

# IOTA ENGINEERING

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## IDP-30 DISTRIBUTION PANEL OWNER'S MANUAL



### **IDP-30 OVERVIEW**

The IDP-30 Distribution Panel is a compact, attractive, electrical distribution panel designed to handle the 120 volt AC and 12 volt DC distribution of an RV or other similar AC/DC system. The 120 volt compartment is rated for 30 amps 120 VAC and for 50 amps 120 VAC depending on the model, and will accommodate from two branch circuits to a maximum of one pole main and seven branch circuits. Standard configuration for an RV with 30 amp powercord is a 30 amp main and five branch circuits. The 12 volt compartment will accommodate twelve circuits utilizing blade type fuses. The panel is acceptable for Canada by utilizing optional bushings in the 12 volt wire entry holes. It comes with a standard two-year warranty.

### **INSTALLATION**

#### **I. LOCATION**

The IDP should be mounted on an interior vertical surface where there is sufficient depth to allow for space for the panel and wiring behind it. Typical locations include under counter cabinet fronts or sides, below closet compartments, overhead cabinet fronts, and bed pedestals. **Under floor storage compartments or in the back wall of closets are not acceptable, as the panel must not be installed in the rear of any storage compartment.** Eye level locations are best, where possible, as it is easier to reset or replace breakers or fuses.

The location chosen must have access space in front for service after installation. This space is defined by the National Electric Codes as 24" wide by 30" deep. However, if the IDP is mounted facing the aisle, then one of these dimensions may be reduced to 22".

When choosing a mounting location for the IDP, consideration should be given to its proximity to supply components, such as a powercord (or powercord/generator/inverter lines from a transfer switch) on the 120 VAC side, and the battery/converter locations on the 12 VDC side. Where possible, consideration should also be given to mounting the IDP toward the middle of the RV, thus equalizing the length of the different 12 volt branch circuits, in order to minimize DC voltage drop. This is preferred to circuits which must run the entire length of the vehicle.

#### **II. CABINET PREPARATION**

Cut an opening in the face of the cabinet for the IDP. The cabinet face must be strong enough to support the unit during vehicle operation. Approximate dimensions for the opening are 4.5" high and 10.75" wide. If the opening is cut into light paneling the opening must be framed with support members into which Distribution Panel mounting screws may be driven and to which cables may be attached.

Determine how many branch circuits will be used. Remove the rectangular knockouts for those branch circuits. Mount the IDP in the opening on the cabinet using four screws.

### III. 120 VOLT COMPARTMENT

Install an 8 gauge copper chassis ground wire to the IDP ground bar. A hole in the case is provided for wire entry directly to the bar.

**Powercord-** (Fig A) Attach a cable clamp in the 1" round opening for the supply wire (powercord, feed wire from transfer switch, etc.) Attach and tighten the cable clamp nut as required. Remove outer sheathing from the supply wire, and trim leads (recommended 1.5" for the ground wire, and 2.5" for the neutral and hot wires; see wire stripping guide, Fig. B). Strip 1/2" insulation from the ends of the lead. Insert the wire through the clamp. Connect the green (ground) conductor to the first terminal on the ground bar located toward the front of the compartment. Connect the white (neutral) conductor to the bottom terminal on the neutral bar located at the rear of the compartment. Tighten screws on cable clamp to secure supply wires. Do not install circuit breakers until other connections are made first.

**Branch Circuits-** (Fig. C) Remove sheathing from nonmetallic branch circuit wiring, and trim leads (recommended 1.5" for the ground wire, and 2.5" for the neutral and hot wires; see wire stripping guide, Fig. B.) Strip 1/2" insulation from the ends of the leads. Insert wires into rectangular openings; the sheathing must intrude into the compartment 1/4" or more. Wedge-shaped cable clamps can be provided for the IDP-30 to secure the branch circuit nonmetallic cables inside the box as required by the National Electric Code. If wedge clamps are required, contact Customer Service at 1-800-866-IOTA (4682).

Insert ground wire into the ground bar and tighten terminal screw. Attach the neutral conductor to the neutral bar. Tighten securely. The NEC allows only one conductor per terminal on the neutral bar. Repeat this process with all the branch circuits.

### IV. CIRCUIT BREAKERS

Install circuit breakers (Fig. D.). Connect black (hot) wires to the circuit breakers. Tighten securely. The NEC allows only one conductor per terminal in the circuit breakers. NOTE: The IDP-30 is listed to accept any standard 1" wide circuit breaker and interchangeable models currently on the market, whether one pole or twin. It is not brand or part number specific. Refer to the specifications labeled on the IDP-30 for the maximum circuit breaker amperage.

FIG. A - POWERCORD CONNECTION

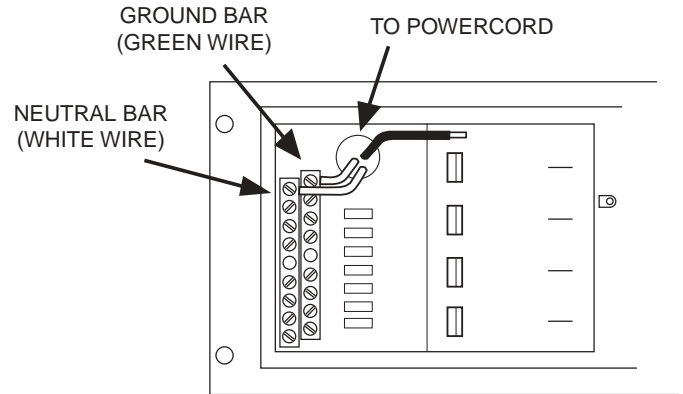


FIG. B - WIRE STRIPPING GUIDE

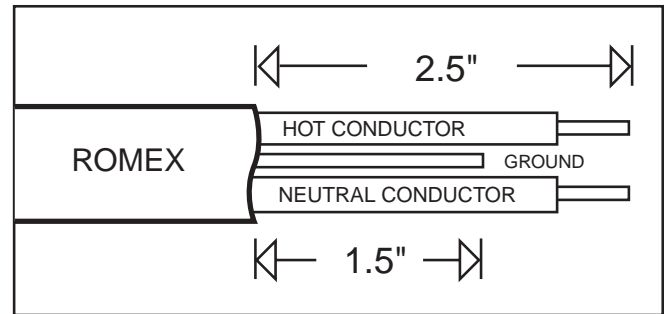
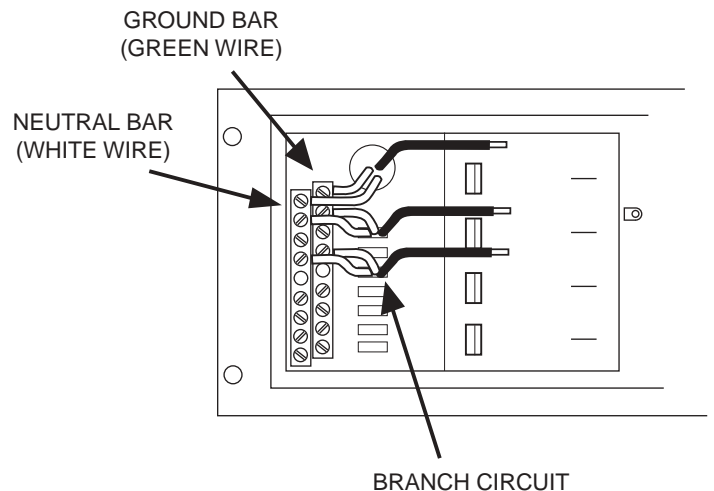
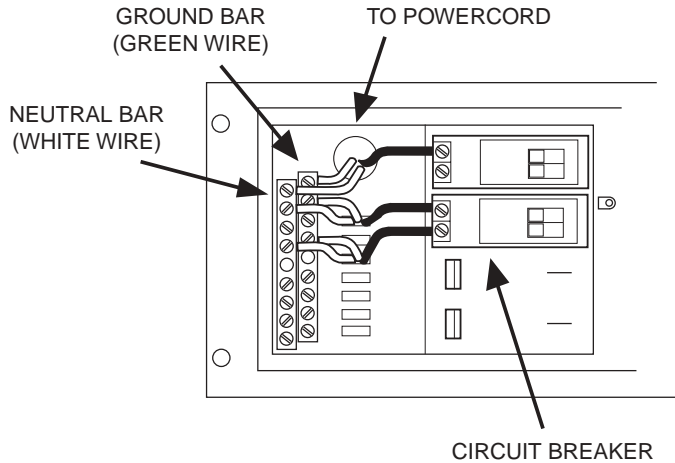


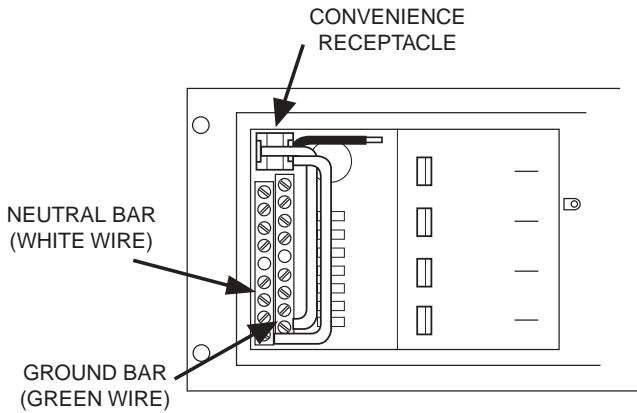
FIG. C - BRANCH CIRCUIT CONNECTIONS



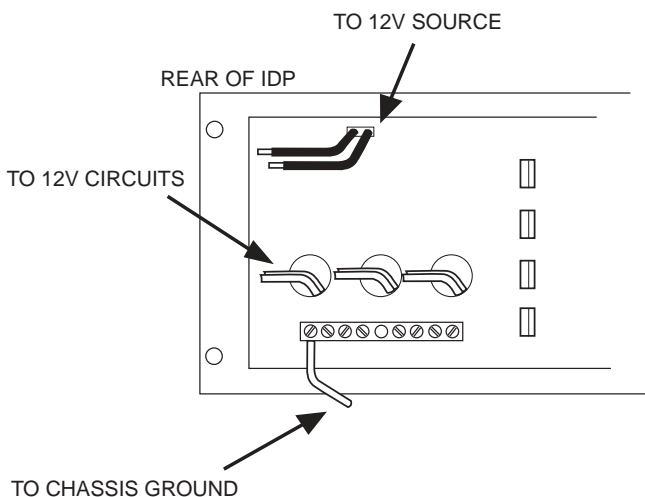
**FIG. D - CIRCUIT BREAKER CONNECTIONS**



**FIG. E - CONVENIENCE RECEPTACLE**



**FIG. F - 12 VOLT CONNECTIONS**



**V. CONVENIENCE RECEPTACLE**

A 15 amp receptacle is available on the back of the IDP-30 as a convenient place to plug in the converter (FIG. E). The receptacle may be on a dedicated circuit or it may be wired as part of a 15 amp general purpose branch circuit. If the convenience receptacle is present, connect its green (ground) and white (neutral) wires to the ground and neutral bar as with other branch circuits. If it is on a dedicated circuit, connect the black wire to the breaker. If it will be on a general purpose circuit, attach its black (hot) wire by means of a wire nut to a 6" black conductor cut from excess branch circuit wiring. Connect the hot wire from the branch circuit cable to the same wire nut. Attach the other end of the 6" black wire to the breaker.

**VI. 12 VOLT CONNECTIONS**

All wires connected to the DC fuse panel extend out of the back of the IDP unit (FIG. F). Red and blue wires are labeled with the fuse position number for ease of wiring. Connect numbered wires to desired circuits and/or appliances. Connect the chassis ground to the groundbar on the back of the IDP. Connect the two black wires to the 12V power source such as the battery or power converter.

The fuse panel will accommodate ATO/ATC sized blade fuses. Install fuses or breakers of the correct amperage. Proper protection may be either to protect wires of a certain size on a general purpose branch circuit, or to protect individual appliances, such as a water pump or a TV antenna booster, on a dedicated circuit.

**CANADIAN REQUIREMENTS:** Canada requires that all 12 volt fuses used in RVs be listed to CSA standards. There is also a requirement in Canada that low voltage panels be enclosed, "...such that an 1/8" diameter rod shall not penetrate." For installation in Canadian RVs, snap the optional round bushings into the 12 volt wire entry holes; they may be installed from the outside or inside. The pie-shaped fingers in the bushings bend to allow wiring to pass, yet fill in the remainder of the space, complying with Canadian requirements.

**VII. FRONT COVER**

Install the front cover by means of the decorative screw provided. Make sure all wires are neatly tucked inside and none are pinched. Tighten snugly with the screw provided.

**VIII. LABELS**

Install labels for 120 volt and 12 volt circuit identification. Labels may be preprinted or blank labels may be filled in by the installer.

## **HI-POT TESTING**

### **(MANUFACTURING COMPANIES ONLY)**

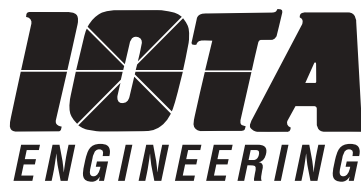
- 1) Turn on all circuit breakers in panel.
- 2) Make sure all power supplies including inverter and generator are off. If there are other power supplies present, and they are electrically connected to the RV system by means of a transfer switch, refer to the transfer switch hi-pot instructions before proceeding further. See Note.
- 3) Turn off or disconnect all appliances that would be damaged by the hi-pot test.
- 4) Connect the hi-pot leads to the powercord plug: one lead to the hot and neutral prongs, the other lead to the ground prong.
- 5) Energize the hi-pot and conduct test. This will hi-pot test for leakage (short) between the current-carrying conductors and the ground in the entire RV 120 VAC circuitry. It will also test the powercord itself. Turn off hi-pot.
- 6) If hi-pot test fails there is a short in the system. The next step is to isolate the location of the short. Turn off the main breaker in panel and hi-pot test again. If test fails, fault is between the cord plug and the panel. Test cord for

shorted plug. If second test passes, turn on main breaker, and turn off all branch breakers except one. Retest each branch circuit individually until short circuit is isolated. Repair fault and retest. Hi-pot test is successful when there are no more fault indications.

NOTE: If the hi-pot test is performed from the plug on the powercord, and there is a transfer switch present, the test may only hi-pot the cord itself; it may not test the RV wiring beyond the switch. In this case the hi-pot transfer switch should be performed from either the transfer switch output, or from the main panel, as well as from the plug to test the cord itself.

## **WARRANTY**

All IOTA Power Products come with a two-year warranty. IOTA warrants their products in the continental United States and Canada from defects in materials or workmanship under normal use for two years from date of retail purchase and will repair or replace any product under warranty found to be defective free of charge. For complete warranty information, consult Customer Service or visit [www.iotaengineering.com](http://www.iotaengineering.com).



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