



INTEGRITY MAX UPS Series User Manual



Model Numbers

NPTU 2200, 3200, 4200, 5200, 6000, 8200, 10.0

***** IMPORTANT SAFETY INSTRUCTIONS ********** SAVE THESE INSTRUCTIONS *******INTRODUCTION**








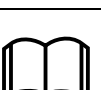
Thank you for choosing the INTEGRITY MAX Series UPS.

This manual provides useful guidance on your INTEGRITY Max Series UPS (referred hereafter to as UPS). You will find helpful information here on the UPS features, performance, appearance, structure, working principles, installation, operation, maintenance, transportation, and storage. Please save this manual for future reference.

**NOTE**

The images shown in the various figures in this manual are for reference purposes. For specific details, please see the actual product.

SYMBOL GUIDE

Symbol	Description
 DANGER	Alerts the user to a high-risk hazard that could, if not avoided, result in severe injury or death.
 WARNING	Alerts the user to a medium or low-risk hazard that if not avoided, could result in moderate or minor injury.
 CAUTION	Alerts the user to a potentially hazardous situation that if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results.
	Alerts the user to protect against electrostatic discharge (ESD).
	Alerts the user to a risk of electric shock.
	Protective Earth Ground
 TIP	Provides a tip that may help the user solve a problem or save time.
 NOTE	Provides additional information to emphasize or supplements essential points in the main text.

GUIDE DES SYMBOLES









Symbol	Description
 LE DANGER	Avertit l'utilisateur d'un danger à haut risque qui pourrait, s'il n'est pas évité, entraîner des blessures graves ou la mort.
 L'ALERTE	Avertit l'utilisateur d'un danger à risque moyen ou faible qui, s'il n'est pas évité, pourrait entraîner des blessures modérées ou mineures.
 PRUDENCE	Avertit l'utilisateur d'une situation potentiellement dangereuse qui, si elle n'est pas évitée, pourrait entraîner des dommages matériels, une perte de données, une détérioration des performances ou des résultats imprévus.
	Alerte l'utilisateur pour qu'il se protège contre les décharges électrostatiques (ESD).
	Alerte l'utilisateur d'un risque de choc électrique.
	Terre de protection
 L'AVIS	Fournit une astuce qui peut aider l'utilisateur à résoudre un problème ou à gagner du temps.
 LA NOTE	Fournit des informations supplémentaires pour souligner ou compléter les points essentiels du texte principal.

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SAFE OPERATION OF YOUR UPS

Before performing any work on the UPS, please read this user manual carefully and follow the proper installation, operation, and maintenance instructions. To prevent injury to personnel or UPS damage caused by improper equipment operation, please observe all the critical danger, warning, and safety information found in this manual and on the UPS. **SAVE THESE IMPORTANT SAFETY INSTRUCTIONS FOR FUTURE REFERENCE.**



CAUTION

Before using the UPS, please read this section carefully to avoid accidents. The cautions and warning you see here in this user manual do not encompass all potential safety hazards but provide general guidelines for the safe use of the UPS, as well as known dangers and hazards.



DANGER

USING YOUR UPS SAFELY

High temperature and high voltage are present inside the UPS. When in use, please strictly comply with all warnings and operation instructions on the UPS and in the user manual.



CAUTION

There are no user-serviceable parts inside the UPS. The removal of covers by non-authorized personnel exposes the user to high voltage and the risk of electric shock. Removal of the UPS cover also voids the warranty.



CAUTION

This UPS is a Class A product. When it is used in residential applications, additional measures should be taken to prevent electromagnetic interference (EMI).

- Ensure that no liquid or other foreign objects can enter the UPS.
- The UPS must be properly grounded in accordance with the National Electric Code and other applicable codes.
- If the UPS must be rewired, relocated, or maintained, all sources of external and internal power, such as AC power or battery power, must be disconnected and electrically isolated. To avoid the risk of injury from electric shock, no work should be attempted until the UPS and its power sources have been shut off and isolated for at least 10 minutes.
- In case of fire, use only dry powder type extinguisher.

BATTERY SAFETY



CAUTION

A battery can present a risk of electrical shock and high short -circuit current. Contact with any part of a grounded battery can result in electrical shock. The following precautions should be observed when working on batteries:

- a) Remove watches, rings, or other metal objects.
- b) Use tools with insulated handles.
- c) Wear rubber gloves and boots.
- d) Do not lay tools or metal parts on top of batteries.
- e) Disconnect charging source and load prior to installing or maintaining the battery.
- f) Remove battery ground during installation and maintenance to reduce likelihood of shock. Remove the connection from ground if any part of the battery is determined to be grounded.

ESD PROTECTION



CAUTION

To prevent ESD (Electrostatic Discharge) damage to sensitive components (such as optional communications PCB's), make sure to wear a well-grounded anti-static wrist strap before touching such components.

WORKING ENVIRONMENT REQUIREMENTS

Install and operate the UPS in accordance with environmental specifications contained in this manual and avoid exposure to direct sunlight, water, condensation, dust, or heat sources. Here is some additional guidance on where to install your UPS:

- Install your UPS on a flat floor without vibration and with a vertical gradient less than 5°.
- Make sure there is proper ventilation around the UPS. The clearance between the rear or the side of the UPS and adjacent devices or wall should be at least 12" (305 mm).
- Inadequate ventilation will result in a temperature rise inside the UPS that will reduce the life of the internal components, such as the batteries.

OVERVIEW & FEATURES OF YOUR UPS

Here you will find useful information about product features, characteristics, and working principles for your new UPS.

PRODUCT BASICS

(2-10kVA) Integrity Series is a high-frequency, online double-conversion, pure sine wave output UPS. The microprocessor-based design features of this unit make it the perfect power quality protection product for clinical diagnostic, analytical, industrial process control, IT/data center, telecommunication systems, and other priority applications that require high-quality power.

The (2-10kVA) UPS is compatible with 200 to 240 VAC nominal single-phase input sources and can supply single-phase 100 – 240 VAC output. Each UPS in this series can be configured with additional battery cabinets for extended run time.

KEY FEATURES

High performance: The Integrity Series of our UPS line combines leading-edge power conversation and high-frequency PWM (Pulse Width Modulation) topology. This results in superior performance characteristics, high reliability, outstanding power quality, and a small footprint — all in one package. It is the NXT generation in power quality.

High input power factor: The UPS uses advanced active PFC technology that results in very low input THDi characteristics. This dramatically reduces the current harmonics reflected by the UPS back on the power line.

Intelligent RS232 communication: The RS232 standard data port and optional SNMP card used with power management software enables monitoring of the UPS via remote computer. Monitoring the parameters of the UPS on the computer and supporting SNMP network adaptor is possible through remote external connection to the UPS.

Wide mains input voltage tolerance: Because of the use of independent rapid AC detection technology, the UPS can operate with a wide input voltage window which allows the UPS to supply output power from the AC mains rather than the batteries, resulting in more stable output power and greater battery life.

Advanced design solves for poor power quality: This UPS is the next level solution for problems typically associated with other high-frequency UPS products, as it addresses problems associated with poor quality of incoming AC mains power. Advanced features include:

- Output over-voltage protection
- Battery under-voltage protection
- Input over-voltage protection
- Multi-stage over-current protection
- High-frequency noise filtering
- Output isolation
- Surge protection

PRODUCT VIEWS

Figure 2-1: Isometric view



Figure 2-2: Front panel view

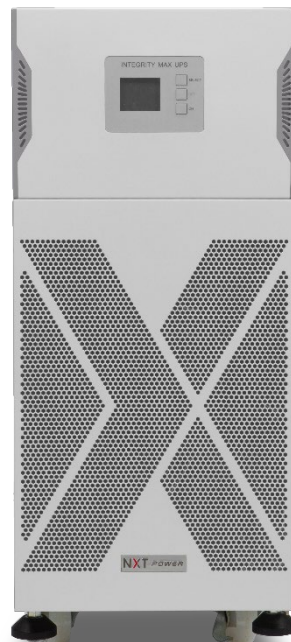
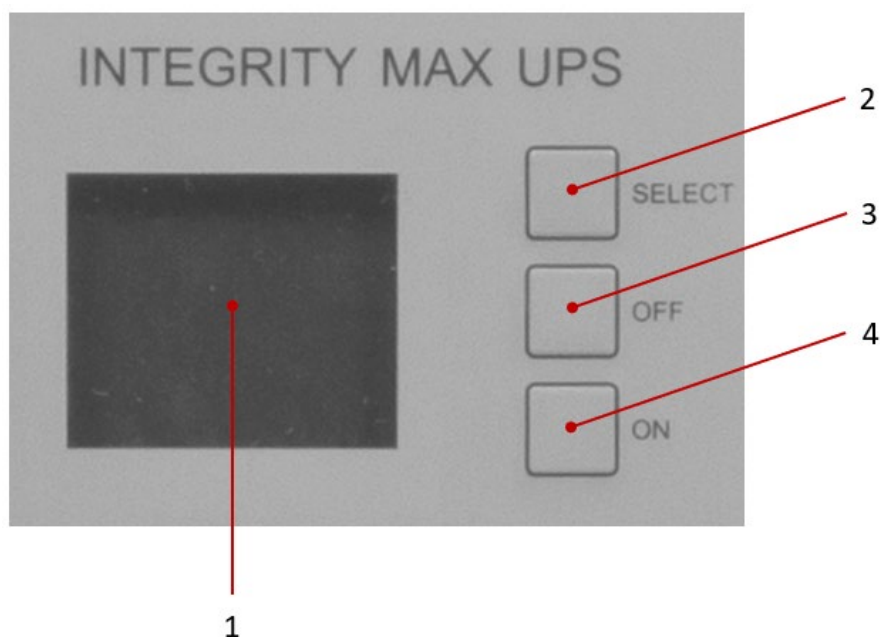


Figure 2-3: Rear panel view



OPERATION PANEL

Figure 2-4: Operation Panel



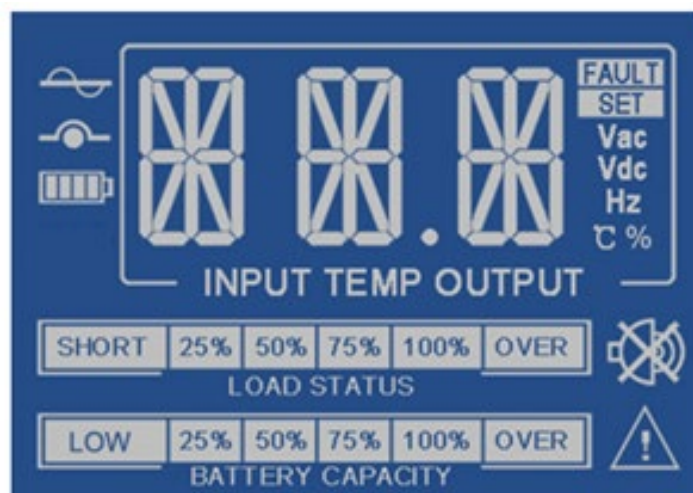
No.	Name	Illustration
①	LCD Display Panel	Displays information concerning the operational status and settings of the UPS.
②	SELECT Button	Use the SELECT button to display measurement and setting information, such as input voltage, input frequency, battery voltage, internal temperature, output voltage, output frequency, load percentage, fault information, as well as programmable output voltage settings.
③	OFF Button	Use to turn the UPS off: <ul style="list-style-type: none"> When the UPS is on-line, press this button to turn off the Inverter. If the bypass is in range, the load will be transferred to bypass. If the bypass is out of range, the output will shut off.
④	ON Button	To turn the UPS on, select various functions, and to confirm setting changes: <ul style="list-style-type: none"> When the UPS is off, press the ON button to turn on UPS. When UPS is on and operating in normal mode, press and hold the ON button for three seconds to do a battery test. When the UPS works in the battery mode - press and hold the ON button for three seconds to silence the buzzer.

Table 2-1: Description of Display Panel buttons

LCD panel

The UPS is equipped with a backlit LCD display panel as shown in Figure 2-5

Figure 2-5: LCD display panel



Icon	Illustration
	Inverter Icon ON: Inverter is online.
	Bypass Icon ON: UPS is bypass mode.
	Battery Icon <ul style="list-style-type: none"> Energy bars illuminating from left to right again and again indicate the battery is in charge mode. Energy bars all fully illuminated indicate the battery is fully charged. Energy bars all flickering indicate the battery is over-voltage. Energy bars are all off and the frame is flickering indicates the battery is about to run out.
	Silence Icon ON: Buzzer is in the silence status.
	Alarm Icon ON: UPS is in a fault condition.
	Measurement Icons: <ul style="list-style-type: none"> Indicate voltage, frequency, temperature, load values.

Table 2-2: Description of the LCD panel

BATTERIES

The UPS is equipped with internal sealed lead acid batteries. Optional extended runtime battery cabinet(s) are available from NXT Power. Consult your local sales representative for pricing and availability details. Refer to Section 4 for battery maintenance and replacement intervals.

INTELLIGENT SLOT

SNMP Card (optional)

An optional SNMP card is available for installation in the Intelligent Slot. Consult your local sales representative for pricing and availability details.

EMERGENCY POWER OFF (EPO)

This circuit is used to shut off the UPS output from a remote location. The EPO connection requires a remote mounted, normally open dry contact rated at 240 VAC. When the UPS is supplying output power and the contact is closed, the POWER and BATTERY circuit breaker will shunt trip and turn off the power of the UPS. Refer to Section 3 (Installation) for connection details.

RS232 COMMUNICATION

The UPS is equipped with RS232 communications. The pin configuration of the RS232 port of the UPS is shown in Table 2-3.

RS232 port of UPS
Pin 2 (transmit)
Pin 3 (receive)
Pin 5 (ground)

Table 2-3: Pin configuration of the RS232 port of the UPS

WORKING PRINCIPLES

This section illustrates the working principles of the UPS in various modes of operation. The various internal functions of the UPS are described as follows.

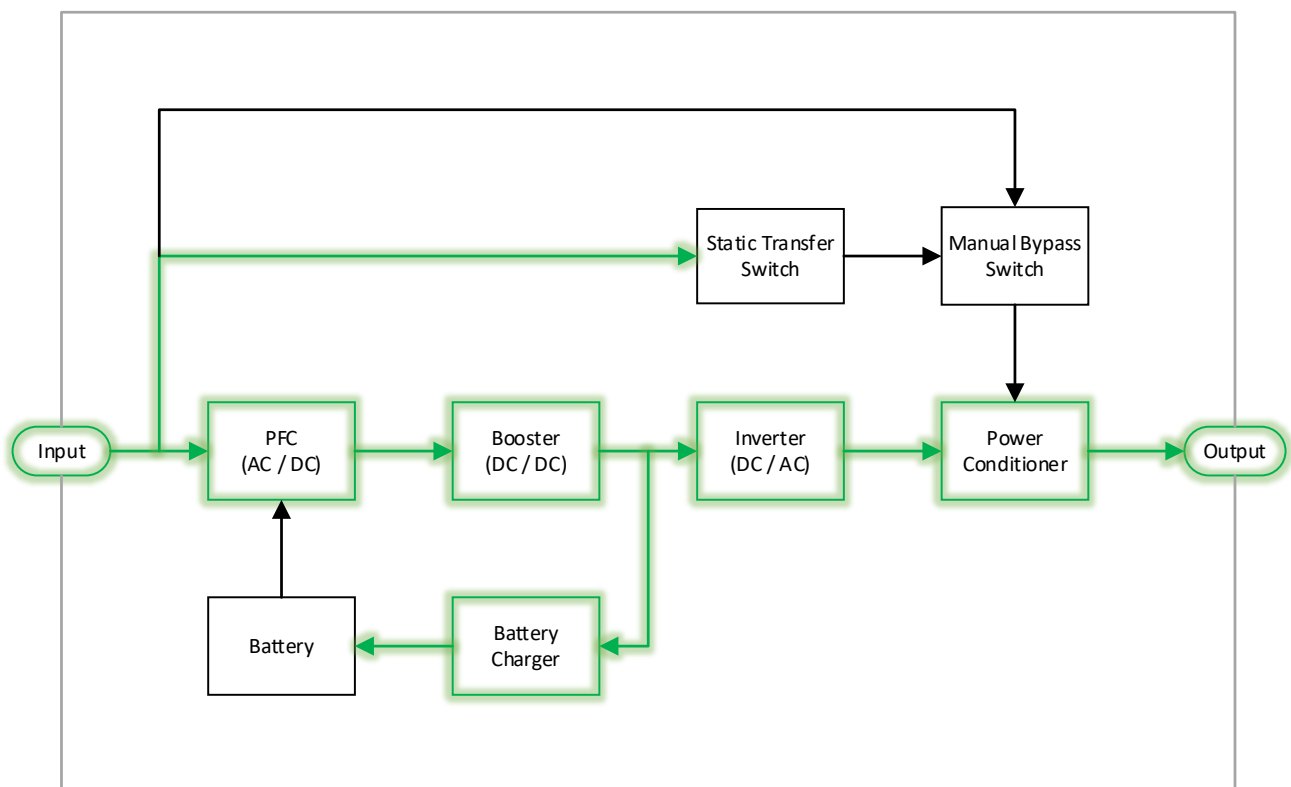
The PFC stage converts input AC Power to DC power and connects the batteries to the booster stage. The Booster stage receives incoming DC from the PFC or batteries and steps up the amplitude to provide a highly regulated DC output to the Inverter stage. The Booster and the PFC stage work together to control the input power factor and limit the magnitude of the current harmonics reflected on the incoming power line. The Inverter stage converts DC power supplied by the Booster to a highly regulated AC output and feeds it to the input of the Power Conditioner stage. The Power Conditioner isolates the Inverter from the output, filters out high frequency common mode and normal mode noise and transforms the primary voltage to various standard voltages needed by the load. The battery stage stores limited energy in reserve for use by the Inverter during incoming power outages. The battery charger stage uses the regulated power from the Booster to provide reduced amplitude regulated power for recharging the batteries. The Static Transfer Switch is a fast acting electronic switch that is automatically engaged to transfer power (bypass) around the active electronics in the UPS in case of fault, or a user initiated cause such as shutting off the UPS for maintenance or storage. Lastly, the Manual Bypass Switch is a manual switch that allows for power to completely bypass most of the internal circuits of the UPS.

Modes of Operation

On-line Mode

In On-line mode, critical power is supplied by the utility and passes through a double conversion process in the UPS where input AC power is converted to DC power and then back to AC power. When the AC main input power is within normal range, the PFC (AC/DC) & Booster (DC/DC) sections of the UPS convert the incoming AC into $\pm 360V$ steady DC voltage and regulate the input power factor and reflected current harmonics. At the same time, some of this DC power is supplied to the battery charger which then charges the battery. Most of the DC power from the Booster is supplied to the Inverter (DC/AC), which converts it to voltage and frequency regulated AC power which in turn is fed to the Power Conditioner. The Power Conditioner establishes a new ground/neutral reference and filters all common mode and normal mode high frequency conducted noise. In the event of a utility power loss, the UPS will operate in battery operation mode.

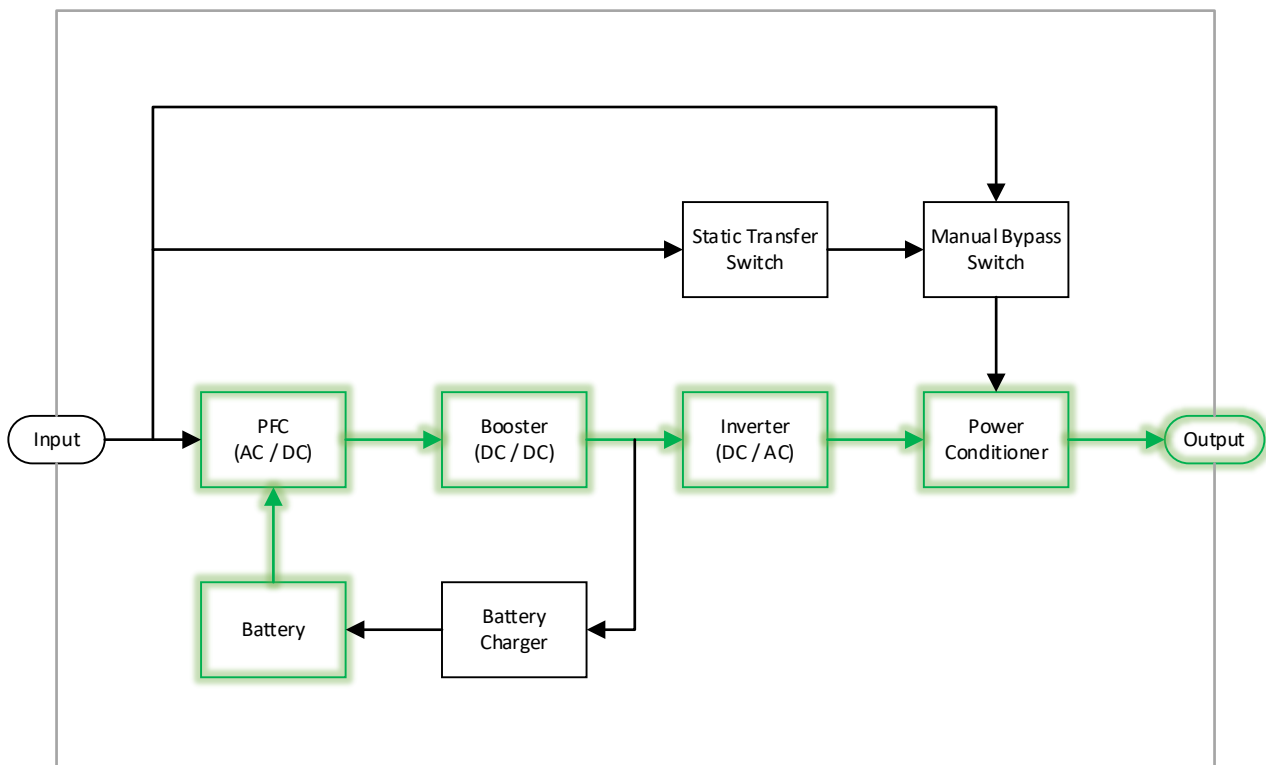
Figure 2-6: On-line mode



Battery Mode

When the AC main input power goes out of tolerance during On-line operation, the PFC (AC/DC) section of the UPS receives power from the battery to the Booster (DC/DC) section of the UPS. The Inverter and Power Conditioner sections continue to operate as described previously under the On-line Operation description. In this mode, the battery charger stops working as the battery is in discharge mode.

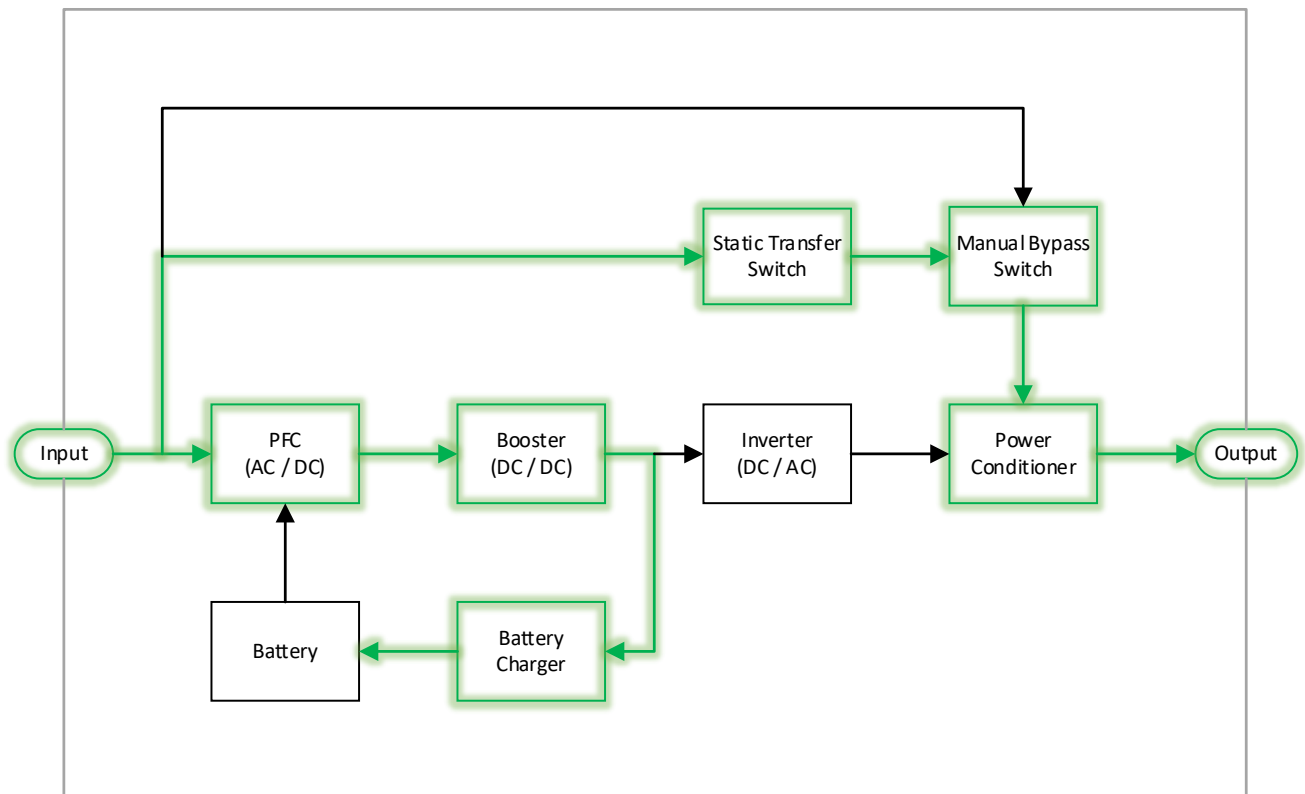
Figure 2-7: Battery Mode



Static Bypass Mode

During certain operational conditions such as extreme overload or a user-initiated selection, the UPS may switch to Static Bypass mode. Critical power is supplied to the Power Conditioner through an auxiliary bypass circuit. In this mode, the Power Conditioner continues to operate and perform its essential functions. The battery charger will remain active; however, the double conversion processes is effectively disabled and critical power at the output will be lost in the event of a utility power failure on the input side (i.e. there will be no battery backup).

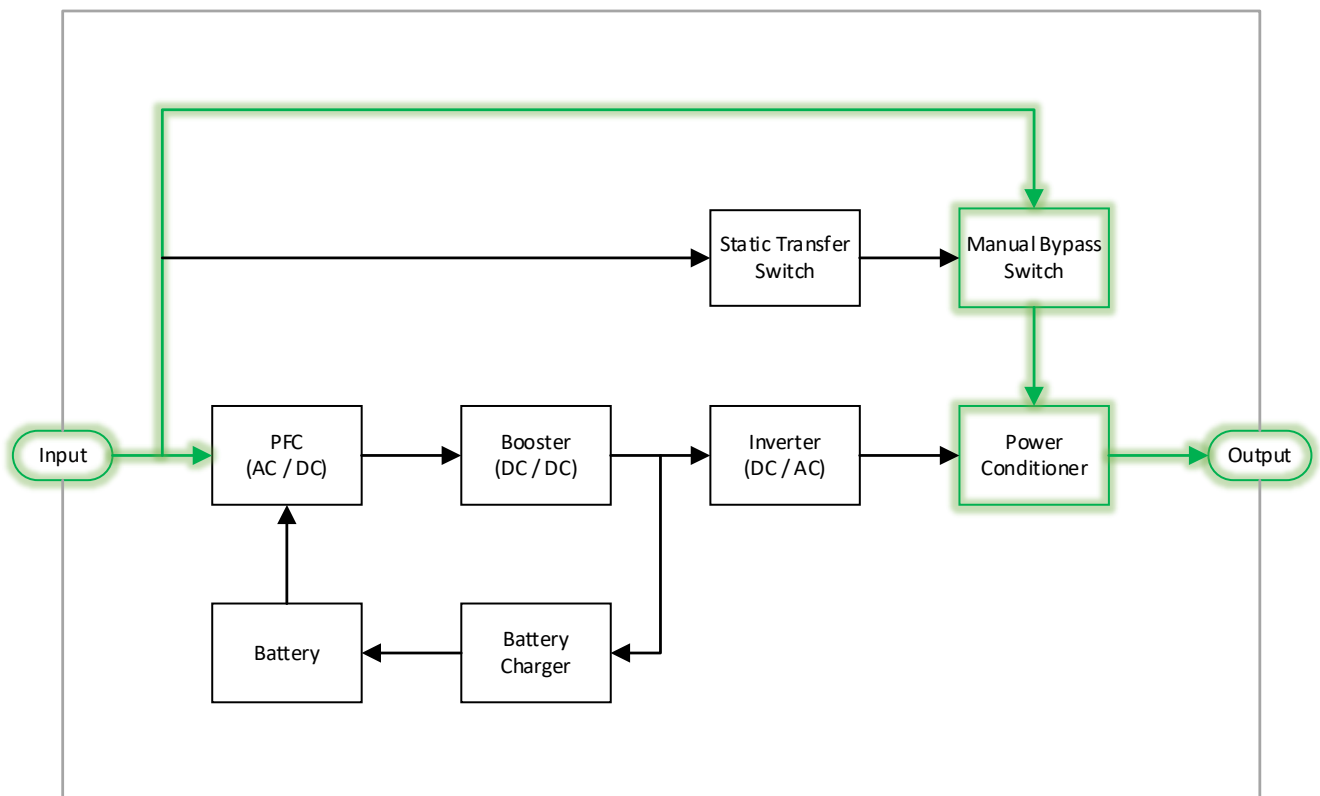
Figure 2-8: Static Bypass Mode



Manual Bypass Mode

Manual Bypass Operation is a mode of operation that allows much of the UPS electronics to be de-energized for service, while simultaneously providing critical power to the output through the Power Conditioner. In this mode, the PFC, Booster, Inverter, battery and battery charger are disabled. Additionally, since the double conversion processes is effectively disabled, critical power at the output will be lost in the event of a utility power failure on the input side of the UPS (i.e. there will be no battery backup).

Figure 2-9: Manual Bypass Mode



INSTALLATION

This section contains useful information on site preparation, unpacking, inspection, installation, and electrical connection of the UPS.

UNPACKING AND INSPECTION

2kVA - 10kVA

The UPS is shipped from NXT Power on a wood pallet with a wooden crate surrounding and protecting the UPS unit, as shown in figure 3-1.



CAUTION

When using a forklift to move the UPS, the end of the fork should extend beyond the crate to avoid tipping or dropping of the unit.

Figure 3-1: Appearance of packaging



The proper unpacking and inspection steps are as follows:

- Step 1 Inspect the exterior appearance of the packaging for shipping damage. Look for any signs of physical damage such as excessive force, water damage, heat damage. If any damage is found, take photographs, report it to the carrier, and file a shipping damage claim immediately.
- Step 2 Compare the packing list to the order. If there is any unexpected discrepancy, contact NXT Power Customer Service immediately at 877-NXT-POWR.
- Step 3 Check the contents of the shipment and compare it to the packing list to verify the receipt of all items. Immediately report any missing items to the carrier.
- Step 4 Transport the UPS to the installation site.

- Step 5 Remove any shipping straps from the outer crate.

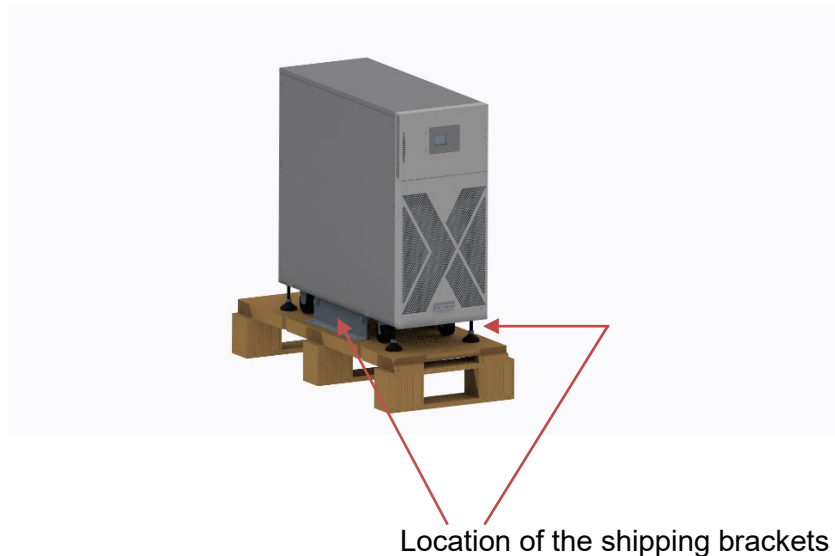


CAUTION

This step requires 2 people:

- Step 6 Detach the crate from the shipping pallet and carefully lift it from the unit. Locate and remove any ancillary materials, including the wood offloading ramp inside the crate. Retain all packaging materials until the UPS is installed in its final location and operational. The appearance of the UPS after unpacking is as shown in Figure 3-2.
- Step 7 Inspect the appearance of the UPS for shipping damage, if any shipping damage is found, take photographs of the product, report it to the carrier and file a shipping damage claim immediately.
- Step 8 Check if the types of accessories included with the UPS are complete and correct. If there is any discrepancy, take note and contact NXT Power Customer Service immediately.
- Step 9 If after inspection, you find the UPS is in good condition, remove the four 13 mm hexagonal bolts of each of the shipping brackets located at the base of the unit on each side, which are used to secure the UPS to the shipping pallet as shown in Figure 3-2.

Figure 3-2: Appearance of the unit after crate and packing material removal.



Location of the shipping brackets

- Step 10 Locate the wheel locks on each of the casters and move them to the unlocked (off) position.
- Step 11 Ensure the leveling jacks, located adjacent to the casters are fully raised before attempting to offload the UPS from the pallet.
- Step 12 Attach the ramp to the pallet using one of the shipping bolts. Ensure that the ramp is positioned with the guard rails up as shown in figure 3-3. Use the ramp to offload the UPS from the crate to the floor.

**CAUTION**

The UPS unit is heavy. Use extreme caution when removing unit from pallet.

This step requires 2 people for unloading.

Figure 3-3: Offloading ramp



Step 13 Move the UPS to the final installation location. Lock the wheels, lower and seat the leveling jacks to the floor to secure the unit in place as shown in Figure 3-4

**NOTE**

- For additional stability, use the shipping brackets to secure the unit to the building structure floor.
- Shipping brackets are not seismic rated. OSHPD rated brackets are available from NXT Power.

Figure 3-4: Appearance of the UPS in the installed position



INSTALLATION & SITE PREPARATION

The UPS should be installed on a flat surface capable of supporting the weight of the unit. The area should be climate-controlled per the unit environmental specifications shown in Appendix A. The area should also be free of foreign substances that could interfere with proper ventilation and operation of the unit. All installation clearances outlined in Table 3-1 must be observed.

Area	Front	Back	Top	Sides
Minimum Clearance	36 Inches	12 Inches	No Minimum	No Minimum

Table 3-1: Installation clearances

INPUT CIRCUIT WIRING AND BREAKER SELECTION (HARD WIRED UNITS ONLY)

For field wired units, the UPS input circuit should be protected by a properly rated 2 pole, non-GFCI circuit breaker or a fused disconnect switch provided by others. Only copper conductors are to be used for field wiring connections. The conductors should be rated at least 75°C or greater. Table 3-2 shows the recommended input protection and wire sizes for installations in North America. For international installations, please refer to the local and national electrical codes and standards.

MODEL	OUTPUT CAPACITY (VA)	RECOMMENDED BREAKER SIZE	MINIMUM WIRE SIZE	TORQUE (in-lbs)
NPTU2200-X	2200	20	#12	40
NPTU3200-X	3200	30	#10	40
NPTU4200-X	4200	40	#8	40
NPTU5200-X	5200	45	#8	40
NPTU6000-X	6000	45	#8	40
NPTU8200-X	8200	70	#4	40
NPTU10.0-X	10000	80	#4	40

Table 3-2: Recommended input circuit breaker and minimum wire sizes for each model UPS

ELECTRICAL CONNECTION

Before performing the electrical connection, ensure all circuit breakers of the UPS, the external mains upstream switch, and the external battery (if equipped) are all disconnected. For hard wired units, refer to the terminal block shown in Figure 3-4 for the location of the AC input and output connection points.

**DANGER**

- Verify all power is disconnected and locked out before attempting to make electrical connections to the UPS.
- Place and bundle input and output wires safely to ensure no one can step on or trip over them.

INPUT CONNECTIONS

For units equipped with input plug, the unit should be placed near the electrical receptacle and positioned for easy access for disconnecting the unit.

For hard wired units, the input wiring is landed on the terminal block labeled INPUT. The ground conductor can be attached at the terminal block or one of the two grounding lugs provided on the rear panel. See Figure 3-5.

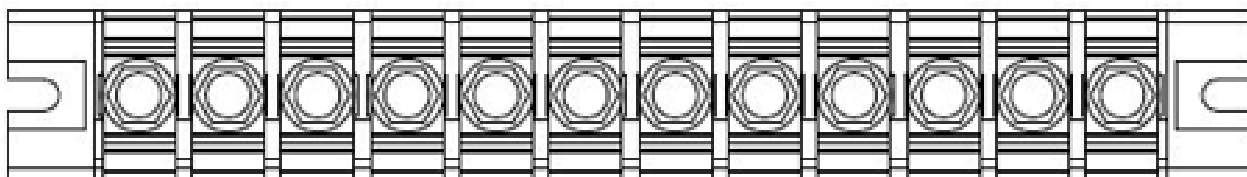
**NOTE**


- Use only copper wiring for making connections of the UPS.

OUTPUT CONNECTIONS

For hard wired units, the output wiring is landed on the terminal block labeled OUTPUT.

Figure 3-4: Terminal Block for input / output connections



OUTPUT				EPO		BYPASS SELECT				INPUT	
240V	208V	120V	0V	EPO1	EPO2	208V	SSO	240V		L1	L2/N

← 120V → | ← 120V →

← 208V (200V) →

← 240V (220V, 230V) →

North American Voltages: 120V / 208V / 240V

International Voltages: 200V / 220V / 230V

A means of disconnect and branch circuit protection, compliant with Local, State, and National Electric Code must be installed on the output of the UPS.

EXTERNAL BATTERY CONNECTIONS

NXT Power offers and optional extended run time battery cabinet(s) for the INTEGRITY MAX Series UPS. The interconnecting cables are provided by the factory when this option is included. Refer to Figure 3-5 for the location of the external battery connection. Refer to the Battery Cabinet Model NPB48-192 User Manual for all safety, installation, use, maintenance and storage information concerning extended batteries.

EPO CONNECTIONS

This UPS is equipped with Input and Battery circuit breakers that can be shunt tripped open in case of emergency, with the use of an external connected, dry contact rated at 240 VAC/3A. The EPO connection is landed on the terminal block labeled EPO.



CAUTION

- The EPO function only works when the UPS is supplying output power.

UNIT CONFIGURATION

Each unit is factory set to operate from a specific input voltage and to supply specific output voltages. Additionally, the unit is equipped with a bypass jumper that enables the UPS to supply correct output voltages while in Bypass Mode. The jumper must be in the right position for the nominal input voltage, otherwise the output voltages may be substantially different than expected when the UPS is in Bypass mode. Refer to Table 3-3 for details. If unit reconfiguration is necessary, please contact NXT POWER Technical Support for complete guidance.

Nominal Input Voltage (VAC)	Jumper Position
200	SSO to 208
208	SSO to 208
220	SSO to 240
230	SSO to 240
240	SSO to 240

Table 3-3: Bypass Jumper Position



DANGER



- Verify all power is disconnected and locked out before attempting to make any changes to the bypass jumper configuration.
- If a configuration different than the factory configuration is desired, contact NXT Power Technical Support for complete reconfiguration guidance.

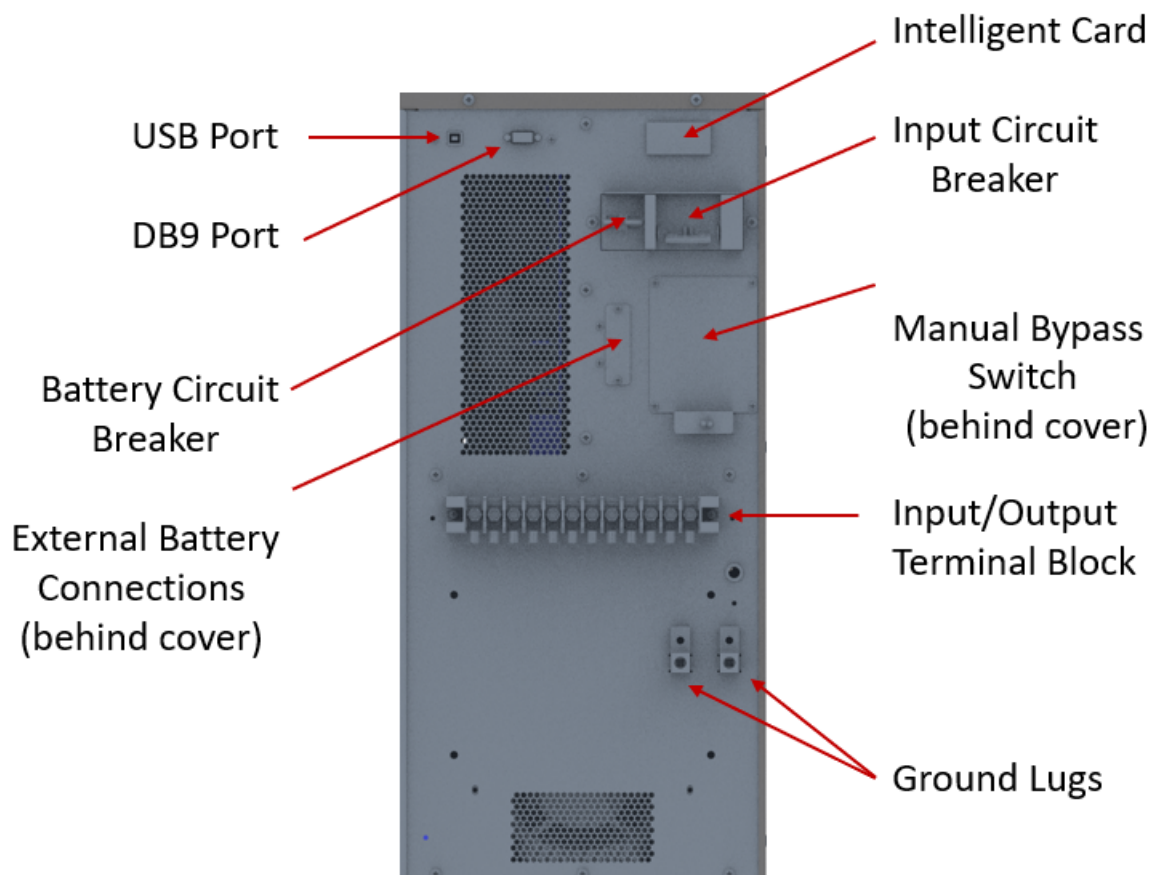
INPUT / OUTPUT PHASE RELATIONSHIP

When using an external maintenance bypass, it is necessary to maintain correct phasing between the output of the external bypass circuit and the UPS output. Table 3-4 below shows the phase relationship between the input and output terminals of the UPS.

Input Terminal Corresponding to Output Terminal	
Input Terminal	Output Terminal
L1	240V
L2/N	0V

Table 3-4

Figure 3-5: UPS back panel (without optional PDU installed)



OPERATION & MAINTENANCE

This section contains useful information on unit operation, user maintenance checks, and troubleshooting.

START-UP SEQUENCE (1ST TIME)

1. Verify all loads downstream from the UPS are disconnected.
2. Apply incoming power to the UPS (if not already on). This means plug in the UPS to a live outlet, or in the case of hard-wired units, make sure the upstream branch circuit breaker is turned on
3. Turn on the POWER (Input) circuit breaker on the back of the UPS.
4. Turn on the BATTERY circuit breaker on the back of the UPS.
5. The UPS will power on, switch to normal operation, and supply power to the output of the unit.
6. Connect intended loads to the UPS and turn them on as needed.

BYPASS OPERATION

1. See caution note below.
2. When the UPS is in On-line mode, press the OFF button. This will switch the UPS to Bypass mode. The UPS will remain in Bypass until the user puts it back to On-line mode or input power is lost.
3. Press the ON button on the panel for 1 second to restart the UPS.
4. Approximately 10 seconds later, the UPS will return to On-line mode.



CAUTION

When putting the unit in Bypass mode, if the supply voltage is out of range for the bypass circuit (Default = Nominal +/- 10%) or if the UPS bypass is disabled through settings, the output of the UPS will shut off.

SHUTDOWN OPERATION

If it is desired to shut down the UPS, the following procedure should be followed:

1. Turn off the connected load and keep the UPS running without load for five to exhaust residual heat.
2. Press the OFF button on the front panel to switch the UPS to bypass operation.
3. Switch off the BATTERY breaker, and POWER breaker on the back of the unit.

SYSTEM DISPLAY

The UPS display can show various system measurements, system icons, and system fault indications as described below. The display will go into sleep mode after a 60 second period of inactivity. To activate the back light, press the select button.

SYSTEM MEASUREMENTS

Measurement Display: The LCD can display various system operating values and indications. Refer to Section 1 for the description of these indicators. By repeatedly pressing the SELECT button, the following display values can be measured:

- Input voltage
- Input frequency
- Battery (input) voltage
- Internal temperature
- Output voltage
- Output frequency
- Percent (%) load

SYSTEM ICONS

Icon Display: The LCD can display various system icons that show the status of the UPS. Refer to Section 1 for the description of these icons.

SYSTEM FAULTS

Fault Display: The LCD can display various system faults that may occur during unit operation. Below is a description of these modes.

- BUS - DC Bus voltage out of tolerance
- TEM - IGBT temperature exceeded limits
- FAN - Fan blocked, fan damage
- BAT - Battery over-voltage protection, battery under-voltage protection
- OUT - Output overload protection, output short-circuit
- CHG - Charger over-temperature or charger short-circuit
- PWR - Internal power fault
- BYP - Bypass fault

Alarm Silence: Press and hold the ON button to silence the alarm. Note: Not all alarms may be silenced.

The corresponding fault status displayed in the LCD is as shown in System Fault Screens 1 & 2.

Figure 4-1: BUS Fault

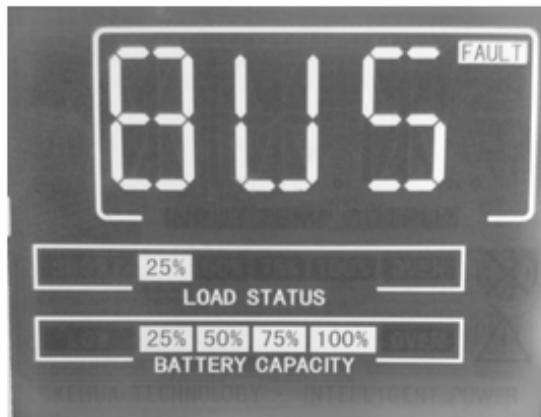


Figure 4-2: TEM Fault

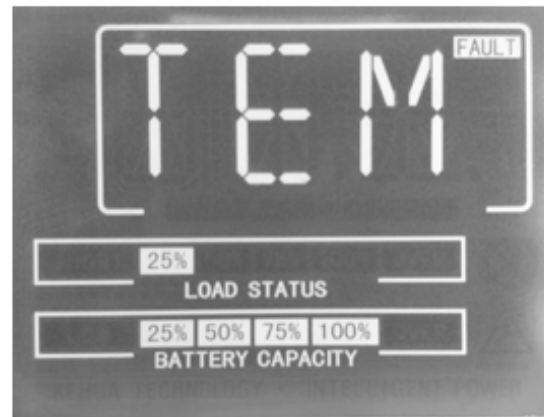


Figure 4-3: FAN Fault

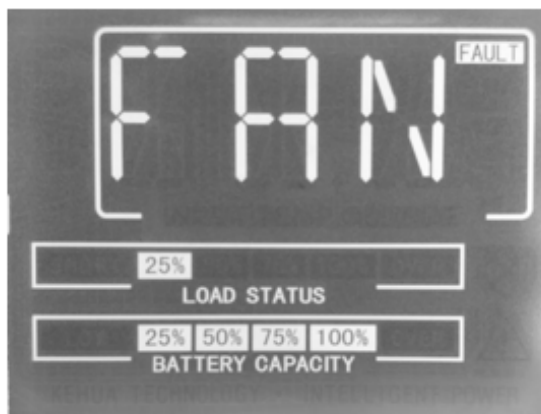
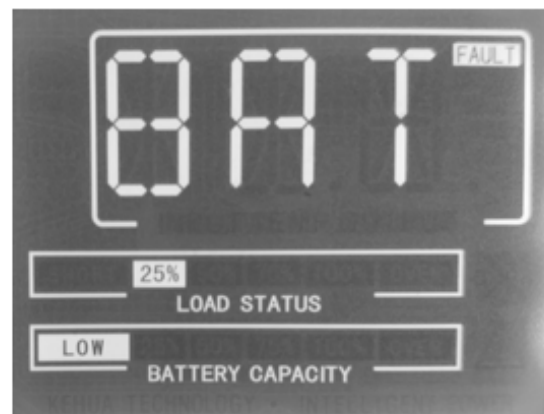


Figure 4-4: BAT Fault



System Fault Screens (1 of 2)

Figure 4-5: OUT Fault

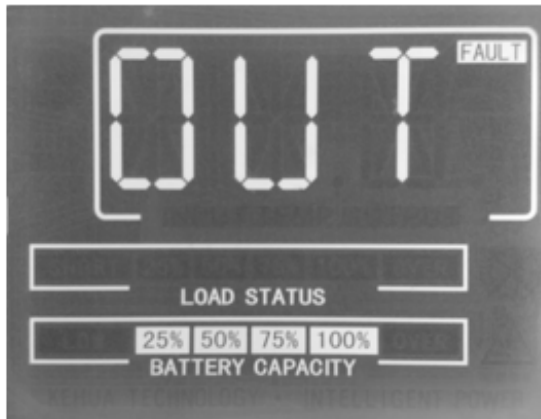


Figure 4-6: CHG Fault

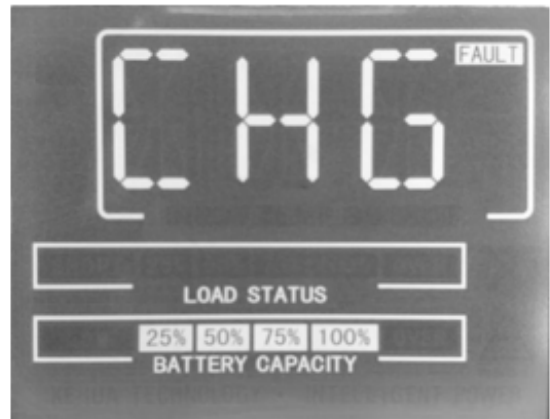


Figure 4-7: PWR Fault

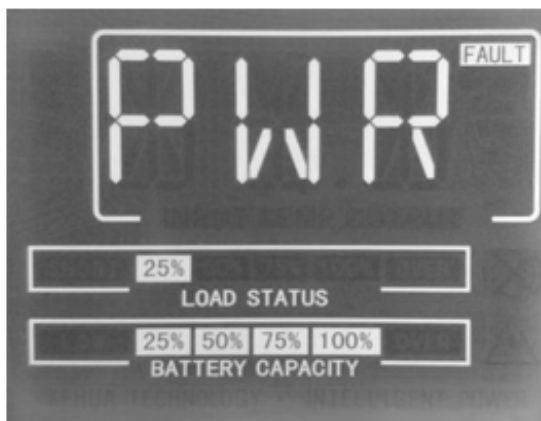
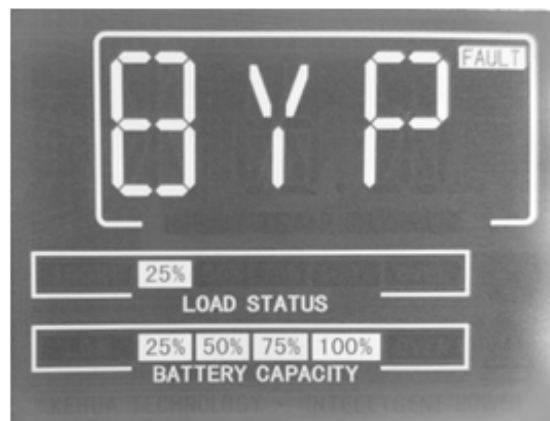


Figure 4-8: BYP Fault



System Fault Screens (2 of 2)

PERIODIC PREVENTATIVE MAINTENANCE

To maintain the performance, efficiency, and reliability of the UPS, perform the following maintenance regularly by the user.



CAUTION

Performing the following preventive maintenance steps will interfere with the normal operation of the UPS and may result in the loss of power on the output.

1. Check the operating values (input, battery, output) on the display and the working status of the UPS.
2. Check the working status of cooling fans. Ensure that air is being expelled from the unit.
3. Check the operating environment for excess dust, debris, heat, or humidity.
4. Perform the battery self-test function. Press and hold the ON button for 5 seconds to initiate the test.
5. Shut down the UPS and then clean the exterior using a dry cloth. Prevent and clear any obstruction to all air inlets and outlets. Do not use liquid or aerosol solutions of any type. Liquid entering in the unit may result in UPS failure.
6. For units equipped with plug and or receptacle panels, check to see that the line cord is in good shape and the plugs are firmly inserted into the receptacles. For hard wired units, see that the conduit is firmly secured and undamaged.

BATTERY MAINTENANCE TIPS

The working life of the battery is based on the environment temperature and the number of discharge cycles. Exposing the battery to a high-temperature environment for a long time or discharging the battery completely will reduce the working life.

- The battery charges under normal UPS operation. Allow a minimum of twenty-four (24) hours of charge time for the battery to attain full charge after prolonged storage or a discharge event. The discharging time will be less than the rated value for batteries that are not fully charged.
- Perform a battery self-test at least once per month. In a high-temperature environment, perform the battery discharge once every two months.
- If storing the UPS, be sure to comply with environmental specifications for storage. Recharge the battery for at least twenty-four (24) hours in intervals not to exceed three months while the unit is in storage.
- The working life of the battery is three to five years. For optimum performance and reliability, it is recommended that the batteries are replaced at three years. The battery replacement should be performed only by authorized personnel using batteries compliant with the agency listings for these units. Contact NXT Power for replacement batteries.

BATTERY REPLACEMENT

Please use only the battery type and model specified for this UPS. Using non-specified batteries may result in reduced performance and or catastrophic battery or equipment failure. Servicing of the batteries including battery replacement should be performed only by authorized and qualified personnel knowledgeable about the batteries and the required safety precautions. Additionally, batteries should only be replaced by persons factory trained in the procedures for replacing batteries. Untrained personnel should not attempt to replace the batteries in this unit. Batteries should be replaced only with the same number and type as factory specified.



CAUTION

The type of batteries used in this system contain electrolyte. Do not dispose of batteries in a fire as batteries may explode. Do not attempt to open or destroy batteries as released electrolyte is harmful to the skin and eyes. Batteries must be disposed of in accordance with local, state, and national regulatory requirements.



NOTE

- For battery replacement, extended warranties, service plans remedial and/or preventative maintenance performed by NXT authorized service, please contact NXT Power at 877-NXT-POWR.

MANUAL BYPASS MODE

The UPS is equipped with an internal manual bypass to supply power to the load during maintenance and battery replacement events. This switch is located on the rear panel and is beneath a cover plate. The cover plate must be removed to gain access to the switch. Please refer to the following steps to use the switch.

Normal Mode to Manual Bypass Mode:

1. Stop the inverter using the OFF button on the front panel.
2. Remove the cover from Manual Bypass Switch on the rear panel.
3. Rotate the switch from the UPS to the BYPASS position.
4. Turn off the POWER and BATTERY circuit breakers on the rear panel.

Manual Bypass Mode to Normal Mode

1. Turn on the POWER and BATTERY circuit breakers on the rear panel.
2. Rotate the switch from the Bypass to the UPS position.
3. Re-install the switch cover
4. Press the ON button on the front panel.



CAUTION



In the manual bypass mode, electricity remains present at the input terminals, output terminals, and the terminals on the filter board.

TROUBLESHOOTING

Fault Indication	Customer action
The UPS has input voltage; however, it can only start in battery operation mode.	1) Verify the input voltage amplitude and frequency on the display are within the allowable input range of UPS.
The UPS does not support the load when input power is lost, or the backup time is substantially shorter than expected.	1) The battery capacity is lost, and it needs to be replaced. Call for service at 877-NXT-POWR. 2) There is a problem with the battery terminals or associated wiring. Call for service at 877-NXT-POWR.
The output shuts off when the load is applied.	1) The UPS is severely overloaded, or there is a short circuit on the output. Investigate the load and reduce it to the proper capacity or find the cause of the short-circuit. 2) The proper load start-up sequence (highest power load to lowest power load) is not being followed. Restart the UPS and once it comes on-line, restart the load in sequence starting with the highest-power device first, and then moving successively to the lower power devices.
The audible alarm emits long beeps and the UPS operates in Bypass mode.	1) The output is overloaded beyond the rated capacity of the UPS. Reduce load or select a UPS with a larger power capacity. It is normal for the UPS to work in the bypass mode temporarily for load start-up impact, then recover automatically. 2) The UPS is in over-temperature protection mode. Check if the air inlet and air outlet of the UPS is blocked, or if the working temperature of the UPS is beyond the allowable range.
The display is not working with input power available and within range of specifications.	1) Possible major UPS fault. Call for service at 877-NXT-POWR.
The POWER and BATTERY circuit breakers automatically shut off and the display is off.	1) The EPO function has been activated. Check EPO circuit.

Table 4-1 shows general fault indications. Contact NXT Power for additional service support.

Fault Symbol		Alarm Status	Customer Action
Fault info. page (page up or page down by SELECT button)	BUS	Long beep	The DC bus voltage is out of tolerance. Call for service at 877-NXT-POWR.
	TMP	Long beep	The UPS has an internal over-temperature condition. Check for proper fan operation or blocked air vents.
	FAN	Rapid beep (Alarm once about every 0.2s)	There is a fan problem. Call for service at 877-NXT-POWR.
		Long beep	Fan fault protection is enabled. The Inverter is disabled. Call for service at 877-NXT-POWR.
	OUT	Long beep	Output fault: please check if the output is short-circuited, or the load is too large.
	BAT	Long beep	Battery fault: battery voltage is too low or too high. Check the DC voltage on the display. Call for service at 877-NXT-POWR.
	PWR	Long beep	Indicates an internal power circuit failure. Call for service at 877-NXT-POWR.
	CHG	Rapid beep (Alarm once about every 0.2s)	Charger PCB fault; or over-temperature protection possibly due to defective cooling fan, high ambient temperature, or excessive dust in the unit. Call for service at 877-NXT-POWR.
	BYP	Slow beep (Alarm once about every 2.0s)	In the On-line mode, bypass voltage or frequency is out of range for Bypass. Check input source.
All Load energy bars are flickering.		Rapid beep (Alarm once about every 0.2s)	Output overload alarm: the output is going to shut off. Reduce the load.
All Battery energy bars are flickering.		Slow beep (Alarm once about every 2.0s)	Battery voltage is too high, possibly due to Charger failure. Call for service at 877-NXT-POWR.
Battery energy bars are all off and the frame flickers.		Rapid beep (Alarm once about every 0.2s)	In Battery backup mode, the battery is nearly depleted. Protect your device and save your data.

Table 4-1: Fault Diagnostic Tables

**NOTE**

The above information describes common faults when there is a UPS failure. If it may be an internal component failure. Please contact NXT Power for service

PACKAGE, TRANSPORTATION & STORAGE

This section covers essential information on packaging, transporting, and storing your UPS unit safely and securely.

PACKAGING

The UPS is packed in a wood crate for shipping. If future storage or shipping is anticipated, retain these shipping materials. When packing, pay attention to the directional requirements for placement indicated on the carton. On one side of the carton, you will notice warning icons related to keeping the unit dry, handling with care, up direction for placing in the carton, and stacking layer limits. Please adhere to these warnings when packing your UPS unit for transport.

TRANSPORTATION

Avoid any jarring, shaking or severe impacts on the UPS unit during transportation. To avoid damaging your UPS, follow the placing directions on the carton. Do not place objects that may be flammable, explosive, or corrosive near the UPS while transporting. Do not put the UPS in an open-air warehouse when transporting or during shipment. Physical damage caused by the environment will void the warranty.

STORAGE

Store the UPS in accordance with product specifications and according to the placement and directional warnings and instructions on the carton. Please note that the gap is 20cm between the crate and ground, and the clearance should be at least 50cm from carton to wall, heat source, cold source, windows, or air inlet.

If the unit is stored in a warehouse, avoid exposure to toxic gasses, substances that are flammable, explosive, or corrosive. Also, avoid storage in an area of severe mechanical vibration as well as away from any strong magnetic fields.

Assuming these storage recommendations are followed, you can safely store the UPS for up to three months. If stored beyond three months is necessary, a battery recharge is required to maintain the battery state of charge.

Appendix A – General Specifications

Index \ Model		2.2 – 6 kVA	8.2 – 10 kVA
Input	Nominal Voltage	200 – 240 VAC	
	Nominal Frequency	50/60 Hz auto-detecting	
	Input wiring	Single-phase three wire	
	Nominal Battery Voltage	192 VDC	
Output	Nominal Voltage	120/208/220/230/240 (selectable)	
	Frequency (Hz)	50/60 Hz	
	Waveform	Sinewave	
	Voltage Distortion (THD)	≤1% (linear load); ≤5% (non-linear load)	
	Power factor	1.0 (0.9 for 6 & 10 kVA)	
	Transfer time (ms)	0	
	Overload	> 105% ≤130% for 10mins, > 130% ≤150% for 30s, >150%: 0.5s	
Mech.	Dimensions W×D×H Inches (mm)	11.8 x 29.1 x 28.4	
	Weight Lbs. (kg)	276 (125)	317 (144)
Other Features	Backup time	5 - 20 min (full load) 16 – 56 (half load)	1 - 2 min (full load) 6 – 8 min (half load)
	Charge recovery time	90% ≤ 8 Hours	
	Communication interface	RS232, SNMP	
	Display	LCD displays the running status of UPS.	
	Noise (dB)	55 dBA	
	Temperature °F (°C)	Operating: 32 to 104 °F (0 to 40 °C) Storage: 5 to 131 °F (-15 to 55 °C) Transit: 5 to 160 °F (-15 to 60 °C)	
	Relative humidity	5 - 95%, Non-Condensing	
	Altitude Feet (meters)	Operating: 6,561 (2,000) Transit: 39,370 (12,000)	

Specifications are subject to change without prior notice.

Appendix A – Acronyms & Technical Terms

Acronym & Technical Terms	What it means
AC	Alternating Current
Booster	DC/DC Conversion Process
DC	Direct Current
EPO	Emergency Power Off
Inverter	DC/AC Conversion Process
LCD	Liquid Crystal Display
Nominal	Standard value, as opposed to actual value
PFC Converter	AC/DC Conversion Process
RS232	Recommended Standard 232 — governs serial communication transmission of data
SNMP	Simple Network Management Protocol
Static Transfer Switch	Fast Acting Electronic Switch employed to bypass power around the PFC & Inverter sections of the UPS
UPS	Uninterruptible Power Supply



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Access additional product and support information via our website
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