

PRIMECENTER

19-inch rack system

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Pages 4

19-inch rack technology for all Fujitsu Siemens rack components (PRIMERGY, PRIMEPOWER, storage products, BS2000) based on the 19-inch rack industry standard

As 19-inch rack technology becomes increasingly widespread, new requirements are being placed on flexibility and configuration options. PRIMECENTER racks are the basis for constructing rack configurations with all Fujitsu Siemens products, such as servers, operating devices and storage systems. Based on the industry standards DIN 41949 and IEC 297, PRIMECENTER racks can also accommodate other products on the market that comply with these standards. The racks can easily be expanded both horizontally and vertically and integrate into existing DP environments. In particular, the stacking concept of this rack family offers new flexibility in creating configurations with variable height units.

The PRIMECENTER rack versions range from a small 12U system for office environments, to a 46U rack, or even a stacked 50U rack for data centers. Two versions with different depths of 940 and 1000 mm can also be constructed.

The PRIMECENTER racks offer highly optimized cable management, passive ventilation with a large throughput for current and future IT products with high heat dissipation, as well as large vertical expandability with additional mounting locations for 19-inch devices. An essential design principle is to ensure ease of service-ability and maintenance of the installed components.

Design:	Asymmetrical for ideal cable routing and ventilation
Capacity:	12 to 50 height units plus 1x2 to 3x2 height units vertically (up to 300 mm including cable space)
Shipment:	Fully mounted, including cables and final-tested ex works
Cable management:	Optimized cable routing for short cable lengths, with variable cable inlet from outside
Service:	Complete extraction thanks to telescopic rails for servers with hot-replace components. Doors can be tool less unhinged. Modules also can mount on sliding rails.
Access protection:	Lockable doors, front and rear. Side and top panels bolted.
Dimensions: (H x W x D)	670 x 700 x 1000 mm = 12U 1220 x 700 x 940/1000mm = 24U 1825 x 700 x 940/1000mm = 38U 2220 x 700 x 940/1000mm = 46U



All PRIMERGY / PRIMEPOWER servers (apart from the PRIMERGY Econel servers) are available as rack versions; the rack servers in particular were designed for integration in racks. They require different amounts of space (height units) within the rack. There are no restrictions on mixing rack devices. In addition to the servers, there are also the PRIMERGY SX10/PRIMEPOWER BG57 and SX30 storage subsystems, as well as various console switches, UPSs, modems, etc. for mounting. Additional options especially developed for rack installation include a console drawer (1HU) with foldaway TFT monitor, touchpad and keyboard and a special rack keyboard.

As an end-to-end rack concept, the PRIMECENTER rack also accommodates all other Fujitsu Siemens components, such as PRIMEPOWER and Fujitsu Siemens storage systems. Its compliance with standards means that competitors' products or products from third-party vendors, such as electric door locks, smoke and water level detectors, and power supply components, can be installed.

The asymmetrical structure of the PRIMECENTER racks permits the use of Fujitsu Siemens' patented cable management concept for short cable lengths. Thanks to new cable conduits and an expanded management concept, all cables are routed in an orderly, service-friendly manner. This, in conjunction with the telescopic rails, means that servers can be removed from the rack during online operation. This permits maintenance and repair to be carried out as part of the high-availability functions of the servers (e.g. hot-plug hard disks, hot-plug fans).

Several rack servers can be operated simultaneously via an electronic switch using just one monitor and one keyboard. Improved access control based on lockable doors ensures complete protection of the installed modules against tampering.

Stacking and expansion concept

The new PRIMECENTER racks are available in the gradations 12, 24, 38 and 46 height units. The 12, 24 and 38U versions are stackable. Thus, racks with up to 50 height units can be created, ranging from a small rack for office environments to large full-size racks for data centers. This wide choice of configuration options allows users not only to select the rack system that is ideal for them, but also to adapt their rack systems to cope with subsequent growth – without the need to invest in unnecessary rack space from the outset. In addition, the PRIMECENTER racks can be placed in a row next to each other, even if they are fully equipped. The side panels remain on the rack to permit uniform ventilation, and internal cabling of the cabinets with each other is ensured. The side panels are locked from the inside and remain accessible even when the racks are fully equipped.

PRIMERGY/PRIMEPOWER rack server slide-in modules

As well as the rack versions of the familiar, proven PRIMEPOWER servers already in use in many installations, there are also special rack-mount-only servers available (rack servers). These combine high computing power with minimal space requirements, since larger magnetic disk capacities can be addressed by using additional peripheral modules.

Rack system with horizontal ventilation

The PRIMECENTER rack is ventilated from the front to the rear. A fully configured system in normal air-conditioned rooms can be operated at temperatures up to 35°C. The volume of air required to cool the rack modules is supplied via the integral horizontal ventilation system. The high percentage of air inlet and outlet area in the two doors of the rack ensures minimal restriction of the airstream. The rack conforms to protection class IP00 (i.e. without any special protection against dust or jet water; IP = International Protection). The special front door design, which consists to more than 60% of holes, ensures uniform and constant ventilation.

Hard disk expansion / upgrades

The system's storage capacity can be expanded by 14 x 3.5" hard disks (1" high) by means of the PRIMERGY SX30 storage subsystem. 3 height units are required for this. SCSI or FC hard disk nodes (DN=Disk Nodes) and FibreCat RAID subsystems can also be used to upgrade and expand the storage capacities of the systems. These components take up varying numbers of units in the rack. The hot-plug functionality of the hard disks and power supply modules, and their integration into the server management concept, also contribute toward the high availability and fault tolerance of the overall system.

Extension for tape drives

The PRIMERGY SX10/PRIMEPOWER BG57 storage subsystem extends the capacity for tape drives within a rack. The three height units of the PRIMERGY SX10/PRIMEPOWER BG57 provide two 3.2" or four 1.6" locations for mounting backup media, such as LTO Ultrium, LTO2, DDSgen.5, VXA or autoloader drives.

Automatic console switching

An automatic console switch enables multiple server slide-in modules to be administered with the aid of a single monitor and a keyboard with integrated touch pad. Two variants with 4, 8 and 16 channels are offered. Switching over is carried out by means of hotkeys or the OSD (on-screen display) function. There is also a digital KVM switch, with which a rack system can be integrated in a LAN and administered worldwide. A Remote Communication Adapter (RCA) and a rack-mountable LAN console are also available for PRIMEPOWER servers. This enables up to 64 servers, at the same or multiple locations, to be maintained and administered locally or remotely from a single console.

UPS systems

The availability of the system can be increased through the use of optional UPS (UPS = uninterruptible power supply) modules. These provide the system with effective protection against power outages and fluctuations in the line voltage. Depending on the configuration within the rack, a number of systems can be protected by a single UPS. APC modules rated at 1400 VA, 3000 VA and 5000 VA and online UPS rated 3 / 5 KVA and 7.5 / 10 KVA are currently available. All UPS modules are equipped with an SNMP interface (signal line). All the parameters and operating states of the installed UPS modules can thus be set and interrogated by the server management tool. A power failure can be automatically reported to every connected server by means of traps. The spherical feet permit the casters to be transported internally and allow minor adjustment of the full racks in the datacenter. The height of the racks can also be adjusted using the locking devices.

Ease of serviceability and maintenance

The rack servers and expansion modules are mounted on telescopic/sliding rails and can be withdrawn toward the front. This facilitates maintenance and upgrade operations by allowing technicians easy access to all the components in the slide-in module upon removal of the upper/side covers. The new cable management concept also plays its part in this by allowing reliable and orderly routing of cables. Hot-plug hard disks and hot-plug power supply modules can be exchanged online even more easily. The doors can be optionally mounted to open to the left or right and can easily be unhinged and replaced again by a single person. A U scale on which the height units are numbered and marked facilitates the installation and retrofitting of components.

PRIMEPOWER ServerView Suite

With the FSC administration tool PRIMEPOWER ServerView Suite(formerly WSA), the position of the server or disk node in the rack is also displayed. This provides a greatly improved overview for administration and diagnostic tasks.

Fujitsu Siemens System Architect

The System Architect, a configuration tool with a graphical user interface, can be used to obtain an early overview of the desired configuration at the planning stage. The tool runs a simultaneous consistency check to ensure the completeness and functionality of the desired system. Once the required configuration has been created, the System Builder also provides further information concerning the appropriate installation requirements (such as power connection rating, heat dissipation, weight and the requisite footprint, as well as the maximum floor loading at the installation site). A conflict is created when the weight of a configuration exceeds 1000 kg, and a warning is given (as of System Architect 6.6) when the weight exceeds 250 kg.

Transport

Racks with installed servers may not be tilted. Please check requirements regarding transport to end user for 46U racks and delivery weight (rack and installed servers) in excess of 250 kg.

Security

The rack is suitable for installation and operation of rack management systems such as RMS from Knürr or CMC from Rittal. The rack management systems are currently being adapted to the SICRYPT software pack-age.

After being fitted with an earthquake kit, the 38U PRIMECENTER rack complies with Belcore Zone 4 Level and has passed the corresponding earthquake test. This earthquake kit does not restrict the availability of horizontal height units.

Each rack has a power connection complying with European standards. There are at least two multiple socket outlets distributions and two power connections for configuration. Due to the high leakage current of a fully fitted rack, CEE connectors are used. Connection kits for single-phase and three-phase supply are available, as is a three-phase non-detachable connection.

Reliable grounding in the rack is ensured by the use of IEC60309 connectors. The power supply components are ideal for these applications and the design of the power supply ensures reliable and permanent grounding. IEC320 connectors are used inside the rack. If grounding in a power supply cable is interrupted, the leakage current remains limited to <3.5 mA.

Extensions, options

<p>Installation kits Please refer to the relevant configurator for installation kits for PRIMERGY, PRIMEPOWER, storage servers and subsystems</p>
<p>Dummy panels 1U, 2U, 3U and 5U dummy covers</p>
<p>Monitor and keyboards RC23 rack console, 15" TFT monitor incl. keyboard with an integrated touchpad (1U), monitor installation set (11U) for 17" and 19" TFT monitor, keyboard module (1U) including keyboard</p>
<p>Console switches KVM S2 1611 (1U) digital KVM S2 1602 (1U) KVM S2 0801 (1U)</p>
<p>Uninterruptible power supply (UPS) APC UPS rated at 1500 VA (2U) APC UPS rated at 3000 VA (2U) APC UPS rated at 5000 VA (5U) Online UPS: APC Online UPS rated 3000 / 5000 VA (3U) APC Online UPS rated 7500 / 10000 VA (6U) Masterguard Online UPS rated 3000 VA (2 HU) + Battery (2 HU) Masterguard Online UPS rated 6000 VA (3 HU) + Battery (3 HU)</p>
<p>Tape drives (excerpt) SDLT (PRIMERGY) DLT library DDSgen.5 VXA LTO Ultrium (HH) / LTO2 Ultrium (FH) Integration in or with PRIMERGY SX10/ PRIMEPOWER BG57; 4 x 1.6" or 2 x 3.2" backup drives</p>
<p>Sockets and cables</p> <ul style="list-style-type: none"> ■ Multiple socket outlet, 3 x 4 IEC320-C13 and 3 x 1 earth contact type sockets, 3-phase power cable with 16A CEE plug (3-phase) ■ Multiple socket outlet, 10 x IEC 320-C13 sockets with a 4m cable and 16A CEE plug (1-phase) ■ 10 x IEC 320-C13, 16A for connection to UPS ■ Multiple socket outlet, 8x IEC 320-C13 sockets each 2-way with 10A protected, with a 4-m connection cable and a single-phase 32A CEE plug ■ Multiple socket outlet 10x IEC 320-C13 socket with a single-phase 16A IEC320 plug, for UPS connection ■ Power socket strip, 3x Schuko with 16A IEC320 plug
<p>Modem External modem 56 kbps (V.90), HAYES-compatible ISDN-Modem, digital (for Teleservice) PRIMEPOWER</p>

Technical data

<p>Dimensions (1U = 44.45 mm, H x W x D)</p>	<ul style="list-style-type: none"> • 12U rack 670 x 700 x 1000 mm Transport dimensions: 790 x 775 x 1180 mm • 24U rack 1220 x 700 x 1000 mm Transport dimensions: 1345 x 775 x 1180 mm • 38U rack 1825 x 700 x 1000 mm Transport dimensions: 1935 x 775 x 1180 mm • 46U rack 2220 x 700 x 1000 mm Transport dimensions: 2335 x 775 x 1180 mm
<p>Variants</p>	<ul style="list-style-type: none"> • Rack with 2 side panels
<p>Electrical connection</p> <p>Connection is possible via a UPS. In this case, all the components can be connected directly to the UPS. The UPS must be connected to the primary power supply in accordance with the data sheet for the UPS in question. If the components are connected without a UPS, a multiple socket outlet with 3 x 4 connectors and 3 x 1 earth contact type sockets can be optionally configured in the rack. All multiple socket outlets must be ordered separately. Please consult the configurator for information on configuration. The primary power supply is provided via a 16 A CEE three-phase connector or as a non-detachable connection.</p> <p>Rated voltage range 200 – 240 V Nominal frequency 50 – 60 Hz</p>	
<p>Ambient conditions (EN60721)</p> <p>Transport:</p> <p>Ambient temperature -25°C to 60°C Relative humidity 15% – 98%</p> <p>Mechanical environmental conditions:</p> <p>Operation: Class 3K3*, 3M2, 3S2 Transport: Class 2K2, 2M2, 2M1 * Possibly restricted by rack components</p>	
<p>Maximum load</p> <p>10,000 N stationary on castors/leveling feet 10,000 N dynamically (only on castors)</p>	

<p>Weight</p> <p>12U rack (empty) 82 kg 24U rack (empty) 110 kg 38U rack (empty) 150 kg 46U rack (empty) 168 kg</p>	
<p>Permitted total weight: 10,000 N / 1,000 kg</p>	
<p>19" clearance: 450.5 mm +1 mm/-0 mm</p>	
<p>Internal depth: Front/rear 19" level: 740 mm Minimum distance between the front 19" level and door: 60 mm</p>	
<p>19" prop mounting distance: 9.5 mm²</p>	
<p>Security functions Lockable front and rear door, locked side panels and top, plus anti-tilt protection</p>	
<p>Protection class (to DIN 40050 or IEC 529) IP00</p>	

<p>Compliance with standards</p>	
<p>Product safety</p>	
Global	IEC 60950
Europe	EN 60950
USA / Canada	UL 60950 CSA 60950
<p>There is general compliance with the safety requirements of all European countries and North America. National approvals required in order to satisfy statutory regulations or for other reasons, can be applied for on request.</p>	
<p>Standards compliance of modules</p>	
Electromagnetic safety:	EN 60950, UL 1950, CSA 950
Electromagnetic compatibility:	FCC Regulations