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OPERATING MANUAL
POWER DISTRIBUTION PANELS
DPB1U SERIES DPT1U SERIES
DPG1U SERIES DPU1U SERIES

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Manual No. DP-200-3

8/31/01 DPB-DPT-DPG-DPU-Man

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OPERATING MANUAL POWER DISTRIBUTION PANELS

1.0 INTRODUCTION

- 1.1 This operating manual should be read through carefully before installing and operating these power distribution panels.
- 1.2 These distribution panels provide protected power distribution to telecommunication equipment. They offer fuse or circuit breaker positions on the A and B sides of the panel. The A and B loads of the distribution panel are totally independent and isolated from each other. There is a green/red LED for each load to indicate normal operation or an open circuit due to a blown fuse or tripped circuit breaker.
- 1.3 The distribution panels are only 1.75 inches (1 mounting position) high to minimize rack space and can be mounted in either a 19- or 23-inch relay rack with corresponding brackets. They can be mounted from the front of the rack with offsets every ¼-inch from front to back to align with existing rack-mounted equipment.
- 1.4 Figure 1 shows the four series of distribution panels. The first is the DPG1U Series which has 10 GMT fused circuits on both A and B sides. The second is the DPT1U Series with 6 Type 70 fused circuits on both A and B sides. The third is the DPB1U Series with up to 6 circuit breaker circuits on both A and B sides. The fourth is the DPU1U UNIFLEX® Series which provides a combination of any two of the above three types on the A and B sides. Shown here are circuit breakers on the A side and Type 70 fuses on the B side.
- 1.5 The distribution panels can be configured for 12, 24 or 48 volts with either positive or negative ground. Because the A and B sides are independent and isolated, they can be configured separately. For example, the A side can be 48V positive ground and the B side can be 24V negative ground. The voltage and polarity of each side must be configured at the factory. All models are reverse polarity protected.
- 1.6 Each load (A and B) has a green/red visual alarm and two Form C relay alarm contacts for connection to external audible or visual alarms.



DPG1U: GMT Fuse Distribution Panel



DPT1U: Type 70 Fuse Distribution Panel



DPB1U: Circuit Breaker Distribution Panel



DPU1U: UNIFLEX® Combination Distribution Panel

Figure 1. Distribution Panels Covered by This Manual

2.0 FEATURES AND OPTIONS

2.1 Features. The following summarizes the standard features for all four series:

- ◆ Thin Height: 1.75 inches (1 mounting position)
- ◆ 19 or 23-Inch Rack Mounting
- ◆ Dual A/B Loads
- ◆ Current Capacity: 60 to 150A per Load (Depends on Model)
- ◆ Operating Voltage: 12, 24 or 48VDC
- ◆ Positive or Negative Ground
- ◆ Red/Green LED Indicators
- ◆ 2 Form C Relay Contacts per Load
- ◆ Protection: GMT Fuses, Type 70 Fuses, Magnetic Circuit Breakers
- ◆ Independent and Isolated Loads
- ◆ Input Connections: Crimp Type Lugs
- ◆ Output Connections: Barrier Terminal Strips
- ◆ Reverse Polarity Protected

2.2 Options. There are two standard options available:

- ◆ Clear plastic rear cover to protect connectors and wiring from damage (Option C).
- ◆ Fail safe operation for 24 and 48V units. This means that two identical A and B sides with separate feeds operate redundantly so that one feed takes over both sides in case of failure of the other feed (Option F).

3.0 FRONT PANEL DESCRIPTION

3.1 The front panel consists of the A and B sides and a center section. The A and B sides are described in detail below for each of the four series. The center section has two green/red LEDs, one for the A side (left) and the other for the B side (right). See Figure 1. 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.

3.2 DPG1U Series: Each Side (A & B)

- ◆ 10 GMT Fuses
- ◆ Current Capacity: 80A
- ◆ Fuse Ratings: ½A to 12A



GMT Fuse Section

GMT FUSES

AMPS	BUSSMAN NO.	COLOR
1/2	GMT- 1/2	Red
3/4	GMT- 3/4	Brown
1	GMT- 1	Gray
1 1/3	GMT- 1 1/3	White
2	GMT- 2	Orange
3	GMT- 3	Blue
5	GMT- 5	Green
10	GMT- 10	Red-White
12	GMT-12	Green-Yellow
	GMT-Dummy	

The model number determines the specification of each side of the panel:

Model: DPG1U-A -**B** --

CODE	VOLTAGE & POLARITY
1	-48V (Pos. Gnd.)
2	+48V (Neg. Gnd.)
3	-24V (Pos. Gnd.)
4	+24V (Neg. Gnd.)
5	-12V (Pos. Gnd.)
6	+12V (Neg. Gnd.)

CODE	OPTION *
F	Fail Safe

*See Section 3.6

CODE	OPTION
C	Rear Cover (Clear Plastic)

3.3 DPT1U Series: Each Side (A & B)

- ◆ 6 Type 70 Fuses
- ◆ Current Capacity: 60A
- ◆ Fuse Ratings: 1/2A to 10A



Type 70 Fuse Section

TYPE 70 FUSES

AMPS	BUSSMAN NO.	COLOR
1/2	70G- 1/2A	Red
3/4	70H- 3/4A	Brown
1	70I- 1A	Pink
1 1/3	70A- 1 1/3 A	White
2	70B- 2A	Orange
3	70C- 3A	Blue
5	70D- 5A	Green-Black
10	70N- 10A	Purple-Yellow

The model number determines the specification of each side of the panel:

Model: DPT1U-A -**B** --

CODE	VOLTAGE & POLARITY
1	-48V (Pos. Gnd.)
2	+48V (Neg. Gnd.)
3	-24V (Pos. Gnd.)
4	+24V (Neg. Gnd.)
5	-12V (Pos. Gnd.)
6	+12V (Neg. Gnd.)

CODE	OPTION
F	Fail Safe

*See Section 3.6

CODE	OPTION
C	Rear Cover (Clear Plastic)

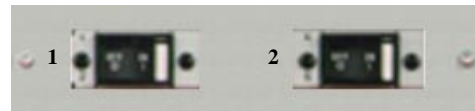
3.4 DPB1U Series: Each Side (A & B)

- ◆ 1 to 6 Circuit Breakers*
- ◆ Current Capacity: 150A
- ◆ Circuit Breaker Capacity: 1A to 50A

* Maximum of 5 circuit breakers if 40-50A breakers are used.

BREAKERS

AMPS
1
2.5
5
10
15
20
25
30
40
50



Circuit Breaker Sections

The model number determines the specification of each side of the panel:

Model: DPB1U-A □-□-□-□-□-□-□-□-□-□-□-□-□-□-□-□-□-□ **-B** □-□-□-□-□-□-□-□-□-□-□-□-□-□-□-□-□-□

CODE	VOLTAGE & POLARITY
1	-48V (Pos. Gnd.)
2	+48V (Neg. Gnd.)
3	-24V (Pos. Gnd.)
4	+24V (Neg. Gnd.)
5	-12V (pos. Gnd.)
6	+12V (Neg. Gnd.)

STANDARD BREAKERS

AMPS
1
2.5
5
10
15
20
25
30
40
50

CODE	OPTION*
F	Fail Safe

*See Section 3.6

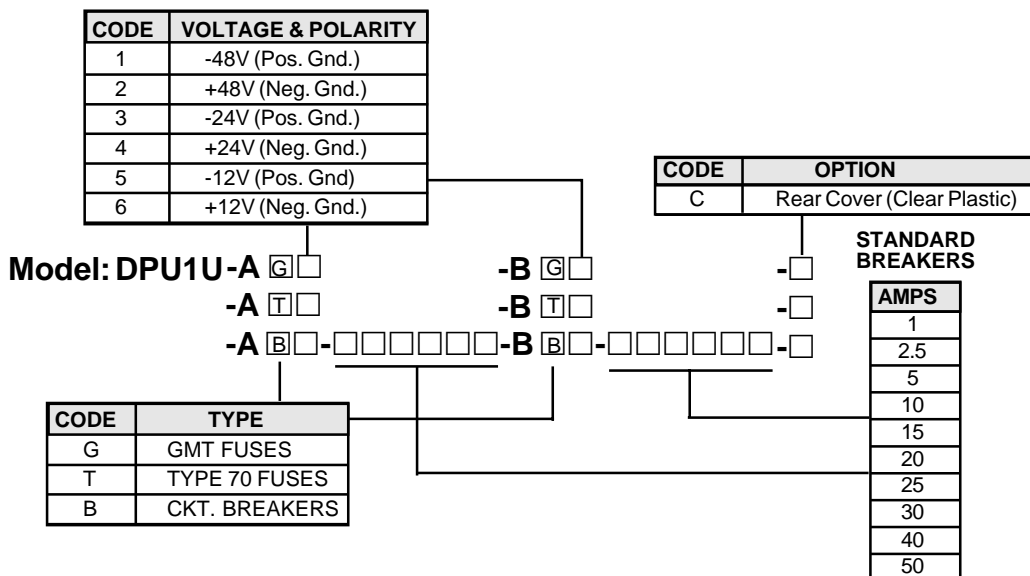
CODE	OPTION
C	Rear Cover (Clear Plastic)

3.5 DPU1U Series. This Uniflex® Distribution Panel combines any two of the three different sections: GMT fuse, Type 70 fuse, or circuit breaker, of any voltage or polarity. It can also have a LV Disconnect section, but only the fuse and circuit breaker combinations are covered in this manual. The Type 70 fuses, GMT fuses and circuit breakers are the same as those given in the previous Sections 3.2, 3.3 and 3.4 as is the current capacity of the A or B sides.



UNIFLEX Sections

The model number determines the specification of each side of the panel:



3.6 Fail Safe Option. This option, Option F, briefly described in Section 2.2, applies to 24V or 48V models only, where sides A and B are identical in polarity and voltage. The returns of the A and B loads are connected together and the two sides are internally cross-coupled by Schottky diodes. When the A and B loads are fed from two different sources, one source will feed both sides if the other source fails. This provides redundancy to both sides. Each side is limited to 60 amperes maximum current. This option is available on all distribution panels except the DPU1U.

4.0 SAFETY WARNINGS

- 4.1** These Distribution Panels operate at voltages that could potentially be hazardous. Furthermore, inadvertent short circuiting of the system battery and/or rectifier by misconnection 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.
- 4.2** 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.
- 4.3** All connections to the Distribution Panels should be carefully checked for errors before applying power to them.

5.0 WARRANTY

All products of UNIPOWER Telecom, a division of UNIPOWER Corporation, 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. This warranty is extended directly by the manufacturer to the buyer and is the sole warranty applicable. EXCEPT FOR THE FOREGOING EXPRESS WARRANTY, THE MANUFACTURER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. As the sole and exclusive remedy under this warranty, the manufacturer, at its option, may repair or replace the non-conforming product or issue credit, provided the manufacturer's inspection establishes the existence of a defect. To exercise this remedy, the buyer must contact the manufacturer's Customer Service Department to obtain a Return Material Authorization number and shipping instructions. Products returned without prior authorization will be returned to buyer. All products returned for repair must be shipped freight prepaid to UNIPOWER. If the buyer fails to fully comply with the foregoing, the buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property or any other incidental or consequential losses) shall be available to the buyer.

6.0 FUNCTIONAL DIAGRAM

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.

6.2 Alarm Circuits. The alarm circuits detect an open fuse or tripped circuit breaker and, in this event, turn on the red part of the LEDs. The alarm circuits also each drive two 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.

7.0 SPECIFICATIONS

Listed below are the specifications which apply to all of the distribution panels covered by this manual.

INPUT / OUTPUT	
Voltage, 48V Version	42-60VDC

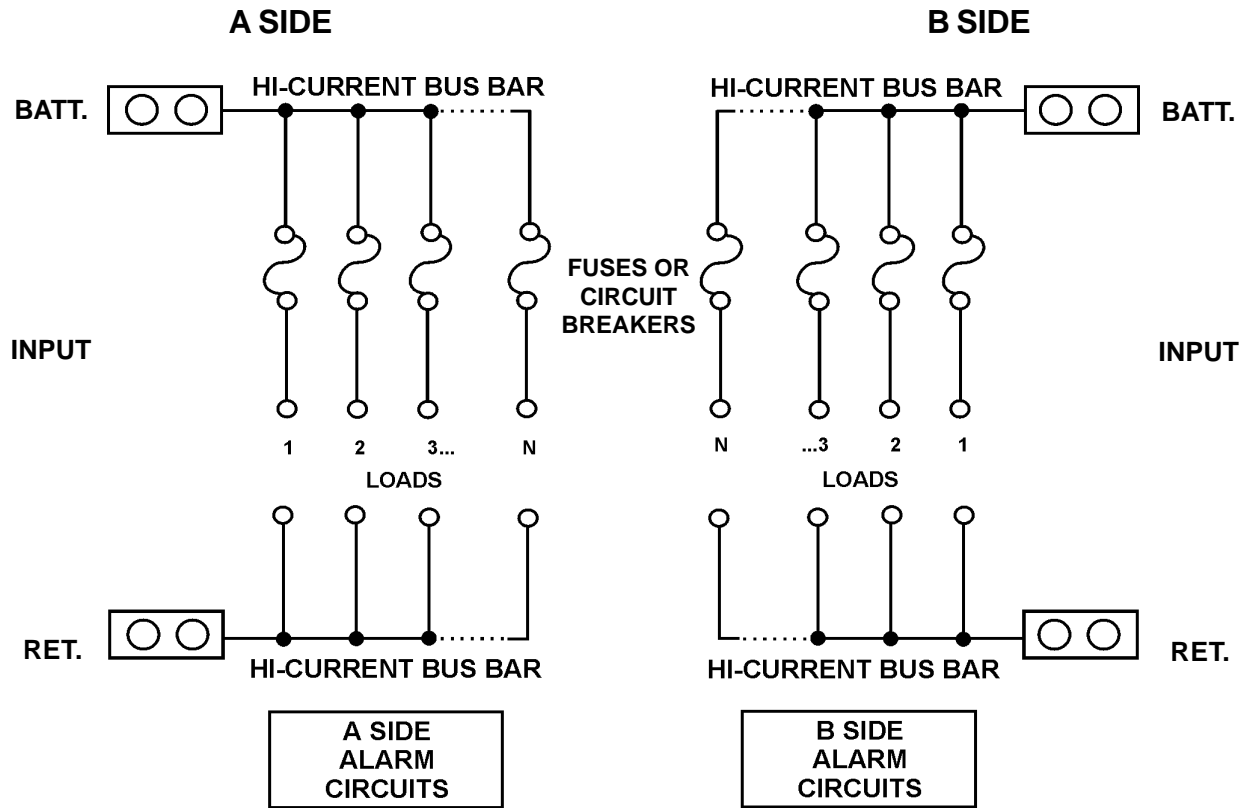


Figure 2. Functional Diagram of Distribution Panels

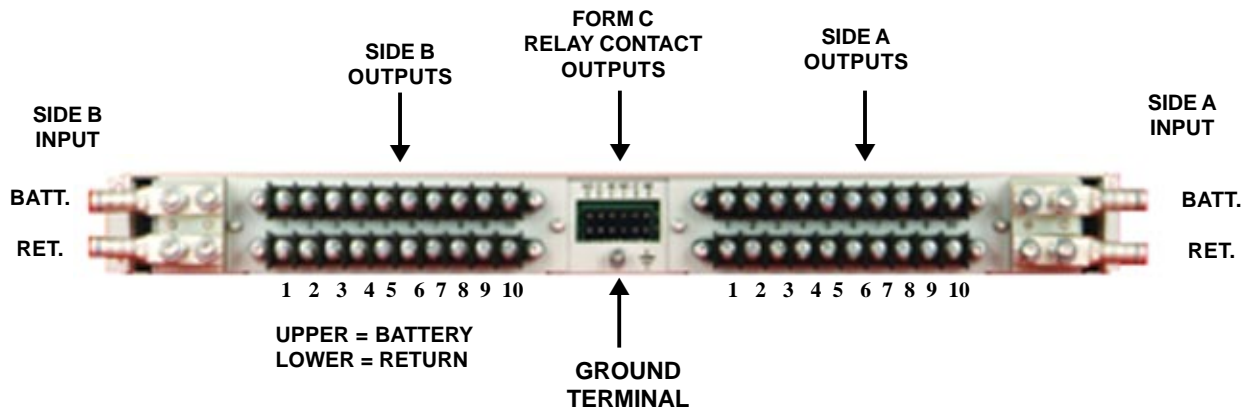


Figure 3. Back of Distribution Panels

24V Version	21-30VDC
12V Version	10.5-15VDC
Polarity	Positive or Negative Ground

ALARMS

Alarm Indicator	Dual-Color LED Per Bus
LED Status Indication	Green = Normal
.....	Red = Alarm
.....	Off = No Power
Alarm Connections	Two Form C Relay Contacts Per Bus

SAFETY STANDARDS UL1950, CSA22.2 No.950, EN60-950

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 Gray
Dimensions ¹ , Inches (mm)	1.75 H x 19.00 W x 9.00 D (44.5 x 483 x 229)
Weight	8.38 - 10.30 lbs. (3.80 - 4.67 kg.)
Rack Mounting Width	19 or 23 Inches

CONNECTIONS

Input Connections	Crimp Type Lug or ¼ - 20 Studs
Output Connections	Barrier Terminal Strips
Chassis Ground Connection	No. 8-32 Stud
Alarm Connections045" sq. Wirewrap Pins

NOTE: 1. For units with fail safe option, the case depth is 10.44 inches (265mm).

8.0 BACK PANEL DESCRIPTION

8.1 Back View. Figure 3 shows the back of a distribution panel. The back panels of all models covered in this manual are identical, and all connections are made at the back 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 12 wirewrap terminals for the Form C relay contact outputs. Below these is a chassis ground terminal.

8.2 Input Connections. See Figure 3. The DC power inputs to the distribution panels are made by means of crimp type lugs or direct connection to ¼ - 20 studs 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 -).

- 8.3 Crimp Type Lugs.** A list of compatible crimp type lugs is shown in the following table for AWG wire sizes from no. 1 to 8 and one- or two- hole lugs. These lugs can be ordered directly from the manufacturer, Panduit Corp., using the model numbers shown in the table. A standard kit of four two-hole crimp type lugs for no. 6 AWG copper wire is available from Unipower Telecom. Order kit no. 775-1434-0000 for \$20.00.

TABLE 8-1 CRIMP TYPE LUGS

WIRE AWG	.25DIA. HOLES	PANDUIT CORP. PART NO.	UNIPOWER PART NO.
8	1	LCA8-14-L	625-1665-0010
	2	LCD8-14A-L	625-1665-0110
6	1	LCA6-14-L	625-1665-0020
	2	LCD6-14A-L	625-1665-0120
4	1	LCA4-14-L	625-1665-0030
	2	LCD4-14A-L	625-1665-0130
2	1	LCA2-14-Q	625-1665-0040
	2	LCD2-14A-Q	625-1665-0140
1	1	LCA1-14-E	625-1665-0050
	2	LCD1-14A-E	625-1665-0150

- 8.4 Output Connections.** Output connections for A and B loads are shown in Figure 3. There are 10 sets of barrier terminal strip connections for each side, A and B. The connections are numbered to correspond with the numbers of the front panel fuses or breakers. The upper strip connections are from the battery through the fuses or breakers; the lower strip connections are the returns. Side B is on the left and side A on the right, as shown. Each terminal is a no. 6-32 screw and is rated at 30 amperes. Wire sizes from no. 10 AWG up to no. 22 AWG may be used for connections.
- 8.5 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 4. The terminals are .045-inch square wire-wrap terminals. The upper row of terminals is for the two Form C relay contacts of side A and the lower row of terminals is for the two Form C relay contacts of side B. Row A terminals 1, 2 and 3 are the normally closed (N.C.) common (C) and normally open (N.O.) contacts, respectively, of the first relay; row A terminals 4, 5 and 6 are the N.C., C and N.O. contacts, respectively, of the second relay. The same designations apply for row B, relays three and four. See the following table.

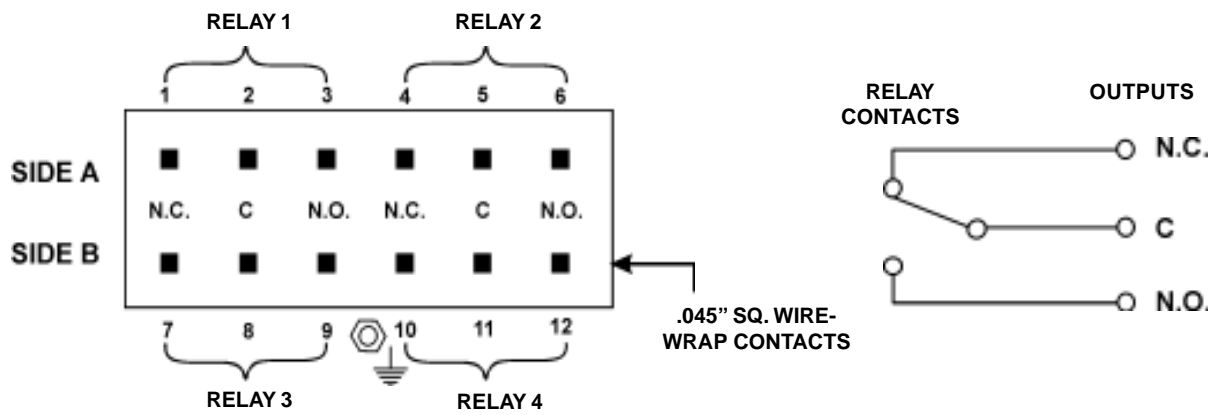


Figure 4. Form C Relay Contact Outputs on Back Panel

TABLE 8-2 FORM C RELAY CONTACTS

ROW A PIN NO.	ROW B PIN NO.	FUNCTION
1	7	N.C. (normally closed)
2	8	C (common)
3	9	N.O. (normally open)
4	10	N.C. (normally closed)
5	11	C (common)
6	12	N.O. (normally open)

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

The ratings of the relay contacts are 0.6A at 125VAC or 2A at 30VDC. The wirewrap terminals accept wire sizes nos. 18 to 22 AWG.

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

- 8.6 Chassis Ground Connection:** Just below the Form C relay contact terminals is the chassis ground terminal. This terminal is a no. 8-32 stud with a nut.

9.0 UNPACKING AND INSPECTION

- 9.1** This power distribution panel was carefully tested, inspected and packaged for shipment from our factory. Upon receipt of the unit it should be carefully unpacked and inspected for any damage in shipment.
- 9.2** 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 distribution panel 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 materials as evidence of damage for the freight carrier’s inspection.
- 9.3** UNIPOWER Telecom will cooperate fully in case of any shipping damage investigation.
- 9.4** Always save the packing materials for later use in shipping the unit. Never ship the distribution panel without proper packing.

10.0 INSTALLATION

10.1 Mounting. This distribution panel can be mounted in either 19- or 23-inch racks by using the appropriate 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.

10.2 Connections. Input connections should be made with one- or two-terminal crimp type lugs using copper wire size from no. 1 to 8 AWG, depending on current and wire loop distance. See Sections 8.2 and 8.3. Output connections are made to the barrier terminal strips. See Section 8.4 and Figure 3. The Form C relay contact output connections are made to the wire-wrap terminals. See Section 8.5. The chassis ground connection is made to the no. 8-32 stud. See Section 8.6. This safety ground connection should be made before operating the panel.

10.3 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 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.

11.0 SETUP AND TESTING

11.1 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 not necessary to have loads connected to the panel for this testing.

11.2 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. Insert all fuses into fuse holders or set all circuit breakers to on.

11.3 Turn on the input power source. The A side LED should be green. If it is red, one of the fuses is blown or a 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.

11.4 With the A side LED green, use an ohmmeter to check the Form C relay contact outputs. On the upper row of the wire-wrap terminals (side A) measure the resistance between pins 1 and 2 and between pins 4 and 5. Both

should read “short”. Measure the resistance between pins 2 and 3 and between pins 5 and 6. Both should read “open”.

- 11.5** On the A side insert a blown fuse into fuse no. 1 position or trip circuit breaker no. 1. The A side LED should turn red. On the upper row (side A) of wire wrap terminals, measure the resistance between pins 1 and 2 and between pins 4 and 5. Both should read “open”. Measure the resistance between pins 2 and 3 and between pins 5 and 6. Both should read “short”. Replace the blown fuse with a good one or reset the circuit breaker.
- 11.6** On the A side check each succeeding fuse by replacing it with a blown fuse, or breaker by tripping it, and verify that the LED turns red. It is not necessary to recheck the Form C relay contacts.
- 11.7** Repeat the same tests of Sections 11.2 through 11.6 on the B side of the distribution panel. Refer to Table 8-2.
- 11.8** The distribution panel may now be connected to its intended application.
- 11.9** 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. If the problem cannot be solved, call UNIPOWER Telecom at 954-346-2442 ext. 400 for help.

