HUGO-X1 User Manual

Contents

IMPORTANT

- Read this User Manual carefully before operation.
- Retain this manual for future reference.
- It is prohibited to connect any appliance or electrical load other than those for which this product is intended.

NOTE: Throughout this document the HUGO-X1 (Uninterruptible Power Supply) may also be referred to as "UPS".

1. PRECAUTIONS AND GENERAL GUIDELINES

The basic condition for safe use and proper operation of the UPS is the knowledge and attention to the safety information provided in this manual.

The following safety information must be observed by all persons who will work with the UPS.

	This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The symbol, defined below, indicates the severity of the hazard. The message after the symbol provides information for preventing or avoiding the hazard.
 WARNING	Hazards which, if not avoided, COULD result in severe injury or death.

CAUTION	Hazards or unsafe practices which, MAY result in injury or property damage.
	WARNING
	• Read all safety warning and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. • Save all warnings and instructions for future reference.
	HUGO recommends the UPS be used with all installed safety features. Customer assumes all liability for injury that could result from improper use of this UPS and responsibility for all necessary training to ensure safe operation of this UPS.
	For installation and use by trained personnel only.
	If any damage to the product is apparent or suspected, do not use the product. Refer product to qualified service personnel.
	FCC WARNING: Changes or modifications to the product could void the user's authority to operate the product.
	Use recommended accessories. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to person.

ELECTRICAL SAFETY PRACTICES

GROUNDING:
In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current which reduces the risk of electrical shock.

Improper connection of the equipment grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

Check with a qualified electrician, or service personnel if the grounding instructions are not completely understood; or if in doubt as to whether the UPS is properly grounded.

Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.

DO NOT remove the ground connection from the UPS's power plug.

	⚠ WARNING
	Use personal protective equipment. Safety glasses must be worn at all times by all persons installing the UPS.
	Have your UPS serviced by a qualified repair person using only identical replacement part.

⚠ ELECTRICAL SAFETY PRACTICES

	⚠ WARNING
	ONLY OPERATE THE UPS INA CLEAN ENVIRONMENT. DO NOT EXPOSE THE UPS INTERIOR TO RAIN OR WET CONDITIONS. WATER ENTERING A UPS WILL INCREASE THE RISK OF ELECTRIC SHOCK.
	⚠ KEEP AWAY FROM LIVE CIRCUITS
	• Operating personnel must not remove covers. • Replacement of components and internal adjustments must be made by qualified maintenance personnel. • Disconnect power when replacing components. • Dangerous voltages may exist even with the power removed. • To avoid injuries, always disconnect power and tum power switch to OFF. • Input connection to the product must remain accessible as a disconnect device. • DO NOT work on the product; connect or disconnect cables during periods of lightning. • Provide wiring per national and local electrical codes.

⚠ BATTERY WARNING

- Turn off the UPS and unplug it from the AC power source before battery replacement.
- This UPS contains a sealed lead-acid battery. DO NOT open the battery
- DO NOT short or bridge the battery terminals with any object.
- The battery must be charged within 80 days from receiving the UPS. It is strongly recommended to cycle the charge within the battery every 90-120 days for battery to maintain its optimum performance.
- Ensure to charge the battery fully with each charge. Battery damage may occur if these instructions are not followed.
- Before replacing battery, make sure the replacement battery has the same charging voltage (12V/35 Amp Hours.) If any doubt, contact the manufacturer.

- Once the battery has reached the end of its life, properly dispose of the battery. **REFER TO YOUR LOCAL LAWS AND REGULATIONS FOR BATTERY DISPOSAL REQUIREMENTS.**
- DO NOT alter the system in any way.

2. INTRODUCTION

The HUGO-X1 is a 350W interruptible power supply (UPS) that is designed to support gas tankless water heaters, direct vents space heaters, vent free space heaters or any gas-ignited appliance. May be installed indoors or outdoors.

3. Packing List:

a) HUGO Power Supply

b) Flow Sensor, if purchased separately

c) Hanging brackets (4)

d) Hanging bracket screws (12)

e) User Manual (1)

f) Adhesive Indication Stickers (2)

4. KEY FEATURES

- **Low output harmonic**

The output wave form is pure sine-wave, the harmonic is low

- **Intelligent MCU Technology**

The intelligent MCU (Micro-Computing Unit) can automatically monitor the input voltage surge, sags, break, output loads and battery status, providing the downstream application with protections.

- **High Reliability**

The UPS constantly monitors input voltage for surge, sags, or breaks, whenever such occurs, the UPS will transfer to battery mode within 10ms. It will also constantly monitor output load to prevent over-load and provide LED indications and chirp sequence alarm to alert user of such event. The UPS is also built with self-protect and self-reset functions.

- **DC Start and re-Startup**

The UPS is capable to switch on from the battery mode without city power, it will also automatically re-start when the city power source is back to normal.

- **Green Power**

This series is equipped with high efficiency, EMC standard meet A class, it meets green power standard.

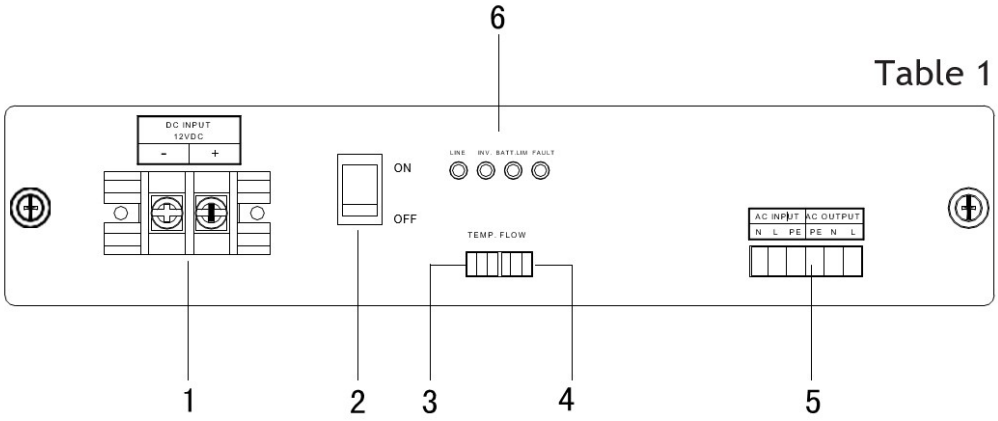
5. WORKING PRINCIPLE

When the main power is normal, the UPS will transfer the main power to downstream application.

During a power outage or when the main power is below 92v or above 138v, the UPS will transfer to inverter mode. While in inverter mode, the UPS will monitor flow and temperature sensor (if purchased separately). When flow sensor detects a demand for water, it will allow power output to downstream application. When the temperature senses 37deg f (+/- 2 deg f) or below, it will also override the UPS to turn on. For non-flow applications, unplug (temp.flow) port in front of inverter to allow flow sensing bypass. For this setup, whenever main power is lost, inverter mode will be in effect and provide constant power to downstream application.

6. INSTALLATION AND OPERATION

a) FRONT PANEL OF UPS



1. DC input connector bar (Connected to the battery)
2. Toggle power switch
3. Temperature dry contact*
4. Flow dry contact*
5. Input/output socket
6. Indicator lamp

Note that when the toggle power switch is in the "ON" position, voltage may still be present at the DC output terminals even when the input terminals are disconnected from power. DO NOT transport or attempt to make connections to the terminals when the toggle switch is in the "ON" position.

*Disconnected by default, connect for flow sensor installation only.

b) LED DISPLAY:

Table 1 LED lamp symbol

	Steady	Flashing	Off
LINE: Utility Power (green light)	Normal Utility	Abnormal Utility	No Utility Power
INV: Inverter Mode (green light)	Inverter Output	Inverter Standby	Inverter Off
BATT.LIM: (Yellow light)	Battery over voltage and under voltage protection	Normal: Battery Charging Rapid: Battery over/under voltage alarm	Normal Battery Voltage
FAULT: (Red light)	Machine Protection	Output overload alarm	Machine normal

c) INSTALLATION:

Ensure that the ON/OFF switch is in the "OFF" position during installation. The UPS can store a significant amount of power for an extended period. DC voltage may be present at the DC output terminals even when the input terminals are disconnected from power.

1. After unpacking the UPS, check whether there is any mechanical damage due to transportation. If the UPS has been noticeably damaged, contact your sales representative for assistance.
2. Tools Required

Phillips head screwdriver M3/M4		Fastening screw, connecting cable

3. Remove the (4) hangers and (8) screws. Tighten each hanger with (2) screws.

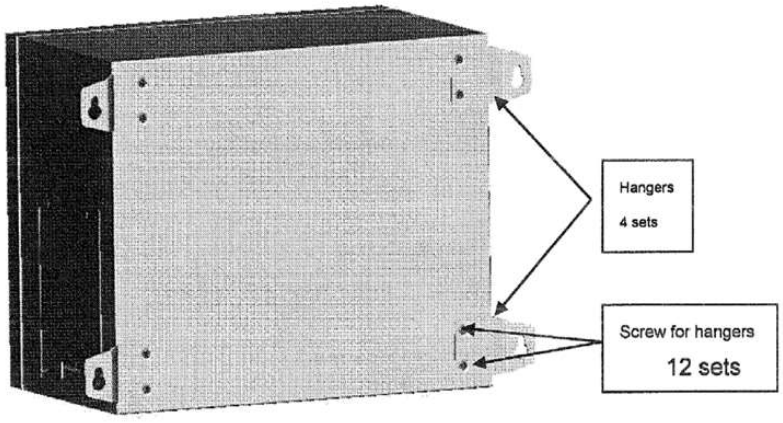


Photo: Hangers installation

4. Choose and prepare proper installation location. Note: Center point distance between left and right hangers is 15.5 inches.
   Warning! Ensure UPS is located above flood and snow lines. If at any time the UPS becomes damaged due to water or other, please consult with SPS customer care.

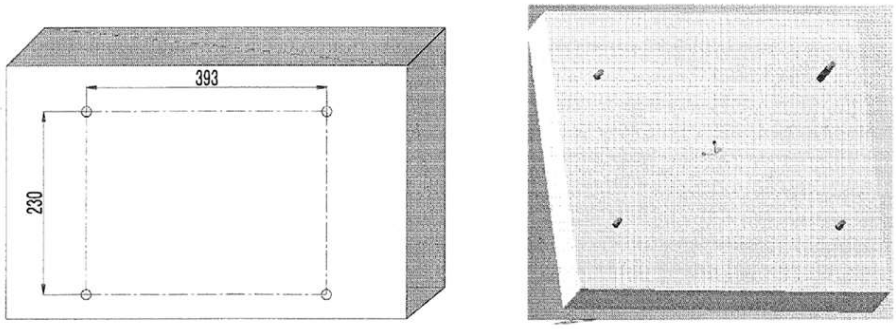


Photo: Hole for expansion bolts, Dimension in cm

5. Hang the UPS on a flat surface that will adequately support the weight of the UPS (45 lbs). When replacing hanger screws, please consult with professionals to use the proper mounting screws or bolts. Mounting screws are not provided with the package due to various installation locations. If the unit is to be wall mounted, it is strongly recommended by the manufacturer to mount on studs only due to the heavy weight of the unit (45 lbs). Should mounting on stub is not an option, please consult with a professional to mount the unit properly using the correct anchors and screws. SPS is not liable for any installation errors such as improper use of mounting material and/or mounting methods.

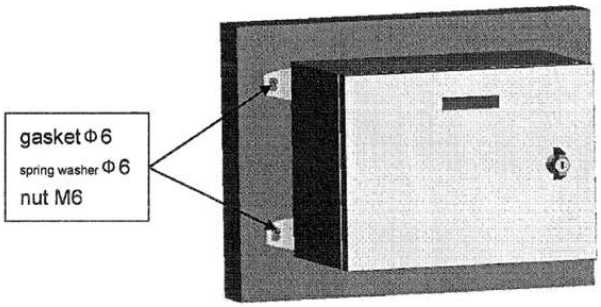


Photo: Installation Illustration

6. Using a Phillips head screwdriver, remove the wiring cover at right side of the UPS, connect application to "utility output socket", Flow Sensor to "Flow signal interface" (if applicable), as shown below:

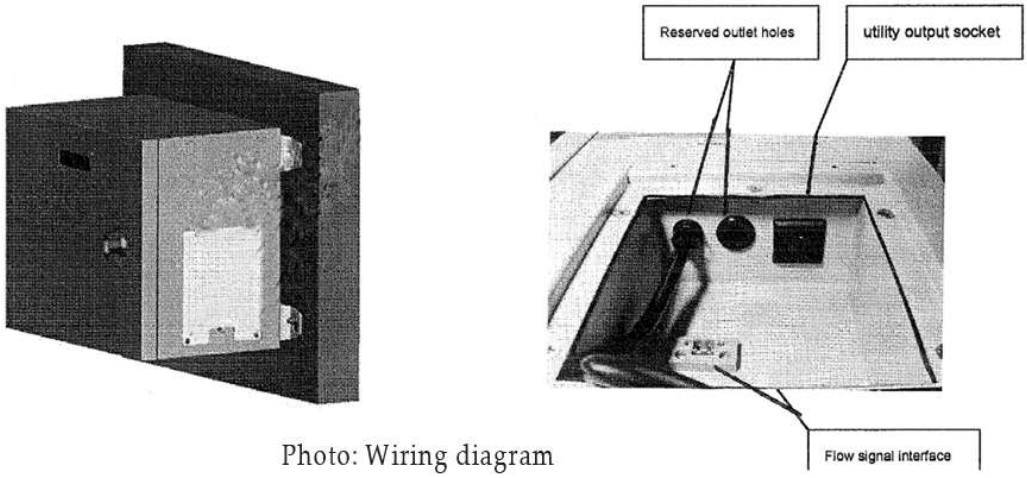


Photo: Wiring diagram

7. Double check wiring to ensure the connection is correct, close and lock the side panel as shown below.

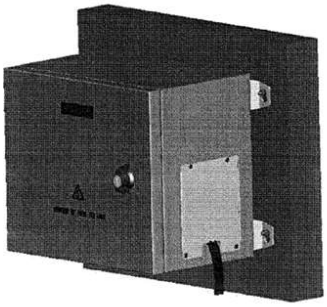


Photo: Installation diagram

8. Finally, connect HUGO's power cord with the main power outlet. NOTE: HUGO's rated input and output is 115 volts, can be fitted to any circuit breaker rated 15A. Ensure all connects are correct and that the input and output power cord is properly grounded.

9. Turn the front door cam to "OPEN" and using the supplied KEY turn the lock counter-clockwise to open the front door.

10. If HUGO-X1 is used for tankless water heaters and the flow sensor is installed, then plug in "temp.flow" port in front of the UPS panel. Otherwise, leave this port unplugged.

11. Turn the HUGO-X1 on via the toggle switch on the left side of the inverter panel. Once turned on, the unit shall chirp once and the indicator lamp "LINE" will stay lit if utility power is normal.

12. Indicator lamps on the front panel will display the operational status of the HUGO-X1 as shown in Table 1 above. The HUGO-X1 is also equipped with chirping alerts as

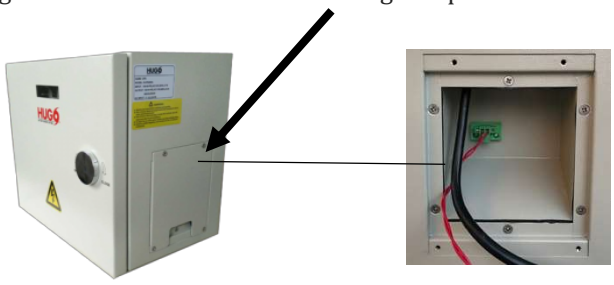
shown in schedule below.

Chirp Alarm Indication				
	Chirp once every 30s, silence after 5 minutes	Chirp twice every 30s, silence after 5 minutes	Chirp 3 times every 30s, silence after 5 minutes	Chirp 4 times every 30s, silence after 5 minutes
Inverter Normal Operation	ON			
Battery under/over Voltage		ON		
Output Overload			ON	
Machine Protection, No Output				ON

At any time, the HUGO-X1 detects overload or under/over voltage as indicated by the LED display or chirping alarm, it will attempt delay restarts. Once such issue is resolved, i.e. battery charge is normal or load is under 350w, the HUGO-X1 will automatically restart and remove any fault indicators.

7. FLOW SENSOR INSTALLATION:

- **NOTE: Before installing the flow sensor, make sure water is shut off at the cold-water supply side.**
- Flow sensor should be installed in the cold-water piping with the arrow pointing in the same direction as the cold-water flow (towards the tankless water heater) and in the horizontal orientation with the 4 screws of the sensor pointing upward.
- The included flow sensor will require two (2), ***installer provided***, ¾" Female Hose Thread (FHT, FGH) Adapters to transition from Male Hose Thread (MHT/MGH) to desired piping (PEX, CPVC, Copper, Etc.)
    - Ensure Female Hose Thread Adaptors utilize proper sealing gaskets (washers).
    - Make sure to never over-tighten the adaptors to the flow sensor. It is also critical to align the threads correctly to avoid stripping of the threads on the flow sensor.
    - If flow sensor is installed outdoors, please make sure it is properly jacketed to protect from direct sunlight and freezing conditions.
- Once Flow Sensor is installed and tested for leaks, connect the flow sensor Molex plug securely into flow signal interface located in the wiring compartment on the right side of the unit.



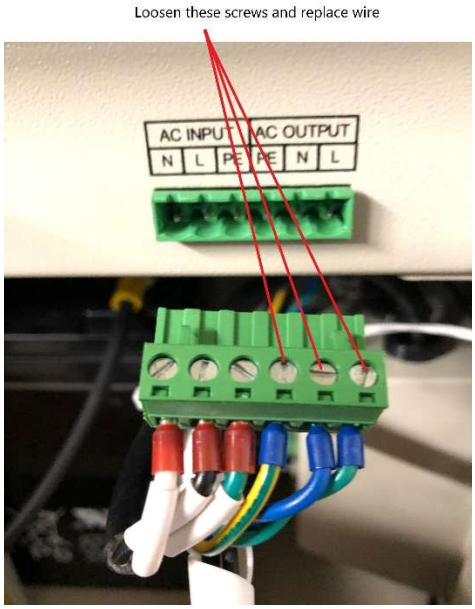
- After flow sensor is properly installed, turn on the cold-water supply and check for

leakage.

8. HARDWIRING INSTRUCTION

If your appliance does not have a plug and requires hardwiring, it is strong recommended that the following procedures to be completed by a certified electrician and the installer must follow all codes to ensure the safety of installation and operation. Improper install voids the warranty for the HUGO product. Upon completion, please send a photo of the completed install to support@sps-us.net to ensure warranty will still be intact.

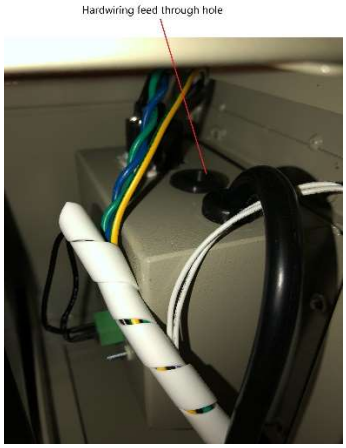
a) Loosen the three wiring screws on the "AC Output" green plug as shown in photo below:



b) Remove the three wires from factory:

- Green-yellow (Output Ground, or "PE")
- Blue (Output Neutral, or "N")
- Green (Output Hot, or "L")

c) Feed your appliance's cord from the outside of HUGO's wiring box to get inside the HUGO unit, as shown below:



d) Make sure not to tangle the wires inside the HUGO unit for easier maintenance and service calls in the future.
e) Connect your appliance's wire cords G (green), N (white), and L (red or black) to the corresponding positions on HUGO's "AC Output" of the green plug.
   - G to PE
   - N to N
   - L to L
f) Ensure no bare wires are exposed to the outside.
g) Tighten the flat head screws on the green connector.
h) Pull the newly installed wires to ensure a tight connection.
i) Plug the green connector back to the inverter.

9. STORAGE AND TRANSPORTATION

Retain the packing box and packing materials. The HUGO-X1 is a sensitive piece of power equipment. When storing or transporting, place the unit back into the original packing box to avoid any damage from moisture, dust, dirt or chemical corrosion.

10. MAINTENANCE AND TROUBLESHOOTING

a) Maintenance

- Upon successful installation of the unit, user shall visit the manufacture's website (www.safeguardpowersolutions.com) to register the UPS under "Product Registration". Once registered, the UPS's serial number will activate its warranty starting date.
- If the unit has not been activated by any power outage for a long period of time, it is recommended to unplug the HUGO-X1 from the main power source to allow the unit to operate on battery mode until battery depletes. Once battery depletes, plug the unit back to main power source to allow battery recharge. This maintenance shall be done every 6 months for the battery to maintain its optimum performance.
- It is recommended to periodically unplug the UPS from the main power source to check the UPS's normal operation. If any fault is detected, read the LED indicator

light and note the chirping sequence, then report this information back to point of purchase or consult with the manufacture.

b) Troubleshooting

Scenario: The unit does not operate in battery mode.

Possible Cause and Solution:

- **Flow sensor installed:** If the flow sensor is installed, the UPS will ONLY operate when it detects cold-water flow. Turn on any faucet and check the operating status of the UPS. If problem persists, unplug the "temp.flow" port in front of the UPS panel to bypass the flow sensing loop. Once unplugged, if the UPS's operation is normal under battery mode, then contact point of purchase to replace the flow sensor. If problem persists, call the manufacture at 855.484.6797.

- **Battery low voltage:** Charge up the battery for a full 20 hours. If problem persists, replace the battery. Battery can be purchased off-the-shelf, 12V, 35Ah, sealed lead-acid battery.

- **Output overload:** Remove the appliance connected to the UPS, wait for 5 minutes. Double check the connected appliance is rated under 350W. Plug the appliance back into the UPS. Turn on the UPS.

- **Output short circuit:** Contact point of purchase or the manufacture for inverter replacement if under warranty.

11. Technical Specifications:

Model No.	HUGO-X1	
Input	Voltage	92-138V
	Frequency	50 Hz/60Hz ±10%
Output	P.F. (VA/W) = 0.6	500VA/350W
	Voltage	113-117V (at Battery Mode)
	Frequency	Utility power mode: Output frequency is the same as input. Battery mode: 50/60Hz ±0.1
Protection	Utility Power Under Voltage	Under 92 VAC
	Utility Surge Protection	When the utility power is >138VAC, it will transfer to battery mode
	Battery Under Voltage Protection	The UPS turns off automatically when the battery voltage too low
	Overload or Short-Circuit Protection	Battery mode: 105%<load<150%, it lasts 5s then protect; 150%≤load, it lasts 200ms then protect; when short circuit, it protects immediately. Utility mode: 105%<load<130%, alarm but no protection; 130%≤load<150%, it lasts 5min then protect; 150%≤load, it last 10s then protect.
	Transfer Time	less than 15ms
Others	LED display	Refer to this manual
	Weight	48.5 lbs.
	Dimensions (W x D x H)	14 x 9 x 12 inches
	Operating Temperature	23 to +104°F
	Humidity	< 95% (non-condensing)