tip over.
  - Do not install the disk array unit near a passageway. If it is installed near a passageway, the disk array unit may fail or malfunction due to vibrations caused by people walking by.
  - Do not install the disk array unit in a location where power cords or various types of cables are found.
  - Do not block the air vents of the disk array unit. Air is taken in from the front of the unit and is exhausted from the rear. Do not seal off the front or rear of the disk array unit with a cover or lean any objects against them.
  - Do not install the disk array unit near any device that generates electrical noise including any device using a motor such as an ungrounded air conditioner or washing machine.
  - Do not install the disk array unit in the vicinity of a device that generates a strong magnetic field (such as a motor or speaker).

- Insert the power plug snugly all the way into the power outlet. Failure to do this may cause a fire to occur or the unit to fail.

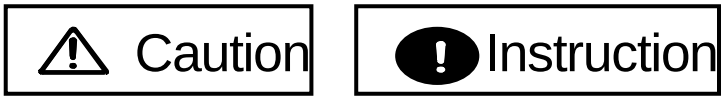
- Use an appropriate method to fasten the rack to the floor. If an appropriate method cannot be found, attach a stabilizer. Someone might be injured if vibration caused the rack to tip over.

- Connecting a UPS is recommended to prevent data loss due to a power failure.
  If a power failure occurs, operation of the disk drive may become unstable.

- Before attaching a fiber channel cable to the connector, verify that no dust, dirt, or oil is adhering to the connector.

- A fiber channel cable is thin and easily damaged. Do not excessively bend it or force it into the device.

- Moving the disk array unit through an extremely uneven area may subject the device to shocks or vibrations and cause data loss.
  Also, pay careful attention to steps or gaps in the floor surface (such as the gap at the entrance of an elevator).



- At least two people should carry a disk array unit on a slope since the weight will increase on one side.

- When moving the rack up or down a slope, make sure the front and back of the disk array unit face the direction of travel. If the side of the disk array unit faces the direction of travel, the unit may be damaged.

6.4 About a countermeasure against static electricity.

A part inside the machine consists of a weak electronic component in static electricity. Follow the following notice for one in case of installation/removal to prevent a breakdown of a product by static electricity.

- Wrist strap for countermeasures against static electricity and wear of static protection gloves
  Work after wrist strap is wound around a wrist and a ground wire is grounded. The static electricity which touched the metal surface where a grounded steel case isn't painted before fingering a part when there is no wrist strap, and accumulated in a body, discharge electricity. During working, touch a metal surface periodically, and do static electricity so that I may discharge electricity.

- Confirmation in a working place
  -Work on the floor where static protection processing was done or the concrete.
  -When working at the place static electricity tends to generate a carpet where, after doing static protection processing, then work.

- Use of a workbench
  Place a machine on the static protection mat and work on it.

———— End ————

NEC Storage M120/M320/M320F
Disk Array Unit
Installation Guide

Rev 1.1
April. 2018

NEC Corporation
5-7-1 Shiba Minato-ku, Tokyo Japan
81-3-3454-1111