Zonit Power Distribution System
Z-PDS™

User Guide

Version 2.3 - October 2019

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Overview

The Zonit Power Distribution System (Z-PDS™) is an extremely versatile and reliable power delivery solution for data centers and tele-communication closets with many innovative patented and patent pending features. It delivers 208V or 480V three phase A-B redundant power directly at the rack and outputs a wide variety of power configurations. Depending on the power density needed in each rack a single Z-PDS can feed multiple plug strips or power IT equipment such as blade servers. A typical deployment uses a Z-PDS to provide A+B redundant power to multiple racks.

The Z-PDS has patented phase load balancing technology which statistically distributes power loads evenly across all phases to eliminate manual balancing of the per phase power loads on UPS units and generators. It also has individual circuit breaker protection for each hot phase of each output to minimize the impact of any fault. While plug strips are typically attached to the outputs of the Z-PDS it is possible to connect either plug strips or IT equipment directly. All output connections are made via standard plugs and receptacles so no electricians are needed to make changes. A wide variety of standard and custom plug adapters for the Z-PDS system are available from Zonit.

The Z-PDS system is the logical evolution of power distribution in the data center. By moving three phase power to the rack and tapping it via inexpensive plug adapters, the same result as running a new whip from a three phase power panel or putting a new tap box in an overhead busway can be achieved, easier, quicker and cheaper.

Cautions and Warnings

Please read the instructions thoroughly as damage can occur to people or equipment if the product is not handled correctly during installation, operation, servicing, maintenance, and decommissioning. The symbols below are used to highlight danger indications, warnings or notices.

⚠ DANGER
DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ CAUTION
CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

NOTICE
NOTICE indicates no immediate physical injury but can include hazards, damages or loss of data

Specifications

	ZPDS-208V60A-HW-6L21-20	ZPDS-208V60A-HW-4L21-30	ZPDS-480V60A-HW-4L22-30	ZPDS-480V60A-HW-6L22-20	ZPDS-208V30A-L21-4L21-20	ZPDS-208V30A-L21-4L21-20-CR
Electrical						
Rated Input Voltage [3ø Wye]	208V	208V	480V	480V	208V	208V
Input Rated Max. Amp [Amp]	60	60	60	60	30	30
Rated Input Frequency [Hz]	50-60	50-60	50-60	50-60	50-60	50-60
Full Load [kVA]	17.2	17.2	39.9	39.9	8.64	8.64
Standard Input Cords	4AWG-5/C-SOOW-600V-90C-UL/CSA				10AWG-5/C-SJTW-600V-105C-UL/CSA	
Input Cord Terminations	Hardwire enclosure				Nema L21-30P	
Outputs	(6) L21-20R	(4) L21-30R	(4) L22-30R	(6) L22-30R	(4) L21-20R	(4) L21-20R (3) 5-20R Duplex
Internal Overload Protection	(18) Circuit Breakers per phase	(12) Circuit Breakers per phase	(12) Circuit Breakers per phase	(18) Circuit Breakers per phase	(12) Circuit Breakers per phase	(12) Circuit Breakers per phase
Physical						
Dimensions (HxWxD)	3.57" x 17.619" x 13.5" Note: width across brackets 19.17"					
Weight	67 Lbs				TBD	
Shipping Dimensions	22" x 24" x 20"					
Shipping Weight	72 Lbs				TBD	
Environmental						
Elevation Operating	0 to 10,000 ft.					
Elevation Storage	0 to 50,000 ft.					
Operating Temperature	-13°F to 149°F					
Operating Humidity	0 – 95% Non-condensing					
Approvals						
Safety	c UL us LISTED CE as appropriate					

Note: All specifications are subject to change without notice.

Common Z-PDS Models

Model	No. Circuit Breakers	Voltage Rating	Input Connection	Output Receptacle	Output Amp Rating
ZPDS-208V30A-L21-4L21-20	12	208V	L21-30P	L21	20
ZPDS-208V30A-L21-4L21-20-CR	12	208V (120V)	L21-30P	L21 (5-20 Duplex)	20
ZPDS-208V60A-HW-6L21-20	18	208V	Hard Wire	L21	20
ZPDS-208V60A-HW-4L21-30	12	208V	Hard Wire	L21	30
ZPDS-480V60A-HW-6L22-20	18	480V	Hard Wire	L22	20
ZPDS-480V60A-HW-4L22-30	12	480V	Hard Wire	L22	30

Installation

Pre-Installation Considerations

Prior to deployment of the Z-PDS, the following site considerations should be reviewed to ensure the Z-PDS will function properly in its intended application.

Shipped Items List:

1. (1) Z-PDS w/ standard attached A-B labeled input 10 ft. power cords
2. (2) Rack Mount Brackets
3. (8) Bracket Mounting Screws
4. (2) Input Connectors As Ordered (either a. or b.)
    a. (2) Plugs on the A-B 10 foot input SJTW cords.
    b. (2) Hard-Wire Assembly Modules attached to the A-B 10 ft. input SOOW cords.
5. (1) User Manual

Mounting

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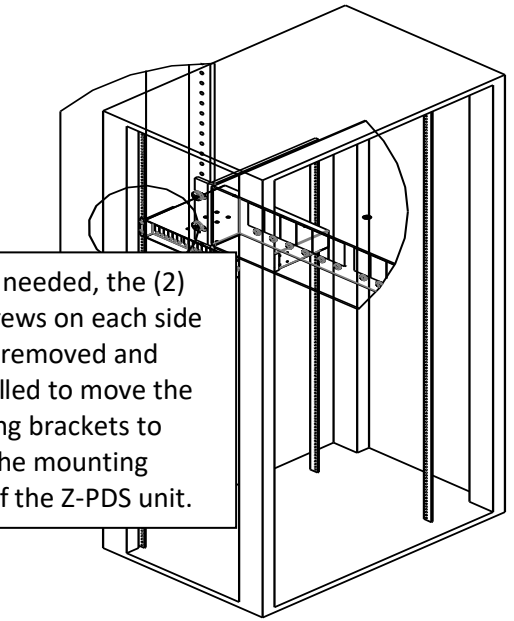
Z-PDS Mounting

1. Remove all items from the shipping box and confirm all pieces in the “Shipped Items List” are present and are not damaged.
2. Inspect all the components to ensure all parts are fastened/installed correctly (e.g. ensure all screws are fastened securely).
3. Locate appropriate hardware needed to mount Z-PDS unit.
4. Mount the Z-PDS in its intended location, for example the rack, via the brackets provided (see fig 1 & fig 2). Use the appropriate mounting hardware that can safely withstand the load of the apparatus and torque the fasteners to the manufacturer’s recommended values.



Electrical Connection and Power-up

⚠ DANGER

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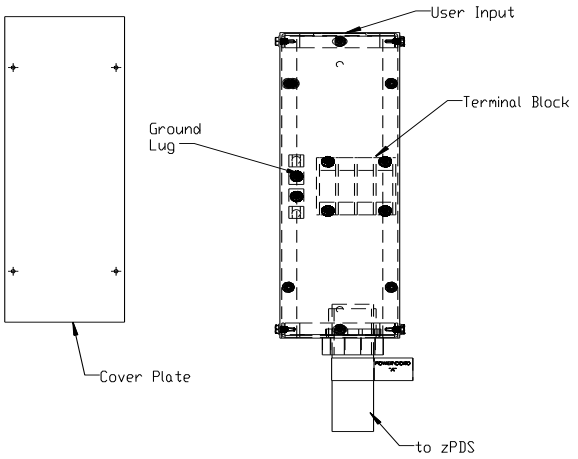
Note: This operation must be performed by a qualified technician or electrician in accordance with your local electrical safety code.

Installation Option 1: Connect via supplied input plugs

1. Have appropriate power whips or busway tap boxes with receptacles that match your Z-PDS model deployed and tested.
2. Ensure all Z-PDS breakers are all in the “off” or “0” position during installation.
3. Consider de-energizing the power input sources for both A and B, if possible. Follow all applicable safety regulations.
4. Connect the input power to the Z-PDS using the supplied input cord plugs.
5. Safely energize the input power whips or busway tap boxes for the Z-PDS A & B inputs.
6. Toggle “1 / ON” for all circuit breakers to ensure all the LEDs are illuminated. If any malfunctions occur at this point please reference the troubleshooting section of this guide.

Installation Option 2: Connect inputs via hard-wire module

1. Insure that the supplied hardwire enclosure modules and the connections described below are in compliance with your local electrical safety codes.
2. Remove the cover plates of the hardwire enclosure modules.
3. Install the bushings in the input feed end by punching the appropriate knockout size and installing the correct bushing for your input cord diameter.
4. Strip the wires and then route the input cords through the bushings and install the wires to the terminal block securely.
5. Ensure the hot and neutral wires from the site power inputs are appropriately matched to the hot (Phase 'X' is Black; Phase 'Y' is Red; Phase 'Z' is Orange) and neutral wires from the Z-PDS input cords using the provided terminal block.
6. Ensure the ground wire is mounted on the ground lug.
7. Securely fasten the input cord strain relief so that it is properly attached to the hard-wire connection module.
8. Ensure all wire lug nuts and enclosure screws are securely tightened and remove any debris from the enclosure.
9. Close the hardwire enclosure assembly with the cover plate. Ensure all screws are securely tightened and place or mount the hard wire assembly in a safe location away from any environmental hazards.



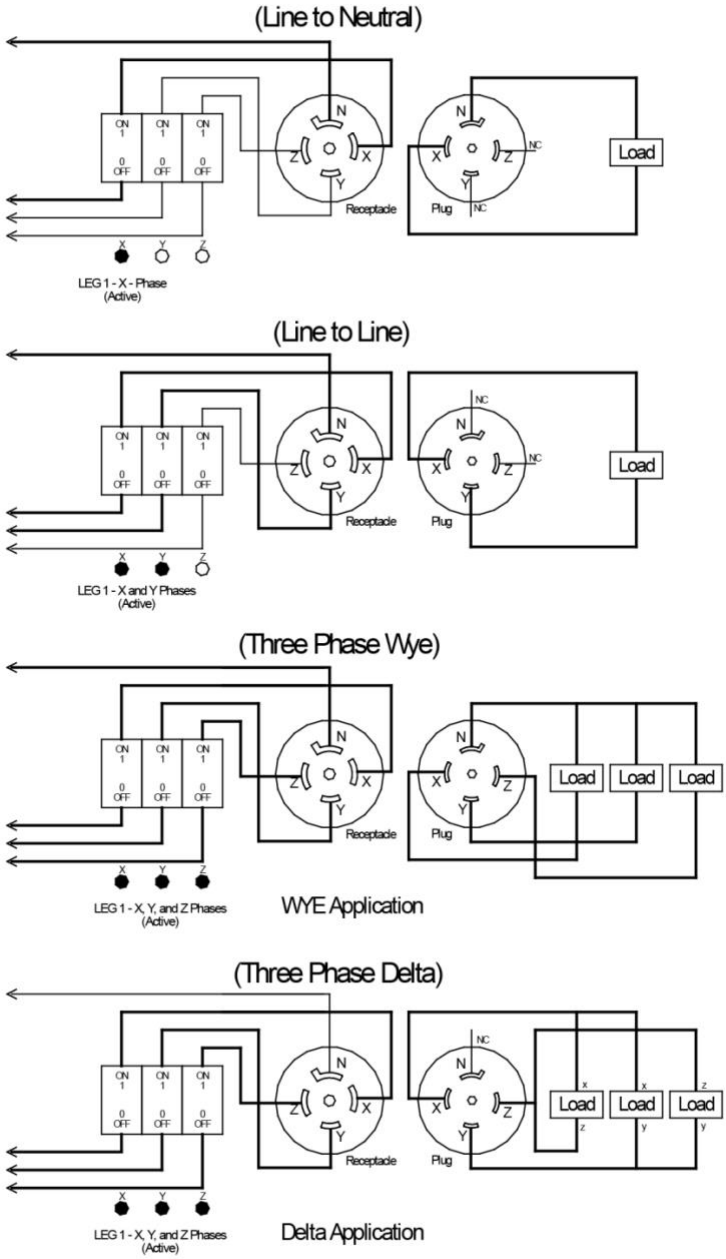
Electrical Connection of output loads

1. Insure that the input load plugs and cords used are in compliance with your local electrical safety codes and appropriate for the intended application.
2. De-energize the Z-PDS output receptacle to be plugged into via the front panel circuit breakers that control it. Follow all applicable safety regulations.
3. Connect the appropriate plug to the chosen Z-PDS output receptacle. Remember to use the NEMA twist-lock feature if your Z-PDS model has that type of output receptacles.
4. Safely energize the Z-PDS output receptacle by closing the circuit breakers that feed that receptacle on the front panel of the Z-PDS unit.
5. Check that all the LEDs on the front panel for the receptacle being energized illuminate to indicate proper function.
6. If any malfunction occurs at this point please reference the troubleshooting section of this guide.

Operation

The Z-PDS will distribute power through multiple branch circuits, depending on the model ordered. The number of branch circuits and the amperage rating for each is pre-determined by the model ordered. The Z-PDS can be configured to deliver several common power configurations that vary the output voltage. This is done using the appropriate plug adapters which tap the three-phase power as required and deliver it in a chosen receptacle type. This is equivalent to and much less expensive than having an electrician run a new power whip from a power panel or installing a new tap box in a busway. The Z-PDS system can be configured to output line-to-line (usually 208V), line-to-neutral (120V or 230/240V) or three-phase wye or delta power.

Output Branch Circuit Configurations



Note: Examples are implemented via Zonit plug adapters where needed.

Controls

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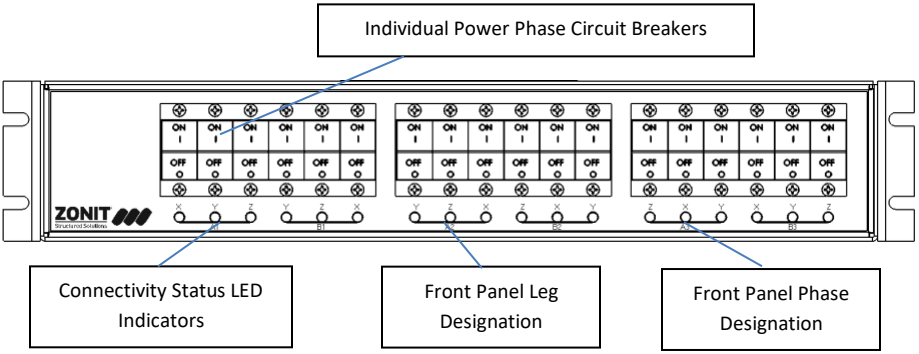
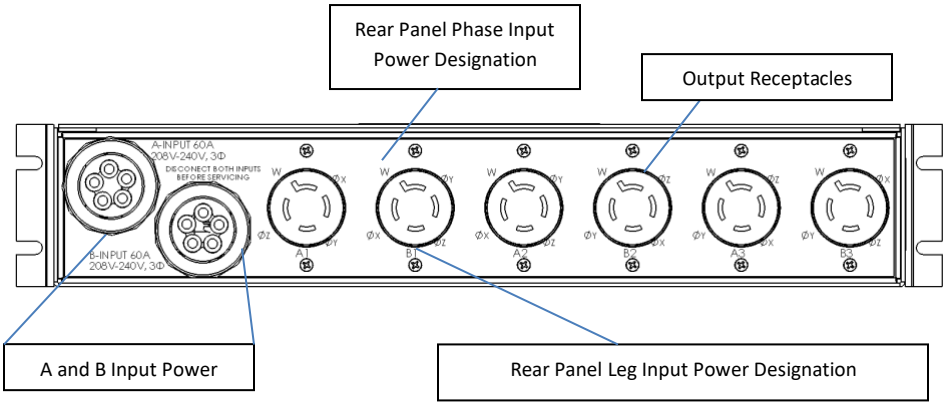
Individual Branch Circuit Output Control Circuit Breakers



Note: All Z-PDS models have either 18 or 12 (not shown) circuit breakers.

Output Receptacles



Note: Output receptacles will vary by model

Maintenance

There is no required maintenance schedule for the Z-PDS; however, toggling on/off all the output circuit breakers to ensure all the LEDs illuminate during general maintenance windows or when the Z-PDS is not in use will help ensure all output branch circuits are working correctly.

Troubleshooting

The Z-PDS is designed and tested for the highest reliability possible. Problems encountered with improper voltages or in-active circuits will generally be attributed to an abnormal condition of the branch circuit delivering the source power to the Z-PDS. If any condition exists that would indicate a problem, follow this process:

1. Check the source power whip or busway tap box circuit breakers. Check that the 3-pole circuit breakers feeding the Z-PDS are fully closed. Toggle to ensure position and check the LED indicators on the Z-PDS to ensure that input power is being delivered.
2. Use a suitable voltmeter and test for the following. This test should only be done by a qualified electrician or qualified technician.
    a. Verify inter-phase voltage (X-Y, X-Z, Y-Z)
    b. Verify phase to neutral voltages
    c. Verify 0.0 Volts from neutral to ground
    d. Verify less than 1ohm from neutral to ground
3. If any fault is located with the A-B feed circuits to the Z-PDS, have a certified electrician correct it.

Warranty

The Z-PDS made by Zonit Structured Solutions, LLC in the U.S.A. is warranted to be free of defects in materials and workmanship for a period of 3 years from date of purchase. If the product becomes defective during the warranty period, we will elect to either repair or replace it free of charge. After contacting Zonit Structured Solutions for a return authorization, send the product (with the original proof of purchase and freight prepaid) to Zonit Structured Solutions, LLC, 1790 30th St. #140, Boulder, Colorado, 80301.

This warranty does not include repair or replacement of any connected equipment. This warranty excludes damage to a Zonit product if a surge or spike reaches the product through an unprotected source connected to it. It does not apply to any product which has been repaired or altered in any manner by anyone other than Zonit Structured Solutions, LLC or to any product which has been installed, connected, used, or otherwise adjusted other than in accordance with written instructions furnished by Zonit Structured Solutions, LLC. Zonit Structured Solutions, LLC shall also not be obligated to repair or replace product which is found to be in need of repair because of damage resulting from accident or misuse.

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Waste Electrical and Electronic Equipment (WEEE)

Within the European Union this symbol indicates that this product should not be disposed in household waste. It should be deposited at an appropriate facility to enable recovery and recycling. For information on how to recycle this product, please check with the reseller that sold you this product to determine proper waste disposal procedures.

support@zonit.com

See our website at www.zonit.com
for the latest version of manuals.

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