PRL3a 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 PRL3a 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 PRL3a 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 11 (dead front cover - attached by four screws). This will also remove Item 10 (insulating barrier) attached to Item 11 via plastic rivets.

Figure 1. Visor Disassembly Reference Drawing.

2. Remove panelboard dead front cover assembly and hardware. Keep dead front cover assembly and hardware for re-installation.
3. If the Visor unit is interfaced via a circuit breaker, move to Step 5. Otherwise, if the Visor unit is mounted directly to the electrical bus, refer to Figure 2. Remove the Item 13 screws (three places for 3-phase units, two places for single-phase units) that attach the bus connectors to the vertical chassis bus and move to Step 6.

Figure 2. Visor Unit Mounted to the Electrical Bus.
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. Refer to Figure 1 and remove the Item 12 screw (two places). These screws affix the neutral wire (white/gray) and ground wire (green) to the Visor. Note that Item 12 (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 the Item 14 screw (two places) and remove the Visor assembly from the panelboard. Remove each Item 5 bracket by removing the Item 15 screw (two places). Discard all hardware and miscellaneous parts removed during the process.

Note: For top incoming applications, there is a bus support located directly above the area from which the Visor was removed. For bottom incoming applications, there is a bus support located directly below the area from which the Visor was removed. This bus support will be used as a reference point when locating the new SPD assembly (Figures 4 and 8).

2.2 CVL/SML Disassembly Instructions

Note: Refer to Figure 3 while performing all CVL/SML disassembly steps.

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

2. Remove the panelboard dead front cover assembly and hardware. Keep the dead front 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 the Item 6 screw (four places) and remove the CVL/SML unit from the panelboard assembly.

Note: For top incoming applications, there is a bus support located directly above the area from which the CVL/SML was removed. For bottom incoming applications, there is a bus support located directly below the area from which the CVL/SML was removed. This bus support will be used as a reference point when locating the new SPD assembly (Figures 4 and 8).

Section 3: SPD Series Unit Installation Instructions

Note: If SPD is to be interfaced via a circuit breaker, skip to Step 10 in this section. If SPD is to be direct bus mounted, go to Step 1 in this section.

1. Refer to Figure 4 for orientation of the Item 9 bracket. In order to properly locate the Item 9 bracket onto chassis rail, select the appropriate Figure 5 illustration based upon top or bottom incoming direction of the panelboard main conductors. Locate the Item 9 bracket onto chassis rail per appropriate illustration "Bracket to Rail" dimensions, noting the bus support as zero reference point. Attach each Item 9 bracket using two of the Item 15 screws.
2. Refer to Figure 6 for proper orientation of bus connectors (Items 1, 2, and 3). Locate and install bus connectors per the appropriate Figure 5 illustration "Connector to Bus" dimensions. For 3-phase applications, all three bus connectors (Items 1, 2, and 3) and the Item 13 screws will be required, one per phase – A, B, and C. For single-phase applications, only two bus connectors (Items 1 and 3) and the Item 13 screws will be required, one per phase – A and C. Ensure the bus connection screws (Item 13) are properly torqued. Do not over tighten them.

Note: To avoid alignment issues, ensure that the bus connector vertical edge remains parallel with the vertical edge of the chassis bus during the torquing process.

Figure 5. SPD Direct Bus Mounted Dimensions.

3. Refer to Figure 4 for Item 6 bracket orientation. Connect the Item 6 bracket to each side of the SPD with two of the Item 14 screws.

4. For 3-phase applications, remove the B-phase bus adapter as shown in Figure 7. Locate SPD such that the bus connectors (Items 1, 2, and 3) align with the bus mounting holes in the top of the SPD per Figure 6. Ensure that the Item 9 bracket and the Item 6 bracket are properly aligned per Figure 4.

Figure 6. Bus Connector Orientation.

Figure 7. B-Phase Bus Adapter.
5. Start the Item 12 screws per Figure 6, but do not tighten at this time. Start Item 10 screws per Figure 4, but do not tighten at this time.

6. Once the fit is confirmed, first tighten and torque the Item 12 screws per Figure 6. Then tighten the Item 10 screws per Figure 4. Move to step 11.

7. For SPD units interfaced via a circuit breaker, refer to Figure 4 for orientation of the Item 9 bracket. In order to properly locate the Item 9 bracket onto chassis rail, select appropriate Figure 8 illustration based upon top or bottom incoming direction of panelboard main conductors. Locate the Item 9 bracket onto chassis rail per appropriate illustration “Bracket to Rail” dimensions, noting the bus support as zero reference point. Attach each Item 9 bracket using two of the Item 15 screw.

8. Refer to Figure 4 for the Item 6 bracket orientation. Connect the Item 6 bracket to each side of the SPD with two of the Item 14 screws.

9. Refer to Figure 4 for proper alignment of the Item 6 and Item 9 brackets. Connect and tighten the brackets using the Item 10 screws (one each side).

10. For SPD units interfaced via a circuit breaker, the SPD phase wires must be connected to the circuit breaker disconnect. Cut any extra length from each SPD phase wire, strip the end, terminate the wire into appropriate circuit breaker lug, and torque.

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.

11. Locate the neutral assembly in the panelboard. Refer to Figure 9 and install the neutral wire (Item 5 - gray) to the side of the SPD closest to the neutral bar using the Item 10 screw and torque.

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 the wire, and torque at the panelboard neutral assembly.

12. Locate the ground assembly in the panelboard. Refer to Figure 9 and install the ground wire (Item 4 - green) to the side of the SPD closest to the ground bar using the Item 10 screw and torque.

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 the wire, and torque at the panelboard ground assembly.

13. Reinstall the panelboard dead front cover assembly.

14. Refer to Figure 10. Install Item 11 SPD dead front cover with four of the Item 10 screws. Reference Figure 5 (direct bus mounted applications) or Figure 8 (interfaced via a circuit breaker applications) for orientation and location of dead front cover as needed. Install the Item 7 and 8 labels on the dead front cover.
Figure 10. Label Locations.

15. For Visor Replacement Only: Depending on the size of the Visor unit that was replaced, blank dead front cover(s) are required to fill in any open space and must be installed directly above or below the SPD dead front cover using four of the Item 10 screws.

16. 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 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.
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