Operating Manual - PowerXchanger®

Double Conversion AC Power Converter

Step-Up Series

UMPX-12

Input Range: 90 VAC ~ 285 VAC

Input Frequency: 50Hz or 60Hz

Output Range: 200V-220V-230V-240V Selectable

Output Frequency: 50Hz or 60Hz Selectable

Read this manual before using PowerXchanger®. Failure to follow the instructions and safety precautions in this manual can result in serious injury or death.

Keep this manual in a safe location for future reference.

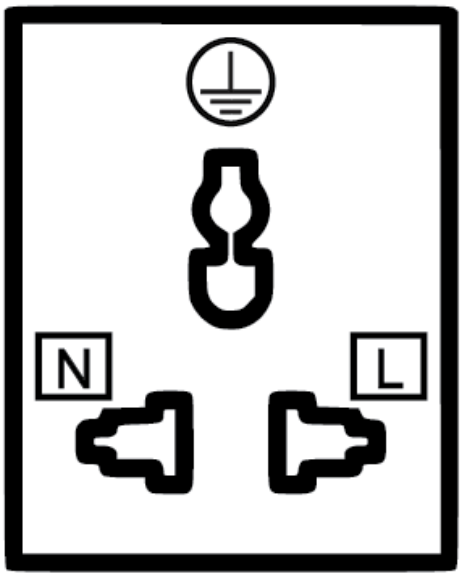
CAUTION:

- The Converter connection instructions and operation described in the manual must be followed in the indicated order.
- Converter must be connected to a nearby wall outlet that is easily accessible. The Converter can be disconnected from the AC-power source by removing the power cord.
- DO NOT install the Converter near liquids or in an excessively damp environment.
- DO NOT let a foreign body penetrate inside the Converter.
- DO NOT block the ventilation fan grates of the Converter.
- DO NOT expose the Converter to direct sunlight or source of heat.
- If the Converter must be stored prior to installation, storage must be in a dry place.
- The admissible storage temperature range is -15℃ to +55℃.

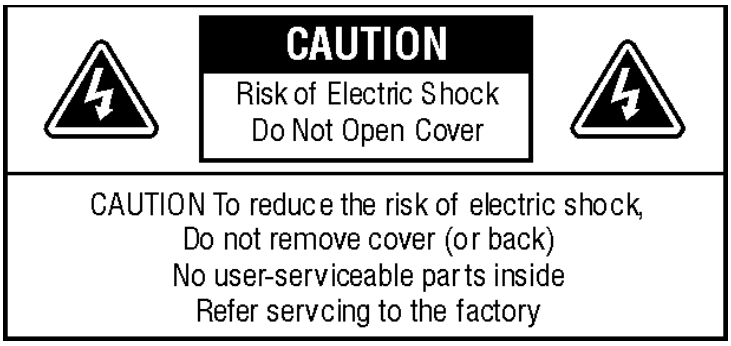
WARNING – YOUR APPLICATION(S) SHOULD NOT EXCEED MAXIMUM OUTPUT CURRENT ON DIFFERENT INPUT VOLTAGES

INPUT VOLTAGE	100V	110V	120V	130V	140V	150V	160V	170V	180V	190V	200V	220V or Higher
O/P CURRENT(A)	7.7	8.6	9.0	9.3	9.7	10.2	10.7	11.4	12.5	12.5	12.5	12.5

OUTPUT WIRING



Special Symbols
The following are examples of symbols used on the Converter to alert you of important information.



RISK OF ELECTRIC SHOCK -
Indicates that a risk of electric shock is present, and the associated warning should be observed

CAUTION; REFER TO OPERATOR'S MANUAL -
Refer to your operator's manual for additional information, such as important operating and maintenance

SAFETY EARTHING TERMINAL -
Indicates the primary safety ground.

Table of Contents

1. OVERVIEW AND FEATURES

This series is a double conversion Power Converter which produces stable pure sine wave voltage and frequency output (O/P). With the Converter, you can protect your equipment from most power problems, including power sags, power surges, brownouts, polarity reversal, and line noise, etc.

With the common neutral topology, the Converter provides internal connection from AC I/P neutral to AC O/P neutral; thus, it does not need to use an isolation transformer to provide 0 volt from AC I/P neutral to O/P neutral. This feature will reduce the interference to loads of communication or video systems.

Output capacity is determined by the input power. For example, operating the Converter with input power 110 volts results in maximum output current capacity of 8.6 Amps. With input power of 200 volts or higher, the max output current capacity is 12.5 Amps.

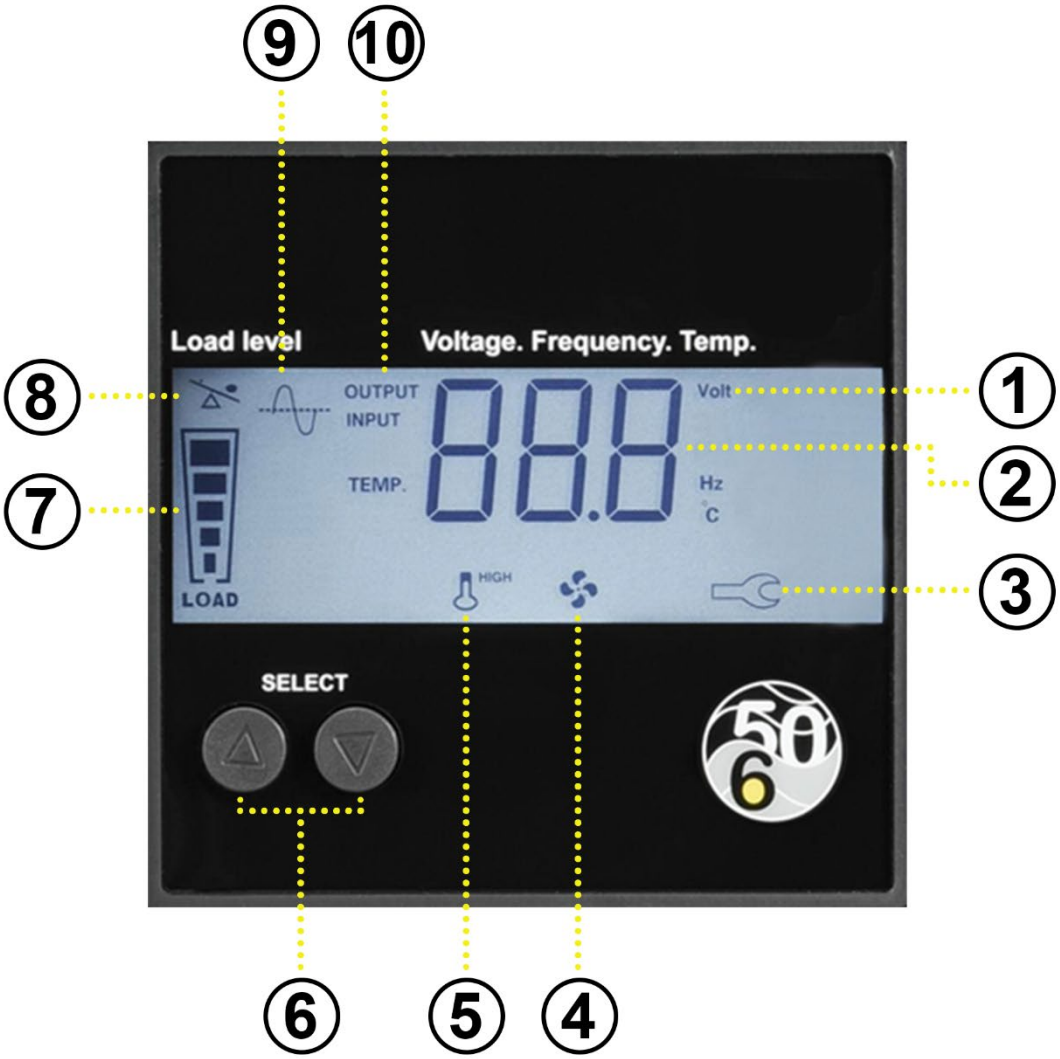
With 8 international power cord types (included) the Converter comes with everything required to get the maximum output capacity wherever you are in the world.

With outstanding performance & reliability, the unique benefits of the Converter include the following:

- Portable, Lightweight, and Durable
- Common Neutral, Double Conversion Topology (O/P Neutral to I/P Neutral is 0 volts normally)
- Wide Range Input Window and Input Power Factor correction
- Silent Smart Fan Design
- Advanced High-Efficiency Full-Bridge Inverter Architecture
- Full Function LCD Display
- Automatic Restart of Loads After Overload Shutdown
- AC Input Generator Compatible

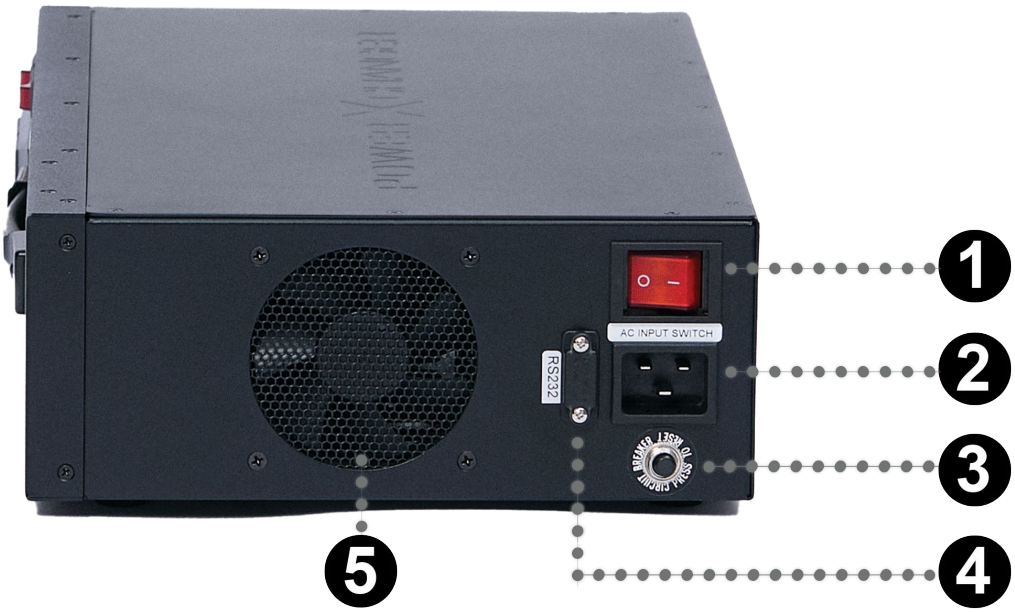
2. PRODUCT DETAILS

LCD Display and Indicators



1. Display Units
2. Display Value
3. Fault Detected
4. Fan Running in High Speed
5. Heat Sink Too Hot
6. Data Select
7. Load Level
8. Overload Indicator
9. Input AC OK Indicator
10. Displayed Parameter

SIDE PANEL



FRONT PANEL

1. Main Power Switch
2. AC Inlet Port
3. Re-Settable Circuit Breaker
4. RS232 Serial Port
5. Ventilation Input Fan
6. LCD Screen
7. AC Output Switches and Breaker (15A)
8. AC Output Sockets
9. Carrying Handle

3. INCLUDED ACCESSORIES

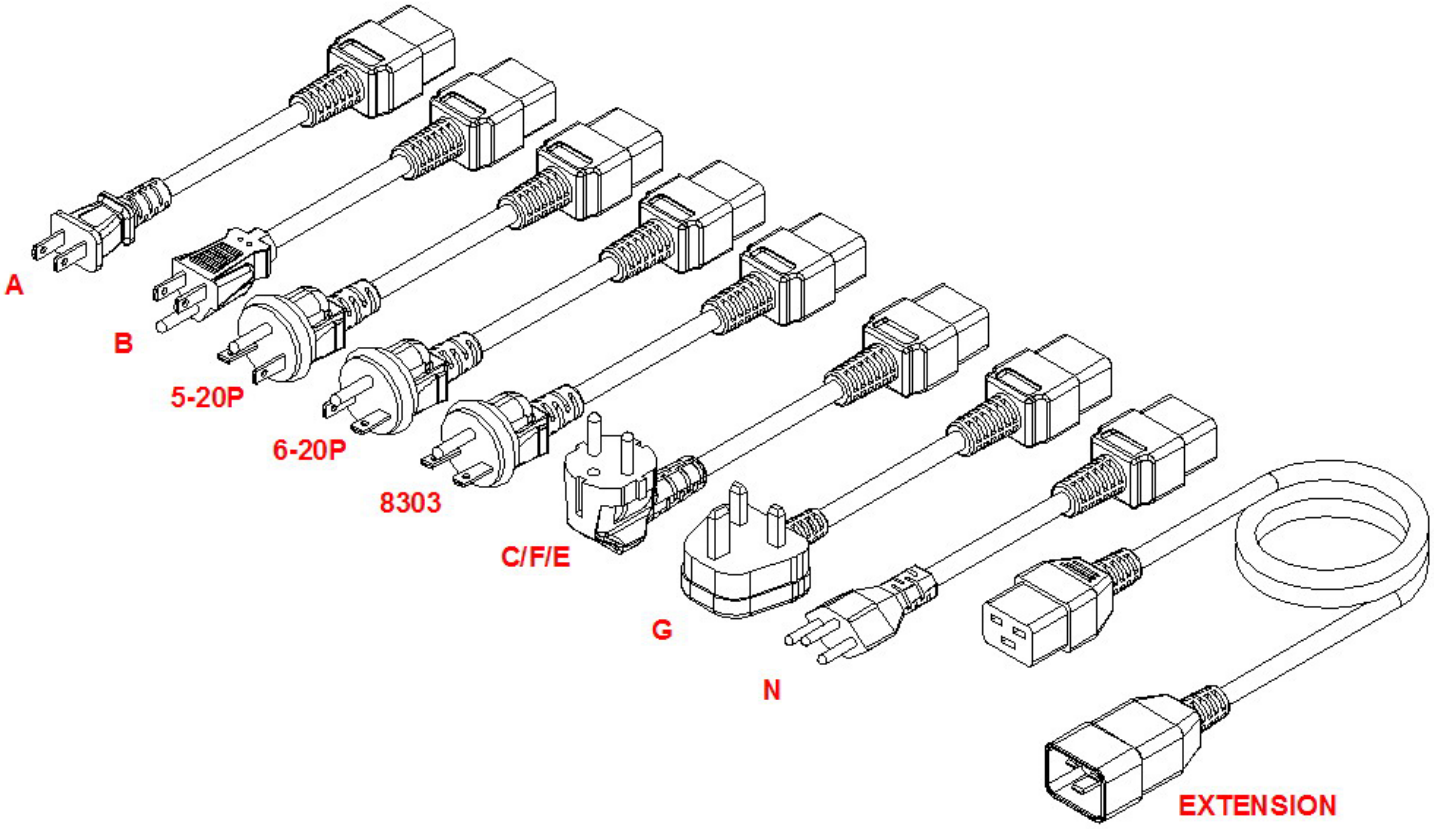
3.1 International Adapting Power Cord Set and Connecting Cord

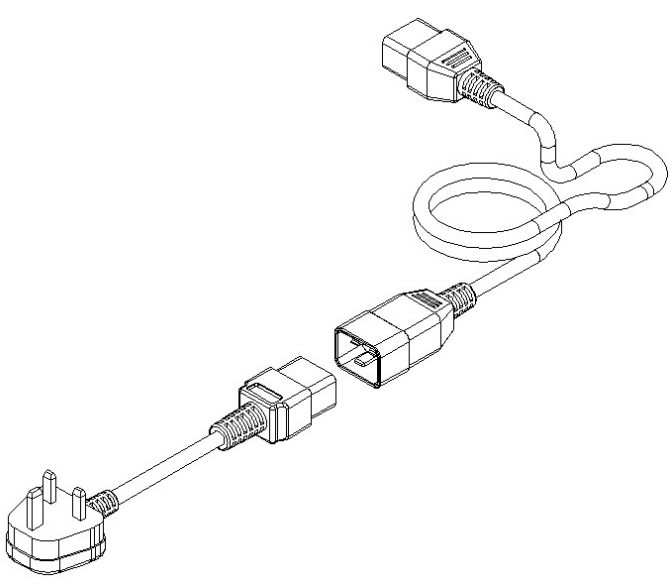
The Converter includes 8 of the world's most common plug types. Using the correct plug type will maximize the converters output capacity at a rated input level.

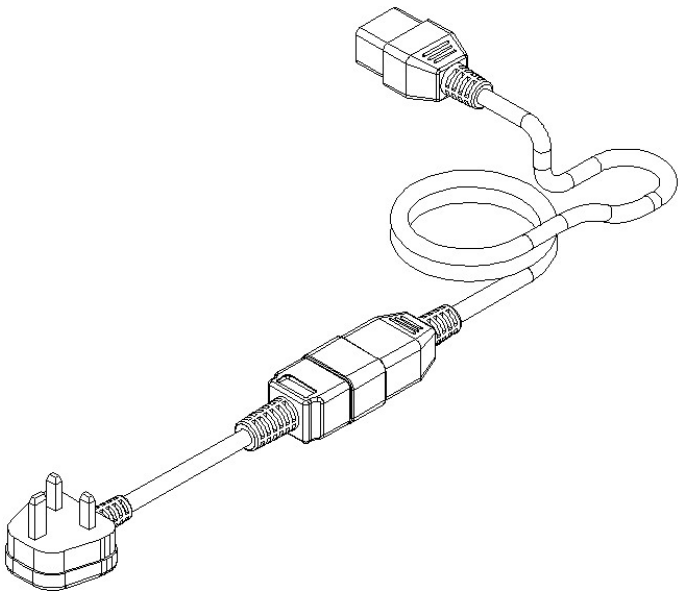
PLUG TYPES	SHORT ADAPTING CORDS FOR CONVERTER	
A	NEMA 2-PIN NORTH AMERICA, CENTRAL AMERICA JAPAN & CARIBBEAN	
B	NEMA 3-PIN NORTH AMERICA, CENTRAL AMERICA JAPAN & CARIBBEAN	
5-20P	NEMA 3-PIN NORTH AMERICA, CENTRAL AMERICA JAPAN & CARIBBEAN	
6-20P	NEMA 3-PIN NORTH AMERICA, CENTRAL AMERICA & CARIBBEAN	
8303	15 AMP PLUG JIS-C JAPAN 200 VOLT	
C / F/ E	PHILIPPINES & SOUTH KOREA	
G	SAUDI ARABIA	
N	BRAZIL	

3.2 Connecting Cord Instructions

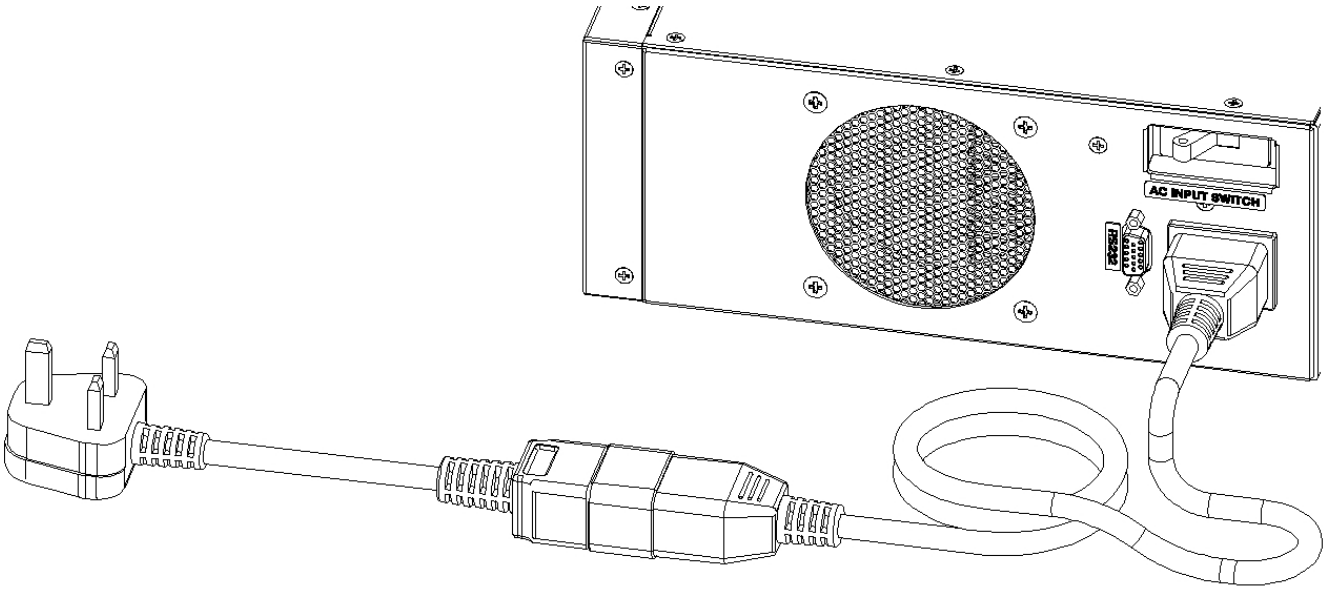
Hold the female end of the 6 ft main extension connecting power cord and the short adapting cord, align the connectors, and then push them firmly together.







Ensure there is no visible gap between the connectors and confirm they are securely connected before plugging into the Converter and local power outlet.



WARNING

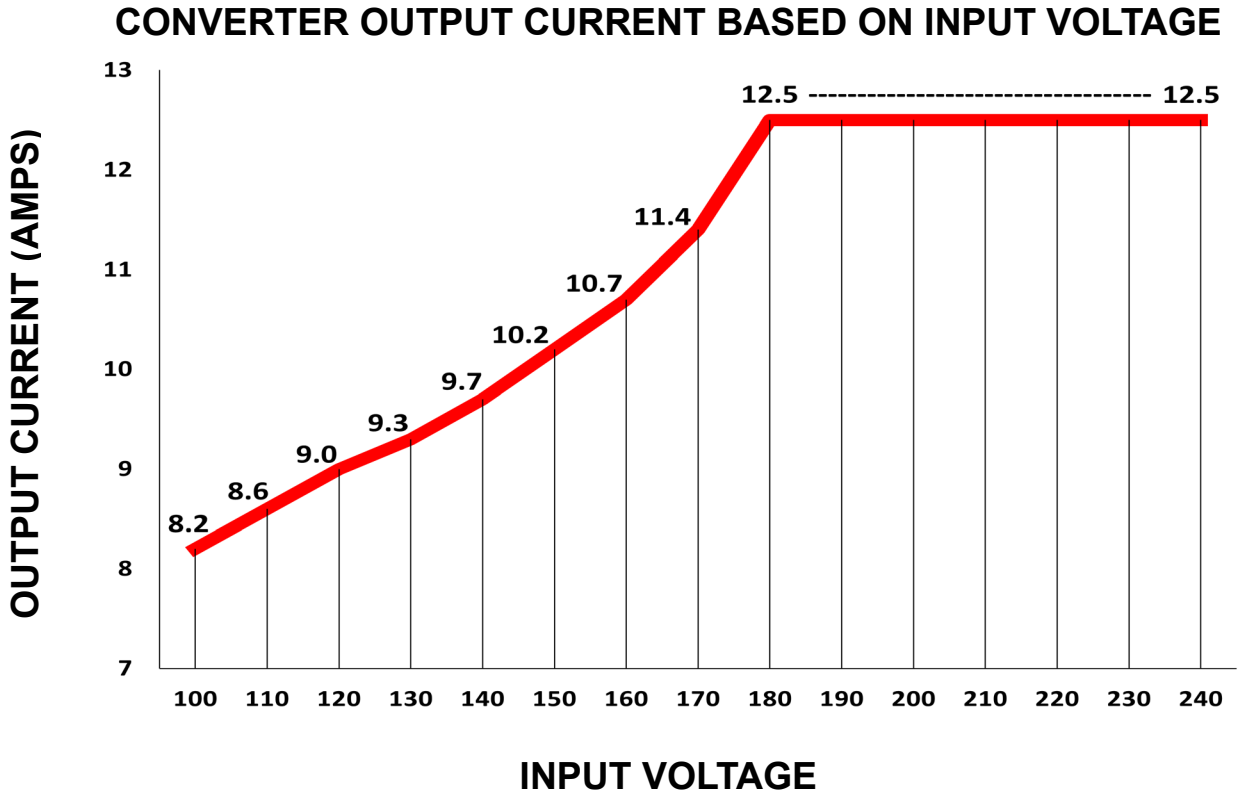
- Check for any dust and debris inside the plugs or inlet before use
- Do not allow connecting cord or short adapting cords to come in contact with any liquid. Do not operate cords near a heat source.
- Place cords out of reach of children and pets.
- Do not modify the provided cords or short adapting cords provided with the Converter. If it will not fit the outlet, have a proper outlet installed by a qualified electrician.
- Do not operate with a damaged connecting cord, or a damaged short adapting cord. Only use official PowerXchanger cords and accessories.
- Do not use another cord between the main extension connecting cord and short adapting cord.
- Using a wall adaptor can result in reduced Converter performance. Always use the appropriate short adapting cord for the country in use.

4. OPERATION

4.1 Input Voltage and Output Capacity

The converter's output capacity depends on the input voltage. Selecting the correct world plug type ensures maximum performance.

I/P	Level of Full-Load (100%)	O/P Current
100V	1890VA / 1700W	8.6A / 7.7A
110V	2100VA / 1890W	9.5A / 8.6A
120V	2200VA / 1980W	10.0A / 9.0A
130V	2280VA / 2050W	10.4A / 9.3A
140V	2370VA / 2130W	10.8A / 9.7A
150V	2490VA / 2240W	11.3A / 10.2A
160V	2610VA / 2350W	11.9A / 10.7A
170V	2780VA / 2500W	12.6A / 11.4A
180V	3000VA / 2700W	13.6A / 12.5A
190V	3000VA / 2700W	13.6A / 12.5A
200V	3000VA / 2700W	13.6A / 12.5A
210V	3000VA / 2700W	13.6A / 12.5A
220V	3000VA / 2700W	13.6A / 12.5A
230V	3000VA / 2700W	13.6A / 12.5A
240V	3000VA / 2700W	13.6A / 12.5A



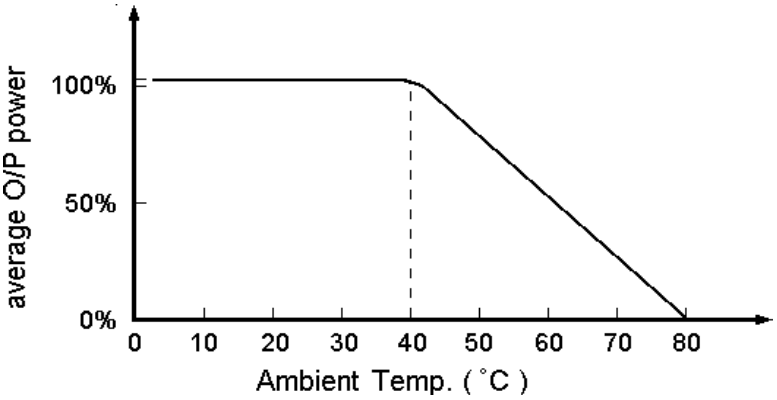
4.2 Installation

SAVE THESE INSTRUCTIONS. Please follow these instructions for installation and maintenance of the Converter. Please read all instructions before operating the equipment and save this manual for future reference.

Increased ambient temperature will shorten the life of the Converter, keep the Converter away from heating elements.

If ambient temperature is over 40℃, the load level will be reduced.

The ambient temperature should be between 0°C and 40°C to ensure optimal operation, over this range will reduce the average output power due to thermal de-rating.



4.3 Control

After installation with normal city power, the Converter will start up when the power switch is turned on. Confirm the output voltage and frequency from LCD display by pressing the up/down data select buttons to change display values.

Converter OFF: When the main power switch is turned off, the Converter will shut down.

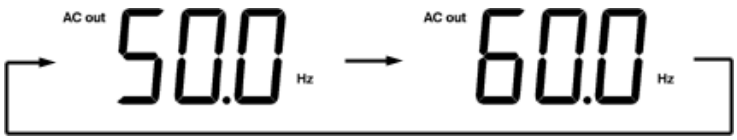
4.3.1 Change the Output Voltage and Frequency: Push the two selection buttons, △ and ▽, at the same time for 3 seconds until the LCD display begins to blink.

To Change the Converter Output Frequency

When the frequency value is blinking, push any selection button, △ or ▽, for 1 second to change the frequency setting.

The setting will keep changing every 2 seconds if you keep pushing the button.

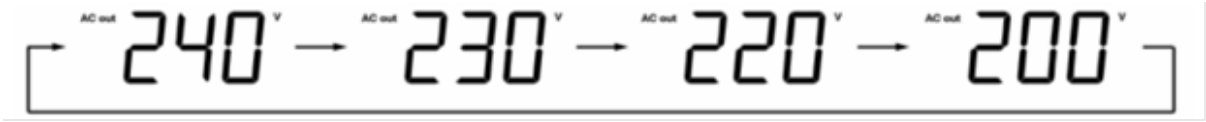
Push two selection buttons at the same time to switch to the next setting option or leave the LCD blinking without pushing any button for 30 seconds to confirm the setting.



To Change the Converter Output Voltage

When the voltage value is blinking, push any selection button for 1 second to change the rated voltage. Keep pushing the button until the required voltage is blinking.

Then, push two select buttons at the same time for confirmation, or leave the LCD blinking for 30 seconds to confirm the setting



5. PROTECTION FEATURES

Thermal Protection

If the Converter detects that it is starting to overheat, it will sound a sequence of 32 beeps every two seconds. The LCD will also show the high temperature symbol when the inside is too hot.

If the Converter continues to overheat, it will eventually turn itself off to protect itself from damage. Once the Converter has cooled off sufficiently, it will automatically restart.

Output Short Circuit Protection

If the Converter detects that the output voltage is too low for at least 250 ms, and the output is short circuited or extremely overloaded. The Converter will shut down and attempt to restart after 30 seconds.

The Converter will continue attempting to restart up to 30 times. If the short circuit is still present after the 30 attempts, the Converter will continue to alarm until the main power switch is turned off.

To restore the Converter operation, use the main power switch to turn off the Converter and remove the cause of the output short circuit or extreme overload. Wait at least 3 seconds before turning the Converter back on.

Output Overload Alarm

The Converter can accept up to 129% of full load before a continuous alarm sounds.

If the output current drawn by the load exceeds the Converter's over current alarm threshold, the CPU timer will start to countdown. If the overload continues for more than one minute an audible alarm will sound as long as the overload is present.

If the overload alarm continues for more than one minute, the Converter will turn off the output.

After a 30 second delay, the Converter output will restart.

Output Overload Protection

If the output of the Converter is loaded to more than its output overload protection threshold for more than two seconds, it will turn off its output, sound an audible alarm, and LCD will display the overload symbol.

After a 30 second delay, the Converter will turn the output on again. If the overload is no longer present, the audible alarm will stop, and the output will operate normally.

If the overload is still present, the Converter will once again turn off the output and wait 30 seconds before attempting to start again.

The Converter will continue attempting to restart up to 30 times. If the overload is still present after 30 attempts, the Converter will stop attempting to restart and shut down.

Input Over Current Protection

The maximum allowed input current for the power inlet is 20A. When the output current is constant, the lower the input voltage, the higher the input current will be required from the inlet.

The circuit breaker will trip when the input current is over the limit to prevent overheating the input circuit.

Reset the circuit breaker by pushing the circuit breaker button. After resetting, user must reduce the load level or plug the inlet at higher voltage socket to prevent the main power switch and breaker from tripping.

6. SPECIFICATIONS

STEP-UP VOLTAGE AND FREQUENCY CONVERTER UMPX-12

OUTPUT

Capacity	2700W / 3000VA*
Output Voltage	200V / 220V / 230V / 240V (Selectable)
Maximum Output Current	9.0 Amp (120V Input) / 12.5 Amp (200V+ Input)
Output Peak Current (<250mS)	40 Amp
Maximum Continuous Load	2700W
Maximum Peak Load	3500W (Tested Under 240Vac Input)
Voltage Regulation	±2% of selected output voltage
Output Frequency	50Hz or 60Hz (selectable)
Output Frequency Synchronization	50±0.01Hz or 60±0.01Hz (independent of input frequency)
Crest Factor	3:1
Voltage Waveform	Sine Wave
Total Harmonic Distortion (Resistive Load)	<2%
Total Harmonic Distortion (Reactive Load)	<3%
Standby Power	27W
Output EMI Filter	150Khz - 30Mhz
Output RFI Filter	30Mhz - 1000Mhz
Clamp Level	400V Peak
Efficiency (Input to Output)	>87%
Output Compatibility with UPS	Yes

OUTPUT CONNECTION FROM MAINS

Ground	Input and Output Ground are Connected
Neutral	Input and Output Neutral Connected (after EMC inductor) Isolation Transformer is not required

INPUT

Nominal Voltage	120V / 240V
Input Voltage Range	90Vac ~ 285Vac
Input Current	20 Amp
Input Frequency Range	45Hz - 70Hz
Input Neutral Auto Detect & Correct	No
Wall-Outlet Type Required	Includes 8 Input Plug Types
Phase	Single
Noise Filtering	Full-Time EMI/RFI Filtering
Input EMI Filter	150Khz -30Mhz (class A)

Input RFI Filter	30Mhz - 1000Mhz (class A)
Overcurrent Protection (Input)	By Re-Settable; Overcurrent Protector
Power Factor	≧ 0.98
Switch-On Surge (In-Rush Current)	<100A, 3mS
Voltage Interruption Ride Through	10mS

PROTECTION

Overcurrent Protection (Output)	Overload Alarm Level: 100% ~ 129% (alarm after 1 minute delay, shutdown after 1 minute alarm); Overload Shutdown Level: 130% (shutdown after 2 second delay)
Short-Circuit Protection	Pulsating Type, 37A Peak; Auto-Restart time: 30 seconds
Over-Temperature Protection	Internal temperature is over 76℃, LCD shows the Over-Temperature Symbol. If temperature continues rising to 85℃, buzzer alert for high temperature is activated and the CPU will shut down the output voltage. CPU will resume output voltage automatically once the temperature drops to 75℃ or lower.

INDICATORS & ALARMS

LCD Display	Displays Input Voltage, Output Voltage, Output Frequency, Temperature, Load Level. Selectable Output Voltage and Output Frequency
Indicator - Load Level	LCD Displays Current Usage Level of Total Available Capacity
Indicator - Overload	LCD Shows Overload Symbol
Indicator - Over-Temperature	LCD Shows Over-Temperature Symbol
Audible Alarms	Overload Alarm, Short-Circuit Alarm, Over-Temperature Alarm
Audible Alarm - Overload	Continuous Alarm
Audible Alarm - Short-Circuit	Every other 2 seconds, 32 beeps in 2 seconds
Audible Alarm - Over-Temperature	Every other 2 seconds, 32 beeps in 2 seconds

ENVIRONMENTAL & SAFETY

Operating Temperature	Up to 1500 meters: 0℃ to 40℃ (32℉ to 104℉)
Transit/Storage Temp	-15℃ to 55℃ (5℉ to 131℉)
Relative Humidity	5 – 95% Non-Condensing
Operating Altitude	0 ~ 3000 Meters
Moisture Sensitivity	Internal Fan
Audible Noise	≦45 dBA (at 1 meter from surface of unit)
Safety Markings	CE & BSMI
Quality Control Standard	ISO9001

COOLING

Cooling Method	Forced Air Cooling by Internal Fan
Internal Fans	Internal fan runs at low speed continuously when temperature inside is low. Fan speed increases as temperature rises. When internal temperature is over 60° C, the internal fan runs at full speed

PHYSICAL

Product Dimensions (in) L x W x H	17in x 10in x 4in
Product Weight (lbs)	15lbs
Product Dimensions (cm) L x W x H	43cm x 25cm x 10cm
Product Weight (kgs)	6.8kgs
Carton Dimensions (in) L x W x H	25in x 14in x 20in
Carton Weight (lbs)	45lbs
Carton Dimensions (cm) L x W x H	63cm x 36cm x 51cm
Carton Weight (kgs)	20.4kgs

* Please refer to the input range for the condition of output rated capacity.