



NetSure™

RDB Series

Installation and User Instructions (Section 6041), Revision L

Specification Number: 547692, 547693, 547499, 547694, 547695, 547615,
547696, 547697, 547503, 547500, 547698, 547699, 547501

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ADMONISHMENTS USED IN THIS DOCUMENT



DANGER! Warns of a hazard the reader **will** be exposed to that will **likely** result in death or serious injury if not avoided. (ANSI, OSHA)



WARNING! Warns of a potential hazard the reader **may** be exposed to that **could** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)



CAUTION! Warns of a potential hazard the reader **may** be exposed to that **could** result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)



ALERT! Alerts the reader to an action that **must be avoided** in order to protect equipment, software, data, or service. (ISO)



ALERT! Alerts the reader to an action that **must be performed** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)



FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)



SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

IMPORTANT SAFETY INSTRUCTIONS

General Safety



DANGER! YOU MUST FOLLOW APPROVED SAFETY PROCEDURES.

Performing the following procedures may expose you to hazards. These procedures should be performed by qualified technicians familiar with the hazards associated with this type of equipment. These hazards may include shock, energy, and/or burns. To avoid these hazards:

- a) The tasks should be performed in the order indicated.
- b) Remove watches, rings, and other metal objects.
- c) Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present. Check for voltage with both AC and DC voltmeters prior to making contact.
- d) Wear eye protection.
- e) Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed.

Voltages

DC Output and Battery Voltages



DANGER! This system produces DC power and may have a battery source connected to it. Although the DC voltage is not hazardously high, the rectifiers and/or battery can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact an output terminal or battery terminal or exposed wire connected to an output terminal or battery terminal. NEVER allow a metal object, such as a tool, to contact more than one termination or battery terminal at a time, or to simultaneously contact a termination or battery terminal and a grounded object. Even a momentary short circuit can cause sparking, explosion, and injury.



DANGER! Follow local lockout/tagout procedures to ensure DC branch circuit protection devices remain de-energized during installation at loads, as required.

Battery

Refer to the battery manufacturer documentation for specific battery safety instructions. The following are general guidelines.



WARNING! Correct polarity must be observed when connecting battery leads.



WARNING! Special safety precautions are required for procedures involving handling, installing, and servicing batteries. Observe all battery safety precautions in this manual and in the battery instruction manual. These precautions should be followed implicitly at all times.



WARNING! A battery can present a risk of electrical shock and high short circuit current. Servicing of batteries should be performed or supervised only by properly trained and qualified personnel knowledgeable about batteries and the required precautions.

The following precautions should be observed when working on batteries:

- Remove watches, rings, and other metal objects.
- Eye protection should be worn to prevent injury from accidental electrical arcs.
- Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed. Ensure that wrenches with more than one working end have only one end exposed.
- Do not lay tools or metal parts on top of batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Risk of explosion if battery is replaced with an incorrect type or if polarity is reversed. Recommended to replace batteries with the same manufacturer and type, or equivalent.
- Dispose of used batteries according to the instructions provided with the batteries. Do not dispose of batteries in a fire. They may explode.
- ALWAYS FOLLOW THE BATTERY MANUFACTURER'S RECOMMENDATIONS AND SAFETY INSTRUCTIONS.



DANGER! This equipment may be used in conjunction with lead-acid batteries. Working near lead-acid batteries is dangerous!

In addition to the hazard of electric shock, gas produced by batteries can be explosive and sulfuric acid can cause severe burns.

- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes, and is toxic.
- Batteries contain sulfuric acid.
- Batteries generate explosive gases during normal operation. Systems containing batteries should never be installed in an airtight room or space. Only install in a ventilated environment.
- Batteries are an energy source that can produce high amounts of electrical current.

FOR THESE REASONS, IT IS OF CRITICAL IMPORTANCE THAT YOU READ THESE INSTRUCTIONS AND FOLLOW THEM EXACTLY.

WHEN WORKING WITH LEAD-ACID BATTERIES:

- Follow the recommended PPE requirements per the SDS for the battery to be used.
- If battery acid enters your eye, immediately flush your eye with running cold water for at least 15 minutes. Get medical attention immediately.
- If battery acid contacts skin or clothing, wash immediately with soap and water.



ALERT! Performing maintenance and/or troubleshooting procedures may interrupt power to the loads, if battery reserve is not sufficient.

Personal Protective Equipment (PPE)



DANGER! ARC FLASH AND SHOCK HAZARD.

Appropriate PPE and tools required when working on this equipment. An appropriate flash protection boundary analysis should be done determine the “hazard/risk” category, and to select proper PPE.



This product is intended only for installation in a Restricted Access Location.

Only authorized and properly trained personnel should be allowed to install, inspect, operate, or maintain the equipment.

Do not work on LIVE parts. If required to work or operate live parts, obtain appropriate Energized Work Permits as required by the local authority, per NFPA 70E “Standard for Electrical Safety in the Workplace”.

Hazardous Voltage



DANGER! HAZARD OF ELECTRICAL SHOCK.

More than one disconnect may be required to de-energize the system before servicing.

Handling Equipment Containing Static Sensitive Components



ALERT! Installation or removal of equipment containing static sensitive components requires careful handling. Before handling any equipment containing static sensitive components, read and follow the instructions contained on the Static Warning Page.

Maintenance and Replacement Procedures



CAUTION! When performing any step in procedures that requires removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise service interruption or equipment damage may occur.



NOTE! When performing any step in procedures that requires removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise directed.

STATIC WARNING



This equipment contains static sensitive components. The warnings listed below must be observed to prevent damage to these components. Disregarding any of these warnings may result in personal injury or damage to the equipment.

1. Strictly adhere to the procedures provided in this document.
2. Before touching any equipment containing static sensitive components, discharge all static electricity from yourself by wearing a wrist strap grounded through a one megohm resistor. Some wrist straps have a built-in one megohm resistor; no external resistor is necessary. Read and follow wrist strap manufacturer's instructions outlining use of a specific wrist strap.
3. Do not touch traces or components on equipment containing static sensitive components. Handle equipment containing static sensitive components only by the edges that do not have connector pads.
4. After removing equipment containing static sensitive components, place the equipment only on conductive or anti-static material such as conductive foam, conductive plastic, or aluminum foil. Do not use ordinary Styrofoam™ or ordinary plastic.
5. Store and ship equipment containing static sensitive components only in static shielding containers.
6. If necessary to repair equipment containing static sensitive components, wear an appropriately grounded wrist strap, work on a conductive surface, use a grounded soldering iron, and use grounded test equipment.

IMPORTANT SAFETY INSTRUCTIONS

Save These Instructions



WARNING! Please read and follow all safety information! Failure to observe the safety information listed below may result in electric shock, fire hazards, or serious injury. Please safeguard this Installation and User Manual.

Intended Use

The NetSure™ RDB Rack PDU (Power Distribution Unit) is designed to deliver power to information technology and telecommunication equipment.

Operate the Rack PDU in an indoor environment only within an ambient temperature range and a relative humidity range as listed in “Environmental Characteristics” on page 9. Install the Rack PDU in a clean environment, free of conductive contaminants, moisture, flammable liquids, gases and corrosive substances.

- Do not use the Rack PDU in moist environments. If the Rack PDU is exposed to moisture, immediately disconnect the Rack PDU from DC input power by opening the circuit breaker or removing the fuse or breaker supplying DC input to the Rack PDU. Send the Rack PDU to the manufacturer for inspection.
- Do not use the Rack PDU for household applications.

Installation and Operation

Improper installation and operation may cause overheating and lead to increased fire hazard. It may also destroy the device and damage other connected systems.

- Installation and start-up must be performed by a qualified service engineer.
- Make sure that the total input current of the connected systems does not exceed the current rating specified on the rating plate of the Rack PDU.

Electrical Safety

Damaged Rack PDUs or connected cables increase the risk of electric shock or smoldering fire.

- Check the unit for external signs of damage prior to start-up operation! Do not operate the device if you detect any damage or other deficiencies.
- Only use the supplied DC input power cable.

Personal Safety

Careless handling increases the risk of electric shock.

- Never touch the outlets or the Rack PDU with wet or moist hands.

Service

Repairs should only be performed by qualified service technicians.

Unauthorized changes, modifications, or repairs of the device are performed at the owner's risk and will void all warranty claims.

- Do not open the Rack PDU.
- Please contact the nearest customer service center in case of malfunction! Damage and defects must be repaired immediately.
- Always disconnect the unit from power before troubleshooting.

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INSTALLATION

The NetSure™ RDB Rack PDUs (Power Distribution Units) are designed to be installed on the left and/or right rear frames of IT racks. They can be mounted directly to the rack or use Rack PDU Mounting Kit P/N 547665. See “Dimensions” starting on page 10 for hole dimensions.

Shipment Inspection

Unpack the shipping container, inspect all items for damage and verify that the shipment is complete and undamaged. Report any damage to your local Vertiv Co. representative and the carrier.

Installing the Rack PDU



WARNING! Ensure proper grounding. The Rack PDU's "Ground Lead Bracket" must be ground bonded to the mounting bracket (if used) or rack frame. The mounting bracket (if used) must be ground bonded to the rack frame. The rack frame must be ground bonded to your site ground. This is typically accomplished through the use of paint free areas and/or grounding washers used when mounting the components.

Installing the Rack PDU Directly to a Rack Frame or Existing Mounting Bracket

Install the Rack PDU directly to the rack frame or existing mounting bracket as shown in **Figure 1**. Note that the supplied "Ground Lead Bracket" is to be placed between the PDU and the rack frame or existing mounting bracket as shown in **Figure 1**. Use the supplied 1/4-20 screws and 1/4-20 KEPS nuts.

Installing Rack PDUs to a Rack Frame using the Optional Mounting Bracket

If using the Rack PDU Mounting Kit, install the Rack PDU mounting bracket to the left and/or right rear frame of the rack using the appropriate hardware that fits to the cabinet that will be used.

Install the Rack PDUs to the Rack PDU mounting bracket that was previously installed on the frame as shown in **Figure 2**. Note that the supplied "Ground Lead Bracket" is to be placed between the PDU and the mounting bracket as shown in **Figure 2**.

Figure 1: Mounting Rack PDUs Directly to Rack Frame

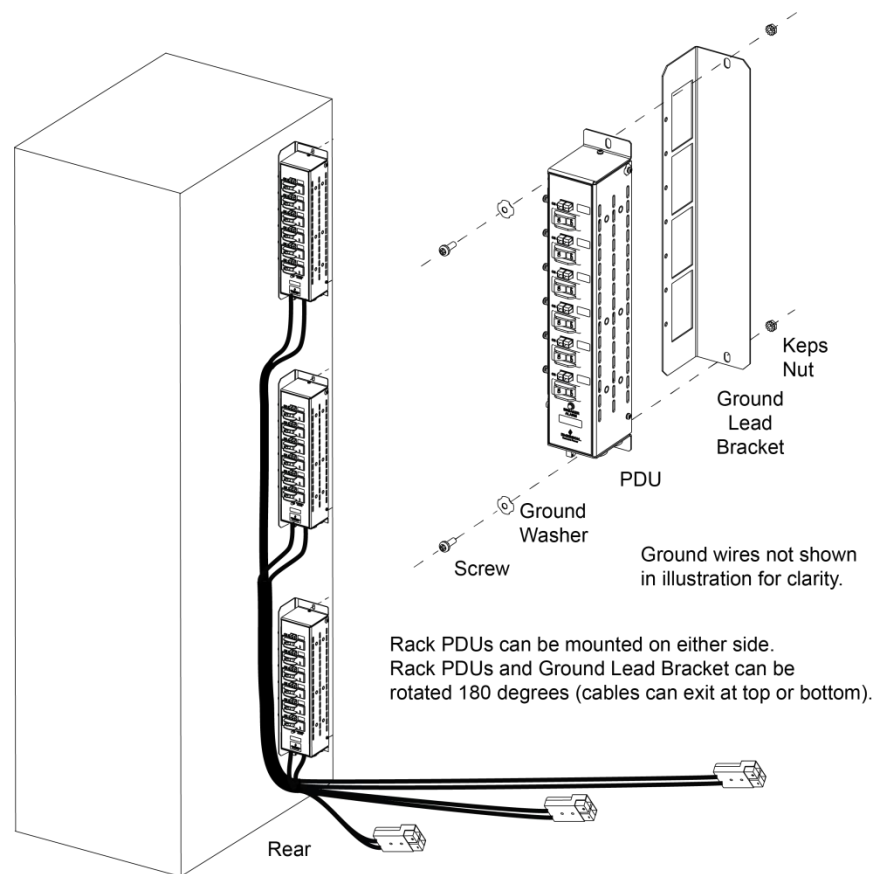


Figure 2: Mounting Rack PDUs using Optional Mounting Bracket Kit

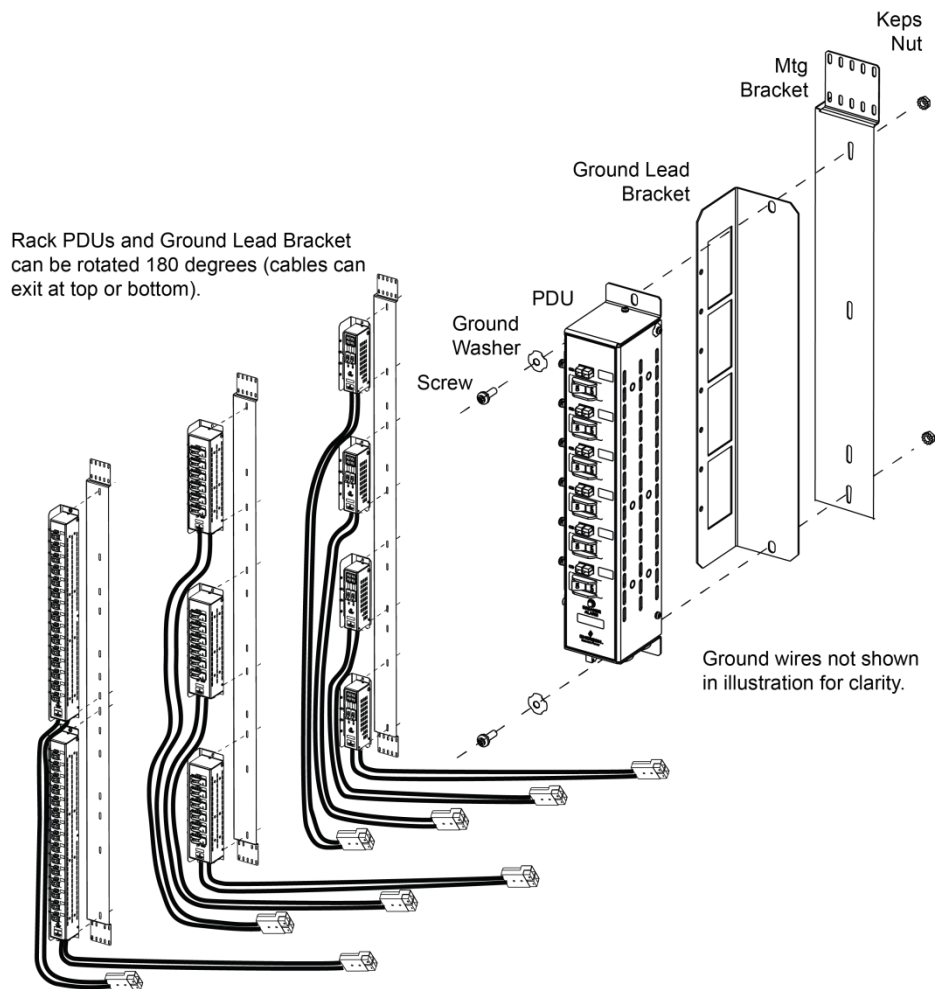
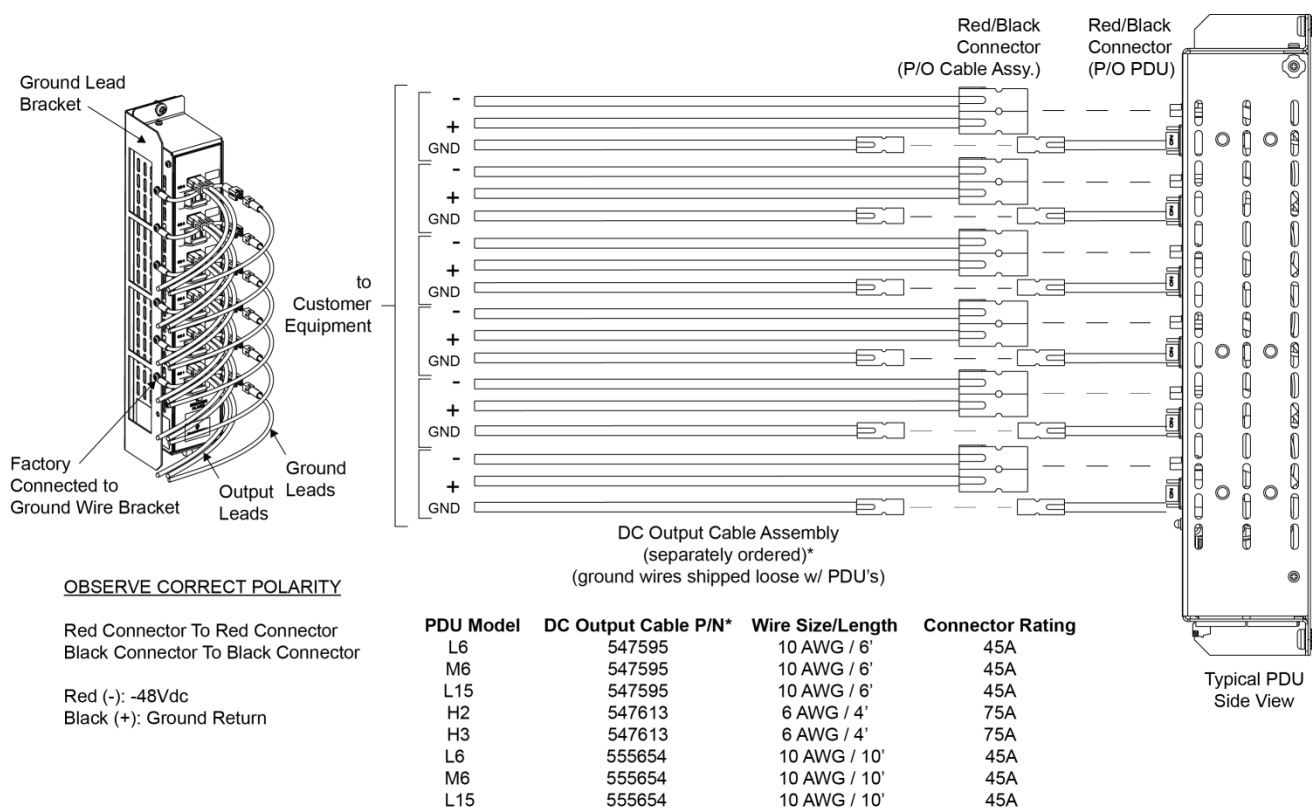


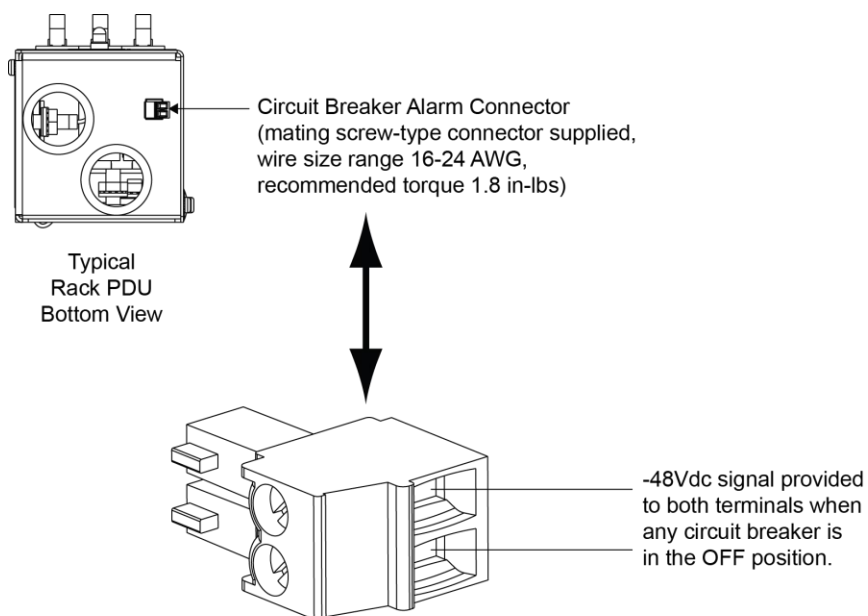
Figure 4: DC Output Connections



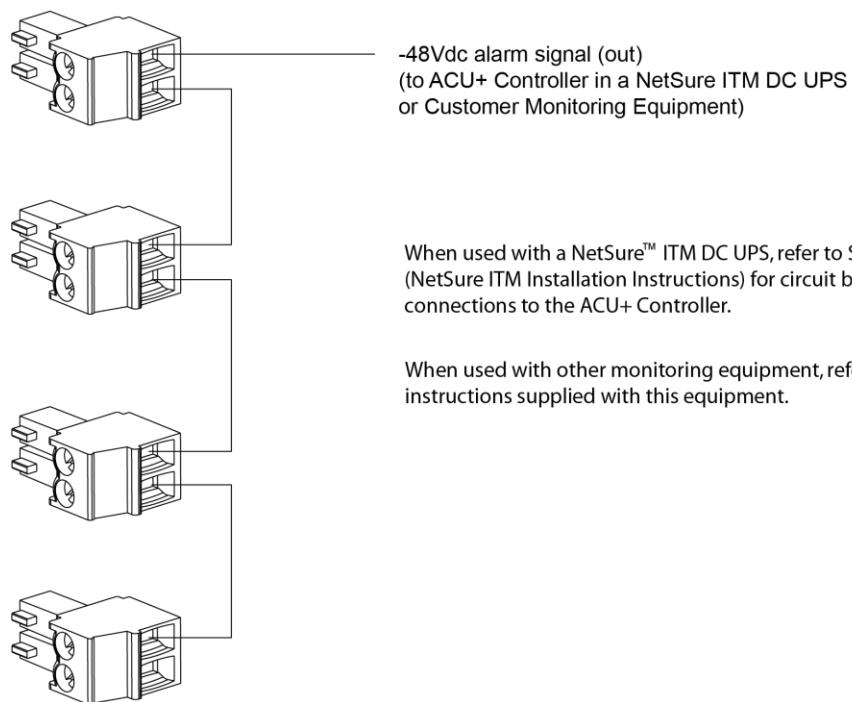
Connecting External Circuit Breaker Alarms

Negative 48Vdc is provided to a set of alarm terminals if any circuit breaker is in the OFF position. See **Figure 5**.

Figure 5: Alarm Connections



Typical interconnections when "daisy-chaining" multiple Rack PDUs.



SPECIFICATIONS AND TECHNICAL DATA

Conformity and Standards

The NetSure RDB Rack PDU (Power Distribution Unit) has the following agency approval ratings:

- UL 60 950-1 + UL 1801 - Recognized (cURus)
- In accordance with the Low Voltage Directive, 2006/95/EEC and including amendments by the CE Marking Directive, 93/68/EEC.

Environmental Characteristics

The NetSure RDB Rack PDU (Power Distribution Unit) is designed to operate under the following environmental conditions without damage or degradation in electrical operating characteristics:

Operating Temperature	-40°F to +104°F (-40°C to +40°C) (Models L6 and L15). -40°F to +113°F (-40°C to +45°C) (Models H2, H3, and M6).
Storage Temperature	-40°F to +176°F (-40°C to +80°C).
Relative Humidity	0 to 95%, non-condensing.
Operating Elevation	6562 ft (2000m) at full power.

Specifications

Model	Part Number	Number of Outlets	Power Rating per Outlet		Power Rating per PDU		Input/Output Voltage (nominal)
			Max Watts	Max Amps ¹	Max kW	Max Amps ¹	
RDB - Basic Rack PDUs			Max Watts	Max Amps ¹	Max kW	Max Amps ¹	-48Vdc
L6	547692	6	420	10	2.5	60	
	547693		630	15	3.8	90	
	547499		840	20	5.0	120	
L15	547694	15	420	10	6.3	150	
	547695		630	15	8.42	2002	
	547615		840	20	8.42	2002	
M6	547696	6	1050	25	6.3	150	
	547697		1260	30	7.6	180	
	547503		1470	35	8.42	2002	
H2	547500	2	3360	80	6.7	160	
H3	547698	3	2100	50	6.3	150	
	547699		2520	60	7.6	180	
	547501		2940	70	8.42	2002	

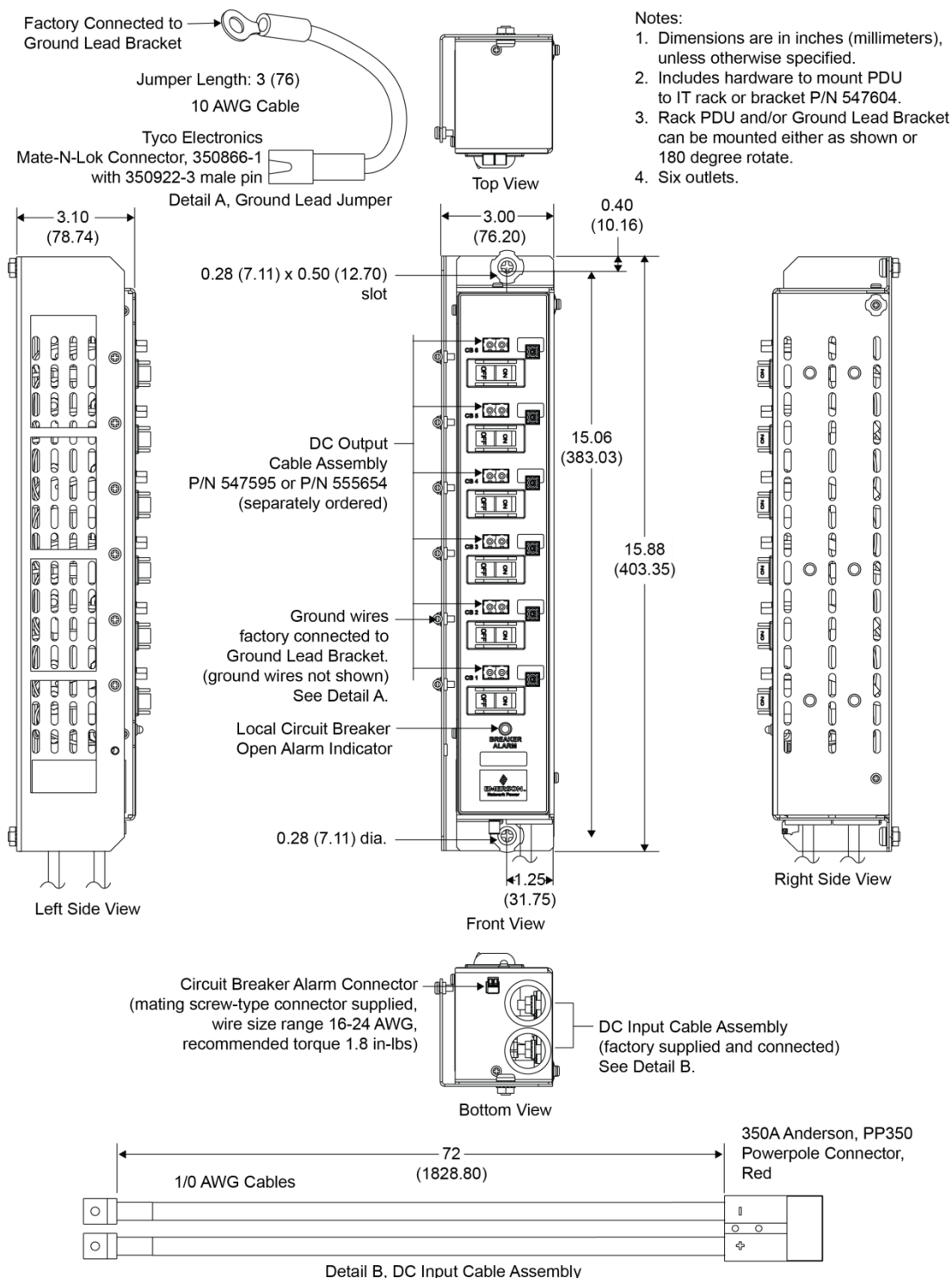
¹ Max Amps rated at end of battery discharge (42V).

² PDU power rating limited to 200A, 8.4kW each.

Dimensions

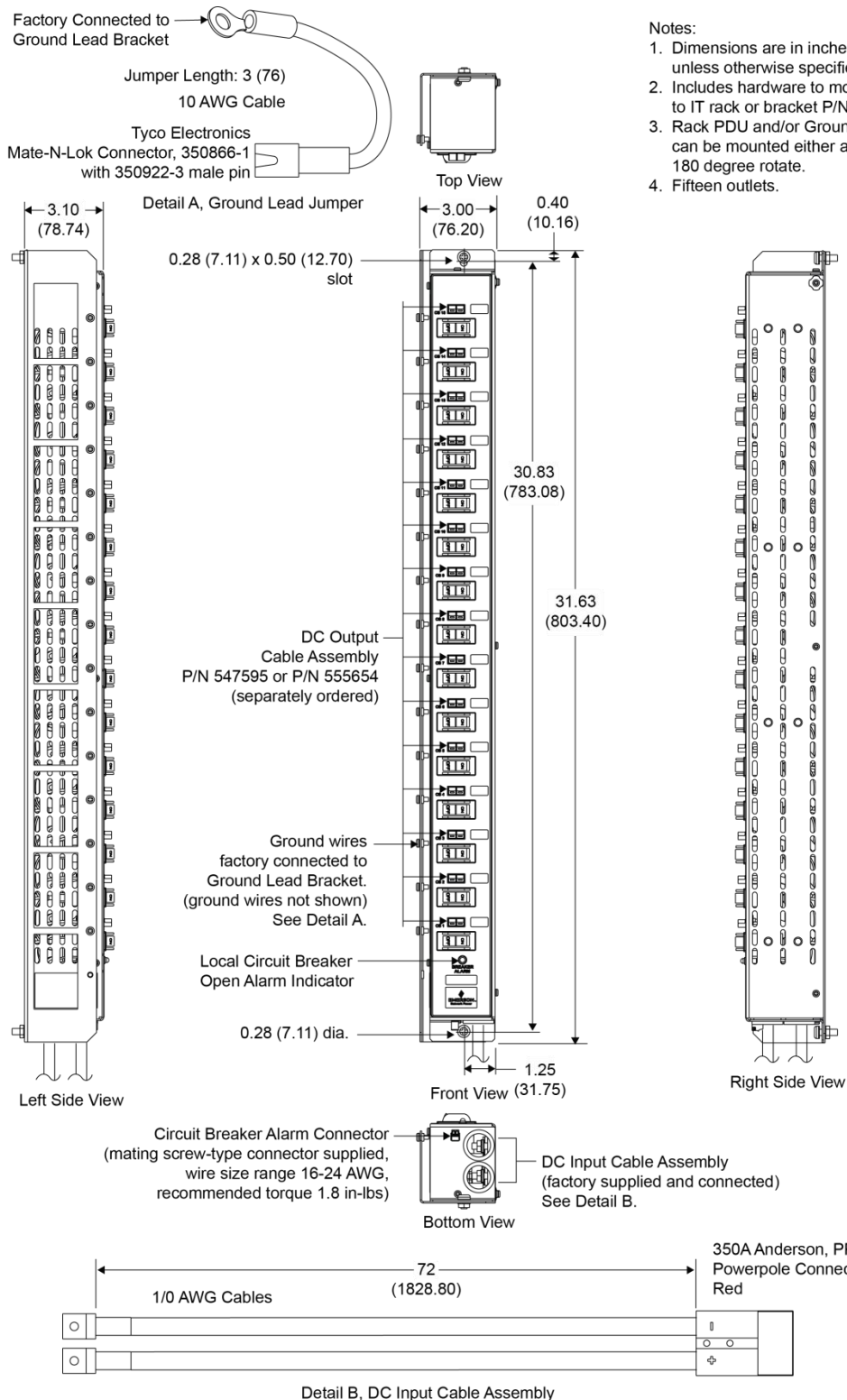
NetSure™ RDB L6, P/Ns 547692, 547693, 547499

Figure 6: NetSure™ RDB L6, P/Ns 547692, 547693, 547499



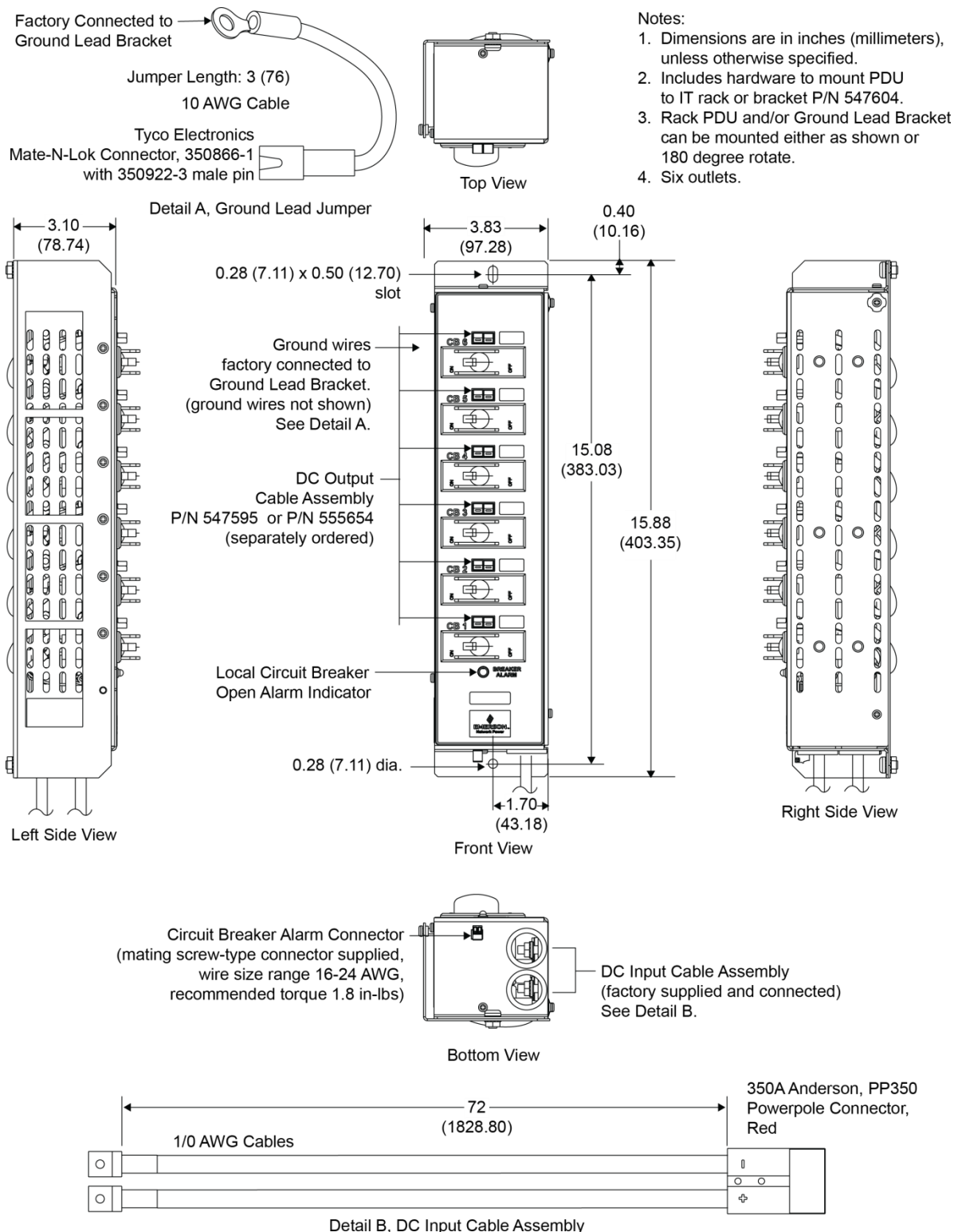
NetSure™ RDB L15, P/Ns 547694, 547695, 547615

Figure 7: RDB L15, P/Ns 547694, 547695, 547615



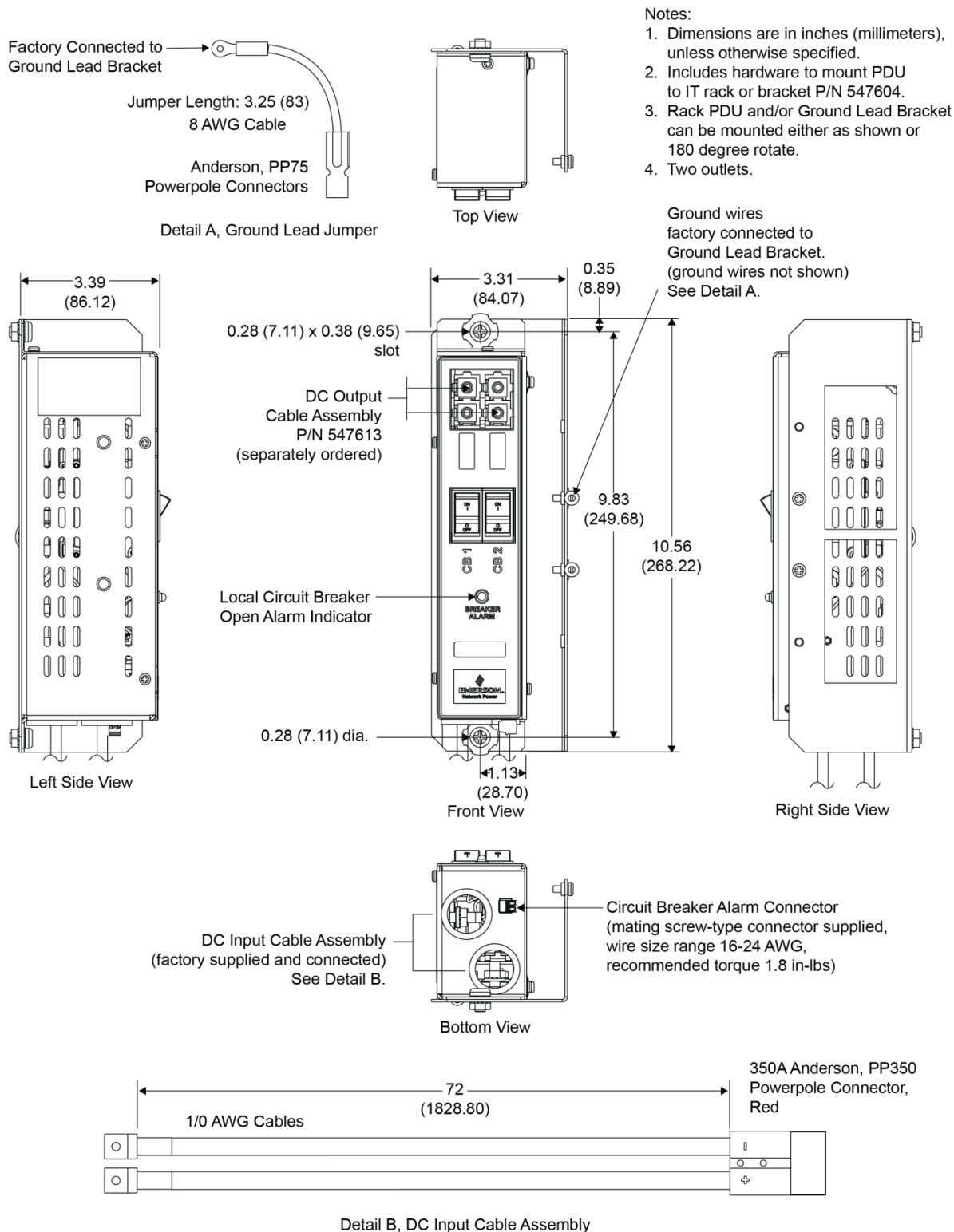
NetSure™ RDB M6, P/Ns 547696, 547697, 547503

Figure 8: RDB M6, P/Ns 547696, 547697, 547503



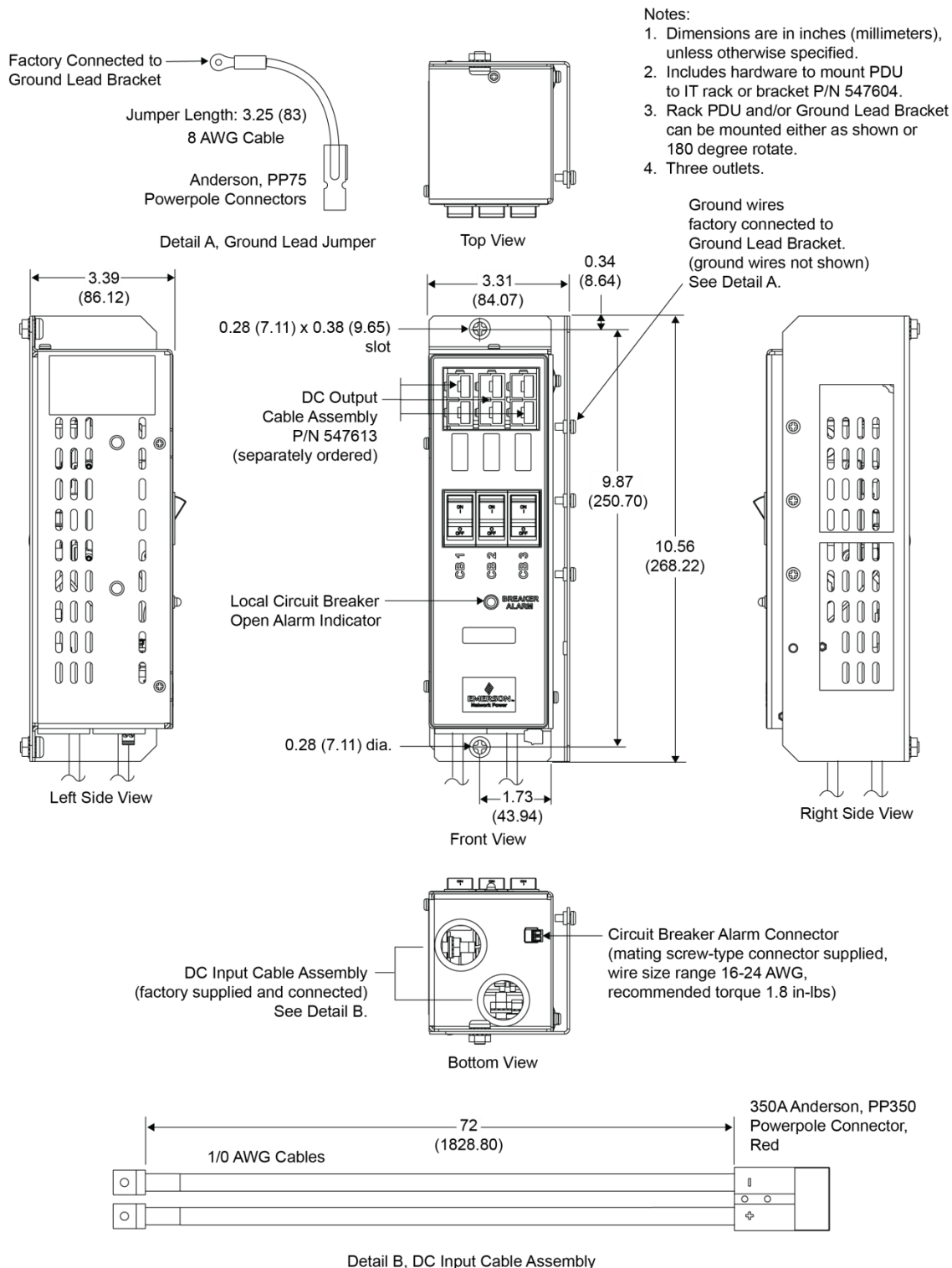
NetSure™ RDB H2, P/N 547500

Figure 9: RDB H2, P/N 547500



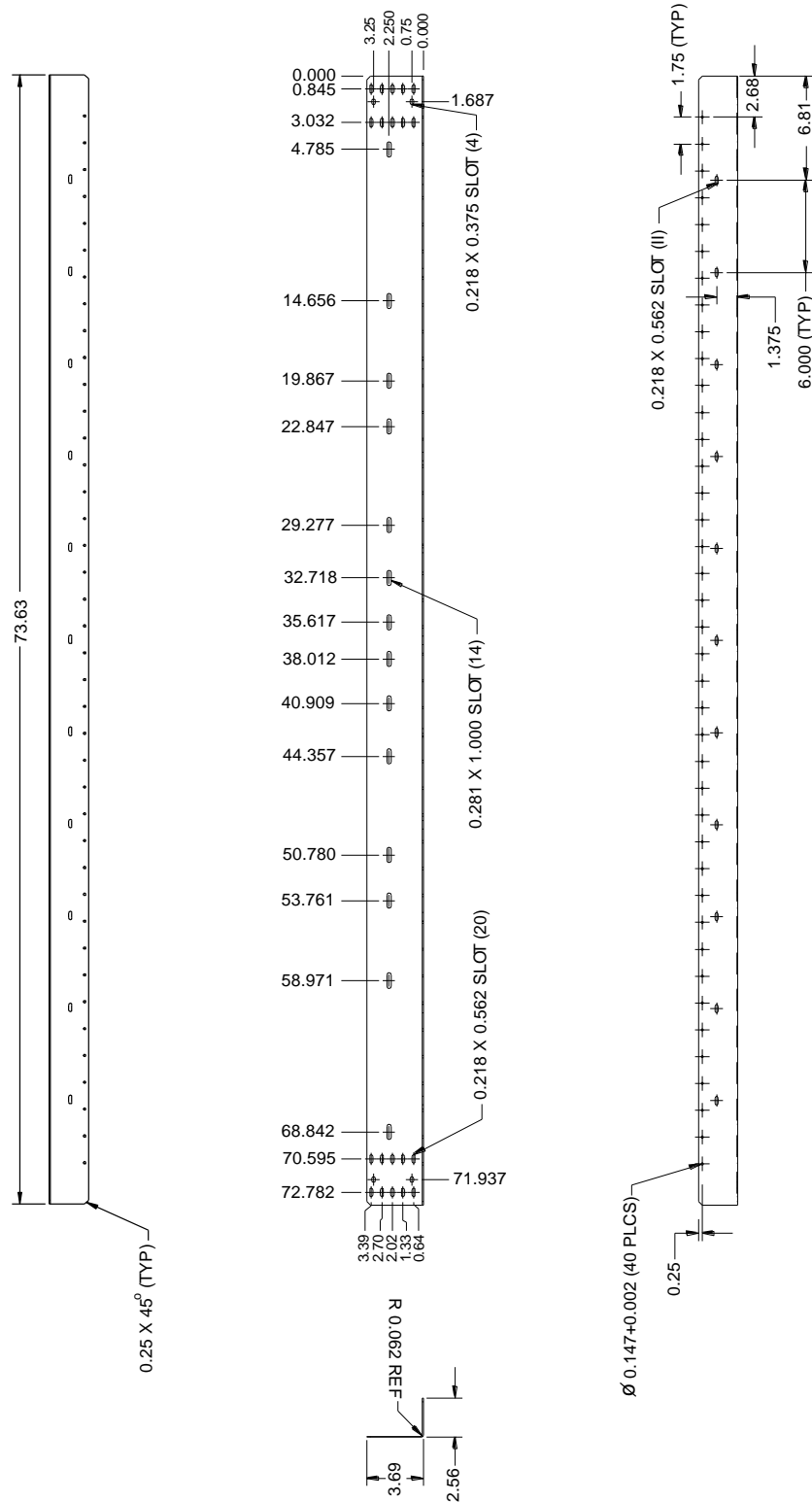
NetSure™ RDB H3, P/Ns 547698, 547699, 547501

Figure 10: RDB H3, P/Ns 547698, 547699, 547501



NetSure™ RDB Mounting Bracket, P/N 547665

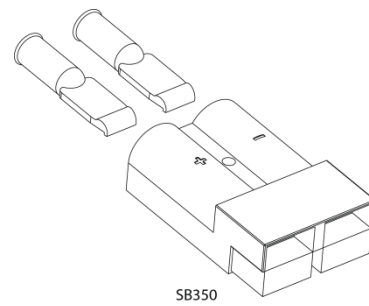
Figure 11: RDB Mounting Bracket, P/N 547665



Input Quick Connect Kit

Provides the mating connector and contacts for the DC Input Cable Assembly factory supplied and connected to the Rack PDU.

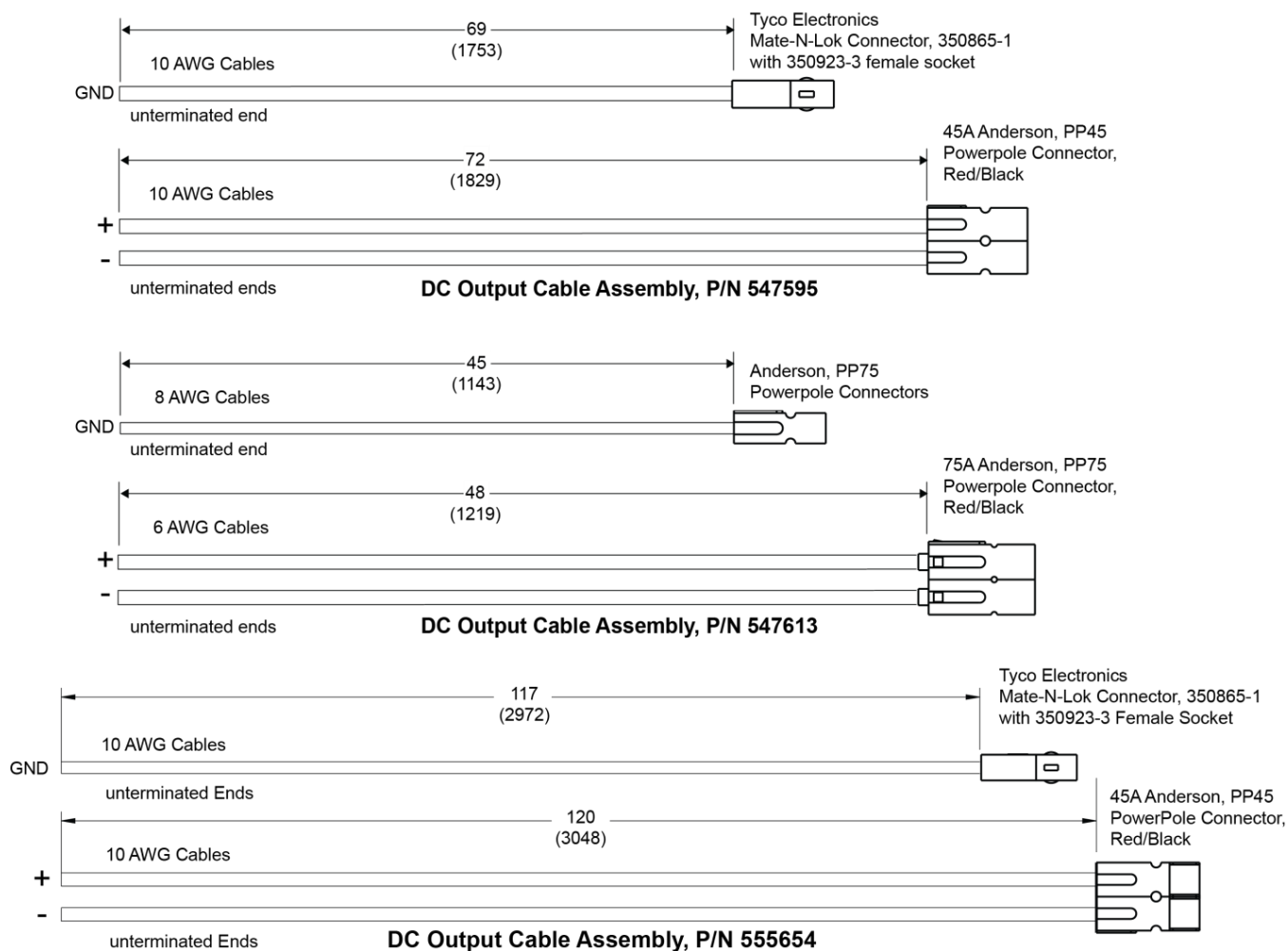
P/N	Contact Size		Mating Anderson Powerpole Connector
	(AWG)	(Metric)	
547668	1/0	55mm ²	350A, Red (SB350)
547669	2/0	70mm ²	
547670	3/0	95mm ²	
547671	4/0	120mm ²	



Output Cable Assemblies

P/N 547595, P/N 547613 and P/N 555654

Figure 12: P/N 547595, P/N 547613 and P/N 555654

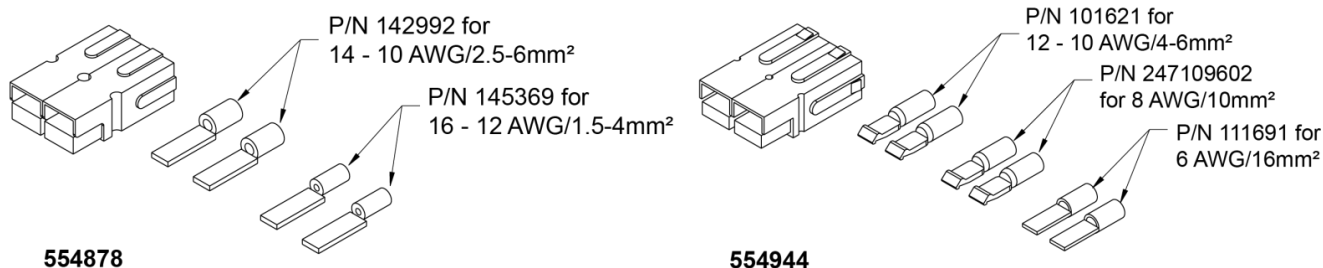


Notes:

1. Dimensions are in inches (millimeters), unless otherwise specified.

Output Connector Kits (P/N 554878 and P/N 554944)

Figure 13: Output Connector Kits (P/N 554878 and P/N 554944)



For use with L6, L15 and M6 RDB
Includes red and black connector housings and contacts for 10-14 AWG/2.5-6mm², and 12-16 AWG/1.5-4mm² wire sizes.

For use with H2 and H3 RDB
Includes red and black connector housings and contacts for 6 AWG/16mm², 8 AWG/10mm² and 10-12 AWG/4-6mm² wire sizes.

Replacement Circuit Breakers

NetSure Rack PDU P/N	Replacement Circuit Breakers P/N
547692 547694	142907 (10A)
547693 547695	142908 (15A)
547499 547615	141801 (20A)
547696	143041 (25A)
547697	143042 (30A)
547503	141802 (35A)
547698	142951 (50A)
547699	142952 (60A)
547501	142953 (70A)
547500	142955 (80A)

OPERATION



WARNING! Improper operation may cause overheating and lead to increased fire hazard. Improper operation may also destroy the device and damage other connected systems. Make sure that the total input current of the connected systems does not exceed the current rating specified on the rating plate of the Rack PDU. Please refer to the operating instructions or the rating plates of the connected systems or the circuit breaker for power specifications.

Connecting Power to the Loads

To connect DC power to the load(s), operate the respective circuit breaker on the Rack PDU to the ON position.

Removing Power from the Loads

To disconnect DC power from the load(s), operate the respective circuit breaker on the Rack PDU to the OFF position.

Alarms

Local Alarm Indicator

Each Rack PDU contains a circuit breaker alarm indicator. This indicator illuminates Red if any circuit breaker on the Rack PDU is in the OFF position.

External Circuit Breaker Alarm

Negative 48Vdc is supplied to a set of terminals when any circuit breaker on the Rack PDU is in the OFF position. These terminals may be connected to customer external alarm circuits.

