

Best 610
Installation and Operation Manual

Single-phase Input and Output
B6106000U and B610010KU Models

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS!

This manual contains important instructions for your UPS.

Best Power is committed to outstanding customer service. If you have a problem or question, our Worldwide Service offices are happy to help you. Simply refer to the list of Best Power offices below and contact the office nearest you. Please have your unit's serial number available when you contact Best Power.

You can also get more information about Best Power products by accessing our World Wide Web site at:
<http://www.bestpower.com>

The installation and use of this product must comply with all national, federal, state, municipal, or local codes that apply. If you need help, please call the nearest Best Power office.

Best Power
P.O. Box 280
Necedah, Wisconsin 54646 U.S.A.
Telephone: 1-608-565-7200
Toll-free: 1-800-356-5794 (U.S.A. and Canada)
FAX: 1-608-565-2221
International FAX: 1-608-565-7675

Best Power's Worldwide Service
N9246 Highway 80 / P.O. Box 11
Necedah, Wisconsin 54646 U.S.A.
Telephone: 1-608-565-2100
Toll-free: 1-800-356-5737 (U.S. and Canada)
FAX: 1-608-565-2509
International Service Fax: 1-608-565-2799

Best Power Technology Mexico, S.A. de C.V.
Golfo de Riga, 34
Colonia Tacuba
México D.F. 11410
MÉXICO
Telephone: (52) 5-527-8009
Toll-free in Mexico: 1-800-711-8978
FAX: (52) 5-399-1320

Best Power Technology Germany GmbH
Am Weichselgarten 23
D-91058 Erlangen
GERMANY
Telephone: (49) 9131-77700
Toll-Free: 0130-84-7712 (in Germany)
FAX: (49) 9131-7770-444

Best Power Technology Limited
BEST House
Wykeham Industrial Estate
Moorside Road
Winchester
Hampshire
SO23 7RX
ENGLAND
Telephone: (44) 1962-844414
Toll-Free: 0800 378444
FAX: (44) 1962-841846

Borri Elettronica Industriale Srl
Via de Laboratori, 124
20092 Cinisello Balsamo (Mi)
Milan, ITALY
Telephone (390) 2-6600661-2
FAX: (390) 2-6122481

Best Power Technology, Pte. Ltd.
30 Prinsep St. #07-00
LKN Prinsep House
SINGAPORE 188647
Telephone: (65) 430-6168
FAX: (65) 430-6170

Sola Australia Ltd.
13 Healey Road
Dandenong Victoria 3175
AUSTRALIA
Telephone: (61) 3-9706-5022
FAX: (61) 3-9794-9150
Melbourne Service: (03) 9768 3105
Free call: 1800-034-402

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100 Introduction

Thank you for choosing the Best 610 (B610). This manual explains how to install and operate the UPS, interpret its status LEDs, and communicate with the UPS. This manual also includes specifications and warranty information.

The B610 is a true online uninterruptible power system that provides reliable, regulated, transient-free sinewave AC output power for your sensitive equipment. The UPS also regulates and filters AC input power to provide better output for your equipment. The UPS normally uses the inverter to provide power to your equipment. However, if there is an overload, or if the UPS is unable to run on battery power (inverter), it will automatically transfer to bypass mode until the problem has been cleared; then, it can automatically transfer back to inverter. All transfers take place with no break in power to ensure uninterrupted operation of your equipment.

Please read this manual carefully to make sure you can get the full benefit of the B610 features. After installing the UPS, please return the warranty card in this manual to help us ensure that you get immediate service whenever you have a question or problem.

200 UPS Features

6 kVA

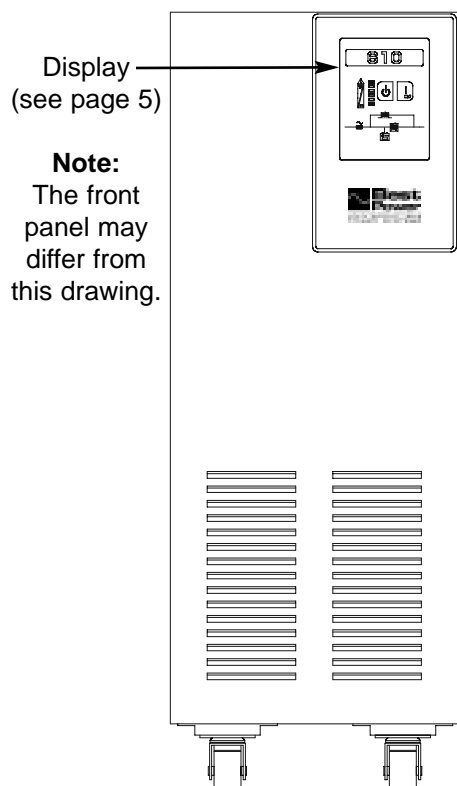
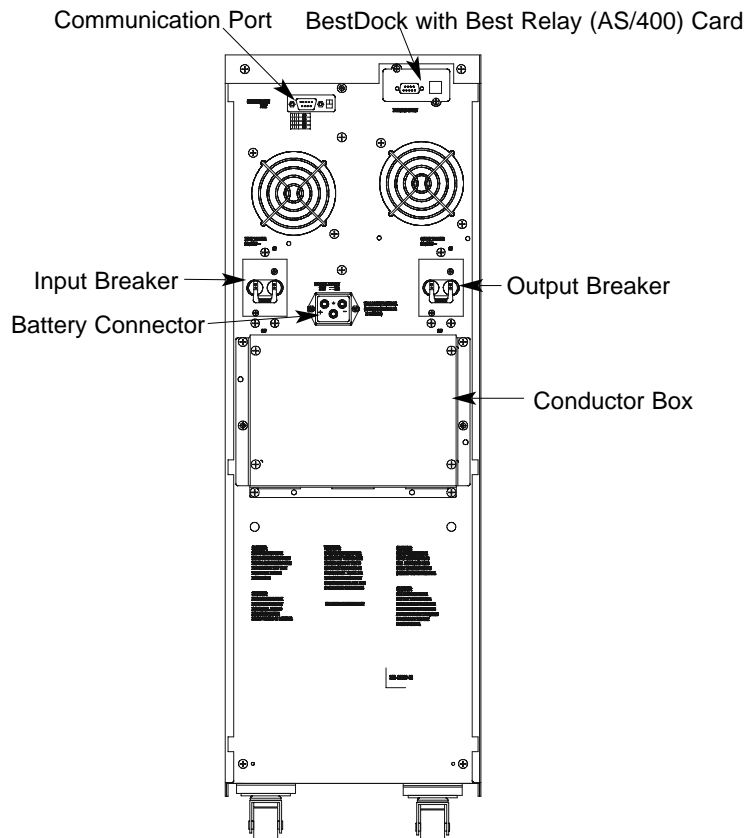


Figure 1



10 kVA

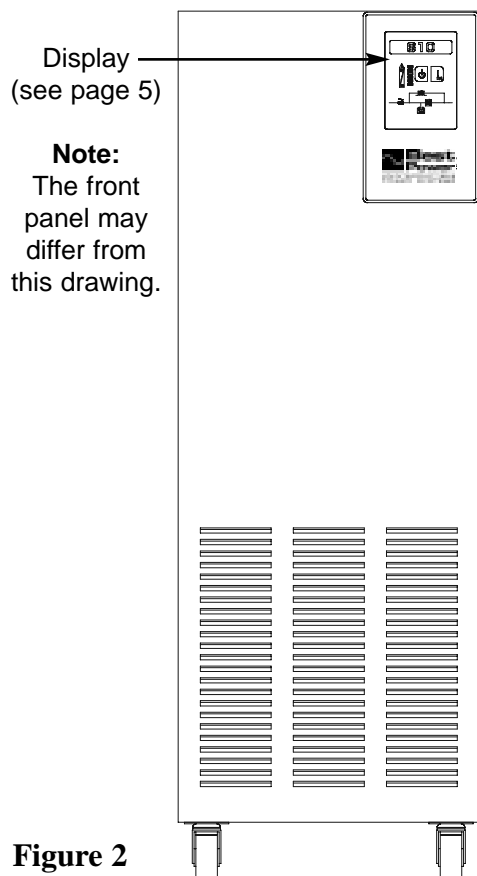
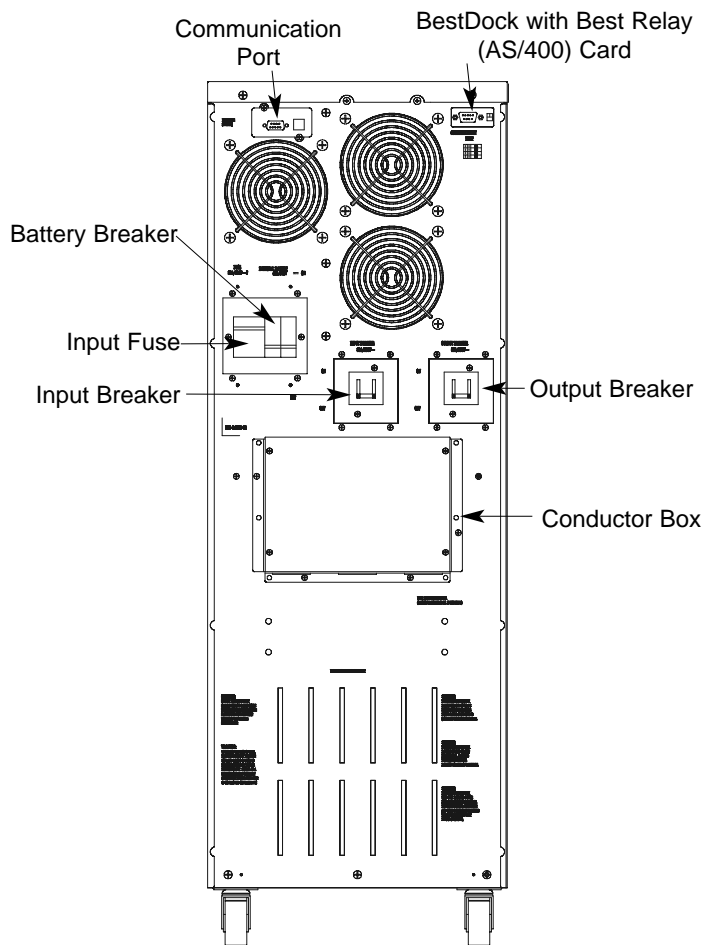


Figure 2



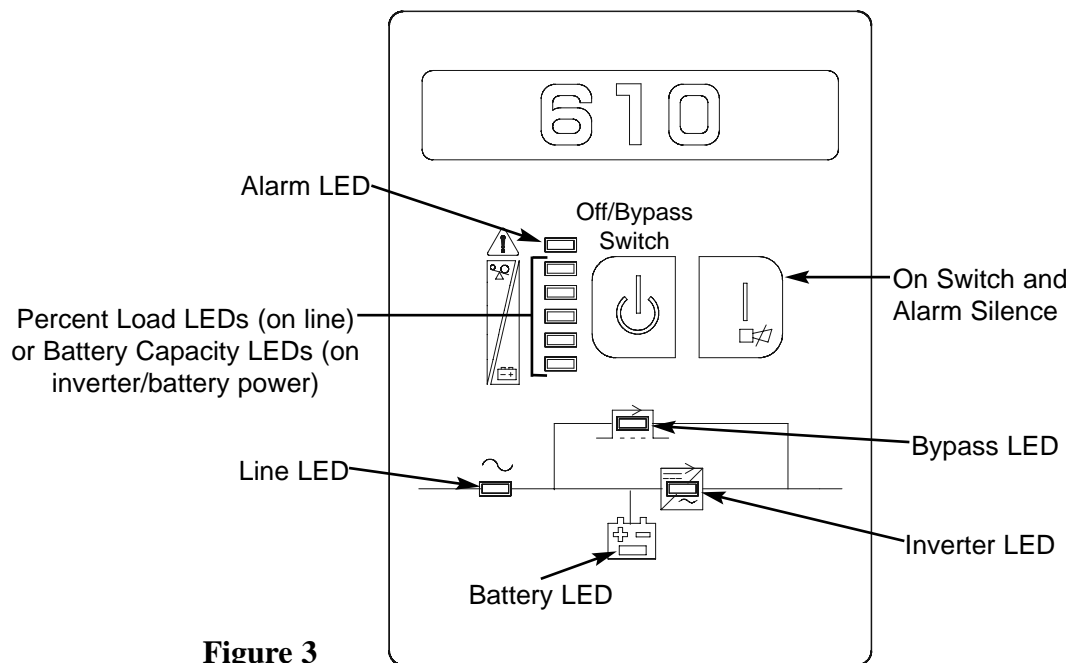


Figure 3

300 Installation (for Qualified Personnel Only)

301 Cautions



CAUTION

UPS units contain hazardous AC and DC voltages. A qualified electrician must install the UPS, AC utility input and output cabling, and external batteries according to local and national codes and must be familiar with batteries and battery installation.

Before installing, maintaining, or servicing the UPS, shut off the UPS and disconnect all sources of AC and DC power. You must shut down the UPS and disconnect AC line input at the external isolator to make sure it will not supply output voltage. Whenever AC and/or DC voltage is applied, there may be AC voltage at the UPS output; this is true because the UPS can supply output power from the input source or its batteries. To avoid equipment damage or personal injury, always assume that there is voltage at the UPS output, even when no front panel LEDs are on.

To reduce the risk of fire or electric shock, install the UPS and external batteries in a temperature-controlled and humidity-controlled indoor area, free of conductive contaminants.

UPS batteries are high current sources. Shorting battery terminals or DC terminal strips can cause severe arcing, equipment damage, and injury. A short circuit can cause a battery to explode. Always wear protective clothing and eye protection and use insulated tools when working near batteries.

If you have an optional bypass switch, make sure it is switched off before you install it. Make sure all inverter interlock cables are installed before you operate the switch.

For normal installation, the side covers do not need to be removed. The nominal battery voltage for the UPS is 240 VDC.

302 Installation and Service Clearances

Side Clearances	Front Clearance	Top Clearance	Back Clearance
36 in. 915 mm	36 in. 915 mm	12 in. 305 mm	4 in. 100 mm

Note: If you use flexible conduit to connect the UPS and battery cabinets, you may be able to achieve the service clearances by moving the UPS. If this is true, you must still leave 4 in. (100 mm) on the sides, front, and back for ventilation. See Section 901 for UPS dimensions.

303 Location Requirements

- Install the UPS as close as possible to the equipment it will protect. If this distance is more than 25 feet (7.6 meters), transient noise can reappear in the electrical distribution system.
- If the UPS batteries are in a separate cabinet, the battery cabinet should be as close to the UPS as possible. If the batteries will be farther away from the unit than the standard cables allow, call the nearest Best Power office for assistance.
- The UPS should be in a flat location in a controlled, indoor environment. (See Section 904 for operating environment specifications.) Keep the UPS away from heat sources, direct sunshine, moisture or corrosive gas. Do not install the UPS next to open windows. Do not place any objects on top of the UPS, and do not install it in any type of enclosure. Do not operate the UPS or batteries in a sealed room or container.

304 AC Installation

The UPS installation must be performed by qualified personnel according to local codes and regulations.

1. Find the UPS ID label on the back panel, and note the model number: _____
2. The UPS can accept an input voltage from 176-276 VAC, and it can provide these output voltages: 104/208, 110/220, 115/230, and 120/240. (The output voltage depends on the setting of the DIP switch. See Section 306.) Make sure the input voltage at the Service panel fits within the input voltage range listed above, and make sure that the output voltage your equipment requires matches one of the possible selections for the UPS. **If not, call the nearest Best Power office.**
3. Move the UPS and any battery cabinets into their permanent location. Then, follow the instructions for your model:

B6106000:

At the UPS, you will find a leveler next to each caster. Using a wrench, turn each leveler to lower it and keep the UPS from moving. Next, find the 4 brackets that were packed under the UPS and each optional battery cabinet. Attach two brackets to each side of the UPS and each battery cabinet as shown to stabilize each cabinet.

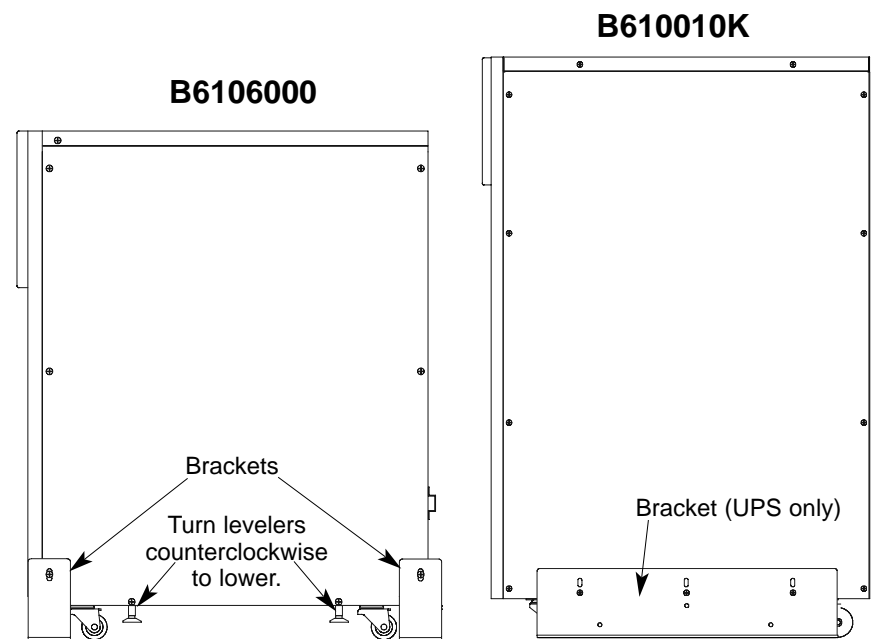


Figure 4

B610010K:

At the UPS and the optional battery cabinet, you will find a leveler next to each caster. Using a wrench, turn each leveler counterclockwise to lower it and keep the UPS from moving. Next, find the two long brackets that were attached to the top of the **UPS** packing crate. (The battery cabinet does not have brackets.) Attach these brackets to the sides of the UPS as shown in Figure 4 on page 6 to stabilize the UPS.

4. Refer to the wiring diagram and use the tables below to find the proper size circuit breaker for the AC input service panel. UPS input and output overcurrent protection are provided on the back panel of the UPS.

You must provide some means for disconnecting input AC within sight of the UPS. Best Power strongly recommends including a means of bypassing the UPS from the critical load for maintenance. AC input cables should be protected against overcurrent by fuses or automatic circuit breakers.

Required Input Circuit Breaker for the AC Input Service Panel, U.S. Installations

UPS Model	Maximum Input Current	Input Circuit Breaker
6 kVA	25 amps	35-amp
10 kVA	42 amps	60-amp

United States Recommended AWG and mm² Wire Sizes

<p>For U.S. installations, read this Important Note!</p> <p>This table lists the AWG and mm² wire size for each circuit breaker size shown on the wiring diagrams. The minimum recommended circuit breaker sizes for each model and voltage application are listed on the wiring diagrams.</p> <p>The conductor size shall be no smaller than the 75° C wire size based on the ampacities given in Tables 310-316 of the National Electrical Code, ANSI/NFPA 70-1993, and article 220. All circuit conductors, including the neutral and equipment grounding conductors, must be the same size (ampacity) wire. Code may require a larger AWG size than shown in this table because of temperature, number of conductors in the conduit, or long service runs. Follow local code requirements.</p>	For this Input Circuit Breaker Size...	Use this Size 75° C Copper Wire	
		AWG	mm ²
	35	8	8.36
	60	6	13.30

5. At the back of the UPS, find the box shown on the back panel. Remove the cover by removing the four screws that hold the cover on the box. (The box on the B610010K model is shown; the B6106000 box is similar.)

There are three knockouts/plugs in the bottom of this box. Remove the two left knockouts for AC input and AC output. If you have a B610010K model with a separate battery cabinet, remove the third knockout or plug for the DC cables.

Install the conduit adapters. AC input and AC output conductors must be run through separate conduit. UPS output circuits shall be installed in dedicated conduit systems and not shared with other electrical circuits.

6. Use the wiring diagram (Figure 7 on page 9) and the terminal block label shown on the next page to make the UPS terminal strip connections and complete the AC installation wiring. **Read the notes below the diagram carefully. See Figure 8 for UPS output terminations.**

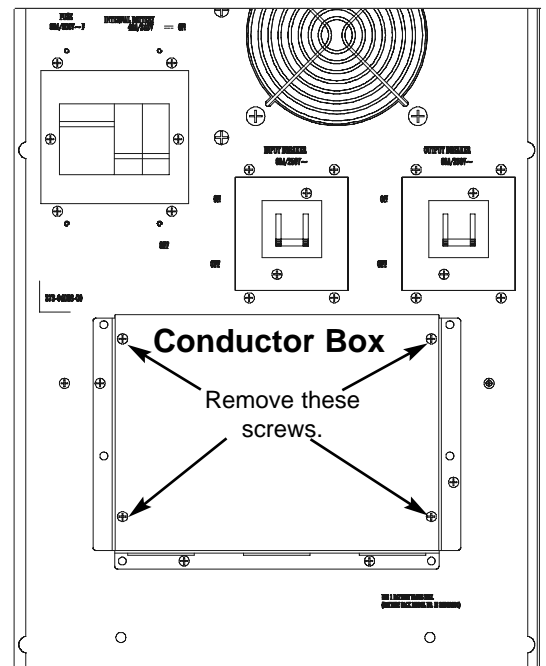


Figure 5

Make all connections exactly as shown on Figure 7 and 8 to make sure the phasing is correct. Good ground connections are necessary to reduce electrical noise and make UPS and load operation safe. Follow the grounding guidelines on the Installation Wiring Diagram. **IMPORTANT: If your unit has an optional bypass switch, follow the instructions that came with the bypass switch to install it with the UPS.**




INPUT			OUTPUT					BATTERY*		
⎵			⎵					—		
	L ₁	L ₂	X ₁	X ₂	X ₃	X ₄		+	—	

Figure 6

* Note: Only the B610010K terminal strip includes battery terminals. B6106000 units have a battery connector. See Section 305.

7. **B6106000 units:**

Reattach the cover to the conductor box on the back of the UPS. If your unit has one or more external battery cabinets, see Section 305 to connect these cabinets. For all models, go to Section 306 to set the output voltage DIP switch.

B610010K units that do not have an external battery cabinet:

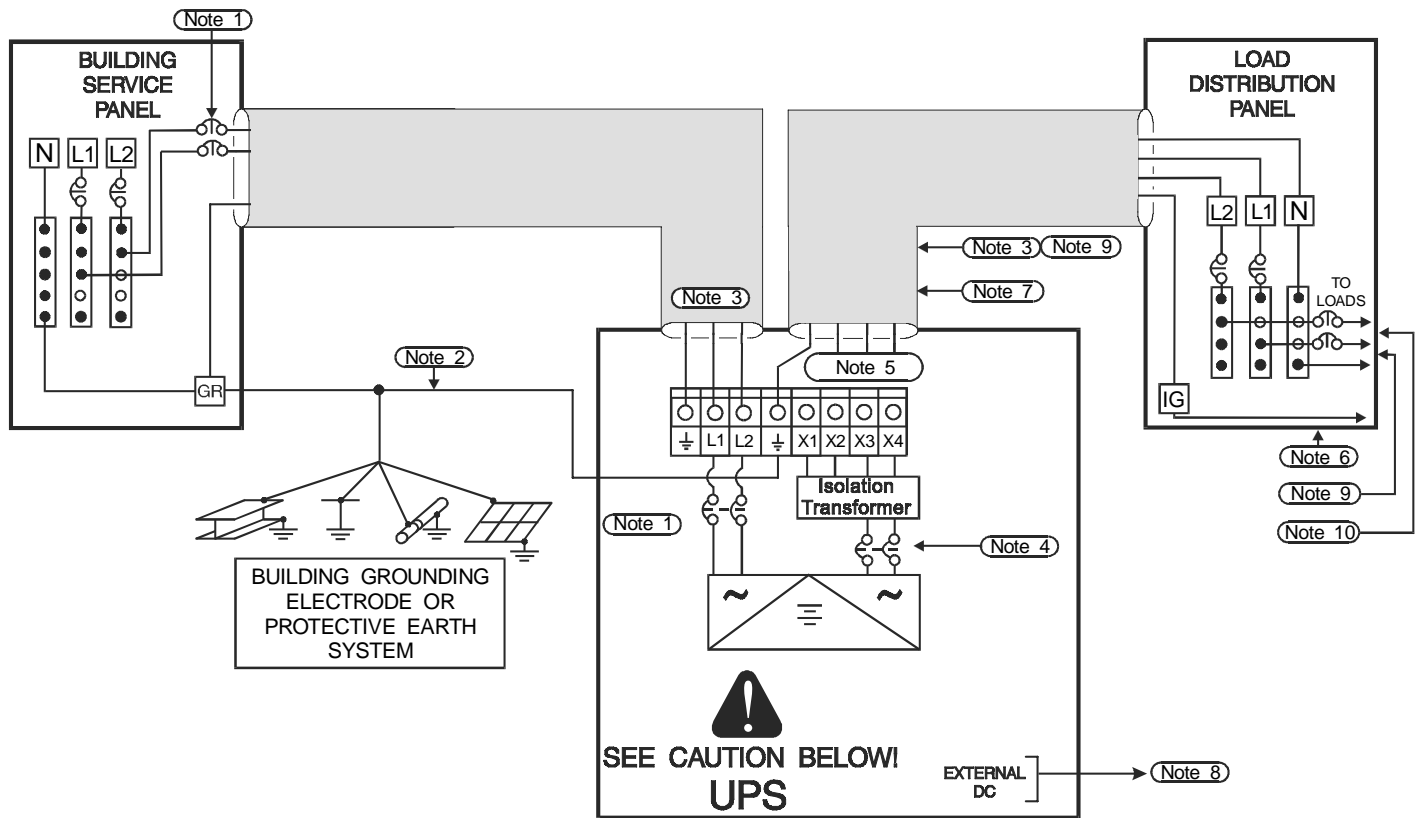
Reattach the cover to the conductor box on the back of the UPS. Then, go to Section 306 to set the output voltage DIP switch.

B610010K units with an external battery cabinet:

Do not reattach the conductor box cover yet. To install the battery cabinet, see Section 305.

If you plan to make connections to the communication port, BestDock, or the Best Relay (AS/400) interface, see Section 700.

Figure 7A: 60 Hz 6 and 10 kVA Installation Wiring Diagram, L1 - L2 Installation without Optional Bypass Switch



CAUTION

The output circuit is considered a separately derived power source. To ground this circuit, the installing electrician *must* connect a neutral-to-ground wire to the proper output terminal before making any other connections to the UPS; for the proper output terminal connection, find your output configuration in Figure 8.

NOTE 1: The UPS includes an input circuit breaker. See Section 304, no. 4 to size the AC input service panel service breaker. The customer must provide overcurrent protection at the input service panel per National Electrical Code (NEC) Article 240 or local code requirements.

NOTE 2: The customer must provide and install this ground (earth) connection per NEC Sections 250-20, 250-30, 250-62 and 250-64 or local code requirements. This grounding electrode conductor must be at least #8 AWG (8.36 mm²) per NEC table 250-66. If the UPS input circuit conductors are larger than #8 AWG (8.36 mm²), Best Power requires the grounding electrode conductor to be the same size (ampacity) as the largest UPS input circuit conductor. See NEC Section 110-3(b). Conduit is not considered an acceptable grounding electrode conductor. Best Power recommends that you do **not** route the grounding electrode conductor through metallic conduit. This conductor may require protection from physical damage according to local code requirements.

NOTE 3: All circuit conductors, including the neutral and equipment grounding conductors, must be the same size (ampacity) and have the same rating (75° C copper wire) and be sized according to the input protection device. The UPS input and UPS output conductors must be run through separate conduits.

NOTE 4: The UPS includes an output circuit breaker. See NEC Section 240-21 or local requirements for output overcurrent protection requirements.

NOTE 5: See Figure 8 for proper output wiring termination and neutral-to-ground (neutral-to-earth) connection.

NOTE 6: For maximum protection against electrical noise, use isolated ground receptacles. See NEC Section 250-146(d), or local code requirements.

NOTE 7: See Section 901 for installation dimensions and Section 302 for service clearances before installing the UPS. Use flexible metal conduit on the UPS or the external battery cabinet if either must be moved.

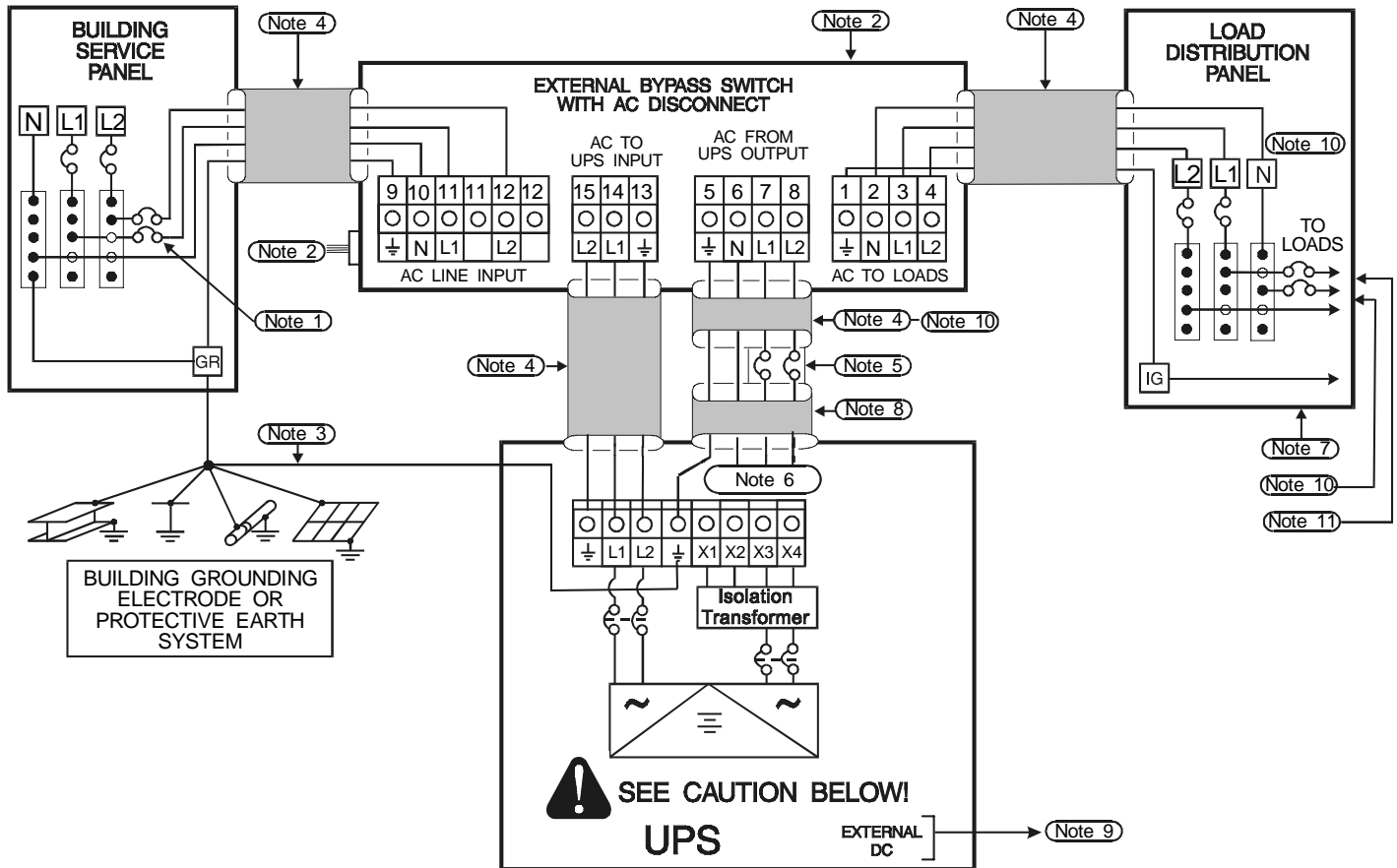
NOTE 8: External UPS batteries are optional. See Section 305 for installation procedures.

NOTE 9: UPS output circuits shall be installed in dedicated conduit systems and not shared with other electrical circuits.

NOTE 10: The output load current must be balanced. See the notes to Figure 8.

**Figure 7B: Installation Wiring Diagram for B610 6 & 10 kVA Models
with External MBB Bypass Switch (L1, L2, N)**

- 208 Input, 120/240 Output
- 208 Input, 208 or 240 Output
- 208 Input, 120/208 Output
- 60 Hz 220 Input, 220 Output (Mexico)
- 120 or 240 Input, 120/240 Output



NOTE 1: The customer must provide input overcurrent protection as stated in NEC Section 240-21 or local codes. Size the protection device according to local code requirements.

NOTE 2: The UPS bypass switch must be installed within sight of the UPS. To properly install, complete the voltage and phase check procedure on pages 14 and 15. **The wires coming from the side of the switch must be connected to the ES2 plug on the Best Relay (AS400) card. See Section 704 for wiring instructions.**

NOTE 3: The customer must provide and install this ground (earth) connection per NEC Sections 250-20, 250-30, 250-62 and 250-64, or local code requirements. This grounding electrode conductor must be at least #8 AWG (8.36 mm²) per NEC table 250-66. If the UPS input circuit conductors are larger than #8 AWG (8.36 mm²), Best Power requires the grounding electrode conductor to be the same size (ampacity) as the largest UPS input circuit conductor. See NEC Section 110-3(b). Conduit is not considered an acceptable grounding electrode conductor. Best Power recommends that you do **not** route the grounding electrode conductor through metallic conduit. This conductor may require protection from physical damage according to local code requirements.

NOTE 4: All AC circuit conductors, including the neutral and equipment grounding conductors, must be the same size (ampacity), have the same rating (75° C copper wire), and be sized according to the input circuit breaker. The UPS input and output conductors must be run through separate conduits.

NOTE 5: The customer must provide output overcurrent protection. See NEC Section 240-21 or local requirements. See Figure 8 for maximum output overcurrent protection device ratings.

NOTE 6: See Figure 8 for proper output wiring termination and neutral-to-ground (neutral-to-earth) connection.

NOTE 7: For maximum protection against electrical noise, use isolated ground receptacles. See NEC Section 250-146(d).

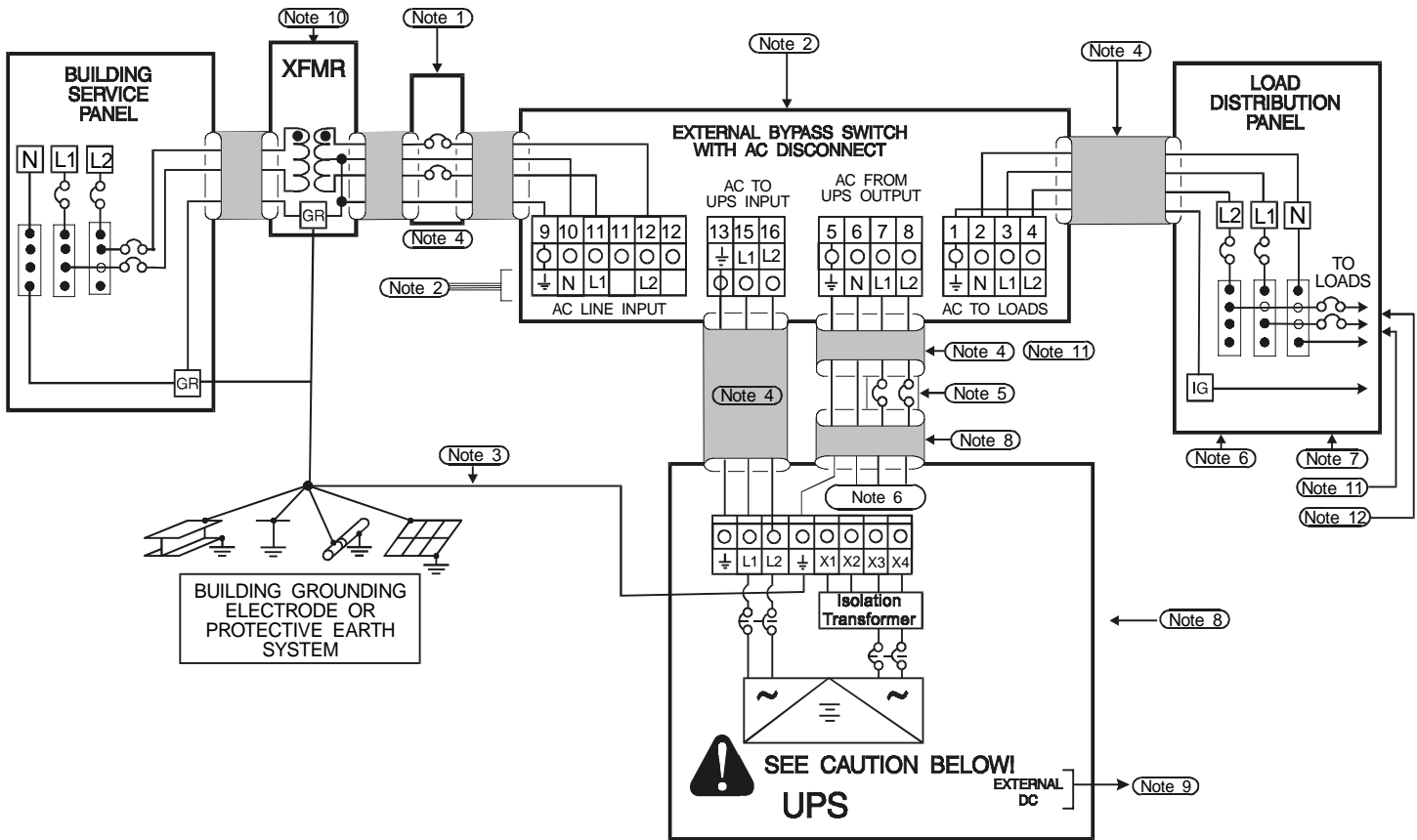
NOTE 8: See Section 302 for installation and service clearances before installing the UPS. Use flexible conduit on the UPS or the external battery cabinet if either must be moved.

NOTE 9: External UPS battery cabinets are optional. See Section 305 for installation instructions.

NOTE 10: UPS output circuits shall be installed in dedicated conduit systems and not shared with other electrical circuits.

NOTE 11: The load fuse or circuit breaker should be sized to match the load current requirements.

**Figure 7C: Installation Wiring Diagram for B610 6 & 10 kVA Models
with MBB External Bypass Switch (1, L2, N) and External Isolation Transformer**
60 Hz 208 or 480 VAC Source with Input Step-Up or Step-Down Isolation Transformer
240 UPS Input - 120/240 UPS Output



NOTE 1: The customer must provide input overcurrent protection as stated in NEC Section 240-21 or local codes. Size the protection device according to local code requirements.

NOTE 2: The UPS bypass switch must be installed within sight of the UPS. To properly install, complete the voltage and phase check procedure on pages 14 and 15. **The wires coming from the side of the switch must be connected to the ES2 plug on the Best Relay (AS400) card. See Section 704 for wiring instructions.**

NOTE 3: The customer must provide and install this ground (earth) connection per NEC Sections 250-20, 250-30, 250-62 and 250-64, or local code requirements. This grounding electrode conductor must be at least #8 AWG (8.36 mm²) per NEC table 250-66. If the UPS input circuit conductors are larger than #8 AWG (8.36 mm²), Best Power requires the grounding electrode conductor to be the same size (ampacity) as the largest UPS input circuit conductor. See NEC Section 110-3(b). Conduit is not considered an acceptable grounding electrode conductor. Best Power recommends that you do **not** route the grounding electrode conductor through metallic conduit. This conductor may require protection from physical damage according to local code requirements.

NOTE 4: All AC circuit conductors, including the neutral and equipment grounding conductors, must be the same size (ampacity), have the same rating (75° C copper wire), and be sized according to the input circuit breaker. The UPS input and output conductors must be run through separate conduits.

NOTE 5: The customer must provide output overcurrent protection. See NEC Section 240-21 or local requirements. See Figure 8 for maximum output overcurrent protection device ratings.

NOTE 6: See Figure 8 for proper output wiring termination and neutral-to-ground (neutral-to-earth) connection.

NOTE 7: For maximum protection against electrical noise, use isolated ground receptacles. See NEC Section 250-146(d).

NOTE 8: See Section 302 for installation and service clearances before installing the UPS. Use flexible conduit on the UPS or the external battery cabinet if either must be moved.

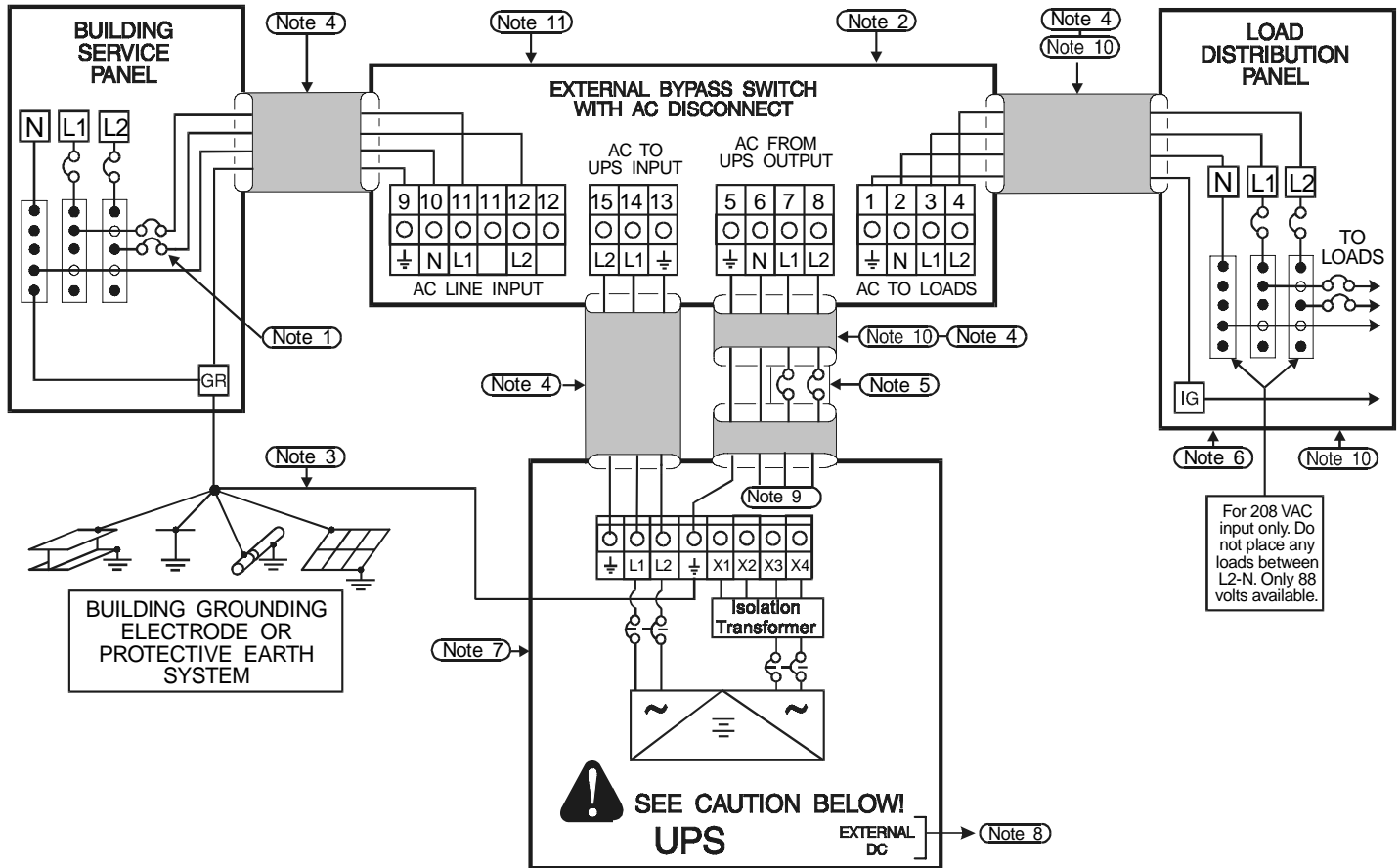
NOTE 9: External UPS battery cabinets are optional. See Section 305 for installation instructions.

NOTE 10: For 208 VAC, use a step-up transformer. For 480 VAC, use a step-down transformer. Use an isolation transformer with a 120/240 grounded center-tapped neutral output. *Do not use a buck/boost transformer.*

NOTE 11: UPS output circuits shall be installed in dedicated conduit systems and not shared with other electrical circuits.

NOTE 12: The load fuse or circuit breaker should be sized to match the load current requirements.

**Figure 7D: Installation Wiring Diagram for B610 6 & 10 kVA Models
with External BBM Bypass Switch**



NOTE 1: The customer must provide input overcurrent protection as stated in NEC Section 240-21 or local codes. Size the protection device according to local code requirements.

NOTE 2: The UPS bypass switch/AC disconnect must be installed within sight of the UPS. To properly install, complete the Phase Check on pages 14 and 15.

NOTE 3: The customer must provide and install this ground connection according to NEC Sections 250-20, 250-30, 250-62 and 250-64 or local requirements. This grounding electrode conductor must be at least #8 AWG (8.36 mm²), per NEC table 250-66. If the UPS input circuit conductors are larger than #8 AWG (8.36 mm²), Best Power requires the grounding electrode conductor to be the same size (ampacity) as the largest UPS input circuit conductor. See NEC Section 110-3(b). Conduit is not considered an acceptable grounding electrode conductor. Best Power recommends that you do **not** route the grounding electrode conductor through metallic conduit. This conductor may require protection from physical damage according to local requirements.

NOTE 4: All circuit conductors, including the neutral and equipment grounding conductors, must be the same size (ampacity) and have the same rating (75 °C copper wire), and must be sized according to the input circuit breaker.

NOTE 5: The customer must provide output overcurrent protection as stated in NEC Section 240-21 or local codes. Size the protection device according to local code requirements.

NOTE 6: For maximum protection against electrical noise, use isolated ground receptacles. See NEC Section 250-146(d) or local codes.

NOTE 7: See Section 901 for dimensions and Section 302 for clearances before installing the UPS. Use flexible metal conduit on the UPS or the external battery cabinet if either must be moved.

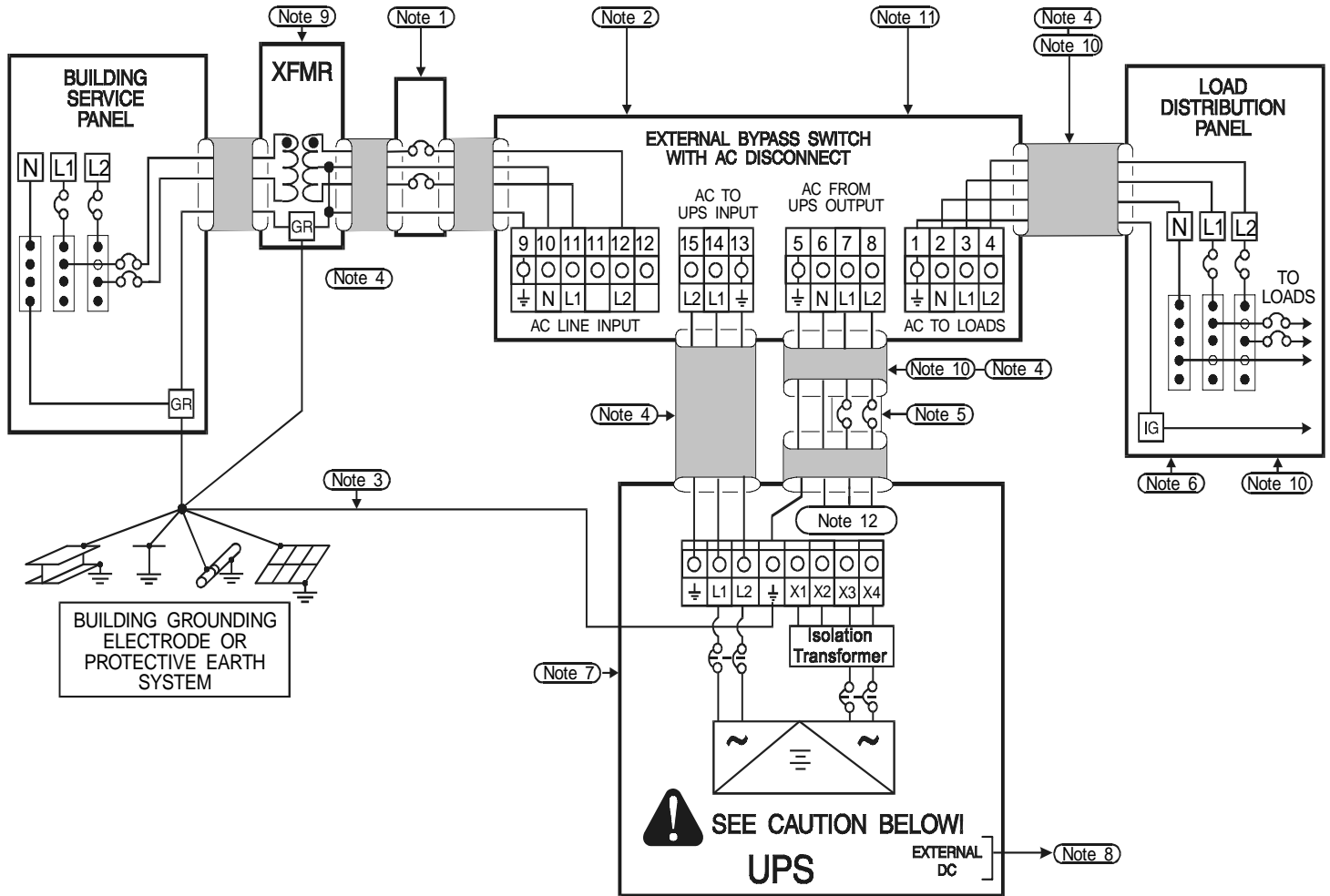
NOTE 8: External UPS batteries are optional for some models and standard for others. The battery cables are connected to the DC terminals on the DIN RAIL in the UPS. See Section 305 for external battery installation.

NOTE 9: See Figure 8 for proper output wiring termination and neutral-to-ground (neutral-to-earth) connection.

NOTE 10: UPS output circuits must be installed in dedicated conduit systems and not shared with other electrical circuits.

NOTE 11: The load fuse or circuit breaker should be sized to match the load current requirements.

Figure 7E: Installation Wiring Diagram for B610 6 & 10 kVA Models with External BBM Bypass Switch and External Isolation Transformer



NOTE 1: The customer must provide input overcurrent protection as stated in NEC Section 240-21. Size the protection device according to local code requirements.

NOTE 2: The UPS bypass switch/AC disconnect must be installed within sight of the UPS. To properly install, complete the Phase Check on pages 14 and 15.

NOTE 3: The customer must provide and install this ground connection according to NEC Sections 250-20, 250-30, 250-62 and 250-64 or local requirements. This grounding electrode conductor must be at least #8 AWG (8.36 mm²), per NEC table 250-66. If the UPS input circuit conductors are larger than #8 AWG (8.36 mm²), Best Power requires the grounding electrode conductor to be the same size (ampacity) as the largest UPS input circuit conductor. See NEC Section 110-3(b). Conduit is not considered an acceptable grounding electrode conductor. Best Power recommends that you do **not** route the grounding electrode conductor through metallic conduit. This conductor may require protection from physical damage according to local requirements.

NOTE 4: All circuit conductors, including the neutral and equipment grounding conductors, must be the same size (ampacity) and have the same rating (75 °C copper wire), and must be sized according to the input circuit breaker.

NOTE 5: The customer must provide output overcurrent protection as stated in NEC Section 240-21. Size the protection device according to local code requirements.

NOTE 6: For maximum protection against electrical noise, use isolated ground receptacles. See NEC Section 250-146(d).

NOTE 7: See Section 901 for dimensions and Section 302 for clearances before installing the UPS. Use flexible metal conduit on the UPS or the external battery cabinet if either must be moved.

NOTE 8: External UPS batteries are optional for some models and standard for others. The battery cables are connected to the DC terminals on the DIN RAIL in the UPS. See Section 305 for external battery installation.

NOTE 9: For 208 VAC, use a Step-Up transformer. For 480 VAC, use a Step-Down transformer. Use an isolation transformer with a 120/240 grounded center-tapped neutral output. Do not use a buck/boost transformer.

NOTE 10: UPS output circuits shall be installed in dedicated conduit systems and not shared with other electrical circuits.

NOTE 11: The load fuse or circuit breaker should be sized to match the load current requirements.

NOTE 12: See Figure 8 on for proper output wiring termination and neutral-to-ground (neutral-to-earth) connection.

When you have made all of the terminal strip connections (and installed the external batteries if the UPS has them), complete this phase check. You will need an AC voltmeter.



CAUTION

Before changing the bypass switch from OFF to UPS or AC Line, check for correct operation by following the steps below. To prevent damage to the loads (protected equipment), make sure the main circuit breaker in the load service panel is OFF, or make sure the loads cannot receive power from the UPS.

1. Make sure the main circuit breaker in the load service panel is off, or make sure the loads cannot receive power from the UPS.
2. Make sure the bypass switch is in the "OFF" position.
3. At the UPS AC input service panel, turn on the input power to the UPS and the bypass switch.
4. Next, turn the AC Disconnect switch on. The AC LINE light on the UPS will light.

If your UPS does not have a separate battery cabinet, follow Section 305 on page 11.

5. Turn the B610 On/Off switch on. (See Section 400 on page 20.)
6. Turn the bypass switch to "UPS."
7. Make sure the voltage from the UPS to the loads is close to the voltage from AC line to the bypass switch. (There may be slight differences.)
 - Find the measurement points for your bypass switch type (internal or external) and model on the next page.
 - Use an AC voltmeter to measure the voltage between these points on the terminal strip. (See the terminal strip label.)
 - Record the voltage measurements for your bypass switch in the spaces provided below.

BPE-02, 04, or - 05:

AC from UPS Output	AC Line Input
7 to 8 _____ VAC	11 to 12 _____ VAC
6 to 7 _____ VAC	10 to 11 _____ VAC
6 to 8 _____ VAC	10 to 12 _____ VAC

The voltages written in the first column should be similar to the voltages in the second column. (They may be slightly different.) If voltages are more than a few volts apart, check the terminal strip connections and correct any wiring problems. If you need help, call Best Power's Worldwide Service or your local Best Power office.

Important: If the AC Input voltage is 208 volts, you will normally measure 104 volts AC between the following AC output terminals:

External Bypass Switches: (6 and 7) and (6 and 8)

Do not connect any 120-volt load to the 104-volt terminals.

8. If you have a Break-Before-Make bypass switch, go to step 10.

If you have a Make-Before-Break bypass switch, make sure the AC voltages from the UPS output and the AC line input are in phase.

- Measure the AC voltage between the following points on the bypass switch terminal strip.
These measurements must not be more than 100 VAC; if they are, call Best Power's Worldwide Service or your local Best Power office.

External Bypass Switches:

BPE-15, -16

7 to 11 _____ VAC

8 to 12 _____ VAC

9. Measure the AC voltage between the following points on the bypass switch terminal strip. **This reading must not be more than 1 VAC**. If it is, call Best Power's Worldwide Service or your local Best Power office.

External Bypass Switches:

BPE-15, -16

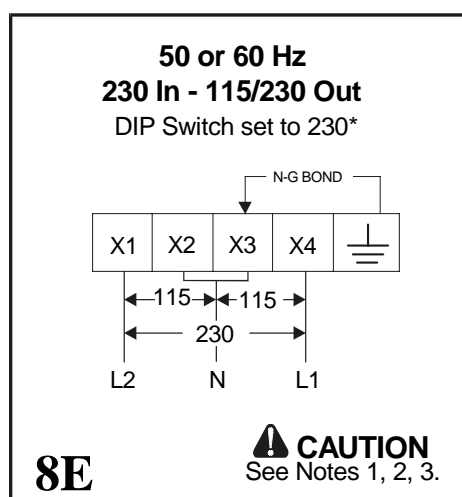
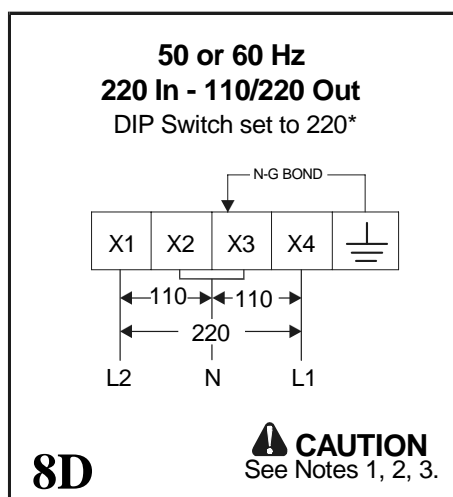
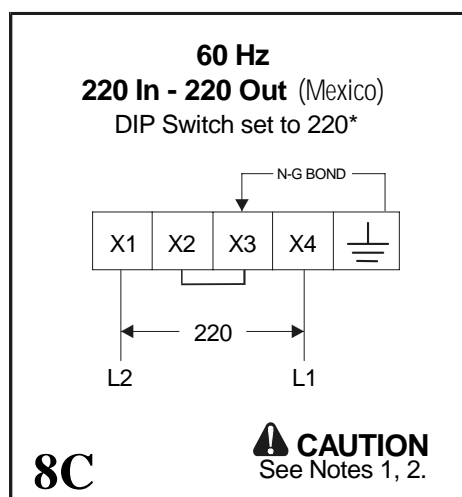
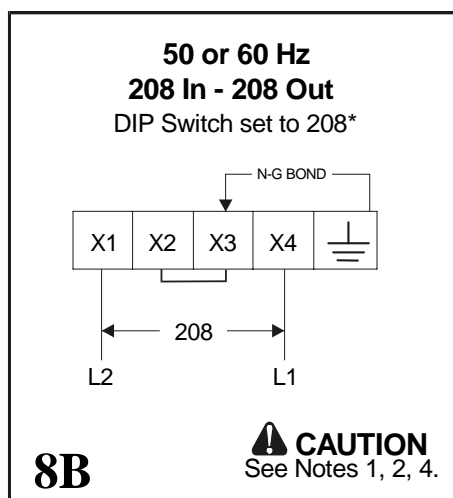
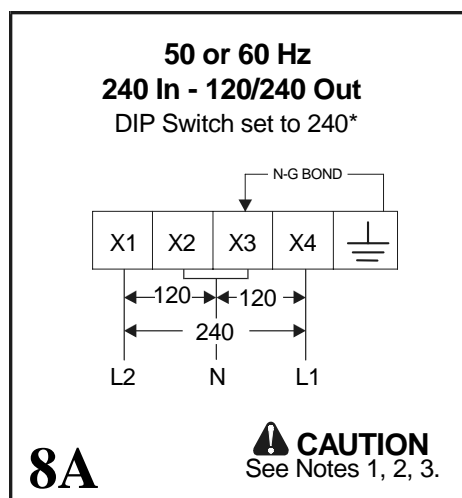
6 to 10 _____ VAC

10. Now, turn the bypass switch to "LINE."
11. Using the AC voltmeter, make sure that the voltage to your protected equipment is correct.
12. Verify the voltage at the Load Distribution Panel (see the wiring diagram) or the UPS-protected receptacles for your equipment.
13. Next, turn the bypass switch to "UPS" and measure the voltage to your protected equipment once more (either at the Load Distribution panel or the UPS-protected receptacles for your equipment). Make sure this voltage is correct.
14. Turn the bypass switch back to "LINE."
15. If all of your readings in the voltage and phase check are acceptable, follow steps a through d below:
- a. Put the bypass switch cover back on and tighten the screws securely.
 - b. Turn the B610 On/Off switch off.
 - c. Turn off the DC switch (if your model has one).
 - d. Turn the AC Disconnect Switch off. If you will not be starting the UPS now, you can leave the bypass switch in the "LINE" position and switch on your protected equipment. Your equipment will be receiving direct AC input power. It will not be protected until you startup the UPS and turn the bypass switch to "UPS."

You have finished installing B610. To startup your B610, see Section 400 on page 14.

Figure 8: UPS Output Wiring Connections

Find the output wiring configuration (Figure 8A-8E) for your UPS input voltage, frequency, and output voltage(s). Make the neutral-to-ground (neutral-to-earth) connection first. Then, wire the UPS output as shown.



Notes for Figure 8

NOTE 1: Connect a neutral-to-ground (neutral-to-earth) wire (N-G bond) as indicated.

NOTE 2: See the table below for maximum output current ratings per phase (leg).

NOTE 3: For dual-phase outputs with the same voltage, balance the load current between phases (legs).

NOTE 4: Do not connect loads between L1 and X2/X3 or between L2 and X2/X3; 104 VAC is present between these points.

*See Section 306 to set the Output Voltage DIP Switch.

Maximum Output Current per Phase (Leg)

Nominal UPS Output Voltage(s)	B6106000	B610010K
104 and/or 208	27.3 amps	48.0 amps
110 and/or 220	27.3 amps	45.5 amps
115 and/or 230	26.1 amps	43.5 amps
120 and/or 240	25.0 amps	41.7 amps



CAUTION

UPS units contain hazardous AC and DC voltages. A qualified service person must install the UPS, AC mains supply and output cabling service, and external batteries according to local and national codes and must be familiar with batteries and the required precautions.

The nominal battery voltage for the UPS is 240 VDC. Full voltage and current are always present at the battery terminals. Keep unauthorized personnel away from batteries. A qualified service person who is familiar with battery systems and required precautions must service the batteries. A battery can present a risk of electrical shock and high short circuit current. Batteries may cause severe injury if the terminals are shorted to ground (earth) or together. Observe these precautions when working on batteries:

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles
- Wear protective clothing, rubber gloves and boots, and protective eye wear.
- Do not allow tools or metal parts to contact battery terminals.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.
- Determine if the battery is inadvertently grounded. If it is, remove the source of the ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if such grounds are removed during installation and maintenance.

Replace batteries with the same number and type of batteries, and use batteries with the same voltage and ampere-hour rating as the original batteries.

Dispose of batteries properly. Assume that old batteries are fully charged. Use the same precautions you would use when handling a new battery. Do not dispose of batteries in a fire — they may explode. Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic. Many areas have regulations for disposing of batteries. Follow all applicable regulations.

B6106000: Connecting External Batteries

The 6K model battery cabinets plug into the back of the UPS with a three-pin connector, which is attached to a cable on the battery cabinet.

Install the UPS first. (See Section 304.) Then, place the battery cabinet(s) close to the UPS so that the battery cable can be plugged into the “EXTERNAL BATTERY” connector on the UPS. See Figure 9.

If you have more than one external battery cabinet, place the second cabinet next to the cabinet connected to the UPS. Connect the plug on the second cabinet to the receptacle on the cabinet you have already connected to the UPS. The cabinet uses the same kind of connector as the UPS. Figure 10 on the next page shows two battery packs connected to a 6K UPS.

6K External Battery Connector

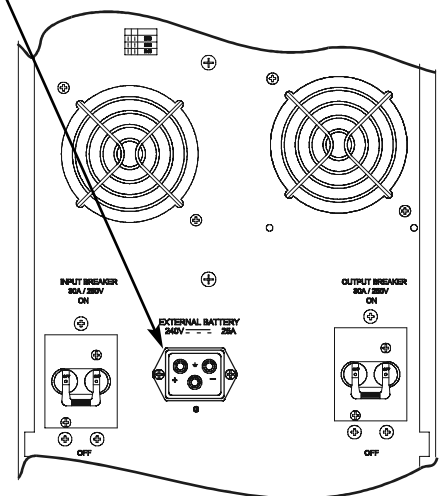


Figure 9

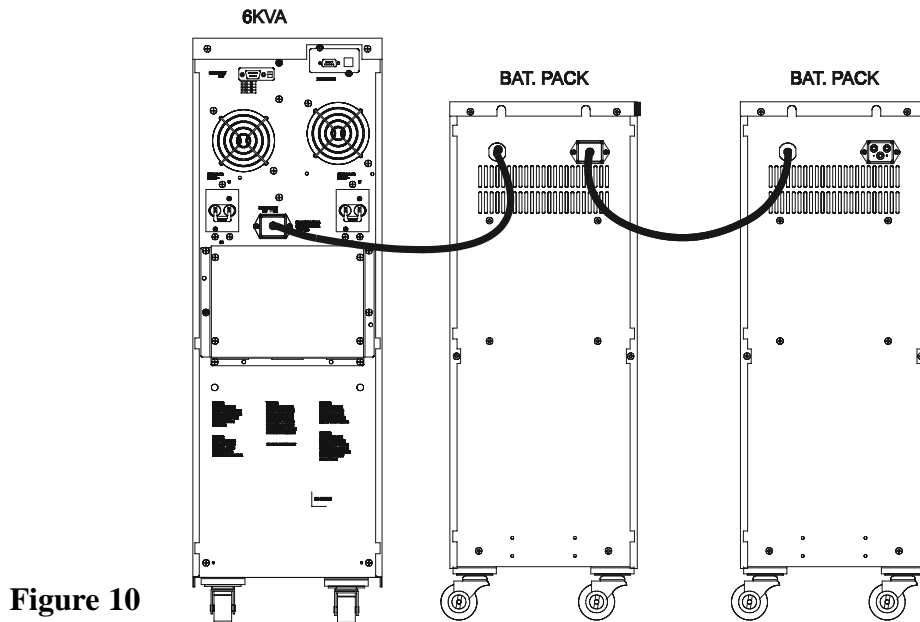


Figure 10

B610010K: Connecting External Batteries



CAUTION

Dangerous voltage is present at the battery terminals. See the cautions at the beginning of this section.

B610010K models do not have internal batteries installed if they will have external batteries connected. **Do not try to connect external batteries to a 10K UPS that already has internal batteries installed.**

1. To connect the external battery cabinet to the 10K UPS, remove the UPS conductor box cover (if it has not already been removed). See Figure 11. The terminals will be labeled as shown in Figure 12 on the next page.
2. Place the external battery cabinet as close as possible to the UPS to reduce DC wiring costs and improve battery performance. At the battery cabinet, remove the conductor box cover shown in Figure 13 on the next page.
3. Size the positive, negative, and ground cables that you will use to connect the UPS to the battery cabinet. The battery cable or wire that should be used is No. 6 AWG (13.30 mm²). If the batteries must be some distance from the UPS, you may need to install larger battery cables between the battery cabinets and the UPS. Using long cable runs and larger diameter cables may require modifications inside the UPS; call the nearest Best Power office for more information.

Conductor Box Cover

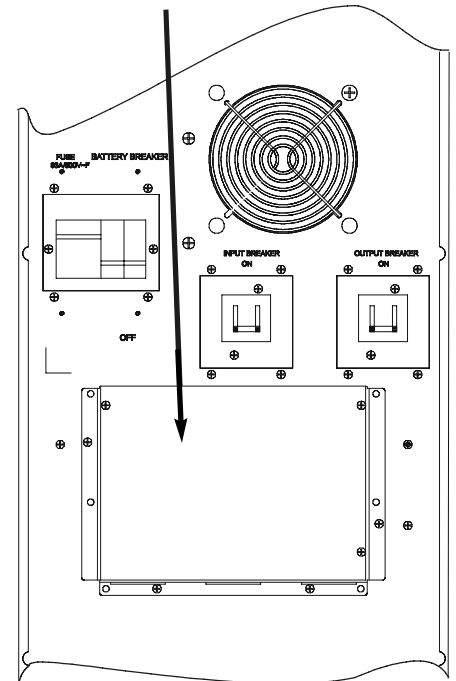


Figure 11

4. At the UPS, the conductor box has knockouts/plugs for AC input, AC output, and DC cables. The knockout for DC should already have been removed during AC installation. Route the battery cables and the ground wire through this opening. At the battery cabinet conductor box, remove one or more knockouts for the DC cables.

5. At the UPS, connect the ground wire to the ground (earth) terminal near the DC terminals as shown in Figure 12. Connect the positive (+) cable to the + UPS DC terminal, and the negative (-) cable to the - UPS DC terminal.
6. See Figure 12. At the battery cabinet, route the cables through the bottom of the conductor box. Then, connect the ground wire to the ground (earth) terminal on the battery cabinet. Connect the positive (+) cable to the + battery cabinet terminal, and the negative (-) cable to the - battery cabinet DC terminal. Reattach the cover over the terminal strip.

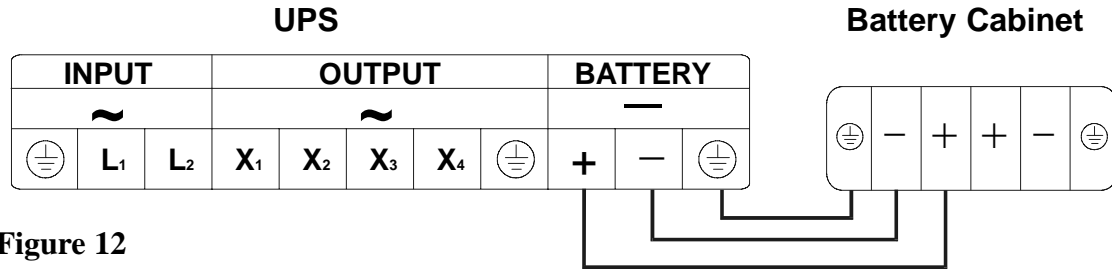


Figure 12

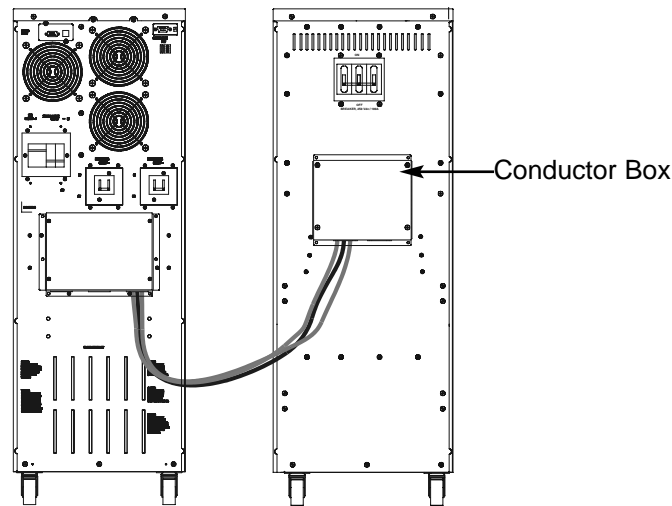
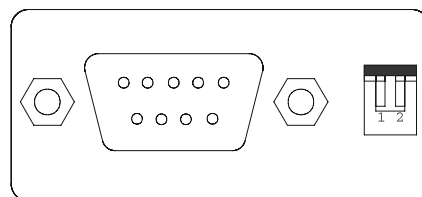


Figure 13

306 Setting the Output Voltage DIP Switch

The DIP switch for setting the output voltage is on the back of the UPS, next to the communication port. The chart below the switch shows the proper settings for each voltage. **Make sure the UPS and its input breaker are off, and if you have an optional bypass switch, make sure it is turned to “Bypass” or “Off.”** Set the DIP switches in the direction shown by the arrows for the inverter output voltage you need.



COMMUNICATION PORT

208	↑	↓
220	↓	↓
230	↑	↑
240	↓	↑

Note: When the UPS is in bypass mode or the optional maintenance bypass switch is set to “Maintenance” or “Bypass,” the DIP switches do **not** control the output voltage.

Figure 14


The UPS can be started once the AC wiring has been installed (as well as any optional battery cabinets or switches). Make sure you adjust the voltage selection switch (Section 306) if necessary before starting the UPS.




CAUTION

To avoid possible equipment damage or personal injury, assume that the UPS terminals have AC voltage present whenever AC input voltage or DC battery voltage is applied. The UPS can provide output voltage from its batteries even when there is no AC input voltage. When AC input voltage is available, the UPS can provide output voltage even when its batteries are disconnected. To make sure there will be no UPS output voltage, always disconnect the AC input source, shut off the UPS output breaker, and shut off the UPS battery breaker (or disconnect/shut off the DC voltage source). For units with bypass switches, make sure the switch is turned to “Bypass” or “Off.”

1. For B610010K models, turn on the battery breaker on the back panel of the UPS. (See the labeling on the back of the UPS, or see the drawings in Section 200.)
2. Turn on the input breaker on the UPS' back panel. The fans will begin to rotate, and the Line and Bypass LEDs will come on (see page 5). **At this point, the UPS will begin charging the batteries. To get the most amount of battery backup time, you should let the batteries fully charge before completely starting the UPS. Charging takes about 10 hours.**
3. If your unit has an optional Maintenance Bypass Switch, turn the switch to “UPS.”

4. Press the  button on the front of the UPS for at least one second to turn the UPS on. All of the “% load” LEDs on the front panel will light at first, then they will light one by one. After a few seconds, the Inverter LED will light to show that the inverter has been started; at the same time, the Bypass LED will be off. The UPS is now in normal mode. **If the Line LED flashes and the Battery LED is on at the same time, your AC input source's voltage and/or frequency are outside of the specifications for the UPS. For this reason, the UPS is running on battery power.**
5. Turn on the output breaker on the UPS' back panel. This turns on output power to the equipment connected to the UPS.

During a power failure or a severe power problem, the UPS will use its batteries and inverter to continue delivering output to your equipment. When this happens, the Battery LED will be on, the Line LED will be off, and the UPS will sound an alarm every 4 seconds. To silence the alarm, press the  button.

6. Start the equipment connected to the UPS. If the equipment overloads the UPS, the UPS will sound an alarm (see Section 504). Remove noncritical equipment from the UPS and recheck the load level.

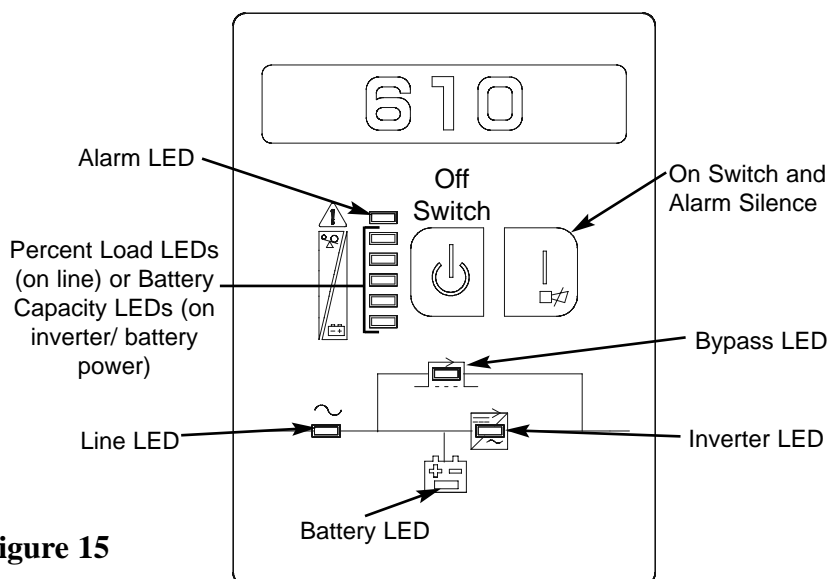


Figure 15

500 Interpreting the Front Panel LEDs

501 Line and Load Level LEDs

During normal operation, the UPS rectifies the AC input and uses it to charge the batteries and feed the inverter. The Line (~) LED shown below is on. In this mode, the five front panel LEDs shown in the drawing show the percentage of the rated UPS power that your equipment is using. The more power your equipment requires, the more LEDs are lit. See the drawing below. **If the Line (~) LED flashes and the unit switches to battery power or bypass, the AC input voltage is too low or too high.**

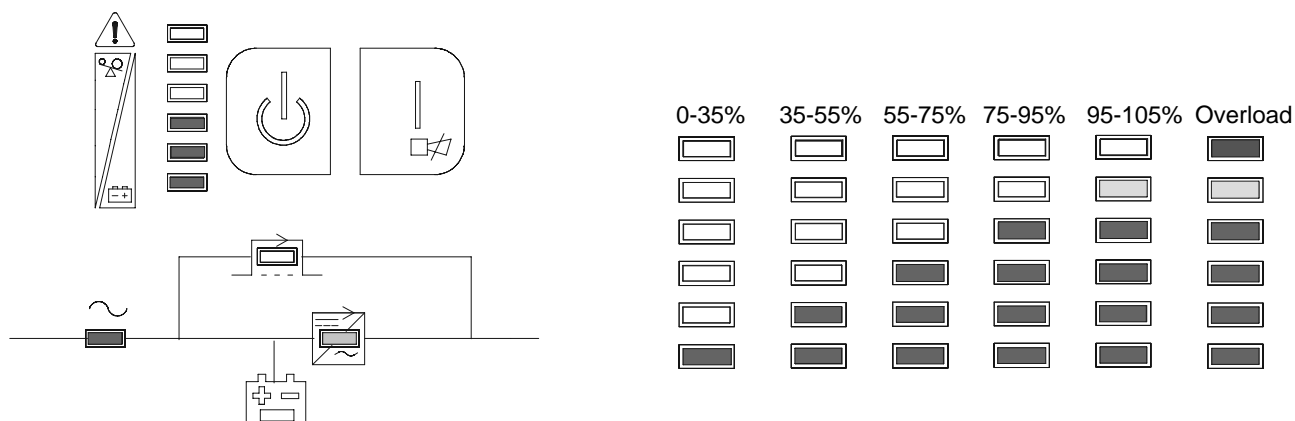


Figure 16

502 Battery Power (Inverter) and Battery Charge LEDs

When the UPS runs on battery backup power (inverter), the Battery and Inverter LEDs are on as shown. This happens during a power outage or when AC input (utility) power is not acceptable.

When the UPS runs on battery power, the five LEDs shown in the drawing show the amount of battery charge that is left. As the UPS runs on battery power, the amount of charge (and the amount of time the UPS can continue running on battery) will decrease, and the LEDs will begin to go out, starting with the bottom LED. See the drawing below. If the Battery LED starts flashing, battery voltage is low (below 240 VDC).

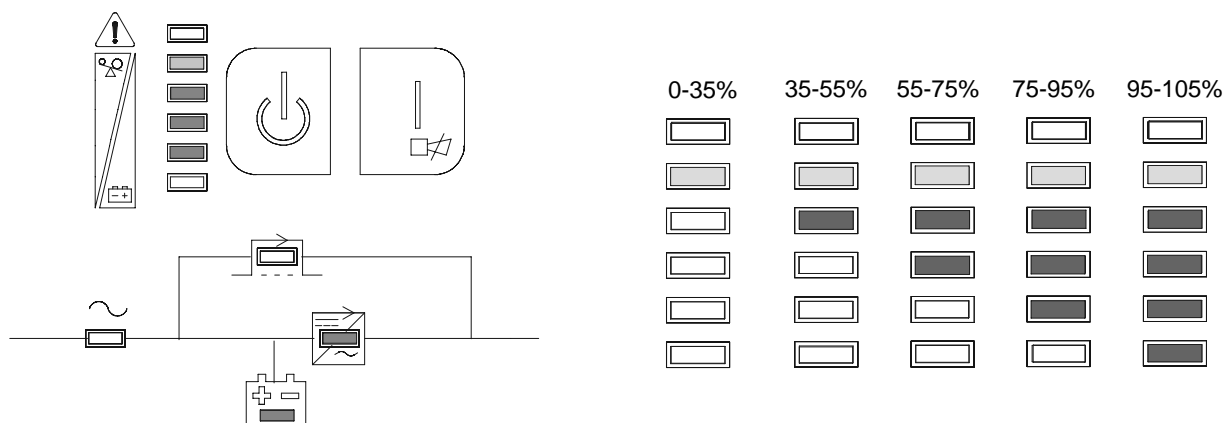



Figure 17

503 Bypass LED

When the UPS is providing power directly from line through the static bypass switch, the Bypass LED is on as shown. This happens during an overload, if the UPS cannot run on battery power because of an inverter failure, or if you press the  button. (If the UPS transferred to bypass automatically, see Section 504 to find the exact cause.) If the cause of the bypass was an overload, the UPS can automatically transfer back to normal operation after the overload has been removed.

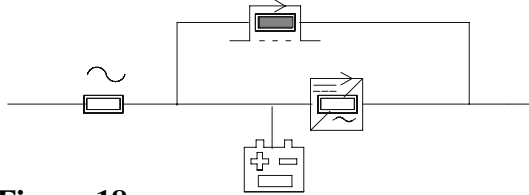



Figure 18

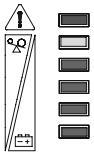
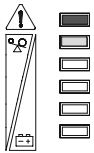
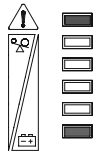
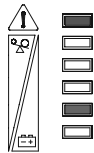
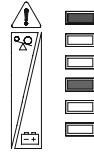
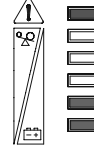
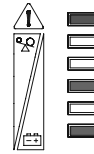
504 Alarm LED

Whenever the red LED at the top of the front panel is on or flashing, the UPS has detected a problem. The UPS will also sound an alarm tone/beep to notify you of the problem. When this happens, use the table on the next page to determine the cause of the problem and how you should react.

To silence the alarm, press the  button.

Important: Silencing the alarm does *not* solve the problem that caused it.

If you need to contact Best Power because of the alarm, make sure that you have your unit's model number and serial number available when you call.

LEDs Lit	Alarm Description	How to React to the Alarm
	Overload. The UPS beeps about twice per second and switches to Bypass (see Section 503). Your equipment needs more power (watts) than the UPS is rated to provide.	Shut off the least important equipment connected to the UPS. If this solves the overload problem, the UPS will switch from bypass back to normal operation (using either AC line input power or battery power).
	Overload (in Battery Mode) or Battery Test. The unit switches to Bypass (see Section 503). If this is an overload, the UPS beeps about twice per second; if it is a battery test, the UPS sounds a constant tone.	If the problem is an overload, see the recommendations above. If the UPS is doing a battery test, no action is needed.
	<p>If the Battery LED is on, this means Replace Battery. Battery voltage is below 140 VDC. The UPS will sound a constant tone, and the battery LED will flash. If there is a power outage, the UPS will shut down.</p> <p>If the Battery LED is off, this is a High Ambient Temperature alarm. The UPS will sound a constant tone.</p>	<p>If the cause of the alarm is the battery, phone the nearest Best Power office.</p> <p>If the cause of the alarm is the temperature, make sure the unit's fans and vent holes are not blocked, and make sure the temperature at the UPS location is not above 40° C (104° F). If none of these conditions caused the problem, phone the nearest Best Power office.</p>
	High output voltage / inverter short circuit. The UPS will sound a constant tone.	Phone the nearest Best Power office.
	High DC bus voltage. The UPS will sound a constant tone.	Phone the nearest Best Power office.
	Bypass static transfer switch short. The bypass static transfer switch was shorted when the line breaker was turned on. The UPS will sound a constant tone.	Phone the nearest Best Power office.
	Inverter static transfer switch short. The inverter static transfer switch was shorted when the UPS was started. The UPS will sound a constant tone.	Phone the nearest Best Power office.

600 Troubleshooting

If the red Alarm LED at the top of the front panel is on, see Section 504. If not, use the table below to troubleshoot UPS problems.

Make sure the UPS is connected to AC input power and that the AC input voltage is within the limits specified in Section 900. Make sure the fuse or circuit breaker on the back panel has not been tripped.

If you are not able to solve the problem, contact the nearest Best Power office. Make sure you have your unit's model number, serial number, the date of the purchase, and a full description of the problem available when you call.

Problem	Possible Cause	How to React
The UPS is on but is not supplying power to the equipment.	The output circuit breaker on the back of the UPS may have been tripped.	Reset the breaker.
No LEDs are on, and no alarm is sounding. The UPS is not operating.	<ul style="list-style-type: none">• No input power may be available to the UPS. (An extended power outage may have occurred.)• The input circuit breaker on the back of the UPS may have been tripped.	<ul style="list-style-type: none">• Check the AC input power supply.• Reset the breaker and restart the UPS.
The green Line (~) LED is not on even though AC line input seems to be available, and the UPS beeps every few seconds.	<ul style="list-style-type: none">• No input power may be available to the UPS.• The output circuit breaker on the back of the UPS may have been tripped.	<ul style="list-style-type: none">• Check the AC input power supply.• Reset the breaker and restart the UPS.
The amount of time that the UPS can run on battery is less than the rating.	The battery may not be fully charged or it may be bad, or the charger may have failed.	Recharge the battery for at least 10 hours by connecting the UPS to a source of AC line input. Then, retest the battery backup time. If the problem has not been solved by recharging the batteries, phone the nearest Best Power office.
The yellow Battery LED is flashing.	The battery voltage is low.	Recharge the battery for at least 10 hours by connecting the UPS to a source of AC line input. If the problem continues, phone the nearest Best Power office.

700 Communication

701 The Communication Port

The DB9 Communication Port on the UPS back panel provides two types of signals: open collector optocouplers and serial (RS232).

For RS232 communication, the data format is

Baud Rate: 2400 bps
Data Length: 8 bits
Ending Code: 1 bit
Parity Bit: None

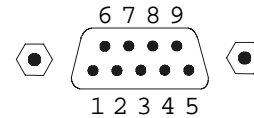


Figure 19

The pins at the port have the following functions:

Pin Number	Description
1	Not used.
2*	Normally open contact that closes when input power fails.
3*	Normally closed contact that opens when input power fails.
4*	Common for pins 2, 3, and 5.
5*	Normally open contact that closes on low battery.
6	Remote shutdown (when input power is not available and the unit is in battery mode). Keeping this pin high (+5 to +12V) for one second turns off the UPS inverter when no input power is present. (For RS232 communication, this pin is Receive Data, RX.)
7	RS232 ground.
8	Not used.
9	RS232 Transmit Data (TX).

***Note:** “Contacts” are open collector optocouplers.

702 CheckUPS Software

The UPS comes with an interface cable and CheckUPS Advanced software for power monitoring and (if desired) automatic computer shutdown during long power outages. To use the software, follow the instructions in the installation section to connect the cable to the UPS. Then, follow the instructions on the CheckUPS CD jacket to install CheckUPS software.

703 Bestlink™ SNMP/Web Adapter Option and BestDock™ Communication Slot

Using Simple Network Management Protocol (SNMP), system administrators can easily monitor and manage remote UPS units that protect key network devices like servers, routers, and hubs. Best Power's SNMP Adapter's provide a self-contained link between the UPS and an Ethernet or Token Ring LAN/WAN. The adapters allow the system administrator to communicate with the UPS even after the protected device goes down. The SNMP adapter displays over 60 Management Information Base (MIB) variables to give the system administrator information about UPS operation.

The BestDock™ communication slot in the upper left corner of the UPS allows quick installation of an optional SNMP card, the Best Relay (AS/400) Card (see Section 704), or BestLink.

704 Best Relay (AS/400) Card

The Best Relay (AS/400) Card in the upper left corner of the unit allows your UPS to work smoothly with an AS/400 system or to provide voltage-free contact closures for use with external alarm circuits.

Note: A plug with a link is supplied on the Best Relay (AS/400) card. This plug must be installed for normal operation **unless your UPS is using an external maintenance bypass switch**. If the plug is not installed, the load will be transferred to bypass.

The table below describes the connections for the Best Relay (AS/400) card.

Pin Number	Description	I/O
1	Normally open contact that closes if the UPS fails.	0
2	Normally open contact that closes if the UPS fails, the bypass is activated, input power is absent, or battery power is low.	0
3	Remote Shutdown Ground (-).	
4	Remote Shutdown +. Activated by +5 to +12V being applied for one second.	1
5	Common connection for pins 1, 2, 6, 7, 8, and 9.	
6	Normally open contact that closes when the UPS is in bypass mode.	0
7	Normally open contact that closes when the battery is almost discharged.	0
8	Normally open contact that closes when the UPS is on.	0
9	Normally open contact that closes when AC input power fails.	0

800 Maintenance and Service

801 Service and Support

If you have a problem or question about your UPS, please feel free to call, write to, or fax the nearest Best Power office. Please have your unit's model number and serial number available when you call. This information appears on a label on the UPS back panel. If you are requesting repair under warranty, please include the proof of purchase date in your correspondence. If you need to return a unit or component, call the nearest Best Power office to obtain an RA (Return Authorization) number *before* shipping the goods.

802 Storing the UPS

If you store the UPS, keep the temperature in the UPS location between -15° C and 55° C (5° F and 131° F).

The batteries in the UPS must be recharged every 90-120 days. Recharge the batteries more often if you store the unit at temperatures above 35° C (95° F) to obtain maximum battery life. To recharge the batteries, connect the UPS to AC input power for 10 hours.

The warranty of this product will be affected if the UPS is not stored properly.

803 Maintenance

Your Best 610 UPS requires little or no maintenance. Occasionally, you should inspect the input and output connections for signs of damage and make repairs if necessary.

If you need to clean the unit, first **remove all power to the unit by switching it off and unplugging it (or disconnecting the AC input source).**

If the unit is operating in an unusually dusty or dirty area, carefully vacuum any dust from the input vents and from the ventilation holes.



900 Specifications

901 Specification Table

Model	6 kVA* / 4.2 kW	10 kVA* / 7 kW
AC Input Voltage:	176-276 VAC (nominal 208, 220, 230, or 240)	176-276 VAC (nominal 208, 220, 230, or 240)
Maximum Current:	25A	42A
Output Voltage and Maximum Output Current**	208 VAC = 27.3 A 104 VAC = 54.6 A 220 VAC = 27.3 A 110 VAC = 54.6 A 230 VAC = 26.1 A 115 VAC = 52.2 A 240 VAC = 25.0 A 120 VAC = 50.0 A	208 VAC = 48.0 A 104 VAC = 96.0 A 220 VAC = 45.5 A 110 VAC = 91.0 A 230 VAC = 43.5 A 115 VAC = 87.0 A 240 VAC = 41.7 A 120 VAC = 83.4 A
Efficiency (AC to AC)	>85% at nominal input voltage (under full load, power factor = 0.7, batteries fully charged).	
Acoustic Noise (on Line Input)	55 dBA typical at 1 meter	65 dBA typical at 1 meter
Typical Standard Runtime (Minutes)	7 minutes full load.	11 minutes full load.
Weights	B6106000U: 267 lbs. (121 kg) B6106000E: 201 lbs. (91 kg) Battery Cabinet, no batteries: 27 kg (59.5 lbs.) Battery Cabinet, 1 string: 76 kg (167.6 lbs.) Battery Cabinet, 2 strings: 125 kg (275.6 lbs.)	B610010KU: 518 lbs. (235 kg) B610010KE: 396 lbs. (180 kg) Battery Cabinet, no batteries: 69 kg (152.1 lbs.) Battery Cabinet with batteries: 365 kg (804.7 lbs.)
Dimensions (H x W x D)	B6106000U: 31.5 x 10.3 x 21.9 in. (800 x 260 x 555 mm) B6106000E and Battery Cabinet: 27.8 x 10.3 x 21.9 in. (705 x 260 x 555 mm)	UPS: 37.8 x 13.4 x 25.6 in. (960 x 340 x 650 mm) Battery Cabinet: 37.8 x 15 x 27.25 960 x 380 x 690

* At 0.7 power factor.

** To set output voltage, use the dip switches on the back panel.

902 Bypass

UPS to/from Bypass

Transfer Time: Zero transfer time.

Auto-reverse: Returns to normal mode after overload condition removed.

903 AC Output with Nominal Input Power and Loads

Voltage Regulation: $\pm 3\%$.

Overload Capability: 120% $\pm 10\%$ for 10 seconds.
 >130% $\pm 10\%$ for 2 seconds.

Output Frequency: On utility, same as utility (output is synchronized to input).
 On battery, $\pm 0.5\%$ of nominal frequency.

Output Power Factor: 0.7 lag to unity.

Output Voltage
Distortion: <4% THD at full linear load.

904 Environment

Operating Temperature: 0° to 40° C (32° to 104° F).
0° to 35° C (32° to 95° F) at elevations above 1500 m above sea level.

Storage Temperature: -15° to 55° C (5° to 131° F).

Relative Humidity: 0% to 90% noncondensing.

High Altitude Operation: Up to 3000 m above sea level; maximum temperature above 1500 m is 35° C (95° F).

Ventilation: The air around the UPS must be clean, dust-free, and free of corrosive chemicals or other contaminants. The UPS uses internal fans to circulate the air for cooling. The air must be free to circulate around the UPS and battery cabinet(s).

905 Protection

Electronic overload and short circuit protection, thermal shutdown, automatic shutdown at low battery voltage, and overvoltage protection for I/P.

906 Batteries and Battery Charger

Battery type: Batteries are sealed lead-acid maintenance-free.

Battery AH: 7.2 AH for batteries inside the UPS.

Nominal DC Voltage: 240V.

Recharge Time: 10 hours to 100% after full discharge.

907 Agency Listings and Compliance

U Models: UL listed to UL 1778, CAN/CSA C22.2 No. 107.1 M91. Compliant to FCC Part 15.

E Models: TÜV certified, EN 60950, EN50091-1.

EMC Conformity Declaration: The following devices comply with the EMC standard specifications.

TÜV:(1) Safety: EN50091-1(1996.12)

EMC: EN50091-2 (1995.09)

(1) EMI 1. Conducted noise meets EN50091-2 Table 2.

2. Radiated noise meets EN50091-2 Table 4

(2) EMS IEC 801-2 level 4.

IEC 801-3 level 3.

IEC 801-4 level 4.

IEC 801-5 level 3.

1000 Warranty

LIMITED TWO YEAR WARRANTY Standard Warranty For All Purchases

BEST POWER, a division of SPX Corporation (hereinafter called BEST POWER) warrants that each product sold by BEST POWER is compatible with existing commercially available computer equipment with enclosed power supplies and is free from defects in materials and workmanship under normal use and service. This warranty is applicable only to the initial retail purchaser (PURCHASER), and is not transferable. The duration of this warranty is two (2) years from the date of the first retail sale or the date of delivery to the PURCHASER, whichever occurs first, subject to the following conditions.

If the PURCHASER discovers within the duration of this warranty a failure of the product to perform compatibly with presently existing computer equipment or a defect in material or workmanship, the PURCHASER must promptly notify BEST POWER in writing within the duration of the warranty or not later than one month after expiration of the warranty. BEST POWER's obligation under this warranty is limited to the replacement or repair, subject to the conditions specified below, of such product returned intact to BEST POWER which shall appear to BEST POWER, upon inspection, to have been either incompatible or defective. Replacement or repair will be made at BEST POWER's Worldwide Service, Highway 80, Necedah, Wisconsin 54646, U.S.A. Such repair or replacement shall be at BEST POWER's expense. This warranty does not cover any taxes which may be due in connection with replacement or repair, nor any installation, removal, transportation or postage costs. These expenses will be paid by PURCHASER. If BEST POWER is unable to repair or replace the product to conform to this warranty after a reasonable number of attempts, BEST POWER will refund the purchase price. Remedies under this warranty are expressly limited to those specified above.

TO THE EXTENT ALLOWED BY LAW, BEST POWER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY. TO THE EXTENT ALLOWED BY LAW, BEST POWER SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, INJURIES TO PROPERTY, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT.

Some states do not allow limitations on how long an implied warranty lasts, so that the above limitation on duration of implied warranties may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. You are advised to consult applicable state laws.

No warranty is made with respect to other products sold by BEST POWER which do not bear the name BEST POWER, and no recommendation of such other product shall imply or constitute any warranty with respect to them. This warranty does not cover repair or replacement because of damage from unreasonable use (for example only, damage from road hazard, accident, fire or other casualty, misuse, negligence, or incorrect wiring) and any use or installation not in conformance with instructions furnished by BEST POWER, or repairs or replacements needed because of modifications or parts not authorized or supplied by BEST POWER.

LIMITED WARRANTY
Transient Voltage Surge Suppression Circuitry
(For U.S. and Canadian Purchasers Only)

BEST POWER, a division of SPX Corporation ("BEST POWER") hereby warrants the transient voltage surge suppression circuitry in each FERRUPS®, FORTRESS®, PATRIOT®, UNITY/I™, BEST 610, AXXIUM™, CITADEL®, or SPIKE-FREE™ product (hereinafter called "Product") sold by it for installation in the United States of America and Canada to be free from defects in material and workmanship under normal use and service for the lifetime of the Product, beginning with the date of sale to the initial retail purchaser, subject to the following conditions. This warranty is applicable only to the initial retail purchaser (hereinafter called PURCHASER), is not transferable, and is limited to the following remedies:

1. The replacement or repair of the transient voltage surge suppression circuitry in each Product that is returned intact to BEST POWER and which shall appear to BEST POWER, upon inspection, to have been defective in material or workmanship or to have been damaged through normal use;
2. The reimbursement to the PURCHASER of up to \$25,000 per occurrence of documented physical damage to specified computer equipment connected to a Product where such damage could have been prevented by transient voltage surge suppression circuitry as detailed in BEST POWER's specification for the Product sold.

This warranty is made in addition to BEST POWER's Limited Two Year Warranty.

This warranty does not include any taxes which may be due in connection with replacement or repair nor any installation, transportation or postage costs. These expenses will be paid by PURCHASER. Replacement or repair will be made at BEST POWER's Worldwide Service, Highway 80, Necedah, Wisconsin 54646, U.S.A.

This warranty does not cover repair or replacement because of damage from unreasonable use (damage from road hazards, accident, fire or other casualty, misuse, negligence, incorrect wiring) and any use or installation not in conformance with instructions furnished by BEST POWER, or repairs or replacements needed because of modifications or parts not authorized or supplied by BEST POWER.

This warranty is operable only upon the written acceptance by BEST POWER of an application by the PURCHASER on BEST POWER's standard form for the above warranty coverage for the Product sold. In such application, the PURCHASER shall represent that the Product sold has been properly installed and grounded in accordance with instructions received from BEST POWER, and the PURCHASER shall also specify the computer equipment to which the Product sold has been connected and the location of the computer equipment. This warranty will not apply to any equipment not specified in the application by the PURCHASER as protected equipment.

EXCEPT AS EXPRESSLY SET FORTH IN THIS WARRANTY AND BEST POWER'S LIMITED TWO YEAR WARRANTY, BEST POWER MAKES NO OTHER WARRANTIES, AND TO THE EXTENT ALLOWED BY LAW, BEST POWER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

REMEDIES UNDER THIS WARRANTY ARE EXPRESSLY LIMITED TO THE REPAIR OR REPLACEMENT OF PRODUCTS AND THE REIMBURSEMENT SPECIFIED ABOVE, AND TO THE EXTENT ALLOWED BY LAW ANY CLAIMS FOR LOSS ARISING OUT OF THE FAILURE OF PRODUCTS TO PERFORM FOR ANY PERIOD OF TIME, OR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR OTHER ECONOMIC LOSS ARE EXPRESSLY EXCLUDED.

Some states do not allow limitations on how long an implied warranty lasts, so that the above limitation on duration of implied warranties may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. You are advised to consult applicable state laws.

For Units in the United States Only:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For Users in Canada

This Class A Interference Causing Equipment meets all requirements of the Canadian Interference Causing Equipment Regulations ICES-003.

Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

WARRANTY REGISTRATION

Fill out the information listed below, and retain this page for your records. Send a photocopy of this page by mail or by fax to your nearest Best Power office if you cannot register your warranty information online.

We recommend that you register your product by using the online registration form. To enter your warranty information online, go to <http://www.bestpower.com> and select "Warranty Registration" on the Best Power home page. Use the information you have recorded on this page to complete the online registration.

Best Power Standard Warranty Registration

Best Power Model Number _____

Best Power Serial Number _____

I acknowledge that the above product has been properly installed and grounded in accordance with instructions supplied by Best Power.

(signature)

(installation date)

Please print the following information:

Contact Person _____

Company _____

Street Address _____

City _____

State/Country _____

Postal/Zip Code _____

Telephone _____

E-mail Address _____