Protective Interface Module for XM2 Power Supply Installation Instructions

This procedure details the installation process for an Protective Interface Module (PIM) in an XM2 Power Supply.

Installing Protective Interface Module (PIM)

NOTICE:

Only qualified personnel should install the PIM. To install the PIM you must completely shut down the power supply. To maintain output to the load, consider using either the APP9015S or APP9022S Service Power Supply during installation.

⚡ WARNING! ELECTRICAL HAZARD

To avoid exposing the technician to potentially lethal voltages, before you proceed you must remove all power from the power supply; unplug the power supply from the AC power source, remove all front panel connections (such as N+1), and disconnect the battery connector.

Tools Required:

* 90° torque driver w/ #2 Phillips-head bit (set to 14 in-lb)
* 9/32" nut driver

Installation Procedure:

1. Completely shut down the XM2 power supply, verify all power is removed. Ensure utility power is off and battery power is safely secured (or not installed) in the enclosure assembly. All connections and cables must be removed from the XM2 power supply. To maintain output to the load, consider using the APP9015S or APP9022S Service Power Supply when installing the PIM.

2. To remove the transformer module's front panel, remove the five front panel screws. Lift the front panel up and away from the chassis.

3. Use a right-angled (90°) Phillips-head screwdriver to remove the fuse wire (A). This wire may be connected to the power distribution board (PDB) by either a standoff (Fig. 1) or "Fast-On" connector.

4. Remove the transformer wire (B). This wire may be connected to the PDB by either a standoff (Fig. 1) or "Fast-On" connector.

5. Remove the factory-installed bus bar (E) between standoffs P13 (D), and P16 (C).

Quick Key

A. Fuse wire
B. Transformer wire
C. P16
D. P13
E. Bus bar

B
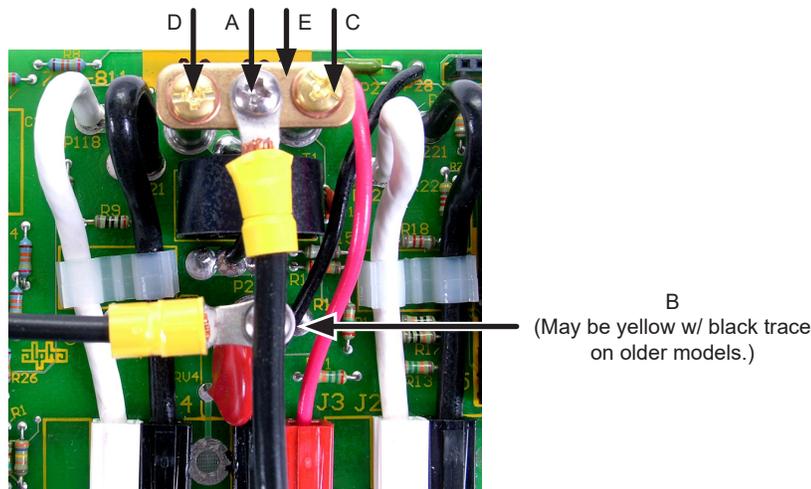(May be yellow w/ black trace on older models.)

Fig. 1, PBD Connections

6. Install the PDB header in the J4 connector of the PIM circuit board.

7. Align the PIM circuit board holes labeled P3, P5, and P4 with the standoffs (P13, P15, and P16) on the PDB. Place the PIM circuit board on the standoffs, making the J6/J4 connection. Verify the J6 pins are aligned correctly and completely seated in J4.

8. Using the provided 6-32 hardware, re-attach the:
    • Fuse wire at P5 (on PIM board in legacy units)
    • 0-Volt wire from the transformer to P4 (XMS2-1350/-922 models only)

9. Torque the three 6-32 screws (P3, P5, and P4) fastening the PIM circuit board to the power distribution circuit board to 14 in-lb (P13, P15, and P16).

10. Replace the front panel.10.

11. Program the PIM. See **Programming the PIM** for instructions.

⚠ CAUTION!

Torque the 6-32 fastening hardware (with or without standoff) to 14 in-lb to avoid arcing or board failure.

✓ **NOTICE**:

The PIM header *(Alpha p/n 545-739-10)* is shipped uninstalled. Locate the header and install it between J6 on the PDB board and J4 on the PIM board.
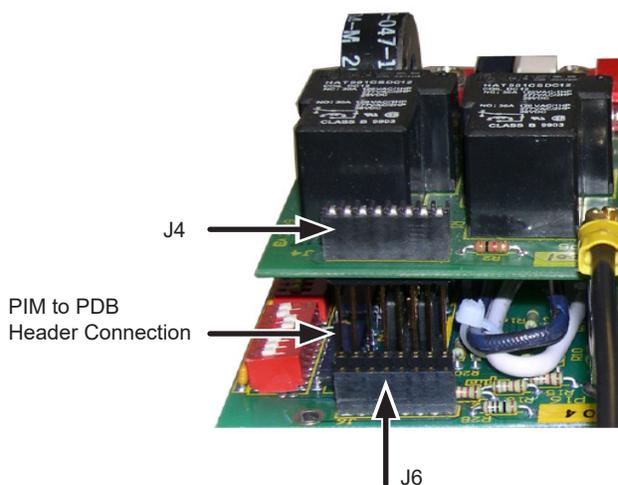
J4

PIM to PDB
Header Connection

J6

Fig. 2, J6 and J4 connection as seen from rear of Power Distribution Board

✓ **NOTICE**:

The output current limit for the PIM is set by the position of the jumper on JP1. Configure JP1 to the proper current setting; either 15A or 22A.
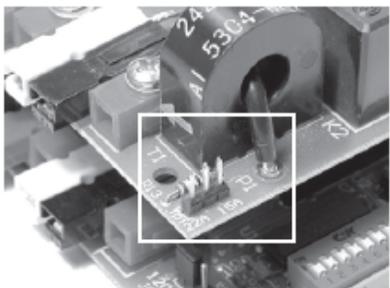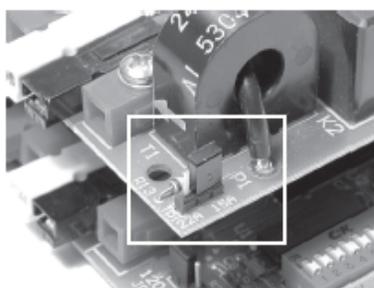
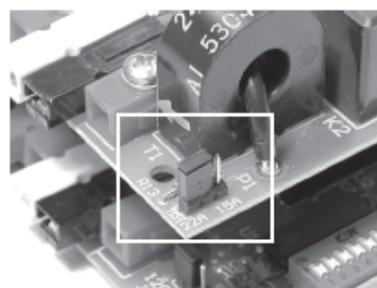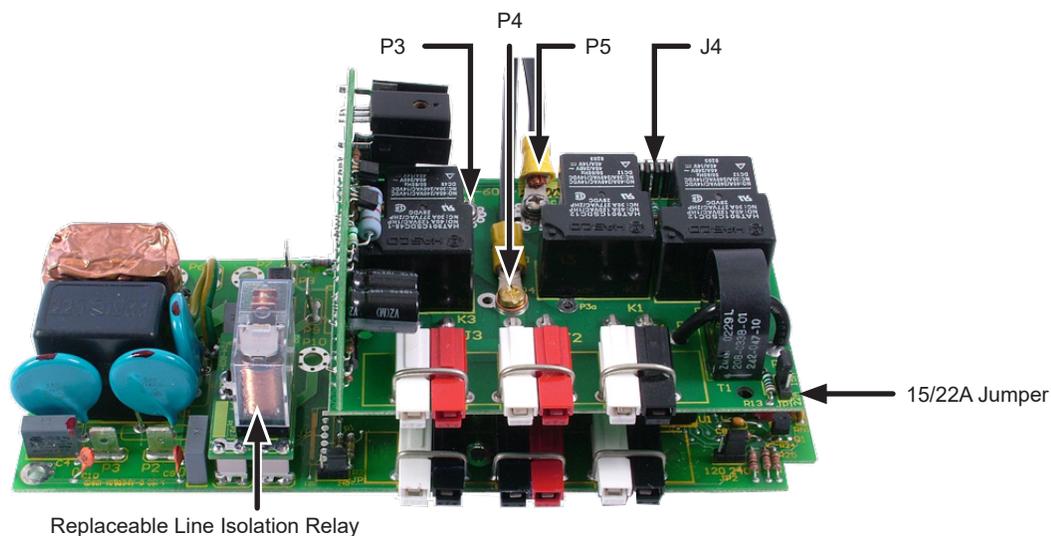**Fig. 3, Location of JP1 on PIM**   **Fig. 4, Jumper in 15A Position**   **Fig. 5, Jumper in 22A Position**

(Front of Power Supply)

Fig. 6, PIM and PDB

Programming the PIM

Programmable parameters (with PIM installed) are:

Channel 1 Overcurrent Limit: The RMS current level that causes the Output 1 protection relay to trip after a specified delay (overcurrent tolerance period).

Channel 2 Overcurrent Limit: The RMS current level that causes the Output 2 protection relay to trip after a specified delay (overcurrent tolerance period).

Retry Delay: The time between each attempt to restart an output in the event of an overcurrent event.

Retry Limit: The number of times the XM2 power supply attempts to restart an output connection. Once the RETRY LIMIT is exceeded, standard models attempt to restart the output connection every 30 minutes (HV models do not attempt to restart after the retry limit is exceeded). Set this parameter to "zero" to disable the "automatic retry" function.

Overcurrent Tolerance Period (1-10 seconds): In the event of an overcurrent episode, the amount of time an output overcurrent condition is permitted on either output connection. Once this time expires, the output protection relay disables its output feeder.

Reset Output 1/Reset Output 2: Once fault condition has been corrected, this manually resets tripped output.

NOTICE:

Programming any of the above parameters will reset the "trip/entry" counters.

N+1 (optional): The N+1 ports are used in redundant system configurations where multiple power supplies are housed in a single enclosure. With the installation of the optional Protective Interface Modules (PIM) on the power distribution board, a second output connection becomes available and allows the XM2 power supply to function as an N+1 redundant power supply system. In the event of a power supply failure, a redundant power supply (with an optional PIM board installed) is automatically switched into service with approximately a 8ms delay. This feature is part of the PIM option.

This provision also protects system components by shutting down the load during overcurrent and short circuit conditions. Adding a PIM in the secondary power supply enables both power supplies to be connected in a "dual redundant" configuration so the system can protect two critical loads.

NOTICE:

If the optional PIM is not installed, the values shown on the "PIM PARAMETERS" line of the Smart Display are "read only".

The Setup Menu

Press the **ENTR** key to access the Setup Menu.

Use the Setup menu to view or change the programmable operating parameters of the power supply or the optional PIM. Navigation is similar to the Operation Normal menu. Press **UP** or **DOWN** to access the Single Step mode where you can individually select sub-menu items.

To select and change a value in the Setup Menu:

1. Press either **UP** or **DOWN** to put the display in the Manual Scroll Mode.
2. Continue pressing **UP** or **DOWN** until the desired item is displayed.
3. Press **ENTR** to select the item to edit.
4. Press **UP** to increase the displayed value, or **DOWN** to decrease the value. To change the displayed values more rapidly, in Edit mode, press either **UP** or **DOWN** and hold for more than two seconds.
5. Press **ENTR** when the desired value is displayed. Press **ENTR** again to accept and save the new value. To leave programming mode without saving the new value, press **ESC**.
6. If an incorrect value is accidentally entered, repeat the above process and enter the proper value, or select the SET DEFAULTS menu selection of the Setup Menu and press **ENTR** twice to reset all parameters to their factory default values.
7. To return to the Operation Normal menu, press **ESC** three times.

You can also access ON or OFF and YES or NO selections as described above. The CODE VER, XM_CLASS VER, and Total Run Time selections are for informational display only and cannot be edited.

NOTICE:

The SET DEFAULTS menu selection does not reset STANDBY TIME, STANDBY EVENTS, or DEVICE ADDRESS. Manually reset these options.