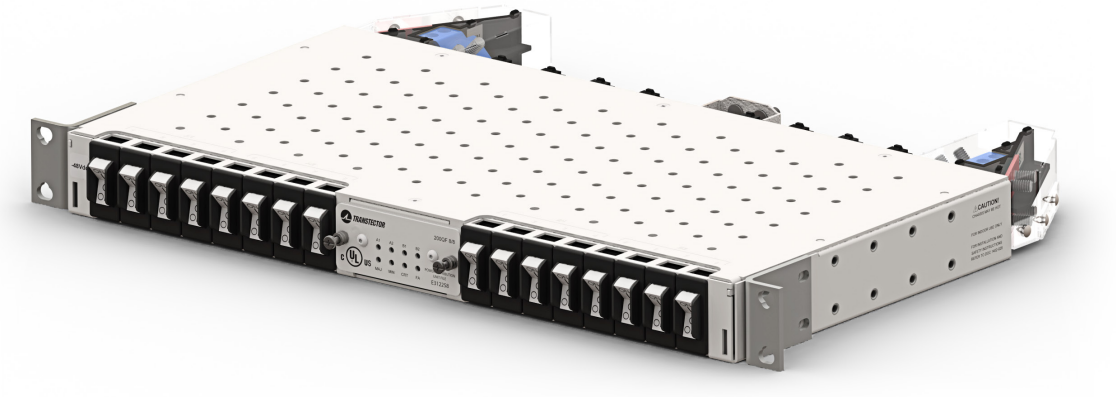
TRANSTECTOR

Installation Manual

Model 1101-1051
Model 1101-1101



DC Edge™ III

Model 1101-1051: -24/-48Vdc

Model 1101-1101: +24/+48Vdc

an INFINITE company

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DC Edge™ III Introduction

Transtector's DC Edge™ III is a compact (1RU) mid-current, -24/-48 Vdc or +24/+48 Vdc power panel featuring quad-feed 100 A buses for secondary power distribution. DC Edge™ III provides power for a wide range of local or remote, wireless and wireline, data and communications applications. The panel fits 19 in. or 23 in. racks.

DC Edge III supports the use of four, Carling Technologies™ M-Series or Airpax® SNAPAK® breaker output positions per bus. Transtector supplies blank covers for all breaker positions. Breakers (.1A to 30A) are sold separately and installed on site.

Buses A1, A2, B1, and B2 BATT feeds are mutually isolated, except for the replaceable alarm board which accepts power from A1 or B1 buses. The two Side A RTNs are strapped together and the two Side B RTNs are strapped together.

The alarm board on the front of the panel contains eight LEDs: one for each feed (green when power is on and off when power is off); one for the breakers (off during normal operation and red for a tripped breaker); and one each for MIN, MAJ, and CRT bay alarms. Along with the LEDs on the front, Form C dry contacts on the rear provide connectivity via two, 15-socket (female), D-type connectors to remote audible/visual alarm devices for announcing/displaying power, breaker, and bay failures. The replaceable alarm board also features four dip switches to enable/disable bus status and alarms. The alarm board can be hot swapped, that is, removed without powering down the panel.

All BATT and RTN inputs and ground receive dual-hole lugs. (Transtector supplies a right-angle, 2 AWG ground lug.) All lug fastener hardware is supplied. All outputs for breakers and returns are 2-pin, keyed (male) Molex® connectors for site-prepared female connectors.

Product Specifications

Electrical	Specification	
Nominal Universal Voltage Range	+24 Vdc to +48 Vdc	Model 1101-1101
Operating Voltage Range	+20 Vdc to +74 Vdc	
Nominal Universal Voltage Range	-24 Vdc to -48 Vdc	Model 1101-1051
Operating Voltage Range	-20 Vdc to -74 Vdc	
DC Fault Rating	10 kA	
Input Rating	100 A per feed, max	
Input Interrupt Device	125 A per feed, max	
Input Configuration	Quad feed (Buses A1, A2, B1, B2)	
Input Wire Size	14 AWG to 2 AWG, depending on primary breaker rating	
Output Configuration	Four breakers per bus (total of 16 positions) not to exceed total of 100 A output per bus and 30 A output per position. Blank covers provided for all breaker positions.	
Breaker Output Current	.1 to 30 A Carling Technologies™ or AIRPAX© single-pole, hydraulic-magnetic, non-delay, slow-trip breakers (sold separately; see page 21 for breaker part numbers)	
Output Wire Size	16 AWG to 10 AWG, depending on output breaker rating	
Alarms Indicators	Power A1, A2, B1, B2 LEDs (4): green for power on; off for power off/failure Fuse Alarm LED (1): red for tripped breaker; off for normal operation CRT, MAJ, MIN LEDs (3) for critical, major, and minor bay alarms. LED lights on a bay alarm; CRT and MAJ LEDs are red, and MIN LED is amber	
Alarm Relay Contacts	Dry Form C for Power, Fuse, and Bay Alarm failures	
Relay Contact Rating	220 Vdc, 220 Vac, 1 A	
Bay Relay Activation	12 Vdc	

Mechanical	Specification
Input Terminals	Dual 1/4-20 studs on 5/8" centers. (Tongue width of lug must be no greater than .062".)
Output Load Terminals	Two-pin, keyed Molex[1] male connectors
Ground Terminal	Dual 1/4-20 studs on 5/8" centers. Transtector includes a 90° ground lug for a 2 AWG ground conductor.
Alarm Terminals	Two, 15-socket, standard, D-type connectors[2]
Rack Chassis Material	16 gauge CRS, telecom grey powder coat.
Weight (out of box)	11.5 lbs (5.2 kg)
Weight (shipping)	~ 13 lbs (~ 6 kg)
Rack Chassis Dimensions (Nominal, Without Rack Mounting Brackets)[3]	1.72" H x 17.0" W x 9.0" D (44 mm x 305 mm x 229 mm)
Rack Mounting	1RU, 19" per EIA Standard RS-310-D[4]. Mount flush to rack or extended up to 5" in 1 1/4" increments.
Rear Panel Safety	Snap-in clear input (BATT and RTN) terminal covers, provided

Environmental	Specification
Storage Temperature	14° F to 149° F -10° C to 65° C
Operating Temperature[5]	14° F to 131° F -10° C to 55° C
Relative Humidity	90% (non condensing)

Approvals	
UL 60950, File #E312258	
NEBS-3V Compliant	

[1] Female terminals and connectors are not supplied. Order Molex Series 42815 (female terminals) and Molex P/N 428160212 (female connector) for output wiring up to 10 AWG.
[2] Male connectors are not supplied. Typical D-type male connectors accept wiring in the range of 20 to 28 AWG.
[3] See Page 23 for detailed dimensions.
[4] Brackets are included for both 19 in. and 23 in. racks.
[5] AIRPAX© maximum operating temperature not to exceed 54ºC.

Factors Affecting Installation

Elevated Operating Ambient

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by Transtector.

Reduced Air Flow

Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

Mechanical Loading

Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to the uneven mechanical loading.

Circuit Overloading Consideration

Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing

Reliable earthing of the rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuits (for example, use of power strips).

Disconnect Device

A readily accessible disconnect device should be incorporated in the building installation wiring.

Installation Procedure

CAUTION

This product must be installed only by qualified personnel. Any service to this product must be performed only by qualified personnel.
The product is intended for installation in a restricted access area.

CAUTION

Only use tools (for example, crimping tools, dies) and components (for example, breakers and wiring connectors) approved by recognized agencies and authorities (for example, UL, TUV, NEC).

⚠ DANGER

Before connecting input power cables make sure input power to panel is turned off.
Read and understand these instructions before installing this product.
If necessary, contact Transtector for technical assistance: by phone at 1.800.882.9110 or 208.635.6400.
Or on the web at www.transtector.com.

⚠ DANGER

Hazardous Voltage. Multiple power sources may be available. Disconnect all power before servicing.

Inspect Shipping Container

1. If damage is suspected, request that the carrier's representative be present during unpacking. Note: Transtector is not liable for damages incurred during shipping.

Inspect Contents of Container

2. During unpacking, inspect panel for damage. If damaged, contact the carrier. Report details of damage to Transtector by phone at 1.800.882.9110 or 208.635.6400, or on the web at www.transtector.com.

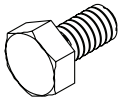
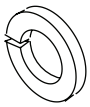
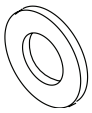
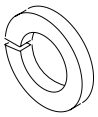
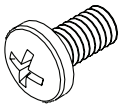
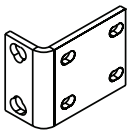
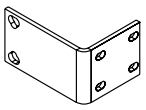
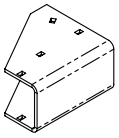
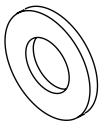
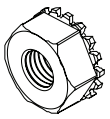
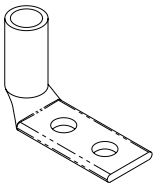
   Check contents of accessory kit, as listed in the following table.
   If any items are missing, contact Transtector by phone at 1.800.882.9110 or 208.635.6400, or on the web at www.transtector.com.

3. If required, prior to fastening the 19 in. or 23 in. brackets to the panel, lightly coat the bracket's contacting surface – between the bracket and the panel – with an anti-oxidant.

4. Fasten 19 in. or 23 in. rack brackets to panel using supplied fasteners (eight, 10-32 cap screws and split lock washers). (See "Bracket Installation" on Page 9.) Torque fasteners to no greater than 23.7 inch pounds (~2.68 Newton meter).

   Note: Panel brackets provide flush front-face mounting or extended mounting up to 5 inch in 1 1/4 inch increments.

Accessory Kit

Accessory	Purpose	Quantity	Illustration
Cap Screw 10 - 32 x 3/8"	Bracket Installation	8	
Lock Washer #10, Split	Bracket Installation	8	
Flat Washer #12	Installing Panel in Rack	4	
Lock Washer #12, Split	Installing Panel in Rack	4	
Screw #12 Thread-Forming, Phillips Head	Installing Panel in Rack	4	
19 in. Mounting Bracket	Rack Mounting	2	
23 in. Mounting Bracket	Rack Mounting	2	
Transparent Cover	Input Terminal Covering	2	
Flat Washer 1/4" ID	Input & Ground Connections	18	
KEPS Nut 1/4 - 20	Input & Ground Connections	18	
Two-Hole, Right-Angle Lug for 2 AWG	Ground Connection	1	

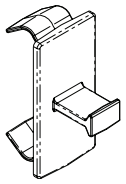
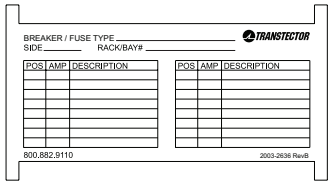
Blank Cover, Black	Covering Unused Breaker Positions	16	
Designation Card	Recording Output Assignments	1	

Figure 1: Accessory Kit

Mounting Panel to Rack

5. Select a location for the DC Edge III panel on the rack.

   Choose to mount power panels at topmost or highest possible rack position.

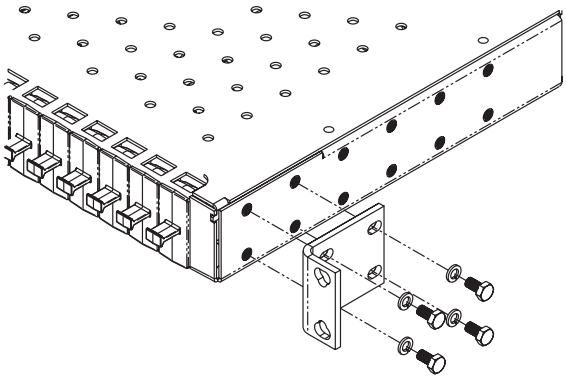


Figure 2: Bracket Installation

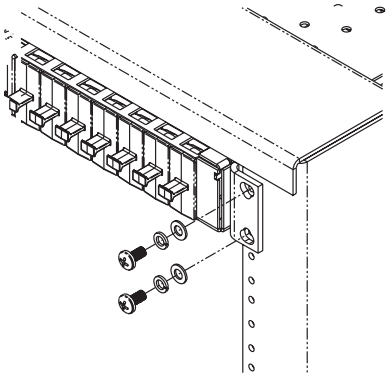


Figure 3: Rack Installation

   Note: Panel weighs approximately 11.5 lbs (5.2 kg). Take care to support the panel when installing panel to rack. Two persons may be required in the following step.

6. Mount panel to rack using two sets of supplied fasteners per side (total of four 12 - 24 thread-forming, Phillips-head screws, split lock washers, and flat washers.), as shown in "Rack Installation" above. Tighten screws to no greater than 35 inch pounds (~4.29 Newton meter).

Torque Rating Chart

Fastener Connections	Maximum Torque (inch pounds)	Maximum Torque (Newton meter)
12 - 24	35 inch pounds	4.29 Newton meter
1/4 - 20	55 inch pounds	6.2 Newton meter

Ground Wiring

⚠ DANGER

This product must be properly grounded to the facility's DC ground bus. Failure to do so is dangerous to personnel and may result in equipment malfunction.

7. Crimp 90° ground lug (supplied) to a 2 AWG stranded copper wire. One 2 AWG ground wire is the minimum requirement for four, 125 A interrupters feeding this panel.
8. If required, lightly coat anti-oxidant on contacting surface between ground lug and ground bracket. (The ground bracket is centered on the rear of the panel.)

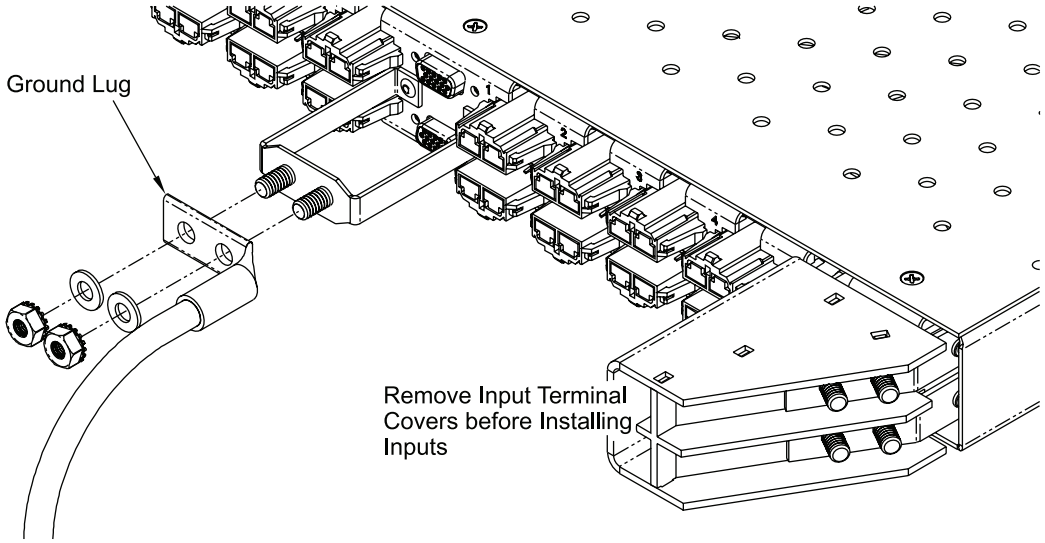


Figure 4: Ground Wiring

9. Fasten lug to panel using two, 1/4 - 20 KEPS nuts and flat washers – all supplied. Tighten to no greater than 55 inch pounds (~6.2 Newton meter).

Inputs

⚠ DANGER

Check that input power to panel is off or disabled before installing input cabling.

10. Remove input terminal covers shown in the previous illustration.

11. Slip UL94 V-0 heat-shrink tubing over the ends of 14 AWG to 2 AWG stranded copper input wires.

    Note: Although the A1 and A2 RTN buses, as well as the B1 and B2 buses, are shared, Transtector recommends separate RTN leads for each active bus, even if those shared buses have a shared primary distribution unit.

12. Use approved tooling to crimp straight, 45º, or 90º dual-hole compression lugs (1/4 inch holes on 5/8 inch centers) onto ends – DC Edge ends – of input wiring.
13. Use a nonabrasive, nonmetallic pad, such as Scotch-Brite®, to clean input terminals and lugs.
14. Heat shrink UL94 V-0 tubing onto lug barrels.
15. If required, lightly coat anti-oxidant on contacting surfaces between input lugs and BATT and RTN input terminals.
16. Fasten lugs to BATT and RTN input terminals using supplied hardware (two 1/4-20 KEPS nuts and flat washers per terminal). Tighten to a maximum of 55 inch pounds (~6.2 Newton meter).

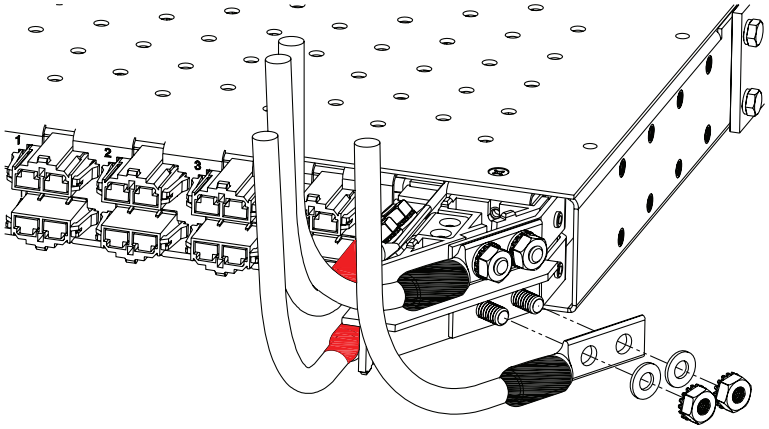


Figure 5: Connecting Input Wiring

17. After connecting inputs, re-install transparent covers over input terminals.

    Transparent covers are labeled for Side A and Side B.

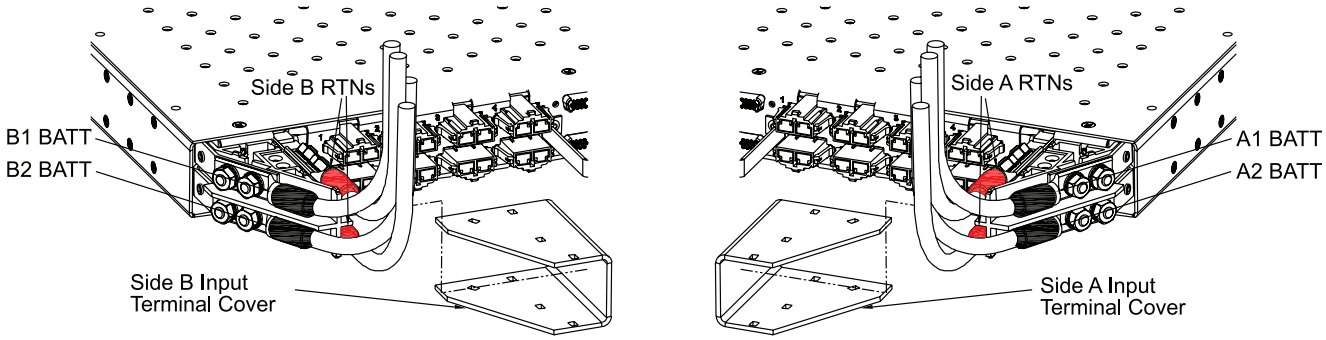


Figure 6: Installing Input Terminal Covers

18. Use the four dip switches on the alarm board to enable/disable bus LEDs and alarms, as follows:

    A. As shown in the following illustration, remove two Phillips-head screws securing alarm board to front of panel.

    B. Pull out alarm board about 2 inches.

    C. Slide a dip switch (A1, A2, B1, B2) to the left to enable (EN) status and alarms for the corresponding bus.

The dip switches enable/disable the power LEDs on the front of the panel and the power alarm contacts on the rear. The dip switches do not enable/disable the buses, meaning that, if a dip switch is set to disable, the corresponding bus can still be used to power its set of four breakers. The problem lies in having a non-indicating power LED for that bus and a non-indicating power alarm.

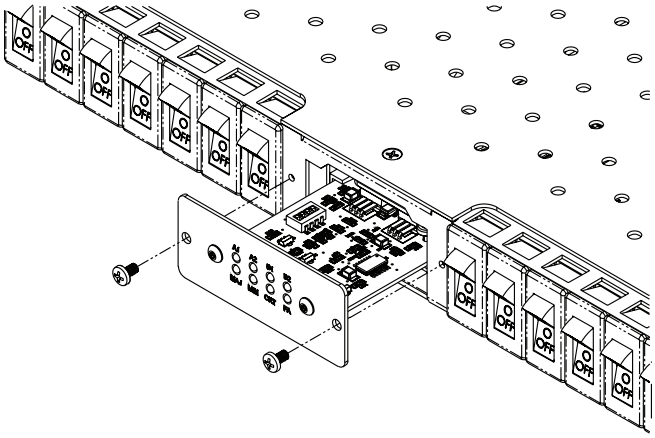


Figure 7.1: Accessing Bus Status & Alarm Switches

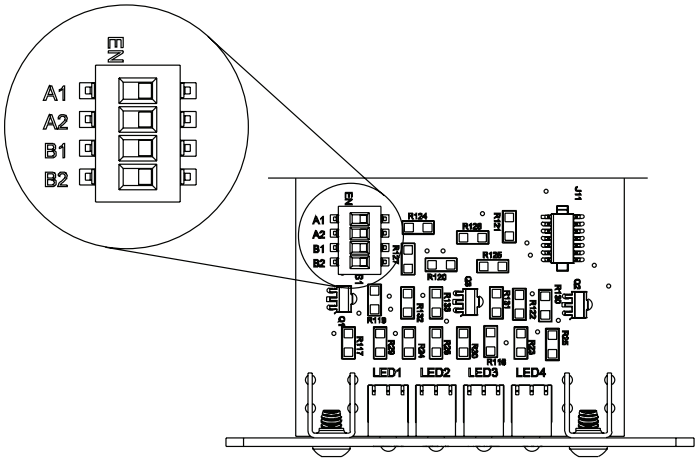


Figure 7.2: Enabling Bus Status & Alarms

Test Voltages & Alarms

19. Make sure all DC Edge III breaker positions are empty (unpopulated).
20. Turn on or enable fuse, breaker, or other disconnect device to feed power to one of the selected buses.
21. Test voltage and polarity at input terminals of that bus. Also, expect that –

    - **Status LED for that bus is lit (green), and**
    - **All other LEDs are off.**

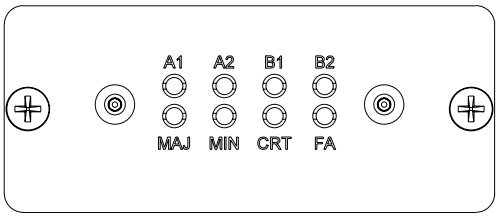


Figure 8: Status & Alarm LEDs

22. Test continuity between power alarm terminals:

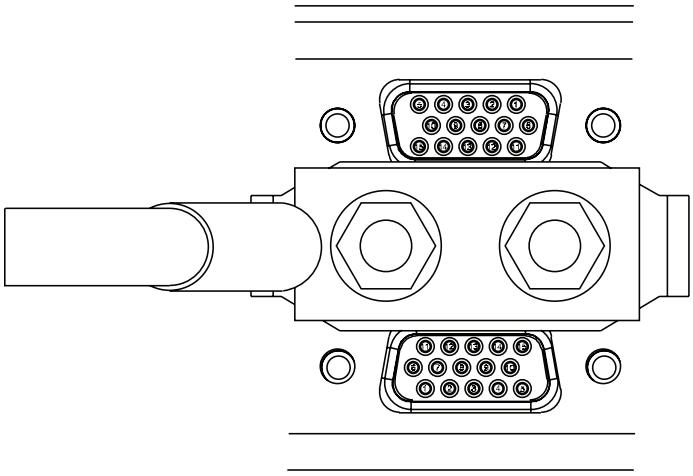


Figure 9: Upper and Lower D-Connector Alarm Terminal

Upper D-Connector Pin-Outs

Pin	Assignment
1	Power Alarm NC
2	Power Alarm NO
3	Power Alarm C
4	Major Reference
5	Major NO
6	Major C
7	Major Activate
8	Major NC
9	Fuse Alarm NC
10	Fuse Alarm NO
11	Fuse Alarm C
12-15	unused

Lower D-Connector Pin-Outs

Pin	Assignment
1	Minor Reference
2	Minor Activate
3	Minor C
4	Critical Reference
5	Minor NO
6	Minor NC
7	Critical Activate
8	Critical C
9	Critical NC
10	Critical NO
11-15	unused

If the bus that was turned on in Step 21 is the only bus enabled in Step 19 –

- **Expect continuity (0 Ohms) between power terminals C and NC;**
- **Expect an open circuit (∞) between C and NO.**

Note: Normal conditions, that is, normally open (NO) and normally closed (NC), are for a normally functioning panel with power on and no tripped breakers.

If any other presently unpowered buses were enabled in Step 19 –

- **Expect an open circuit (∞) between power terminals C and NC;**
- **Expect continuity (0 Ohms) between C and NO.**

23. For FA (fuse alarm) terminals –

- **Expect continuity (0 Ohms) between C and NC;**
- **Expect an open circuit (∞) between C and NO.**

24. Repeat Steps 20 through 23 for each powered/enabled bus. Expect that the corresponding power LED turns green and that the power alarm terminals exhibit normal continuity/open status: namely,

- **Expect continuity (0 Ohms) between power terminals C and NC;**
- **Expect an open circuit (∞) between C and NO.**

Outputs

25. For panel outputs, crimp stranded copper output wiring (16 to 10 AWG) onto Molex terminals (Molex Series 42815) for use in Molex 2-position, single-row female connectors (Molex Part No. 4281680212). Female terminals and connectors are not supplied.

    The male connectors on the panel are Molex Part No. 428180212. The size of output conductors depends on current rating of output circuit breakers to be installed in panel.

    Note: Be aware that the top and bottom rows of output connectors on the rear of the panel are reversely oriented, as shown in the following illustration. The BATT output (±24 V, -48 V, etc.) is always on the left on the top row, when viewed from the rear, and the BATT output is always on the right on the bottom row.

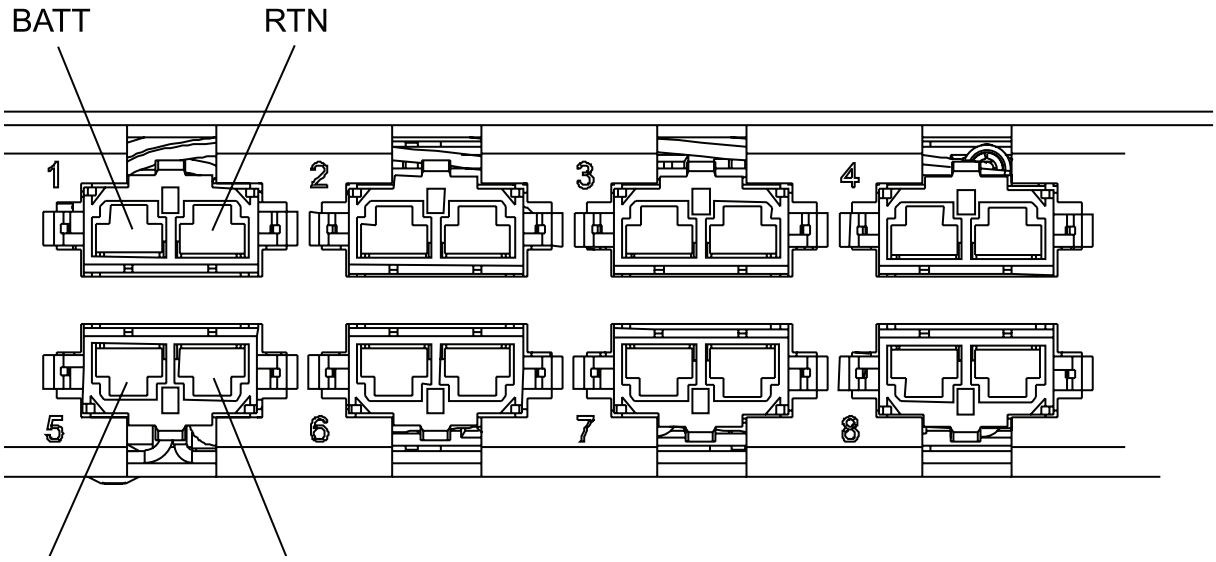


Figure 10: Output Connector Orientation

26. Crimp female terminals on output wires, install terminals in female connectors, and insert female assemblies into male connectors on panel.

    The following illustration shows output connections for Breaker 3 on Bus A1 and Breaker 7 on Bus A2.

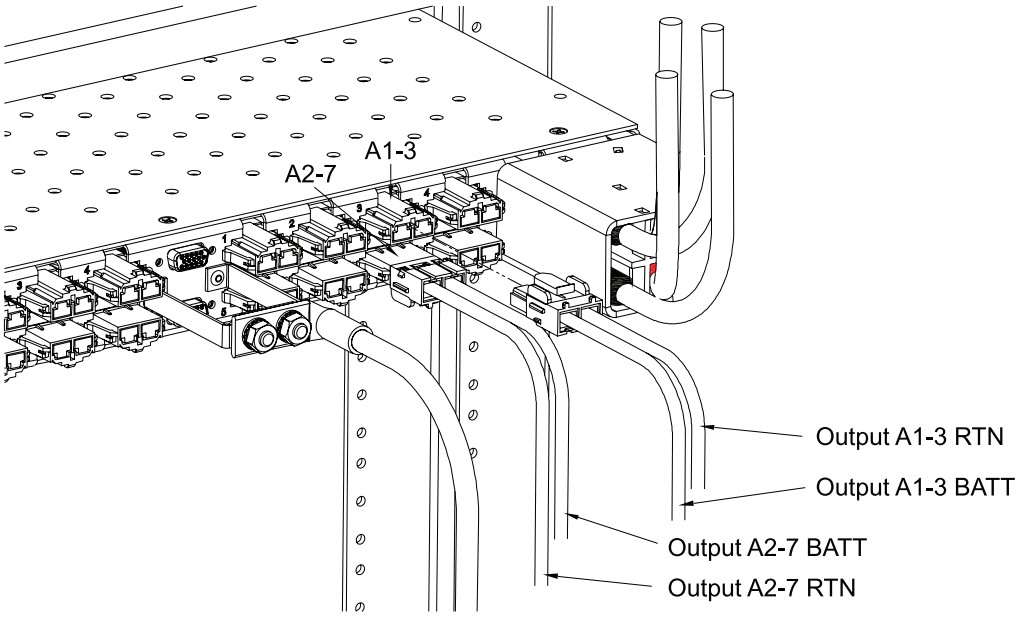


Figure 11: Connecting Output Wiring

27. Use cable ties or lacing cord to fasten the first pair of output conductors to the near-rear corner of the rack.
28. Continue with the next pair of output conductors - tying off that pair to the previous pair.

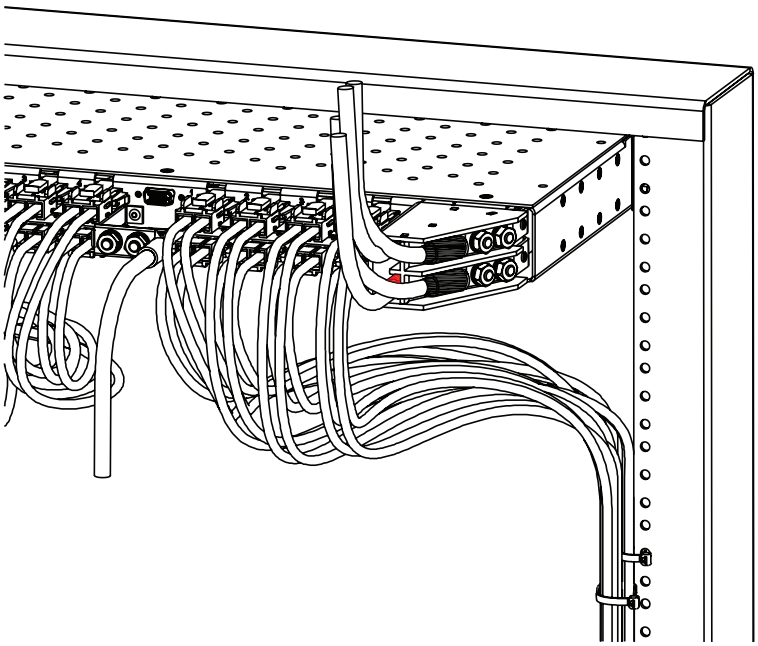


Figure 12: Output Cable Management

29. Connect opposite ends of output conductors to the output loads.
30. Turn off or disable fuses, breakers, or other disconnect devices feeding power to Sides A and B of the DC Edge III panel.

    Note: The following steps deal with breakers. Good practice involves turning off power to one side or the other of this panel when installing or replacing breakers. When that is not possible, rely on and follow established operating company or regulatory practices. However, NEVER install breakers in a live circuit with the operator handle switched on.
31. Remove blank cover over selected breaker position. Pull the handle of the blank cover to remove. See “Breaker Replacement” on Page 21.
32. During installation of breakers, make sure that circuit breakers are switched off.
33. Install circuit breakers (off)[1], as shown in the following illustrations, with ON at the top and OFF at the bottom.

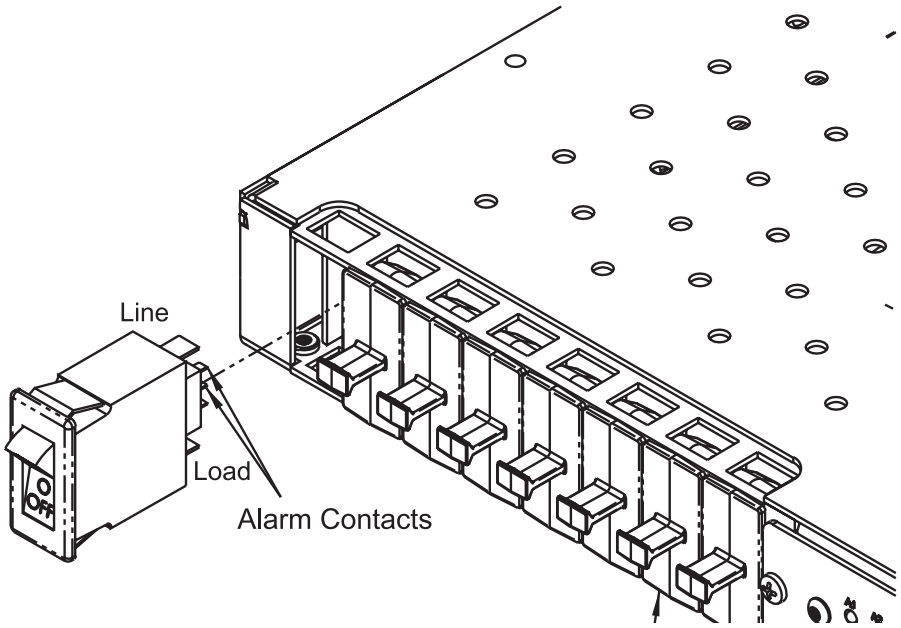


Figure 13: Installing Circuit Breaker

1 For proper alarm relay operation, ensure that the alarm contact tabs are not bent or deformed prior to inserting into the panel.

34. When installing breakers, record the ratings and position on the designation card shown in the following illustration. Insert card into pull-out holder below LED panel.

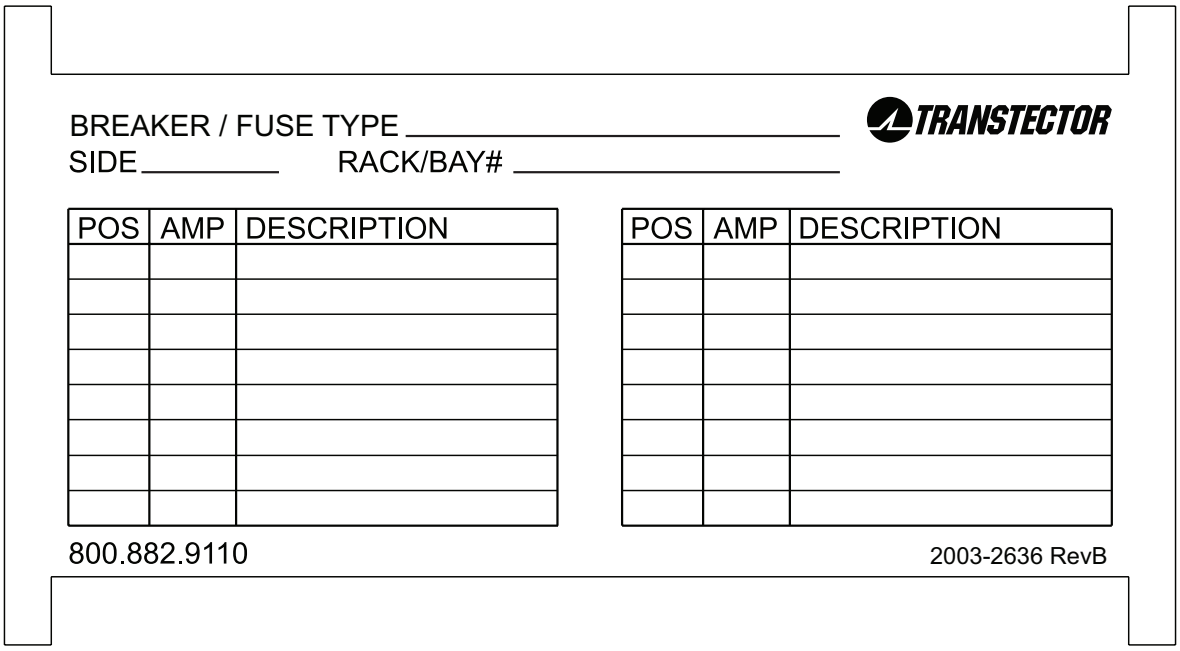


Figure 14: Designation Card

35. Disable DC Edge III output loads at the equipment loads.
36. Turn on output breakers.
37. Turn on or enable fuses, breakers, or other disconnect devices to feed power to all DC Edge III buses.
38. Expect that the enables power LEDs are on (green) and all other alarm LEDs are off.
39. Turn off one of the breakers. Expect that the FA (fuse alarm) LED is on (red).

    Check the FA (fuse alarm) terminals on the rear of the panel. Expect:

- **An open circuit (∞) between C and NC, and**
- **Continuity (0 Ohms) between C and NO.**

40. Make sure all breakers are on.
41. Test power and polarity at the input of each output load.
42. Enable DC Edge III output loads at equipment loads. Check loads for proper operation.

Alarms

43. If required, connect panel and/or bay alarm wires to the two, D-type connectors on the rear of the panel.

Maintenance

DC Edge III panels require no scheduled maintenance.

Breaker Replacement

Circuit breakers are held in place by wide plastic barbs at the top and bottom of each breaker. The barbs lock into cutouts in the top and bottom of the two breaker cages.

Transtector provides two breaker removal tools. The tools are used together to facilitate breaker removal by depressing the barbs while prying out the breaker.

In use, slip one tool between the top of the DC Edge III panel and the bottom of the panel above so that the hooked end of the tool slips into the cutout above the breaker. Insert the other tool in the corresponding position at the bottom of the panel. Then pry up on the top tool and down on the bottom to unlock the barbs and free the breaker.

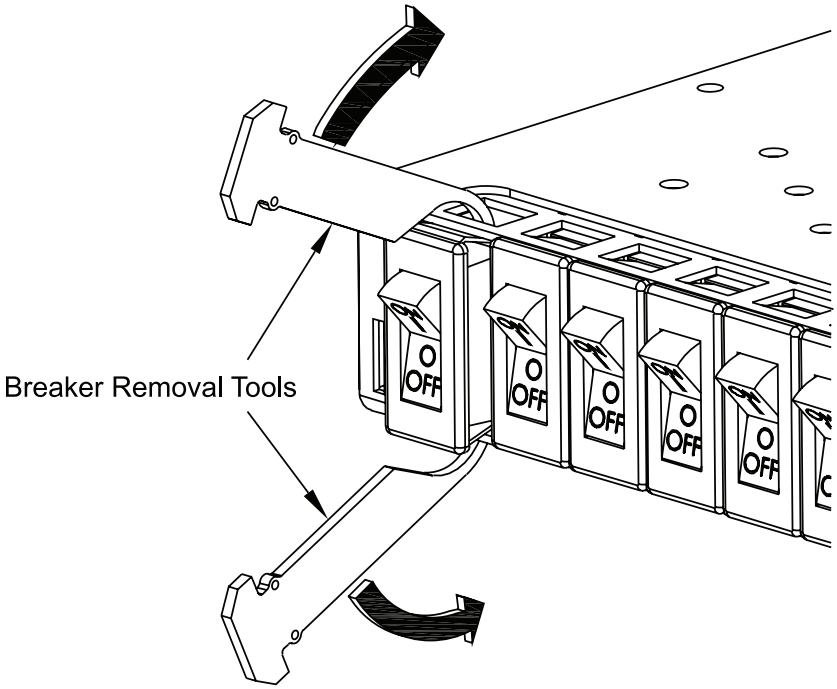


Figure 15: Removing a Breaker

Alarm Board Replacement

The alarm board (Transtector Part No. 2250-949) along with the status LEDs can be replaced with power on. The alarm board rests on slides and is edge connected at the far end.

To replace the alarm board, refer to the following illustration and remove two Phillips-head screws. Then, pull to disconnect and slide out the alarm board.

If installing a replacement alarm board, use a 5/64" Allen wrench to remove the button-head socket screws holding the faceplate to the alarm board. Retain the screws and faceplate for installing the replacement board. Torque screws for replacement board to 6 in-lbs.

Slide the alarm board back into the chassis through the plastic guide rails. Ensure the board is fully seated in the edge connector. Secure the Phillips-head screws and torque to 4 in-lbs.

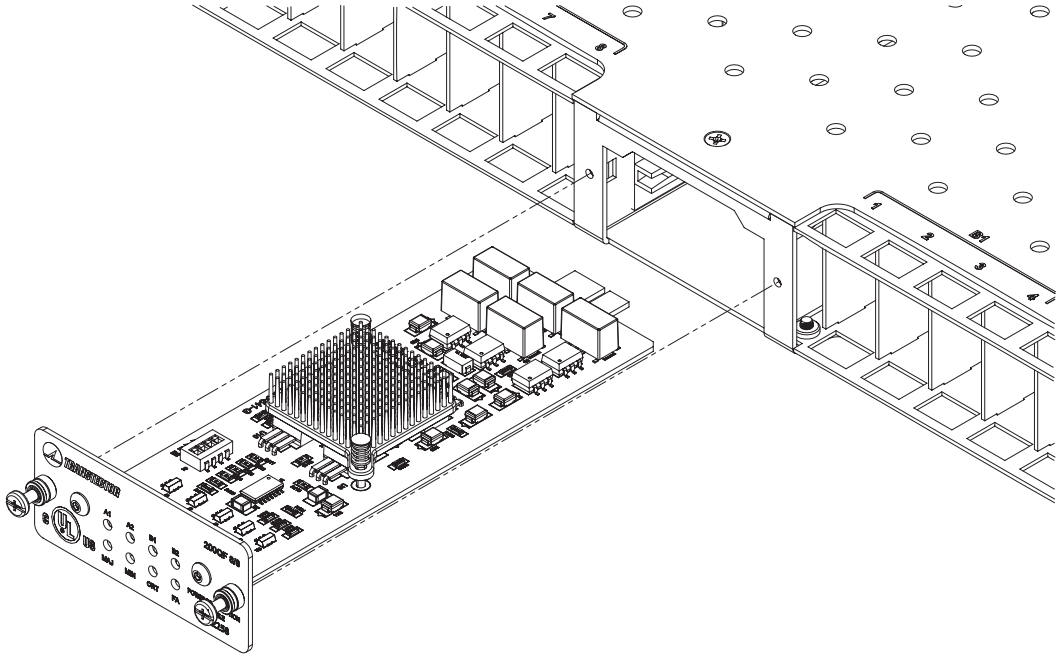


Figure 16: Removing Alarm Board

Service

For service (warranty or otherwise) contact Transtector by phone at 1.800.882.9110 or 208.635.6400, to obtain an RMA number. Transtector will contact you with cost of repair or replacement (if applicable) before proceeding with service.

Circuit Breakers

The DC Edge III panel uses single-pole, Carling Technologies™ M-Series or AIRPAX© SNAPAK© series hydraulic magnetic circuit breakers with on/off rocker operators. All circuit breakers are slow-trip without mid-trip:

Rating	Carling Technologies™ Part Number	AIRPAX© Part Number
0.1 A	MA1-M-14-210-1-A16-2-J	CR15-52-.100A-R06CV-V
0.5 A	MA1-M-14-250-1-A16-2-J	CR15-52-.500A-R06CV-V
1 A	MA1-M-14-410-1-A16-2-J	CR15-52-1.00A-R06CV-V
2 A	MA1-M-14-420-1-A16-2-J	CR15-52-2.00A-R06CV-V
3 A	MA1-M-14-430-1-A16-2-J	CR15-52-3.00A-R06CV-V
4 A	MA1-M-14-440-1-A16-2-J	CR15-52-4.00A-R06CV-V
5 A	MA1-M-14-450-1-A16-2-J	CR15-52-5.00A-R06CV-V
7.5 A	MA1-M-14-475-1-A16-2-J	CR15-52-7.50A-R06CV-V
10 A	MA1-M-14-610-1-A16-2-J	CR15-52-10.0A-R06CV-V
12.5 A	MA1-M-14-712-1-A16-2-J	CR15-52-12.5A-R06CV-V
15 A	MA1-M-14-615-1-A16-2-J	CR15-52-15.0A-R06CV-V
20 A	MA1-M-14-620-1-A16-2-J	CR15-52-20.0A-R06CV-V
25 A	MA1-M-14-625-1-A16-2-J	CR15-52-25.0A-R06CV-V
30 A	MA1-M-14-630-1-A16-2-J	CR15-52-30.0A-R06CV-V

Lugs (1/4” on 5/8” Centers)

A right-angle, 2 AWG dual-hole ground lug is included with the DC Edge III panel.
For input wiring, only use one of the following straight lugs. Crimp lugs to wire terminations with supplier recommended crimp tool.

Lug Style	Wire Size	Burndy Part No.	Panduit Part No.
Straight 	14-10 AWG	YAV10-2TC14	—
	8 AWG	YA8CL-2TC14	LCD8-14A-L
	6 AWG	YA6CL-2TC14	LCD6-14A-L
	4 AWG	YA4CL-2TC14	LCD4-14A-L
	2 AWG	YA2CL-2TC14	LCD2-14A-Q

Dimensions

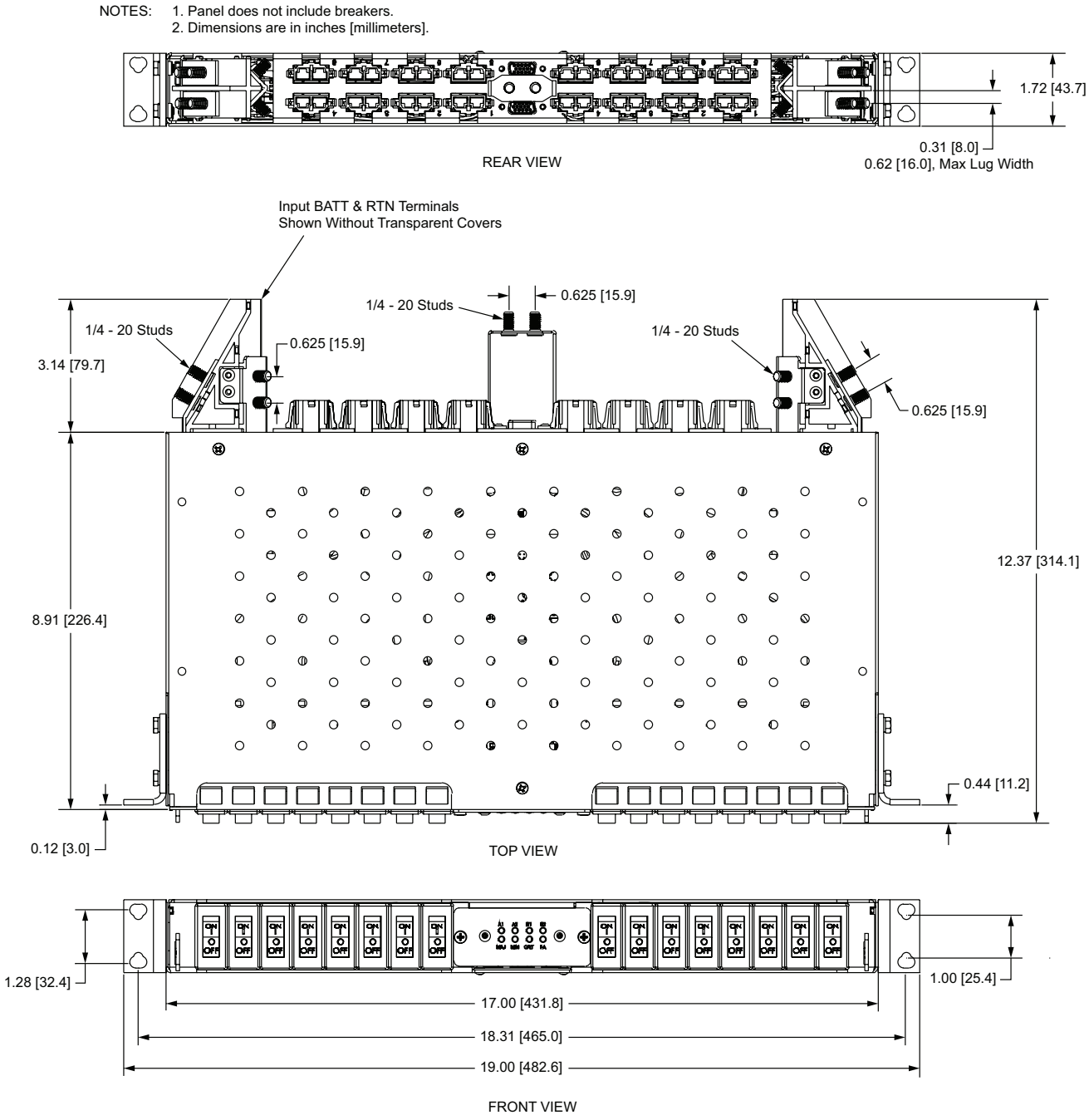


Figure 18: Dimensions

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Transtector reserves the right to change this product and this publication without notice.

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