

PRL1a and 2a Panelboard TVSS Unit Removal and SPD Installation Instructions



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Section 1: Introduction

These instructions will guide you through the process of replacing an existing Eaton Visor, CVL, or SML transient voltage surge suppressor (TVSS) unit with an SPD Series surge protective device (SPD). These instructions are specific to the replacement of those devices when integrated within an Eaton PRL1a or 2a panelboard. Because SPD's vary in application (bus connected versus interfaced through a circuit breaker, 3-phase versus single-phase, etc), the pictures utilized in this document may not be reflective of your specific application.

Please read all instructions carefully as you perform each step. If you require any support throughout the replacement process, please contact the Eaton Technical Resource Center at 1-800-809-2772, Option 4, Option 2.

1.1 PRL1a and 2a Panelboard Preparation

⚠ DANGER

HAZARDOUS VOLTAGES WILL CAUSE SEVERE INJURY OR DEATH. TURN OFF ALL POWER SUPPLYING THE PANELBOARD BEFORE REMOVING THE TVSS UNIT AND INSTALLING THE REPLACEMENT SPD. USE A METER TO ENSURE THAT NO VOLTAGE IS PRESENT IN THE PANELBOARD BEFORE MOVING FORWARD WITH THESE INSTRUCTIONS.

1. Remove the panelboard trim and hardware. Keep the trim and hardware for re-installation.
2. Identify the TVSS unit that is to be removed and replaced. If it is a Visor, move to Section 2.1. If it is a CVL/SML, move to Section 2.2.

Section 2: Visor and CVL/SML Disassembly Instructions

2.1 Visor Disassembly Instructions

Note: Refer to Figure 1 while performing all Visor disassembly steps.

1. Remove Item 14 (dead front cover - attached by four screws).

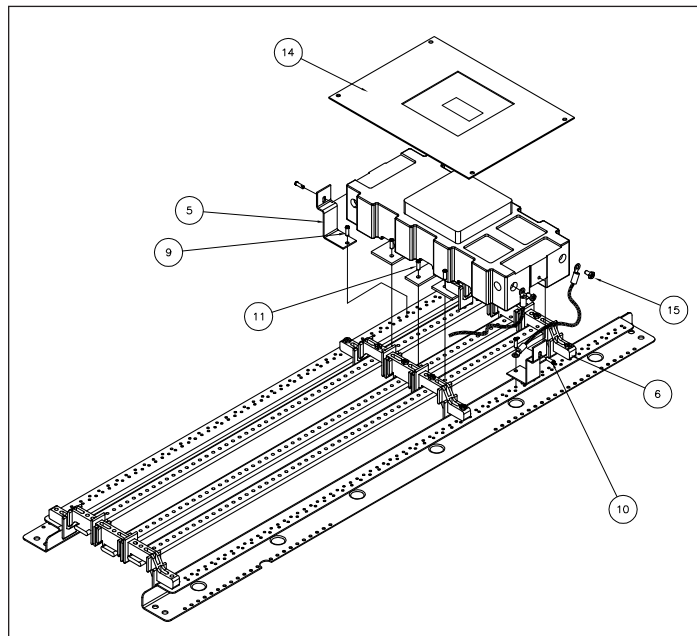


Figure 1. Visor Disassembly Reference Drawing.

2. Remove panelboard dead front cover assembly and hardware. Keep deadfront cover assembly and hardware for re-installation.
3. If the Visor unit is mounted directly to the electrical bus, remove Item 11 screws (three places for 3-phase units, two places for single-phase units) and move to Step 5. If it is a Visor interfaced via a circuit breaker, move to Step 4.
4. Visors interfaced to the system via a circuit breaker will have either two wires (single-phase units) or three wires (3-phase units) connected between the unit and a circuit breaker. Disconnect these wires from the circuit breaker.
5. Remove Item 15 screw (two places). These screws affix the neutral wire (white/gray) and ground wire (green) to the Visor. Note that Item 15 (and the corresponding neutral and ground wire connections) may be located on either side of the Visor. Disconnect the neutral wire (if present) from the panelboard neutral assembly.
6. Remove Item 10 screw (two places) and remove the Visor assembly from the panelboard. Remove each Item 5 bracket by removing Item 9 screw (two places). Discard all hardware and miscellaneous parts removed during the process.

Note: There are two bus supports (Item 6) located eight inches apart in the area from which the Visor was removed. This is the area in which the new SPD must be installed.

2.2 CVL/SML Disassembly Instructions

Note: Refer to Figure 2 while performing all CVL/SML disassembly steps.

1. Remove Item 4 (dead front cover - attached by four screws).

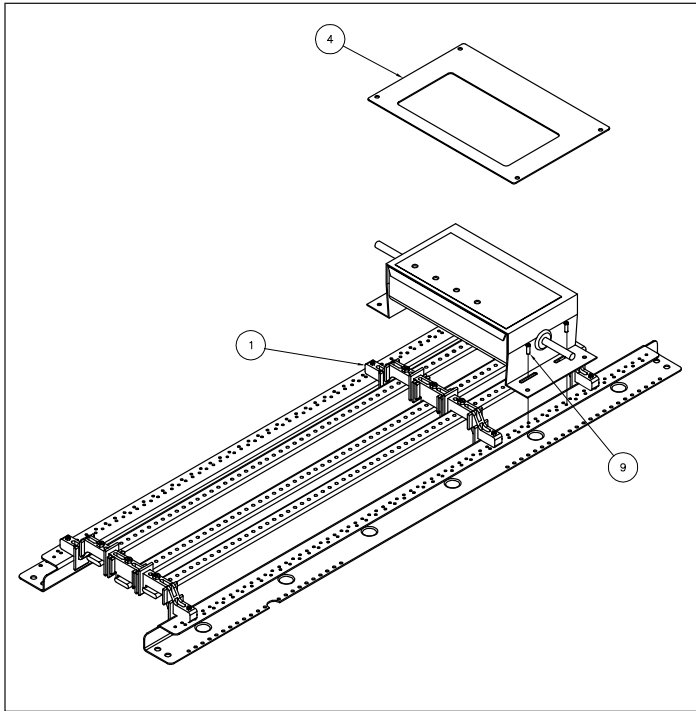


Figure 2. CVL/SML Disassembly Reference Drawing.

2. Remove panelboard deadfront cover assembly and hardware. Keep deadfront cover assembly and hardware for re-installation.
3. CVL/SML units will have either two wires (single-phase units) or three wires (3-phase units) connected between the unit and a circuit breaker. Disconnect these wires from the circuit breaker. Also, disconnect the neutral wire (white/gray) from the panelboard neutral assembly and ground wire (green) from the panelboard ground assembly.
4. Remove Item 9 screw (four places) and remove the CVL/SML unit from the panelboard assembly.

Note: There are two bus supports (Item 1) located seven inches apart in the area from which the CVL/SML was removed. This is the area in which the new SPD must be installed.

Section 3: SPD Series Unit Installation Instructions

Note: If SPD is to be interfaced via a circuit breaker, skip to Step 5 in this section. If SPD is to be direct bus mounted, go to Step 1 in this section.

1. Refer to Figure 3 for orientation of the Item 2 bracket. Locate the Item 2 bracket per Figure 4 "bracket to rail" dimensions. Attach each Item 2 bracket using two pieces of Item 8 screw.

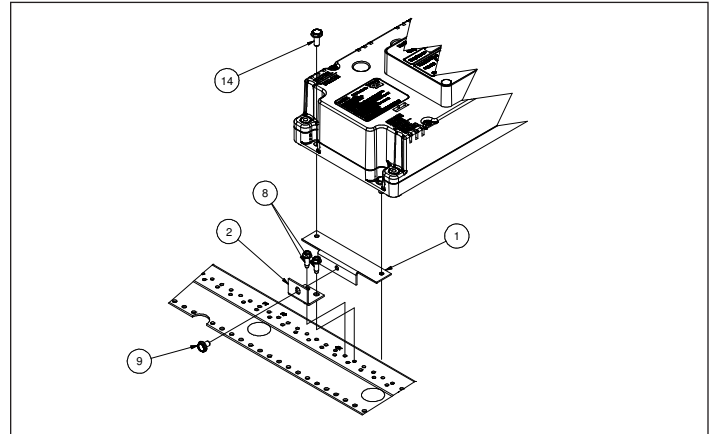


Figure 3. SPD Installation Reference Drawing.

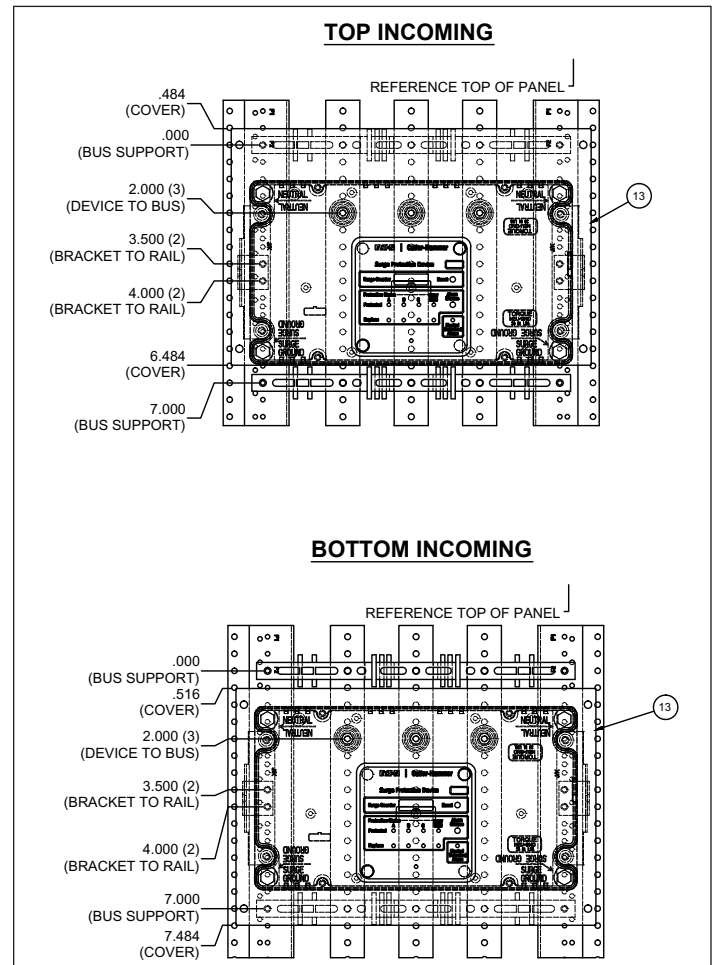


Figure 4. SPD Direct Bus Mounted Dimensions.

2. Connect the Item 1 bracket to each side of the SPD with two pieces of Item 14 screw. Refer to Figure 3 for the Item 1 bracket orientation.
3. For 3-phase applications, ensure that the B-phase bus adapter as shown in Figure 5 is present. Locate the SPD per Figure 4 "device to bus" dimensions ensuring that holes in the Item 2 bracket and the Item 1 bracket align. Start the Item 9 screws per Figure 3, but do not tighten them at this time.

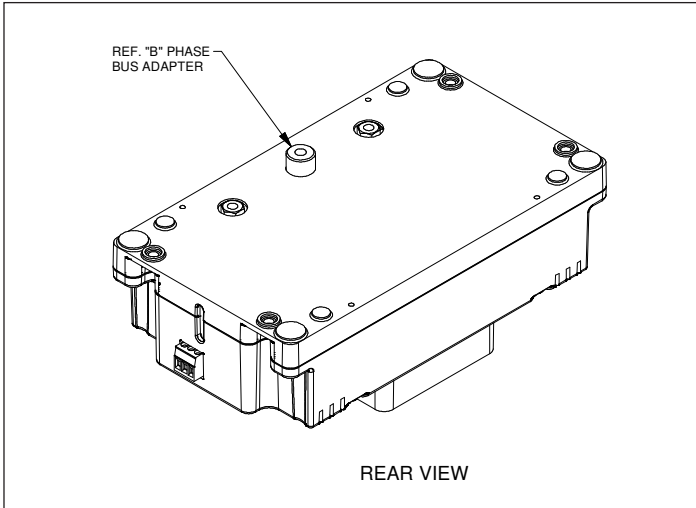


Figure 5. B-Phase Bus Adapter.

4. Install the bus mounting screws (Item 10) per Figure 6. For 3-phase applications, all three screws (Item 10) will be required, one per phase – A, B, C. For single-phase applications, only two screws (Item 10) will be required, one per phase – A & C. Ensure the bus connections screws (Item 10) are properly torqued¹. Do not over tighten them. Then, tighten the Item 9 screw at SPD bracket, one on each side. Move to Step 9 in this section.

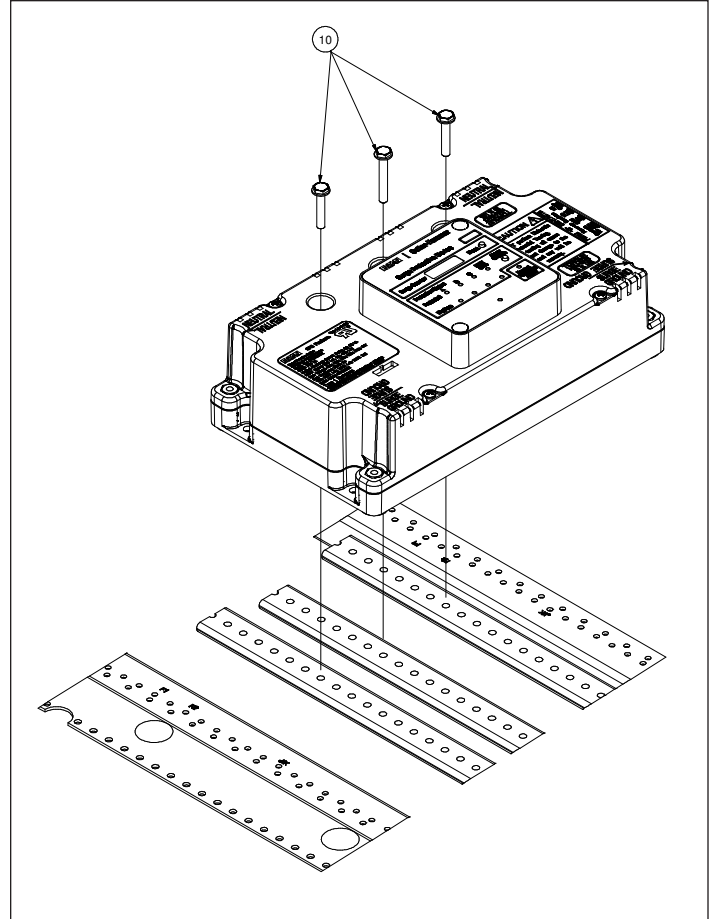


Figure 6. Bus Mounting Screws.

- Refer to Figure 3 for orientation of the Item 2 bracket. Locate the Item 2 bracket per Figure 7 "bracket to rail" dimensions. Attach the Item 2 bracket using two pieces of the Item 8 screw.

- Connect the Item 1 bracket to each side of the SPD with two pieces of the Item 14 screw. Refer to Figure 3 for the Item 1 bracket orientation. Connect the Item 1 bracket to the Item 2 bracket using the Item 9 screw, one on each side.
- Connect and torque² the SPD phase wires into the circuit breaker lugs.

Note: SPD phase wires are labeled appropriately according to the intended application (3-phase [Phase A, Phase B, and Phase C] versus single-phase [Phase A and Phase C]). The phase wires of the SPD must be terminated into the corresponding pole of the circuit breaker disconnect.

- Locate the neutral assembly in the panelboard. Refer to Figure 8 and install the neutral wire (Item 4 - gray) to the side of the SPD closest to the neutral bar using the Item 9 screw and torque³.

Note: The word "neutral" is denoted on the SPD's enclosure. Be sure that only one neutral connection is made to the SPD. Cut any extra wire length, strip the end, terminate wire, and torque¹ at the panelboard neutral assembly.

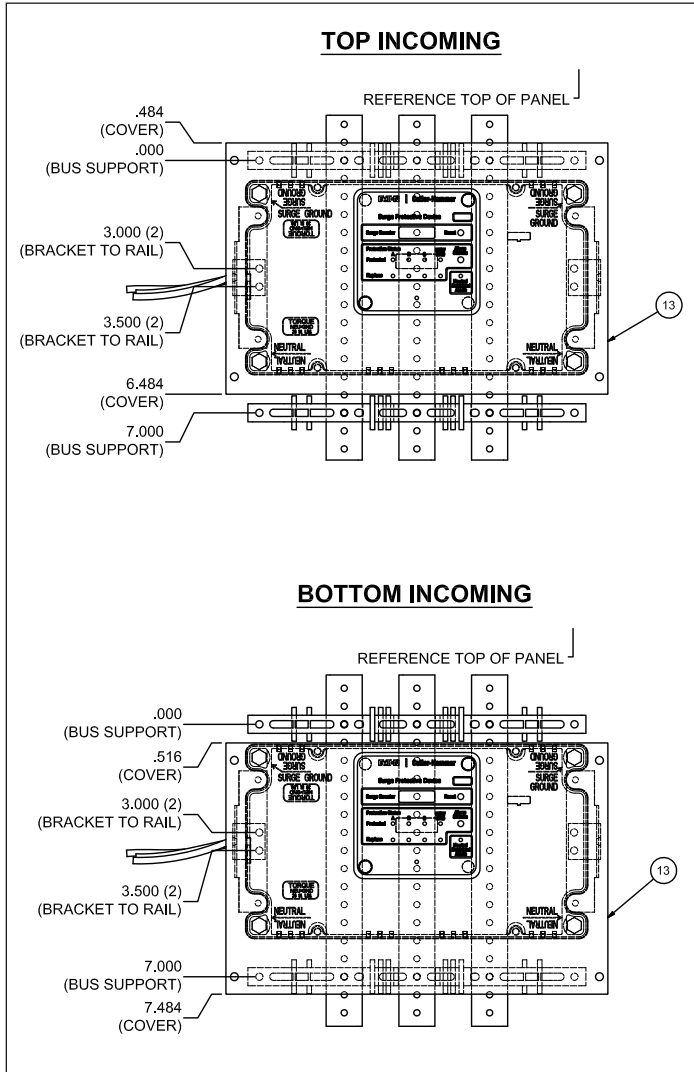


Figure 7. SPD Interfaced Via Circuit Breaker Dimensions.

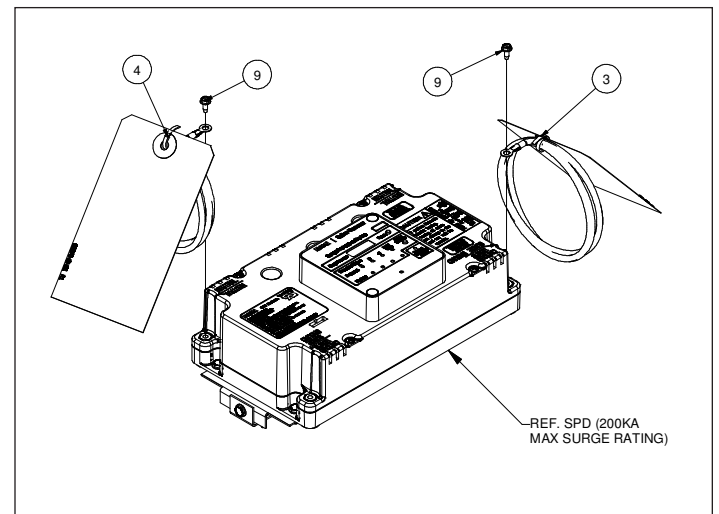


Figure 8. Neutral and Ground Wires.

9. Locate the ground assembly in the panelboard. Refer to Figure 8 and install the ground wire (Item 3 - green) to the side of the SPD closest to the ground bar using the Item 9 screw and torque³.

Note: The word "ground" is denoted on the SPD's enclosure. Be sure that only one ground connection is made to the SPD. Cut any extra wire length, strip the end, terminate wire, and torque¹ at the panelboard ground assembly.

10. Reinstall panelboard deadfront cover assembly.
11. For VISOR Replacement Only: Install the one inch blank dead front cover at bottom of dead front cover opening using two pieces of the Item 9 screw.
12. Select and install the appropriate Item 13 dead front cover (two supplied) using four Item 9 screws. Reference Figure 4 (direct bus mounted applications) or Figure 7 (interfaced via a circuit breaker applications) for orientation and location of the dead front cover as needed.
13. Refer to Figure 9 and install the items 6 and 7 labels on the SPD dead front cover.

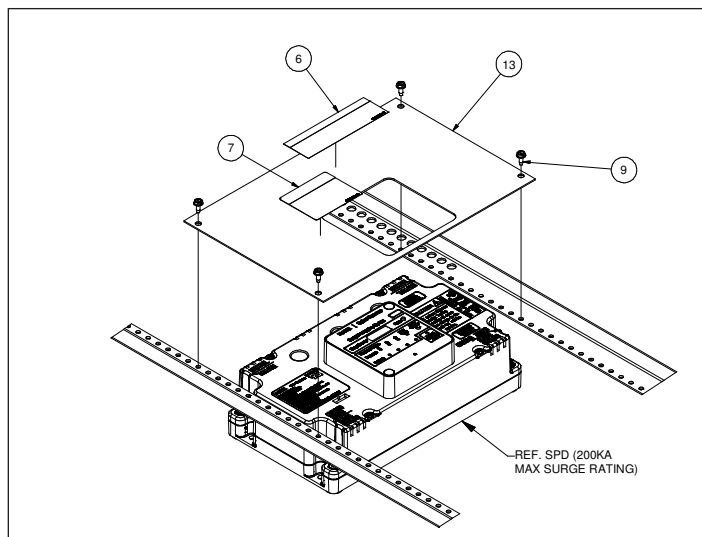


Figure 9. Label Locations.

14. Install any other items that were removed during the disassembly process and reapply power to the panelboard. Ensure that all indicator lights on the SPD Series are green and the audible alarm is not active. If there is a problem, check all connections and verify that proper phase voltages are present. If all connections and voltages are verified and problems still exist, please contact the Eaton Technical Resource Center at 1-800-809-2772, Option 4, Option 2.

Footnotes:

- 1 – Refer to the panelboard torque label (located on panelboard dead front cover) for torque requirements.
- 2 – Refer to the circuit breaker marking for torque requirements.
- 3 – Refer to the SPD marking for torque requirements.

Notes:

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