

CIRCUIT BREAKER PANEL

**PRODUCT MANUAL FOR
P/N 111B-2906**

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**RECEIVING INSTRUCTIONS
&
GENERAL EQUIPMENT INFORMATION**

Please Note: For your protection, the following information and the product manual should be read and thoroughly understood before unpacking, installing, or using the equipment.

C & D Technologies presents all equipment to the delivering carrier securely packed and in perfect condition. Upon acceptance of the package from us, the delivering carrier assumed responsibility for its safe arrival to you. Once you receive the equipment, it is your responsibility to document any damage the carrier may have inflicted, and to file your claim promptly and accurately.

1. PACKAGE INSPECTION

- 1.1 Examine the shipping crate or carton for any visible damage: punctures, dents, and any other signs of possible internal damage.
- 1.2 Describe any damage or shortage on the receiving documents, and have the carrier sign their full name.
- 1.3 If your receiving freight bill notes that a Tip-N-Tell is attached to your freight, locate it. If the Tip-N-Tell arrow has turned even partially blue, this means the freight has been tipped in transport. Make sure the carrier notes this on your receipt before you sign for the freight.

2. EQUIPMENT INSPECTION

- 2.1 Within fifteen days, open the crate and inspect the contents for damages. While unpacking, be careful not to discard any equipment, parts, or manuals. If any damage is detected, call the delivering carrier to determine appropriate action. They may require an inspection.

***SAVE ALL SHIPPING MATERIAL FOR THE INSPECTOR TO SEE!**

- 2.2 After the inspection has been made, call C & D Technologies. We will determine if the equipment should be returned to our plant for repair, or if some other method would be more expeditious. If it is determined that the equipment should be returned to C & D Technologies, ask the delivering carrier to send the packages back to C & D Technologies at the delivering carrier's expense.
- 2.3 If repair is necessary, we will invoice you for the repair so that you may submit the bill to the delivering carrier with your claim form.
- 2.4 It is your responsibility to file a claim with the delivering carrier. Failure to properly file a claim for shipping damages may void warranty service for any physical damages later reported for repair.

3. HANDLING

Equipment can be universally heavy or top-heavy. Use adequate humanpower or equipment for handling. Until the equipment is securely mounted, be careful to prevent the equipment from being accidentally tipped over.

4. NAMEPLATE

Each piece of C & D Technologies equipment is identified by a part number on the nameplate. Please refer to this number in all correspondence with C & D Technologies.

5. INITIAL SETTINGS

All equipment is shipped from our production area *fully checked and adjusted*. Do not make any adjustments until you have referred to the technical reference or product manual.

6. SPARE PARTS

To minimize downtime during installation or operation, we suggest you purchase spare fuses, circuit boards and other recommended components as listed on the Recommended Spare Parts List in the back of the product manual. If nothing else, we strongly recommend stocking spare fuses for all systems.

ISSUE HISTORY

ISSUE	PAGE(S)	DESCRIPTION	DATE
1		Original Issue	Oct. 1995
2	ALL	Changed throughout manual & cover to read “C & D Technologies, Inc. Power Solutions” and/or “C & D Technologies, Inc.”. Changed cover to include Dunlap Plant address, phone #'s, fax #'s, web-site address, etc. Added updated Receiving Instructions & General Equipment Information sheet =issue 7 Added updated drawings & Added Issue History sheet See ECN 12737	MCM 12/20/99
3	ALL	SEE ECN 15562	MCM 6/6/06

MODEL NUMBER

DC VOLTAGE

CURRENT SHUNT

111B.2906.01	-12 V	NO
111B.2906.05	-12 V	YES
111B.2906.13	+12 V	YES
111B.2906.02	-24 V	NO
111B.2906.06	-24 V	YES
111B.2906.12	+24 V	NO
111B.2906.14	+24 V	YES
111B.2906.04	-48 V	NO
111B.2906.08	-48 V	YES

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SECTION ONE: GENERAL DESCRIPTION

SPECIFICATIONS

Operating Voltage:	See Table
Maximum Current:	500 Amps
Number of Breakers:	1 to 20
Rating of Breakers:	10 to 70 Amps
Breaker Type:	Plug-in
Input Connection:	Copper bus
Output Connection:	Screw Compression Lug, AWG 14-2
Alarm Circuit:	Red LED and one set of form "C" relay contacts
Ammeter Shunt:	Optional. 200 to 600 Amp
Dimensions:	7" High X 17" Wide
Mounting:	23" Rack or Enclosed Box
Marking Strip:	Write on type

The circuit breaker panel is designed to be completely accessible from the front panel. A hinged front cover provides access to add, change or wire the circuit breakers and alarm. The enclosure has a built-in cable tray and provides for cable tie-downs.

SECTION TWO: INSTALLATION

GROUND

Panels can be furnished for positive grounded or negative grounded systems. The polarity can be changed only by changing the alarm circuit board.

MOUNTING

Install panel in a rack or box enclosure using 12 – 24 hardware. Panel can be mounted in a 23" rack or enclosure.

WIRING

1. The input bus bar can be connected directly to vertical bus bar systems in 23" racks or box enclosures. For other systems, connect a properly sized cable to the bus bar using the holes provided.
2. Route output cables through the holes provided in the rear of the enclosure. Insert the output wire along with the flat blade of the orange alarm wire into the circuit breaker's output lug.

3. Securely fasten the cable to the cable-clamping bracket using tie wraps.
4. Wire TB1 on the alarm circuit board as follows:
 - a. Using AWG 20 minimum wire for all connections.
 - b. Connect terminal 5 (FA) to the Power Distribution System alarm circuit.
 - c. Connect terminal 4 (BATT + or BATT-) to the Ground bus bar.
 - d. If desired, alarm terminals 1, 2, and 3 (C, NO, and NC respectively) can be used for another alarm circuit. Relay will energize when a circuit breaker is tripped or turned off. Contacts are rated 2 Amps at 28 VDC, 1 Amp at 60 VDC, and ½ Amp at 120 VDC resistive.
5. Battery voltage will appear at the load side of unloaded, open breakers due to a high impedance path through the alarm board. To verify that this is a resistive battery path, place a load of 1000 ohms (5 watt or greater) between the breaker output lug and ground. This load will alleviate the installer's concern of wiring low impedance connections at different voltages.
6. For panels equipped with the optional current shunt, do the following:
 - a. Confirm that the rating of the shunt matches the requirements for the monitoring circuit (i.e., 600 Amps at 50 MV).
 - b. Connect AWG 14 wires, maximum 6-foot length, to the terminal block (TB2) located on the rear of the panel, and to the meter panel. Ensure that proper polarity is observed.

INSTALLING A NEW CIRCUIT BREAKER

⚠ **WARNING:** The circuit breakers snap onto a copper bus bar. Do not use tools that could short this bus bar to any other piece of metal. Personnel injury and equipment damage may result if improper techniques are used to remove or install breakers.

To install a new circuit breaker, follow the procedure below:

1. Move a cover plate on the front panel to allow space for the new breaker.
2. Turn off the new breaker and snap it onto the bus bar, making the lower connection first, then the upper connection. Be sure breaker is seated properly.
3. Wire breaker as explained in Step 4 of Wiring. Connect the push-on end of the orange alarm wire to the alarm board, using any available connection.

REMOVING AN EXISTING BREAKER

To remove a circuit breaker from the panel, use the following instructions. Refer to the WARNING notice given above before proceeding.

1. Turn off the breaker and remove the load cable and orange alarm wire.
2. Insert the tip of a screwdriver into the outer casing slot on the top of the protruding portion of the circuit breaker, and pull the top of the breaker free. Then grip the breaker body and pull the lower clip free.

SECTION THREE: CIRCUIT DESCRIPTION

The circuit breaker panel is designed to provide output load protection for total load current not to exceed 550 Amps.

⚠️ **WARNING:** Excess load breaker capacity may result in improper operation and hazard to equipment and personnel.

The panel has an alarm board, which provides:

- An alarm LED
- A change in state of one set of form “C” relay contacts (for remote alarm)
- A signal to activate a circuit breaker trip alarm on an alarm panel

These alarms will be activated if a load is connected to the affected breaker, and the breaker has tripped due to an overcurrent condition or it is manually turned off. A breaker will not activate an alarm if no load is connected to it.

Individual breakers will also display a red flag indicator when they have tripped due to an overcurrent condition.

SECTION FOUR: MAINTENANCE

The circuit breaker panel should be inspected periodically for:

- Loose or overheated connections
- Burned or overheated parts
- Accumulation of dirt