



***INSTALLATION AND OPERATING  
INSTRUCTIONS***

**IMPORTANT SAFETY INSTRUCTIONS  
SAVE THESE INSTRUCTIONS**

**PROMINENCE 6R  
DC COMBINER BOXES**

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AMtec Solar, a Division of AMtec Industries, Inc.

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*-Proprietary Information-*

SAVE THESE INSTRUCTIONS- THIS MANUAL CONTAINS IMPORTANT INSTRUCTIONS FOR MODEL **PROMINENCE 6R** THAT SHALL BE FOLLOWED DURING INSTALLATION AND MAINTENANCE OF THE COMBINER BOXES.

**YOU MUST FOLLOW THESE INSTRUCTIONS DURING INSTALLATION AND/OR MAINTENANCE OF THESE COMBINER BOXES**

**WARNING! THE INSTALLATION, ADJUSTMENT, OR REPAIR OF COMBINER BOXES INVOLVES RISK OF CONTACT WITH POTENTIALLY LETHAL VOLTAGES AND CURRENTS.**

**NO ATTEMPT TO INSTALL OR SERVICE THE SYSTEM SHOULD BE MADE BY ANYONE WHO IS NOT A QUALIFIED, TRAINED TECHNICIAN FAMILIAR WITH THIS TYPE OF ELECTRICAL EQUIPMENT.**

Installers should be advised:

- These installation instructions are for use by qualified personnel only.
- The equipment contains lethal DC voltages.
- Site access is intended for authorized personnel only.
- The electrical quick-connects are not for current interrupt. Do not disconnect the quick-connects unless the system is open-circuited and has been checked for a short circuit.
- The inverters contain energy storage devices that require 15 minutes in order to safely discharge their lethal voltages.
- Don not install the combiner box in wet rooftop conditions (i.e. in the presence of rain, snow, or ice).
- Handle broken or damaged PV modules with extreme caution.
- Any system work that occurs within six feet of a roof edge must be performed by workers equipped with fall protection.
- Maximum Ambient temperature for guaranteed operation is 50°C.

Installers must reference the National Electric Code (NEC) sections 250 and 690 to ensure proper system wiring and grounding compliance. In addition, all state and federal Occupational Safety and Health Administration (OSHA) guidelines and regulations must be followed.

## ***1. EXPLANATION OF SYMBOLS***

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**ELECTRICAL SHOCK HAZARD-** These labels are used to mark components where potentially lethal voltages exist.



**GROUND-** This identifies the equipment grounding points.

## ***2. DESCRIPTION***

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### PRODUCT DESCRIPTION

The DC combiner box provides a means of combining multiple source circuits from a PV array into a single DC source. Each source circuit is fused separately according to the requirements of the National Electric Code (NEC). The combiner box allows for fail-safe operation of the system in the unlikely event that a problem with a source circuit leads to abnormally high current. In addition, the combiner box provides a convenient means of diagnosing the DC portion of a PV system for routine maintenance and troubleshooting.

### SPECIFICATIONS

| Model  | Maximum #<br>Of Strings | Maximum Fuse<br>Capacity Per<br>String (DC) | Maximum<br>Output<br>Current (DC) | Maximum<br>Output<br>Wire Size | Number of<br>Output<br>Poles |
|--------|-------------------------|---|-----------------------------------|--------------------------------|------------------------------|
| PROM6R | 6                       | 15 Amps                                     | 90 Amps                           | 3/0 AWG                        | 1                            |

## COMPONENTS

The combiner box is a pre-wired, wall or floor mounted electrical enclosure containing the following components:

- **Fuse blocks-** Dead front fuse holders
- **Positive Bus Bar-** Copper bar used to combine all positive inputs.
- **Negative Bus Bar-** Copper bar used to combine all negative inputs.
- **Ground Bus Bar-** Copper bar used to combine individual array grounds to system ground.

### **3. REQUIRED TOOLS AND MATERIALS**

#### TOOLS

Standard construction and electrical tools along with basic electrical safety and testing instruments are required for the installation of the combiner box. In addition to this, installation requires the following:

- **Multimeter**
- **Phillips Screwdriver**
- **Torque Wrench**
- **Electrical Safety Gloves**
- **Allen Wrench Set**
- **Wire Strippers**
- **Permanent Marking Device**
- **Level**

#### MATERIALS

- **Tie wraps**
- **Liquid tight conduit hubs**
- **Torque Seal (Optional)**

**NOTE: IN ADDITION TO TOOLS AND MATERIALS REQUIRED, INSTALLERS MUST REFERENCE THE SPECIFIC SITE SCOPE AND PROJECT DRAWINGS FOR ADDITIONAL INFORMATION AND CONSIDERATIONS, INCLUDING THE SYSTEM LAYOUT AND ANY RELATED ELECTRICAL DRAWINGS.**

#### **4. INSTALLATION PROCEDURE**

##### **1. PREPARING THE COMBINER BOX FOR MOUNTING**

1.1 Refer to the project drawings to identify the mounting location and any specific combiner box location requirements or special instructions. You must mount the box in a position/location where the door is easily accessible.

1.2 Your Prominence 6R Combiner Box has integrated mounting holes to be used for mounting.

1.3 Refer to the layout diagram of the array and secure the enclosure to a rigid substrate using a minimum of 1/4" stainless hardware.

1.4 Refer to the appendix in the rear of this manual to identify acceptable punchout locations. Use only water tight conduit fittings to connect the conduit to the punchouts. All hubs must comply with the requirements of UL 514B, "Standards for Fittings for Conduit and Outlet Boxes."

**DO NOT INSTALL CONDUIT ON UPWARDS FACING SIDES OF THE ENCLOSURE.** This is meant to reduce the likelihood of rainwater penetrating into the enclosure.

## 2. CONNECTING WIRES FROM THE ARRAY\*

*\*In this section it is assumed that all arrays are negatively grounded. To positively ground arrays, route the negative conductors to the fuse blocks and the positive conductors to the bus bar without fuses (labeled as the negative bar).*

*Class 1 wiring methods are to be used for field wiring connections to terminals of a Class 2 circuit.*

- 2.1 Label each wire from the array with a reference number as well a polarity.
- 2.2 Run all wires into the combiner box through the watertight hub.
- 2.3 Strip ½” from all of the wires.
- 2.4 Terminate all positive wires on corresponding fuse block.
- 2.5 Terminate all negative wires on negative bus bar tap.
- 2.6 Use Tie wraps and bridge punching on backplate to secure incoming wireways onto backplate.
- 2.7 Use torque and wiring guidelines from Combiner Box Backplate or the Appendix in the back of this manual to torque components to proper specifications.\*

***\*Due to the inherent expansion and contraction of metals when subjected to temperature changes, we suggest re-torquing all components on a scheduled basis.***

## 3. ATTACHING POSITIVE AND NEGATIVE TERMINALS TO THE INVERTER

- 3.1 After referring to the electrical drawings to determine which wire to use, connect all three conductors (positive, negative, and ground) to either the inverter or DC switch, depending on the system.
- 3.2 Use torque guidelines from Combiner Box Backplate or the Appendix in the back of this manual to torque output terminals to proper specifications.

3.3 After components have been properly torqued, permanently mark the hex nuts so that any change in the rotation will be easily discerned. Use either torque seal or a permanent marker. See backpan for torquing information.

3.4 Refer to the single-line drawings to identify the correct wire and conduit, then install the conduit and pull the wire from the combiner box to the inverter or DC switch.

#### 4. INSTALL FUSES

4.1 Open all fuseblocks and insert a fuse into each. Be sure to use only fuses of the proper rating. Fuse sizing can be determined by  $1.56 \times I_{sc}$  of the corresponding modules.

#### 5. VERIFYING VOLTAGE, POLARITY

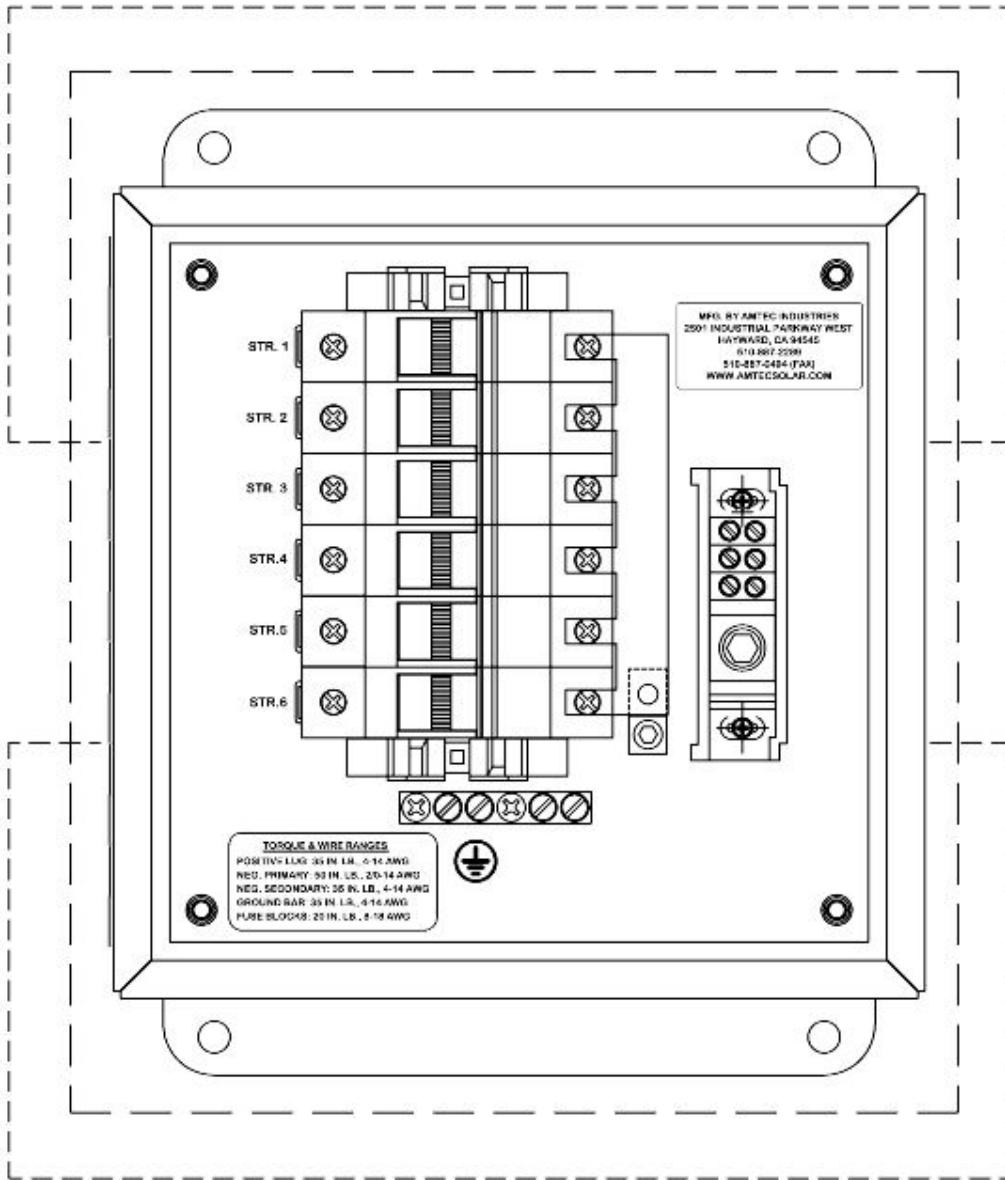
5.1 Using a multimeter, test the voltage of each string by measuring between the array side of the fuse block and the negative bus bar. Ensure that each string has the proper polarity.

#### 6. FINALIZING INSTALLATION

6.1 Be sure that the inverter has been turned off.

6.2 Close all fuse blocks.

**The system is now ready to be energized.**



KNOCKOUT REGION FOR  
OUTGOING CONDUITS



KNOCKOUT REGION FOR  
INCOMING CONDUITS

## PROMINENCE 6R KNOCKOUT LOCATIONS

# APPENDIX

## TORQUE VALUES

*All Values Given in In-Lbs.*

|                           | <b>PROM6R</b> |
|---------------------------|---------------|
| <b>FUSE BLOCKS</b>        | <b>20</b>     |
| <b>POSITIVE LUGS</b>      | <b>35</b>     |
| <b>NEGATIVE PRIMARY</b>   | <b>50</b>     |
| <b>NEGATIVE SECONDARY</b> | <b>35</b>     |
| <b>GROUNDING TAP BAR</b>  | <b>35</b>     |

## WIRE RANGES

*For Reference Only*

*All Values in A.W.G. (Unless Otherwise Noted)*

|                           | <b>PROM6R</b>       |
|---------------------------|---------------------|
| <b>FUSE BLOCKS</b>        | <b>8-18</b>         |
| <b>POSITIVE LUGS</b>      | <b>4 – 14AWG</b>    |
| <b>NEGATIVE PRIMARY</b>   | <b>2/0 – 14 AWG</b> |
| <b>NEGATIVE SECONDARY</b> | <b>4-14</b>         |
| <b>GROUNDING TAP BAR</b>  | <b>4-14</b>         |