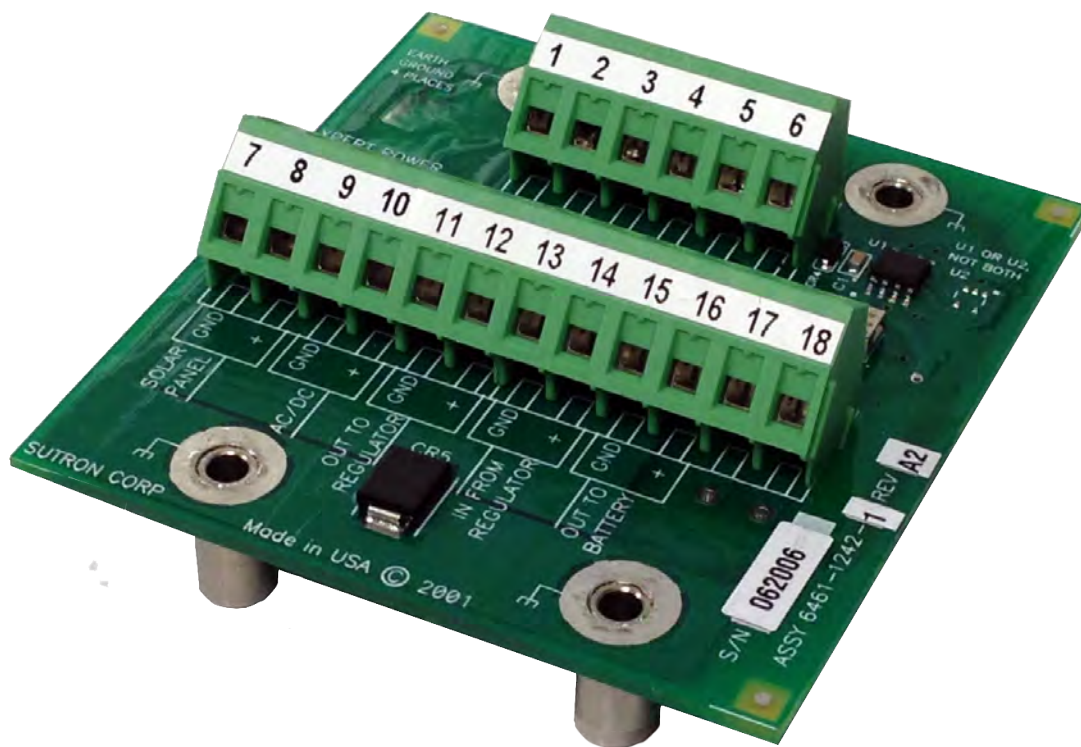


OPERATIONS & MAINTENANCE MANUAL



Part No. 8800-1134

Rev. A

May 2013

INSTALLATION XPERT TERMINATION BOARDS

Purpose of this document:

The purpose of this document is to give the customer guidelines for installation and to provide connection details that may not be clear from the markings on the boards. This document also covers the specifications of the boards.

A. ALL TERMINATION BOARDS.

1. Mount board(s) to an **earth grounded metal panel** using #6 screws (see appendix A). All surges are sent to the standoffs, so it is critical to have a good connection between the standoffs, panel and earth ground.

B. 8080-0002-4 AND 8080-0003-3 I/O MODULE WITH TERMINATION.

1. Mount I/O module(s) as desired . Follow the Xpert Users Manual for Xpert and sensor connections.
2. Connect ribbon cable between I/O module and termination board (Pin 1 to pin 1). Supplied ribbon cable is 24" long, for longer lengths, contact customer service.

B. 6461-1241 SDI-12 TERMINATION

1. Connect "TO XPERT" connector to Xpert SDI using 3 conductor wire(Strip back wire as needed):
 - PIN 1 to Xpert SDI : G
 - PIN 2 to Xpert SDI : +
 - PIN 3(or 4) to Xpert SDI : D
2. Connect SDI-12 sensor(s) to the J1 connector (pins 5-7 and/or 8-10).

C. 6461-1240 TELEPHONE LINE TERMINATION

1. Connect RJ-11(J2) or Pins 1-2 to telephone line.
2. Connect RJ-11 (J1) connector to modem "line in" connection.

D. 6461-1239 RS-232 TERMINATION

1. Connect J1 DB-9 connector to com port of data logger.
2. Set jumper J3 to get desired signal at PIN 1, J4 to get desired signal at PIN 4.
3. Connect RS-232 device to J2 connector. NOTE: PIN 6 is from pin 9 of DB-9(J1) and is assumed to have +12V or +5V from Xpert/Xlite com port.

E. 6461-1242 POWER TERMINATION

1. PINS 7(G) / 8(+),solar panel, and 9(G) / 10(+),AC/DC battery charger, are inputs. PINS 11 / 12 outputs the higher of these two voltages to a regulator's input.
2. PINS 13 / 14 connect to a regulator's output. PINS 15 / 16 provide the regulator's output to a battery. Connecting the regulator's output to a battery this way allows the J3 "MONITOR" connector to get the necessary signals for current and voltage readings.
3. Use the following equations to get system voltages/current from J3 voltage readings:

PIN 1 or 6 = GND reference

Charge current to battery in amps = $V(\text{PIN } 2) * 1.5$

Battery volts = $V(\text{PIN } 3) * 4$

AC/DC output volts = $V(\text{PIN } 4) * 5$

Solar panel output volts = $V(\text{PIN } 5) * 5$

SPECIFICATIONS XPERT TERMINATION BOARDS

A. 6461-1237 ANALOG TERMINATION

- Operating temperature : -40°C to +60°C
- Accepts wire sizes (*input side) : 26-14 AWG
- Accepts connection (#output side) : 0.1" centerline ribbon cable
- Multi-stage circuitry
- Automatically resets after surge
- Series resistance (Analog I/O) : 10 ohms
- Power handling : (8/20 uS) 20 kAmps
- Clamping voltage : 36 V
- Maximum line voltage (Analog I/O) : 22 V
- Dimensions : 4.20" W X 3.10" H

B. 6461-1238 DIGITAL TERMINATION

- Operating temperature : -40°C to +60°C
- Accepts wire sizes (input side) : 26-14 AWG
- Accepts connection (output side) : 0.1" centerline ribbon cable
- Multi-stage circuitry
- Automatically resets after surge
- Series resistance (Digital I/O) : 10 ohms
- Power handling : (8/20 uS) 20 kAmps
- Clamping voltage : 36 V
- Maximum line voltage (Digital I/O) : 18 V
- Dimensions : 4.20" W X 3.10" H

C. 6461-1239 RS-232 TERMINATION

- Operating temperature : -40°C to +60°C
- Accepts wire sizes (input side): 26-14 AWG
- Accepts connection (output side) : DB-9 serial
- Automatically resets after surge
- Series resistance (Data lines) : 100 ohms
- IEC 61000-4-5 (Lightning) : (8/20 uS) 12 Amps
- IEC 61000-4-2 (ESD) : 15 kV (air)
- Clamping voltage : (5 Amps) 24 V
- Maximum line voltage (Data lines) : 12 V
- Maximum line voltage (Power lines) : 24 V
- Capacitance : 150 pF
- Signal lines available (input side)
 - RXD
 - TXD
 - DTR or RTS (not both)
 - CTS or DSR (not both)
 - Pin 9 (power out from Xpert/Xlite)
- Dimensions : 1.40" W X 3.10" H

*input side refers to side where surges come from
#output side refers to surge protected side

D. 6461-1240 TELEPHONE TERMINATION

- Operating temperature : -40°C to +60°C
- Accepts wire sizes (input side): 26-14 AWG or RJ-11 telephone jack
- Accepts connection (output side) : RJ-11 telephone jack
- Multi-stage circuitry
- Automatically resets after surge
- Power handling : (8/20 uS) 20 kAmps
- Surge ratings :
 - TELCORDIA GR-1089
 - ITU K.20/21/45
 - FCC PART 68
- Let through voltage : 400 V
- Dimensions : 1.40" W X 3.10" H

E. 6461-1241 SDI-12 TERMINATION

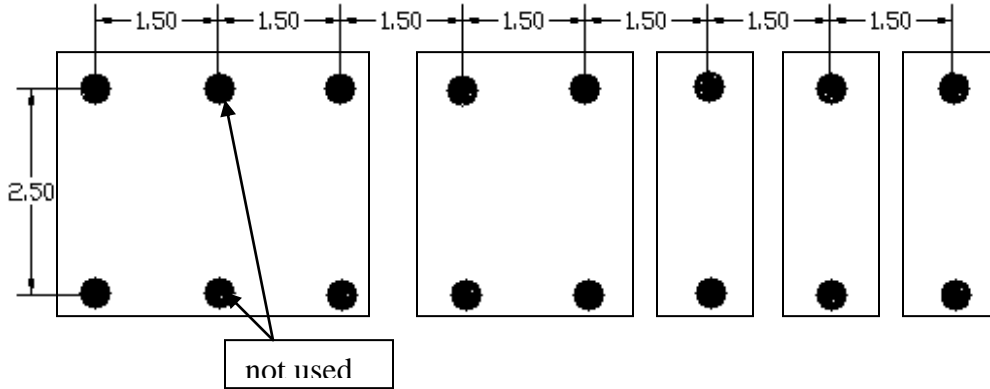
- Operating temperature : -40°C to +60°C
- Accepts wire sizes (input/output): 26-14 AWG
- Dual SDI-12 input connections
- Multi-stage circuitry
- Automatically resets after surge
- Power handling : (8/20 uS) 20 kAmps
- Series resistance (Data line) : 100 ohms
- Clamping voltage : 30 V
- Dimensions : 1.40" W X 3.10" H

F. 6461-1242 POWER TERMINATION

- Operating temperature : -40°C to +60°C
- Accepts wire sizes (input/output): 26-14 AWG
- Dimensions : 2.90" W X 3.10" H
- **SOLAR AND AC/DC INPUTS**
 - Maximum voltage : 22 V
 - Transient protection : (10/1000 uS) 1500 W
 - Reverse voltage protected
 - Sense output accuracy : $\pm 2\%$
 - Output to regulator = Higher (V) of Solar or AC/DC
 - Maximum current : 5 Amps
 - Maximum voltage drop : 0.7 V
- **REGULATOR to BATTERY**
 - Current sense resistance : 0.033 ohms
 - Current sense error : < 5 % @ 3 Amps
 - Battery voltage sense accuracy : $\pm 2\%$

APPENDIX A

Suggested mounting hole pattern (in inches) using #6-32 threaded stand-offs or tapped holes:



Add/remove holes depending on which board combinations are needed:

6461-1239, 6461-1240 and 6461-1241 boards only require one set of holes (see right 3).

6461-1237 and 6461-1238 require two sets of holes spaced 3 inches apart (see left).

6461-1242 requires two sets of holes spaced 1.5 inches apart (see middle).

Boards are designed to fit into this pattern side-by-side to minimize required mounting space.