



**AMERICAN POWER CONVERSION**

**Smart-UPS™**

**Hardwire Kit**

**Installation  
Guide**

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# 1. Introduction

*These instructions describe how to safely install the accessory hardware kit on the following Smart-UPS models.*

SU1400XLT	SU2200	SU3000
SU1400RMXLT	SU2200XL	SU3000T
	SU2200XLT	SU3000RM
	SU2200RM	SU3000J
	SU2200RMXLT	SU3000RMJ
	SU2200XLRM	
	SU2200J	

*This kit provides the necessary hardware to install direct wiring for input connection, output connection or both. Carefully read these instructions in their entirety before continuing.*

## WARNING!



*Only qualified service personnel or electricians may perform the following procedure. The electrical terminals exposed in the following procedures will be energized if the UPS is on or plugged in. Make sure the UPS is both unplugged and off.*

## CAUTION!

*When the input and/or output panels are replaced with this kit, the standard circuit breakers are eliminated. Properly rated overcurrent protection must be supplied at the source to protect both the wiring, the UPS, and the loads attached to it. Where an individual load has a lower rating for its source overcurrent protection, additional properly rated overcurrent protection must be supplied for the load(s).*

The maximum allowed overcurrent protection for each model is given in the table below. A lower value may be used, but may result in a reduction of power that can be supplied by the UPS.

<b>Model Number</b>	<b>Overcurrent Protection</b>	<b>Maximum Input Current</b>	<b>Nominal Voltage</b>
1400XLT	20A	12A	208V
1400RMXLT	20A	12A	208V
2200J	30A	24A	100V
2200	30A	21A	120V
2200RM	30A	21A	120V
2200XL	30A	24A	120V
2200RMXL	30A	24A	120V
2200XLT	20A	16A	208V
2200RMXLT	20A	16A	208V
3000J	40A	30A	100V
3000RMJ	40A	30A	100V
3000	40A	28A	120V
3000RM	40A	28A	120V
3000T	20A	18A	208V

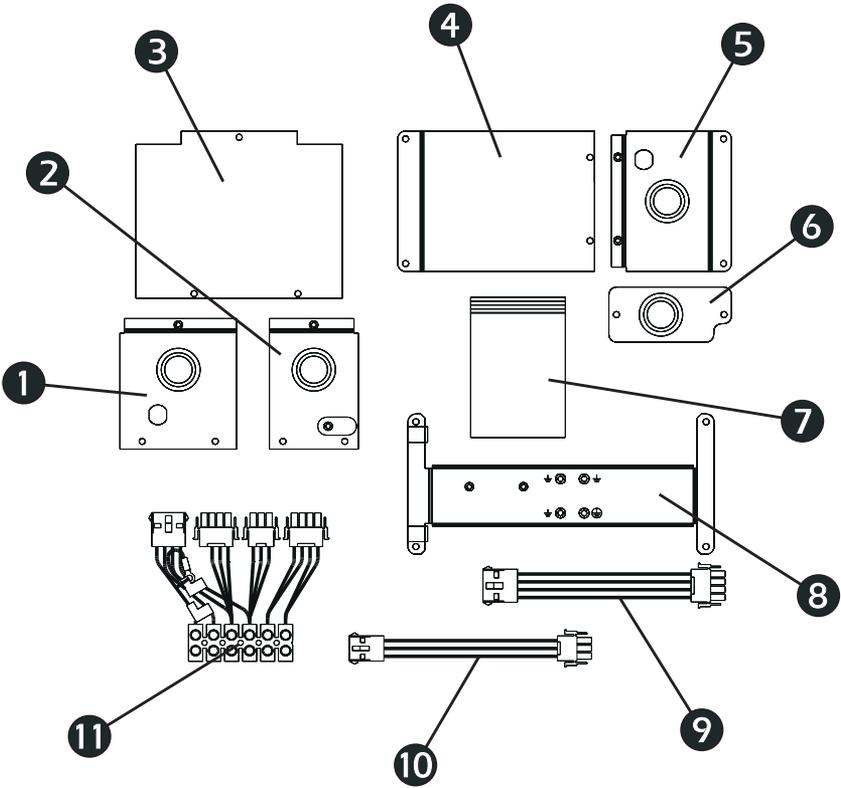
## 2 Hardwire Kit Overview

*The Smart-UPS hardwire kit provides the panels and mounting hardware for both floor standing (tower) and rack mount Smart-UPS models. This kit is used to replace the power distribution outlets and/or input power cord that is originally furnished with the UPS. The input and output panels are designed with knockouts for use with standard sized cable or conduit clamps. Cable or conduit clamps are not included in this kit.*

**NOTE:** *If your Smart-UPS is serial number 9603xxxxxxx or less, you may be unable to install this hardwire kit to your UPS. Contact your dealer for an alternative solution.*

### 3. Hardwire Kit Contents

The Smart-UPS hardwire kit contains the following items:



**Figure 3-1** Contents of the Hardwire Kit

- ❶ **Output Panel** - *For tower unit. Colored black.*
- ❷ **Input Panel** - *For tower unit. Colored black.*
- ❸ **Access Panel** - *For tower unit. Colored black.*
- ❹ **Access Panel** - *For rack mount unit. Colored silver.*
- ❺ **Output Panel** - *For rack mount unit. Colored silver.*
- ❻ **Input Panel** - *For rack mount unit. Colored silver.*
- ❼ **Hardware Bag** - *Contains:*
  - 2 red wire nut connectors*
  - 4 green self-tapping screws (10-32 x 3/8")*
  - 8 self-locking panel screws (8-32 x 3/8")*
  - 2 wire harness mounting screws (8-32 x 3/4")*
  - 1 terminal block label*
  - 1 maximum input label*
  - 1 receptacle option label sheet*
- ❽ **Rack Mount Wire Harness Bracket** - *Used to mount the wire harness assembly (#10) inside a rack mount unit.*
- ❾ **4-Wire Jumper Harness (qty 2)** - *An extension used to attach wire harness input wires to the input connector inside the UPS.*
- ❿ **3-Wire Jumper Harness** - *An extension used to attach wire harness input wires to the input connector inside the UPS.*
- ⓫ **Wire Harness Assembly** - *Provides screw terminals for connecting external input and output wiring to the wiring harness. In-line connectors allow for connection between the wiring harness and the UPS.*

## 4. Required Materials and Tools

### 4.1 Required Materials

*The following materials are not included in the hardwire kit and must be supplied by the purchaser:*

- **Electrical cable or wiring** - *Cable or wiring must be of sufficient current carrying capacity to safely accommodate the attached loads. Refer to local electrical requirements for the appropriate wire size.*
- **Electrical conduit or tubing** - *Conduit or tubing should meet all local requirements for electrical wiring.*
- **Cable or conduit clamps** - *The hardwire kit requires cable clamps for the input and output cords. Panel knockouts are sized to accept 1/2", 3/4", or 1" clamps.*

**NOTE:** *Wiring codes and requirements differ from area to area. Be sure to conform to all local electrical requirements when installing and wiring this kit.*

### 4.2 Required Tools

*The following tools are required to install the hardwire kit*

- *Electrician's Pliers*
- *Flat Blade Screwdrivers (large and small)*
- *Phillips Screwdriver*
- *Wire Cutters*

## 5. Installation

This section provides step by step instructions for installing a hardwire kit to a Smart-UPS tower or rack-mount UPS.

**NOTE:** The examples used in this manual assume a typical, flexible cord installation. If you are using tubing, or rigid or flexible conduit, make the necessary adjustments for the situation. Be sure to conform to all local electrical requirements.

### Input or Output Only Installations

In the event that only the input or only the output is to be hard wired, follow only the portion of the instructions that apply to your installation.

When hard wiring the input only, the existing output panel must be removed for access. This panel must then be replaced after the input wiring is completed.

Use the following table to locate the correct installation procedure for a specific Smart-UPS model.

Description	Model Number	Section	Page
Smart-UPS Tower (100V or 120V)	SU2200	5.1	10
	SU2200J		
	SU2200XL		
	SU3000		
	SU3000J		
Smart-UPS Tower (208V)	SU1400XLT	5.2	19
	SU2200XLT		
	SU3000T		
Smart-UPS Rack Mount (100V or 120V)	SU2200RM	5.3	29
	SU2200XLRM		
	SU3000RM		
	SU3000RMJ		
Smart-UPS Rack Mount (208V)	SU1400RMXLT	5.4	37
	SU2200RMXLT		

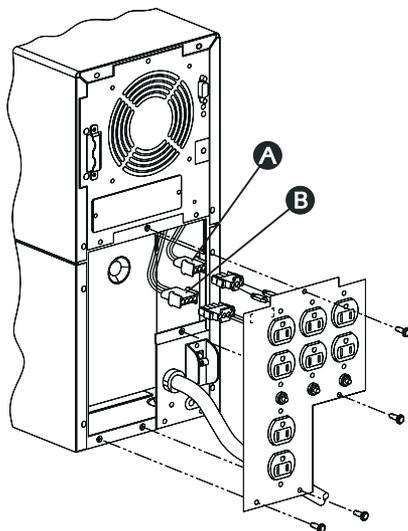
## 5.1 Installing the Hardwire Kit on 100V or 120V Tower Units

Follow the procedures in this section to install the hardwire kit to a 100V or 120V Smart-UPS in the tower configuration (Model numbers SU2200, SU2200J, SU2200XL, and SU3000, SU3000J).

### 5.1.1 Removing the Rear Panels

#### Remove the Output Panel

1. *Unpack and inspect the hardwire kit. Notify the carrier and dealer immediately if there is damage. Recycle the packaging or dispose of it properly.*
2. *Prepare the UPS for installation. Shut down any protected loads (computers, etc.), if present. Unplug all loads from the output receptacles of the UPS.*
3. **IMPORTANT:** *Turn off the UPS and unplug it from the wall outlet.*
4. *Unscrew the output panel at the rear of the UPS. Remove only the 4 screws indicated in Figure 5-1. Save these screws. They will be used to install the replacement panels.*



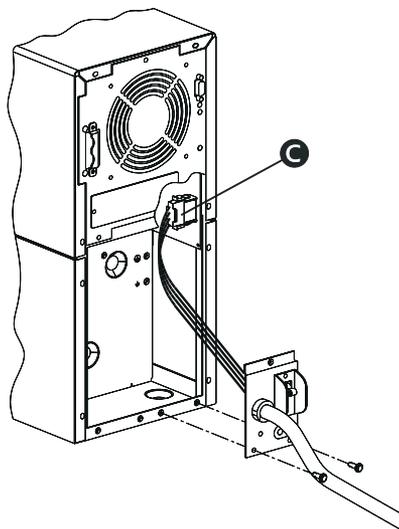
**Figure 5-1** *Removal of Output Panel (100V and 120V Tower)*

5. Pull the panel out gently so that the 3-pin **A** and 4-pin **B** in-line connectors are accessible.
6. Squeeze the locking tabs on the sides of the connectors and pull the connectors apart. Do not pull on the wires.
7. If the serial number decal is located on the output panel, remove it and replace it onto the permanent, upper panel on the back of the UPS.
8. Discard the output panel.

### Remove the Input Panel

**NOTE:** If you are hard wiring only the output, skip this section and continue with Section 5.1.2.

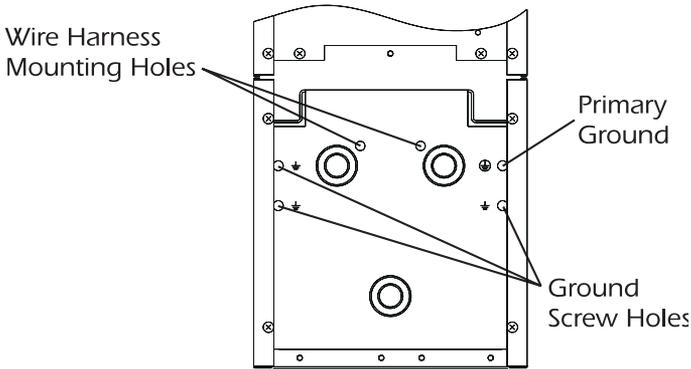
1. Remove the two bottom screws from the input panel as shown in Figure 5-2.
2. Unplug the 4-pin input connector **C** as shown below. Note the location of the input connection. Some units may have an in-line connector as well. If this is the case, unplug this in-line connector instead.
3. Save the screws. They will be used to install the replacement panel.
4. Discard the input panel and cord.



**Figure 5-2** Removal of Input Panel (100V and 120V Tower)

## 5.1.2 Verifying the Presence of Mounting Holes

1. Examine the rear plate inside the UPS. The configuration of the mounting holes should appear as in Figure 5-3. If the mounting and ground screw holes are present in this configuration, proceed with the installation procedure. If the holes are not present, you will not be able to install the hardwire kit to this UPS. Contact your dealer for an alternative solution.



**Figure 5-3 Wire Harness Mounting Holes**

## 5.1.3 Installing the Wire Harness Assembly

**NOTE:** If you are hard wiring the input only, choose one of the following two methods:

- A. Mount the wire harness as instructed (Section 5.1.3), and wire only the **Input L1** and **Input L2/N** connections  
or,
- B. Retrieve the old line cord and cut the last 6" from the end with the 4-wire connector attached. This connector and the attached wires will be spliced to your input line. Using approved field-applied splicing devices, connect the two black wires to Line1 (or Hot) of your input line and the two white wires to Line2 (or Neutral) of your input line. Plug the connector into the mating connector in the UPS (Figure 5-2) and reinstall the input and output panels.



## Connect the Wire Harness Assembly to the UPS

*Electrical connection between the wire harness assembly and the UPS is accomplished through the use of the four in-line connectors on the wire harness assembly and the corresponding connectors inside the UPS. Carefully follow the procedure below to ensure that the connections are made properly.*

**NOTE:** *Engage the connectors by holding one connector firmly in each hand, and fitting them together. Be sure to seat the connectors fully in place - they lock together with a click.*

1. *Refer to Figure 5-4 for connector numbers.*
2. *Retrieve the four-wire, yellow jumper harness (Figure 3-1, item #9).*
3. *Plug connector #4 into the “female” end of the jumper harness.*
4. *Connect the “male” end of the jumper harness into the 4-pin plug located inside the UPS. (Connector **C** in Figure 5-2)*
5. *Plug connector #3 to the 3-pin output connector inside the UPS. (Connector **A** in Figure 5-1)*
6. *Plug connector #2 to the 4-pin output connector inside the UPS. (Connector **B** in Figure 5-1)*
7. *Connector #1 is not used in this application. Leave this plug unconnected.*
8. *Double check all connections. Make sure that all connections are firmly locked together. Pay close attention that connectors #2 and #4 are connected correctly.*

### **5.1.4 Connecting External Wiring to the UPS**

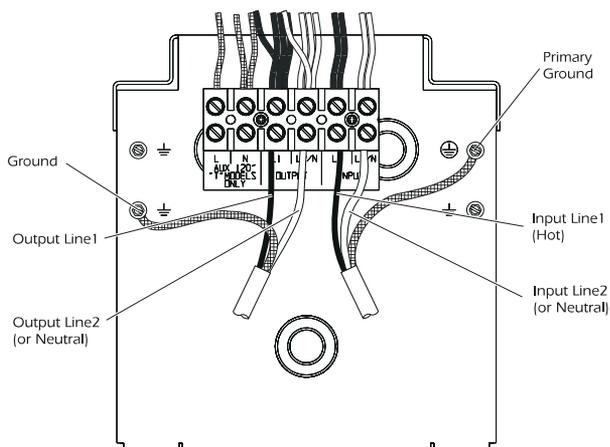
*The wire harness assembly provides a terminal block equipped with screw terminals to attach input and output wiring. Follow the procedure below to connect input and output wiring to the wire harness assembly.*

#### **Connect Input Wiring to the Wire Harness Assembly**

**CAUTION:** *Make sure input wiring is not live!!*

1. *Locate the input panel from the hardwire kit (Figure 3-1, item #2) and remove the appropriate size knockout from the panel. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.*

2. Remove approximately 5 inches of outer jacket from the end of the input cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the input wiring through the input panel so that the panel can be installed correctly after the connections have been made. Make sure the cable clamp is installed such that the screws will be located outside of the unit.
3. Refer to Figure 5-5. Connect the input wiring as shown. Secure the ground wire (green) to the primary ground connection with a green ground screw from the hardware bag.



**Figure 5-5 Connections for External Input and Output Wiring**

### Connect Output Wiring to the Wire Harness Assembly

1. Locate the output panel from the hardwire kit (Figure 3-1, item #1) and remove the appropriate size knockout from the panel. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.

2. Remove approximately 5 inches of outer jacket from the end of the output cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the output wiring through the output panel so that the panel can be installed correctly after the connections have been made. Make sure the cable clamp is installed such that the screws will be located outside of the unit.
3. Refer to Figure 5-5. Connect the output wiring as shown. Secure the ground wire (green) to one of the ground holes with a green ground screw from the hardware bag.

### **5.1.5 Installation of New Rear Panels**

Before closing up the back of the unit, make sure that all wiring has been properly installed:

1. Output wiring is connected to the center two screw terminals on the terminal block.
2. Input wiring is connected to the last two screw terminals on the terminal block.

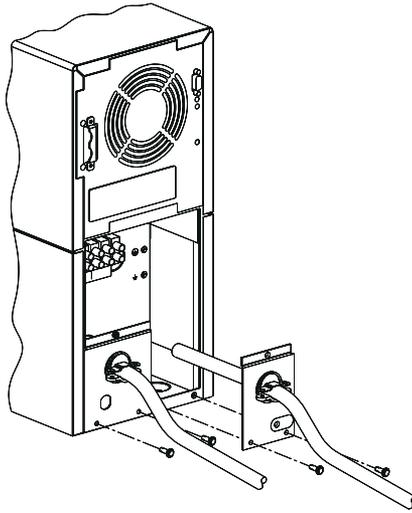
Make sure all ground wires (green) are securely fastened to an appropriate ground screw.

#### **Install the Output Panel**

1. Slide the output panel into position as shown in Figure 5-6. Fasten the panel to the UPS with two self-locking panel screws.
2. Make sure there are a few inches of slack output cable tucked inside the unit.
3. Tighten the cable clamp. The clamp will prevent strain on the connections if the output cable is accidentally pulled.

#### **Install the Input Panel**

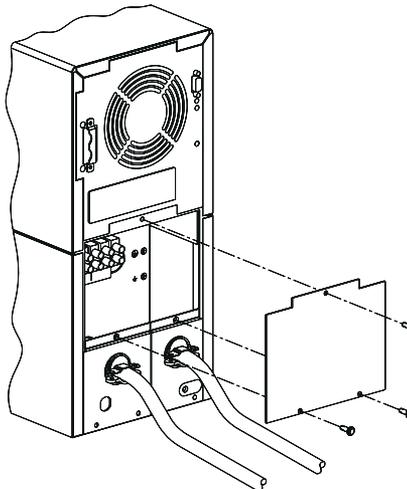
1. Slide the input panel into position as shown in Figure 5-6. Fasten the panel to the UPS with two self-locking panel screws.
2. Make sure there are a few inches of slack output cable tucked inside the unit.
3. Tighten the cable clamp. The clamp will prevent strain on the connections if the input cable is accidentally pulled.



**Figure 5-6** *Installation of Input and Output Panels (100V and 120V Tower)*

#### Install the Access Panel

1. Slide the access panel (Figure 3-1, item #3) into position as shown in Figure 5-7. Make sure printed side is facing out.
2. Fasten the panel to the UPS with three self-locking panel screws as shown.



**Figure 5-7** *Installation of Access Panel (100V and 120V Tower)*

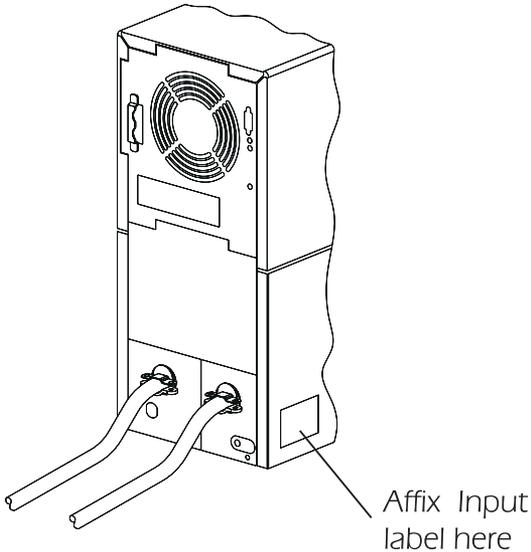
### 5.1.6 Final Installation Procedure

Two labels must be applied to the chassis of the Smart-UPS unit to complete the installation.

1. Retrieve the Receptacle Option label sheet and the Input label from the hardware bag.
2. Remove the small “R31” label from the Option label sheet and apply it to the rear of the chassis, directly below the existing model/serial number label.

**Note:** Be careful not to cover any portion of the existing model/serial number label.

3. Remove the Input label from its backing and apply it to the side panel of the Smart-UPS unit. (Figure 5-8)
4. **IMPORTANT:** Make sure that all external wiring has been completed before turning on the UPS.



**Figure 5-8 Input Label Location (100V and 120V Tower)**

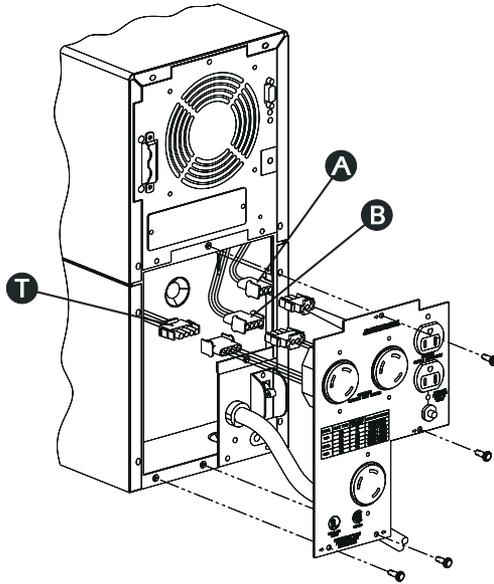
## 5.2 Installing the Hardwire Kit on 208V Tower Units

Follow the procedures in this section to install the hardwire kit to a 208V Smart-UPS in the tower configuration (Model numbers SU1400XLT, SU2200XLT, and SU3000T).

### 5.2.1 Removing the Rear Panels

#### Remove the Output Panel

1. *Unpack and inspect the hardwire kit. Notify the carrier and dealer immediately if there is damage. Recycle the packaging or dispose of it properly.*
2. *Prepare the UPS for installation. Shut down any protected loads (computers, etc.), if present. Unplug all loads from the output receptacles of the UPS.*
3. **IMPORTANT:** *Turn off the UPS and unplug it from the wall outlet.*
4. *Unscrew the output panel at the rear of the UPS. Remove only the 4 screws indicated in Figure 5-9. Save these screws. They will be used to install the replacement panels.*



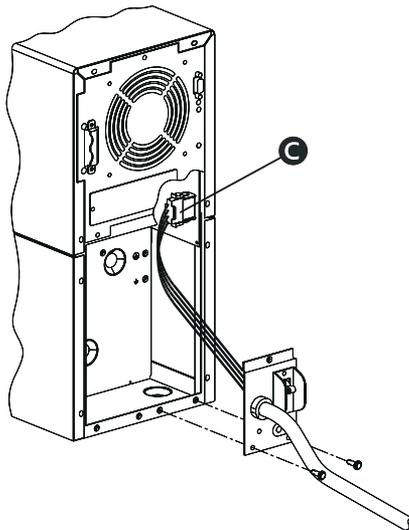
**Figure 5-9** *Removal of Output Panel (208V Tower)*

5. Pull the panel out gently so that the 3-pin **A**, 4-pin **B**, and 4-pin **T** in-line connectors are accessible.
6. Squeeze the locking tabs on the sides of the connectors and pull the connectors apart. Do not pull on the wires.
7. Disconnect the two wires from the rear of the circuit breaker on the output panel. Working from the front side of the output panel, use a small screwdriver to apply pressure to the side of the circuit breaker and push it free of the panel. Save the circuit breaker for reinstallation into the new output panel.
8. If the serial number decal is located on the output panel, remove it and replace it on the permanent, upper panel on the back of the UPS.
9. Discard the output panel.

### Remove the Input Panel

**NOTE:** If you are hard wiring only the output, skip this section and continue with Section 5.2.2.

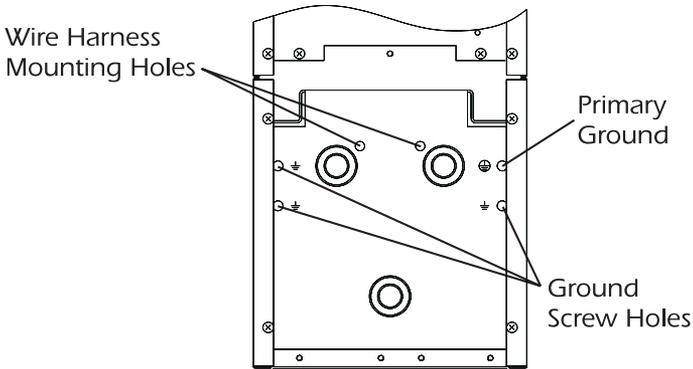
1. Remove the two bottom screws from the input panel as shown in Figure 5-10.
2. Unplug the 4-pin input connector **C** as shown below. Note the location of the input connection.
3. Save the screws. They will be used to install the replacement panel.
4. Discard the input panel and cord.



**Figure 5-10 Removal of Input Panel (208V Tower)**

## 5.2.2 Verifying the Presence of Mounting Holes

1. Examine the rear plate inside the UPS. The configuration of the mounting holes should appear as in Figure 5-11. If the mounting and ground screw holes are present in this configuration, proceed with the installation procedure. If the holes are not present, you will not be able to install the hardwire kit to this UPS. Contact your dealer for an alternative solution.



**Figure 5-11 Wire Harness Mounting Holes**

## 5.2.3 Installing the Wire Harness Assembly

**NOTE:** If you are hard wiring the input only, choose one of the following two methods:

- A. Mount the wire harness as instructed (Section 5.2.3), and wire only the **Input L1** and **Input L2/N** connections  
or,
- B. Retrieve the old line cord and cut the last 6" from the end with the 4-wire connector attached. This connector and the attached wires will be spliced to your input line. Using approved field-applied splicing devices, connect the two black wires to Line1 (or Hot) of your input line and the two white wires to Line2 (or Neutral) of your input line. Plug the connector into the mating connector in the UPS (Figure 5-10) and reinstall the input and output panels.



## Connect the Wire Harness Assembly to the UPS

*Electrical connection between the wire harness assembly and the UPS is accomplished through the use of the four in-line connectors on the wire harness assembly and the corresponding connectors inside the UPS. Carefully follow the procedure below to ensure that the connections are made properly.*

**NOTE:** *Engage the connectors by holding one connector firmly in each hand, and fitting them together. Be sure to seat the connectors fully in place - they lock together with a click.*

1. *Refer to Figure 5-12 for connector numbers.*
2. *Retrieve the four-wire, yellow jumper harness (Figure 3-1, item #9).*
3. *Plug connector #4 into the “female” end of the jumper harness.*
4. *Connect the “male” end of the jumper harness into the 4-pin plug located inside the UPS. (Connector **C** in Figure 5-10)*
5. *Plug connector #3 to the 3-pin output connector inside the UPS. (Connector **A** in Figure 5-9)*
6. *Plug connector #2 to the 4-pin output connector inside the UPS. (Connector **B** in Figure 5-9)*
7. *Cut the wire tie securing the wires to connector #1 and separate the wires.*
  - a. *Plug connector #1 into the 4-pin transformer connector inside the UPS. (Connector **T** in Figure 5-9)*
  - b. *Connect the two “push-on” terminals to the circuit breaker that was removed from the original output panel. (Section 5.2.1)*
  - c. *Use a green screw from the hardware bag to secure the green ground wire to one of the ground screws holes on the panel inside the rear of the UPS. (Refer to Figure 5-13)*
8. *Double check all connections. Make sure all connections are firmly locked together. Pay close attention that connectors #2 and #4 are connected correctly.*

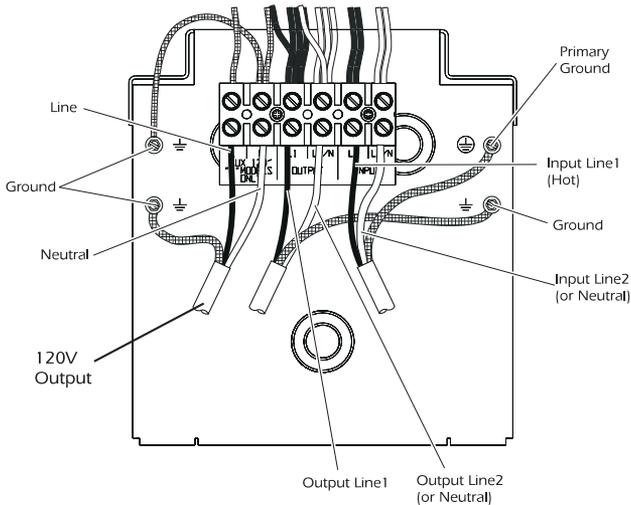
### **5.2.4 Connecting External Wiring to the UPS**

*The wire harness assembly provides a terminal block equipped with screw terminals to attach input and output wiring. Follow the procedure below to connect input and output wiring to the wire harness assembly.*

## Connect Input Wiring to the Wire Harness Assembly

**CAUTION:** *Make sure input wiring is not live!!*

1. *Locate the input panel from the hardwire kit (Figure 3-1, item #2) and remove the appropriate size knockout from the panel. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.*
2. *Remove approximately 5 inches of outer jacket from the end of the input cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the input wiring through the input panel so that the panel can be installed correctly after the connections have been made. Make sure that the cable clamp is installed such that the screws will be located outside of the unit.*
3. *Refer to Figure 5-13. Connect the input wiring as shown. Secure the ground wire (green) to the primary ground connection with a green ground screw from the hardware bag.*



**Figure 5-13** *Connections for External Input and Output Wiring (208V Tower)*

## Connect Output Wiring to the Wire Harness Assembly

1. *Locate the output panel from the hardwire kit (Figure 3-1, item #1) and remove the appropriate knockouts for the circuit breaker and the output cable. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.*
2. *Remove approximately 5 inches of outer jacket from the end of the 208V output cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the output wiring through the output panel so that the panel can be installed correctly after the connections have been made. Make sure that the cable clamp is installed such that the screws will be located outside of the unit.*
3. *Repeat step 2 for the 120V output cable.*
4. *Connect the 208V and 120V output wiring to the wiring harness as shown in Figure 5-13. Secure each ground wire (green) to a ground hole with a green ground screw from the hardware bag.*

### **5.2.5 Installation of New Rear Panels**

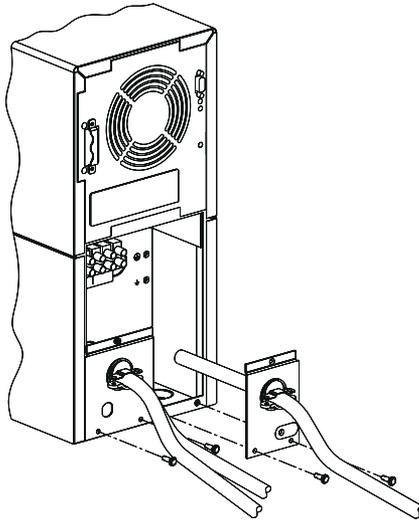
*Before closing up the back of the unit, make sure that all wiring has been properly installed:*

1. *Auxiliary output wiring (120V) is connected to the first two screw terminals at the left of the terminal block.*
2. *Output wiring (208V) is connected to the center two screw terminals of the terminal block.*
3. *Input wiring is connected to the last two screw terminals at the right of the terminal block.*

*Make sure all ground wires (green) are securely fastened to an appropriate ground screw.*

## Install the Output Panel

1. Slide the output panel into position as shown in Figure 5-14. Install the circuit breaker by pushing it through the hole in the output panel until it snaps into place. Fasten the panel to the UPS with two self-locking panel screws.
2. Make sure there are a few inches of slack output cable tucked inside the unit.
3. Tighten the cable clamp. The clamp will prevent strain on the connections if the output cable is accidentally pulled.



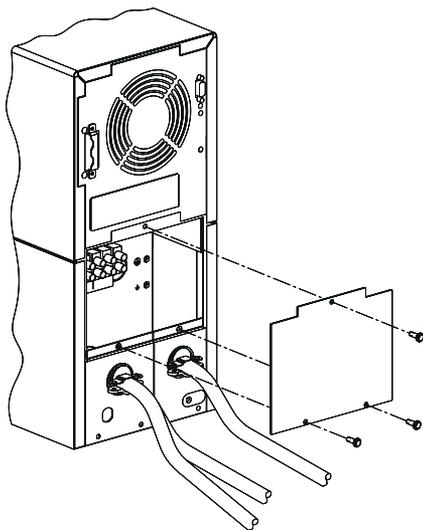
**Figure 5-14 Installation of Input and Output Panels (208V Tower)**

## Install the Input Panel

1. Slide the input panel into position as shown in Figure 5-14. Fasten the panel to the UPS with two self-locking panel screws.
2. Make sure there are a few inches of slack input cable tucked inside the unit.
3. Tighten the cable clamp. The clamp will prevent strain on the connections if the input cable is accidentally pulled.

## Install the Access Panel

1. Slide the access panel (Figure 3-1, item #3) into position as shown in Figure 5-15. Make sure printed side is facing out.
2. Fasten the panel to the UPS with three self-locking panel screws as shown.



**Figure 5-15 Installation of Access Panel (208V Tower)**

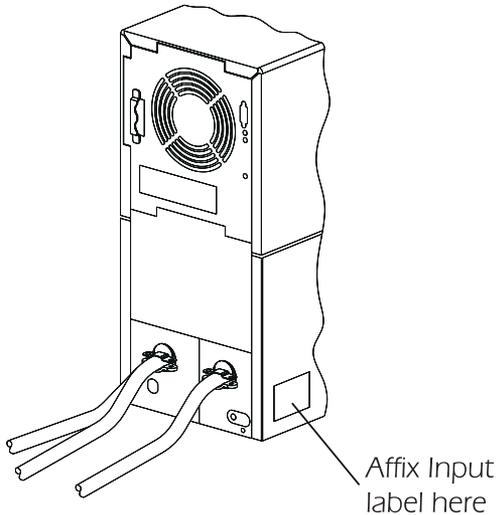
## 5.2.6 Final Installation Procedure

Two labels must be applied to the chassis of the Smart-UPS unit to complete the installation.

1. Retrieve both the Receptacle Option label sheet and the Input label from the hardware bag.
2. Remove the small “R31” label from the Option label sheet and apply it to the rear of the chassis, directly below the existing model/serial number label.

**Note:** Be careful not to cover any portion of the existing model/serial number label.

3. Remove the Input label from its backing and apply it to the side panel of the Smart-UPS unit. (Figure 5-16)
4. **IMPORTANT:** Make sure that all external wiring has been completed before turning on the UPS.



**Figure 5-16 Input Label Location (208V Tower)**

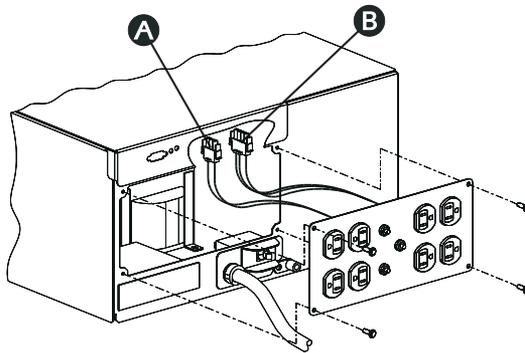
## 5.3 Installing the Hardwire Kit on 100V and 120V Rack Mount Units

Follow the procedures in this section to install the hardwire kit to a 100 V or 120V Smart-UPS in the rack mount configuration (Model numbers SU2200RM, SU2200XLRM, SU3000RM, and SU3000RMJ).

### 5.3.1 Removing the Rear Panels

Remove the Output Panel

1. *Unpack and inspect the hardwire kit. Notify the carrier and dealer immediately if there is damage. Recycle the packaging or dispose of it properly.*
2. *Prepare the UPS for installation. Shut down any protected loads (computers, etc.), if present. Unplug all loads from the output receptacles of the UPS.*
3. **IMPORTANT:** *Turn off the UPS and unplug it from the wall outlet.*
4. *Unscrew the output panel at the rear of the UPS. Remove only the 4 screws indicated in Figure 5-17.*



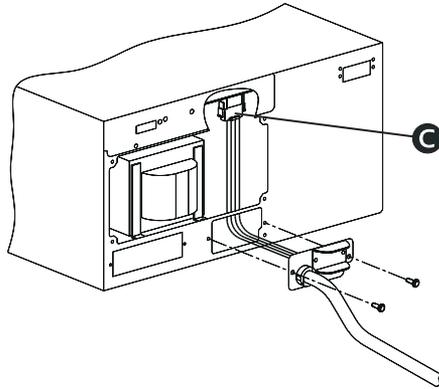
**Figure 5-17 Removal of Output Panel (100V and 120V Rack Mount)**

5. *Pull the panel out gently so that the 3-pin **A** and 4-pin **B** connectors are accessible.*
6. *Squeeze the locking tabs on the sides of the connectors and unplug the connectors from the printed circuit board. Note the location of the connectors.*
7. *Discard the output panel.*

## Remove the Input Panel

**NOTE:** *If you are hard wiring only the output, skip this section and continue with Section 5.3.2.*

1. Remove the two screws from the input panel as shown in Figure 5-18.
2. Unplug the 4 pin input connector **C** as shown below. Note the location of the input connection.
3. Discard the input panel and cord.



**Figure 5-18 Removal of Input Panel (100V and 120V Rack Mount)**

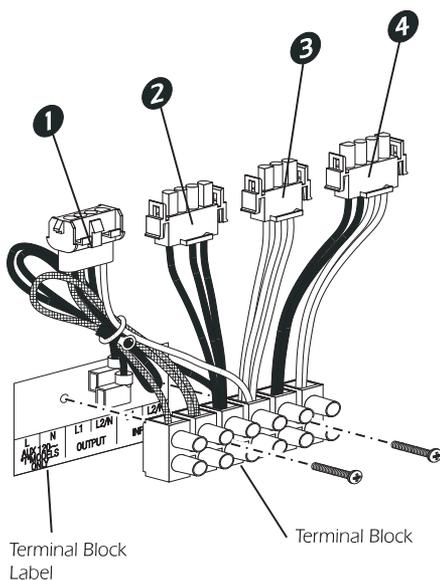
## 5.3.2 Installing the Wire Harness Assembly

**NOTE:** *If you are hard wiring the input only, retrieve the old line cord and cut the last 6" from the end with the 4-wire connector attached. This connector and the attached wires will be spliced to your input line. Using approved field-applied splicing devices, connect the two black wires to Line1 (or Hot) of your input line and the two white wires to Line2 (or Neutral) of your input line. Plug the connector into the mating connector in the UPS (Figure 5-18) and reinstall the input and output panels.*

### Mount the Wire Harness Assembly to the UPS

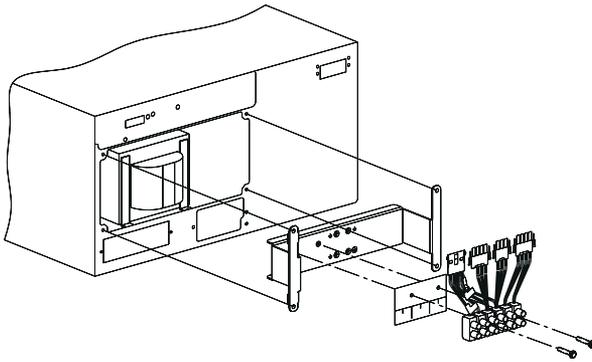
1. Take a moment to examine the wire harness assembly.  
**IMPORTANT:** *When the wire harness assembly is installed into the UPS, the plug-type connectors should be positioned at the top and the terminal block should be positioned at the bottom. (Refer to Figure 5-19.)*

2. Retrieve the rack mount wire harness bracket, the terminal block label, and two 3/4" installation screws from the hardware bag.
3. The bracket is installed in the unit as shown in Figure 5-20. For ease of installation, the wire harness assembly is secured to the bracket before it is installed inside the UPS.
4. Refer to Figure 5-20. Make sure the metal tabs on one of the mounting ears are located to the left. Note the location of the wire harness installation holes in the bracket.
5. Position the screws through the front of the wire harness assembly as shown in Figure 5-19. Position the terminal block label behind the harness so that the screws pass through the holes in the label, and it is visible as shown in Figure 5-19.



**Figure 5-19 Location of Wiring Harness Mounting Screws**

6. Hold the label and harness together. Align them against the rack mount wire harness bracket so that the screws line up with the wire harness installation holes (See Figure 5-20). Tighten the screws while making sure the label stays in place.
7. Slide the rack mount wire harness bracket onto the UPS as shown in Figure 5-20. Make sure the metal tabs slide over the edge of the UPS housing as shown. The tabs will hold the bracket in place while the wire harness connections are made.



**Figure 5-20 Installing the Wire Harness Mounting Bracket (100V and 120V Rack Mount)**

### Connect the Wire Harness Assembly to the UPS

Electrical connection between the wire harness assembly and the UPS is accomplished through the use of the four in-line connectors on the wire harness assembly and the corresponding connectors inside the UPS. Carefully follow the procedure below to ensure that the connections are made properly.

**NOTE:** Engage the connectors by holding one connector firmly in each hand, and fitting them together. Be sure to seat the connectors fully in place - they lock together with a click.

1. Refer to Figure 5-19 for connector numbers.
2. Retrieve one of the four-wire, yellow jumper harnesses (Figure 3-1, item #9). Plug the “female” end of the jumper harness into connector #4. Connect the “male” end of the jumper harness to the 4-pin plug located inside the UPS. (Connector **C** in Figure 5-18)
3. Retrieve the other four-wire, yellow jumper harness. Plug the “female” end of the jumper harness into connector #2. Connect the “male” end of the jumper harness to the 4-pin plug located inside the UPS. (Connector **B** in Figure 5-17)
4. Retrieve the 3-wire jumper harness (Figure 3-1, item #10). Plug the “female” end of the jumper harness into connector #3. Connect the “male” end of the jumper harness to the 3-pin output connector inside the UPS. (Connector **A** in Figure 5-17)
5. Connector #1 is not used in this application. Leave this plug unconnected.

6. *Double check all connections. Make sure all connections are firmly locked together. Pay close attention that connectors #2 and #4 are connected correctly.*

### **5.3.3 Connecting External Wiring to the UPS**

*The wire harness assembly provides a terminal block equipped with screw terminals to attach input and output wiring. Follow the procedure below to connect input and output wiring to the wire harness assembly.*

#### **Connect Input Wiring to the Wire Harness Assembly**

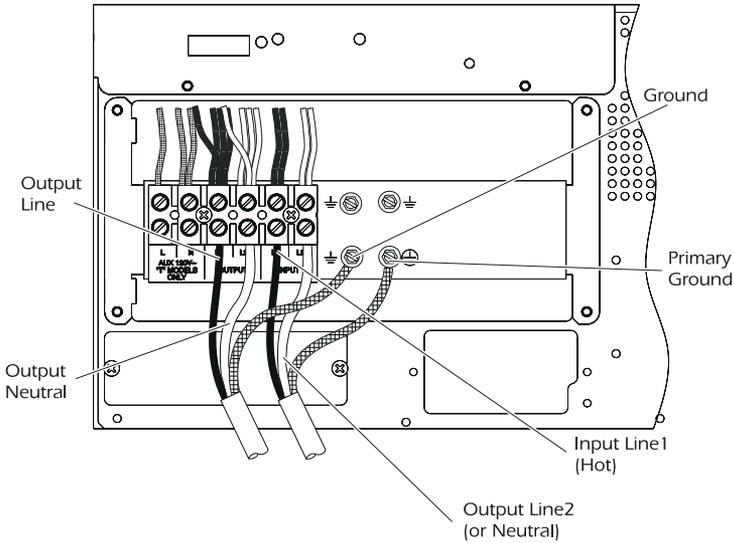
**CAUTION:** *Make sure input wiring is not live!!*

1. *Locate the input panel from the hardwire kit (Figure 3-1, item #6) and remove the appropriate size knockout from the panel. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.*
2. *Remove approximately 5 inches of outer jacket from the end of the input cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the input wiring through the input panel so that the panel can be installed correctly after the connections have been made. Make sure that the cable clamp is installed such that the screws will be located outside of the unit.*
3. *Refer to Figure 5-21. Connect the input wiring as shown. Secure the ground wire (green) to the primary ground connection with a green ground screw from the hardware bag.*

#### **Connect Output Wiring to the Wire Harness Assembly**

1. *Locate the output panel from the hardwire kit (Figure 3-1, item #5) and remove the appropriate size knockout from the panel. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.*
2. *Remove approximately 5 inches of outer jacket from the end of the output cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the output wiring through the output panel so that the panel can be installed correctly after the connections have been made. Make sure that the cable clamp is installed such that the screws will be located outside of the unit.*

3. Refer to Figure 5-21. Connect the output wiring as shown. Secure the ground wire (green) to one of the ground holes with a green ground screw from the hardware bag.



**Figure 5-21 Connections for External Input and Output Wiring (100V and 120V Rack Mount)**

### 5.3.4 Installation of New Rear Panels

Before closing up the back of the unit, make sure that all wiring has been properly installed:

1. Input wiring should be connected to the last two screw terminals at the right of the terminal block.
2. Output wiring should be connected to the center two screw terminals of the terminal block.

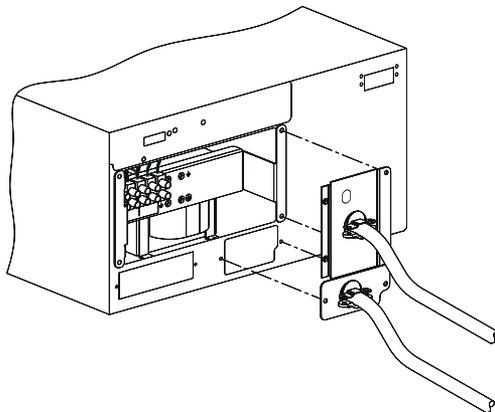
Make sure all ground wires (green) are securely fastened to a ground screw.

#### Install the Output Panel

1. Slide the output panel into position as shown in Figure 5-22. Fasten the panel to the UPS with 2 screws from the hardware bag.
2. Make sure there are a few inches of slack output cable tucked inside the unit.
3. Tighten the cable clamp. The clamp will prevent strain on the connections if the output cable is accidentally pulled.

### Install the Input Panel

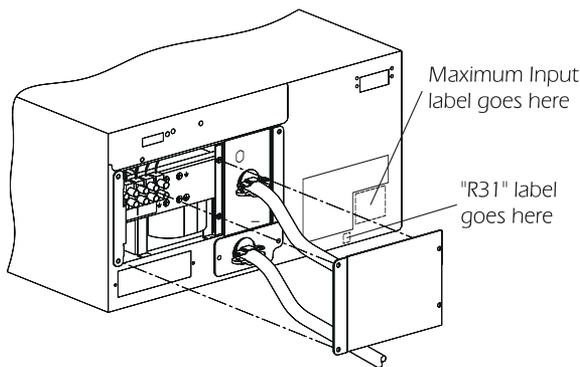
1. Slide the input panel into position as shown in Figure 5-22. Fasten the panel into position as shown. Fasten the panel to the UPS with two self-locking panel screws from the hardware bag.
2. Make sure there are a few inches of slack input cable tucked inside the unit.
3. Tighten the cable clamp. The clamp will prevent strain on the connections if the input cable is accidentally pulled.



**Figure 5-22 Installation of Input and Output Panels (100V and 120V Rack Mount)**

### Install the Access Panel

1. Slide the access panel (Figure 3-1, item #4) into position as shown in Figure 5-23. Make sure that the printed side faces out.
2. Fasten the panel to the UPS with 4 self-locking panel screws from the hardware bag.



**Figure 5-23 Installation of Access Panel (100V and 120V Rack Mount)**

### 5.3.5 Final Installation Procedure

*A label must be applied to the chassis of the Smart-UPS unit to complete the installation.*

- 1. Retrieve both the receptacle option label sheet and the maximum input label from the hardware bag.*
- 2. Remove the small “R31” label from the receptacle option label sheet and apply it to the rear of the chassis, directly below the existing model/serial number label. (See Figure 5-23)*

*Note: Be careful not to cover any portion of the existing model/serial number label.*

- 3. Apply the maximum input label adjacent to the existing label on the rear of the chassis in the lower right corner.*
- 4. IMPORTANT:** Make sure that all external wiring has been completed before turning on the UPS.

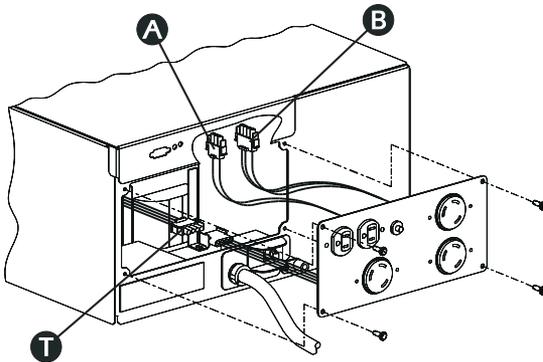
## 5.4 Installing the Hardwire Kit on 208V Rack Mount Units

Follow the procedures in this section to install the hardwire kit to a 208V Smart-UPS in the rack mount configuration (Model numbers SU1400RMXLT and SU2200RMXLT).

### 5.4.1 Removing the Rear Panels

Remove the Output Panel

1. *Unpack and inspect the hardwire kit. Notify the carrier and dealer immediately if there is damage. Recycle the packaging or dispose of it properly.*
2. *Prepare the UPS for installation. Shut down any protected loads (computers, etc.), if present. Unplug all loads from the output receptacles of the UPS.*
3. **IMPORTANT:** *Turn off the UPS and unplug it from the wall outlet.*
4. *Unscrew the output panel at the rear of the UPS. Remove only the 4 screws indicated in Figure 5-24.*



**Figure 5-24 Removal of Output Panel (208V Rack Mount)**

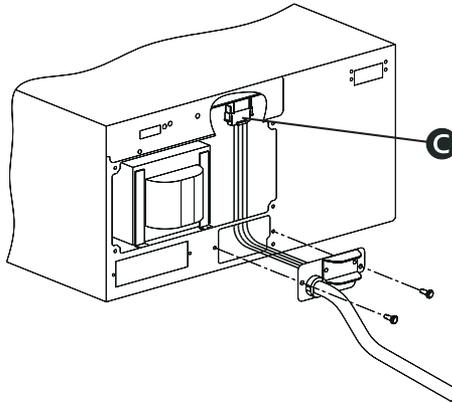
5. *Pull the panel out gently so that the 3-pin **A**, 4-pin **B**, and 4-pin **T** in-line connectors are accessible.*
6. *Squeeze the locking tabs on the sides of the connectors and unplug the connectors from the printed circuit board. Note the location of the connectors.*

7. Disconnect the two wires from the rear of the circuit breaker on the output panel. Working from the front side of the output panel, use a small screwdriver to apply pressure to the side of the circuit breaker and push it free of the panel. Save the circuit breaker for reinstallation into the new output panel.
8. Discard the output panel and the 4 screws.

### Remove the Input Panel

**NOTE:** If you are hard wiring only the output, skip this section and continue with Section 5.4.2.

1. Remove the two screws from the input panel as shown in Figure 5-25.
2. Unplug the 4-pin input connector **C** as shown below. Note the location of the input connection.
3. Discard the input panel, cord, and screws.



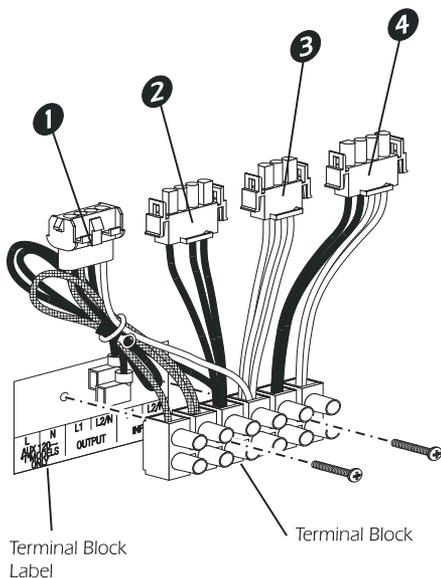
**Figure 5-25 Removal of Output Panel (208V Rack Mount)**

### 5.4.2 Installing the Wire Harness Assembly

**NOTE:** If you are hard wiring the input only, retrieve the old line cord and cut the last 6" from the end with the 4-wire connector attached. This connector and the attached wires will be spliced to your input line. Using approved field-applied splicing devices, connect the two black wires to Line1 (or Hot) of your input line and the two white wires to Line2 (or Neutral) of your input line. Plug the connector into the mating connector in the UPS (Figure 5-25) and reinstall the input and output panels.

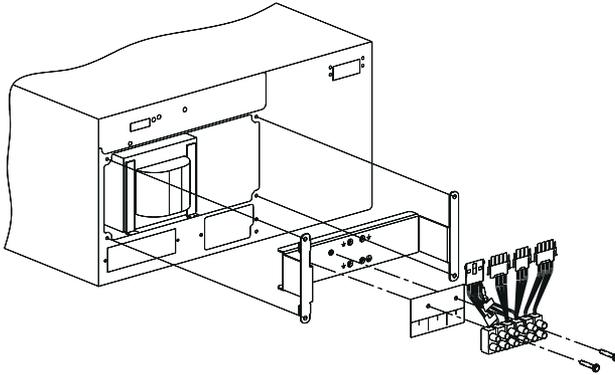
## Mount the Wire Harness Assembly to the UPS

1. Take a moment to examine the wire harness assembly.  
*IMPORTANT:* When the wire harness assembly is installed into the UPS, the plug-type connectors should be positioned at the top and the terminal block should be positioned at the bottom. (Refer to Figure 5-26.)
2. Retrieve the rack mount wire harness bracket, the terminal block label, and two 3/4" installation screws from the hardware bag.
3. The bracket is installed in the unit as shown in Figure 5-27. For ease of installation, the wire harness assembly is secured to the bracket before it is installed inside the UPS.
4. Refer to Figure 5-27. Make sure the metal tabs on one of the mounting ears are located to the left. Note the location of the wire harness installation holes in the bracket.
5. Position the screws through the front of the wire harness assembly as shown in Figure 5-26. Position the terminal block label behind the harness so that the screws pass through the holes in the label, and it is visible as shown in Figure 5-26.



**Figure 5-26 Location of Wiring Harness Mounting Screws**

6. Hold the label and harness together. Align them against the rack mount wire harness bracket so that the screws line up with the wire harness installation holes. (See Figure 5-27) Tighten the screws while making sure the label stays in place.
7. Slide the rack mount wire harness bracket onto the UPS as shown in Figure 5-27. Make sure the metal tabs slide over the edge of the UPS housing as shown. The tabs will hold the bracket in place while the wire harness connections are made.



**Figure 5-27 Installing the Wire Harness Mounting Bracket (208V Rack Mount)**

### Connect the Wire Harness Assembly to the UPS

Electrical connection between the wire harness assembly and the UPS is accomplished through the use of the four in-line connectors on the wire harness assembly and the corresponding connectors inside the UPS. Carefully follow the procedure below to ensure that the connections are made properly.

**NOTE:** Engage the connectors by holding one connector firmly in each hand, and fitting them together. Be sure to seat the connectors fully in place - they lock together with a click.

1. Refer to Figure 5-26 for connector numbers.
2. Retrieve one of the four-wire, yellow jumper harnesses (Figure 3-1, item #9). Plug the “female” end of the jumper harness into connector #4. Connect the “male” end of the jumper harness to the 4-pin plug located inside the UPS. (Connector **C** in Figure 5-25)

3. Retrieve the other four-wire, yellow jumper harness. Plug the “female” end of the jumper harness into connector #2. Connect the “male” end of the jumper harness to the 4-pin plug located inside the UPS. (Connector **B** in Figure 5-24)
4. Retrieve the 3-wire jumper harness (Figure 3-1, item #10). Plug the “female” end of the jumper harness into connector #3. Connect the “male” end of the jumper harness to the 3-pin output connector inside the UPS. (Connector **A** in Figure 5-24)
7. Cut the wire tie securing the wires to connector #1 and separate the wires.
  - a. Plug connector #1 into the 4-pin transformer connector inside the UPS. (Connector **T** in Figure 5-24)
  - b. Connect the two “push-on” terminals to the circuit breaker that was removed from the original output panel. (Section 5.4.1)
  - c. Use a green screw from the hardware bag to secure the green ground wire to one of the ground screws holes on the mounting bracket. (See Figure 5-28)
8. Double check all connections. Make sure all connections are firmly locked together. Pay close attention that connectors #2 and #4 are connected correctly.

### **5.4.3 Connecting External Wiring to the UPS**

The wire harness assembly provides a terminal block equipped with screw terminals to attach input and output wiring. Follow the procedure below to connect input and output wiring to the wire harness assembly.

#### **Connect Input Wiring to the Wire Harness Assembly**

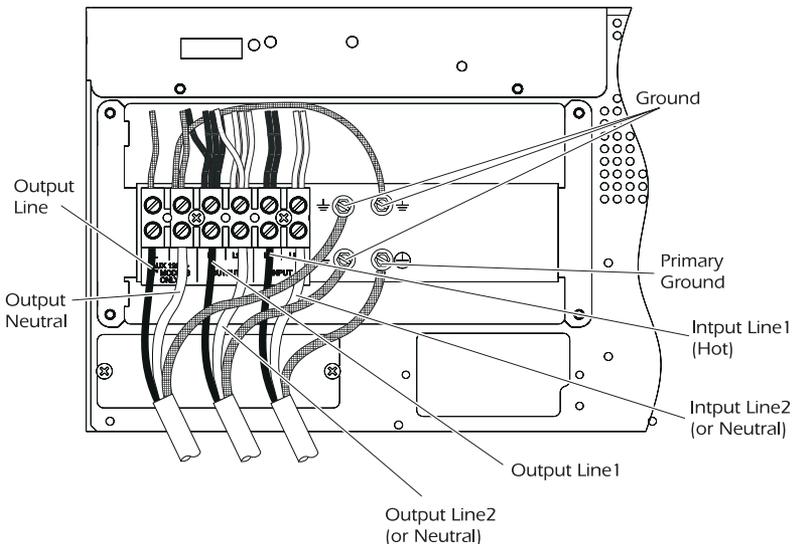
**CAUTION:** Make sure input wiring is not live!!

1. Locate the input panel from the hardwire kit (Figure 3-1, item #6) and remove the appropriate size knockout from the panel. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.
2. Remove approximately 5 inches of outer jacket from the end of the input cable. Separate the three wires (white, black and green). Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the input wiring through the input panel so that the panel can be installed correctly after the connections have been made. Make sure that the cable clamp is installed such that the screws will be located outside of the unit.

3. Refer to Figure 5-28. Connect the input wiring as shown. Secure the ground wire (green) to the primary ground connection with a green ground screw from the hardware bag.

### Connect Output Wiring to the Wire Harness Assembly

1. Locate the output panel from the hardwire kit (Figure 3-1, item #5) and remove the appropriate knockouts for the circuit breaker and the output cable. Install a cable clamp so that it can be tightened from the outside of the unit once the panel is installed.
2. Remove approximately 5 inches of outer jacket from the end of the 208V output cable. Separate the three wires (white, black and green.) Strip the insulation from the end of each wire so that approximately 3/8" of bare wire is exposed. Route the output wiring through the output panel so that the panel can be installed correctly after the connections have been made. Make sure that the cable clamp is installed such that the screws will be located outside of the unit.
3. Repeat step 2 for the 120V output cable.
4. Connect the 208V and 120V output wiring to the wiring harness as shown in Figure 5-28. Secure each ground wire (green) to a ground hole with a green ground screw from the hardware bag.



**Figure 5-28 Connections for External Input and Output Wiring (208V Rack Mount)**

#### **5.4.4 Installation of New Rear Panels**

*Before closing up the back of the unit, make sure that all wiring has been properly installed:*

- 1. Auxiliary output wiring (120V) is connected to the first two screw terminals at the left of the terminal block.*
- 2. Output wiring (208V) is connected to the center two screw terminals of the terminal block.*
- 3. Input wiring is connected to the last two screw terminals at the right of the terminal block.*

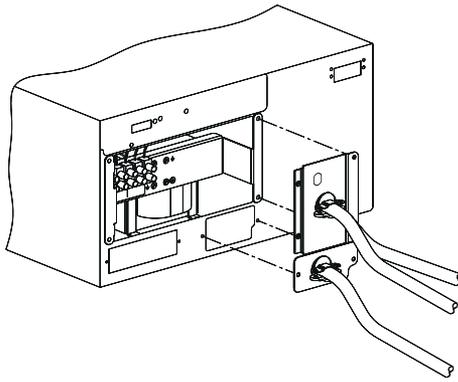
*Make sure all ground wires (green) are securely fastened to an appropriate ground screw.*

##### **Install the Output Panel**

- 1. Slide the output panel into position as shown in Figure 5-29. Install the circuit breaker by pushing it through the hole in the output panel until it snaps into place. Fasten the panel to the UPS with two self-locking panel screws from the hardware bag.*
- 2. Make sure there are a few inches of slack output cable tucked inside the unit.*
- 3. Tighten the cable clamp. The clamp will prevent strain on the connections if the output cable is accidentally pulled.*

##### **Install the Input Panel**

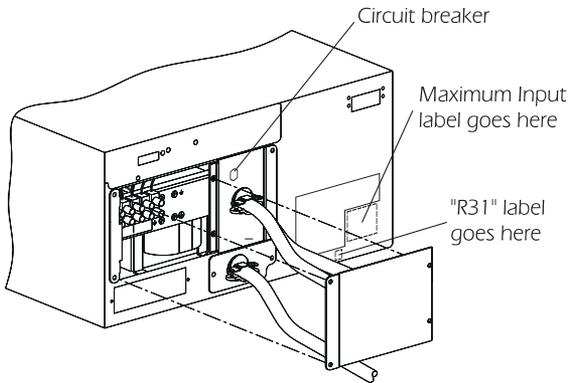
- 1. Slide the input panel into position as shown in Figure 5-29. Fasten the panel into position as shown. Fasten the panel to the UPS with two self-locking panel screws from the hardware bag.*
- 2. Make sure there are a few inches of slack input cable tucked inside the unit.*
- 3. Tighten the cable clamp. The clamp will prevent strain on the connections if the input cable is accidentally pulled.*



**Figure 5-29 Installation of Input and Output Panels (208V Rack Mount)**

#### Install the Access Panel

1. Slide the access panel (Figure 3-1, item #4) into position as shown in Figure 5-30. Make sure that the printed side faces out.
2. Fasten the panel to the UPS with 4 self-locking panel screws from the hardware bag.



**Figure 5-30 Installation of Access Panel (208V Rack Mount)**

### **5.4.5 Final Installation Procedure**

*A label must be applied to the chassis of the Smart-UPS unit to complete the installation.*

- 1. Retrieve both the receptacle option label sheet and the maximum input label from the hardware bag.*
- 2. Remove the small “R31” label from the receptacle option label sheet and apply it to the rear of the chassis, directly below the existing model/serial number label. (See Figure 5-30)*

*Note: Be careful not to cover any portion of the existing model/serial number label.*

- 3. Apply the maximum input label adjacent to the existing label on the rear of the chassis in the lower right corner.*
- 3. IMPORTANT: Make sure that all external wiring has been completed before turning on the UPS.**



## Limited Warranty

*American Power Conversion (APC) warrants its products to be free from defects in materials and workmanship for a period of two years from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. To obtain service under warranty you must obtain a Returned Material Authorization (RMA) number from APC or an APC service center. Products must be returned to APC or an APC service center with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase. This warranty does not apply to equipment which has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.*

*EXCEPT AS PROVIDED HEREIN, AMERICAN POWER CONVERSION MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.*

*EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL APC BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, APC is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.*

## Customer Service

*Note: Before calling the Customer Service telephone number, please have available the PDU's model and serial numbers (see bar-coded labels).*

Toll free technical support:

*United States and Canada 1-800-800-4272*

*Ireland 1-800-702000*

*U. K. 0800-132990*

*In areas without toll free numbers, call:*

*+1 401 789 5735 (USA) or*

*+353 91 702020 (Ireland)*

Return shipment addresses:

*American Power Conversion Corporation*

*132 Fairgrounds Road*

*P. O. Box 278*

*West Kingston, Rhode Island 02892*

*USA*

*American Power Conversion Corporation*

*(A. P. C.) b. v.*

*Ballybritt Business Park*

*Galway*

*Ireland*