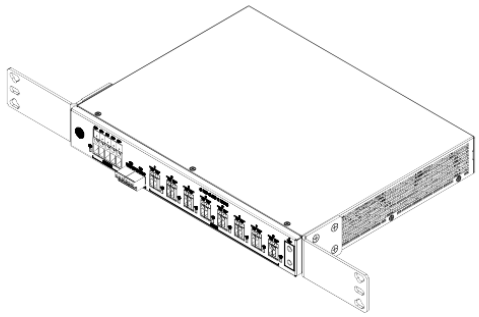
Power Express Remote Circuit Combiner

150041934 NEC Class 2 Shelf



No vertical spacing is required, allow a minimum 2 inch clearance at back of shelf for cooling airflow. Output is isolated from inputs.

Tools required:

- Wire cutters and strippers
- Cable crimpers
- Torque wrench (0-40 in-lb)
- Philips Screw Driver - #0
- Flat Screw Drivers - 1/8” and 1/16”
- Sockets - 7/16” & 5/16”

Step 1 - Mount the Shelf

Attach the shelf to the frame using a minimum of four (two on each side) 12-24 screws (not provided).

Torque to 40 in-lb using 5/16” socket.

Step 2 - Connect Chassis Ground

- Wire - 6AWG minimum
- Lug - double-hole 1/4” on 5/8”centers (not provided).
- Secure lug with screws - 10-32 (provided) Torque to 10-32 screws to 30 in-lb (3.4Nm) - 5/16” socket.

Some applications may rely on frame mounting screws for shelf ground omitting the shelf ground cable.

Step 3 - Connect DC Input Cables

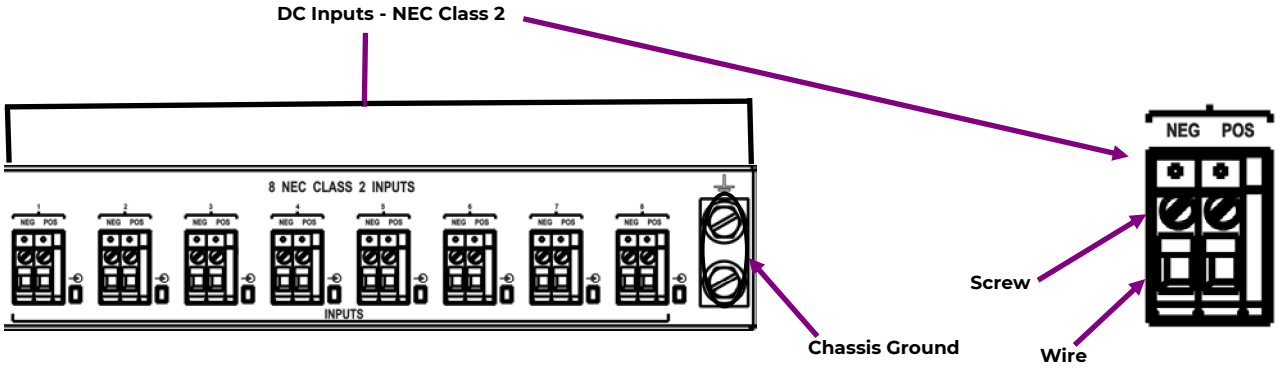
- Verify that the DC Input voltage is 48VDC using a meter.
- Match the marked polarity on all inputs.

Note: Equipment will operate properly only with proper DC Input voltage and polarity.

- Wire- 12 AWG (2.5 mm2) maximum
  1. Strip 0.35 in (9 mm)
  2. Tighten screw - torque to 4.5 in-oz (0.5 Nm)
  3. Pull wire to verify connection.

Caution: Ensure cables do not come in contact with sharp or rough surfaces that may damage insulation and cause a short circuit.

Step 3- Connect DC Input Cables (Continued)



Step 4 - Connect DC Outputs and DC Expansion

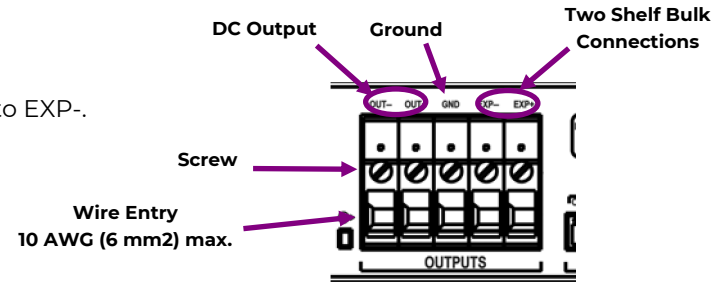
1. Connect DC output wires to Out+ and OUT-.
2. Two Shelf Bulk Option: Combine the outputs of two Power Express Remote Circuit Combiners to a single bulk feed.

Out+ = Positive DC Output

OUT- = Negative DC Output

Connect two shelves together: EXP+ to EXP+ and EXP- to EXP-.

1. Strip wire 1/2" (14 mm)
2. Insert wire fully into wire entry
3. Tighten screw - torque to 5 in-oz (0.6 Nm)
4. Pull wire to verify.



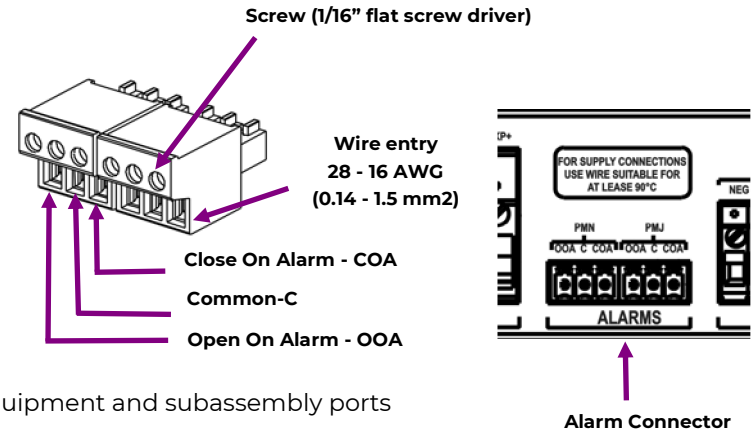
Step 5 - Connect DC Output to Ground

1. DC output is isolated from ground (floating). It must be connected to
2. Connect Ground to an output at a single point. This connection may be made on the output terminal block or externally to

Note: DC Output (Out+ or OUT-) must be externally connected to DC Reference Ground (CO Ground).

Step 6 - Connect Alarm Cable

1. Remove alarm connector from the chassis.
2. Connect alarm wires.
    1. Strip wire 3/16"
    2. Insert wire fully into wire entry
    3. Tighten screw
    4. Pull wire to verify.
3. Insert alarm connector into the chassis.



Warning: Shock Hazard and Equipment Damage - Equipment and subassembly ports

1. are suitable for connection to intra-building or unexposed wiring or cabling;

2. can be connected to shielded intra-building cabling grounded at both ends.

Information: LEDs and Alarms

LEDs: each input and output: Green OK, RED Fault.

Alarms: Major (MAJ) indicates abnormal output. Minor (MIN) indicates abnormal conditions not immediately affecting output.

Shelf Output Condition	LEDs		Circuit Condition (each)	Shelf Alarm
	Out	In		
Normal	●	●	Normal	None
Normal	●	○	Never powered	None
Normal	●	● Blink	Not powered, was previously powered	MIN
Normal	●	● Blink	Circuit internal failure, powered	MIN
Limited - load power exceeds shelf capability	●	●	Circuit in limit mode.	MAJ
Unpowered	○	○	Unpowered.	MAJ

Specifications and Application

- Specifications and ordering information are in the Power Express Class 2 Distribution Brochure available at **omnionpower.com**
- External Surge Protective Devices (SPD) Evaluated surge withstand - 1000V, 10/1000 µs pulse. Primary protection or other surge protection devices are required on each input where the transient over voltage due to atmospheric discharge and faults in power distribution systems exceeds these levels. For example, external SPDs are required when the product is used with outdoor overhead wiring.
- Equipment and subassembly ports:
  1. are suitable for connection to intra-building or unexposed wiring or cabling;
  2. can be connected to shielded intra-building cabling grounded at both ends.
- Grounding / Bonding Network – Connect to an Isolated Ground Plane (Isolated Bonding Network) or an Integrated Ground Plane (Mesh Bonding Network or Common Bonding Network).
- Installation Environment - Install in Network Telecommunication Facilities, OSP, or Restricted Access location.
- Equipment must be permanently connected.
- DC return may be either Isolated DC return (DC-I) or Common DC return (DC-C).
- DC Output (Out+ or OUT-) must be externally connected to DC Reference Ground (CO Ground).

Reference Documents

These documents are available at **omnionpower.com**

Document	Title
	Power Express Class 2 Distribution Brochure (aka Power Express Class 2 Distribution Ordering Guide)

Safety Statements

- Do not install this equipment over combustible surfaces.
- Rules and Regulations - Follow all national and local rules and regulations when making field connections.
- Compression Connectors
  - U. S. or Canada installations - use Listed/Certified compression connectors to terminate Listed/Certified field-wire conductors where required.
  - All installations - apply the appropriate connector to the correct size conductor as specified by the connector manufacturer, using only the connector manufacturer's recommended or approved tooling for that connector.
- Electrical Connection Securing: Torque to the values specified on labels or in the product documentation.
- Cable Dress - dress to avoid damage to the conductors and undue stress on the connectors.
- Fuses and Circuit Breakers - Size as required by the National Electric Code (NEC) and/or local codes. Refer to the equipment ratings to assure current does not exceed:
  - Continuous Load (List 1) - 60% of protector rating
  - Maximum Load (List 2 - typically end of discharge) - 80% of protector rating.
- Field-wired Conductors - Follow all National Electric Code (NEC) and local rules and regulations .
  - Insulation rating: 90°C minimum; 105°C (minimum) if internal to enclosed equipment cabinets.
  - Size AC field-wired conductors with 75°C ampacity (NEC) equal to or greater than their panel board circuit breaker rating.
  - Size DC field-wired conductors with 90°C ampacity (NEC) equal to or greater than circuit breaker/fuse rating.
- AC and DC input disconnect/protection - Provide accessible devices to remove input power in an emergency.
- Alarm Signals - Provide external current limiting protection. Rating 60V, 0.5A unless otherwise noted.
- Grounding - Connect the equipment chassis directly to ground. In enclosed equipment cabinets connect to the cabinet ac service ground bus. In huts, vaults, and central offices connect to the system bonding network.
- Circuit Breakers and Fuses - Use only those specified in the equipment ordering guide.
- GMT Style Fuses - Use only fuses provided with safety caps.

Precautions

- Install, service, and operate equipment only by professional, skilled and qualified personnel who have the necessary knowledge and practical experience with electrical equipment and who understand the hazards that can arise when working on this type of equipment.
- Disconnect batteries from outputs and/or follow safety procedures while working on equipment. Batteries may be connected in parallel with the output of the rectifiers. Turning off the rectifiers will not necessarily remove power from the bus.
- Do not disconnect permanent bonding connections unless all power inputs are disconnected.
- Verify that equipment is properly safety earth grounded before connecting power. High leakage currents may be possible.
- Exercise care and follow all safety warnings and practices when servicing this equipment. Hazardous energy and voltages are present in the unit and on the interface cables that can shock or cause serious injury. When equipped with ringer modules, hazardous voltages will be present on the ringer output connectors.
- Use the following precautions in addition to proper job training and safety procedures:
  - Use only properly insulated tools.
  - Remove all metallic objects (key chains, glasses, rings, watches, or other jewelry).
  - Follow Lock Out Tag Out (LOTO) procedures: customer specified, site specific, or general as appropriate. Disconnect all power input before servicing the equipment. Check for multiple power inputs.
  - Wear safety glasses.
  - Follow Personal Protective Equipment requirements: customer specified, site specific, or general as appropriate.
  - Test circuits before touching.
  - Be aware of potential hazards before servicing equipment.
  - Identify exposed hazardous electrical potentials on connectors, wiring, etc.
  - Avoid contacting circuits when removing or replacing covers;.
  - Use a personal ESD strap when accessing or removing electronic components.
- Personnel with electronic medical devices need to be aware that proximity to DC power and distribution systems, including batteries and cables, typically found in telecommunications utility rooms, can affect medical electronic devices, such as pacemakers. Effects decrease with distance.

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