OWNER'S OPERATING MANUAL

FN Series™ UPS Plus®

Parallel or N+1 Redundant 3kVA to 40kVA

Hardwire Models

Uninterruptible Power Supply Models:

FN3K-2TXI
FN4K-2TXI
FN5K-2TXI
FN6K-2TXI
FN8K-2TXI
FN10K-2TXI

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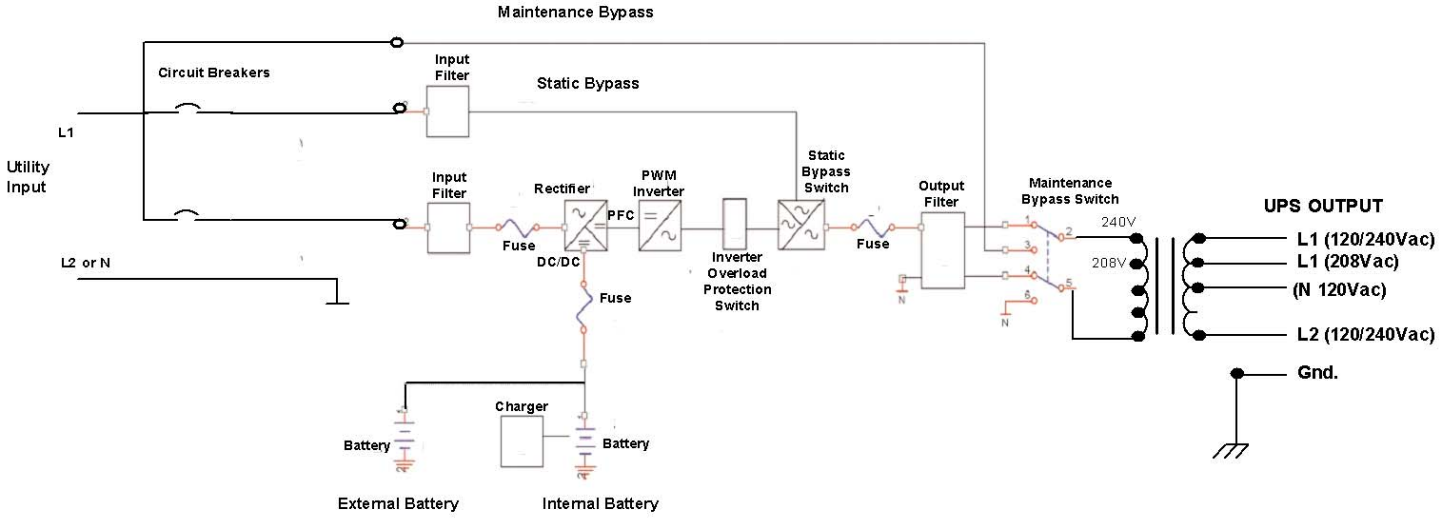
FN Series™ Parallelable and N+1 Redundant UPS Features

- Parallel Mode and N+1 Redundant Mode Operation
- True Double Conversion On-line Sinewave Design
- Output Galvanic Isolation
- LCD Display with Advanced Monitoring
- Remote Emergency Power Off (REPO)
- Input Power Factor Correction
- Wide Input Voltage Window
- Precision Output Voltage Regulation
- Superior Brownout, Surge and Transient Protection
- Frequency Converter Operation
- User-Replaceable and Hot-Swappable Battery Pack
- Optional Extended Battery Banks & Chargers
- RS-232, USB & Optional SNMP/HTTP Communications
- UPSilon UPS Monitoring & Management Software
- Two-Year Warranty

FN -2TXI Model Double Conversion On-line UPS Block Diagram



SAVE THESE INSTRUCTIONS

This manual contains important instructions which must be followed during the installation, operation and maintenance of the UPS and batteries. Please read all instructions before operating this equipment and save this manual for future reference.

All of the models presented herein are intended for installation in a controlled environment.

This UPS operates from utility power and contains a number of high current back-up batteries; this information is important to all personnel involved. Please read this manual first before continuing to unpack, install or operate this UPS.

STORAGE AND TRANSPORTATION

This UPS must be handled with care and given special attention due to the high amount of energy stored within its internal sealed, lead acid batteries. Please retain the UPS shipping container in the event the UPS needs to be returned for service. It has been designed to ship the UPS safely, without shipping damage.

INSTALLATION

This UPS must be installed in a clean environment, free from moisture, flammable gases or fumes and corrosive substances. **This UPS is for use in a protected environment with an ambient temperature range from 32ºF to a maximum of +104ºF (0ºC to +40ºC).**

This UPS is designed for use with industrial, scientific or data processing class equipment.

⚠ WARNING

NEVER USE THIS UPS TO POWER LIFE SUPPORT EQUIPMENT OR ANY EQUIPMENT USED FOR "LIFE CRITICAL" APPLICATIONS.

The maximum UPS output load (in watts) must never exceed that shown on the UPS rating label. NEVER CONNECT equipment that could overload the UPS or demand half-wave rectification from the UPS, for example: electric drills, vacuum cleaners or hair dryers.

Storing magnetic media on top of the UPS may result in data loss or corruption.

⚠ WARNING

This UPS should be installed according to the instructions in this manual. Failure to do so could result in unsafe operation and could invalidate your warranty.

⚠ WARNING

Once batteries have reached the end of their life, ensure they are disposed of properly.
PLEASE REFER TO YOUR LOCAL LAWS AND REGULATIONS FOR BATTERY RECYCLING REQUIREMENTS. NEVER DISPOSE OF BATTERIES IN A LAND FILL.

Do not dispose of battery pack or batteries in a fire. The battery may explode. Do not open or mutilate the battery pack. Released electrolyte is harmful to skin and eyes. It may be toxic.

⚠ WARNING

A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:

* Remove watches, rings, and other metal objects.
* Use tools with insulated handles.

1.0 INTRODUCTION

Manual Overview

This user manual has been written to provide basic information about Falcon FN Series -2TXI models. The FN Series is a rugged, double conversion, "on-line" UPS. It has galvanic output isolation configured for a split-phase (3 wire plus ground) 120/240Vac output. The FN Series provides continuous power conditioning and accepts a wide range input voltage, while providing tight output voltage regulation, with a true sinewave output. The FN Series UPS is specifically designed to protect sensitive computers and equipment against the widest range of power problems. These problems include power failures, voltage sags, voltage surges, brownouts, utility line noise, high voltage spikes, frequency variations, common mode noise, switching transients, and harmonic distortion.

This manual also details unpacking, unit installation and the major features of the FN Series UPS, in addition to detailed UPS operation, configuration and troubleshooting information.

The specifications section at the end of this manual provides detailed operating parameters and general information on approvals and certifications.

FN UPS Overview

The Falcon FN Series UPS is designed to be easily installed in a floor standing configuration.

The FN Series front panel features a graphical LCD display, providing detailed operational information at a glance. The display enables the user or field service engineer to easily monitor and troubleshoot localized power problems, in addition to UPS operation. UPS control and programming are easily accessed using push buttons located adjacent to the LCD display.

All FN -2TXI model rear panels have the following features and functions:

a. Two input Circuit Breakers. Bypass and UPS input circuit breakers are provided as supplemental protection devices. The UPS circuit breaker acts as the main on/off switchs for the UPS. It may be turned off to simulate a utility power loss or for performing battery runtime testing. The UPS can be completely shutdown when both the UPS and bypass circuit breakers are turned off, and the "Off" push button is depressed.

b. Single-phase 208-240Vac, 2 wire plus ground, hardwire input on a common terminal block.

c. Split-phase 120/240Vac, 3 wire plus ground, hardwire output on a common terminal block.

d. RS-232 Port - This port may be used to provide communications between the UPS and a network server or other computer system. When used in conjunction with the supplied UPSilon software, remote UPS monitoring and control are facilitated. The software will automatically save all open computer files and initiate an unattended, orderly operating system shutdown in the event of a utility power outage. UPSilon supports most MS Windows and Linux operating systems. An optional UNIX version is available through Falcon at an additional cost.

e. Two Communications Option Board Expansion Slots - The slots support the installation of an optional SNMP/HTTP Agent or contact closure interface boards. The SNMP/HTTP Agent board is a TCP-IP addressable solution to remote UPS monitoring and management via LAN, WAN or the Internet. The agent board is supplied with client software that will remotely shut down multiple servers or computers through the Ethernet LAN. A CD containing software clients and a SNMP MIB II compliant MIB is provided that supports most popular operations systems.

f. Two RJ45 connectors for connection of UPS parallel operation or remote maintenance bypass interface cables. Used when (2) or more FN -2TXI units are connected in parallel.

WARNING: Only FN models of identical power ratings may be connected in parallel. For example, a FN3K-2TXI may only be connected in parallel with another FN3K-2TXI unit. The FN5K-2TXI may only be connected in parallel with another FN5K-2TXI. The same is true for the FN6K-2TXI model.

g. One Local Maintenance Bypass Switch. The switch provides a manual means of placing the UPS into bypass mode to allow for minor servicing to be performed on the UPS.

2.0 FN UPS CIRCUIT DESCRIPTIONS

Galvanically Isolated Output

The FN -2TXI models provide a galvanically isolated, 120/240Vac, hardwire output. To meet UL and code requirements, a dedicated electrical panel should be provided by your electrical contractor or electrician. The FN -2TXI output configuration gives the required split-phase output necessary to hardwire the UPS to most standard 3 wire plus ground type electrical panels. This both allows for the use of readily available branch rated circuit breakers and simplifies the distribution to 240Vac and 120Vac loads. The outputs of up to four FN -2TXI units may be connected in parallel. Please refer to pages 12-13 of this manual for wiring details.

Additionally, the FN galvanic output isolation in conjunction with a derived neutral greatly reduces common mode noise and ground loops.

Input & Power Factor Correction

All FN -2TXI models require a 2 wire plus ground type 208-240Vac at 50 or 60Hz. Each FN -2TXI unit input must be connected to a dedicated circuit having a branch rated circuit breaker. If multiple FN units are to be connected in parallel, care must be taken to verify the source electrical panel has enough capacity. It must be rated to supply the total power requirements of the FN Series units, all optional extended battery chargers, and any other circuits that may be connected to the panel. Please have your electrical contractor review the FN datasheet located at the end of this manual and perform a site survey several weeks in advance of the installation date.

While the FN Series UPS is operating from the utility power, the power factor correction circuit converts utility AC power into regulated DC power for inverter use. The circuit corrects the input current to maintain a sine waveform to minimize the amount of current distortion that will be reflected back to the utility.

DC/DC Converter

The DC/DC converter utilizes energy from the batteries and boosts up the DC voltage to a level required by the inverter. This allows the inverter to operate continuously at optimum efficiency and voltage. The converter incorporates a patented circuit which reduces the amount of ripple current and EMI interference to the battery, increasing the overall battery life.

DC/AC Inverter

In utility mode operation, the inverter utilizes the regulated DC output and converts it back into clean, regulated sinewave AC power. When utility power fails, the inverter will receive its energy from the battery through the DC/DC converter. In both modes of operation, the UPS inverter is online and continuously generates clean, regulated AC output power to the load. The IGBT, PWM inverter is of a very robust design and produces a pure sinewave output with a +/-2% voltage regulation. Having a very low output impedance, it can supply the high current demands of high inrush and non-linear loads.

Battery Packs

FN -2TXI models utilize flame retardant batteries packaged in (5) user-replaceable, hot-swappable packs that are accessible by removing the UPS lower front panel. There are (4) 12V, 7AH valve-regulated, sealed lead acid (VRLA) batteries in each pack (Yuasa NP7-12). See replacement instructions on page 38.

To maintain the optimum battery life, the UPS should be installed in an environment with an ambient temperature of 68ºF to 77ºF (20ºC to 25ºC). Due to the battery manufacturer specification, the FN Series UPS batteries may be operated at 32ºF to 104ºF (0ºC - 40ºC), but battery life will be substantially reduced if continuously operated at the higher temperature levels. Optional extended battery banks and charger modules are available through Falcon to extend the amount of battery runtime.

Internal Battery Charger

The internal UPS battery charger utilizes energy from the utility power to continuously charge the UPS batteries. The charger operates in "constant power" mode. The UPS batteries are being charged whenever the UPS is plugged in, turned on and operating from utility power. The internal UPS battery charger output is rated at 1.9 amps.

Static Bypass Function

NOTE: Bypass power will only be available If the bypass input is connected at the time of UPS installation.

A manual static bypass pushbutton is located on the FN front control panel. When the UPS is operating from utility in the normal utility mode on-line state, depressing this button will cause the UPS to transfer to bypass. Depressing the bypass button again will return the UPS to normal inverter operation.

Automatic Bypass Transfers

NOTE: Bypass power will only be available if the bypass input is connected at the time of UPS installation.

The FN Series UPS will automatically switch to bypass mode under the following conditions: To energize the connected load when the UPS is first turned on; encounters an overload; encounters an over temperature condition; or upon a UPS failure condition. Should any of these events occur, the UPS will transfer to bypass mode, sound an audible alarm and provide a "BPS" indication on the LCD display.

Output Filter

As with the input filter stage, the output filter maintains conducted (EMC) and RFI levels below FCC Class A limits.

3.0 UNPACKING THE UPS AND BATTERY BANK

Due to their size and weight, FN -2TXI model UPS units and optional battery banks are shipped secured to shipping pallets. Removal of the UPS and battery bank should never be attempted by one person.

Upon unpacking the UPS or battery bank, verify the following items were shipped. Should you have not received any of the items listed below, please contact Falcon Electric Customer Service at 1-800-842-6940.

FN -2TXI UPS Models
Shipping pallet contents:

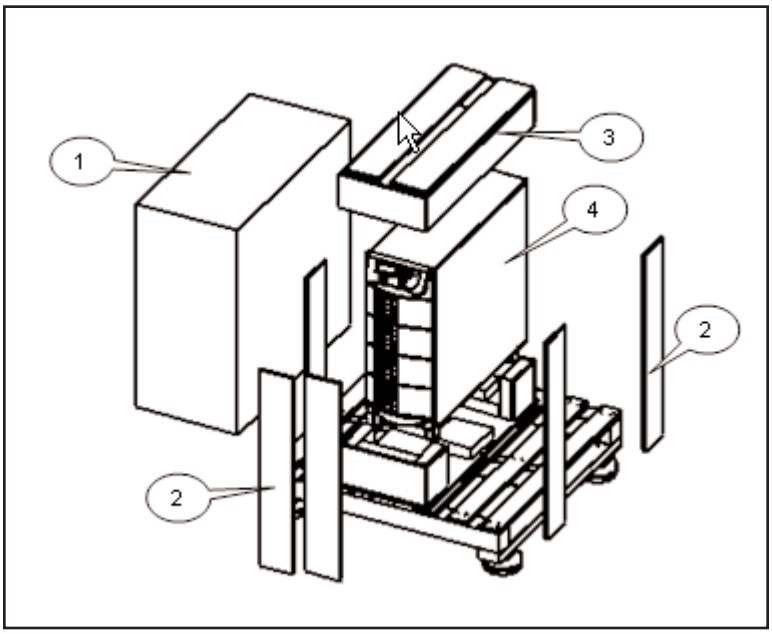
(1) FN -2TXI UPS (verify the exact model shipped)
(1) RS-232 Cable
(1) UPSilon Software CD
(1) Software Interface Cable
(1) Owner's Manual

FNB1S7-6K6 Extended Battery Bank
Shipping pallet contents:

(1) FN Extended Battery Bank
(1) Interface Cable
(1) Installation Kit

NOTE: If multiple FN UPS units were received for connection in parallel, please verify that one parallel interface cable kit has been received for each FN unit received.

Unpacking Details



3.1 Unpacking Instructions

1. Cut the bands securing the protective carton and lift it off of the UPS or battery bank.
2. Remove the (8) upright boards from the upper and lower crate assemblies.
3. Remove the upper crate piece off of the top of the UPS or battery bank.
4. Using a fork lift position the forks under the UPS or battery bank and lift it out of the lower shipping cradle.

Note: The UPS or extended battery bank weighs over 300 pounds. It is not recommended that you attempt to lift and remove them from the shipping pallet without the proper equipment.

4.0 PRE-INSTALLATION DETAILS

Falcon Electric, Inc. is not responsible for shipping damage or for filing shipping damage claims. Visually inspect the UPS for freight damage. If any equipment has been damaged during shipment, retain the shipping pallet and packing materials for inspection by the carrier, and immediately file a claim for “shipping damage” with the carrier. If you discover damage after acceptance, file a claim for “concealed damage”.

To file a claim for shipping damage or concealed damage:

a. YOU MUST file with the carrier within 15 days of receipt of the equipment;
b. YOU MUST send a copy of the damage claim within 15 days to Falcon Electric, Inc.

⚠ WARNING

The UPS and Battery Module are very heavy. Use the proper lifting equipment and take the proper precautions when lifting or moving them.

1. Install the UPS indoors in a controlled environment.
2. Place the UPS in an area with unrestricted airflow around the unit, away from water, flammable liquids, gases, corrosive, and conductive contaminants.
3. Maintain a minimum clearance of 12 inches in the front and rear of the UPS.
4. Maintain an ambient temperature range of 32ºF to 104ºF (0ºC to 40ºC). To assure the maximum life of the batteries, UPS operation in an ambient temperature of 68ºF to 77ºF (20ºC to 25ºC) is recommended.

OPERATION IN TEMPERATURES ABOVE 77ºF (25ºC) WILL REDUCE BATTERY LIFE.

5. The FN Series UPS and optional extended battery banks must be installed in an upright position on a flat surface. After installation, all (4) UPS caster locks must be depressed and set to the locking position.
6. When selecting a suitable location for the UPS and extended battery bank(s) always verify:

4.1 Floor Loading Requirements

a. THE FLOOR OR SUPPORTING SURFACE IS RATED TO SUPPORT THE WEIGHT OF THE UPS AND ALL EXTENDED BATTERY BANKS TO BE CONNECTED.

UPS with internal batteries:

(1) FN3K-2TXI or FN4K-2TXI or FN5K-2TXI or FN6K-2TXI = 286.6 lbs. (130 kg), 8 & 10kVA 328 lbs. (148.7)
(2) FN3K-2TXI or FN4K-2TXI or FN5K-2TXI or FN6K-2TXI = 573 lbs. (260 kg), 8& 10kVA 657 lbs. (298)
(3) FN3K-2TXI or FN4K-2TXI or FN5K-2TXI or FN6K-2TXI = 859.8 lbs. (390 kg), 8 & 10kVA 985.5 lbs.(447)
(4) FN3K-2TXI or FN4K-2TXI or FN5K-2TXI or FN6K-2TXI = 1146 lbs. (520 kg), 8 & 10kVA 1314 lbs. (596)

Extended Battery Banks (for all FN -2TXI models)

(1) FNB-1S7 or FNB-1S9 = 180 lbs. (81.7 kg)
(2) = 360 lbs. (163.3 kg) -
(3) = 540 lbs. (245 kg)
(4) = 729 lbs. (327 kg)

(1) FNB-2S7 or FNB-2S9 = 290 lbs. (131.6 kg)
(2) = 580 lbs. (263.1 kg)
(3) = 870 lbs. (394.7 kg)
(4) = 1,160 lbs. (526.2 kg)

(1) FNB-3S7 or FNB-3S9 = 400 lbs. (181.5 kg)
(2) = 800 lbs. (362.9 kg)
(3) = 1,200 lbs. (545 kg)
(4) = 1,600 lbs. (726 kg)

4.2 UPS Input Requirements

CAUTION - To reduce the risk of fire, connect the UPS input to a circuit provided with branch rated circuit breaker protection per the following table, in accordance with the National Electrical Code and ANSI/NFPA 70 requirements

a. VERIFY THE PROPER UPS INPUT POWER IS AVAILABLE (for each UPS installed)

FN3K-2TXI	**Input**	**--**	**Hardwire, 208-240Vac, 50/60Hz, 20A, single-phase, 2 wire plus ground Branch Rated Circuit Breaker Rating = 20A Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.**
FN4K-2TXI	**Input**	**--**	**Hardwire, 208-240Vac, 50/60Hz, 30A, single-phase, 2 wire plus ground Branch Rated Circuit Breaker Rating = 30A Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.**
FN5K-2TXI	**Input**	**--**	**Hardwire, 208-240Vac, 50/60Hz, 40A, single-phase, 2 wire plus ground Branch Rated Circuit Breaker Rating = 40A Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.**
FN6K-2TXI	**Input**	**--**	**Hardwire, 208-240Vac, 50/60Hz, 40A, single-phase, 2 wire plus ground Branch Rated Circuit Breaker Rating = 40A Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.**
FN8K-2TXI	**Input**	**--**	**Hardwire, 208-240Vac, 50/60Hz, 50A, single-phase, 2 wire plus ground Branch Rated Circuit Breaker Rating = 50A Use only #8 AWG, 75C copper wire and torque terminal block screws to 23 in-lb.**
FN10K-2TXI	**Input**	**--**	**Hardwire, 208-240Vac, 50/60Hz, 65A, single-phase, 2 wire plus ground Branch Rated Circuit Breaker Rating = 65A Use only #6 AWG, 75C copper wire and torque terminal block screws to 23 in-lb.**

Alternate Input Connection Method:

As an alternate method to your electrician having to hardwire the FN Series UPS units, an optional input pigtail cable with an L6-30P plug on one end is available. The cable may be connected to the input terminals of the hardwire terminal block, located behind a cover panel on the UPS rear panel. Three meters is the maximum pigtail length allowed for a hardwire device per the National Electrical Code (NEC).

4.3 UPS Output Requirements

CAUTION - An output disconnect circuit breaker must be provided. To reduce the risk of fire, connect on to a circuit provided with branch rated circuit breaker over-current protection. Please refer to the table below for the specific branch rated circuit breaker amperage rating.

FN3K-2TXI		
Output No.	Output Rating	Ratings of output branch circuit over current protection
No.1 (Output2 0V L1- Output2 120V L2)	3 KVA, 120 V.	20
No.2 (Output1 0V L1- Output1 120V L2(N))	3 KVA, 120 V.	20
No.3 (Output1 0V L1- Output2 88V L2)	6 KVA, 208 V.	20
No.4 (Output1 0V L1- Output2 120V L2)	6 KVA, 240 V.	20

FN4K-2TXI		
Output No.	Output Rating	Ratings of output branch circuit over current protection
No.1 (Output2 0V L1- Output2 120V L2)	3 KVA, 120 V.	25
No.2 (Output1 0V L1- Output1 120V L2(N))	3 KVA, 120 V.	25
No.3 (Output1 0V L1- Output2 88V L2)	6 KVA, 208 V.	25
No.4 (Output1 0V L1- Output2 120V L2)	6 KVA, 240 V.	25

FN5K-2TXI		
Output No.	Output Rating	Ratings of output branch circuit over current protection
No.1 (Output2 0V L1- Output2 120V L2)	3 KVA, 120 V.	30
No.2 (Output1 0V L1- Output1 120V L2(N))	3 KVA, 120 V.	30
No.3 (Output1 0V L1- Output2 88V L2)	6 KVA, 208 V.	30
No.4 (Output1 0V L1- Output2 120V L2)	6 KVA, 240 V.	30

FN6K-2TXI		
Output No.	Output Rating	Ratings of output branch circuit over current protection
No.1 (Output2 0V L1- Output2 120V L2)	3 KVA, 120 V.	30
No.2 (Output1 0V L1- Output1 120V L2(N))	3 KVA, 120 V.	30
No.3 (Output1 0V L1- Output2 88V L2)	6 KVA, 208 V.	30
No.4 (Output1 0V L1- Output2 120V L2)	6 KVA, 240 V.	30

FN8K-2TXI		
Output No.	Output rating	Ratings of output branch circuit over current protection
No.1 (Output2 0V L1- Output2 120V L2)	4 KVA, 120 V.	40
No.2 (Output1 0V L1- Output1 120V L2(N))	4 KVA, 120 V.	40
No.3 (Output1 0V L1- Output2 88V L2)	8 KVA, 208 V.	40
No.4 (Output1 0V L1- Output2 120V L2)	8 KVA, 240 V.	40

FN10K-2TXI		
Output No.	Output rating	Ratings of output branch circuit overcurrent protection
No.1 (Output2 0V L1- Output2 120V L2)	4 KVA, 120 V.	40
No.2 (Output1 0V L1- Output1 120V L2(N))	4 KVA, 120 V.	40
No.3 (Output1 0V L1- Output2 88V L2)	8 KVA, 208 V.	40
No.4 (Output1 0V L1- Output2 120V L2)	8 KVA, 240 V.	40

4.4 UPS Output Ratings

WARNING: If the (50 or 60Hz) constant frequency mode is enabled, the UPS output(s) must be derated by 25%. Please refer to the fixed frequency output mode ratings for your model in the specifications located at the end of this manual.

FN3K-2TXI:

Output Marking: No.1 (Output2 0V L1- Output2 120V L2): 1.5KVA, 120 V.
No.2 (Output1 0V L1- Output1 120V L2(N)): 1.5KVA, 120 V.
No.3 (Output1 0V L1- Output2 88V L2): 3KVA, 208 V
No.4 (Output1 0V L1- Output2 120V L2): 3KVA, 240 V.
Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.

FN4K-2TXI:

Output Marking: No.1 (Output2 0V L1- Output2 120V L2): 2KVA, 120 V.
No.2 (Output1 0V L1- Output1 120V L2(N)): 2KVA, 120 V.
No.3 (Output1 0V L1- Output2 88V L2): 4KVA, 208 V
No.4 (Output1 0V L1- Output2 120V L2): 4KVA, 240 V.
Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.

FN5K-2TXI:

Output Marking: No.1 (Output2 0V L1- Output2 120V L2): 2.5KVA, 120 V.
No.2 (Output1 0V L1- Output1 120V L2(N)): 2.5KVA, 120 V.
No.3 (Output1 0V L1- Output2 88V L2): 5KVA, 208 V
No.4 (Output1 0V L1- Output2 120V L2): 5KVA, 240 V.
Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.

FN6K-2TXI:

Output Marking: No.1 (Output2 0V L1- Output2 120V L2): 3KVA, 120 V.
No.2 (Output1 0V L1- Output1 120V L2(N)): 3KVA, 120 V.
No.3 (Output1 0V L1- Output2 88V L2): 6KVA, 208 V
No.4 (Output1 0V L1- Output2 120V L2): 6KVA, 240 V.
Use only #10 AWG, 75C copper wire and torque terminal block screws to 17.7 in-lb.

FN8K-2TXI:

Output Marking: No.1 (Output2 0V L1- Output2 120V L2): 4KVA, 120 V.
No.2 (Output1 0V L1- Output1 120V L2(N)): 4KVA, 120 V.
No.3 (Output1 0V L1- Output2 88V L2): 8KVA, 208 V
No.4 (Output1 0V L1- Output2 120V L2): 8KVA, 240 V.
Use only #8 AWG, 75C copper wire and torque terminal block screws to 23 in-lb.

FN10K-2TXI:

Output Marking: No.1 (Output2 0V L1- Output2 120V L2): 5KVA, 120 V.
No.2 (Output1 0V L1- Output1 120V L2(N)): 5KVA, 120 V.
No.3 (Output1 0V L1- Output2 88V L2): 10KVA, 208 V.
No.4 (Output1 0V L1- Output2 120V L2): 10KVA, 240 V.
Use only #6 AWG, 75C copper wire and torque terminal block screws to 23 in-lb.

Alternate Output Connection Method:

As an alternate method to your electrician having to hardwire the FN Series UPS units, an optional output pigtail cable with an L6-30R receptacle on one end is available. The cable may be connected to the input terminals of the hardwire terminal block, located behind a cover panel on the UPS rear panel. Three meters is the maximum pigtail length allowed for a hardwire device per the National Electrical Code (NEC).

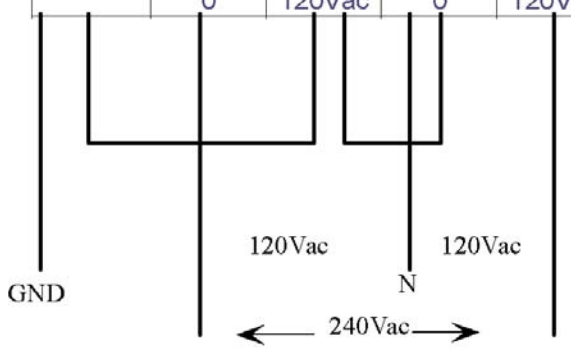
4.5 Hardwire Terminal Block Wiring Details

FN -2TXI Models Hardwire Terminal Designations

1	2	3	4	5	6	7	8	9	10
Output	Output 1	Output 1	Output 2	Output 2A	Output 2B	Input	Input	Input	Not Used
Ground	L2	L1	L2	L1	L1	Ground	L2 (N)	L1	
	0	120Vac	0	120Vac	88Vac		208-240Vac		

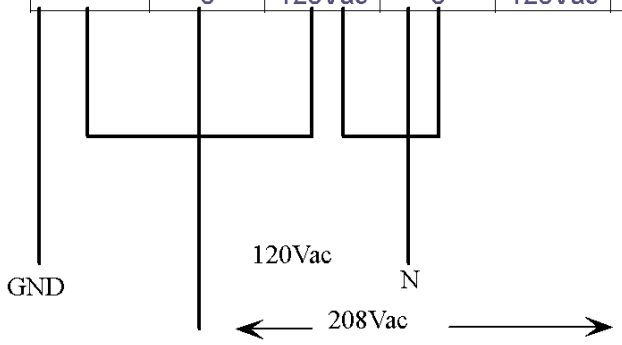
Wiring Detail for a 120/240Vac Split-Phase Output

1	2	3	4	5	6	7	8	9	10
Output	Output 1	Output 1	Output 2	Output 2A	Output 2B	Input	Input	Input	Not Used
Ground	L2	L1	L2	L1	L1	Ground	L2 (N)	L1	
	0	120Vac	0	120Vac	88Vac		208-240Vac		



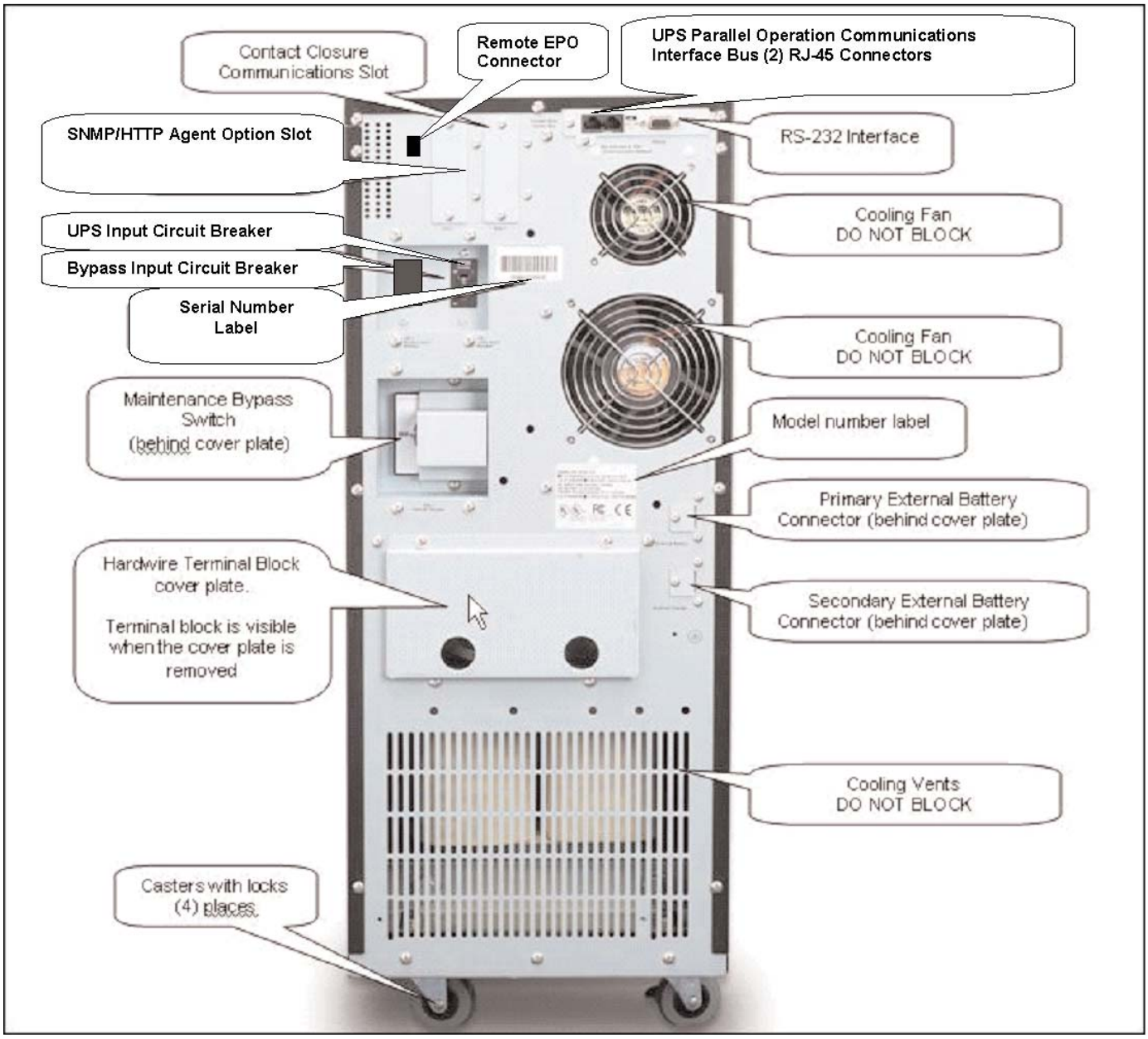
Wiring Detail for a 120/208Vac Output

1	2	3	4	5	6	7	8	9	10
Output	Output 1	Output 1	Output 2	Output 2A	Output 2B	Input	Input	Input	Not Used
Ground	L2	L1	L2	L1	L1	Ground	L2 (N)	L1	
	0	120Vac	0	120Vac	88Vac		208-240Vac		

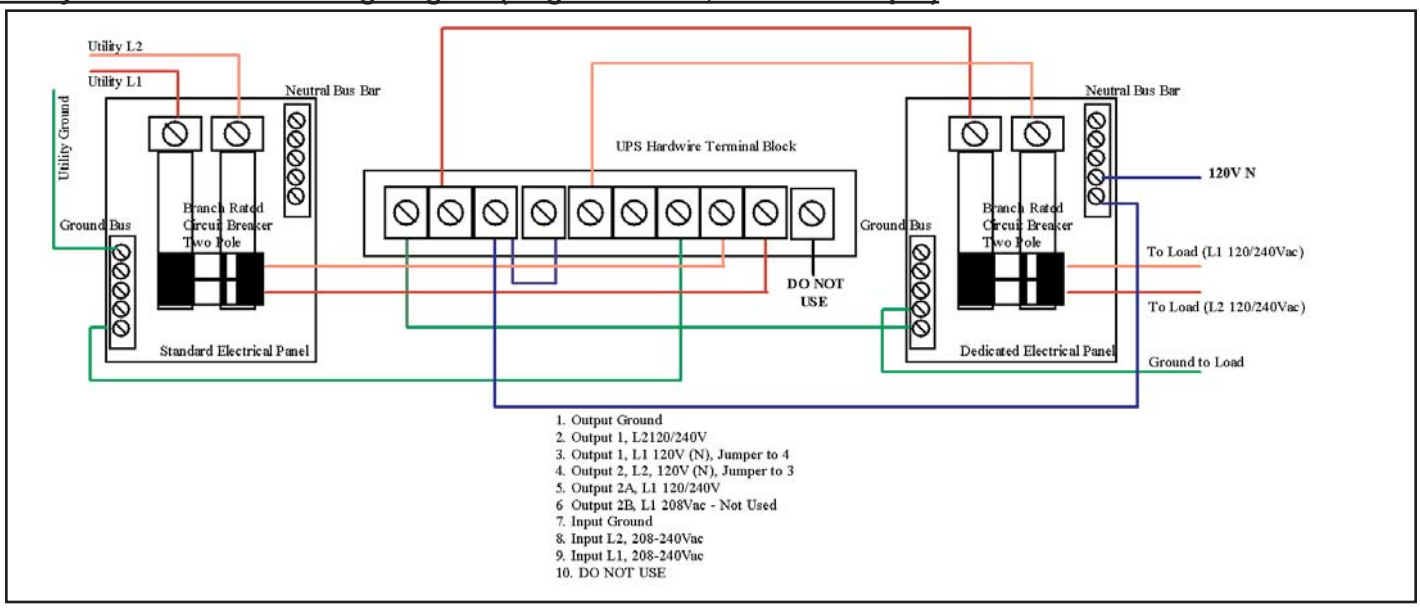


The 120Vac output must never loaded more than 50% of UPS output rating.
The 208Vac output must never be loaded more than 100% of UPS output rating.
The total load for both 120Vac & 208Vac outputs must ever exceed the maximum rated output of the UPS

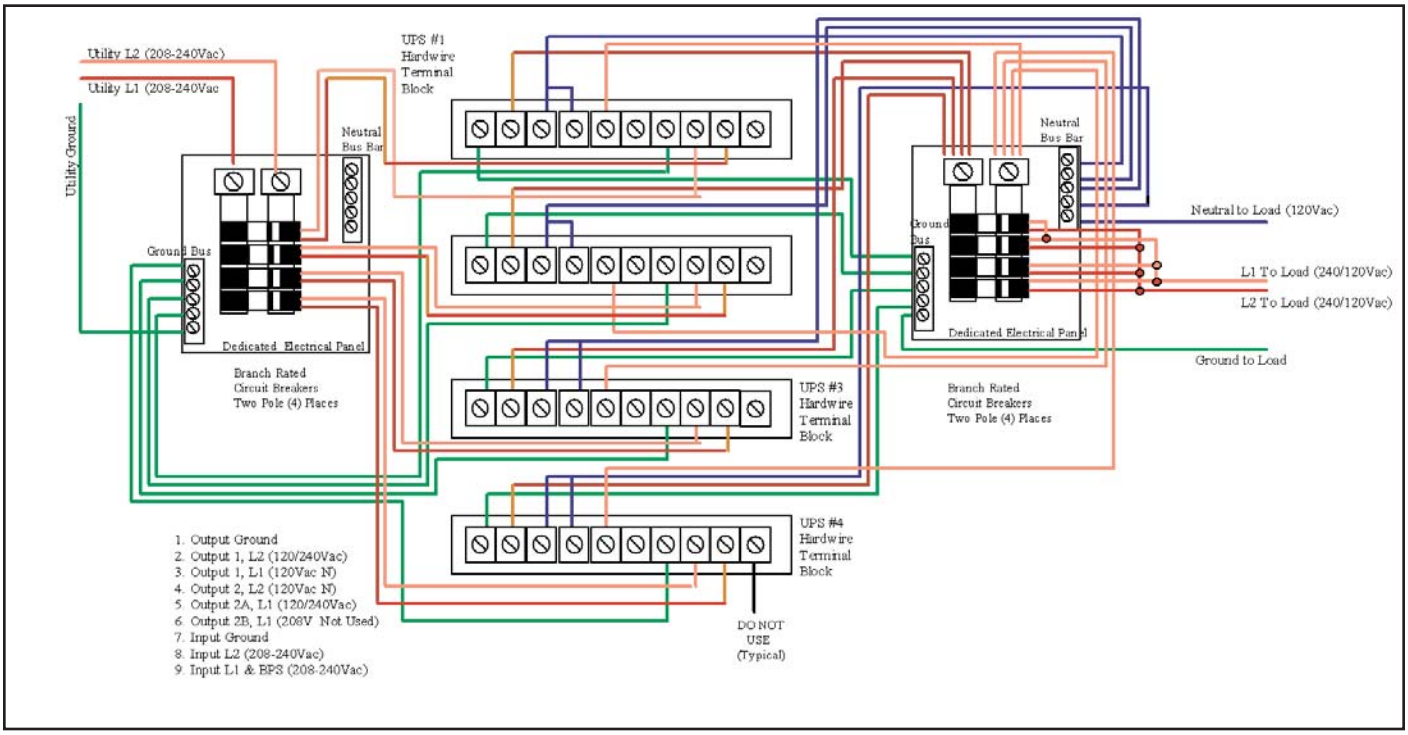
4.6 Rear Panel Details



4.9 System Installation Wiring Diagram (single UPS unit, 120/240V Output)

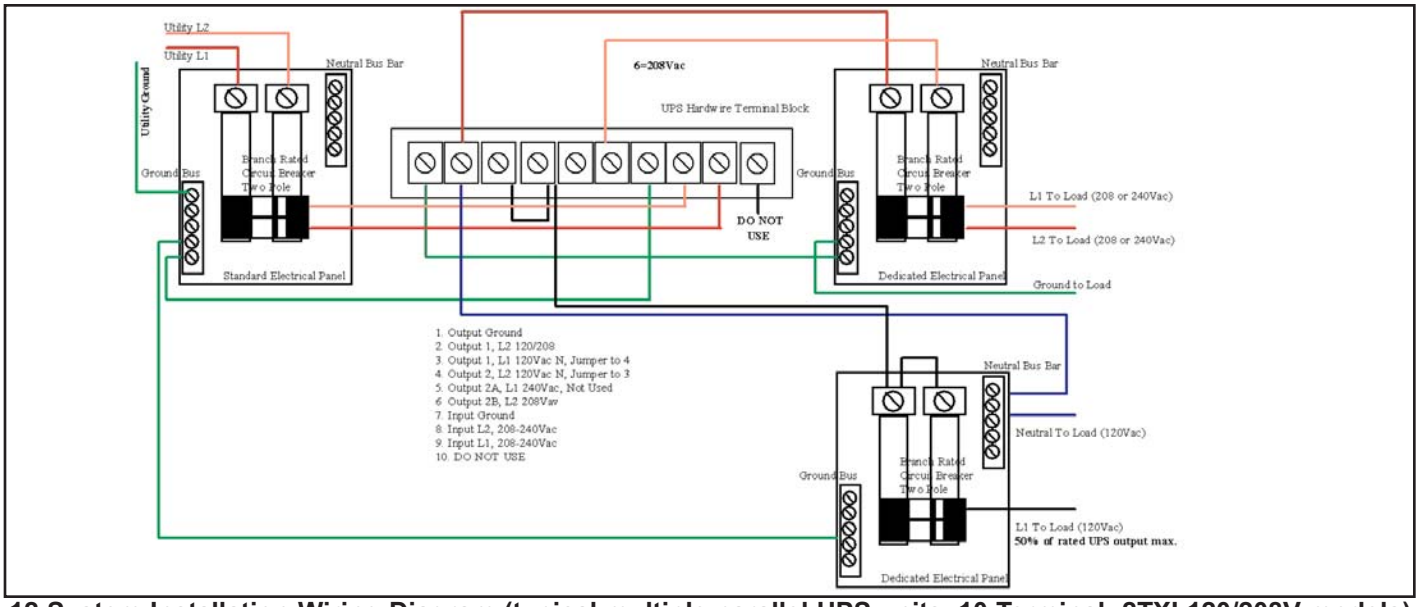


4.10 System Installation Wiring Diagram (typical multiple parallel UPS units, 120/240V Output)

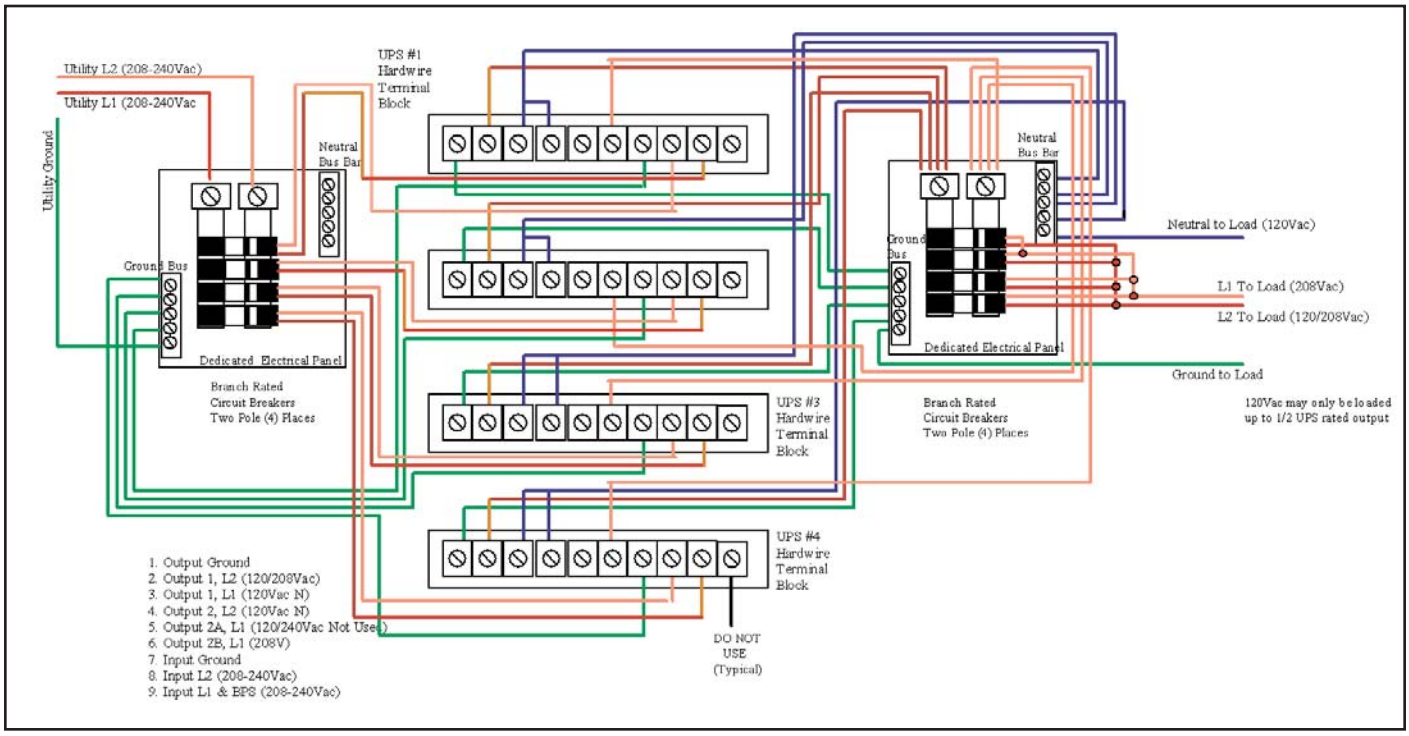


WARNING: The 50 or 60Hz constant frequency model must not be set if multiple FN units are to be connected in parallel or used in N+1 mode.

4.11 System Installation Wiring Diagram (single UPS unit, 10 Terminal -2TXI 120/208V models)



4.12 System Installation Wiring Diagram (typical multiple parallel UPS units, 10 Terminal -2TXI 120/208V models)



4.13 Parallel UPS Communications Bus Cabling

Use one UA88385 parallel communications bus cabling kit for each UPS to be connected parallel. Connect the supplied cables as shown below. Note the first and last connectors on the first and last UPS are connected using the longer of the supplied cables.

Parallel UPS Communications Bus Termination Resistor Switch Settings

Whenever FN Series UPS units are connected in parallel with the parallel communications cabling installed, the communicaitons bus termination switched located to the right side of the cable connectors must be set as follows:

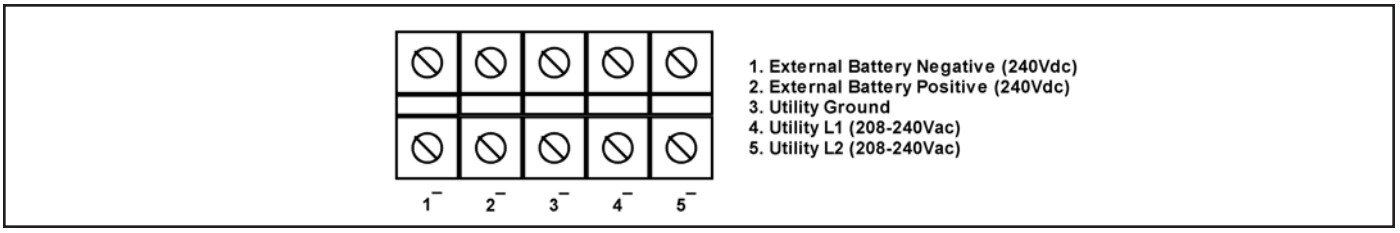
When convifuring paralleled units, set the termination resistor switch to the “on” position for the first and last paralleled UPS only. IF two units are paralleled set the switch to “on” for units 1 & 2, for three units, set the swirches on for units 1 & 3. For four unit set switches on the units 1 & 4 to “on”.

Never set the termination resistor switch to the “on” position for single unit installations.

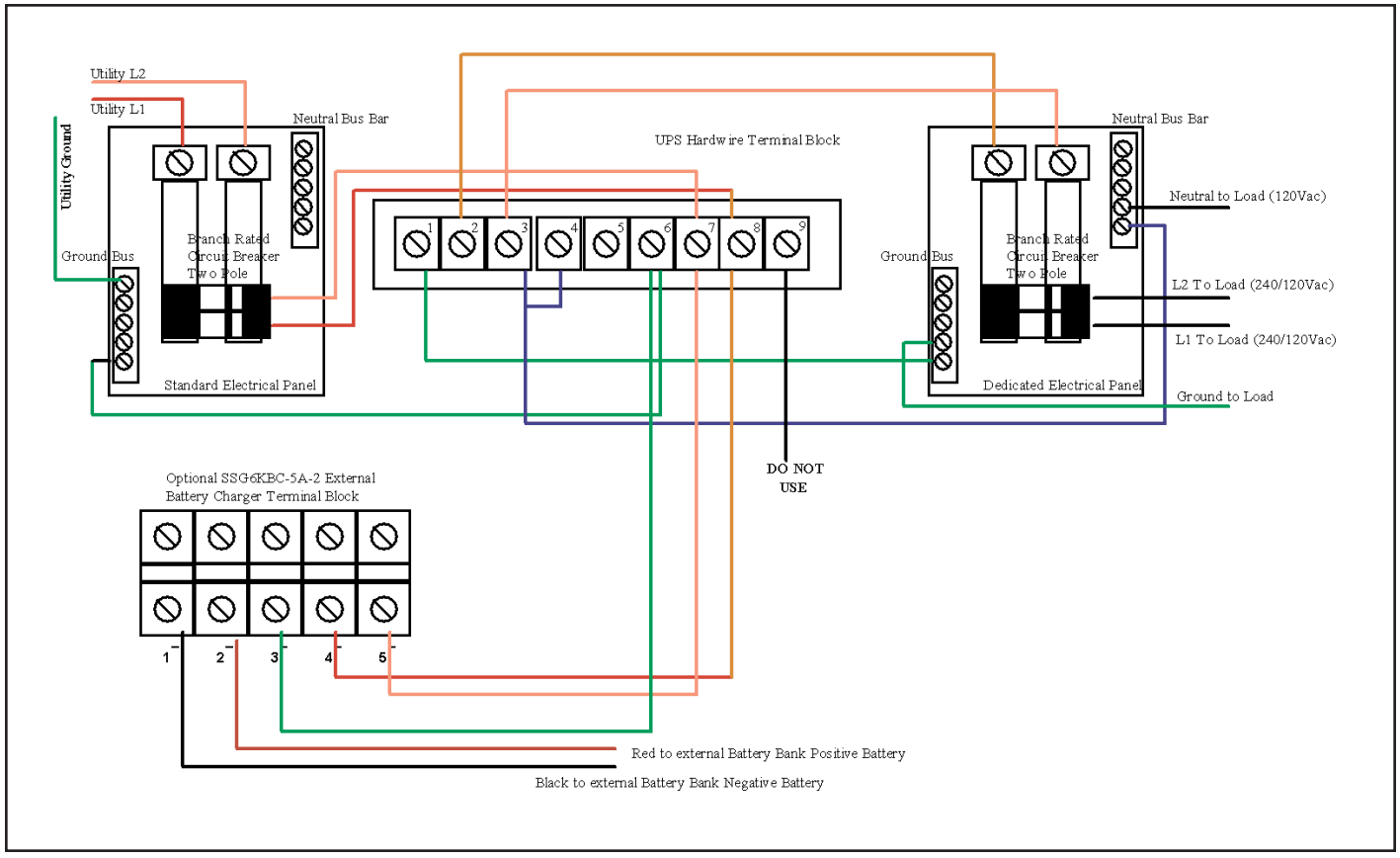
4.10 External Battery Charger Option Installation Wiring Detail (Typical UPS unit with optional FNBC-5A-2, for use with external battery banks only)

FN6KBC-5A-2 5 Amp External Battery Charger Module

FNBC-5A-2 Battery Charger Module Terminal Block Wiring Details



Battery Charger Module/UPS System Wiring Diagram

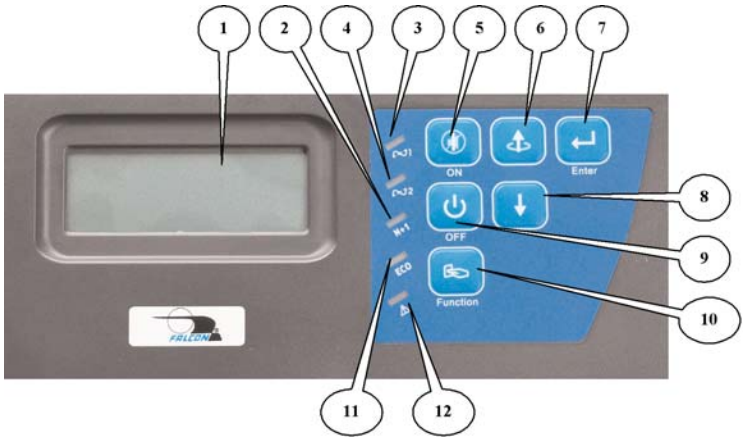


5.0 DISPLAY & CONTROLS

The pictures below outline the various control panel, LED and LCD functions and locations.

5.1 Control Button and LCD Locations

1. LCD Display
2. N+1 Status LED
3. Utility Status Indicator LED
4. Bypass Input Status LED
5. UPS On / Alarm Silence Control Button
6. Previous Page / Change Setting Button
7. Confirm Button
8. Next Page Button
9. UPS Off / Bypass Button
10. Function Button
11. Economy/Green Mode Status LED
12. UPS Alarm LED



5.2 Control Button Operation

On/Alarm Silence Button

1. When utility power is present and the UPS input circuit breakers are in the "On" position, depressing and holding this button for 5 seconds will turn on the UPS.
2. When utility power is not present or the UPS input circuit breaker is in the "Off" position, depressing and holding this button for 5 seconds will initiate a preliminary startup sequence. When "Off" or "BPS" is displayed on the LCD, depressing the "On" button again for 6 seconds will start up the UPS in battery mode (cold start).
3. When the UPS is in utility or battery mode, depressing this button will silence any audible alarms.

Off/Bypass Button

1. When the UPS is operating in utility or battery mode, depressing and holding this button until an audible beep is sounded <u>will leave the load powered in bypass mode</u>. To completely shut down the UPS and connected load, press the Off/Bypass button until "BPS" is displayed on the LCD, and then turn off the UPS and Bypass input circuit breakers. The UPS will shut down in about one minute.

Function Button

1. When the UPS is operating in utility or battery mode, depressing the Function Button will switch the LCD to display the "Programmed Parameter" settings. When in this mode, depressing the "Next Page" button will display the next programmed parameter setting. Repeatedly depress the "Next Page" button to display all of the programmed parameter settings.

Control Panel

2. When the LCD is in the "Display Programmed Settings" mode, depressing the Function Button will return the LCD to normal mode.

   The LCD display will also return to "Normal Mode" automatically after 30 seconds of button inactivity.

Previous Page/Change Setting Button

1. When the LCD display is in "Normal Mode", repeated pressing of this button will sequence up through the input/output/battery parameters and readings will be displayed.
2. When in "Programming Mode", pressing this button will change the selected parameter setting. The new setting will be displayed on the LCD Measurement display.

Next Page Button

1. **When the LCD display is in "Normal Mode", repeated pressing of this button will sequence down through the input/output/battery parameters and readings.**
2. **When the UPS is displaying "OFF" or "BPS", depressing the "Next Page" and "Function" buttons at the same time will place the UPS into "Programming Mode". Refer to the "How to Change the Programmed Settings" section of this manual for more details (Page 30).**
3. **When in "Programming Mode", repeated pressing of this button will sequentially select the various programmable parameters. Refer to page 30, "How to Change the Programmed Settings" section of this manual for more details.**

Confirm Button

1. **When in "Programming Mode" and prompted on the LCD display to SAVE settings, pressing this button will save all changed parameters.**

5.3 LED Display Modes

Utility (AC Source 1) UPS Input Power Present LED (Green) -- Indicates utility power is present and the UPS input circuit breakers is turned on. If the utility voltage is out of tolerance the LED will turn off.

Bypass (AC Source 2) Bypass Input Power Present LED (Green)-- Indicates bypass power is present and the Bypass circuit breaker is turned on. If bypass power is out of range, the LED will turn off.

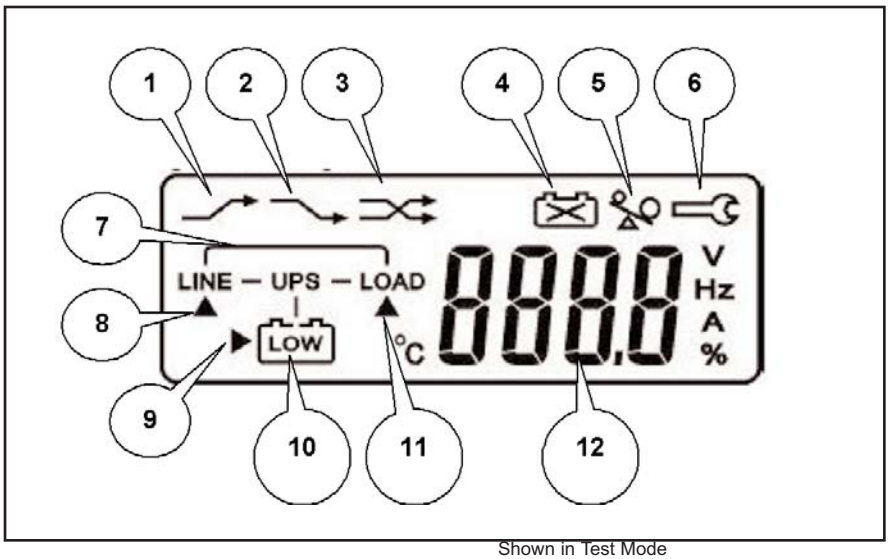
N+1 Mode Enabled (Green) - Indicates multiple UPS units are connected in parallel and have been properly configured and programmed for Parallel N+1 mode operation.

Economy/Green Mode Enabled (Yellow) -- Indicates Economy/Green mode has been enabled.

Alarm Condition Present (Red) -- Indicates the UPS in an alarm condition.

5.4 LCD Display Overview

LCD Display



Shown in Test Mode

5.5 LCD Icon Descriptions

1. Bypass input is out of tolerance, UPS failed to transfer to bypass, or bypass input is out of tolerance when the UPS is in Economy/Green Mode.
2. Utility loss or the utility input is out of tolerance.
3. UPS lost inverter output and transferred to bypass.
4. Battery voltage is out of tolerance, or defective batteries.
5. The UPS output is overloaded.
6. The UPS is presently in maintenance mode.
7. MIMIC Display showing Line, UPS, Battery and Load. When referenced in conjunction with arrows 8, 9 and 11, it defines the operational state of the UPS. They also indicate the source of the input/output/battery parameter readings displayed on the Measurement Display (12).

8, 9 & 11. MIMIC display and Measurement location indicators.

10. Battery and Low Battery Icons. The battery icon is displayed as part of the MIMIC display. In the event of a utility loss that depletes that battery charge, the Low Battery icon is displayed until the batteries have recharged to a reasonable level. In the event of a complete battery discharge, the low battery icon will be displayed along with an audible alarm. When the batteries have recharged to a reasonable level, the normal battery icon will be displayed.
12. Measurement Display. The Measurement display is used to show the input/output/battery readings, program mode settings, status and error codes.

5.6 Status and Error Code Descriptions

OFF or BPS-- Displayed when the UPS is turned off with the “Off” button, EPO or remote shutdown.

EPO -- EPO is displayed alternately with the OFF or BPS message, after an EPO signal has been applied to the EPO interface connector. After an EPO condition, the UPS input circuit breaker must be turned off and the “Off” button must be depressed twice for 5 seconds to reset the UPS prior to turning the UPS and Bypass input circuit breakers back on.

Er04 -- Error code 04 indicates the UPS inverter has malfunctioned. Contact Falcon Service.

Er05 -- Error code 05 indicates the UPS batteries are weak or dead and must be replaced. Call Falcon Service upon receiving the message for further instructions.

Er06 -- Error code 06 indicates the UPS output has a short circuit connected to it. Remove the connected equipment load from the UPS output and restart the UPS. If the shorted output condition is corrected, determine the location of the shorted wiring or equipment.

Er07 -- EPO Mode.

Er08 -- DC Bus high voltage level out of specification. Contact Falcon Service.

Er09 -- DC Bus low voltage level out of specification. Contact Falcon Service.

Er10 -- Error code 10 indicates the UPS inverter has encountered an over-current condition. This could indicate the connected equipment exceeds the output rating of the UPS. Disconnect some of the connected equipment in an attempt to correct the condition.

Er11 -- Error code 11 indicates the UPS is in an over-temperature condition. Verify the ambient operating temperature is not too high. Verify the UPS cooling fan operation.

Er12 -- Error code 12 indicates the UPS output is overloaded, similar to error code 10. This could indicate the connected equipment exceeds the output rating of the UPS. Disconnect some of the connected equipment in an attempt to correct the condition.

Er13 -- Battery charger malfunction. Contact Falcon Service.

Er14 -- Cooling fan failure. Contact Falcon Service.

Er15 -- Maintenance bypass initiated improperly. Refer to page 35, Maintenance Bypass section.

Er18 -- Internal software error, UPS programming reset to default values.

Er22 -- Static bypass malfunction. Contact Falcon Service.

Er24 -- Fixed 50 or 60Hz output mode programmed without turning off the bypass input circuit breaker Should a fixed 50 or 60Hz output be desired, turn the bypass input circuit breaker off. To clear error code 24, startup the UPS with the Bypass input circuit breaker turned off.

Er26 -- PFC over-current condition. Verify the UPS output is or has been overloaded.

Er28 -- The UPS output has experienced a 120% overload in bypass for over 2 minutes. Bypass has been shutdown.

Er29 -- The battery charger is overcharging the batteries. Contact Falcon Service.

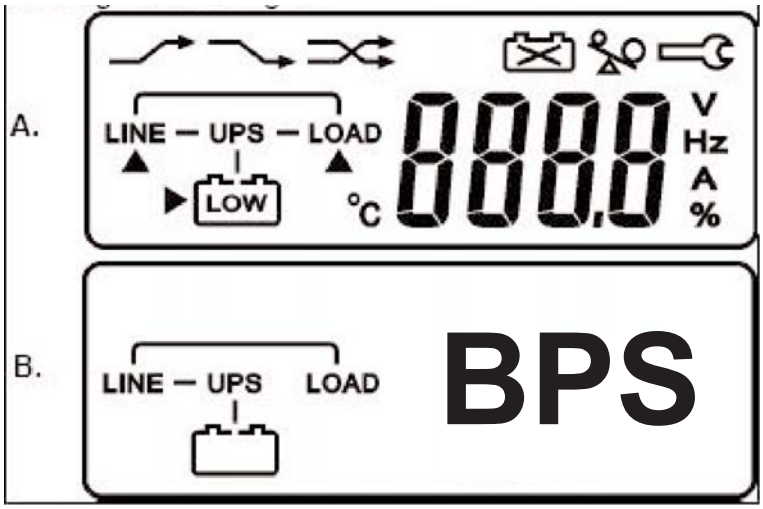
Er** -- Other error code, consult with Falcon Service.

6.0 OPERATION

The following sections outline the operation and programming of the FN -2TXI UPS models. Please read and understand them completely prior to connecting any equipment to the UPS output.

6.1 How to start up the UPS with utility power present

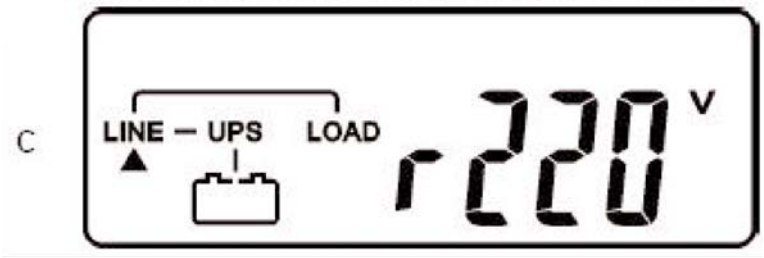
1. Verify the UPS input wiring is correct and connected to a live circuit.
2. Turn on the UPS and Bypass input circuit breakers located on the UPS rear panel, and the following LCD Display will be displayed. **The UPS output will be immediately turned on, with the UPS in bypass mode.**



Display A is an LCD test display and is shown for about 3 seconds after the input circuit breaker is turned on.

Next, display B is shown (BPS displayed). The UPS is OFF with the load supported by the bypass output. The UPS will remain in this state until the "On" button is depressed. When the UPS is turned off using the "Off" button, it will return to this state until the input circuit breaker is turned off.

3. Depress the "On" button for 3 seconds until two audible beeps are sounded.
4. The UPS LCD display will be shown:

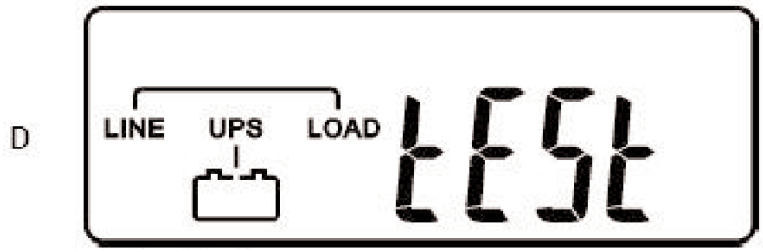


Note the MIMIC portion of the display with the arrow under the line and the input voltage is displayed.

The UPS will sound two short beeps continuously until the following is displayed.

NOTE: Always allow the UPS to charge its batteries for 8 hours prior to use.

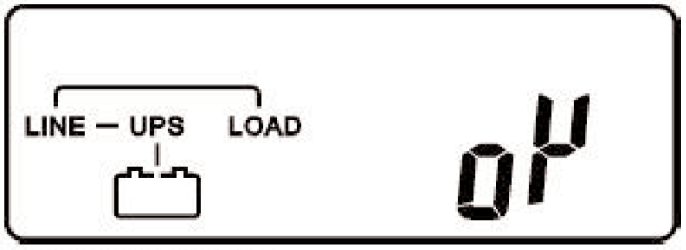
5. The UPS will now sequence up to on-line mode and display the following:



The UPS initiates a self-test.

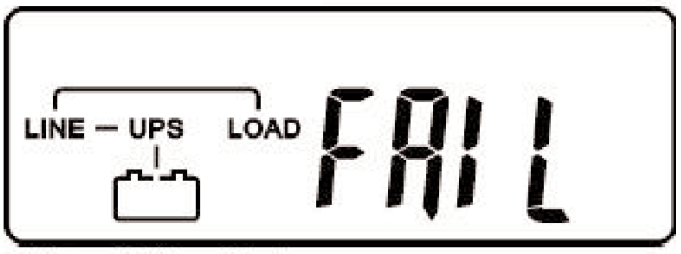
Go to the next page.

E1



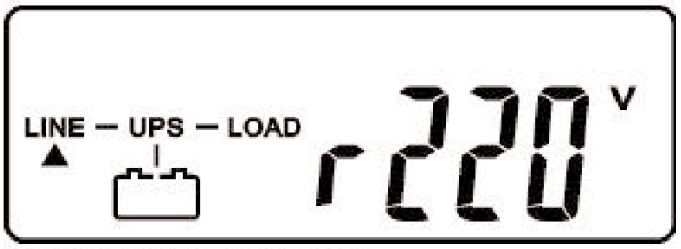
If the UPS passes the self-test, “OK” is displayed.

E2



If the UPS fails the self-test, “FAIL” is displayed alternately with an error code. Please note the error code and contact Falcon Service.

F

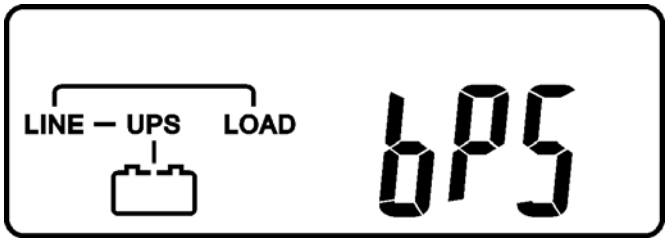


The UPS is now turned on and in on-line inverter mode. Using an AC volt meter, verify the UPS input voltage measurement.

6.2 How to start up the UPS without utility power present (Cold Start)

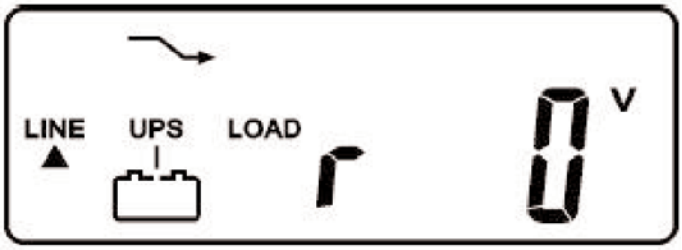
1. **Press the "On" button for 6 seconds to awaken the UPS. The UPS will beep twice and display G below. Immediately upon G being displayed, press the "On" button for another 6 seconds. The UPS will beep twice again and sequence through H and I.**

G



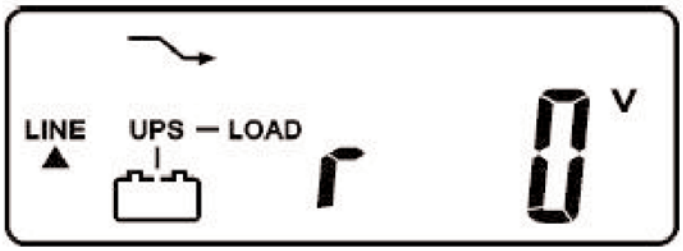
After depressing the "On" button for 6 seconds the first time, the UPS will beep twice and "OFF" or "BPS" will be displayed.

H



After depressing the "On" button the second time for 6 seconds, the UPS will display input voltage H and I. The UPS output voltage will be present and the UPS will continue to run on battery until the batteries are discharged or the "Off" button is pressed for 3 seconds.

I



6.3 How to turn off the UPS inverter and place the UPS into bypass mode

1. While the UPS is operating in utility, inverter or battery mode, depress the "Off" button until the UPS sounds two audible beeps. The UPS will switch to static bypass and turn off the inverter. The LCD will display "OFF" or "BPS". The connected load will now be powered directly from the utility source. The UPS will continue to operate in bypass mode until:
    a. The "On" button is depressed for three seconds, which will return the UPS to normal inverter mode operation.
    b. The UPS and Bypass Input circuit breakers are turned off, which will shut down the UPS and the connected load completely.

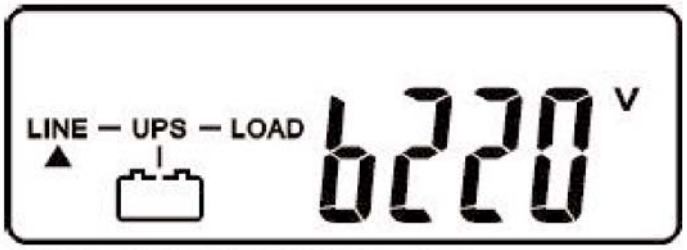
6.4 How to completely shut down the UPS

1. While the UPS is operating in utility, inverter or battery mode, depress the "Off" button until the UPS sounds two audible beeps. The UPS will switch to static bypass and turn off the inverter. The LCD will display "OFF" or "BPS".
2. Turn off the UPS and Bypass input circuit breakers, which will shutdown the UPS and the connected load completely.
   Note, the UPS may continue to run for a few seconds prior to turning off.

6.5 How to display readings

1. The bypass input voltage is displayed immediately after the UPS and Bypass circuit breakers are turned on and has sequenced up to inverter mode as shown in I1. Depressing the “Next Page” button will change to display the utility frequency as shown in J below.

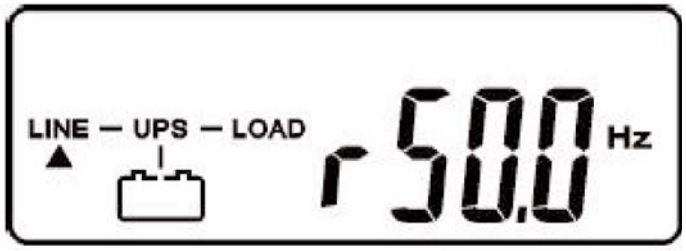
I1



The “b” denotes the reading is for the bypass. The arrow under the LINE indicates the reading is for the bypass input voltage.

Depress the “Next Page” button.

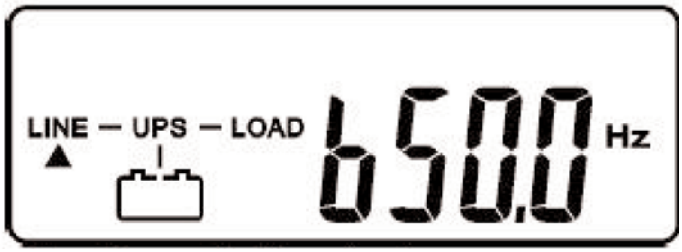
J



The “r” denotes the reading is for utility. The arrow under the LINE indicates the reading is for the utility frequency.

Depress the “Next Page” button.

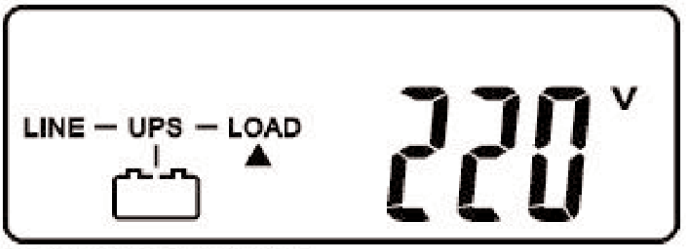
K



The “b” denotes the reading is for the bypass.

Depress the “Next Page” button.

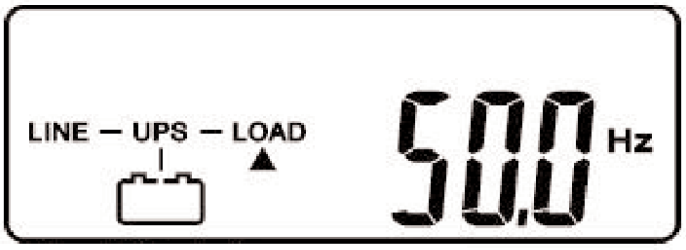
L



The arrow under the LOAD indicates the reading is for the UPS output voltage.

Depress the “Next Page” button.

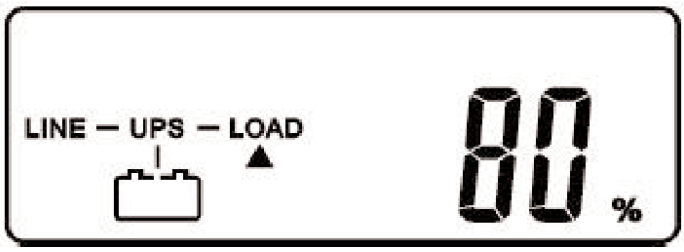
M



The arrow under the LOAD indicates the reading is for the UPS output frequency.

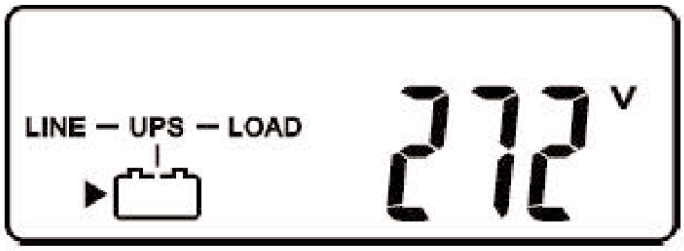
Depress the “Next Page” button.

N



The arrow under the LOAD indicates the reading is for the UPS output and indicates the percentage of output load connected to the UPS.

O

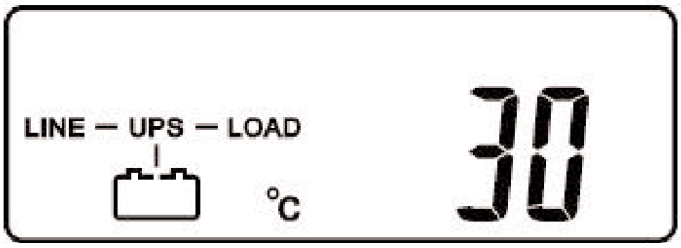


Depress the “Next Page” button.

The arrow next to the battery icon indicates the reading is for the battery voltage.

Depress the “Next Page” button.

P



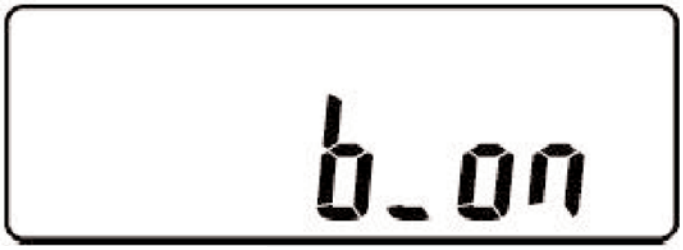
The degree C symbol indicates the reading is for the internal UPS temperature.

Depressing the “Next Page” button again will return the display to reading I1.

6.6 How to Display Programmed Settings

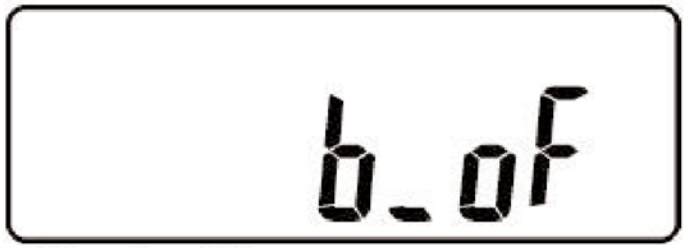
1. The UPS must be turned on and operating in on-line inverter mode prior to attempting to read the "programmed settings".
2. Depress the "Function" button and the following first function parameter will be displayed:

Q1



The first function status displayed will be the audible alarm buzzer status. It is shown here to be turned on.

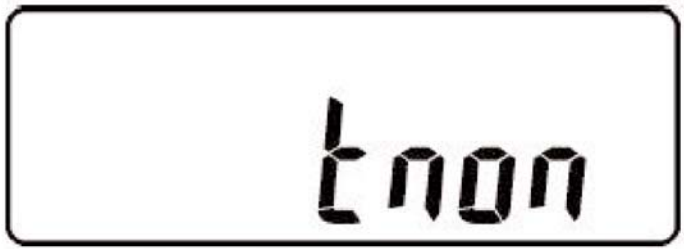
Q2



If the "Previous Page/Change Setting" button is pressed, the audible alarm will be turned off. Depressing the button again will turn the alarm back on.

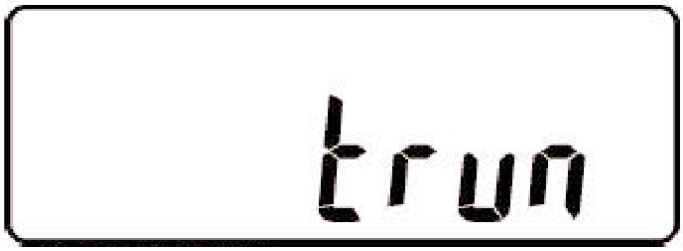
<u>Depress the "Next Page" button.</u>

R1



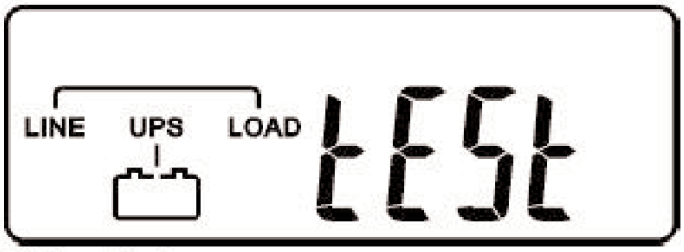
Next, the self-test status is displayed. Here the self-test is shown to be in the "Test Not On" state.

R2



If the "Previous Page/Change Setting" button is pressed, a UPS self-test will be initiated and the following displays will be shown.

D

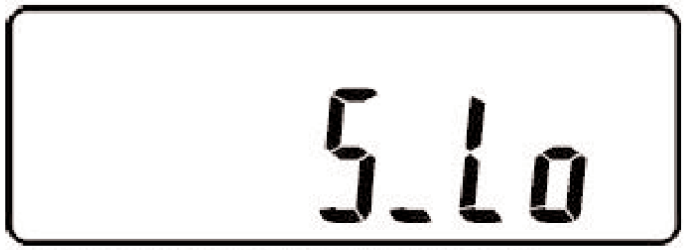


<u>Depress the "Next Page" button.</u>

Go to the next page.

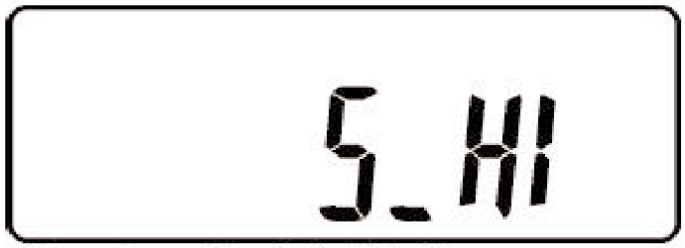
Note: The following functions are a continuation from the previous page. These functions can only be displayed and must have their settings changed using another programming method referenced later in the manual. As the other programming method requires turning the UPS off to perform, they are accessible here as a convenient reference while the UPS is in normal online operation.

S1



The next parameter displayed shows the "bypass input voltage acceptable window" setting. The voltage window can be set to "Lo" (184-260Vac) or "Hi" (195-260Vac), which is shown below.

S2



Depress the "Next Page" button.

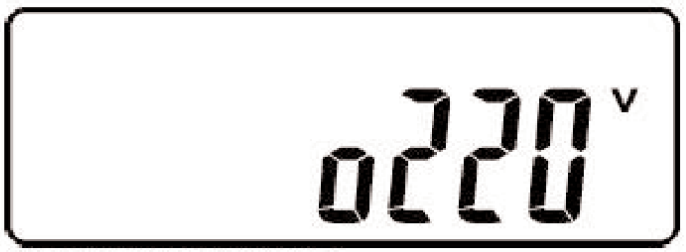
The next parameter displayed shows acceptable input frequency window. The window can be set to +/-3Hz (shown), or +/-1Hz (not shown).

T

Depress the "Next Page" button.

The next parameter display is the inverter output voltage setting. The inverter output voltage can be set to 200Vac (not shown), 208 or 220Vac (shown), 230Vac (not shown) or 240Vac (not shown).

U



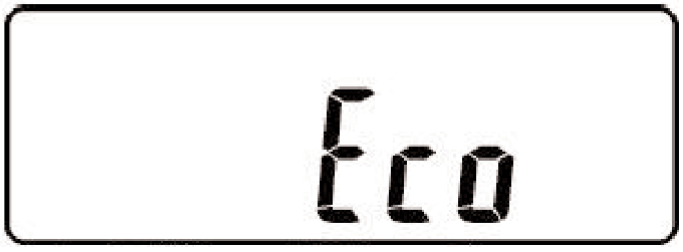
Depress the "Next Page" button.

The following V1, V2, V3 and V4 show the operational status setting of the UPS. This function may be set to one of four modes. "Normal" indicates none of the other modes are set.

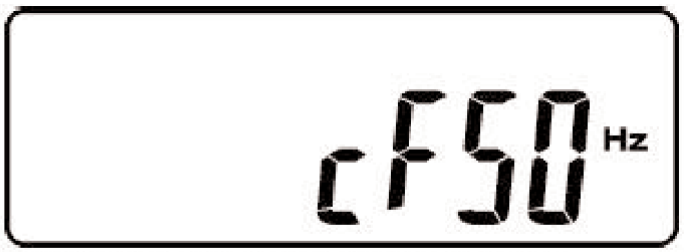
V1

Economy/Green Mode: Indicates the UPS will automatically transfer to bypass mode to save energy, one minute after the output load drops below 10% of the UPS output rating.

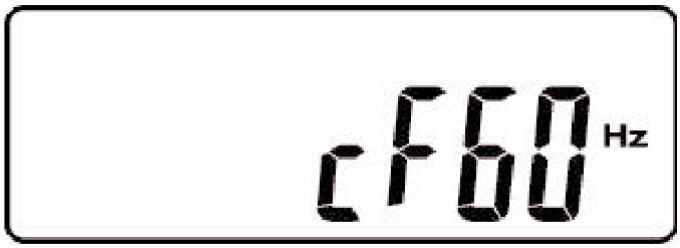
V2



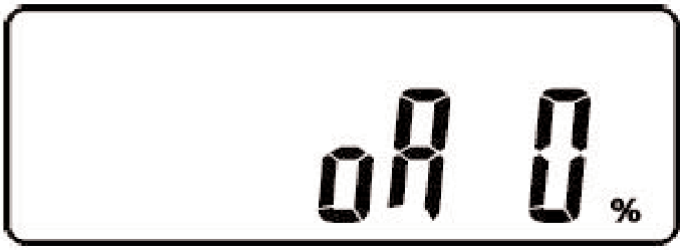
V3



V4



W



X

Fixed or constant frequency output mode: In normal mode the UPS output frequency will automatically be set to the utility frequency and is synchronized with that frequency. When set to cf50Hz mode, the UPS inverter output frequency will always be 50Hz. When set to cf60Hz mode, the UPS inverter output frequency will always be 60Hz.

Setting the UPS to a fixed or constant output frequency should be done when the input source is a generator.

<u>Depress the "Next Page" button.</u>

The next parameter displayed shows the inverter output voltage adjustment. The adjustment can be set to 0% (shown), +1%, -1%, +2%, -2%, +3%or -3% (not shown).

<u>Depress the "Next Page" button.</u>

The next parameter displayed shows the UPS unit address. If only one UPS is being used, the address should be set to "d0" as shown.

If multiple parallel UPS units are connected in a parallel configuration of up tp 40kVA or up to 30kVA N+1 operation, the units would be addressed "id01", "id02", "id03" and "id04". See the parallel mode configuration section on page 42 of this manual for more details.

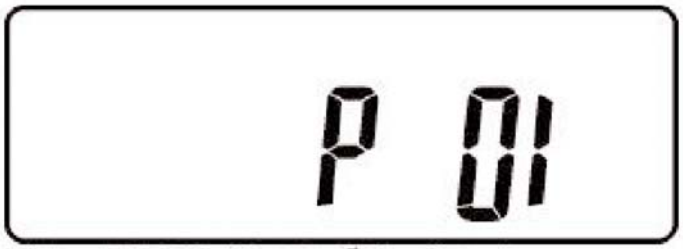
<u>Depress the "Next Page" button.</u>

The next parameter displayed defins when the UPS is used in a parallel configuration. The settings are "P01" and "P02", If only one UPS is being configured (not paralleled), the position should be set to "P01" as shown. If UPS units are connected in parallel it should be set to P02

WARNING: If the (50 or 60Hz) constant frequency mode is enabled, the UPS output(s) must be derated by 25%. Please refer to the fixed frequency output mode ratings for your model in the specifications located at the end of this manual.

WARNING: The 50 or 60Hz constant frequency model must not be set if multiple FN units are to be connected in parallel or used in N+1 mode.

Y

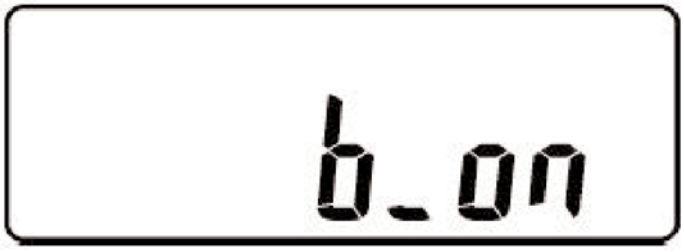


6.7 How to Change the Programmed Settings

Note: The UPS must be placed into Off / Bypass mode prior to attempting to change the following parameter settings.

1. To enter programming mode depress the “On” and “Next Page” buttons at the same time and hold them down until the UPS sounds two beeps. The audible alarm status parameter setting will be displayed.

Q1

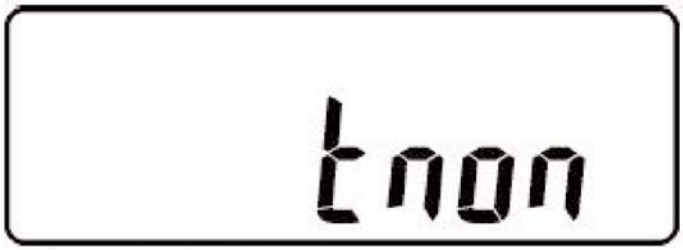


The audible alarm parameter settings cannot be set in this programming mode.

Q2

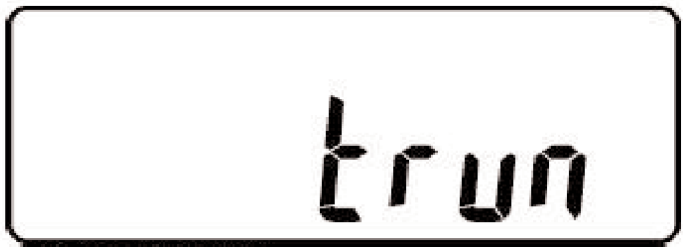
Depress the “Next Page” button.

R1



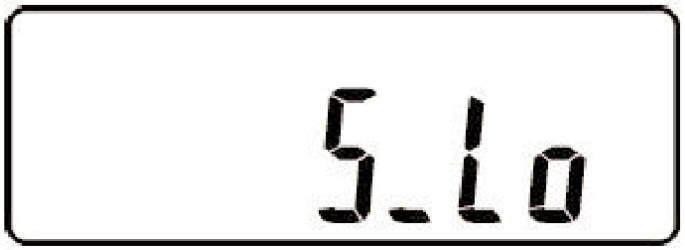
Self-test parameter settings cannot be set in this programming mode. Refer to section 6 of this manual for setup instructions.

R2



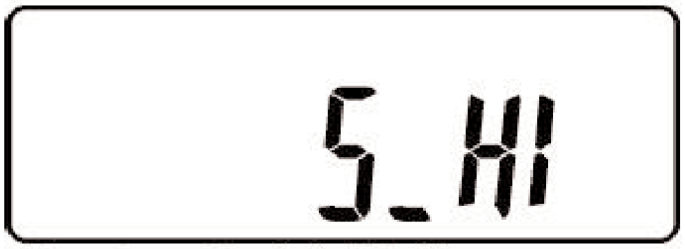
Depress the “Next Page” button and go to the next page.

S1



The next parameter displayed shows the "bypass input voltage acceptable window" setting. The voltage window can be set to "Lo" (184-260Vac) or "Hi" (195-260Vac), which is shown below.

S2



To change the settings, depress the "Previous Page/Change Setting" button. To change to the alternate setting, press the button again. All setting changes will be saved when prompted at the end of the parameter sequence.

<u>Depress the "Next Page" button.</u>

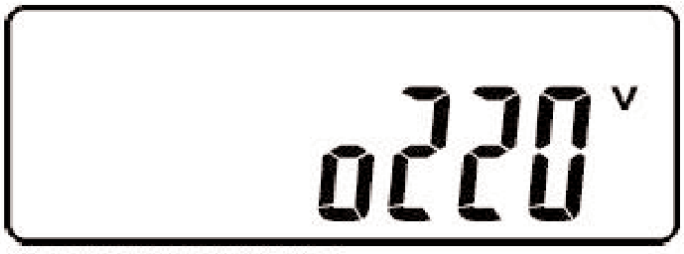
T

The next parameter displayed shows the acceptable input frequency window. The window can be set to +/-3Hz (shown), or +/-1Hz (not shown).

To change the settings, depress the "Previous Page/Change Setting" button. To change to the alternate setting, press the button again. All setting changes will be saved when prompted at the end of the parameter sequence.

<u>Depress the "Next Page" button.</u>

U

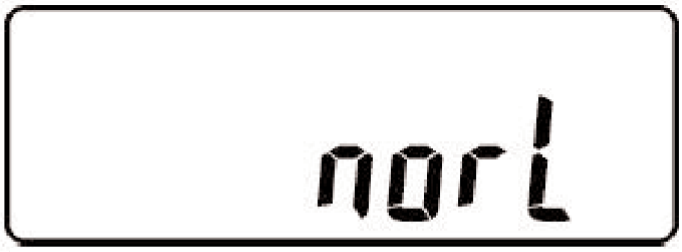


The next parameter display is the inverter output voltage setting. The inverter output voltage can be set to 200Vac (not shown), 208 OR 220Vac (shown), 230Vac (not shown) or 240Vac (not shown).

To change the settings, depress the "Previous Page/Change Setting" button. To change to another voltage setting, repeat pressing the button until the desired voltage is displayed. All setting changes will be saved when prompted at the end of the parameter sequence.

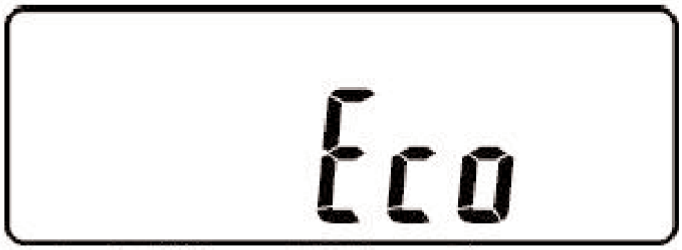
<u>Depress the "Next Page" button and go to the next page.</u>

V1



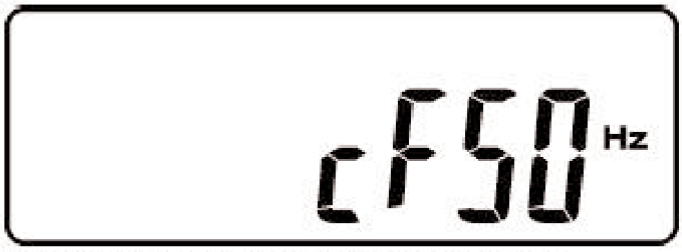
The following V1, V2, V3 and V4 show the operational status setting of the UPS. This function may be set to one of four modes. "Normal": which indicates none of the other modes are set.

V2



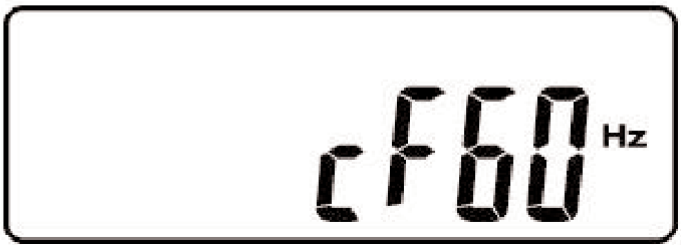
The Economy/Green Mode: indicates the UPS will automatically transfer to bypass mode to save energy, should the output load drop below 10% of the UPS output rating.

V3



Fixed or constant frequency output mode: In normal mode the UPS output frequency will automatically be set to the utility frequency and is synchronized with that frequency. When set to cf50Hz mode, the UPS inverter output frequency will always be 50Hz. When set to cf60Hz mode, the UPS inverter output frequency will always be 60Hz.

V4



Setting the UPS to a fixed or constant output frequency should be done when the input source is a generator.

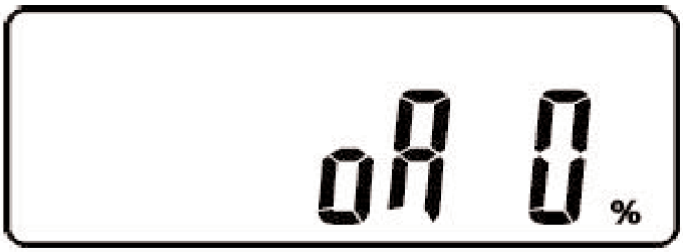
To change between these settings, depress the"Previous Page/Change Setting" button. Repeat pressing the button until the desired mode setting is displayed. All setting changes will be saved when prompted at the end of the parameter sequence.

WARNING: If the (50 or 60Hz) constant frequency mode is enabled, the UPS output(s) must be derated by 25%. Please refer to the fixed frequency output mode ratings for your model in the specifications located at the end of this manual.

WARNING: The 50 or 60Hz constant frequency model must not be set if multiple FN units are to be connected in parallel or used in N+1 mode.

<u>Depress the "Next Page" button.</u>

W



The next parameter displayed shows the inverter output voltage adjustment. The adjustment can be set to 0% (shown), +1%, -1%, +2%, -2%, +3%or -3% (not shown).

To change between these settings, depress the "Previous Page/Change Setting" button. Repeat pressing the button until the desired mode setting is displayed. All setting changes will be saved when prompted at the end of the parameter sequence.

X

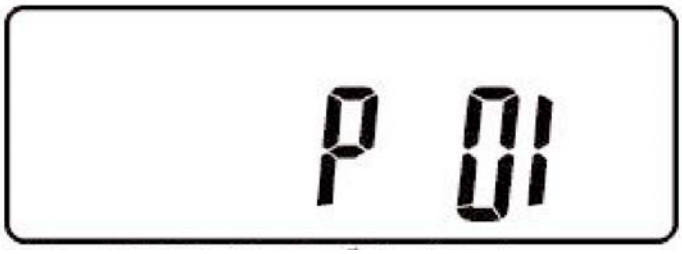
The next parameter displayed shows the UPS unit address. If only one UPS is being used, the address should be set to "d0" as shown.

If multiple parallel UPS units are connected in a parallel configuration of up tp 40kVA or up to 30kVA N+1 operation, the units would be addressed "id01", "id02", "id03" and "id04". See the parallel mode configuration section on pages 16 and 42 of this manual for more details.

To change between these settings, depress the "Previous Page/Change Setting" button. Repeat pressing the button until the desired address setting is displayed.

<u>Depress the "Next Page" button.</u>

Y



The next parameter displayed defins when the UPS is used in a parallel configuration. The settings are "P01" and "P02", If only one UPS is being configured (not paralleled), the position should be set to "P01" as shown. If UPS units are connected in parallel it should be set to P02.

To change between these settings, depress the "Previous Page/Change Setting" button. Repeat pressing the button until the desired UPS position setting is displayed.

<u>Depress the "Next Page" button.</u>

At the end of the parameter setup mode, you will be prompted to save the settings.

Z

To save the settings press the "Confirm" button. If you do not wish to save the settings, press the Off / Bypass button for five seconds. The LCD will display OFF to indicate the settings are not saved.

IMPORTANT: The UPS must be switched to maintenance bypass mode, shut down and restarted after entering the programming mode.

6.8 How to Use the Maintenance Bypass Switch Located on the Rear Panel

IMPORTANT: Improper use of the internal Maintenance Bypass Switch will void the equipment warranty. The following instructions must be followed whenever this switch is used.

1. Press the”Off/Bypass” button for 5 seconds to place the UPS into bypass mode.
2. Remove the phillips screw securing the lower side of the maintenance bypass security cover plate.
3. Turn the Maintenance Bypass Switch to “Bypass”. The maintenance bypass icon will be displayed on the LCD display.
4. The UPS is now in internal maintenance bypass mode.
5. To return the UPS to normal operation, switch the Maintenance Bypass Switch to INV. Replace the switch cover plate and secure it with the screw previously removed.
6. Press the “On” button to return the UPS to normal inverter operation.

7.0 COMMUNICATIONS

FN -2TXI models are provided with the following communication ports:

RS-232 port with standard DB-9F serial port connector.
Two advanced communications option slots are provided on the rear panel of the UPS.
Unless an advanced communications option board has been previously purchased and installed, the port will be covered with a small cover plate. This plate will be secured with (2) screws.

CAUTION: NEVER INSTALL OPTION CARDS THAT HAVE NOT BEEN SUPPLIED BY FALCON ELECTRIC, OR ARE FOR ANOTHER FALCON MODEL, WITHOUT CONSULTING WITH FALCON SERVICE.

MOST SG SERIES COMMUNICATIONS BOARDS WILL NOT WORK IN FN SERIES MODELS.

ONLY USE OPTION BOARDS THAT ARE SPECIFIED FOR FN 3, 4, 5, 6, 8 or 10kVAMODELS.

7.1 Advanced Communications Option Cards Available:

a. USHA TYPE SNMP/HTTP Agent Board
b. Dry Contact with EPO Interface Board (P/N UA88383)
c. USB & EPO Interface Board (P/N UA88382)
d. RS485 & EPO Interface Board (P/N UA88381)
e. Second RS-232 Interface Card (P/N UA88380)

CAUTION: The internal USHA SNMP/HTTP AGENT device must be installed into the Advanced Communications Option Slot specified in this manual. Do not attempt to install it in the contact closure option card slot. The RS-232 port and UPSilon software may not be used when the USHA card is installed.

7.2 RS-232 Port

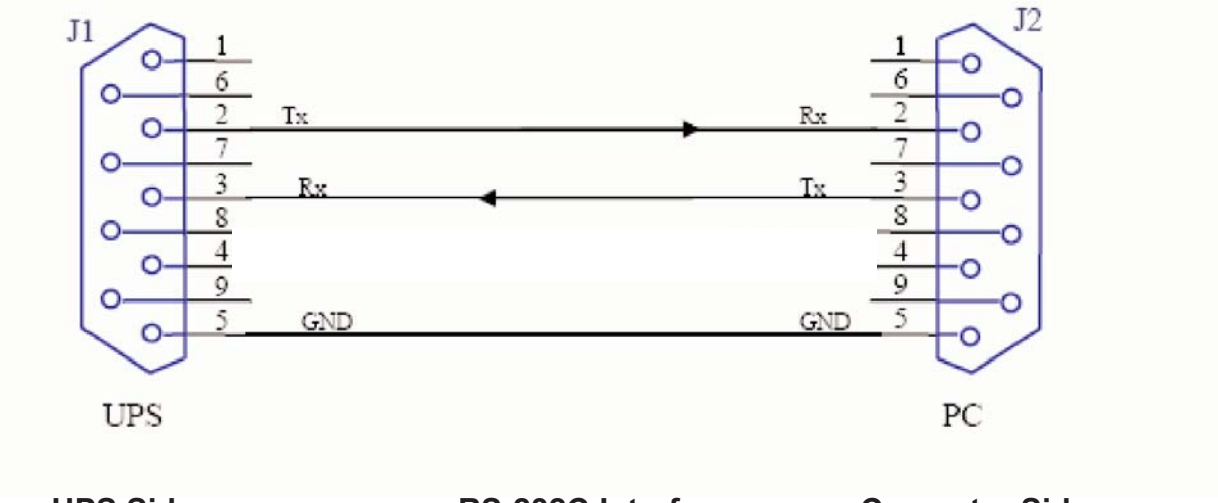
This UPS is equipped with (1) RS-232 port located on the UPS rear panel. A standard RS-232C interface cable is provided to allow for the connection of the UPS to another RS-232 port found on most computers. When an RS-232 cable has been connected, and the supplied UPSilon computer shutdown and management software has been properly installed on the connected computer, a high level of UPS management and protection against lost or corrupted files is in effect. **Please follow the installation and setup instructions supplied on the UPSilon software CD.**

The UPSilon users manual is also located on the UPSilon CD supplied with this unit. UPSilon supports most popular operating systems. Should you have special UNIX requirements, please contact Falcon Sales for information and pricing of UPSilon for UNIX.

The UPS & PC Computer DB-9 pin designations are as follows:

PIN #	*PIN Definition (UPS)*	*PIN Definition (PC)*
2	*Transmitted data*	*Received data*
3	*Received data*	*Transmitted data*
5	*Signal ground*	*Signal ground*

The supplied Falcon RS-232 interface cable pin designations are as follows:



UPS Side **RS-232C Interface** **Computer Side**

The computer RS-232 Port settings should be set to the following:

Baud Rate	***2400 bps***
Data Length	***8 bits***
Stop Bit	***1 bit***
Parity	***None***

7.3 Remote Emergency Power Off (REPO)

A green two-pin REPO connector is located on rear panel of all FN 3 - 10kVA UPS models. The connector is shipped with no jumper wire installed, and is a normally open interface requiring a CLOSED EPO connection to initiate EPO UPS shutdown.

Upon receiving the remote EPO switch contact closure, the UPS will immediately turn off the UPS inverter and bypass outputs, in addition to placing the UPS into an “OFF” state and sounding an audible alarm. “OFF” and EPO will be alternately displayed on the LCD panel.

After removal of the EPO contact closure, the UPS must be completely shut down and restarted to clear the EPO condition.

7.4 Optional Communications Interface Board Details

UA88380 Second RS-232 Interface Option Board

This communications board supports the connection of a second RS-232 DB-9 connection to the UPS, in addition to providing (1) two-pin EPO interface connector. The DB-9 pinout is identical to the standard DB-9 RS-232 interface found on the UPS rear panel.

UA88381 RS-485 Interface Option Board

This communications board has (1) RS485 standard interface (CN2), in addition to providing (1) two-pin EPO interface connector (CN1), and (1) two-pin remote power connector (CN3).

Pin 1 - Ground
Pin 2 - A/Data+
Pin 3 - B.Data-

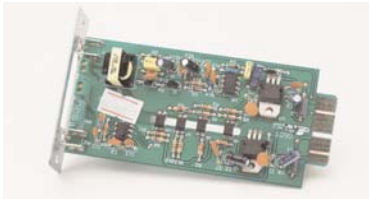
CN2
1 2 3

Pin 1 - AC+
Pin 2 - AC-

CN3
1 2

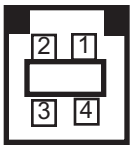
Pin 1 - REPO 1
Pin 2 - REPO 2

CN1
1 2



UA88382 USB Interface Option Card

This option card supports the connection of (1) USB interface cable for use with UPSilon remote monitoring, management and unattended O/S shutdown software.



Pin 1 - VCC (+5V)
Pin 2 - D-
Pin 3 - D+
Pin 4 - Ground

Pin 1 - REPO 1
Pin 2 - REPO2

CN1
1 2

UA88383 Dry Contact Interface Option Card

This card provides dry contact closure signals for UPS on bypass, utility normal, inverter on, low battery, abnormal battery, UPS summary alarm. It also provides EPO and remote UPS shutdown capability.

1 2 3 4 5 6 7 8 9 10

Pin 1 - UPS on Bypass N.O.
Pin 2 - Utility Abnormal N.O.
Pin 3 - Utility Normal N.C.
Pin 4 - Inverter On N.C.
Pin 5 - Low Battery N.O.
Pin 6 - Abnormal Battery N.O.
Pin 7 - UPS Summary Alarm N.O.
Pin 8 - Common
Pin 9 - Shutdown UPS (+) SIgnal
Pin 10 - Shutdown UPS (-) Signal

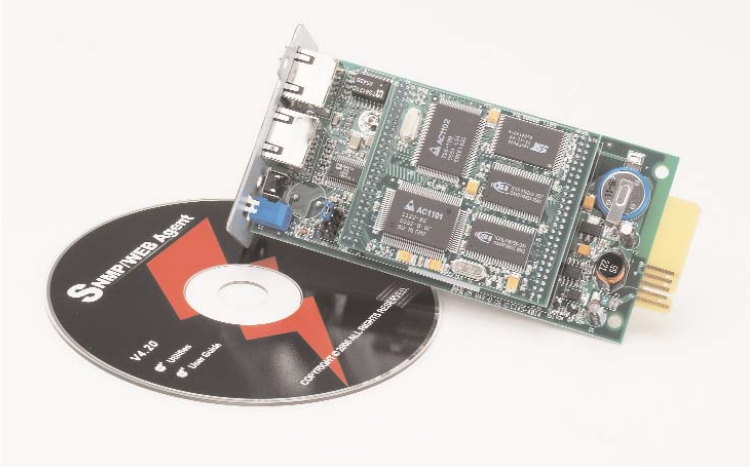
Shutdown function will be activated after a 6-25Vdc voltage is applied across pins 9 and 10. The UPS will shutdown after about 5 seconds.

USHA SNMP/HTTP Agent Option Card

Now you can monitor and manage your Falcon Electric FN Series UPS across an Ethernet LAN, WAN, Enterprise Network or via the World Wide Web. With our Universal SNMP/HTTP Agent board (USHA), remote management is easy using a standard web browser or Network Management Software (NMS).

Remote SNMP/HTTP UPS management is a simple matter of inserting our USHA board into the designated option port provided on the rear panel of every FN Series UPS.

The USHA board is supplied with a SNMP UPS MIB II compliant "snap-in" Management Information Base (MIB). The MIB is compatible with HP OpenView and other Network Management Software (NMS).



Remote server and computer shutdown client software is also provided. The software supports the shutdown of multiple servers or computers “in-band” across any Ethernet LAN. The client software may be installed on as many systems as required and supports most MS Windows and server platforms, in addition to LINUX.

8.0 MAINTENANCE

The FN Series UPS requires very little maintenance. The batteries are located behind the UPS front panel and consist of (5) hot-swappable, user replaceable packs containing (4) Yuasa 12V, 7AH or equivalent, sealed, VRLA, maintenance-free, lead-acid batteries (20 batteries total).

Batteries must be kept recharged to prevent excessive self-discharging, which may result in their premature failure. **The UPS will continuously recharge the batteries when plugged in and turned on. When not in use, batteries must be recharged every 6 months to keep your warranty valid.**

1. The UPS and Battery Care

Keep the area around the UPS clean and dust free. If the area around the UPS becomes very dusty, clean the area and the UPS with a vacuum cleaner. To assure the full 3-5 year battery life, keep the UPS at an ambient temperature of 77ºF (25ºC). No other battery maintenance is required.

2. Storing the UPS and Batteries

When storing the UPS for any amount of time, it is recommended to connect and turn on the UPS for at least 24 hours, every four to six months to ensure full recharging of the batteries. This will prevent excessive battery self-discharge.

3. When to Replace Batteries

We suggest the battery pack(s) be replaced every 3-5 years for FN units that are operated and maintained in a 77ºF (25ºC) environment. Higher temperature operating environments will decrease the battery life. Typically, if the UPS is installed in a 104ºF (40ºC) operating environment, the batteries will need to be replaced once a year.

In order to assure the performance of the FN Series UPS, check the battery every two to three months by performing a UPS self-test. If at any time the UPS LCD panel displays the weak or defective battery icon or error code, the batteries need replacing. Contact the Falcon Electric Service Department to order replacement battery packs or batteries.

4. Battery Pack Replacement

With the hot-swappable battery pack feature, the FN Series UPS battery pack is easily replaced, without having to turn the UPS off or disconnect the load. Refer to the battery pack replacement section of this manual for detailed replacement instructions.

NOTE!
NEVER ATTEMPT TO REPLACE THE BATTERY PACKS WHILE THE UPS IS IN BATTERY MODE.

8.1 FN -2TXI Model Internal Battery Pack Replacement

8.2 How to Replace the Internal UPS Battery Packs

1. Remove the (3) screws securing the lower UPS front panel. Screws are located on the bottom of the lower front panel.
2. Lay the panel and screws aside for reassembly.
3. Loosen and remove the screws securing the (5) battery pack hold down brackets. Lay them aside for reassembly.
4. Unplug all (5) of the battery pack interconnect connectors. Note the location of the connector for each battery pack.
5. Grasp each of the battery packs, and pull them out of the front of the unit.
6. Unpack the new battery packs. Take care not to destroy the packaging. Compare the new and old battery packs and verify that they are the same type. If so, proceed with the next step, otherwise stop and contact Falcon Service.
7. Line up and slide in the new replacement battery packs in the correct orientation.
8. Gently push the battery pack back into the cabinet. Ensure it is tightly seated into the unit.
9. Reconnect all (5) of the battery pack interface connectors to the correct mating connector on the UPS chassis.
10. Reinstall the battery hold-down brackets with the screws originally removed.
11. Reinstall the front panel to the unit with the screws originally removed.
12. Perform a UPS self-test immediately upon restarting the UPS.

9.0 FNB-1S7, FNB-2S7 & FNB-3S7 EXTENDED BATTERY BANK OPTION OVERVIEW

FN Series Extended Battery Bank Option contains: one, two or three 240Vdc parallel strings of 12V, 7AH, Valve Regulated Lead Acid (VRLA) batteries depending on the model. The FNB-1S7 model adds one additional battery string, the FNB-2S7 adds two, and the FNB-3S7 adds three. All strings are in a single battery bank enclosure. Multiple enclosures may also be configured. When connected to the FN -2TXI model UPS, the Extended Battery Bank will provide an extended battery backup time.

9.1 How to connect the FNB-xS7 or FNB-xS9 extended battery bank to the FN -2TXI Model UPS.

1. Locate the extended battery installation kit. The kit contains, (1) interface cable, (1) ground cable, (2) interface cable connector locking plates and (4) screws.
2. Remove the screws securing the external battery connectors located on the UPS and Extended Battery Bank rear panels. (See the picture to the right).
3. Verify the Extended Battery Bank output circuit breaker is in the “Off” position.
4. Connect one end of the extended battery interface cable to the battery connector on the UPS rear panel. Secure the connector by sliding the locking plate into the slots on the connector and installing the supplied screw.
5. Connect the other end of the extended battery interface cable to the battery connector on the extended battery bank rear panel. Secure the connector by sliding the locking plate into the slots on the connector and installing the supplied screw.
6. Connect one end of the ground cable to the UPS ground point located on the rear panel and secure with the supplied screw. Connect the other end of the ground cable to the grounding point on the battery bank rear panel and secure with the supplied screw.
7. Turn on the battery bank output circuit breaker and start up the UPS.
8. Perform a UPS self-test to verify operation.

10.0 PARALLEL MODE OPERATION

10.1 How to configure FN -2TXI models for parallel or N+1 mode operation.

Up to (4) FN -2TXI model UPS units may be connected in parallel, in single UPS increments, to provide a single 3-40kVA UPS output a true N+1 redundant output. This is accomplished by connecting each UPS to be paralleled, wired to a single utility source rated for the combined UPS load. The UPS outputs should be connected together via pigtail connections with mating plugs. A licensed electrician can provide the hardwire output connections and circuit. Each individual UPS output must have a dedicated branch rated circuit breaker installed between the UPS output and load.

FN -2TXI models have two special bus connectors located on the UPS rear panel that supports interconnection of the paralleled UPS units. (1) parallel UPS interface kit must be purchased from Falcon for each UPS to be paralleled. The interface kit contains (1) daisy chain bus cable (3076), (1) wrap around bus cable (3077), detailed installation instructions and assorted hardware. The Falcon part number for the kit is UA88385.

The picture to the left shows a typical two UPS configuration with extended battery bank.

The full output of each UPS is connected together to provide a single output of the two or true N+1 redundancy with the output rating of a single UPS.

Up to (4) FN -2TXI model UPS units may be connected in parallel to provide a single output totaling four times the output of a single UPS. If N+1 redundancy is required, the total output rating will be three times the rating of a single UPS.

For more details, contact Falcon Sales or Support Engineering.

11.0 ENVIRONMENTAL

11.1 Recycling the Used Battery Packs

NEVER discard the UPS, the UPS battery bank, or batteries in the trash. Contact your local recycling or hazardous waste center for information on proper disposal of the used battery pack and batteries. The entire spent battery packs may be returned to the Falcon Service Center at the end user's expense for recycling. Prior to returning the spent battery pack(s), please call the Falcon Service Center and obtain a Return Materials Authorization (RMA) number.

NEVER dispose of batteries in a fire, as batteries will explode.

NEVER dispose of used batteries or the UPS in the trash or a landfill as it is a violation of federal and state laws. The UPS and batteries must be recycled. For UPS and battery recycling information, please contact Falcon Service for the name and address of the nearest battery recycling facility.

NEVER open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic. A battery can present a risk of electrical shock and burns due to their high short circuit current capability.

⚠ WARNING

Observe all warnings, cautions, and notes before replacing batteries. Batteries can present a risk of electrical shock and burns due to high short circuit current. The following precautions should be observed when working on batteries:

* **Remove watches, rings, and other metal objects.**
* **Use tools with insulated handles.**
* **Do not lay tools or metal parts on top of batteries.**
* **Do not attempt to alter any battery wiring or connectors. Attempting to alter wiring can cause injury.**
* **Do not dispose of batteries in a fire. The batteries may explode. Refer to your local codes for disposal requirements.**
* **Do not open or mutilate the battery packs or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.**

11.2 FCC Considerations

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in an industrial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.
* Increase the separation between the equipment and receiver.
* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
* Consult the dealer or an experienced radio/TV technician for help.

12.0 TECHNICAL SUPPORT

In the event your FN Series UPS requires service or should any other technical support be required, write, call, fax or email Falcon Service.

Falcon Electric, Inc.
5106 Azusa Canyon Road
Irwindale, CA. 91706
Service 800.842.6940
Voice 626.962.7770
Fax 626.962.7720
Email: service@falconups.com
WWW.FALCONUPS.COM

Please have your UPS model, serial number and date of purchase on hand prior to your call. This information is located on the identification label on the rear panel of the UPS. This information is essential in retrieving your unit's historical records. Should our service department determine service is required, you will be given a Return Material Authorization number (RMA) along with return shipping instructions.

The RMA number issued must appear on the outside of the shipping carton. The original shipping container must be used when returning any FN Series product. **Failure to use the original shipping container and packing materials will likely result in the unit being received by Falcon with shipping damage.**

Falcon Electric will not assume any responsibility for shipping damage. In the event shipping damage is found, you will be notified of the damage and be instructed to file a claim with the freight carrier. You will be billed for all required repairs due to the shipping damage. You must submit a copy of our repair invoice to the carrier for reimbursement.

All units must be returned prepaid. The address and shipping instructions will be given to you at the time the RMA is issued.

Requesting Technical Information or Support

You may request technical information or support by email or telephone.

Please send your technical or support questions by email to:
SUPPORT@FALCONUPS.COM

You may contact a FALCON support engineer directly by calling the FALCON support line between 9:00 am and 4:00 pm PST.
800.842.6940

FALCON Web Support

Product data sheets, specifications and owner's manuals are available in Adobe® Acrobat .PDF format on our corporate website at:
WWW.FALCONUPS.COM

FALCON ELECTRIC, INC.

NEW PRODUCT LIMITED WARRANTY

Limited Warranty: Falcon warrants that this product will be free from defects in materials and workmanship for a period of two years from the date of shipment by Falcon.

Procedures: Any defective product must be returned to Falcon. No product can be returned without first obtaining a Return Material Authorization (RMA) number from Falcon. Falcon will repair, replace or refund the purchaser price, at Falcon's sole discretion, for any defective product that is returned to Falcon with an RMA number. For defective product returned within 30 days of shipment, Falcon will pay for shipping costs to and from its service center. For defective product returned after 30 days but within 90 days of shipment, Falcon will only pay for shipping costs in sending the new or repaired product back to the end-user. For defective product returned more than 90 days after shipment, all shipping costs will be borne by the end-user.

Exclusions: This limited warranty does not cover damage caused by: (i) improper installation, misuse or neglect; (ii) unauthorized repairs or modifications or use of unauthorized parts; (iii) acts or events outside of Falcon's control, such as fire, accidents, impacts; (iv) normal wear and tear, such as cleaning and replacement of batteries. The warranty is null and void if: (i) the product is used in conjunction with life support equipment; (ii) the factory seal is broken or shows signs of tampering; or (iii) the battery is allowed to discharge below the minimum battery cutoff point. To prevent this discharge, remove the battery fuse, or switch the battery disconnect to the "off" position when the unit is to be stored without the AC power being supplied to the UPS for more than two days. The battery must be recharged every four to six months when not in use. This limited warranty is not transferable.

Limitations: IN NO EVENT IS FALCON RESPONSIBLE FOR ANY SPECIAL, INDIRECT, SECONDARY OR CONSEQUENTIAL DAMAGES, SUCH AS PERSONAL INJURY, DAMAGE TO PROPERTY, LOSS OF DATA, LOST PROFITS, ETC. IN NO EVENT WILL FALCON'S LIABILITY UNDER THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT IN QUESTION.

Disclaimers: The limited warranties set forth in this document are the only warranties that apply to Falcon's products. **ALL OTHER WARRANTIES ARE EXPRESSLY DISCLAIMED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER LEGAL RIGHTS THAT VARY FROM STATE TO STATE.**

2007-04 Rev. C

Model Number	FN3K-2TXI	FN3K-2TXI	FN3K-2TXI	FN3K-2TXI
Number of Parallel Units	**1**	**2**	**3**	**4**
N+1 VA Rating	N/A	3,000	6,000	9,000
Maximum VA Rating (non-N+1)	3,000	6,000	9,000	12,000
Electrical Input				
Nominal AC Voltage	208 or 240Vac			
Voltage Range	160Vac – 280Vac			
Bypass Voltage Window	184-260Vac or 195-260Vac (Programmable)			
Current-Amps (system) N+1	N/A	14.5A	29A	N/A
(non-N+1)	14.5A	29A	44A	58A
Frequency	50/60 Hz (Synchronized Auto – Tracking) or 47-63 Hz (Programmable Unsynchronized)			
Power Factor Correction	> 0.95			
Efficiency (AC-AC)	Up to 90%			
(Battery Mode)	85%			
Electrical Output				
Watts	2,100	4,200	6,300	8,400
N+1 Redundant Mode	N/A	2,100	4,200	6,300
Fixed Frequency Output Mode	1,575	N/A	N/A	N/A
Voltage (Isolated)	Please specify the output voltage configurations desired at the time of order. Note: Each 120Vac output is rated at 50% of the model output rating. 240/120Vac Split-Phase (3 wire plus ground) or 208Vac (2 wire plus ground) with 120Vac (2 wire plus ground)			
Overload Capability	<105% of 2100 Watts continuous output (each UPS) 115% of 2100 Watts for 83 Seconds (each UPS) 125% of 2100 Watts for 25 seconds (each UPS) 150% of 2100 Watts for 320 milliseconds (each UPS)			
Voltage Regulation	±2%			
Voltage Adjustment	±0%, ±1%, ±2% or ±3% (Programmable)			
Frequency	50/60 Hz ± 5Hz (Synchronized Auto-Tracking) or 50 Hz and 60 Hz (Programmable Fixed Output)			
Frequency Stability	±0.2% (Fixed frequency operation) Fixed frequency output available in non-parallel configurations only.			
Frequency Window	±1 Hz or ±3 Hz (Programmable, Auto-Tracking mode)			
Harmonic Distortion	5% Typical			
Crest Ratio	3:1			
Battery				
DC Voltage	240Vdc			
Type	12V, 7AH Sealed Lead Acid Maintenance-Free (20 pieces)			
Charger Current	1.5A			
Back Up Time @ Full Load	31 Minutes			
@ 1/2 Load	78 Minutes			
Recharge Time	4 Hours to 90%			
Replacement	Hot-Swappable & User-Replaceable Through Removable Front Panel			
Battery times are approximate.				
Transfer Time				
Line Fails/Recovers	0 ms			
UPS to Bypass or Reverse	0-1 ms			
After Overload	Auto Transfer to UPS			
Electrical Connections				
Input	Hardwire Terminal Block			
Output	Hardwire Terminal Block			
REPO	Hardwire Connector Supplied			
Environmental				
Operating Temperature	0° C - 40° C (32° F to 104° F)			
Humidity	10% to 95% Non – Condensing			
Altitude	10,000 Feet			
Cooling	Low Velocity Forced Air Fans			
Audible Noise @ 1 Meter	50 dbA			
Controls and Indicators				
Status on LCD & LED	Line mode, Backup mode, ECO (green) mode, Bypass, Low Battery, Defective Battery, Overload, UPS Alarm, Transferring with interruption			
LCD Displayed Readings	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Internal Temperature			
Self-Diagnostics	At power up, Manual front panel button & Software control with programmable 24-hour automatic self-test			
Audible Alarms	Utility Loss, Low Battery, Transfer to Bypass and UPS Failure			
Communications	RS-232 Serial Port (Bundled UPSilon 2000 Software) & REPO Connector			
Mechanical				
UPS Dimensions H x W x D				
inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets	**1**	**2**	**3**	**4**
UPS Weight (total) lb. (kg)	286.6 (130)	573.2 (260)	859.8 (400)	1146.4 (520)
Optional Ext. Battery Bank Dimensions H x W x D				
inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets Required	**1**	**2**	**3**	**4**
Agency Listing	UL 1778 & cUL Listed, CE and FCC Class A			

Model Number	FN4K-2TXI	FN4K-2TXI	FN4K-2TXI	FN4K-2TXI
Number of Parallel Units	**1**	**2**	**3**	**4**
N+1 VA Rating	N/A	4,000	8,000	12,000
Maximum VA Rating (non-N+1)	4,000	8,000	12,000	16,000
Electrical Input				
Nominal AC Voltage	208 or 240Vac			
Voltage Range	160Vac – 280Vac			
Bypass Voltage Window	184-260Vac or 195-260Vac (Programmable)			
Current-Amps (system) N+1	N/A	19.3A	38.5A	N/A
(non-N+1)	19.3A	38.5A	58A	77A
Frequency	50/60 Hz (Synchronized Auto – Tracking) or 47-63 Hz (Programmable Unsynchronized)			
Power Factor Correction	> 0.95			
Efficiency (AC-AC)	Up to 90%			
(Battery Mode)	85%			
Electrical Output				
Watts	2,800	5,600	8,400	11,200
N+1 Redundant Mode	N/A	2,800	5,600	8,400
Fixed Frequency Output Mode	2,100	N/A	N/A	N/A
Voltage (Isolated)	Please specify the output voltage configurations desired at the time of order. Note: Each 120Vac output is rated at 50% of the model output rating. 240/120Vac Split-Phase (3 wire plus ground) or 208Vac (2 wire plus ground) with 120Vac (2 wire plus ground)			
Overload Capability	<105% of 3500 Watts continuous output (each UPS) 115% of 3500 Watts for 83 Seconds (each UPS) 125% of 3500 Watts for 25 seconds (each UPS) 150% of 3500 Watts for 320 milliseconds (each UPS)			
Voltage Regulation	±2%			
Voltage Adjustment	±0%, ±1%, ±2% or ±3% (Programmable)			
Frequency	50/60 Hz ± 5Hz (Synchronized Auto-Tracking) or 50 Hz and 60 Hz (Programmable Fixed Output)			
Frequency Stability	±0.2% (Fixed frequency operation) Fixed frequency output available in non-parallel configurations only.			
Frequency Window	±1 Hz or ±3 Hz (Programmable, Auto-Tracking mode)			
Harmonic Distortion	5% Typical			
Crest Ratio	3:1			
Battery				
DC Voltage	240Vdc			
Type	12V, 7AH Sealed Lead Acid Maintenance-Free (20 pieces)			
Charger Current	1.5A			
Back Up Time @ Full Load	15.6 Minutes			
@ 1/2 Load	40 Minutes			
Recharge Time	4 Hours to 90%			
Replacement	Hot-Swappable & User-Replaceable Through Removable Front Panel			
Transfer Time				
Line Fails/Recovers	0 ms			
UPS to Bypass or Reverse	0-1 ms			
After Overload	Auto Transfer to UPS			
Electrical Connections				
Input	Hardwire Terminal Block			
Output	Hardwire Terminal Block			
REPO	Hardwire Connector Supplied			
Environmental				
Operating Temperature	0º C - 40º C (32º F to 104º F)			
Humidity	10% to 95% Non – Condensing			
Altitude	10,000 Feet			
Cooling	Low Velocity Forced Air Fans			
Audible Noise @ 1 Meter	50 dbA			
Controls and Indicators				
Status on LCD & LED	Line mode, Backup mode, ECO (green) mode, Bypass, Low Battery, Defective Battery, Overload, UPS Alarm, Transferring with interruption			
LCD Displayed Readings	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Internal Temperature			
Self-Diagnostics	At power up, Manual front panel button, Software control with programmable 24-hour automatic self-test			
Audible Alarms	Utility Loss, Low Battery, Transfer to Bypass and UPS Failure			
Communications	RS-232 Serial Port (Bundled UPSilon 2000 Software) & REPO Connector			
Mechanical				
UPS Dimensions H x W x D				
inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets	1	2	3	4
UPS Weight lb. (kg)	286.6 (130)	573.2 (260)	859.8 (400)	1146.4 (520)
Optional Ext. Battery Bank Dimensions H x W x D				
inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets Required	1	2	3	4
Agency Listing	UL 1778 & cUL Listed, CE and FCC Class A			

Battery times are approximate.

Model Number	FN5K-2TXI	FN5K-2TXI	FN5K-2TXI	FN5K-2TXI
Number of Parallel Units	**1**	**2**	**3**	**4**
N+1 VA Rating	N/A	5,000	10,000	15,000
Maximum VA Rating (non-N+1)	5,000	10,000	15,000	20,000
Electrical Input				
Nominal AC Voltage	208 or 240Vac			
Voltage Range	160Vac – 280Vac			
Bypass Voltage Window	184-260Vac or 195-260Vac (Programmable)			
Current-Amps (system) N+1	N/A	24A	57A	N/A
(non-N+1)	24A	57A	70A	93A
Frequency	50/60 Hz (Synchronized Auto – Tracking) or 47-63 Hz (Programmable Unsynchronized)			
Power Factor Correction	> 0.95			
Efficiency (AC-AC)	Up to 90%			
(Battery Mode)	85%			
Electrical Output				
Watts	3,500	7,000	10,500	14,000
N+1 Redundant Mode	N/A	3,500	7,000	10,500
Fixed Frequency Output Mode	2,625	N/A	N/A	N/A
Voltage (Isolated)	Please specify the output voltage configurations desired at the time of order. Note: Each 120Vac output is rated at 50% of the model output rating. 240/120Vac Split-Phase (3 wire plus ground) or 208Vac (2 wire plus ground) with 120Vac (2 wire plus ground)			
Overload Capability	<105% of 3500 Watts continuous output (each UPS) 115% of 3500 Watts for 83 Seconds (each UPS) 125% of 3500 Watts for 25 seconds (each UPS) 150% of 3500 Watts for 320 milliseconds (each UPS)			
Voltage Regulation	±2%			
Voltage Adjustment	±0%, ±1%, ±2% or ±3% (Programmable)			
Frequency	50/60 Hz ± 5Hz (Synchronized Auto-Tracking) or 50 Hz and 60 Hz (Programmable Fixed Output)			
Frequency Stability	±0.2% (Fixed frequency operation) Fixed frequency output available in non-parallel configurations only.			
Frequency Window	±1 Hz or ±3 Hz (Programmable, Auto-Tracking mode)			
Harmonic Distortion	5% Typical			
Crest Ratio	3:1			
Battery				
DC Voltage	240Vdc			
Type	12V, 7AH Sealed Lead Acid Maintenance-Free (20 pieces)			
Charger Current	1.5A			
Back Up Time @ Full Load	15.6 Minutes			
@ 1/2 Load	40 Minutes			
Recharge Time	4 Hours to 90%			
Replacement	Hot-Swappable & User-Replaceable Through Removable Front Panel			
Battery times are approximate.				
Transfer Time				
Line Fails/Recovers	0 ms			
UPS to Bypass or Reverse	0-1 ms			
After Overload	Auto Transfer to UPS			
Electrical Connections				
Input	Hardwire Terminal Block			
Output	Hardwire Terminal Block			
REPO	Hardwire Connector Supplied			
Environmental				
Operating Temperature	0º C - 40º C (32º F to 104º F)			
Humidity	10% to 95% Non – Condensing			
Altitude	10,000 Feet			
Cooling	Low Velocity Forced Air Fans			
Audible Noise @ 1 Meter	50 dbA			
Controls and Indicators				
Status on LCD & LED	Line mode, Backup mode, ECO (green) mode, Bypass, Low Battery, Defective Battery, Overload, UPS Alarm, Transferring with interruption			
LCD Displayed Readings	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Internal Temperature			
Self-Diagnostics	At power up, Manual front panel button, Software control with programmable 24-hour automatic self-test			
Audible Alarms	Utility Loss, Low Battery, Transfer to Bypass and UPS Failure			
Communications	RS-232 Serial Port (Bundled UPSilon 2000 Software) & REPO Connector			
Mechanical				
UPS Dimensions H x W x D				
inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets	1	2	3	4
UPS Weight lb. (kg)	286.6 (130)	573.2 (260)	859.8 (400)	1146.4 (520)
Optional Ext. Battery Bank Dimensions H x W x D				
inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets Required	1	2	3	4
Agency Listing	UL 1778 & cUL Listed, CE and FCC Class A			

FN Series™ UPS PLUS® 6kVA - 24kVA

Model Number	FN6K-2TXI	FN6K-2TXI	FN6K-2TXI	FN6K-2TXI
Number of Parallel Units	**1**	**2**	**3**	**4**
N+1 VA Rating	N/A	6,000	12,000	18,000
Maximum VA Rating (non-N+1)	6,000	12,000	18,000	24,000

Electrical Input

Nominal AC Voltage	208 or 240Vac			
Voltage Range	160Vac – 280Vac			
Bypass Voltage Window	184-260Vac or 195-260Vac (Programmable)			
Current-Amps (system) N+1	N/A	29A	58A	N/A
(non-N+1)	29A	58A	87A	116A
Frequency	50/60 Hz (Synchronized Auto – Tracking) or 47-63 Hz (Programmable Unsynchronized)			
Power Factor Correction	> 0.95			
Efficiency (AC-AC)	Up to 90%			
(Battery Mode)	85%			

Electrical Output

Watts	4,200	8,400	12,600	16,800
N+1 Redundant Mode	N/A	4,200	8,400	12,600
Fixed Frequency Output Mode	3,150	N/A	N/A	N/A
Voltage (Isolated)	Please specify the output voltage configurations desired at the time of order. Note: Each 120Vac output is rated at 50% of the model output rating. 240/120Vac Split-Phase (3 wire plus ground) or 208Vac (2 wire plus ground) with 120Vac (2 wire plus ground)			
Overload Capability	<105% of 4200 Watts continuous output (each UPS) 115% of 4200 Watts for 83 Seconds (each UPS) 125% of 4200 Watts for 25 seconds (each UPS) 150% of 4200 Watts for 320 milliseconds (each UPS)			
Voltage Regulation	±2%			
Voltage Adjustment	±0%, ±1%, ±2% or ±3% (Programmable)			
Frequency	50/60 Hz ±5Hz (Synchronized Auto-Tracking) or 50 Hz and 60 Hz (Programmable Fixed Output)			
Frequency Stability	±0.2% (Fixed frequency operation) Fixed frequency output available in non-parallel configurations only.			
Frequency Window	±1 Hz or ±3 Hz (Programmable, Auto-Tracking mode)			
Harmonic Distortion	5% Typical			
Crest Ratio	3:1			

Battery

DC Voltage	240Vdc
Type	12V, 7AH Sealed Lead Acid Maintenance-Free (20 pieces)
Charger Current	1.5A
Back Up Time Full/Half Load	12 Minutes / 31 Minutes
Recharge Time	4 Hours to 90%
Replacement	Hot-Swappable & User-Replaceable Through Removable Front Panel

Battery times are approximate.

Transfer Time

Line Fails/Recovers	0 ms
UPS to Bypass or Reverse	0-1 ms
After Overload	Auto Transfer to UPS

Electrical Connections

Input	Hardwire Terminal Block
Output	Hardwire Terminal Block
REPO	Hardwire Connector Supplied

Environmental

Operating Temperature	0° C - 40° C (32° F to 104° F)
Humidity	10% to 95% Non – Condensing
Altitude	10,000 Feet
Cooling	Low Velocity Forced Air Fans
Audible Noise @ 1 Meter	50 dbA

Controls and Indicators

Status on LCD & LED	Line mode, Backup mode, ECO (green) mode, Bypass, Low Battery, Defective Battery, Overload, UPS Alarm, Transferring with interruption
LCD Displayed Readings	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Internal Temperature
Self-Diagnostics	At power up, Manual front panel button, Software control with programmable 24-hour automatic self-test
Audible Alarms	Utility Loss, Low Battery, Transfer to Bypass and UPS Failure
Communications	RS-232 Serial Port (Bundled UPSilon 2000 Software) & REPO Connector

Mechanical

UPS Dimensions H x W x D inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets	1	2	3	4
UPS Weight lb. (kg)	286.6 (130)	573.2 (260)	859.8 (400)	1146.4 (520)
Optional Ext. Battery Bank Dimensions H x W x D inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets Required	1	2	3	4
Agency Listing	UL 1778 & cUL Listed, CE and FCC Class A			

Available Options

OPTION	DESCRIPTION	OPTION	DESCRIPTION
FNB-1S9	External Battery Bank (1 parallel 7AH battery strings) (180 lbs. – 81.7 kg)	Option A	USHA SNMP/HTTP Network Card
FNB-2S9	External Battery Bank (2 parallel 7AH battery strings) (290 lbs. – 139 kg)	Option B	Contact Closure Interface Card
FNB-3S9	External Battery Bank (3 parallel 7AH battery strings) (400 lbs. – 181.5 kg)	Option C	2nd RS-232 Interface Card
FNMB30A-2	External Maintenance Bypass, 208-240Vac (supports 1 UPS unit)	Option D	Optional RS485 Interface board
FNMB60A-2	External 60A Maintenance Bypass, 208-240Vac (supports 2 UPS units)	Option E	Optional USB Interface board
FNMB120A-2	External 120A Maintenance Bypass, 208-240Vac (supports 3-4 UPS units)	Option F	Parallel cable kit
FN6KBC-5A-2	5 Amp External Battery Charger (Supports up to 4 external battery banks, 3 chargers maximum per UPS.)		

FN Series™ UPS PLUS® *8kVA - 32kVA*

Model Number	FN8K-2TXI	FN8K-2TXI	FN8K-2TXI	FN8K-2TXI
Number of Parallel Units	**1**	**2**	**3**	**4**
N+1 VA Rating	N/A	8,000	16,000	24,000
Maximum VA Rating (non-N+1)	8,000	16,000	24,000	32,000

Electrical Input

Nominal AC Voltage	208 or 240Vac			
Voltage Range	160 – 280Vac <75% load, 175-280Vac >75% load			
Bypass Voltage Window	184-260Vac or 195-260Vac (Programmable)			
Current-Amps (system) N+1	N/A	40A	80A	N/A
(non-N+1)	40A	80A	120A	160A
Frequency	50/60 Hz (Synchronized Auto – Tracking) or 47-63 Hz (Programmable Unsynchronized)			
Power Factor Correction	> 0.95			
Efficiency (AC-AC)	Up to 90%			
(Battery Mode)	85%			

Electrical Output

Watts	5,600	11,200	12,600	22,400
N+1 Redundant Mode	N/A	5,600	16,800	16,800
Fixed Frequency Output Mode	4,200	N/A	N/A	N/A
Voltage (Isolated)	Please specify the output voltage configurations desired at the time of order. Note: Each 120Vac output is rated at 50% of the model output rating. 240/120Vac Split-Phase (3 wire plus ground) or 208Vac (2 wire plus ground) with 120Vac (2 wire plus ground)			
Overload Capability	<105% of 5600 Watts continuous output (each UPS) 115% of 5600 Watts for 83 Seconds (each UPS) 125% of 5600 Watts for 25 seconds (each UPS) 150% of 5600 Watts for 320 milliseconds (each UPS)			
Voltage Regulation	±2%			
Voltage Adjustment	±0%, ±1%, ±2% or ±3% (Programmable)			
Frequency	50/60 Hz ± 5Hz (Synchronized Auto-Tracking) or 50 Hz and 60 Hz (Programmable Fixed Output)			
Frequency Stability	±0.2% (Fixed frequency operation) Fixed frequency output available in non-parallel configurations only.			
Frequency Window	±1 Hz or ±3 Hz (Programmable, Auto-Tracking mode)			
Harmonic Distortion	5% Typical			
Crest Ratio	3:1			

Battery

DC Voltage	240Vdc
Type	12V, 9AH Sealed Lead Acid Maintenance-Free (20 pieces)
Charger Current	1.5A
Back Up Time Full/Half Load	7 Minutes / 21 Minutes
Recharge Time	4 Hours to 90%
Replacement	Hot-Swappable & User-Replaceable Through Removable Front Panel

Battery times are approximate.

Transfer Time

Line Fails/Recovers	0 ms
UPS to Bypass or Reverse	0-1 ms
After Overload	Auto Transfer to UPS

Electrical Connections

Input	Hardwire Terminal Block
Output	Hardwire Terminal Block
REPO	Hardwire Connector Supplied

Environmental

Operating Temperature	0° C - 40° C (32° F to 104° F)
Humidity	10% to 95% Non – Condensing
Altitude	10,000 Feet
Cooling	Low Velocity Forced Air Fans
Audible Noise @ 1 Meter	50 dbA

Controls and Indicators

Status on LCD & LED	Line mode, Backup mode, ECO (green) mode, Bypass, Low Battery, Defective Battery, Overload, UPS Alarm, Transferring with interruption
LCD Displayed Readings	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Internal Temperature
Self-Diagnostics	At power up, Manual front panel button, Software control with programmable 24-hour automatic self-test
Audible Alarms	Utility Loss, Low Battery, Transfer to Bypass and UPS Failure
Communications	RS-232 Serial Port (Bundled UPSilon 2000 Software) & REPO Connector

Mechanical

UPS Dimensions H x W x D inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets	1	2	3	4
UPS Weight lb. (kg)	328.5 (149)	657 (298)	985.5 (447)	1314 (596)
Optional Ext. Battery H x W x D inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets Required	1	2	3	4
Agency Listing	UL 1778 & cUL Listing Pending, CE and FCC Class A			

Available Options

OPTION	DESCRIPTION	OPTION	DESCRIPTION
FNB-1S9	External Battery Bank (1 parallel 9AH battery strings) (180 lbs. – 81.7 kg)	Option A	USHA SNMP/HTTP Network Card
FNB-2S9	External Battery Bank (2 parallel 9AH battery strings) (290 lbs. – 139 kg)	Option B	Contact Closure Interface Card
FNB-3S9	External Battery Bank (3 parallel 9AH battery strings) (400 lbs. – 181.5 kg)	Option C	2nd RS-232 Interface Card
FN6KBC-5A-2	5 Amp External Battery Charger (Supports up to 4 external battery banks, 3 chargers maximum per UPS.)		

FN Series™ UPS PLUS® *10kVA - 40kVA*

Model Number	FN10K-2TXI	FN10K-2TXI	FN10K-2TXI	FN10K-2TXI
Number of Parallel Units	**1**	**2**	**3**	**4**
N+1 VA Rating	N/A	10,000	20,000	30,000
Maximum VA Rating (non-N+1)	10,000	20,000	30,000	40,000

Electrical Input

Nominal AC Voltage	208 or 240Vac			
Voltage Range	160 – 280Vac <75% load, 175 – 290Vac >75% load			
Bypass Voltage Window	184-260Vac or 195-260Vac (Programmable)			
Current-Amps (system) N+1	N/A	50A	100A	N/A
(non-N+1)	50A	100A	150A	200A
Frequency	50/60 Hz (Synchronized Auto – Tracking) or 47-63 Hz (Programmable Unsynchronized)			
Power Factor Correction	> 0.95			
Efficiency (AC-AC)	Up to 90%			
(Battery Mode)	85%			

Electrical Output

Watts	7,000	14,000	21,000	28,000
N+1 Redundant Mode	N/A	7,000	14,000	21,000
Fixed Frequency Output Mode	5,250	N/A	N/A	N/A
Voltage (Isolated)	Please specify the output voltage configurations desired at the time of order. Note: Each 120Vac output is rated at 50% of the model output rating. 240/120Vac Split-Phase (3 wire plus ground) or 208Vac (2 wire plus ground) with 120Vac (2 wire plus ground)			
Overload Capability	<105% of 7000 Watts continuous output (each UPS) 115% of 7000 Watts for 83 Seconds (each UPS) 125% of 7000 Watts for 25 seconds (each UPS) 150% of 7000 Watts for 320 milliseconds (each UPS)			
Voltage Regulation	±2%			
Voltage Adjustment	±0%, ±1%, ±2% or ±3% (Programmable)			
Frequency	50/60 Hz ±5Hz (Synchronized Auto-Tracking) or 50 Hz and 60 Hz (Programmable Fixed Output)			
Frequency Stability	±0.2% (Fixed frequency operation) Fixed frequency output available in non-parallel configurations only.			
Frequency Window	±1 Hz or ±3 Hz (Programmable, Auto-Tracking mode)			
Harmonic Distortion	5% Typical			
Crest Ratio	3:1			

Battery

DC Voltage	240Vdc
Type	12V, 9AH Sealed Lead Acid Maintenance-Free (20 pieces)
Charger Current	1.5A
Back Up Time Full/Half Load	5.5 Minutes / 15 Minutes
Recharge Time	5 Hours to 80%
Replacement	Hot-Swappable & User-Replaceable Through Removable Front Panel

Battery times are approximate.

Transfer Time

Line Fails/Recovers	0 ms
UPS to Bypass or Reverse	0-1 ms
After Overload	Auto Transfer to UPS

Electrical Connections

Input	Hardwire Terminal Block
Output	Hardwire Terminal Block
REPO	Hardwire Connector Supplied

Environmental

Operating Temperature	0° C - 40° C (32° F to 104° F)
Humidity	10% to 95% Non – Condensing
Altitude	10,000 Feet
Cooling	Low Velocity Forced Air Fans
Audible Noise @ 1 Meter	50 dbA

Controls and Indicators

Status on LCD & LED	Line mode, Backup mode, ECO (green) mode, Bypass, Low Battery, Defective Battery, Overload, UPS Alarm, Transferring with interruption
LCD Displayed Readings	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Internal Temperature
Self-Diagnostics	At power up, Manual front panel button, Software control with programmable 24-hour automatic self-test
Audible Alarms	Utility Loss, Low Battery, Transfer to Bypass and UPS Failure
Communications	RS-232 Serial Port (Bundled UPSilon 2000 Software) & REPO Connector

Mechanical

UPS Dimensions H x W x D inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
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Number of Cabinets	1	2	3	4
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Optional Ext. Battery H x W x D inches	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4	29.5 x 11.5 x 25.4
(mm)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)	(748 x 290 x 645)
Number of Cabinets Required	1	2	3	4
Agency Listing	UL 1778 & cUL Listing Pending, CE and FCC Class A			

Available Options

OPTION	DESCRIPTION	OPTION	DESCRIPTION
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FNB-3S9	External Battery Bank (3 parallel 9AH battery strings) (400 lbs. – 181.5 kg)	Option C	2nd RS-232 Interface Card
FNBC-5A-2	5 Amp External Battery Charger (Supports up to 4 external battery banks, 3 chargers maximum per UPS.)		