



DCPDU2B Series Power Distribution Units

Installation Manual



REV	DESCRIPTION	CHK'd & APPR'd / DATE
1	Production Release	DR / 01-29-21

Contents

1.0	INTRODUCTION	4
2.0	FEATURES.....	4
3.0	PRODUCT LINE	5
4.0	SAFETY & INDUSTRY STANDARDS	6
5.0	WARRANTY (summary)	6
6.0	DESCRIPTION OF OPERATION	7
7.0	SPECIFICATIONS	8
8.0	FRONT PANEL DESCRIPTION	8
9.0	BACK PANEL DESCRIPTION.....	9
10.0	UNPACKING AND INSPECTION	13
11.0	INSTALLATION.....	14
13.0	SETUP AND TESTING	18

FIGURES

Figure 1. DCPDU2B DC Power Distribution Panel.....	4
Figure 2. Block Diagram.....	7
Figure 3. Front Panel View	8
Figure 4. Back Panel View.....	9
Figure 5. Input Bus Bar Detail.....	9
Figure 6. Output Barrier Strip Detail.....	10
Figure 7. Alarm Connection Detail.....	11
Figure 8. Form-C Relay Schematic	11
Figure 9. Chassis Ground Connection	12
Figure 10. Series Connection of Multiple Panels	14

OPERATING MANUAL

DCPDU2B SERIES DC POWER DISTRIBUTION PANELS

1.0 INTRODUCTION

DCPDU2B Series circuit breaker panels provide distribution and overload protection for 1 to 20 circuits with circuit breakers that can be field installed/exchanged using a supplied puller tool. The panels are only two mounting positions (3.5 inches) high.

The panels provide up to 20 breakers single bus 450A or 10A+10B 450A+450A distribution and alarm capabilities. The A and B sections of the dual-bus panel are fully isolated, can be separately configured for 24/48 volts and are polarity neutral. Breaker capacities range from 2.5 to 200 amperes.

Breaker alarm is indicated by a dual color LED (green/red) and Form C relay contacts for each bus.



Figure 1. DCPDU2B DC Power Distribution Panel

2.0 FEATURES

- ◆ 48/24V
- ◆ POLARITY NEUTRAL
- ◆ 450A bus bar inputs
- ◆ Single or Dual Feed
- ◆ Rear panel safety cover standard
- ◆ Tapered entry for easy insertion
- ◆ NO or NC alarm contacts
- ◆ Alarm LEDs
- ◆ Power Fail form-C alarm
- ◆ 19" & 23" mounting brackets

3.0 PRODUCT LINE

3.1 Configurations

The following table lists the 5 available configurations of the DCPDU2B series.

STANDARD DUAL FEED CONFIGURATIONS

MODEL NUMBER	VOLTS EACH FEED	INPUT FEEDS	MAX. # BREAKERS	AMPS EACH FEED	TOTAL AMPS
DCPDU2B-D-2X10-450	48/24 - 48/24	2	10 A side & 10 B side	450	900

OPTIONAL SINGLE FEED CONFIGURATIONS

MODEL NUMBER	VOLTS EACH FEED	INPUT FEEDS	MAX. # BREAKERS	AMPS EACH FEED	TOTAL AMPS
DCPDU2B-S-X20-450	48/24	1	20	450	450

3.2 Available Breakers ¹

AMPS	PART NUMBER	AMPS	PART NUMBER
2.5	DCBKR2B-2.5	50	DCBKR2B-50
5	DCBKR2B-5	60	DCBKR2B-60
10	DCBKR2B-10	80	DCBKR2B-80
15	DCBKR2B-15	100	DCBKR2B-100
20	DCBKR2B-20	125 ²	DCBKR2B-125
25	DCBKR2B-25	150 ²	DCBKR2B-150
30	DCBKR2B-30	200 ²	DCBKR2B-200
40	DCBKR2B-40		

NOTES:

1. Breakers need to be ordered individually and are shipped separately.
2. Require two positions. Includes paralleling bars to connect output load terminals.
3. Breakers are magnetic-hydraulic plug-in type with auxiliary contacts (Normally Open) and mid-trip function. Only the following types may be installed.

2.5A to 100A:

CBI D-Frame Series single pole, D-2A23XANBSXXXXLXB-XXXXXWDVAX2-X

or

Carling C-Series Handle single pole, CT1-B2-14-XXX-A11-MJ

125A to 200A:

CBI D-Frame Series, parallel pole, D-2A23XBNBSXXXXLAM-XXXXXWDVAX3-X

or

Carling C-Series Handle Parallel pole, CT2-P2-04-XXX-A11-MK

4.0 SAFETY & INDUSTRY STANDARDS

4.1 DCPDU2B Series power distribution panels meet the following safety requirements:

STANDARD

UL60950-1, 2nd Edition

CSA22.2 No. 60950-1, 2nd Edition

EN60950-1, 2nd Edition

4.2 DCPDU2B Series power distribution panels are CE marked to indicate conformance to the European Union's Low Voltage Directive.

4.3 These Distribution Panels operate at voltages that could potentially be hazardous. Furthermore, inadvertent short circuiting of the system battery and/or rectifier by mis-connection or other error could be harmful. This product should be handled, tested and installed only by qualified technical persons who are trained in the use of power systems and are well aware of the hazards involved.

4.4 When operating this Distribution Panels the chassis ground terminal must be connected to the system frame ground or other proper safety ground for the protection of personnel.

4.5 All connections to the Distribution Panels should be carefully checked for errors before applying power to them.

4.6 The internal voltages may be at hazardous potentials. The top cover should not be removed. There are no user-serviceable components in these units. Removing the top cover will void the warranty.

5.0 WARRANTY (summary)

DCPDU2B Series power distribution panels are warranted for two (2) years from date of shipment against defects in material and workmanship. This warranty does not extend to products which have been opened, altered or repaired by persons other than persons authorized by the manufacturer or to products which become defective due to acts of God, negligence or the failure of customer to fully follow instructions with respect to installation, application or maintenance.

For a complete text of Transtector's warranty conditions please request a copy from your local Sales Office.

6.0 DESCRIPTION OF OPERATION

6.1 Power Distribution Circuits. A simplified schematic diagram of the distribution panels is shown in Figure 2. The battery input to each load connects to a high-current copper bus bar from which the individual fuses or circuit breakers distribute power to the loads. The return input connects to a similar bus bar to which the individual loads terminate. The A and B loads are totally independent and isolated with the exception of models incorporating the 'S' option.

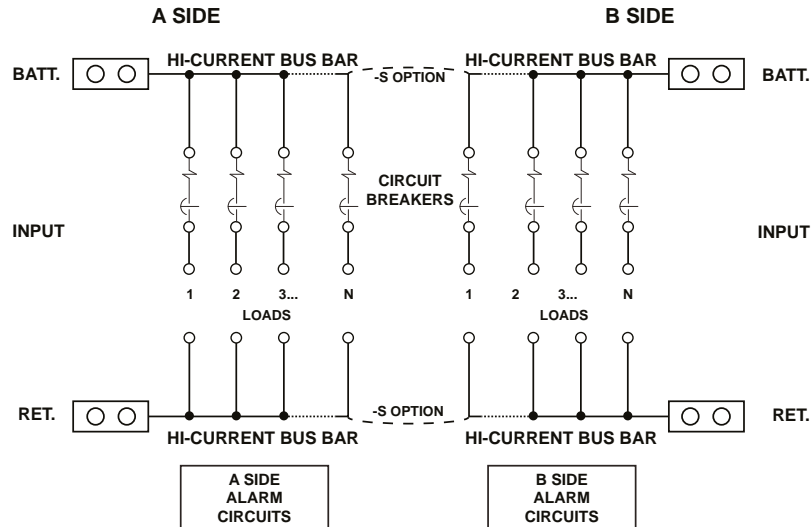


Figure 2. Block Diagram

6.2 Alarm Circuits. The alarm circuits detect a tripped circuit breaker and, in this event, turn on the red part of the LEDs. The alarm circuits also each drive Form C relay contacts. If one or more circuits open or if there is an input power failure, the relays are de-energized and the contacts are used to control external audible or visual alarms. The A and B alarm circuits are also independent and isolated from each other.

LED & RELAY STATE MEANINGS

LED State	Relay State	Meaning
Green	Energized (N.O. is closed)	OK
Red	De-energized (N.O. is open)	Breaker Trip
OFF		No Input Power

7.0 SPECIFICATIONS

The following specifications are typical at 25°C unless otherwise noted.

INPUT/OUTPUT

Panel Capacity	
@35°C	450A per Bus
@40°C	400A per Bus
@50°C	320A per Bus
@70°C	200A per Bus
Configuration	450A Single Bus with 1 to 20 Breakers 900A Dual Bus 1 to 10 Breakers Each Bus
Breaker Capacity ¹	2.5A to 200A
Voltage ¹	21-60VDC
Polarity	Neutral, Positive or Negative Ground

ALARMS

Alarm Indicator	Dual Color LED Per Bus
LED Status Indication	Green = Normal Red = CB Trip Alarm Off = No Power
Alarm Relays	Form C Contacts for each Bus

SAFETY UL60950-1 2nd Ed., CSA22.2 No. 60950-1 2nd Ed., EN60950-1 2nd Ed.

ENVIRONMENTAL

Operating Temp. Range	-10°C to +70°C
Storage Temp. Range	-40°C to +85°C
Humidity	0% to 95%, Non-Condensing

PHYSICAL SPECIFICATIONS

Case Material	Steel
Finish	Powder Coat Black
Case Dimensions, Inches (mm)	3.45 H x 17.16 W x 5.98 D (87.6 x 435.9 x 151.9)
Weight (approx.)	12.5 lbs. (5.67 kg.)
Rack Mounting	19 or 23 Inch

CONNECTIONS

Input Connections	Bus Bar
Output Connections	1/4-20 Stud, 2-hole lugs
Chassis Ground Connection	1/4-20 Stud, 2-hole lugs
Alarm Relay Connections	Spring Clamp Terminals, 16-26AWG

Notes:
1. See ordering guide to specify.

8.0 FRONT PANEL DESCRIPTION

The front panel of the DCPDU2B, shown in Figure 3 below, consists of the A and B sides and a center section. The A and B sides can each accommodate up to 10 field installed/replaceable hydraulic magnetic circuit breakers rated from 2.5A to 200A. The center section has two green/red LEDs, one for the A side (left) and the other for the B side (right). At the bottom of this center section is a slot for a wallet and designator card. This card permits the recording of each output circuit by number.

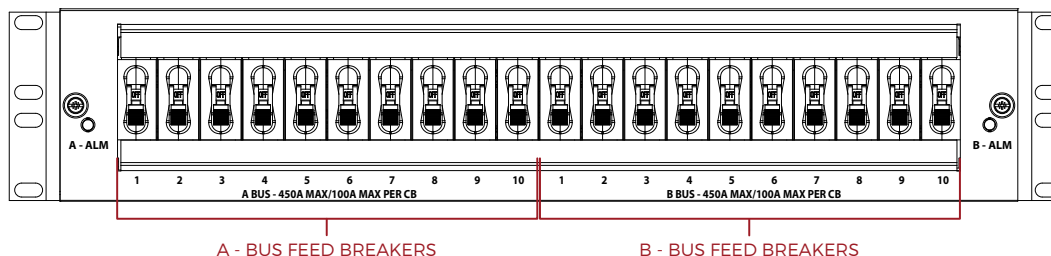


Figure 3. Front Panel View

9.0 BACK PANEL DESCRIPTION

9.1 Back View. Figure 4 shows the back of the DCPDU2B distribution panel. Inputs are at the left and right ends of the back panel. Side B outputs are at two rows of barrier terminal strips on the left side, and side A outputs are the same on the right side. At the center of the back panel are two spring clamp terminal blocks for the Form C relay contact outputs.

Below these is a chassis ground terminal.

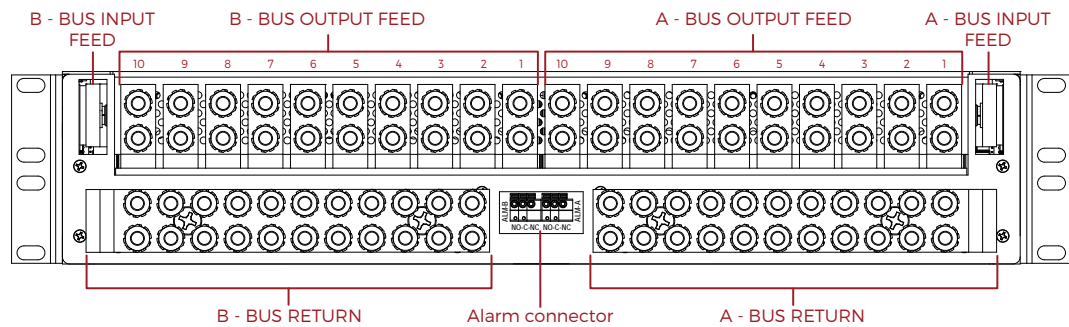


Figure 4. Back Panel View

9.2 Input Connections. See Figure 5. The DC power inputs to the distribution panel are made by means of crimp type lugs to two copper bus bars on side A and side B. The upper bus bar is the battery connection (whether + or -) and the lower bus bar is the return (whether + or -).

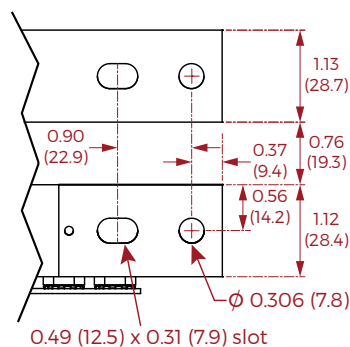


Figure 5. Input Bus Bar Detail

9.3 Recommended Input Cable Sizes and Lugs

The following table details the recommended cable size for various input current.

MAXIMUM CURRENT	CONDUCTOR SIZE	PANDUIT CORP. PART NUMBER	TORQUE 1/4 x 20 BOLT
450A	350KCMIL	LCC350-14BW-X	62 in-lbs
400A	300KCMIL	LCCX250-14B-X	62 in-lbs
320A	4/0 AWG	LCCX4/0-14B-X	62 in-lbs
200A	3/0 AWG	LCCX3/0-14B-X	62 in-lbs
150A	1/0 AWG	LCCX1/0-14B-X	62 in-lbs

9.4 Output Connections. Output connections for A and B loads are shown in Figure 4. There are 10 sets of bus bar terminals for each side, A and B. The connections are numbered to correspond with the numbers of the front panel breakers. The upper strip connections are from the battery (FEED) through the breakers; the lower strip connections are the RETURNS. Side B is on the left and side A on the right when viewed from the rear.

All connections use 1/4-20 threaded studs and are rated up to 100 amperes. Maximum wire size is 2 AWG. Transtector recommends using FLEX wire with either Panduit LCDXN2-14A-E or LCDXN2-14AF-E (90deg angle) lugs. When 125A, 150A or 200A breakers are installed two positions are utilized. Figure 6 below shows detailed spacing of the terminals.

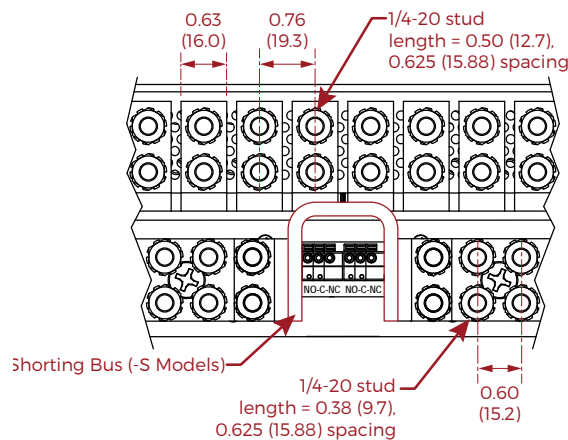


Figure 6. Output Barrier Strip Detail

The following table lists a range of cable sizes with matching lugs that will fit the output terminals. The indicated current rating is the maximum assuming that the cables are bundled/confined.

MAXIMUM CURRENT	CONDUCTOR SIZE	PANDUIT CORP. PART NUMBER	TORQUE 1/4 x 20 BOLT
200A (2 pos)	3/0 AWG	LCDX3/0-14A-X	62 in-lbs
150A (2 pos)	1/0 AWG	LCDX1/0-14A-X	62 in-lbs
125A (2 pos)	1 AWG	LCDX1-14A-X	62 in-lbs
100A (1 pos)	2 AWG	LCDXN2-14A-E	62 in-lbs
80A (1 pos)	4 AWG	LCDX4-14A-L	62 in-lbs
60A (1 pos)	6 AWG	LCDX6-14A-L	62 in-lbs
50A (1 pos)	8 AWG	LCDX8-14A-L	62 in-lbs

9.5 Form C Relay Contact Outputs. The center of the back panel has connections to the Form C relay contact outputs for connection to external audible or visual alarm circuits. See Figure 7 below.

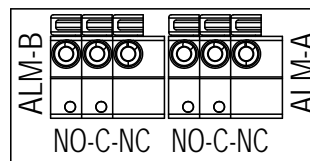


Figure 7. Alarm Connection Detail

Connection is made via two Phoenix Contact spring clamp terminal blocks. J3 is for the Form C relay contact of side B and J4 is for the Form C relay contact of side B. Terminals 1, 2 and 3 viewed from left to right are the normally open (NO) common (C) and normally closed (NC) contacts, respectively. See figure 8 below.

“Normally Closed” and “Normally Open” are defined with the distribution panel powered and providing power to all outputs, i.e., no circuit breakers tripped.

The ratings of the relay contacts are 0.6A at 125VAC or 2A at 30VDC. The spring clamp terminals accept wire sizes nos. 16 to 26 AWG.

When the input power is connected to a side (A or B), the Form C relay of that side is energized. If there is either loss of input power, one or more circuit breakers trip or the relay is de-energized, the normally open contacts close and the normally closed contacts open. See figure 8 below.

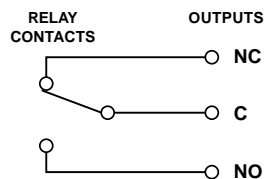


Figure 8. Form-C Relay Schematic

9.6 Chassis Ground Connection. This is located on the left side of the chassis as shown in figure 9 below and is a pair of 1/4-20 bolts.

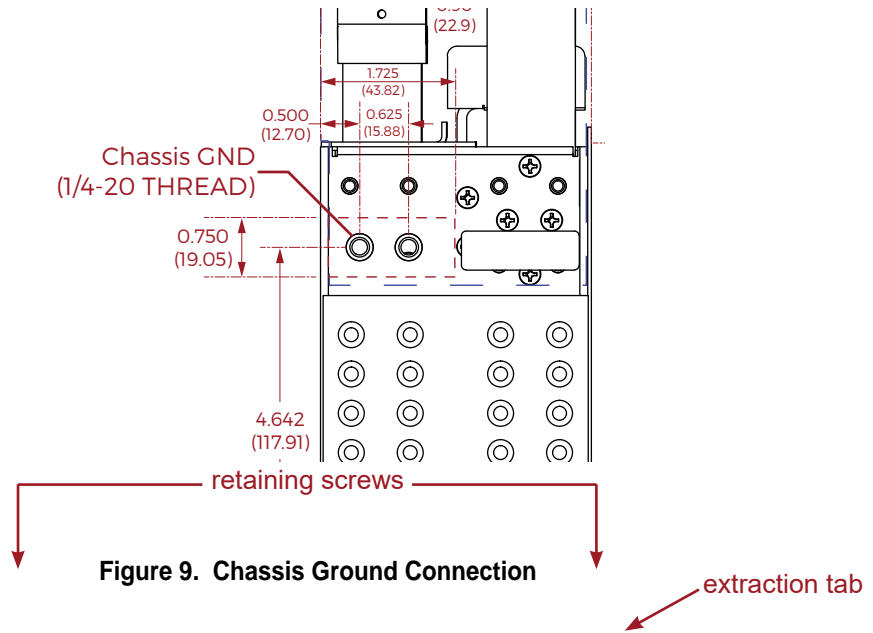


Figure 9. Chassis Ground Connection

The recommended cable size for this connection is 2/0 AWG terminated with a Panduit LCDN2/0-14A-X or equivalent lug. Torque bolts to 62 in-lbs.

NOTE THAT IT IS ESSENTIAL THAT THIS TERMINAL IS CONNECTED TO THE SYSTEM FRAME GROUND TO ENSURE SAFE OPERATION.

10.0 UNPACKING AND INSPECTION

- 10.1** This DCPDU2B Series power distribution panel was carefully tested, inspected and packaged for shipment from our factory. The unit and circuit breakers are shipped separately. Upon receipt of the unit it should be carefully unpacked and inspected for any damage in shipment.
- 10.2** If there is evidence of damage, do not attempt to test the unit. The freight carrier should be notified immediately and a claim for the cost of the rectifier system should be filed with the carrier for direct reimbursement. Be sure to include the model and serial number of the damaged unit in all correspondence with the freight carrier. Also save the shipping carton and packing material as evidence of damage for the freight carrier's inspection.
- 10.3** Transtector will cooperate fully in case of any shipping damage investigation.
- 10.4** Always save the packing materials for later use in shipping the unit. Never ship the unit without proper packing.

11.0 INSTALLATION

- 11.1 Mounting.** This distribution panel can be mounted in either 19- or 23-inch racks by using the supplied reversible brackets. Mount it from the front of the rack using the correct offsets to align with existing rack-mounted equipment. The bracket offsets are every quarter inch from front to back.

A minimum air clearance of 1.5" above and below the unit must be maintained after installation in the rack. Care should be taken not to compromise the stability of the rack by the installation of this unit.

- 11.2 Connections.** Input connections should be made with two-terminal crimp type lugs. See Sections 9.2 and 9.3.

Connection to Supply

- Connect to a reliably grounded 24VDC to 48VDC SELV source.
- The branch circuit over-current protection shall be sized appropriate to the input current and shall not exceed 600A.
- Use minimum 350Kcm copper conductors for max. rated input current.
- A readily accessible disconnect device that is suitably approved and rated is recommended to be incorporated in the field wiring.
- To be installed in a Restricted Access Location.

NOTE: Single feed models have both left and right side input bus bars fitted. It is only necessary to connect the input feed to one side for correct operation.

The unused side is directly connected to the live input feed and can be used for supplying additional panels. See figure 10 below.

CAUTION: The total load must not exceed 450A on any one pair of bus bars in the chain.

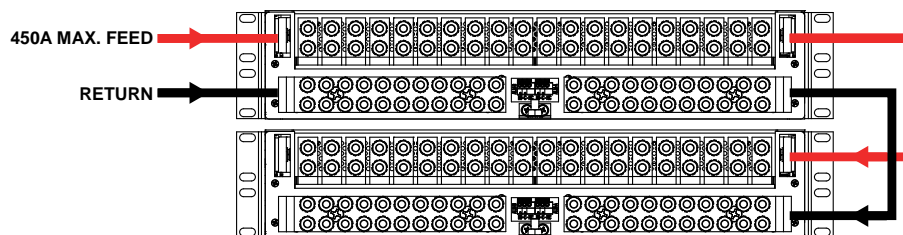


Figure 10. Series Connection of Multiple Panels

Output connections are made to individual output bus bars and common return. See Section 9.4 and Figure 6.

The Form C relay contact output connections are made to the spring clamp terminal blocks. See Section 9.5. The chassis ground connection is made to the 1/4-20 studs. See Section 9.6. This safety ground connection should be made before operating the panel.

- 11.3 Checking Connections.** Carefully check the polarity of input connections to the distribution panel and output connections to the load before operating the panel. Reverse connections will not harm the distribution panel which is POLARITY NEUTRAL but may cause serious harm to the load. Check to make sure that the chassis safety ground connection is made. Make sure that all connections are clean and secure to minimize contact resistance.
- 11.4 Rear Safety Cover.** Once all of the above have been completed, fit the clear plastic safety cover to the back of the unit using the supplied mounting studs and screws. Instruction for fitting the mounting studs the panel are included in the accessory kit.

12.0 INSTALLING CIRCUIT BREAKERS

The DCPDU2B Series employs pluggable circuit breakers that can be easily installed, removed or replaced using the supplied puller tools. This operation is carried out without the need to dismount the unit from its installation.

Installation, removal or replacement of a circuit breaker and connection or disconnection of a load circuit should be carried out only by qualified technical persons who are trained in the use of power systems and are well aware of the hazards involved.

Although it may be necessary on some occasions to carry out this operation while power remains applied to the panel, it is always preferable to switch off the power if possible before proceeding.

12.1 Removing the cover plate. To remove the cover plate undo the two knurled retaining screws at the left and right side of the unit and pull forward.

12.2 Removing a breaker or blanking panel. To remove a breaker pull the toggle switch handle using the supplied puller tool until the breaker comes free. To remove a blanking panel lever it out at the top or bottom using a flat bladed screwdriver.

12.3 Installing a breaker or blank panel. To insert a breaker carefully push the breaker firmly into the socket and make sure that it is fully seated. To fit a blanking panel use the two supplied retaining screws to fit it into position.

Repeat the above procedure from 12.2 to 12.3 for all positions and then replace the cover plate.

12.4 Conditions for breaker positioning. For thermal reasons, when operating the panel continuously at the current ratings stated in note (2) on page 15, the circuit breaker current shall not exceed the continuous rating as defined in the table.

Adjoining gaps on each side of the circuit breaker must be provided for current ratings 70A to 200A. None are required for 2.5A to 60A.

Circuit Breaker Gap Requirements

CB Current Rating	Number Poles	Max. Continuous Load	Adjoining Gap (each side)
2.5A to 60A	1	80% of CB rating (70% @ 70°C)	NO
70A to 100A	1	75% of CB rating (50% @ 70°C)	YES
125A to 200A	2	62.5% of CB rating (37.5% @ 70°C)	YES

The above table is based on the following:

- 1) Use of Carling (C Series) breakers or CBI (D Frame) breakers. Breakers in these series are equivalent in fit, form, and function and can be used interchangeably within the same system.
- 2) The DCPDU2B panel is rated for continuous operation at a maximum input of 450A per side @ 35C max., 400A per side @ 40C max., 320A per side @ 50C max., and 200A per side @ 70C max.

12.5 Connecting or disconnecting load circuits. In cases where a breaker has been installed follow the instructions in section 9.4 to connect the new output wiring. Ensure that the breaker is in the OFF position until all connections have been made and thoroughly checked.

Remember that if any 125A, 150A or 200A breakers have been fitted these will require that the supplied link bar is fitted across the associated output bus bars.

Note that if power remains applied to the panel during breaker installation the alarm LED will show red and the alarm relay will be activated until the new cables have been connected and the breaker set to the ON position.

13.0 SETUP AND TESTING

- 13.1** It is not necessary to have the distribution panel mounted in a rack for initial testing. This can be done on a bench. It is also not necessary to have loads connected to the panel for this testing.
- 13.2** With the input power source off, connect the input wires to the A side of the distribution panel. Connect ground to the chassis ground terminal. Set all circuit breakers to on.
- 13.3** Turn on the input power source. The A side LED should be green. If it is red, one of the circuit breaker is tripped. If the LED is off, there is no input power to the unit. Check the output voltage at each set of output terminals with a digital voltmeter.
- 13.4** With the A side LED green, use an ohmmeter to check the Form C relay contact outputs. On J4 measure the resistance between pins 1 and 2. This should read "open". Measure the resistance between pins 2 and 3. This should read "short".
- 13.5** On the A side trip circuit breaker no. 1. The A side LED should turn red. On J4 measure the resistance between pins 1 and 2. This should read "short". Measure the resistance between pins 2 and 3. This should read "open". Reset the circuit breaker.
- 13.6** On the A side check each succeeding breaker by tripping it, and verify that the LED turns red. It is not necessary to recheck the Form C relay contacts.
- 13.7** Repeat the same tests of Sections 13.2 through 13.6 on the B side of the distribution panel, use J3 to check the Form-C relay operation.
- 13.8** The distribution panel may now be connected to its intended application.
- 13.9** If the distribution panel did not operate properly in the above tests, go back and double check the connections and the polarity of the input source to make sure it is correct.

Please note that there are no user serviceable parts inside either the modules or the shelves and that opening either will void the warranty.

Product support can be obtained using the following addresses and telephone numbers.

TRANSECTOR
10701 N Airport Rd
Hayden, ID 83815
United States

Phone: +1.208.635.6400
Toll Free: 1.800.882.9110
Web site – www.transtector.com

About Transtector Systems:

Transtector Systems, an Infinite Electronics brand, leads the industry with a comprehensive product portfolio and specialized expertise in consulting, design and manufacturing of AC, DC, data and signal surge protection, communications power cabinets, and EMP protection.

Transtector provides valuable end-to-end power and signal integrity solutions for markets that include telecommunications, medical imaging, transportation, energy, security and the military. Our goal is to support the urgent surge-protection requirements of our customers with responsive customer service, technical support and a wide-range of quality AC, DC and data line surge protection products in-stock and available for same-day shipping.

Contact us at +1 208 635 6400 or online at www.transtector.com.

About Infinite Electronics:

Infinite Electronics is a leading global supplier of electronic components serving the urgent needs of engineers through a family of highly recognized and trusted brands. Our portfolio brands are specialists within their respective product set, offering broad inventories of engineering-grade product, paired with expert technical support and same day shipping. Over 100,000 customers across a diverse set of markets rely upon Infinite Electronics to stock and reliably ship urgently needed products every day.

This document is believed to be correct at time of publication and TRANSECTOR accepts no responsibility for consequences from printing errors or inaccuracies. Specifications are subject to change without notice.