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Compaq Dual Input Power Distribution Unit Information Guide

Abstract: The new Compaq Dual Input Power Distribution Unit (PDU) is Compaq's first dual input PDU with smart AC fail over switch capability. This device has a built-in fault tolerant, automatic AC transfer switch that delivers AC power line redundancy to the attached computer equipment. The dual AC input feature adds redundancy and reduces the risk of downtime due to power outages.

The Dual Input PDU has a versatile rack mounting design that gives you the flexibility to mount it in either in a zero-U or 1U rack installation. This fault-tolerant PDU, in a zero-U or 1U rack configuration, provides an efficient and economical way to manage power cords while offering additional protection features such as surge protection and circuit breakers.

The Compaq Dual Input Power Distribution Unit is designed for users who want to distribute fault-tolerant AC power to their rack equipment.

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Compaq Dual Input Power Distribution Unit Information Guide
White Paper prepared by SPG

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Product Overview



Figure 1: Compaq Dual Input Power Distribution Unit

The Compaq Dual Input Power Distribution Unit (PDU) is a rack mountable PDU with dual AC input and a built-in AC transfer switch. This device delivers rapid switching between two AC power sources for uninterrupted operation of mission-critical systems.

Its unique space saving design gives you the flexibility to mount it in either a “zero-U” or a 1U configuration within a Compaq rack depending upon your requirements. This Dual Input PDU provides 12 AC receptacles that distribute 24A of AC current at 200-240VAC, and has two attached input line cords.

This Dual Input PDU is designed for mission critical environments where customers depend on the reliability of redundant power systems housed in their facility. This PDU helps data centers and facilities with dual AC input to distribute fault tolerant AC power to their rack equipment. It provides reliable, redundant power that virtually eliminates system downtime.

Model List

191186-001 (North America)

191186-B31 (International)

Feature List:

- Dual AC input
- Built-in AC transfer switch
- Power distribution through 12 receptacles
- zero-U or 1U rack mounting options
- Distributes 24A of AC current at 200-240VAC

Key Benefits

The Compaq Dual Input PDU is equipped with several features that provide fault-tolerance and optimum power management in a rack environment. The list below details these key features.

Fault Tolerance

The Dual input PDU is equipped with a built-in fault tolerant, automatic AC transfer switch that delivers AC power line redundancy to computer equipment in a rack environment.

It utilizes two AC inputs, Source A and Source B. When source A falls below 168 VAC and source B is valid, the output is automatically transferred to source B.

The output is transferred back to source A when source A is valid and rises above 178 VAC. Total sensing and transfer time is less than 18 milliseconds. This high-speed transfer rate ensures that the transfer is transparent to sensitive equipment. The two sources are not required to be in the same phase.

This is an effective solution that builds in redundancy and increases the AC power availability of connected equipment. If the dual input power is fed through two independent AC sources, then the system availability is increased and the Dual Input PDU advantages are fully used.

Power Distribution

Output Power

The Compaq Dual Input PDU provides 12 AC receptacles that distribute redundant AC power within a Compaq rack. Four groups of three IEC-320 (10A) receptacles, where each group is backed up by a 10A circuit breaker.

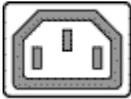


Figure 2.

Unique Rack Space-saving Design

The Dual Input PDU can be mounted in either a “zero-U” or 1U configuration offering maximum flexibility for utilizing rack space.

This device installs into the frame of a Compaq 9000 Series Racks. For more information on Compaq racks, please visit www.compaq.com/racks.

The installation process is quick and easy. All required mounting brackets, accessories, and installation instructions are shipped with the product.

Note: One U is equal to 1.75 in. and is the common unit for measuring rack cabinet space.

Note: For detailed installation instructions, refer to the Installation Card that accompanied your Compaq Dual Input PDU.

“zero-U” Configuration

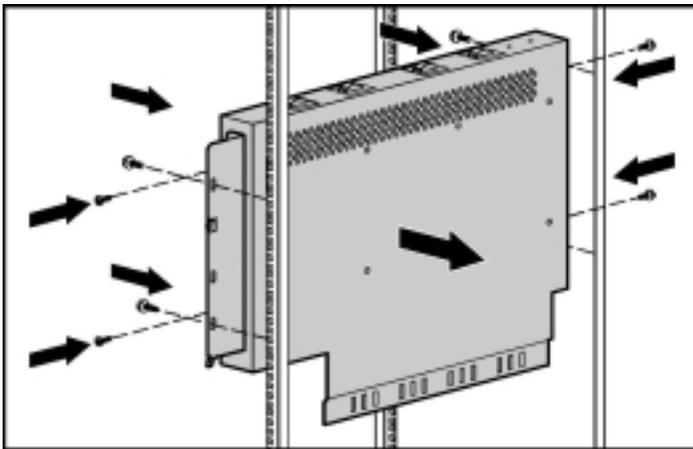


Figure 3: Compaq Dual Input PDU in a zero-U Configuration

1U Configuration

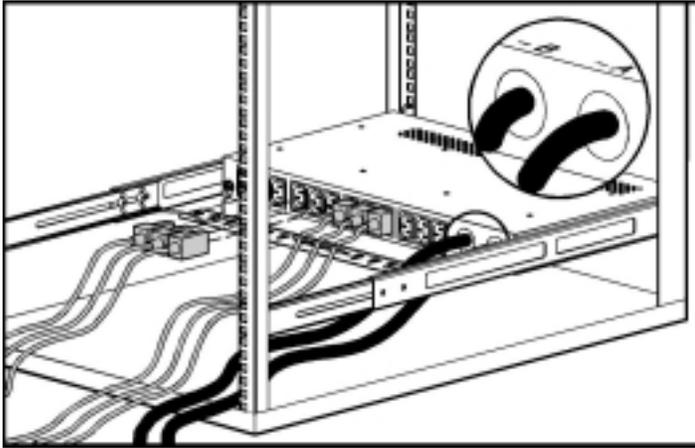


Figure 4. Compaq Dual Input PDU in a 1U Configuration

Rack-mountable With 24A Peak Capacity at 200-240VAC

The Compaq Dual Input PDU distributes power to the servers, storage units, and other peripherals mounted in the rack. The PDU distributes up to 24A of AC load at 200-240VAC.

Overload Circuit Protection

The Compaq Dual Input PDU is divided into four groups. See Figure 5. Each section is protected with a 10A magnetic circuit breaker and has three IEC 320 C13 receptacles. The total current available for each section is 10A. The total load for the Dual Input PDU cannot exceed 24A. The total load for each of the four groups cannot exceed 10A or the internal breaker may trip or the fuse will blow. The load must be balanced among the four segments such that the total current draw per section does not exceed 10A and a total of 24A for all the four segments of the Dual Input PDU.

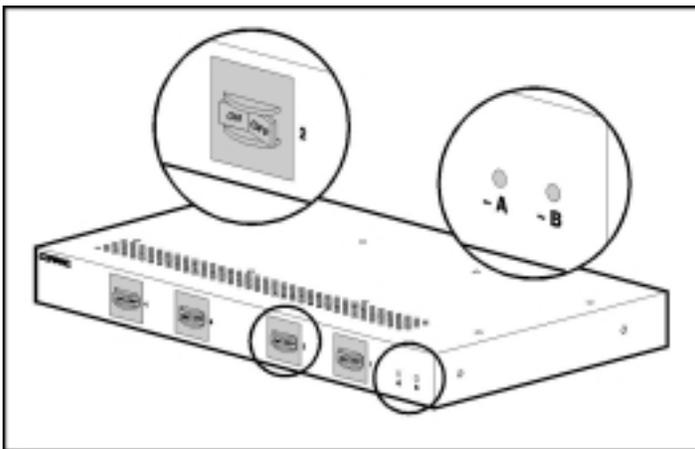


Figure 5: Front View of Compaq Dual Input PDU Highlighting Breakers and LEDs.

Cord Retention

To minimize accidental cable disconnect, the Dual Input PDU includes an integral cable management bracket. The included cable ties can be used to secure output cords to the integral cable management bracket.

Surge and Spike Protection

This product provides line-to-line surge protection (500 Joules, 10x 10,000 usec). The Dual Input PDU is equipped with four circuit breakers to protect any connected system devices from damage in the event of an incoming electrical surge or external equipment malfunction.

Note: For more detailed information regarding Compaq Dual Input PDU specifications, consult the Compaq website at www.compaq.com/ups.

Dual Input Power Distribution Unit Applications

The Compaq Dual Input PDU can be configured to fit several power distribution requirements.

Configuration 1

This application shows use of the Dual Input PDU in conjunction with single-line cord devices. This configuration is known as the “2-1 Configuration.”

Note: Each segment can accommodate a maximum current draw of 10A, so the individual load connected to it must not exceed 10A or the circuit breaker will trip.

2-1 Configuration

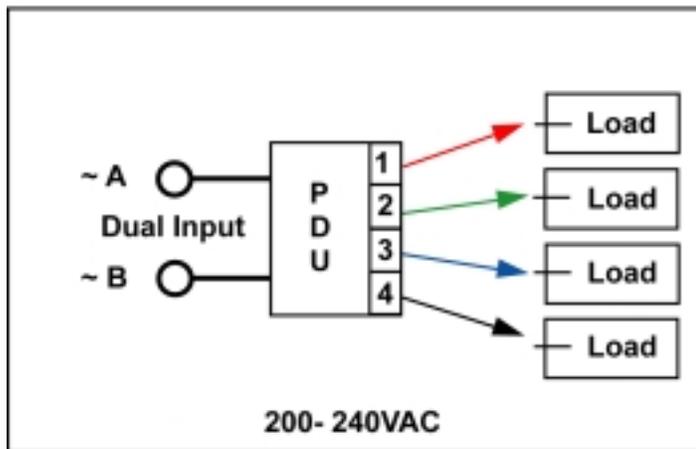


Figure 6.

~A: AC input source A

~B: AC input source B

1,2,3,4: Load segments on the Dual Input Power Distribution Unit (PDU)

Load: Any server, storage, or other equipment connected to the Dual Input PDU

Configuration 2

This configuration shows the use of a Dual Input PDU with 2-line cord devices. This is called the “2-2 Configuration”. In this configuration, a server is connected to each of the four segments of the Dual Input PDU.

Note: Each segment can accommodate a maximum current draw of 10A, so the individual load connected to it must not exceed 10A or the circuit breaker will trip.

2-2 Configuration

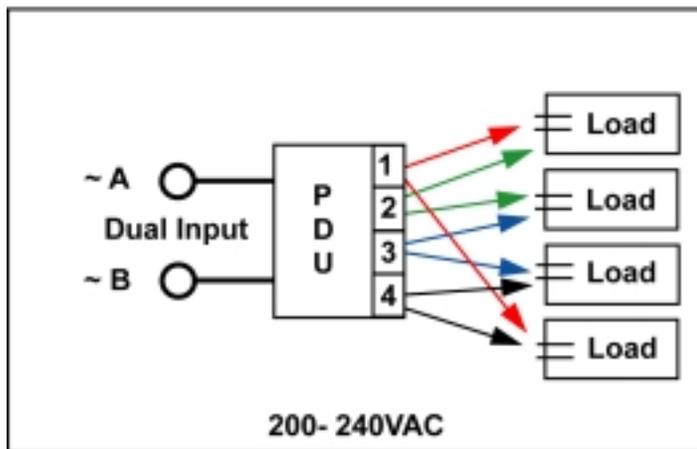


Figure 7.

~A: AC input source A

~B: AC input source B

1,2,3,4: Load segments on the Dual Input Power Distribution Unit (PDU)

Load: Any server, storage, or other equipment connected to the Dual Input PDU

2-2 Configuration

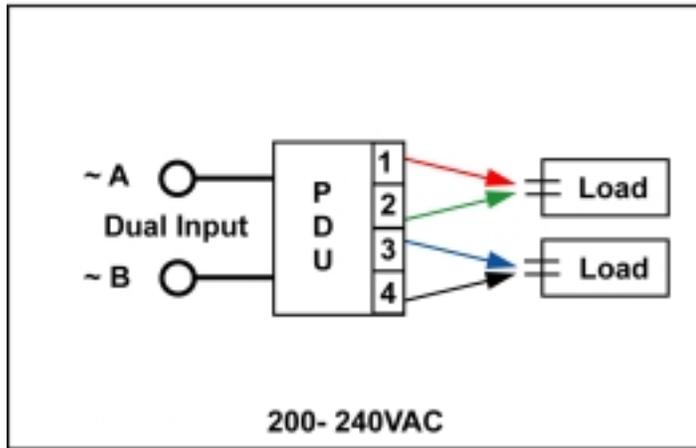


Figure 8.

~A: AC input source A

~B: AC input source B

1,2,3,4: Load segments on the Dual Input Power Distribution Unit (PDU)

Load: Any server, storage, or other equipment connected to the Dual Input PDU

Configuration 3

This configuration shows the use of the Dual Input PDU with 3-line cord devices. This is called the “2-3 Configuration.” The figure below shows how three Dual Input PDUs can be used to connect with up to four 3-line cord devices.

Note: Each segment can accommodate a maximum current draw of 10A, so the individual load connected to it must not exceed 10A or the circuit breaker will trip.

2-3 Configuration

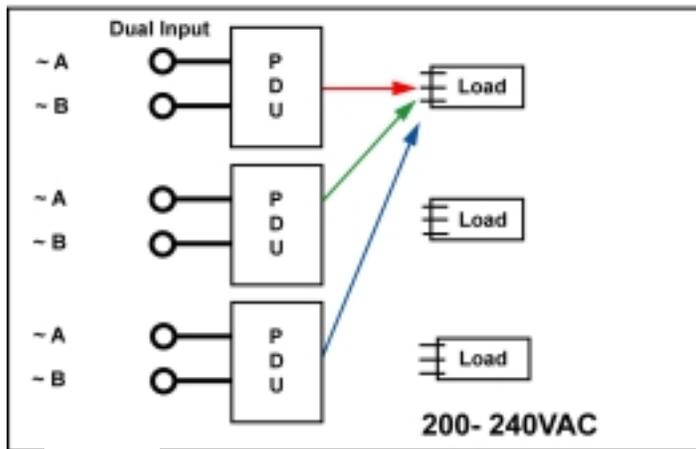


Figure 9.

~A: AC input source A

~B: AC input source B

Load: Any server, storage, or other equipment connected to the Dual Input PDU

Configuration 4

If your facility does not have a centralized Uninterruptible Power System, then the following configuration will provide maximum redundancy in a rack environment. The diagram below shows how to use three Dual Input PDUs, each connected to a UPS and a server. For more information on Compaq UPS products, please visit www.compaq.com/ups.

Note: Each segment can accommodate a maximum current draw of 10A, so the individual load connected to it must not exceed 10A or the circuit breaker will trip.

2-3 Configuration

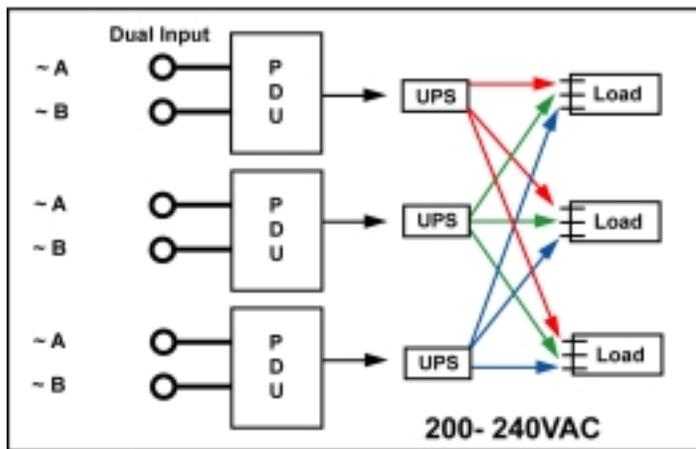


Figure 10.

~A: AC input source A

~B: AC input source B

Load: Any server, storage, or other equipment connected to the Dual Input PDU

Compaq Dual Input PDU Specifications

Part Number	191186-001	191186-B31
Dimensions (HxWxD)	1.72 x 17 x 15.25 in / 4.37 x 43.18 x 38.74 cm (out-of-box)	1.72 x 17 x 15.25 in / 4.37 x 43.18 x 38.74 cm (out-of-box)
Shipping Dimensions	23 x 12.13 x 20.94 in / 58.42 x 30.81 x 53.19 cm	23 x 12.13 x 20.94 in / 58.42 x 30.81 x 53.19 cm
Weight	20 lbs / 9.1 kg (out-of-box weight)	20 lbs / 9.1 kg (out-of-box weight)
Shipping Weight	32 lbs / 14.52 kg	32 lbs / 14.52 kg
LED Indicators	Indicator lights for the two AC inputs	Indicator lights for the two AC inputs
AC Input Voltage	200 – 240VAC	200 – 240VAC
AC Input Frequency	50 / 60Hz	50 / 60Hz
Output Power (VA)	4320 VA	4320 VA
Input Connections	(2) Attached cords terminating in NEMA L6-30P	(2) IEC309 Plugs
Output Connections	(12) IEC 320-C13	(12) IEC 320-C13
AC Output Voltage	200 – 240 VAC nominal	200 – 240 VAC nominal
Current (maximum)	24A	24A
Circuit Breakers	(4) 10A	(4) 10A
Surge Suppression Clamping Level	275 to 320V RMS	275 to 320V RMS
Surge Current	50,000A per unit	50,000A per unit
Spike Protection	500 Joules, 10x 10,000 usec	500 Joules, 10x 10,000 usec

Frequently Asked Questions

Q Compaq already offers some rack mounted PDUs. How is this PDU different from the other Compaq PDU products?

A The Dual Input is a fault tolerant PDU, while the other Compaq PDU products are “Single Input” PDUs.

Q The Dual Input PDU has a built-in AC transfer switch. What is the purpose of this switch?

A If the first input (input A) fails (or falls below 168VAC), then the transfer switch automatically switches over to the second valid input source (input B). Thus building in redundancy, and keeping your systems up and running even when the first input fails.

The output is transferred back to source A, when source A rises above 176 VAC.

Q How long does it take to transfer from one input to the other?

A The transfer switch provides very fast automatic switching. The transfer time of 18 milliseconds is virtually invisible to the user and to the connected equipment.

Q Is there an indicator that tells the user which input is being distributed?

A Yes, the unit has two LEDs, one for each of the two inputs (Input A and Input B). Each input line has its own LED that is illuminated when AC is present at that input.

Q Is this a PDU (Power Distribution Unit) or an AC transfer Switch?

A This product provides dual functionality. It is a PDU with a built-in AC transfer switch. Meaning it is a fault tolerant PDU that distributes redundant power within a rack.

Q Is this a “zero-U” or a “1U” rack mountable PDU?

A The Dual Input PDU has a unique and versatile design. It offers customers the flexibility to mount it in either a “zero-U” or a “1U” rack configuration depending on customer preferences. The required mounting brackets are shipped with the unit.

Q Who would most benefit from this product?

A Customers who have want to distribute redundant power to their rack mounted equipment. Ideally, their facility or data centers should be equipped with dual AC input line feeds.

Q Does the Dual Input PDU connect to the Compaq UPS R3000 XR or the R6000?

A No. The dual input is designed to immediately switch over to the secondary power source when the primary power source goes down, so you don't need battery back-up.

Q Where can I buy Compaq PDUs?

A Through Compaq Authorized reseller channels.

Q Where can customers find more information about the Dual Input PDU?

A More information can be found at our web site <http://www.compaq.com/ups>

Contact Information

For comprehensive online support, refer to:

www.compaq.com

For international information, refer to:

www.compaq.com/corporate/overview/world_offices.html

For a list of Compaq products, refer to:

www.compaq.com/showroom/

Departments and Telephone Numbers for the United States and Canada

Department	Telephone Number
Consumer Direct	1-800-888-0220
Compaq DirectPlus	1-800-888-5858 (U.S.)
Compaq Partner Direct	1-800-888-5874
Compaq Reseller Locator	1-800-345-1518 (Option 3)
Compaq Canadian Reseller Locator and Product Literature	1-800-567-1616
Diskette Fulfillment (backup diskettes for preinstalled software)	1-800-952-7689 (U.S.) 1-800-349-8498 (Canada)
Compaq Product Information	1-800-345-1518 (U.S.) 1-800-567-1616 (Canada)
Compaq Technical Support	1-800-OK-COMPAQ (U.S. and Canada) 1-800-652-6672

