C122-H002-07EN

PRIMEQUEST
520A/520/420

INSTALLATION PLANNING MANUAL

FUJITSU

FOR SAFE OPERATION

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

Fujitsu makes every effort to prevent users and bystanders from being injured or from suffering damage to their property. Use the product according to this manual.

ABOUT THIS PRODUCT

This product server is designed and manufactured for use in standard applications such as office work, personal device, household appliance, and general industrial applications. This product is not intended for use in nuclear-reactor control systems, aeronautical and space systems, air traffic control systems, mass transportation control systems, medical devices for life support, missile launch control systems or other specialized uses in which extremely high levels of reliability are required, the required levels of safety cannot be guaranteed, or a failure or operational error could be life-threatening or could cause physical injury (referred to hereafter as “high-risk” use). You shall not use this product without securing the sufficient safety required for the high-risk use. If you wish to use this product for high-risk use, please consult with sales representatives in charge before such use.

RADIO FREQUENCY INTERFERENCE STATEMENT

The following notice is for EU users only.

WARNING: This is a product which meets Class A of EN55022. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

The following notice is for USA users only.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, 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 own expense.

Laser standards

This equipment includes Class 1 laser products and complies with FDA Radiation Performance Standards, 21 CFR 1040.10 and 1040.11, and the International Laser Safety Standards IEC60825-1: 2001.

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Revision History

(1/3)

Edition	Date	Revised section (Added/ Deleted/ Altered)	Details
01	2006-02-20	—	—
02	2006-04-17	Section 1.3 (Altered)	• Modification of model names of PCI_Box and expansion file unit
		Section 2.2.1 (Altered)	• Addition of SCSI device with VHDCI connector in Figure 2.2
		Section 2.2.2 (Altered)	• Modification of the connector type of Gigabit Ethernet card (optical) in Figure 2.3
		Section 2.2.3 (Altered)	• Addition of the model names of Fibre Channel cable with an adapter
		Appendix A.1 (Altered)	• Addition of description for the pull-out stabilizer and total revision
		Appendix A.1.2 (Added)	• Addition of conditions for mounting in non-Fujitsu racks
03	2006-08-11	Entire manual (Added/Altered)	• Addition of the information about PRIMEQUEST 520 • Correction of illustrations due to change in specifications for the stabilizer • Correction of erroneous descriptions

Note: In this table, a revised section is indicated by its section number in the current edition. An asterisk (*) indicates a section in the previous edition.

Edition	Date	Revised section (Added/ Deleted/ Altered)	Details
03	2006-08-11	Section 1.3 (Added/Altered)	• Addition of the installation specification table for PRIMEQUEST 520 • Modification of values for installation specifications
		Section 2.2.4 (Added)	• Addition of the illustration for the external interface connection port in PRIMEQUEST 520
		Section 2.3 (Altered)	• Correction due to change in specifications for the power distribution box for use in outside Japan
		Section 2.4 (Altered)	• Modification of specifications for AC cables
		Appendix A.1.1 (Added)	• Addition of specifications and illustrations for the stabilizer • Addition of illustrations for the cable routes
		Appendix A.2.3 (Altered)	• Modification of the cable port size in Figure A.12
04	2007-03-05	Entire manual	• Correction of erroneous descriptions
		Section 2.4 (Altered)	• Modification of plug type for Japan.

Note: In this table, a revised section is indicated by its section number in the current edition. An asterisk (*) indicates a section in the previous edition.

Edition	Date	Revised section (Added/ Deleted/ Altered)	Details
05	2007-08-31	Section 2.1 (Altered) Section 2.2.1 (Altered) Section A.1.2 (Added)	• Addition of PEXU to Figure 2.1 • Addition of PEXU to Figure 2.2 • Addition of conditions for mounting in a non-Fujitsu rack
06	2008-03-10	Entire manual Appendix A.1.1 (Added)	• Addition of information of PRIMEQUEST 520A • Addition of description for selecting Fujitsu 19-inch global racks
07	2008-04-10	Section 2.2.1 (Altered)	• Correction of the order codes of UPS cables

Note: In this table, a revised section is indicated by its section number in the current edition. An asterisk (*) indicates a section in the previous edition.

Preface

This manual describes requirements and concepts for installation and facility planning for the PRIMEQUEST 520A/520/420. Installation and facility planning should be performed together with your assigned Fujitsu representatives according to the instructions provided in this manual.

This manual is intended for persons introducing and planning the installation of a PRIMEQUEST server, or those who manage server operations. The reader of this manual is expected to have some knowledge of or experience with server installation planning.

Structure and Contents of this Manual

This manual is organized as described below:

CHAPTER 1 Installation Reference

This chapter provides equipment configurations, external views, installation specifications, and outline drawings of PRIMEQUEST units.

CHAPTER 2 Connection Reference

This chapter provides cable connection diagrams and lists of required cables.

CHAPTER 3 Precautions Pertaining to Delivery and Installation

This chapter describes precautions regarding delivery and installation of the equipment.

Appendix A Racks

This appendix provides reference material for expansion racks in which a PRIMEQUEST 520A/520/420, PCI_Box, and the power distribution box can be mounted.

Acronyms and Abbreviations, Index

Acronyms & Abbreviations

This section provides the full spellings of the acronyms and abbreviations used in this manual.

Index

The index provides page references for keywords to allow the reader to quickly find necessary information.

Other Reference Manuals

The manuals listed below are related to this manual.
Before installing the equipment, first read the *PRIMEQUEST 500A/500/400 Installation Manual* (C122-E001EN) and see the related manual.

- *SPARC Enterprise/PRIMEQUEST Installation Planning Manual* (C120-H007EN)
- *PRIMEQUEST 520A/520/420 System Design Guide* (C122-B009EN)

Environmental Requirements for Using This Product

This product is a general-purpose computer intended for use in a computer room.

Conventions for Alert Messages

This manual uses the following conventions to show the alert messages. An alert message consists of an alert signal and alert statements.

IMPORTANT	This indicates information that could help the user to use the product more effectively.

Alert messages in the text

In the text, the alert messages are indented to distinguish them from regular text. A wider space precedes and follows the message to show where the message begins and ends.

(Example)

IMPORTANT

- The template is created on a scale of 1:50. When printing the template from Acrobat® Reader® or Adobe® Reader® software, be sure to uncheck the checkbox of Fit to page on the Print dialog box.

Reader Feedback

- In this manual, it is assumed that two BMMs (optional products) can be connected to a single I/O unit and IOX; this is reflected both in the explanations and in the figures included in this manual. At present, however, the PRIMEQUEST 420 series supports only connection to one BMM (BMM#0) per I/O unit and IOX.
- If you find any errors or unclear statements in this manual, please fill in the "Reader's Comment Form" sheet at the back of this manual and forward it to the address indicated at the bottom of the sheet.
- This manual is subject to revision without prior notice.
- The PDF version of this manual is best viewed in Adobe® Reader® with a magnification of 100% and Single Page for the page layout.

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CHAPTER 1 Installation Reference

This chapter provides the information required for installing the PRIMEQUEST 520A/520/420 server.

1.1 Equipment Configuration

Table 1.1 lists the units that comprise the PRIMEQUEST server and the specifications. Figure 1.1 shows a sample system configuration.

Table 1.1 Units and their specifications

Unit	Specifications	Remarks
PRIMEQUEST 520A/520/420 main unit	Unit that can contain up to two system boards (maximum of 8 CPUs) and up to two IO Units (including IOX)	Standard equipment Size of 12U
PCI_Box	Device used to expand the number of PCI or PCI Express slots. Up to one unit can be connected to the PRIMEQUEST 520A/520/420 main unit. Four PCI units or two PCI Express units can be added with each addition of a PCI_Box. (*1) (PCI units and PCI Express units can be mounted together.) Each PCI unit has three PCI slots, and each PCI Express unit has two PCI Express slots.	Size of 4U

*1 PCI Express units can be connected to only the PRIMEQUEST 520A/520 main unit, and up to two units can be connected.

Remarks: Units listed in Table 1.1 are mounted in the 19-inch rack which conforms to EIA. For more information about the 19-inch rack, see Appendix A, "Racks."

*1: PRIMEQUEST 520A/520/420 is equipped with one 200-V power distribution box as standard.

*2: To connect a power supply to the PCI_Box and the expansion file unit, two 200-V power distribution boxes are required. For single power configuration, another power distribution box (optional) is required in addition to the standard power distribution box.
For dual power feed in the PRIMEQUEST 520A/520/420, a Dual Power Feed Option is required. The Dual Power Feed Option is equipped with one 200-V power distribution box. For connecting a power supply to the PCI_Box and the expansion file unit in dual power feed configuration, see Section 2.3, "Power Cable Connections."

Remark: For more information about the 19-inch rack, see Appendix A, "Racks."

Figure 1.1 Configuration of the PRIMEQUEST 520A/520/420 main unit

1.2 Views of the Units

The following figures show different views of the units:

- External view of the PRIMEQUEST 520A/520/420 main unit (Figure 1.2)
- External view of the PCI_Box (Figure 1.3)

Figure 1.2 External view of the PRIMEQUEST 520A/520/420 main unit

Figure 1.3 External view of the PCI_Box

1.3 Installation Specifications

The following tables list the installation specifications for the units:

- PRIMEQUEST 520A/520 main unit installation specifications (Model name: MC3B0R211x) (Table 1.2)
- PRIMEQUEST 420 main unit installation specifications (Model name: MC3A0R111x) (Table 1.3)
- PCI_Box installation specifications (Model name: MC-07PBa1x) (Table 1.4)
- Expansion file unit installation specifications (Model name: MC-03F111x) (Table 1.5)

Remark: In model names, a is any digit from 1 to 9 or any letter from A to Z, while x is any letter from A to Z or blank.

Table 1.2 PRIMEQUEST 520A/520 main unit installation specifications (Model name: MC3B0R211x)

Item				Value
Dimensions [mm (in.)]	Width			482 (18.98)
	Depth (*1)			820 (32.28)
	Height			530 (20.87)
Weight [kg (lb)] (*2)				150 (330)
Air conditioning	Maximum heat dissipation [kJ/Hr (BTU/h)]			10944 (10373)
	Exhaust air flow [m^3/min (ft^3/min)]		With fans operating at low speed	10.0 (353.1)
			With fans operating at high speed	14.7 (519.1)
	Temperature and humidity (*3)	Operating	Temperature [°C (°F)]	(*4)
			Humidity [%RH]	20 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
		Stand-by	Temperature [°C (°F)]	0 to 40 (32 to 104)
			Humidity [%RH]	20 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
		Not operating (*5)	Temperature [°C (°F)]	0 to 50 (32 to 122)
			Humidity [%RH]	8 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)

Item			Value
Air conditioning	Noise [dB (A)] (*6)		56
	Sound power level [B (A)] (*6)		7.4
	Allowable vibration [m/s^2]	Operating (including standby)	2.5 (Synthetic seismic vibration)
		Not operating (*5)	4.0 (Synthetic seismic vibration)
	Allowable dust [mg/m^3]		0.15
Power supply	Input voltage tolerance and No. of phases		200 to 240 VAC ± 10 % 1ϕ
	Frequency and tolerance		50/60 Hz +2/-4 Hz
	Maximum power consumption/apparent power	Operating	3,040 W/3,200 VA
		Not operating	200 VA
	Power factor		0.9 or more
	Inrush current [A] [Inrush duration] (*7)		62 or less
	Leakage current [mA] (*7)		3.5 or less

*1: This value does not include any projection.

*2: Value for the case with the maximum number of optional units allowed installed.
Value not including the rack-mounting rails and cable management.
The weight of the unit based on the equipment configuration can be calculated from the following formula:

Unit weight = 103 + (11 x A) + (17 x B) + (4 x C) + (4 x D)

- A = Number of SBs mounted: From a minimum of one to a maximum of two
- B = Number of IOUs mounted: From a minimum of zero to a maximum of one
- C = Number of IOXs mounted: From a minimum of zero to a maximum of one
- D = Number of Dual Power Feed Options mounted: From a minimum of zero to a maximum of one

*3: There must be no condensation.

*4: The temperature requirement depends on the installation altitude.

- 5 to 35 °C (41 to 95.0 °F)
  [if installed at an altitude of 0 to 1500 m (0 to 4921.2 ft)]
- 5 to 33 °C (41 to 91.4 °F)
  [if installed at an altitude of 1500 to 2000 m (4921.2 to 6561.6 ft)]
- 5 to 32 °C (41 to 89.6 °F)
  [if installed at an altitude of 2000 to 2500 m (6561.6 to 8202 ft)]
- 5 to 30 °C (41 to 86 °F)
  [if installed at an altitude of 2500 to 3000 m (8202 to 9842.4 ft)]

*5: "Not operating" means the time when the equipment is stored.

*6: The noise and sound power level vary on the ambient temperature.

*7: These values are for each power cable.

Table 1.3 PRIMEQUEST 420 main unit installation specifications
(Model name: MC3A0R111x)

Item				Value
Dimensions [mm (in.)]	Width			482 (18.98)
	Depth (*1)			820 (32.28)
	Height			530 (20.87)
Weight [kg (lb)] (*2)				150 (330)
Air conditioning	Maximum heat dissipation [kJ/Hr (BTU/h)]			10620 (10066)
	Exhaust air flow [m^3/min (ft^3/min)]		With fans operating at low speed	10.0 (353.1)
			With fans operating at high speed	14.7 (519.1)
	Temperature and humidity (*3)	Operating	Temperature [°C (°F)]	(*4)
			Humidity [%RH]	20 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
		Stand-by	Temperature [°C (°F)]	0 to 40 (32 to 104)
			Humidity [%RH]	20 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
		Not operating (*5)	Temperature [°C (°F)]	0 to 50 (32 to 122)
			Humidity [%RH]	8 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
	Noise [dB (A)] (*6)			56
	Sound power level [B (A)] (*6)			7.4
	Allowable vibration [m/s^2]	Operating (including standby)		2.5 (Synthetic seismic vibration)
		Not operating (*5)		4.0 (Synthetic seismic vibration)
	Allowable dust [mg/m^3]			0.15
Power supply	Input voltage tolerance and No. of phases			200 to 240 VAC ± 10 % 1ϕ
	Frequency and tolerance			50/60 Hz +2/-4 Hz
	Maximum power consumption/apparent power		Operating	2,950 W/3,100 VA
			Not operating	200 VA
	Power factor			0.9 or more
	Inrush current [A] [Inrush duration] (*7)			62 or less
	Leakage current [mA] (*7)			3.5 or less

*1: This value does not include any projection.

*2: Value for the case with the maximum number of optional units allowed installed.
Value not including the rack-mounting rails and cable management.
The weight of the unit based on the equipment configuration can be calculated from the following formula:

Unit weight = 103 + (11 x A) + (17 x B) + (4 x C) + (4 x D)

- A = Number of SBs mounted: From a minimum of one to a maximum of two
- B = Number of IOUs mounted: From a minimum of zero to a maximum of one
- C = Number of IOXs mounted: From a minimum of zero to a maximum of one
- D = Number of Dual Power Feed Options mounted: From a minimum of zero to a maximum of one

*3: There must be no condensation.

*4: The temperature requirement depends on the installation altitude.

- 5 to 35 °C (41 to 95.0 °F)
  [if installed at an altitude of 0 to 1500 m (0 to 4921.2 ft)]
- 5 to 33 °C (41 to 91.4 °F)
  [if installed at an altitude of 1500 to 2000 m (4921.2 to 6561.6 ft)]
- 5 to 32 °C (41 to 89.6 °F)
  [if installed at an altitude of 2000 to 2500 m (6561.6 to 8202 ft)]
- 5 to 30 °C (41 to 86 °F)
  [if installed at an altitude of 2500 to 3000 m (8202 to 9842.4 ft)]

*5: "Not operating" means the time when the equipment is stored.

*6: The noise and sound power level vary on the ambient temperature.

*7: These values are for each power cable.

Table 1.4 PCI_Box installation specifications (Model name: MC-07PBa1x)

Item				Value
Dimensions [mm (in.)]	Width			482 (18.98)
	Depth (*1)			768 (30.24)
	Height			174 (6.85)
Weight [kg (lb)] (*2)				42 (92)
Air conditioning	Maximum heat dissipation [kJ/Hr (BTU/h)]			2550 (2416.9)
	Exhaust air flow [m^3/min (ft^3/min)]		With fans operating at low speed	4.49 (158.6)
			With fans operating at high speed	5.85 (206.2)
	Temperature and humidity (*3)	Operating	Temperature [°C (°F)]	(*4)
			Humidity [%RH]	20 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
		Stand-by	Temperature [°C (°F)]	0 to 40 (32 to 104)
			Humidity [%RH]	20 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
		Not operating (*5)	Temperature [°C (°F)]	0 to 50 (32 to 122)
			Humidity [%RH]	8 to 80
			Maximum wet bulb temperature [°C (°F)]	29 (84.2)
	Noise [dB (A)]			56 (included in the main unit)
	Sound power level [B (A)]			7.4 (included in the main unit)
	Allowable vibration [m/s^2]	Operating (including standby)		2.5 (Synthetic seismic vibration)
		Not operating (*5)		4.0 (Synthetic seismic vibration)
	Allowable dust [mg/m^3]			0.15
Power supply	Input voltage tolerance and No. of phases			200 to 240 VAC ± 10 % 1ϕ
	Frequency and tolerance			50/60 Hz +2/-4 Hz
	Maximum power consumption/apparent power		Operating	736 W/750 VA
			Stand-by	20 VA
	Power factor			0.9 or more
	Inrush current [A] [Inrush duration] (*6)			30 or less
	Leakage current [mA] (*6)			3.5 or less

*1: This value does not include any projection.

*2: Value for the case the maximum allowable number of optional units is mounted.
Value not including the rack-mounting rails and cable management.

*3: There must be no condensation.

*4: The temperature requirement depends on the installation altitude.

- 5 to 35 °C (41 to 95.0 °F)
  [if installed at an altitude of 0 to 1500 m (0 to 4921.2 ft)]
- 5 to 33 °C (41 to 91.4 °F)
  [if installed at an altitude of 1500 to 2000 m (4921.2 to 6561.6 ft)]
- 5 to 32 °C (41 to 89.6 °F)
  [if installed at an altitude of 2000 to 2500 m (6561.6 to 8202 ft)]
- 5 to 30 °C (41 to 86 °F)
  [if installed at an altitude of 2500 to 3000 m (8202 to 9842.4 ft)]

*5: "Not operating" means the time when the equipment is stored.

*6: These values are for each power cable.

Table 1.5 Expansion file unit installation specifications (Model name: MC-03F111x)

Item				Value
Dimensions [mm (in.)]	Width			483 (19.01)
	Depth (*1)			646 (25.43)
	Height			133 (5.23)
Weight [kg (lb)] (*2)				34 (74.8)
Air conditioning	Maximum heat dissipation (in steady state) [kJ/Hr (BTU/h)]			1098 (1040.7)
	Temperature and humidity (*3)	Operating	Temperature [°C (°F)]	5 to 35 (41 to 95)
			Humidity [%RH]	20 to 80
		Not operating (*4)	Temperature [°C (°F)]	-25 to 60 (-13 to 140)
			Humidity [%RH]	5 to 90
Power supply	Input voltage tolerance and No. of phases			200 to 240 VAC ±10 % 1ϕ
	Frequency and tolerance			50/60 Hz ±1 Hz
	Maximum power consumption/apparent power			305 W/310 VA

*1: This value does not include any projection.

*2: Value for the case the maximum allowable number of optional units (maximum configuration with 14 hard disk drive units) is mounted. Value not including the rack-mounting rails and cable management.

*3: There must be no condensation.

*4: "Not operating" means the time when the equipment is stored.

1.4 Equipment Floor Plan

This section shows the installation area and the service area when the PRIMEQUEST 520A/520/420 is installed in the Fujitsu 19-inch global rack.

* This is a top view of the unit.

Figure 1.4 Service area for the PRIMEQUEST 520A/520/420 main unit

1.5 Cooling Air and Exhaust Flows

This section explains the cooling air and exhaust flows of each cabinet.

- Cooling air and exhaust flows of the PRIMEQUEST 520A/520/420 main unit (Figure 1.5)
- Cooling air and exhaust flows of the PCI_Box (Figure 1.6)

IMPORTANT

- When planning the installation of the equipment, it is important to consider the flows of cooling air and exhaust. If the equipment is installed without giving proper consideration to these flows, a cabinet or rack may draw in the exhaust from another cabinet or rack and be adversely affected as a result. Particularly, a device that monitors the temperature of intake air may continue to output the alarm indicating abnormal intake temperature.

Figure 1.5 Cooling air and exhaust flows of the PRIMEQUEST 520A/520/420 main unit

Figure 1.6 Cooling air and exhaust flows of the PCI_Box

CHAPTER 2 Connection Reference

This chapter provides cable connection diagrams and lists of the applicable cables.

2.1 Connection Overview

Figure 2.1 shows an overview of equipment cable connections:

Figure 2.1 Equipment cable connections (1/2)

*1: The main unit does not include an IOU/IOX Unit. IOU or IOX unit must be prepared.

*2: For PRIMEQUEST 520A/520: x4
For PRIMEQUEST 420: x2

*3: The main unit does not include an IOX. To connect the PCI_Box, one unit must be prepared.

*4: The PCI_Box includes neither a PCIU nor a PEXU. At least one of those units must be prepared.

*5: Up to two PEXUs can be connected to the PRIMEQUEST 520A/520 main unit.

*6: PEXUs are connected by PCI unit cables (combination of CH#0/#1 and CH#2/#3 on the main unit side).

Figure 2.2 Equipment cable connections (2/2)

2.2 Signal Cable Connections

This section provides diagrams of signal-cable connections, lists of applicable cables, and notes on cabling.

- Basic interfaces and peripherals (Section 2.2.1)
- LAN and other device connections (Section 2.2.2)
- Notes on cabling PRIMEQUEST 520A/520/420 (Section 2.2.3)
- Details of external interface connection ports (Section 2.2.4)

2.2.1 Basic interfaces and peripherals

Figure 2.2 shows the cable connections for the basic interfaces and peripheral units. Table 2.1 lists the applicable cables.

(1) Cable connection diagram

Remarks: The number in parenthesis corresponds to the number of the cables in Table 2.1.

Figure 2.2 Interface cable connections (basic interfaces and peripherals)

(2) Cable list

When determining the total length of the external interface cable to be connected to the PRIMEQUEST 520A/520/420, allow for an extra length of cable for pulling out the units.

Table 2.1 Cable list (basic interface and peripherals)

NO.	Name	Order code	Japan	Outside Japan	Packaging	Length [m (ft.)]
1	Twisted pair cable (Category 5 UTP cable)	TPCBL-B005	Y	Y	Optional: Select 5, 10, 15, 30, 50, or 100 m. This cable is required if 100Base-TX or 10Base-T is used. (category 5) RJ45 8 Pin - RJ45 8 Pin	5 (16)
		TPCBL-B010	Y	Y		10 (33)
		TPCBL-B015	Y	Y		15 (49)
		TPCBL-B030	Y	Y		30 (98)
		TPCBL-B050	Y	Y		50 (164)
		TPCBL-B100	Y	Y		100 (328)
2	Enhanced category 5 UTP cable	TPCBL-C005	Y	Y	Optional: Select 5, 10, 15, 30, 50, or 100 m. This cable is required if 1000Base-T, 100Base-TX, or 10Base-T is used. (category 5e) RJ45 8 Pin - RJ45 8 Pin	5 (16)
		TPCBL-C010	Y	Y		10 (33)
		TPCBL-C015	Y	Y		15 (49)
		TPCBL-C030	Y	Y		30 (98)
		TPCBL-C050	Y	Y		50 (164)
		TPCBL-C100	Y	Y		100 (328)
3	UPS cable	DCBL-UPK05	Y	Y	This cable is required for connection to the UPS (F987xx).	5 (16)
		DCBL-UPK15	Y	Y		15 (49)
4	UPS interface branch connector	UPS-B	Y	Y	Branch connector box that is used to connect two UPS (F987xx) units to a single UPC interface. (Comes with a 2.2 m cable for connecting the device to the box.)	2.2 (7)
5	UPS interface six-branch connector	UPS-B1	Y	Y	Branch connector box that is used to connect six UPS (F987xx) units to a single UPC interface. (Comes with a 2.5 m cable for connecting the device to the box.)	2.5 (8)
6	SCSI cable	DCBL-SCP05	Y	Y	Optional: Select 5 or 10 m. VHDCI 68-pin, male to VHDCI 68-pin, male	5 (16)
		DCBL-SCP10	Y	Y		10 (33)

Y: Supported

NO.	Name	Order code	Japan	Outside Japan	Packaging	Length [m (ft.)]
7	SCSI cable	DCBL-SCN05	Y	Y	Optional: Select 5 or 10 m. VHDCI 68-pin, male to HIDEC 68-pin, male	5 (16)
		DCBL-SCN10	Y	Y		10 (33)
8	RS232C cable (Dsub-9Pin-9Pin, cross cable)	FMV-CBL501	Y	Y		1.5 (5)
9	PCI_Box CTL cable	(CA78005-0053)	Y	Y	One cable is equipped with the PCI_Box .	5 (16)
10	PCIU cable (5m)	MC-07CA11	Y	Y	Two cables are required for connecting the PEXUs.	5 (16)
11	USB extension cable	MC-07UE11	Y	Y	This cable is required for connecting the main unit to a keyboard/mouse.	3 (9)
12	VGA extension cable	MC-07VE11	Y	Y	This cable is required for connecting the main unit to a display.	3 (9)

Y: Supported

2.2.2 LAN and other device connections

Figure 2.3 shows the cable connections for a LAN and other device connections.
Table 2.2 lists the applicable cables.

(1) Cable connection diagram

Remarks: The number in parenthesis corresponds to the number of the cables in Table 2.2.

Figure 2.3 Cable connections (LAN and other device connections)

(2) Cable list

When determining the total length of the external interface cable to be connected to the PRIMEQUEST 520A/520/420, allow for an extra length of cable for pulling out the units.

Table 2.2 Cable list (LAN and other device connection)

No.	Name	Order code	Japan	Outside Japan	Packaging	Length [m (ft.)]
(1)	Multimode Fibre Channel Cable	CBL-MLLB02	Y	Y	Optional: Select 2, 5, or 15 m. Dual LC connector - Dual LC connector cable Sheathless	2 (7)
		CBL-MLLB05	Y	Y		5 (16)
		CBL-MLLB15	Y	Y		15 (49)
		CBL-MLLC05	Y	Y	Optional: Select 5, 10, 20, 30, 40, or 50 m. Dual LC connector - Dual LC connector cable Sheathed	5 (16)
		CBL-MLLC10	Y	Y		10 (33)
		CBL-MLLC20	Y	Y		20 (66)
		CBL-MLLC30	Y	Y		30 (98)
		CBL-MLLC40	Y	Y		40 (132)
		CBL-MLLC50	Y	Y		50 (164)
		CBL-MLLA1A (Note)	Y	Y	Optional: 100 m. Dual LC connector - Dual LC connector cable Sheathed	100 (328)
(2)	Multimode Fibre Channel Cable	CBL-MLSB02	Y	Y	Optional: Select 2, 5, or 15 m. Dual LC connector - Dual SC connector cable Sheathless	2 (7)
		CBL-MLSB05	Y	Y		5 (16)
		CBL-MLSB15	Y	Y		15 (49)
		CBL-MLSC05	Y	Y	Optional: Select 5, 10, 20, 30, 40, or 50 m. Dual LC connector - Dual SC connector cable Sheathed	5 (16)
		CBL-MLSC10	Y	Y		10 (33)
		CBL-MLSC20	Y	Y		20 (66)
		CBL-MLSC30	Y	Y		30 (98)
		CBL-MLSC40	Y	Y		40 (132)
		CBL-MLSC50	Y	Y		50 (164)
		CBL-MLSA1A (Note)	Y	Y	Optional: 100 m. Dual LC connector - Dual SC connector cable Sheathed	100 (328)

Y: Supported

Note: Cannot be connected to the 10Gigabit Ethernet card (optical).

No.	Name	Order code	Japan	Outside Japan	Packaging	Length [m (ft.)]
(3)	Twisted pair cable (category 5 UTP cable)	TPCBL-B005	Y	Y	Optional: Select 5, 10, 15, 30, 50, or 100 m. This cable is required if 100Base-TX or 10Base-T is used. (Category 5e) RJ45 8 Pin - RJ45 8 Pin	5 (16)
		TPCBL-B010	Y	Y		10 (33)
		TPCBL-B015	Y	Y		15 (49)
		TPCBL-B030	Y	Y		30 (98)
		TPCBL-B050	Y	Y		50 (164)
		TPCBL-B100	Y	Y		100 (328)
(4)	Enhanced category 5 UTP cable	TPCBL-C005	Y	Y	Optional: Select 5, 10, 15, 30, 50, or 100 m. This cable is required if 1000Base-T, 100Base-TX, or 10Base-T is used. (Category 5e) RJ45 8 Pin-RJ45 8 Pin	5 (16)
		TPCBL-C010	Y	Y		10 (33)
		TPCBL-C015	Y	Y		15 (49)
		TPCBL-C030	Y	Y		30 (98)
		TPCBL-C050	Y	Y		50 (164)
		TPCBL-C100	Y	Y		100 (328)

Y: Supported

2.2.3 Notes on cabling PRIMEQUEST 520A/520/420

When determining the total length of the cable to be connected to the PRIMEQUEST 520A/520/420, allow for an extra length of cable for pulling out the units.

PRIMEQUEST 520A/520/420 needs to be pulled out from the rack for maintenance. The cable is routed with the cable-management system. For the cable-management system, extra cable length of 2 m (6.6 ft.) is required.

IMPORTANT

- Use a sheathless optical cable for the fibre channel cable. (If the sheath fibre channel cable has been laid, connect a sheathless optical Fibre Channel cable with an adapter (DCBL-FCE02 (SC-LC: 2m (6.6 ft.)), DCBL-FCE05 (SC-LC: 5m (16.4 ft.)), DCBL-FCG02 (LC-LC: 2m (6.6 ft.)) or DCBL-FCG05 (LC-LC: 5m (16.4 ft.))) to the sheath fibre channel cable.)
- Avoid laying the power cable close to metal cables such as RS232C or SCSI cables. If cables need to be crossed, avoid laying the sheathless optical cable under power cables or metal cables.

2.2.4 Details of external interface connection ports

This section shows the locations of the external interface connection ports of PRIMEQUEST 520A/520/420. Take these locations into account when calculating the excess lengths of connection cables.

- External interface connection ports in the PRIMEQUEST 520A/520 main unit (Figure 2.4)
- External interface connection ports in the PRIMEQUEST 420 main unit (Figure 2.5)
- External interface ports in the PCI_Box (Figure 2.6)

(1) PRIMEQUEST 520A/520 main unit

Note: The above unit contains a Dual Power Feed Option.

Figure 2.4 External interface connection ports in the PRIMEQUEST 520A/520 main unit

(2) PRIMEQUEST 420 main unit

Note: The above unit contains a Dual Power Feed Option.

Figure 2.5 External interface connection ports in the PRIMEQUEST 420 main unit

(3) PCI_Box

Figure 2.6 External interface ports in the PCI_Box

2.3 Power Cable Connections

This section provides diagrams of the input power system for the PRIMEQUEST 520A/520/420 and the PCI_Box.

- Input power system diagram for the PRIMEQUEST 520A/520/420 (Section 2.3.1)
- Input power system diagram for the PRIMEQUEST 520A/520/420 including peripherals (Section 2.3.2)
- Power distribution box (Section 2.3.3)

2.3.1 Input power system diagram for the PRIMEQUEST 520A/520/420

The figures in this section show the input power system diagrams for the PRIMEQUEST 520A/520/420.

- Standard configuration for use in Japan (including single power feed system and redundant power supply unit) (Figure 2.7)
- Dual power feed configuration for use in Japan (Figure 2.8)
- Standard configuration for outside Japan (general) (including single power feed system and redundant power supply unit) (Figure 2.9)
- Dual power feed configuration for outside Japan (general) (Figure 2.10)

(1) Standard configuration for use in Japan (including single power feed system and redundant power supply unit)

This section shows the input power system in the standard PRIMEQUEST 520A/520/420 configuration for use in Japan (including a single power feed option and redundant power supply unit).

CB: Circuit breaker (overcurrent protector)

*1: Power cables (Input#0 to Input#2) are connected to PSUs (PSU#0 to PSU#2) as shown below, on a one-to-one basis.

*2: Each power cable is connected to each output group (including one overcurrent protector and two outlets) of the outlet box on a one-to-one basis. Do not connect for redundancy a power cable from a peripheral unit to the open outlet of the output group to which one power cable is already connected.

*3: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.7 Input power system diagram for the PRIMEQUEST 520A/520/420 (standard configuration)

(2) Dual power feed configuration for use in Japan

This section shows the input power system and PSU locations in the PRIMEQUEST 520A/520/420 containing a Dual Power Feed Option for use in Japan.
For dual power feeding, a dual power feed option is required. This option consists of a power cable, one PSU, and one power distribution box.

CB: Circuit breaker (overcurrent protector)

*1: Power cables (Input#0 to Input#3) are connected to PSUs (PSU#0 to PSU#3) as shown below, on a one-to-one basis.

*2: Each power cable is connected to each output group (including one overcurrent protector and two outlets) of the outlet box on a one-to-one basis. Do not connect for redundancy a power cable from a peripheral unit to the open outlet of the output group to which one power cable is already connected.

*3: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.8 Input power system diagram for the PRIMEQUEST 520A/520/420 (dual power feed configuration)

(3) Standard configuration for outside Japan (general) (including single power feed system and redundant power supply unit)

This section shows the input power system in the standard PRIMEQUEST 520A/520/420 configuration for outside Japan (general) (including a single power feed option and redundant power supply unit).

CB: Circuit breaker (overcurrent protector)

*1: Power cables (Input#0 to Input#2) are connected to PSUs (PSU#0 to PSU#2) as shown below, on a one-to-one basis.

*2: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.9 Input power system diagram for the PRIMEQUEST 520A/520/420 for outside Japan (general) (standard configuration)

(4) Dual power feed configuration for outside Japan (general)

This section shows the input power system and PSU locations in the PRIMEQUEST 520A/520/420 containing a Dual Power Feed Option for use outside Japan (general). For dual power feeding, a dual power feed option is required. This option consists of a power cable, one PSU, and one power distribution box.

CB: Circuit breaker (overcurrent protector)

*1: Power cables (Input#0 to Input#3) are connected to PSUs (PSU#0 to PSU#3) as shown below, on a one-to-one basis.

*2: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.10 Input power system diagram for the PRIMEQUEST 520A/520/420 for outside Japan (general) (dual power feed configuration)

2.3.2 Input power system diagram for the PRIMEQUEST 520A/520/420 including peripherals

The figures in this section show the input power system diagrams for the PRIMEQUEST 520A/520/420 when the PCI_Box and expansion file unit are connected.

- Single power feed configuration for use in Japan (including a redundant power supply unit) (Figure 2.11)
- Dual power feed configuration for use in Japan (Figure 2.12)
- Single power feed configuration (including a redundant PSU) for use outside Japan (general) (Figure 2.13)
- Dual power feed configuration for use outside Japan (general) (Figure 2.14)

(1) Single power feed configuration for use in Japan (including a redundant power supply unit)

Figure 2.11 shows the input power system diagram of the PRIMEQUEST 520A/520/420 connected with the PCI_Box and expansion file unit in a single power feed configuration (including a redundant PSU) for use in Japan.

CB: Circuit breaker (overcurrent protector)

Figure 2.11 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a single power feed configuration (including a redundant PSU) for use in Japan (1/2)

*1: Power cables (Input#0 to Input#2) of the main unit (PRIMEQUEST 520A/520/420) are connected to PSUs (PSU#0 to PSU#2) as shown below, on a one-to-one basis.

*2: Each power cable is connected to each output group (including one overcurrent protector and two outlets) of the outlet box on a one-to-one basis. Do not connect for redundancy a power cable from a peripheral unit to the open outlet of the output group to which one power cable is already connected.

*3: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.11 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a single power feed configuration (including a redundant PSU) for use in Japan (2/2)

(2) Dual power feed configuration for use in Japan

Figure 2.12 shows an input power system diagram of the PRIMEQUEST 520A/520/420 connected with the PCI_Box and expansion file unit in a dual power feed configuration for use in Japan.

For dual power feeding, a dual power feed option is required. This option consists of a power cable, one PSU, and one power distribution box.

CB: Circuit breaker (overcurrent protector)

Figure 2.12 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a dual power feed configuration for use in Japan (1/2)

*1: Power cables (Input#0 to Input#3) of the main unit (PRIMEQUEST 520A/520/420) are connected to PSUs (PSU#0 to PSU#3) as shown below, on a one-to-one basis.

*2: Each power cable is connected to each output group (including one overcurrent protector and two outlets) of the outlet box on a one-to-one basis. Do not connect for redundancy a power cable from a peripheral unit to the open outlet of the output group to which one power cable is already connected.

*3: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.12 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a dual power feed configuration for use in Japan (2/2)

(3) Single power feed configuration (including a redundant PSU) for use outside Japan (general)

Figure 2.13 shows the input power system diagram of the PRIMEQUEST 520A/520/420 connected with the PCI_Box and expansion file unit in a single power feed configuration (including a redundant PSU) for use outside Japan (general).

CB: Circuit breaker (overcurrent protector)

Figure 2.13 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a single power feed configuration (including a redundant PSU) for use outside Japan (general) (1/2)

*1: Power cables (Input#0 to Input#2) of the main unit (PRIMEQUEST 520A/520/420) are connected to PSUs (PSU#0 to PSU#2) as shown below on a one-to-one basis.

*2: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.13 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a single power feed configuration (including a redundant PSU) for use outside Japan (general) (2/2)

(4) Dual power feed configuration for use outside Japan (general)

Figure 2.14 shows the input power system diagram of the PRIMEQUEST 520A/520/420 connected with the PCI_Box and expansion file unit in a dual power feed configuration for use outside Japan (general).

For dual power feeding, a dual power feed option is required. This option consists of a power cable, one PSU, and one power distribution box.

CB: Circuit Breaker

Figure 2.14 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a dual power feed configuration for use outside Japan (general) (1/2)

*1: Power cables (Input#0 to Input#3) of the main unit (PRIMEQUEST 520A/520/420) are connected to PSUs (PSU#0 to PSU#3) as shown below on a one-to-one basis.

*2: For information about the circuit breakers on the customer's distribution panel, see Section 2.6, "Circuit Breaker Characteristics."

Figure 2.14 Input power system diagram of the PRIMEQUEST 520A/520/420 including the peripherals in a dual power feed configuration for use outside Japan (general) (2/2)

2.3.3 Power distribution box

PRIMEQUEST 520A/520/420 is equipped with one power distribution box as standard. For use in Japan, the power distribution box contains four outlet groups each of which contains one overcurrent protector (CB) and two outlets as shown in Figure 2.15.

Figure 2.15 Power distribution box (for use in Japan)

The maximum rated current per output group is 12 A (for use in Japan). The maximum rated current per power distribution box (total current for four output groups) is 24 A.

Power cables of the PRIMEQUEST 520A/520/420 and the PCI_Box are connected to each output group on a one-to-one basis.

The overcurrent protector (CB) protects each output group only. When power cables are connected to two outlets of an output group, be careful not to exceed the maximum rated current of the group.

IMPORTANT

- When connecting power cables from the PRIMEQUEST 520A/520/420 and the PCI_Box to power distribution boxes, connect the power cables to different output groups.
  Do not connect for redundancy a power cable from a peripheral unit to the open outlet of the output group to which one power cable is already connected.

For use outside Japan, the power distribution box contains one overcurrent protector (CB) per outlet as shown in Figure 2.16.

Figure 2.16 Power distribution box (for use outside Japan)

2.4 Input Power Supply Unit Connections

The following table lists the connection specifications for the input power supply unit.

- PRIMEQUEST 520A/520/420 main unit (Section 2.4.1)
- Cables between PCI_Box and power distribution box (Section 2.4.2)
- Cables between the power distribution box and power distribution panel (Section 2.4.3)

2.4.1 PRIMEQUEST 520A/520/420 main unit

Table 2.3 lists the specifications for connecting the input power supply unit to the PRIMEQUEST 520A/520/420 main unit.

Table 2.3 AC cable specifications for the PRIMEQUEST 520A/520/420 main unit

Destination	Plug type	Remarks
JAPAN	Two-prong hook-type plug with grounding electrode (250V15A) [NEMA standard name: L6-15P]	The main unit is equipped with one power distribution box as standard. The power cable of the main unit is connected to a power distribution box. Provide a wall-side outlet (of the power distribution board) according to the outlet shape given in Table 2.5, "Specifications of the AC cables between the power distribution box and power distribution panel."
Outside Japan	Covered 3-pin plug (for power distribution box connection) IEC320-C14 type	The main unit is equipped with one power distribution box as standard. Connect the power cable of the main unit to the power distribution box. (10A-250VAC) IEC320-C13 type

Note: Use the supplied accessory AC cable to connect the main unit.
Do not use the accessory AC cable for other products.

2.4.2 PCI_Box

Table 2.4 lists the specifications for connecting the input power supply unit to the PCI_Box.

Table 2.4 AC cable specifications for the PCI_Box

Destination	Plug type	Remarks
Japan	Two-prong twist-lock plug with grounding electrode (250V15A) [NEMA standard name: L6-15P]	Connected to the standard or optional power distribution box of the main unit (PRIMEQUEST 520A/520/420).
Outside Japan	Covered 3-pin plug (for power distribution box connection)	Connected to the standard or optional power distribution box of the main unit (PRIMEQUEST 520A/520/420).

Note: Use the supplied accessory AC cable to connect the main unit. Do not use the accessory AC cable for other products.

2.4.3 Cables between the power distribution box and power distribution panel

Table 2.5 lists the specifications of the AC cables between the power distribution box and the power distribution panel.

Table 2.5 Specifications of the AC cables between the power distribution box and power distribution panel

Destination	AC cable specification	Plug type	Remarks
Japan	-	Two-prong twist-lock plug with grounding electrode (250V30A) [NEMA standard name: L6-30P]	Prepare the following power-receiving outlets: Outlet for two-prong twist-lock plug with grounding electrode (250V30A) [NEMA standard name: L6-30R] Embedded type: 3320-L6 (American Denki) Exposed type: 3321-L6 (American Denki)
Outside Japan	-	NEMA L6-30P	NEMA L6-30R (North America only) 30A, 220 VAC

Note: Use the supplied accessory AC cable to connect the main unit.
Do not use the accessory AC cable for other products.

2.5 AC Cable Connection under a Free-Access Floor (Only for Use inside Japan and General Use outside Japan)

If AC cables are connected to the power distribution box (or main unit, PCI_Box) under a free-access floor, Fujitsu recommends that the underfloor height be 300 mm (11.8 in.) or more in consideration of the shape of the AC cable connector, cable bending radius (see Figure 2.17 (1)).

However, if the underfloor height is less than 300 mm (11.8 in.), place outlets sideways (see Figure 2.17 (2)).

Prepare an outlet near the unit.

Remark 1: This drawing shows the Fujitsu 19-inch global rack with the main unit as an example.

Remark 2: Values in ( ) are in inches.

Figure 2.17 AC cable connection under a free-access floor (only for use inside Japan and general use outside Japan)

2.6 Circuit Breaker Characteristics

This section describes the circuit breaker characteristics.

(1) For customers in Japan

Table 2.6 lists the requirements for the circuit breakers. Figure 2.18 shows the characteristics of the circuit breakers.

Table 2.6 Requirements for circuit breakers in customers' distribution panels installed in Japan

Main unit (PRIMEQUEST 520A/520/420 base cabinet) Extended power cabinet	PCI_Box
The breaking capacity must be 30 A or greater. The tripping time must be equal to or slower than the characteristics shown in Figure 2.18.	The breaking capacity must be 20 A or greater. The tripping time must be equal to or slower than the characteristics shown in Figure 2.18.

IMPORTANT

- If breakers other than those specified above are used, they may be tripped at the occurrence of a device-internal short circuit, which in turn may cause the entire device to shut down. This may occur even if a PSU is present that provides a redundant configuration.

Figure 2.18 Characteristics of circuit breakers in customers' distribution panels installed in Japan

(2) For customers outside Japan

Table 2.7 lists the requirements for the circuit breakers. Figure 2.19 shows the characteristics of such circuit breakers.

Table 2.7 Requirements for circuit breakers in customers' distribution panels installed outside Japan

Main unit (PRIMEQUEST 520A/520/420 base cabinet) Extended power cabinet	PCI_Box
The breaking capacity must be 32 A or greater. The tripping time must be equal to or slower than the "D" characteristics (IEC898 or DIN0641 Part II) shown in Figure 2.19.	The breaking capacity must be 16 A or greater. The tripping time must be equal to or slower than "C" or "D" characteristics (IEC898 or DIN 0641 Part II) shown in Figure 2.19.

Figure 2.19 Characteristics of circuit breakers in customers' distribution panels installed outside Japan

CHAPTER 3 Precautions Pertaining to Delivery and Installation

This chapter contains precautions regarding delivery and installation of the equipment.

3.1 Elevator Load Requirements

The equipment is wider than a typical server system. To load this equipment on an elevator, you may need to remove side panels and/or doors. Before loading equipment mounted in an expansion rack onto an elevator, see the elevator load requirements listed in Table 3.1. In this table, dimensions are stated in units of mm (in), and weight is stated in units of kg (lb).

Table 3.1 Elevator load requirements

Elevator code	Load	Inside dimensions of cage			Effective doorway dimensions		Rack MC-R7RC11/21 MC-R8RC11/21
		Width	Depth	Height	Width	Height	
P-6-C0	400 (880)	1150 (45)	900 (35)	2300 (91)	800 (31)	2100 (83)	N
P-9-C0	600 (1320)	1400 (55)	1100 (43)	2300 (91)	800 (31)	2100 (83)	N
P-11-C0	750 (1650)	1400 (55)	1350 (53)	2300 (91)	800 (31)	2100 (83)	Y
P-13-C0	900 (1980)	1600 (63)	1350 (53)	2300 (91)	900 (35)	2100 (83)	Y
P-15-C0	1000 (2200)	1600 (63) 1800 (71)	1500 (59) 1300 (51)	2300 (91)	900 (35) 1000 (39)	2100 (83)	Y
P-17-C0	1150 (2530)	1800 (71) 2000 (79)	1500 (59) 1350 (53)	2300 (91)	1000 (39) 1100 (43)	2100 (83)	Y
P-20-C0	1350 (2970)	1800 (71) 2000 (79)	1700 (67) 1500 (59)	2300 (91)	1000 (39) 1100 (43)	2100 (83)	Y
P-24-C0	1600 (3520)	2000 (79) 2150 (85)	1750 (69) 1600 (63)	2300 (91)	1100 (43)	2100 (83)	Y

Y: The equipment can be loaded.

N: The equipment cannot be loaded.

3.2 Earthquake Preparedness Measures

Earthquake preparedness measures are intended to prevent computers from falling over, to ensure the safety of operators, to prevent damage, and to enable the quick recovery of systems. Fujitsu has standardized the following techniques to prevent damage to computer systems resulting from an earthquake.

- Securing techniques: Techniques that secure the equipment in place prevent toppling by providing resistance to the force of an earthquake.

The extent to which this technique is required depends upon the following factors:

- Floor vibration levels at the location where the equipment is installed
- Whether or not a free-access floor is being used
- Structure of the equipment

When selecting construction techniques for earthquake-preparedness measures and before starting construction work, contact Fujitsu's construction department.

Appendix A Racks

This appendix provides reference material for expansion racks in which the PRIMEQUEST 520A/520/420, PCI_Box, and the power distribution box are mounted.

A.1 Rack Mounting

The PRIMEQUEST 520A/520/420 (including peripherals) has been developed, and its operation guaranteed based on an assumption that it is mounted in the 19-inch global rack manufactured by Fujitsu. For safe operation of this equipment mounted in a Fujitsu 19-inch global rack, the conditions specified in Appendix A.1.1, "Conditions for mounting in Fujitsu 19-inch global racks," must be satisfied.

If the PRIMEQUEST 520A/520/420 is mounted not in a Fujitsu 19-inch global rack but in another type of rack such as a rack manufactured by another company, validation (verification of cooling in the rack and the rack strength) cannot be performed and operation cannot be guaranteed. In such cases, this verification is entirely the customer's responsibility.

If another company's rack must be used, refer to Appendix A.1.2, "Conditions for mounting in another company's rack," and consider appropriate racks.

A.1.1 Conditions for mounting in Fujitsu 19-inch global racks

This section describes the conditions for unit mounting in the 19-inch global racks manufactured by Fujitsu.

Two types of Fujitsu 19-inch global rack are available: one type has a stabilizer for preventing the rack from toppling, and the other type does not have it (the rack is designed to be secured to the floor). Order the appropriate type according to (4), "Selecting the rack type."

(1) Rack stability

To maintain the PRIMEQUEST 520A/520/420 or add an optional unit to the system, the PRIMEQUEST 520A/520/420 unit must be pulled out from the front of the rack. Appropriate measures such as securing the rack to the floor must be taken to prevent the rack from toppling when the PRIMEQUEST 520A/520/420 unit is pulled out. There are two methods for preventing the rack from toppling. If the number of mounted units is not more than the recommended number of mounted units as indicated in Table A.1 and the mounting height not higher than the recommended mounting height indicated in the same table, use the first method. Otherwise, use the second method.

Table A.1 Recommended number of units to be mounted in racks

Rack	Recommended number of units to be mounted	Remarks
PRIMEQUEST 520A/ 520/420	1	Mounting height is 24U or lower.

The following explains these rack-fixing methods.

a) Up to the recommended number of units is mounted and the mounting height is 24U or lower.

In principle, the recommended method of securing the rack to the floor is the same as that used if more than the recommended number of units is mounted or the mounting height is higher than 24U.

However, if the rack cannot be secured to the floor, mount a pull-out stabilizer supplied with the main unit (see Figure A.1).

To perform maintenance work or add an optional unit, pull out the pull-out stabilizer forward before pulling out the PRIMEQUEST 520A/520/420 unit, as shown in Figure A.1.

Note: A rack without the stabilizer must always be secured to the floor even if the number of mounted units in the rack is less than the recommended number or the mounting height is lower than the recommended height of 24U.

Figure A.1 Pull-out stabilizer

b) More than the recommended number of units is mounted or the mounting height is higher than 24U.

Secure the rack in one of the following ways:

Note that because all rack-securing methods will require some construction work, a specialist will need to be consulted.

- Securing the rack with bolt stabilizers
  Affix bolt stabilizers (*1) to the front and back and sides of the rack and anchor the stabilizers to the building structure (floor).

  *1: The bolt stabilizers comprise an optional product. The following kit needs to be purchased:
  Earthquake proofing kit: MC-R1ST11 (Kit for the Fujitsu 19-inch global/basic rack.)
  MC-R1ST21 (Kit for the Fujitsu 19-inch global/expansion rack.)
  Note that the pull-out stabilizer supplied as standard is not required if the earthquake proofing kit (MC-R1ST11) is to be used. Note also that the standard pull-out stabilizer and the earthquake proofing kit (MC-R1ST11) cannot be used jointly. In cases where the pull-out stabilizer is not used, store it in a safe place in case the racks are moved in the feature.

Figure A.2 Securing the rack with bolt stabilizers

- Securing the rack with leveling feet
  Use the threaded holes at the bottom of the rack leveling feet to anchor the leveling feet to the building structure (floor) (See Figure A.3). The rack leveling feet that are already built into the rack structure can be anchored with M20 bolts.

Note: The pull-out stabilizer supplied as standard is not required if the rack is secured with leveling feet. However, in consideration of the possibility that the racks will be moved in the future, Fujitsu recommends jointly using the standard pull-out stabilizers. In cases where the pull-out stabilizer is not used, store it in a safe place in case the racks are moved in the feature.

Figure A.3 Securing a rack with leveling feet

(2) Cable route inside the rack

The PRIMEQUEST 520A/520/420 is equipped with a cable management system as standard equipment designed for mounting in a Fujitsu 19-inch global rack. By controlling cable slack with the cable management system, the PRIMEQUEST 520A/520/420 unit can easily be pulled out from the rack while cables remain connected.

Cables as long as about two meters (6.6 ft.) are required for use of the cable management system. Consider this length when determining the length of each interface cable.

Figure A.4 Cable route

(3) Other conditions

The Fujitsu 19-inch global rack comes with blank panels for covering the front of unused space where no unit is mounted. If warm exhaust air from the PRIMEQUEST 520A/520/420 unit flows to the front and reenters the unit, it may trigger a temperature alarm and cause a problem.

Be sure to cover the front of unused space by mounting the blank panels.

(4) Selecting the rack type

The methods of selecting and installing Fujitsu 19-inch global racks are explained below.

1 Consider the requirements concerning the earthquake-resistance level and building conditions, and determine whether to secure the rack to the floor when installing it.

- If earthquake preparedness measures do not include securing the rack to the floor
  In this method, the installed rack can withstand an acceleration force of up to 20 gal in a general-use building during an earthquake.
  The stabilizer mounted to the rack is used to prevent the rack from toppling, such as during maintenance of mounted units.
- If earthquake preparedness measures include securing the rack to the floor
  In this method, the installed rack can withstand an acceleration force of up to 1000 gal in a general-use building during an earthquake.
  The rack is secured to the floor to prevent the rack from toppling, such as during maintenance of mounted units.

2 Select the rack type.

To install the rack without taking earthquake preparedness measures: Select a rack with the stabilizer -> Go to step 5.

To install the rack with earthquake preparedness measures taken: Select a rack without the stabilizer -> Go to step 3.

Note: Even if the building and floor where the rack will be installed are equipped with functionality for earthquake preparedness, the rack requires a mechanism for preventing it from toppling, such as during maintenance of mounted units. Unless the rack will be secured to the floor, be sure to select a rack with the stabilizer regardless of the building conditions.

3 If the rack will be secured to the floor, confirm the method of securing it.

If the earthquake proofing kit is used to secure the rack to the floor -> Go to step 4.

If the leveling feet are used to secure the rack to the floor -> Go to step 5.

Note 1: The only two methods that can be selected as the method of securing the rack are using the leveling feet to secure it or using the earthquake proofing kit to secure it. Select the appropriate method with consideration of the condition at the installation site, such as with regards to the construction of the floor.

Note 2: No operation can be performed on a rack without the stabilizer until the rack is secured to the floor. The rack must be secured to the floor to prevent it from toppling, such as during maintenance of mounted units.

4 To use the earthquake proofing kit to secure the rack, an optional earthquake proofing kit is required. The appropriate kits must be selected and prepared separately for basic racks and expansion racks.

5 Issue a construction order for installation.

Table A.2 Rack installation flow

1. Considering requirements for securing a rack with earthquake preparedness measures taken	2. Selecting a rack	3. Selecting a method of securing the rack	4. Preparing the required options
Rack not secured to the floor	Rack with the stabilizer • MC-R7RC11 (40U basic) • MC-R7RC21 (40U expansion) • MC-R8RC11 (36U basic) • MC-R8RC21 (36U expansion)	- (*1),(*2)	None
Rack secured to the floor	Rack without the stabilizer • MC-R7RC12 (40U basic) • MC-R7RC22 (40U expansion) • MC-R8RC12 (36U basic) • MC-R8RC22 (36U expansion)	Method of securing it with the earthquake proofing kit	Earthquake proofing kit (*3),(*4) MC-R1ST11 (for a basic rack) MC-R1ST21 (for an expansion tack)
		Method of securing it with leveling feet	None (*3)

*1 The leveling feet can be used to secure the rack to the floor, even if the stabilizer remains mounted on the rack. The stabilizer is not functionally required.

*2 The rack with the stabilizer can be secured with the earthquake proofing kit to the floor, though the following restriction applies:
The earthquake proofing kit and stabilizer cannot both be mounted on the rack. The stabilizer must be removed before the earthquake proofing kit is mounted.

*3 The construction personnel are responsible for preparing the bolts used to secure the rack to the floor.

*4 One type of earthquake proofing kit is available for basic racks, and another type is available for expansion racks:

- MC-R1ST11 (for a basic rack): Front part x 1, rear part x 1, side part x 2, and a set of bolts for securing the rack
- MC-R1ST21 (for an expansion rack): Front part x 1, rear part x 1, and a set of bolts for securing the rack

If the earthquake proofing kit for a basic rack is purchased for an expansion rack, the parts that are mounted on the sides of the rack are extra.

If the earthquake proofing kit for an expansion rack is purchased for a basic rack, the parts that are mounted on the sides of the rack are required. No operation can be performed on the rack until these parts are mounted.

A.1.2 Conditions for mounting in another company's rack

The PRIMEQUEST 520A/520/420 (including peripherals) has been developed, and its operation guaranteed based on an assumption that it is mounted in the 19-inch global rack manufactured by Fujitsu. If the PRIMEQUEST 520A/520/420 is mounted not in a Fujitsu 19-inch global rack but in another type of rack such as a rack manufactured by another company, validation (verification of cooling in the rack and the rack strength) cannot be performed and operation cannot be guaranteed. In such cases, this verification is entirely the customer's responsibility.

Note: If a problem arises because the PRIMEQUEST 520A/520/420 (including peripherals) is mounted in another company's rack, Fujitsu does not guarantee system operation.

Examples: Cooling problem caused by an inadequate cool air supply due to the rack structure, or earthquake-proofing problem due to the insufficient strength of another company's rack

If another company's rack must be used, confirm that the rack under consideration satisfies the following structural conditions:

Note: The rack mounting kit that is supplied with the PRIMEQUEST 520A/520/420 can be used only for mounting in the 19-inch global rack manufactured by Fujitsu.
To mount the PRIMEQUEST 520A/520/420 in another type of rack, the rail mounting bracket must be mounted on the left rear column of the rack. To do so, prepare the following screws and washers:
Screw set CA-06503-K901
(Components: Flat head machine screw (M5x16) x3, WASHER x3)

Figure A.5 Assembling the rack mounting kit

(1) Rack stability conditions

To maintain the PRIMEQUEST 520A/520/420 or add an optional unit to the system, the PRIMEQUEST 520A/520/420 unit must be pulled out from the front of the rack. Appropriate measures, such as securing the rack to the floor, must be taken to prevent the rack from toppling when PRIMEQUEST 520A/520/420 unit is pulled out.

(2) Rack depth conditions

The PRIMEQUEST 520A/520/420 unit is mounted with slide rails (which come with the PRIMEQUEST 520A/520/420) in a rack. Therefore, the rack must satisfy the conditions specified below as follows: (1) rack depth measured as the distance between the front and rear columns; (2) distance between the inside surface of the front rack cover and the front face of the front columns; and (3) distance between the front face of the front columns and the inside surface of the rear rack cover.

Note: To perform maintenance work from one of the sides, the front cover may need to be removed or other measures may need to be taken, depending on the thickness of the front cover or the angle of the cover when open.

Figure A.6 Rack depth conditions

(3) Rack column requirements

(Rack column holes)

A: Unit front panel mounting space:
483 mm (19.0 in.) or more

B: Distance between right and left unit mounting holes (common to front and rear columns):
465 mm (18.3 in.)

C: Distance between right and left columns (common to front and rear columns):
450 mm (17.7 in.) or more

D: EIA standard, universal pitch

E: Side dimension of each square hole:
9 to 9.5 mm (0.354 to 0.374 in.)

Figure A.7 Rack column requirements

(4) Cable route inside the rack

To maintain the PRIMEQUEST 520A/520/420 or add an optional unit to the system, the PRIMEQUEST 520A/520/420 unit must be pulled out from the front of the rack. If this equipment is mounted in a rack manufactured by another company, the cable management mechanism cannot be used in the rack. Therefore, there would be no supported capability for pulling out the mounted PRIMEQUEST 520A/520/420 unit while cables remain connected. In this case, turn off the unit power before disconnecting cables and pulling out the unit.

(5) Other conditions

In addition to structural conditions, the following conditions must be taken into consideration:

- Equipment cooling when mounted in a rack
  Once the rack has been installed, make sure that the temperature inside the rack satisfies the conditions specified in Section 1.3, "Installation Specifications."
  Particularly, make sure that exhaust air from the PRIMEQUEST 520A/520/420 unit does not reenter the air intake on the side of the unit, by taking measures such as covering the front of empty space in the rack.
- Reserving a work area (service area) for maintenance
  Reserve a service area for maintenance work by a Fujitsu certified service engineer.
  Referring to the description of the service area for Fujitsu racks in Section 1.4, "Equipment Floor Plan," and the installation manual for the rack used, determine the appropriate service area.

A.2 Fujitsu 19-inch Global Racks

This section describes the types, appearance, and bottom plan views of 19-inch global racks manufactured by Fujitsu.

A.2.1 Types of 19-inch global rack

Table A.3 lists the expansion racks in which the PRIMEQUEST 520A/520/420 (12U), PCI_Box (4U), and the power distribution box (1U) can be mounted.

Table A.3 Types of 19-inch global rack

No.	Model	Product name	Rack size [mm (in.)]			Weight [kg (lb.)]			Remarks
			Width	Depth (*1)	Height	Total load (*2)	Rack alone (*3)	Total rack weight	
1	MC-R7RC11	19-inch global/40U basic rack (with pull-out stabilizer)	700 (27.5)	1050 (41.3)	2000 (78.8)	800 (1760)	200 (440) (*3)	1000 (2200)	With side panels
2	MC-R7RC21	19-inch global/40U expansion rack (with pull-out stabilizer)	691 (27.2)	1050 (41.3)	2000 (78.8)	800 (1760)	165 (363) (*3)	965 (2123)	Without side panels
3	MC-R8RC11	19-inch global/36U basic rack (with pull-out stabilizer)	700 (27.5)	1050 (41.3)	1800 (70.8)	720 (1584)	180 (396) (*3)	900 (1980)	With side panels
4	MC-R8RC21	19-inch global/36U expansion rack (with pull-out stabilizer)	691 (27.2)	1050 (41.3)	1800 (70.8)	720 (1584)	155 (341) (*3)	875 (1925)	Without side panels
5	MC-R7RC12	19-inch global/40U basic rack (without pull-out stabilizer)	700 (27.5)	1050 (41.3)	2000 (78.8)	800 (1760)	175 (385)	1000 (2200)	With side panels
6	MC-R7RC22	19-inch global/40U expansion rack (without pull-out stabilizer)	691 (27.2)	1050 (41.3)	2000 (78.8)	800 (1760)	140 (308)	965 (2123)	Without side panels
7	MC-R8RC12	19-inch global/36U basic rack (without pull-out stabilizer)	700 (27.5)	1050 (41.3)	1800 (70.8)	720 (1584)	155 (341)	900 (1980)	With side panels
8	MC-R8RC22	19-inch global/36U expansion rack (without pull-out stabilizer)	691 (27.2)	1050 (41.3)	1800 (70.8)	720 (1584)	130 (286)	875 (1925)	Without side panels

*1 The depth does not include protrusions. The depth including the protruding sections of the front door is 1075 (42.3).

*2 Shows total load allowed within a rack (does not include the rack weight).

*3 The weight of the rack includes the stabilizer for preventing falling over.

Remarks: The expansion rack (MC-R7RC21) is used for connection with the basic rack (MC-R7RC11). It is possible to connect expansion racks (MC-R7RC21) together.
The expansion rack (MC-R8RC21) is used for connection with the basic rack (MC-R8RC11). It is possible to connect expansion racks (MC-R8RC21) together.

A.2.2 Views of the 19-inch global racks

This section provides views of the expansion racks.

- Views of the 19-inch global/40U rack (basic: MC-R7RC11, expansion: MC-R7RC21/MC-R7RC12) (Figure A.8)
- Views of the 19-inch global/40U rack (expansion: MV-R7RC21-MC-R7RC21) (Figure A.9)
- Views of the 19-inch global/36U rack (basic: MC-R8RC11, expansion: MC-R8RC21/MC-R8RC12) (Figure A.10)
- Views of 19-inch global/36U rack (expansion: MC-R8RC21/MC-R8RC22) (Figure A.11)

Figure A.8 Views of the 19-inch global/40U rack
(basic: MC-R7RC11, expansion: MC-R7RC21/MC-R7RC12)

Rack without the stabilizer (MC-R7RC21)

Unit: mm (in.)

Remarks: The expansion rack is a basic rack without a side panel.

Figure A.9 Views of the 19-inch global/40U rack (expansion: MV-R7RC21-MC-R7RC21)

Figure A.10 Views of the 19-inch global/36U rack
(basic: MC-R8RC11, expansion: MC-R8RC21/MC-R8RC12)

Rack without the stabilizer (MC-R8RC22)

Unit: mm (in.)

Remarks: The expansion rack is a basic rack without a side panel.

Figure A.11 Views of 19-inch global/36U rack (expansion: MC-R8RC21/MC-R8RC22)

A.2.3 Detailed bottom view of 19-inch global racks

This section provides detailed views of the bottoms of the 19-inch global racks.

- Detailed view of 19-inch global rack bottom (with basic stabilizer) (MC-R7RC11 or MC-R8RC11) (Figure A.12)
- Detailed view of 19-inch global rack bottom (without basic stabilizer) (MC-R7RC11 or MC-R8RC11) (Figure A.13)
- Detailed view of 19-inch global rack bottom after connection (Figure A.14)
- Detailed view of the 19-inch global rack bottom after connection (with the stabilizer mounted) (Figure A.15)

[Legends]

Unit: mm (in.)

: Cable port on equipment

: Caster

: Leveling foot
The leveling foot contains
a hole (size M20 and 17 mm deep) in the
center and is used to secure the rack.

: Hole for secur ing stabilizer to the floor

Figure A.12 Detailed view of 19-inch global rack bottom (with basic stabilizer) (MC-R7RC11 or MC-R8RC11)

[Legends]

Unit: mm (in.)

: Cable port on equipment

: Caster

: Leveling foot
The leveling foot contains
a hole (size M20 and 17 mm deep) in the
center and is used to secure the rack.

: Hole for secur ing stabilizer to the floor

: Optional stabilizer
MC-R1ST11

Figure A.13 Detailed view of 19-inch global rack bottom (without basic stabilizer) (MC-R7RC11 or MC-R8RC11)

Figure A.14 Detailed view of 19-inch global rack bottom after connection

Figure A.15 Detailed view of the 19-inch global rack bottom after connection (with the stabilizer mounted)

Acronyms & Abbreviations

A

ACS	AC Section

C

CB	Circuit Breaker
CPU	Central Processing Unit

F

FC	Fibre Channel

I

IEC	International Electrotechnical Commission

L

LAN	Local Area Network

P

PCI	Peripheral Component Interconnect
PSU	Power Supply Unit (AC to DC)

S

SB	System Board
SCSI	Small Computer System Interface

U

UPS	Uninterruptible Power Supply
UTP	Unshielded Twisted Pair

V

VHDCI	Very High Density Cable Interconnect

W

WAN	Wide Area Network

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