

## Replacing a CXPS-E3 Shelf P/N: 0916022-100 (with battery busses)

### Summary

This procedure can be used to replace both shelves in a CXPS-E3 system.

### Equipment or Tools Necessary

- Insulated Tools (including screwdriver, torque wrench, wire cutter, electricians tape, and other common tools)
- Digital Multimeter that can read AC and DC
- Reference documents as required
- Personal safety equipment
- 48-2.4kW Rectifier Shelf (P/N: 0300040-001) (as many as being replaced)

### Procedure

**Note: Before you begin make sure all metal jewelry including rings and watches are removed and you have an antistatic wrist strap on.**

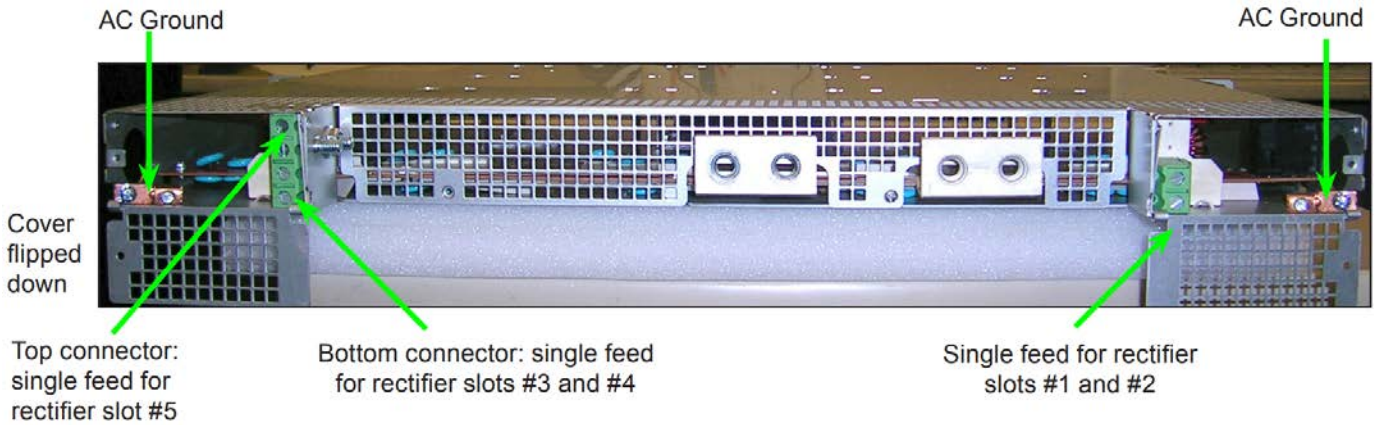
**Note: This procedure will de-power all loads connected to the system.**

- 1) Ensure that there are no unexpected alarms or problems with the system before working on it.
- 2) Power down all loads connected to the system. If this option is inaccessible, turn off the output breakers when it is safe to do so.
- 3) Remove rectifiers one at a time. If applicable, take note of the serial numbers belonging in to each position of each shelf. This may be required if failure analysis is to be made. Ensure all of the rectifiers are removed from the shelf.
- 4) Turn off all battery breakers or battery disconnects to isolate them from the system. Using a voltmeter in DC measurement, ensure that the bus bars do not have voltage on them.
- 5) Turn off each AC input breaker (up to 3), to ensure that no power is entering the shelf from either sides.

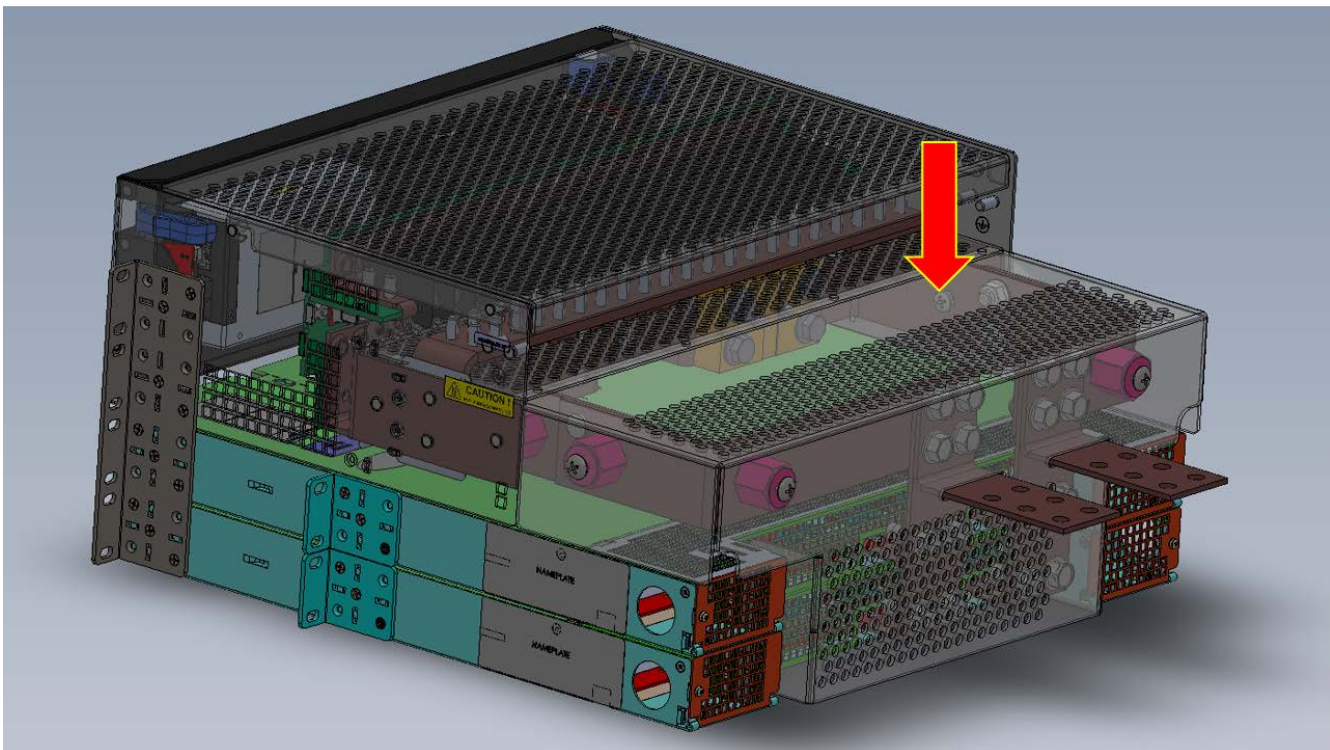


- 6) Unscrew the panels on the back opening up access for the AC connections. Using a voltmeter in AC or a voltage detector ensure that there is no AC coming into any of the 5 inputs by measuring at the screws.

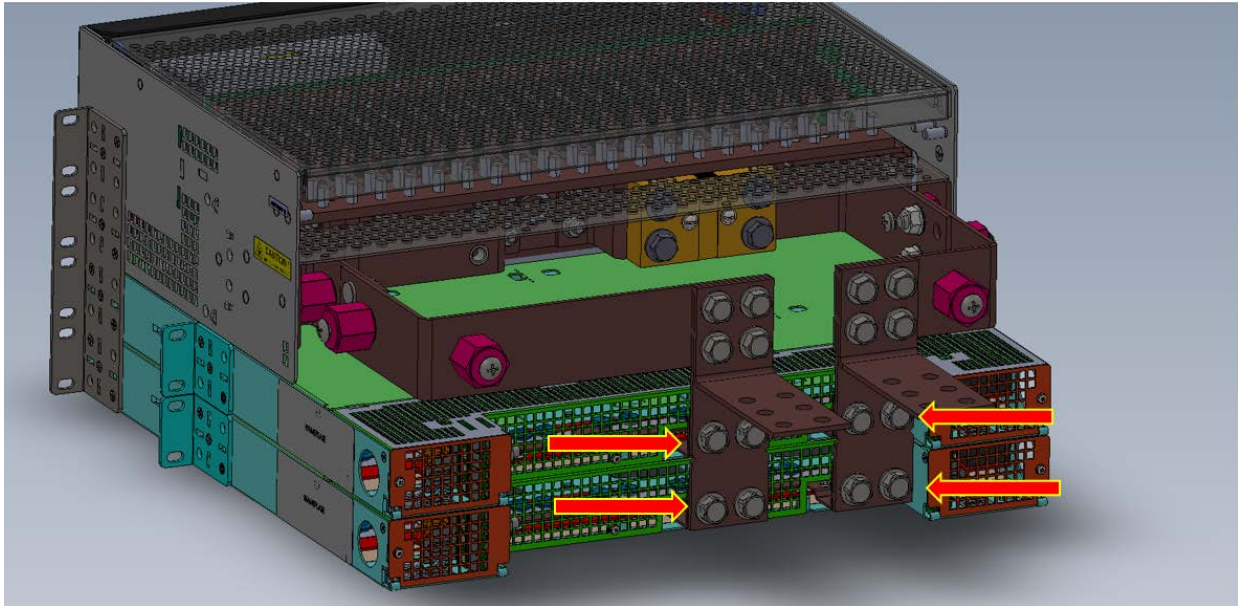
NOTE: Rectifier slots are numbered 1 to 5 from the left front of the shelf.



- 7) After ensuring that there is no DC or AC on the system on the busses or the terminal blocks respectively, first mark, then remove the AC wiring by loosening the AC screws. Tape the wires accordingly.
- 8) Remove the back cover by undoing the connecting screws.



- 9) Remove the four screws in the back of bus bars for each shelf to detach the bus bars from the shelf.



- 10) Disconnect the CAN cables on the side of the shelf. Remove the CAN termination. Take note of its position.
- 11) Replace the shelf by carefully removing the screws from the rack, making sure that the weight of the shelf is supported as it is removed.
- 12) Insert the replacement shelf. Screw the shelf onto the rack using the recommended torque values.

### 7.1.2 Recommended Torque Values

- Clear hole connections (nut and bolt)
- PEM studs
- PEM threaded inserts
- Thread formed connections (in copper bus bar)

Grade 5 rated hardware is required for these torque values.

Table C lists the recommended torque values for connection to the power system with the following hardware:

Table C — Recommended torque values	
1/4"	8.8 ft-lbs
3/8"	32.5 ft-lbs
1/2"	73 ft-lbs

- 13) Screw the bus bars onto the back of the shelf using the recommended torque values.
- 14) Repeat steps 12 and 13 for each shelf.
- 15) Reinsert the CAN cables into the previous positions making sure the daisy chain is complete and the last shelf is terminated.
- 16) Carefully reconnect the AC wiring to their appropriate connections making sure to fasten the wiring with the screw securely.
- 17) Insert one rectifier.



- 18) Turn on all the AC breakers. Measure with an AC meter for nominal AC voltage. If there are no irregularities, proceed to the next step.
- 19) Observe that the rectifier turns on and the AC and the DC light is on.
- 20) Measure the voltage at the bus bars. Ensure that there is approximately 54V on these bars.
- 21) Reinsert the rest of the rectifiers and note for any irregularities.
- 22) The rectifiers may need to be added or removed from the programmed power system within the controller as needed to clear the alarms.
- 23) Proceed to turn on the load breakers noting any irregularities.

### End of Method of Procedures

#### For assistance, contact Alpha Technical Support:

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