Operating Manual - PowerXchanger®

Double Conversion AC Power Converter

Step-Down Series

MPX-21U

Input Range: 90 VAC ~ 285 VAC

Input Frequency: 50Hz or 60Hz

Output Range: 100V-110V-115V-120V 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.

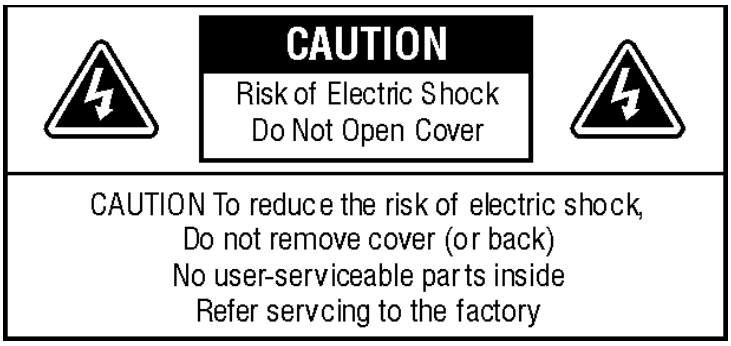
CAUTION:

- 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	90V	100V	110V	120V	130V	140V	150V	160V	170V	180V	190V	200V	220V or Higher
O/P CURRENT(A)	12.2	13.5	14.8	15.5	16.2	17.1	18.0	19.1	20.1	20.7	21.6	21.6	21.6

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 100 volts results in maximum output current capacity of 13.5 Amps. With input power of 200 volts or higher, the max output current capacity is 21.6 Amps.

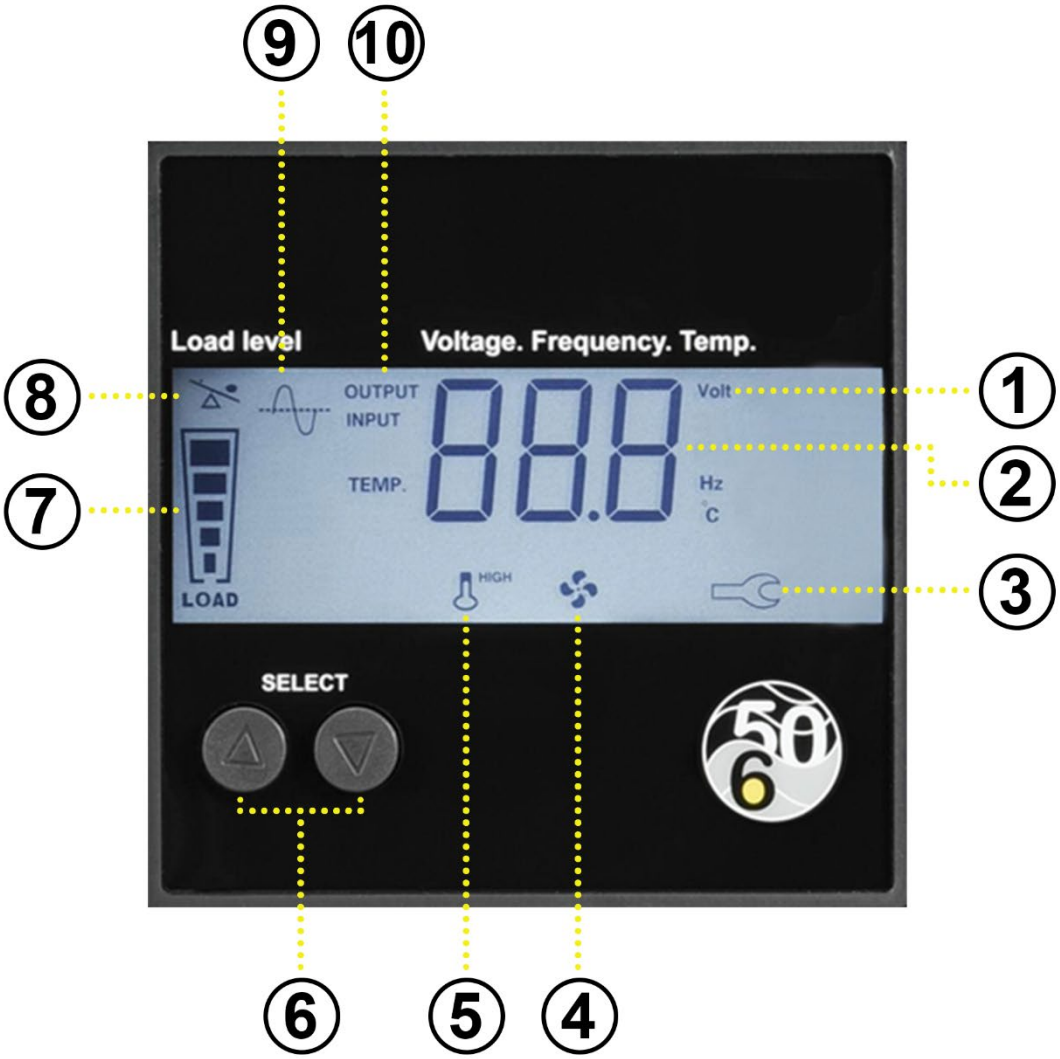
With 11 international power cord types (included) the Converter comes with everything required to get the maximum output capacity wherever you are in the world.

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
- Reverse Polarity Detection and Correction (Automatic)

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

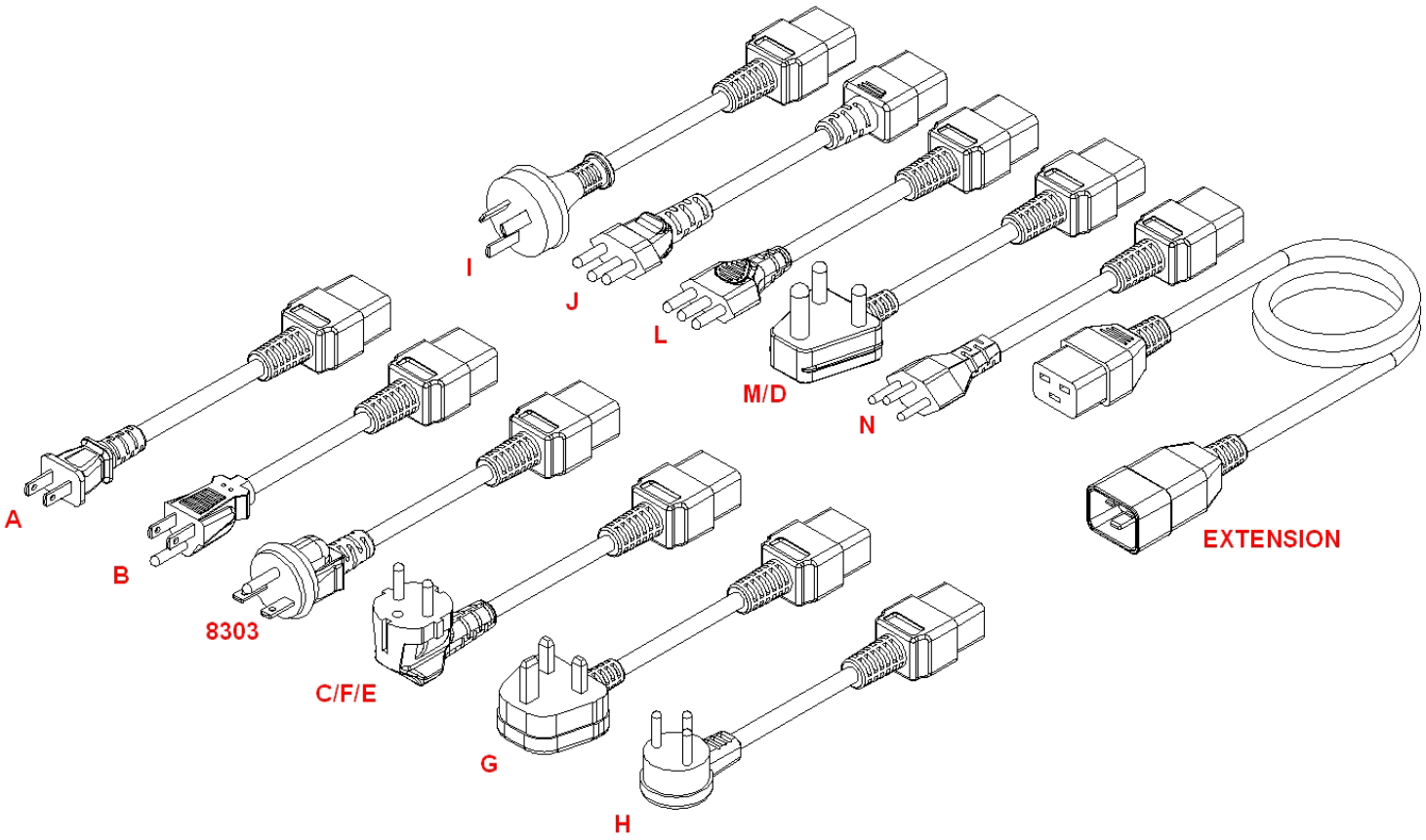
1. Main Power Switch and Breaker (20A)
2. AC Inlet Port
3. RS232 Serial Port
4. Ventilation Input Fan
5. LCD Screen
6. AC Output Switches and Breaker (15A)
7. AC Output Sockets
8. Carrying Handle

3. INCLUDED ACCESSORIES

3.1 International Adapting Power Cord Set and Connecting Cord

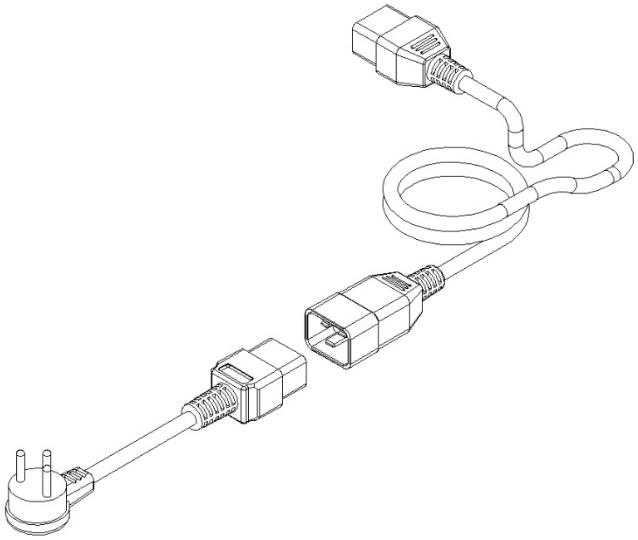
The Converter includes 11 of the world's most common plug types. Using the correct plug type will maximize the converters output capacity at rated input level.

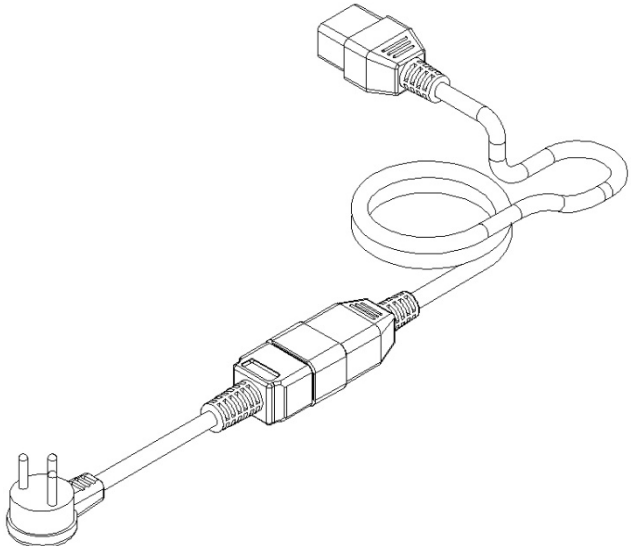
PLUG TYPES	SHORT ADAPTING CORDS FOR CONVERTER	
A	NEMA 2-PIN USA, JAPAN & CARIBBEAN	
B	NEMA 3-PIN USA, JAPAN & CARIBBEAN	
8303	15 AMP PLUG JIS-C JAPAN 200 VOLT	
C / F/ E	EUROPE (GERMANY, FRANCE), SOUTH AMERICA & ASIA	
G	UK	
H	ISRAEL	
I	AUSTRALIA & NEW ZEALAND	
J	SWITZERLAND	
L	ITALY	
M / D	SOUTH AFRICA & INDIA	
N	BRAZIL	



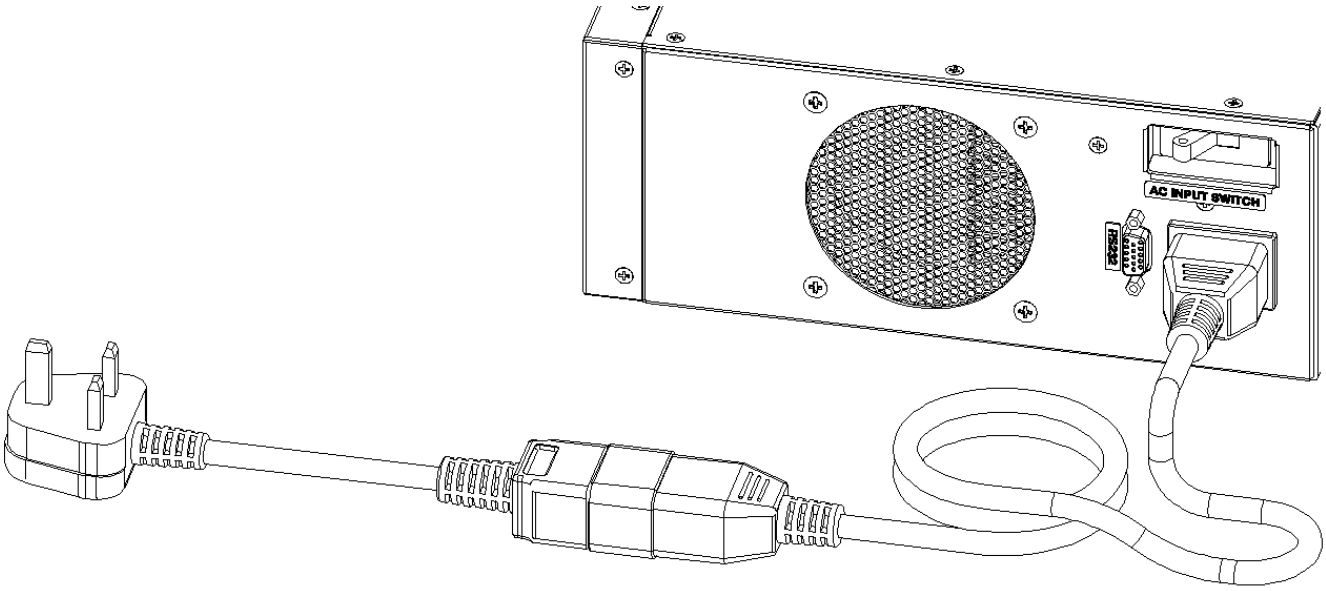
3.2 Connecting Cord Instructions

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.

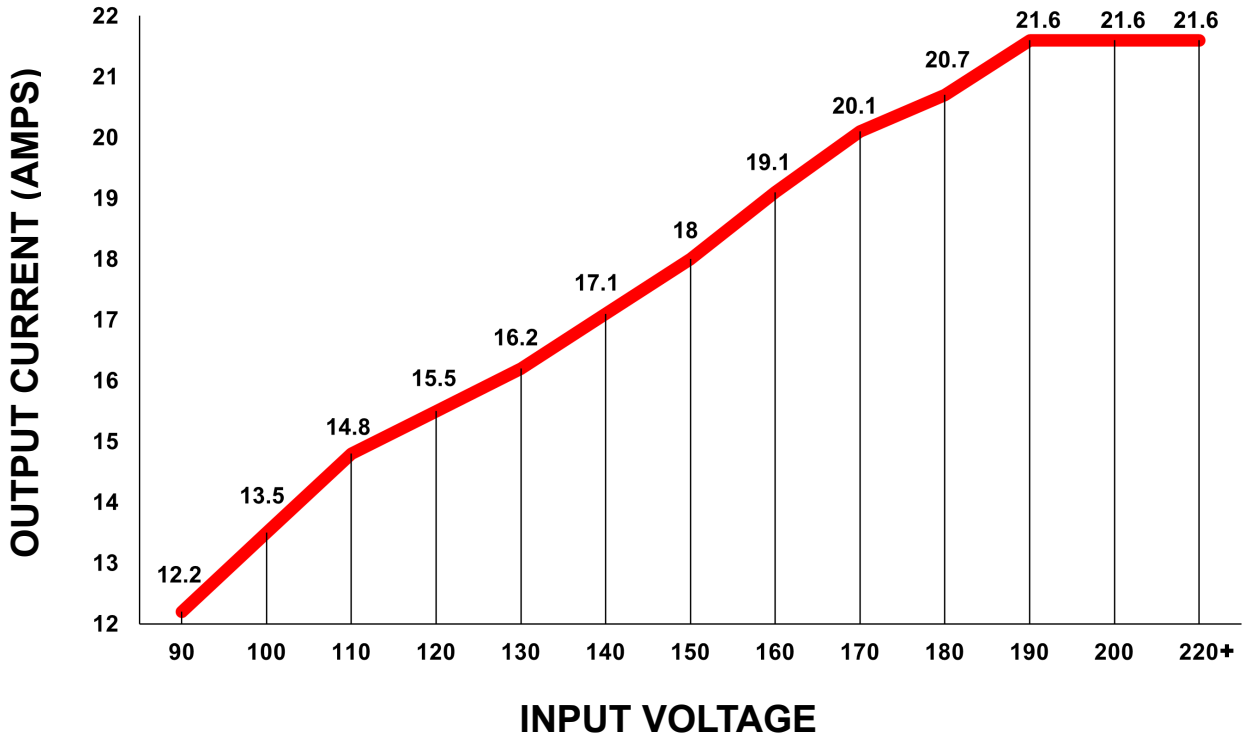
4. OPERATION

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
90V	1470VA / 1323W	12.2A
100V	1620VA / 1458W	13.5A
110V	1780VA / 1602W	14.8A
120V	1860VA / 1674W	15.5A
130V	1950VA / 1755W	16.2A
140V	2050VA / 1845W	17.1A
150V	2160VA / 1944W	18.0A
160V	2290VA / 2061W	19.1A
170V	2420VA / 2178W	20.1A
180V	2490VA / 2241W	20.7A
190V	2600VA / 2340W	21.6A
200V	2600VA / 2340W	21.6A
210V	2600VA / 2340W	21.6A
220V	2600VA / 2340W	21.6A
230V	2600VA / 2340W	21.6A
240V	2600VA / 2340W	21.6A

CONVERTER OUTPUT CURRENT BASED ON INPUT VOLTAGE



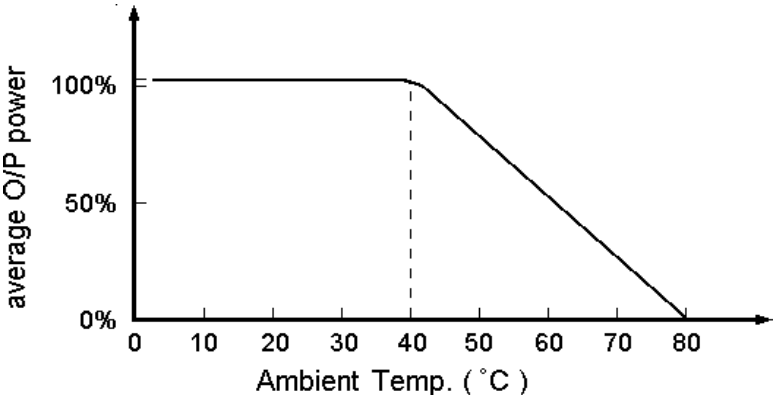
4.2 Installation

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: The Converter will turn off when the main power switch and breaker is turned off.

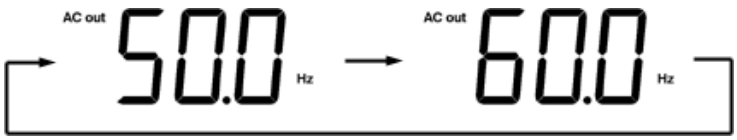
4.3.1 Change the Output Voltage and Frequency: Push the two selection buttons, △ and ▽, at the same time for 3 seconds until the LCD display begins to blink.

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.

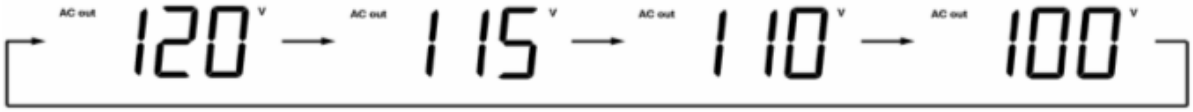
Push two selection buttons at the same time to switch to the next setting option or leave the LCD blinking without pushing any button for 30 seconds to confirm the setting.



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 overload is still present after 30 attempts, the Converter's main power switch and breaker switches off and the Converter shuts down.

To restore the Converter operation, remove the cause of the output short circuit or extreme overload, then turn the Converter's main power switch back on and the output will operate normally.

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's main power switch and breaker turns off and the Converter shuts 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 main power switch and breaker will trip when the input current is over the limit to prevent overheating the input circuit.

User can reduce the load level or plug the inlet at higher voltage socket to prevent the main power switch and breaker from tripping.

Polarity Reversal Auto Detect and Correct

If input Line / Neutral is reversed the Converter will automatically detect and correct the polarity for the output power.

6. SPECIFICATIONS

STEP-DOWN VOLTAGE AND FREQUENCY CONVERTER MPX-21U

OUTPUT

Capacity	2600VA/2340W
Output Voltage	100V/110V/115V/120V Selectable
Voltage Waveform	Sine Wave
Crest Factor	3 : 1
Output Frequency (Sync to Mains)	50/60Hz (selectable from LCD function button)
Output Frequency (Not Sync to Mains)	50±0.01Hz or 60±0.01Hz
Regulation	±2% of selected output voltage
OUTPUT CURRENT 100 V ~ 120 V	21.6 Amp Max *
OUTPUT PEAK CURRENT (<250mS)	67 Amp Max
Overload Protection	100% ~ 129% for 60 seconds delay, then alarm; alarm for 60 seconds, then shutdown o/p; 130%, alarm for 2 seconds, then shutdown o/p;
Harmonic Distortion	<3% (at full resistive load)
Efficiency	Up to 90%

INPUT

Voltage Range	90V~285Vac
Frequency Range	45~70Hz
Input Current	20Amp
Power Factor	≧0.98
Surge Current	<100A, 3mS

COMMUNICATIONS & MANAGEMENT

Control Panel	LCD
Audible Alarm	Overload Alarm, Short-Circuit Alarm, Thermal Alarm

ENVIRONMENTAL & SAFETY

Operating Temp.	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
Audible Noise	≦45 dBA (at 1 meter from surface of unit)
Safety Markings	CE
Quality Control System	ISO9001

PHYSICAL

Dimension D x H x W	250 x 108 x 430 (mm) 10 x 4 x 17 (in)
Weight (Net W.)	7.8kg 17 lbs

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