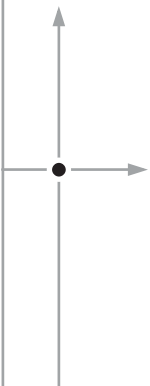


TRX-PS-BU Series

Trinix Backup Power Supplies

Installation Manual



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September 22, 2005

the most watched worldwide

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Grass Valley Web Site

The www.thomsongrassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Software updates, drivers, and patches can be downloaded.

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Preface

About This Manual

This manual provides installation instructions for the Trinix backup power supplies.

Additional Documentation

Trinix Installation and Operating Manual, part no. 071 8276 xx. Includes planning and installation instructions.

A printed copy of the documentation set is normally provided with the system. Individual manuals may be ordered by contacting Technical Support. For contact information, see page 2. Electronic copies of all routing products documentation are available on the following documentation CDs:

CD 071 8274 xx. Includes Jupiter VM-3000 and Jupiter CM-4000 manuals.

CD 071 8130 xx. Includes Encore Control System manuals.

These documents are also available on our web site. See page 2.

Safety Summary

Read and follow the important safety information below, noting especially those instructions related to risk of fire, electric shock or injury to persons. Additional specific warnings not listed here may be found throughout the manual.

WARNING Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Safety Terms and Symbols

Terms in This Manual

Safety-related statements may appear in this manual in the following form:

WARNING Warning statements identify conditions or practices that may result in personal injury or loss of life.

CAUTION Caution statements identify conditions or practices that may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.

Terms on the Product

The following terms may appear on the product:

DANGER — A personal injury hazard is immediately accessible as you read the marking.

WARNING — A personal injury hazard exists but is not immediately accessible as you read the marking.

CAUTION — A hazard to property, product, and other equipment is present.

Symbols on the Product

The following symbols may appear on the product:



Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



Indicates that user, operator or service technician should refer to product manual(s) for important operating, maintenance, or service instructions.



This is a prompt to note fuse rating when replacing fuse(s). The fuse referenced in the text must be replaced with one having the ratings indicated.



Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.



Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.



Indicates that static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Warnings

The following warning statements identify conditions or practices that can result in personal injury or loss of life.

Dangerous voltage or current may be present — Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

Do not service alone — Do not internally service this product unless another person capable of rendering first aid and resuscitation is present.

Remove jewelry — Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.

Avoid exposed circuitry — Do not touch exposed connections, components or circuitry when power is present.

Use proper power cord — Use only the power cord supplied or specified for this product.

Ground product — Connect the grounding conductor of the power cord to earth ground.

Operate only with covers and enclosure panels in place — Do not operate this product when covers or enclosure panels are removed.

Use correct fuse — Use only the fuse type and rating specified for this product.

Use only in dry environment — Do not operate in wet or damp conditions.

Use only in non-explosive environment — Do not operate this product in an explosive atmosphere.

High leakage current may be present — Earth connection of product is essential before connecting power.

Dual power supplies may be present — Be certain to plug each power supply cord into a separate branch circuit employing a separate service ground. Disconnect both power supply cords prior to servicing.

Double pole neutral fusing — Disconnect mains power prior to servicing.

Use proper lift points — Do not use door latches to lift or move equipment.

Avoid mechanical hazards — Allow all rotating devices to come to a stop before servicing.

Cautions

The following caution statements identify conditions or practices that can result in damage to equipment or other property

Use correct power source — Do not operate this product from a power source that applies more than the voltage specified for the product.

Use correct voltage setting — If this product lacks auto-ranging power supplies, before applying power ensure that the each power supply is set to match the power source.

Provide proper ventilation — To prevent product overheating, provide equipment ventilation in accordance with installation instructions.

Use anti-static procedures — Static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Do not operate with suspected equipment failure — If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.

Ensure mains disconnect — If mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible. Verify that all mains power is disconnected before installing or removing power supplies and/or options.

Route cable properly — Route power cords and other cables so that they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

Use correct power supply cords — Power cords for this equipment, if provided, meet all North American electrical codes. Operation of this equipment at voltages exceeding 130 VAC requires power supply cords which comply with NEMA configurations. International power cords, if provided, have the approval of the country of use.

Use correct replacement battery — This product may contain batteries. To reduce the risk of explosion, check polarity and replace only with the same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Troubleshoot only to board level — Circuit boards in this product are densely populated with surface mount technology (SMT) components and application specific integrated circuits (ASICs). As a result, circuit board repair at the component level is very difficult in the field, if not impossible. For warranty compliance, do not troubleshoot systems beyond the board level.

Regulatory Notices

Certifications and Compliances

FCC Emission Control

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. Changes or modifications not expressly approved by Grass Valley Group can affect emission compliance and could void the user's authority to operate this equipment.

Canadian EMC Notice of Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

EN55022 Class A Warning

For products that comply with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Canadian Certified Power Cords

Canadian approval includes the products and power cords appropriate for use in the North America power network. All other power cords supplied are approved for the country of use.

Canadian Certified AC Adapter

Canadian approval includes the AC adapters appropriate for use in the North America power network. All other AC adapters supplied are approved for the country of use.

Laser Compliance

Laser Safety Requirements

The device used in this product is a Class 1 certified laser product. Operating this product outside specifications or altering from its original design may result in hazardous radiation exposure, and may be considered an act of modifying or new manufacturing of a laser product under U.S. regulations contained in 21CFR Chapter 1, subchapter J or CENELEC regulations in HD 482 S1. People performing such an act are required by law to recertify and reidentify this product in accordance with provisions of 21CFR subchapter J for distribution within the U.S.A., and in accordance with CENELEC HD 482 S1 for distribution within countries using the IEC 825 standard.

Laser Safety

Laser safety in the United States is regulated by the Center for Devices and Radiological Health (CDRH). The laser safety regulations are published in the "Laser Product Performance Standard," Code of Federal Regulation (CFR), Title 21, Subchapter J.

The international Electrotechnical Commission (IEC) Standard 825, "Radiation of Laser Products, Equipment Classification, Requirements and User's Guide," governs laser products outside the United States. Europe and member nations of the European Free trade Association fall under the jurisdiction of the Comité Européen de Normalization Electrotechnique (CENELEC).

For the CDRH: The radiant power is detected through a 7 mm aperture at a distance of 200 mm from the source focused through a lens with a focal length of 100 mm.

For IEC compliance: The radiant power is detected through a 7 mm aperture at a distance of 100 mm from the source focused through a lens with a focal length of 100 mm.

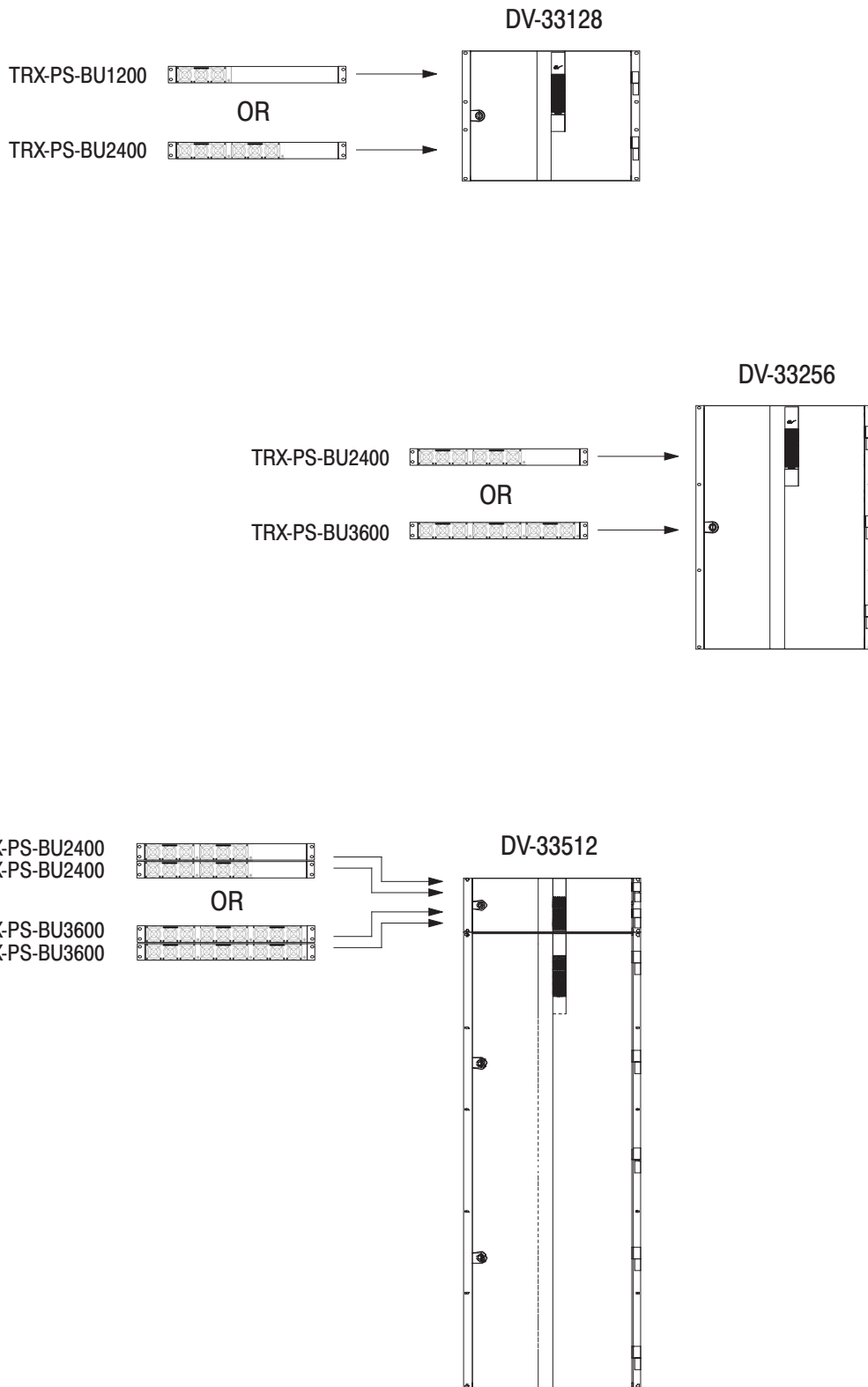
FCC Emission Limits

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. This device has been tested and found to comply with FCC Part 15 Class B limits for a digital device when tested with a representative laser-based fiber optical system that complies with ANSI X3T11 Fiber Channel Standard.

Certification

Category	Standard	Designed/tested for compliance with:
Safety	UL1950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1993).
	IEC 950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1991).
	CAN/CSA C22.2, No. 950-93	Safety of Information Technology Equipment, including Electrical Business Equipment.
	EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.

Figure 1. TRX-PS-BU Trinix Backup Power Supplies



Introduction

The TRX-PS-BU series of products are designed to supplement the Trinix DV-33128, DV-33256 and DV-33512 internal power supplies to provide increased backup protection.. Three packages are available:

- TRX-PS-BU1200 - 1 ea. 1200 watt module mounted in a 1 RU frame
- TRX-PS-BU2400 - 2 ea. 1200 watt modules mounted in a 1 RU frame
- TRX-PS-BU3600 - 3 ea. 1200 watt modules mounted in a 1 RU frame

Each module consists of a Unipower TPCP 7000 1200 watt power supply. The rack frame is a Unipower TPCP R1U3-B 1.75-inch chassis.

As shown on the facing page, these packages can be used in various combinations with Trinix DV-33128, DV-33256, and DV-33512 routers.

The power supplies are essentially bussed together so that the power load is shared at all times. If one supply fails, the remaining supplies on that bus will continue to provide power. The failed supply should be replaced as soon as possible.

DV-33128

For DV-33128 routers, installation of one **TRX-PS-BU1200** will provide a total of three on-line power supplies: two internally-mounted supplies and one supply mounted in the external chassis. Any one of these three supplies can fully power the DV-33128 router.

Installation of one **TRX-PS-BU2400** will provide a total of four on-line power supplies: two internally-mounted supplies and two supplies mounted in the external chassis. Any one of these four supplies can fully power the DV-33128 router.

DV-33256

For DV-33256 routers, installation of one **TRX-PS-BU2400** will provide a total of four on-line power supplies: two internally-mounted supplies and two supplies mounted in the external chassis. Any one of these four supplies can fully power the DV-33256 router.

Installation of one **TRX-PS-BU3600** will provide a total of five on-line power supplies: two internally-mounted supplies and three supplies mounted in the external chassis. Any one of these five supplies can fully power the DV-33256 router.

DV-33512

For DV-33512 routers, installation of **two TRX-PS-BU2400s** will provide a total of eight on-line power supplies divided into two groups:

- One group consists of internal supplies A and B and the two supplies in one of the external chassis (total of four supplies). The four supplies in this group power half the boards in the router. Any one of the four supplies can provide all needed power to these boards.
- The opposite group consists of internal supplies C and D and the two supplies in the other external chassis (total of four supplies). The four supplies in this group power half the boards in the router. Any one of the five supplies can provide all needed power to these boards

Installation of **two TRX-PS-BU3600s** will provide a total of ten on-line power supplies divided into two groups:

- One group consists of internal supplies A and B and the three supplies in one of the external chassis (total of five supplies). The five supplies in this group power half the boards in the router. Any one of the five supplies can provide all needed power to these boards.
- The opposite group consists of internal supplies C and D and the three supplies in the other external chassis (total of five supplies). The five supplies in this group power half the boards in the router. Any one of the five supplies can provide all needed power to these boards.

Materials Supplied

Each of the three packages includes the following:

<u>Qty</u>	<u>Description</u>
1	Power cable assembly, power supply rack to Trinix, 9 ft.
1, 2, or 3	AC mains power cord kit (type varies per destination country)
1, 2, or 3	Power supply, Unipower TPCP 7000, 1200 W 48 VDC
1	Power supply rack, Unipower TPCP R1U3-B
1 or 2	Blank panels for power supply rack
2	Small pattern 6 nut
2	Split lock no. 6 washer
2	4-40 x 1/4 SEMS screw
4	6-32 x 1/4 SEMS screw
2	1/4-20 UNC nut
2	Internal lock washer
2	No. 6 flat washer

Equipment Required

TRX-PS-BU1200 installations:

1.75 in. (1 RU) rack space in Trinix or adjacent rack, and
1 AC power outlet, 1200 watts.

TRX-PS-BU2400 installations:

1.75 in. (1 RU) rack space in Trinix or adjacent rack, and
2 AC power outlets, 1200 W each (total 2400 W)

TRX-PS-BU3600 installations:

1.75 in. (1 RU) rack space in Trinix or adjacent rack, and
3 AC power outlets, 1200 W each (total 3600 W)

Software Required

No software changes are needed.

Specifications

For mechanical, environmental, and electrical specifications, see *Appendix A - Specifications*.

Ordering Information

Table 1.

TRX-PS-BU1200	POWER SUPPLY 1200 W 1 RU STAND ALONE DC OUTPUT
TRX-PS-BU2400	POWER SUPPLY 2400 W 1 RU STAND ALONE DC OUTPUT
TRX-PS-BU3600	POWER SUPPLY 3600 W 1 RU STAND ALONE DC OUTPUT

Figure 2. TRX-PS-BU Trinix Backup Power Supplies

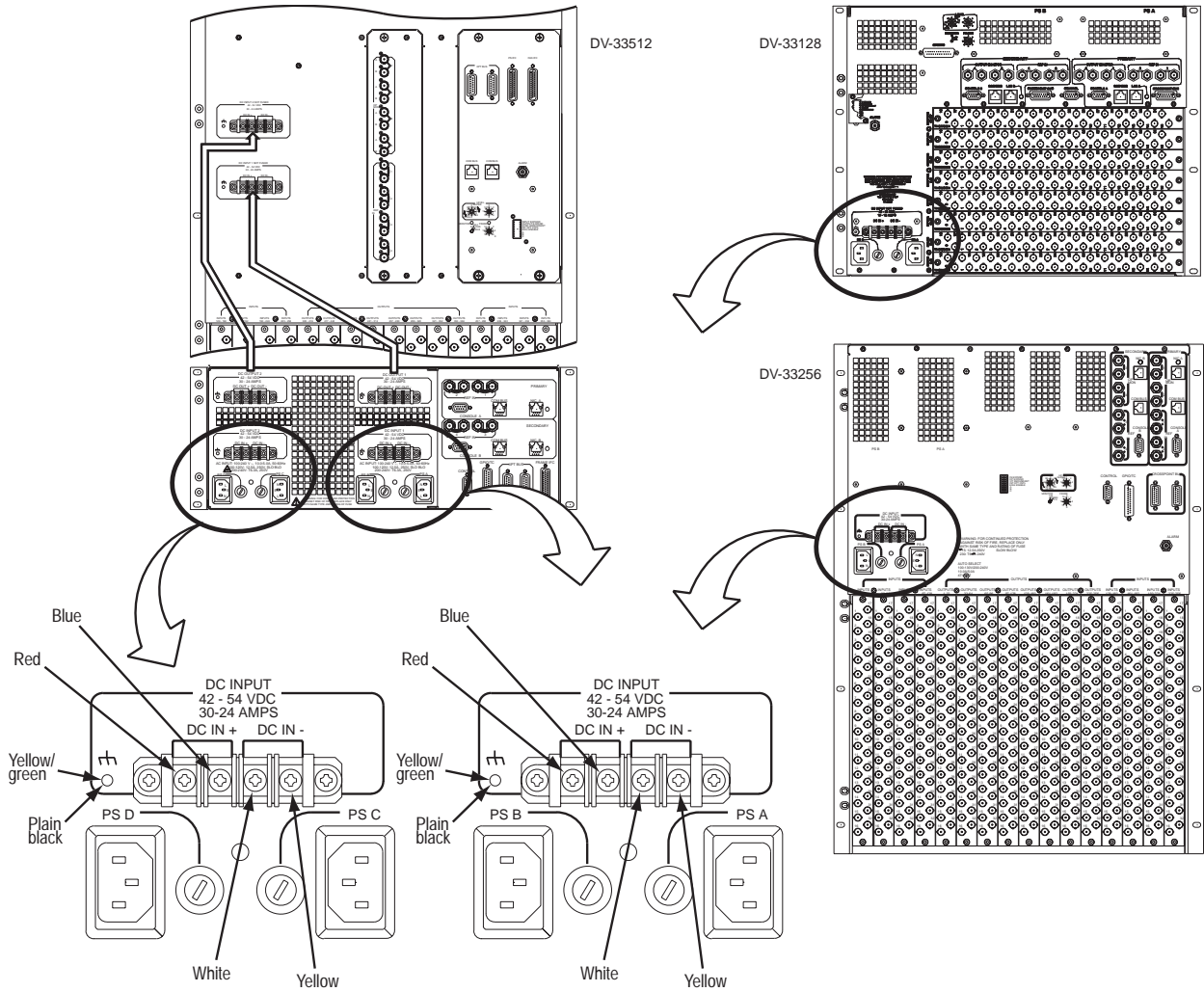


Table 2. DC power cord pinouts.

Trinix DC Input connector	Cable description
⏏ (Ground)	Yellow/green
	Plain black
DC IN + (left)	1 (red)
DC IN + (right)	2 (blue)
DC IN - (left)	3 (white)
DC IN - (right)	4 (yellow)

Installation

Procedure

The following procedure will not disrupt normal operation of the router.

1. Install the supplied TPCP R1U3-B power supply frame(s).

The frames are shipped with the DC cables already connected.

The power supply frames should preferably be mounted in the same equipment rack as the Trinix, but they may be mounted in an adjacent rack if necessary. The cables provided for connection to the Trinix are approximately nine feet (2.7 m) long.

No special ventilation spacing is needed for these frames since the airflow is from front to back.

2. Connect the DC power cable(s) to the Trinix rear panel DC Input connector(s).

See Table 2 for pinout information.

3. Connect the supplied AC power cords.

All LEDs on the front of the power supply array(s) should now be green. The left LED of each supply monitors AC; the right LED monitors DC.

4. Check the DC voltage now being provided at the Trinix “DC In” connector(s). Voltage should be between 47.0 and 48.5 VDC.

5. At an appropriate time, check the fail-over function of the new supplies. This procedure should not cause any interruption to router operation; however, Grass Valley recommends that you perform this check when the consequences of possible signal interruption are at a minimum.
 - For DV-33128 and DV-33256 units, pull both internal power supplies out a few inches. The router should remain powered up. Push the internal supplies back into position.
 - For DV-33512 units, first **make sure** that **both** power supply frames are installed and powered on per the above procedure. Open the main chassis door. Open the power supply chassis and pull the A and B supplies out a few inches. The router should remain powered up. Replace the A and B supplies. Pull the C and D supplies; the router should remain powered. Replace the C and D supplies.

- 6. This completes the installation.**

Specifications

Mechanical

Table 3. Mechanical Specifications

	Depth ^a	Width	Height	Weight ^b	Rack Units
TRX-PS-BU1200	11.56 in. / 294 mm	19.0 in. / 483 mm	1.75 in. / 44 mm	7.2 lb. / 3.2 kg	1
TRX-PS-BU2400	11.56 in. / 294 mm	19.0 in. / 483 mm	1.75 in. / 44 mm	10.3 lb. / 4.6 kg	1
TRX-PS-BU3600	11.56 in. / 294 mm	19.0 in. / 483 mm	1.75 in. / 44 mm	13.5 lb. / 6.1 kg	1

^a Allow a minimum of 6 in. (152 mm) of clear space at the rear of the MCP for proper cable clearance and air flow.

^b All weights approximate.

Environmental

Table 4.

Environmental Characteristics (operation with required forced air cooling)	
Operating temperature	32 to 158 degrees F (0 to 70 degrees C) ambient
Full specifications met	32 to 122 degrees F (0 to 50 degrees C)
Storage temperature	-40 to 185 F (-40 to +85 degrees C)

Air Intake/Exhaust Locations

All modules draw cooling air through fans in the front. Warm air is exhausted through openings in the back. It is not necessary to leave open space above or below the chassis.

Electrical

Table 5.

Total Output Power, Continuous, Max	800 - 1200 watts per module
Input voltage range	85 - 264 VAC
Input frequency	47 - 63 Hz
Hot-swap operation	Yes