

**SECTION 27 11 26  
COMMUNICATIONS RACK MOUNTED POWER PROTECTION AND POWER STRIPS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies power distribution equipment and interconnections supporting equipment deployed in telecommunications spaces (entrance rooms, computer rooms, and telecommunications rooms).

**1.2 SUMMARY**

Section Includes:

- A. Zone Power Distribution Units (zPDUs).
- B. Rack-Mounted Uninterruptible Power Supply (UPS) Units.
- C. Rack Power Distribution Units (rPDUs).

**1.3 REFERENCES**

- A. VA Infrastructure Standard for Telecommunications Spaces.

**1.4 RELATED WORK**

- A. General electrical requirements that are common to more than one section in Division 27: Section 27 05 11, REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS.
- B. IT equipment enclosures: Section 27 11 16, COMMUNICATIONS CABINETS, RACKS, FRAMES, AND ENCLOSURES

**1.5 SUBMITTALS**

- A. Submit in accordance with Section 27 05 00, COMMON WORK RESULTS FOR COMMUNICATIONS SYSTEMS.
- B. For each type of product:
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for rack-mounted power protection and power strips.
  - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

**PART 2 - PRODUCTS**

**2.1 ZONE POWER DISTRIBUTION UNITS (ZONE PDU)**

- A. Provide components from a single manufacturer. eConnect intelligent PDUs combines remote rack-level (cabinet-level) power monitoring and control, environmental monitoring and access control via a single

appliance, software and network Ethernet connection. eConnect Monitored PDU provides rack-level power monitoring. Monitored Pro PDU provides rack and device (outlet) level power monitoring. Switched provides rack level power monitoring and individual outlet control. Switched Pro provides rack level power monitoring, outlet level power monitoring and outlet level control.

B. 60 Amp Zone PDU:

1. Description: Zone PDU with A/B redundant 3-phase 60A input circuits and three (3) pairs of A/B redundant L21-20R outlets allowing each supported Standard Density (5kW) enclosure to operate at full density rating.
2. Input Connection: Dual 60A three-phase 208V hard-wired, with junction box and five-wire (L+L+L+N+G) DIN copper terminal blocks accommodating 4AWG conductors. Power cord 10' (3m) length.
3. Output Connection: Three (3) pairs of A/B (redundant) L21-20R outlets.
4. Power Capacity: 43.2kW (21.6kW redundant at full load); 5.7kW fully-rated at each L21-20R outlet.
5. Enclosure: Fully self-contained.
6. Mounting: 1" rack-mount.

C. 30 Amp Zone PDU:

1. Description: Zone PDU with A/B redundant 3-phase 30A input circuits and two (2) pairs of A/B redundant L21-20R outlets allowing each supported Standard Density (5kW) enclosure to operate at partial density rating.
2. Input Connection: Dual 30A three-phase 208V L21-30P. Power cord 10' (3m) length.
3. Output Connection: Two (2) pairs of A/B (redundant) L21-20P outlets.
4. Power Capacity: 21.6kW (10.8kW redundant at full load); combined 8.6kW rated output through each A/B pair of L21-20R outlets.
5. Enclosure: Fully self-contained.
6. Mounting: 1" rack-mount.

**2.2 RACK-MOUNTED UNINTERRUPTIBLE POWER SUPPLY (UPS) UNITS**

- A. Provide components from a single manufacturer.
- B. Description: 5kW three-phase 208V 20A rack-mounted UPS with L21-

20 input and output connections.

- C. Input Connection: Single input NEMA L21-20P plug (twistlock three-phase five wire L+L+L+N+G). Power cord minimum 3' (1m) length. (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length. (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length. (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length. (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length. (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length. (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length.
- D. Output Connection: Single output NEMA L21-20R receptacle.
- E. Power Capacity: 5kW
- F. Enclosure: Fully self-contained.
- G. Mounting: 19" rack mount.
- H. Battery Capacity: Ten minutes at 70% load (3.5kW).
- I. Cooling: Fan-cooled, front air entry, rear exhaust.

### **2.3 RACK POWER DISTRIBUTION UNITS (RACK PDUS)**

- A. Provide components from a single manufacturer.
- B. Description: Metered/monitored three-phase 208V 20A vertical Rack Power Distribution Unit (Rack PDU), 5.7kW, with IEC60320 outlets.
- C. Input Connection: Single input NEMA L21-20P plug (twistlock three-phase five wire L+L+L+N+G). Power cord 10' (3m) length.
- D. Output Connections.
  1. For Computer Room applications: Minimum 30 each C13 and 6 each C19. Outlets grouped in phase-grouping banks (A-B, B-C, C-A) or alternating to assist with phase balancing. Outlets labelled with associated phase-grouping bank.
  2. For Telecommunications Room (TR) and entrance room applications: Minimum 30 each C13, 6 each C19, 2 each L5-20. Outlets grouped in phase-grouping banks (A-B, B-C, C-A) or alternating to assist with phase balancing. Outlets labelled with associated phase-grouping bank.
- E. Power Capacity: 5.7kW rated.
- F. Enclosure: Fully self-contained.
- G. Mounting: Toolless mounting, orientation vertical at rear of enclosure, taking up zero RU spaces. Up to two Rack PDUs must be able to be installed on each side for High Density (10kW) enclosures.
- H. Mounting Hardware: As required to connect to the specific enclosure make/model.

I. Number of RPDUs: 2 for Standard Density (up to 5kW) enclosures, 4 for High Density (10kW) enclosures.

J. Metering: Local display provides input line currents (Amperage). Additional metering items (voltage, power, energy, power factor) across the unit or at individual outlets, is acceptable.

K. Monitoring: RJ45 Ethernet port allows connection to an external monitoring system. Supports SNMP v3 with SSL Encryption.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

A. DEFINITION: Sides (left/right) of the enclosure are as when viewed from the rear (hot aisle) of the enclosure for the purposes of this section.

B. Zone PDUs.

1. Install Zone PDUs only in enclosures that require them.
2. Zone PDUs shall not be installed in enclosures supported by busbar power distribution.
3. Install Zone PDUs beginning in RU position 1 or the first open RU position above any rack-mounted UPS unit, at the bottom of the 19" rack, on the rear rails of the enclosure.
4. Connect the Zone PDU power cords to the upstream branch circuit supporting the enclosures.

C. Rack-Mounted UPS Units.

1. Install rack-mounted UPS units only in enclosures that require them. Rack-mounted UPS units shall not be installed downstream of another UPS system (cascaded).
2. Where non-redundant UPS power is required to support the enclosure, install the rack-mounted UPS unit in the A side power distribution.
3. Install rack-mounted UPS units beginning in RU position 1, at the bottom of the 19" rack, with the exhaust ports facing the rear of the enclosure. No other equipment should be installed below the rack-mounted UPS units.
4. Connect the rack-mounted UPS unit power cord to the appropriate (A side) power receptacle on the upstream Zone PDU.

D. Rack PDUs.

1. Install Rack PDUs in matched A/B pairs only.
2. Install A side Rack PDUs on the left side of the enclosure and

B side Rack PDUs on the right side of the enclosure, interior to the rear enclosure door.

3. Connect the Rack PDU power cord to the upstream rack-mounted UPS unit (where present) or the appropriate power receptacle on the upstream Zone PDU.

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