

UPStealth®



UPSTEALTH®



This user manual provides the essential information you need in order to get the most from your UPStealth Uninterruptible Power Supply & RTi Connect.

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Introduction

Proprietary Information

This document contains information that is confidential and proprietary to ZincFive, Inc. It may not be reproduced, distributed, or translated in any other language, in whole or in part, without written approval from ZincFive and/or its associated partners.

Copyright

The user acknowledges that all content included in this document, including the information, data, software, photographs, graphs, typefaces, graphics, images, illustrations, drawings, designs, icons, written and other material (collectively, "Content") and the arrangement and compilation of the Content are intellectual property and copyrighted works of ZincFive.

Trademarks

"UPStealth®", "RTi Connect™" are registered trademarks of ZincFive.

Support

Support Contacts

For technical support, please contact a ZincFive support representative:

Support Phone: 888.517.7776

Support Email: support@zincfive.com

Support Website: zincfive.com/support

Returns

For product returns, please contact a ZincFive support representative to obtain a return material authorization (RMA).

ZincFive, Inc.
20170 SW 112th Ave.
Tualatin, Oregon 97062

Returns Email: support@zincfive.com
Support Phone: 888.517.7776

Save the packaging material in the event a return is needed. ZincFive does not warranty product damage from return shipping unless it is shipped in approved packaging.

Warranty

ZincFive's UPStealth® is provided with ZincFive's Limited Warranty. Please refer to the Limited Warranty in the back of the manual.

About This Manual

This manual contains information to help owners and operators understand how to safely and properly prepare, install and operate the ZincFive UPStealth. Your careful attention to this manual will help avoid risks, reduce repair costs and downtime, and increase the reliability of the UPStealth.

The manual must be read and applied by those who use the UPStealth for proper installation, operation and maintenance of the system in accordance with the Limited Warranty.

Save These Instructions

This manual provides guidelines for safe and reliable UPStealth operation. Save this manual, it contains important installation and operating instructions. If you have any questions about the safe installation, operation or maintenance of the UPStealth, contact a ZincFive support representative. (zincfive.com/support or call 888-517-7776).

Battery Recycling

ZincFive is committed to environmental responsibility for our products. We work closely with ER2, our recommended and certified electronic recycling partner, to ensure our UPS and batteries can be responsibly recycled and kept out of landfills. Please call 1-844-372-0002 or visit ER2.com to schedule a pick up and learn more!

Disclaimer

While efforts have been made to ensure the accuracy and validity of information contained in the document, ZincFive assumes no responsibility and disclaims all liability for any errors and/or omissions that may be contained herein.

Due to possible changes and/or updates to component design and software applications, this document, completely or in part may become obsolete or out-of-date until a subsequent revision is released by ZincFive.

ZincFive may make changes to specifications, product descriptions, and documentation at any time, without notice.

Safety

Safety Symbols

ZincFive's UPStealth uninterruptible power supplies are carefully designed and tested to ensure that they are safe and reliable products when used properly. To ensure the safe and proper use of ZincFive's UPStealth, the following symbols are used throughout this manual. Operators, buyers, and technicians must observe each occurrence of these symbols as they appear throughout the document. Only qualified personnel should carry out these instructions.

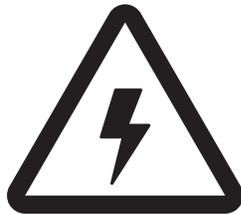


Figure 1: Danger Symbol

Danger:
A dangerous voltage exists in this area. Use extreme caution at all times.



Figure 2: Attention Symbol

Attention:
Important information or operating instructions. Follow them exactly.

UPS And Battery Safety

 This Uninterruptible Power Supply (UPS) and batteries must be installed in a restricted access location, and by trained personnel qualified in the safe use of high-energy power supplies and their batteries. Also assumed is knowledge of the local electrical code(s) and their safe application.

 Never let water or any form of liquid enter the UPS and batteries to prevent accidental shorts, shocks or electrocutions.

 Do not operate the UPS and batteries with damaged cables and wires. Defective cables and wires must be replaced before system installation. Prior to system installation, verify that all cables and wires are properly secured and connected. Faulty connections can interrupt operation and cause irreparable damage to this product

 Dismantling or opening the equipment will result in voiding the product warranty and expose a risk of electrical shock. Opening the equipment should only be done by a ZincFive representative.

Before Installation & Operation

UPS

- Do not work alone under hazardous conditions.
- Read this manual prior to installation and operation. If you have any questions about safe installation, operation or maintenance, contact ZincFive's Support Department.
- Carefully unpack the components. Report any shipping or other damage at once.
- Always assume electrical connections or conductors are live. Turn off all circuit breakers and double-check with a voltmeter before performing installation or maintenance.
- Before installation, verify the input voltage and current requirements of the load are met by the UPS's output. Verify the line voltage and current meet the UPS's input requirements.
- Never let live battery wires touch the UPS, the enclosure or any other metal objects.
- Use proper lifting techniques when lifting or moving the UPS or its components.
- At high ambient temperature conditions, the UPS's surface can be very hot to the touch when operating.

Battery

- Battery installation and servicing should be done or supervised by personnel knowledgeable about batteries and the required precautions.
- Use proper lifting techniques when lifting or moving the batteries.
- Never dispose of batteries in a fire.
- Never open or damage the batteries.
- 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, or other metal objects.
 - Use tools with insulated handles.
 - Disconnect charging source prior to connecting or disconnecting battery terminals.
 - Never short pins inside battery cable connectors.
 - Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance.

Unpacking & Inspection

Parts

Welcome to your UPStealth, carefully unbox your system. Upon removing the UPS and/or Batteries, inspect the contents and see Figure 3 to make sure the following items are included, depending on your purchased configuration and option choices:

	300W Living Hinge Battery	500W Living Hinge Battery	500W NEMA Battery	170 Controller (Regular/HD)	NEMA Controller (Regular/HD)	PIM	HUB
Whats Included							
Selected UPStealth Product	x	x	x	x	x	x	x
Interconnect cable	x	x	x				x
PIM Cable						x	
Shipping Kit (Product Dependent)			x	x	x	x	
UPStealth Manual				x	x		
Getting Started				x	x		
PIM Diagram						x	
Any ordered options							

Figure 3: Parts Chart

Inspection

Upon initial unpacking, inspect the equipment for issues that may have occurred during shipping. If you hear loose hardware or see damage to the equipment, do not open or energize the equipment. Opening the equipment will result in voiding the product warranty and expose a risk of electrical shock. Energizing damaged equipment may expose a risk of electrical shock.

For return information, see the Return section of this manual.

UPS

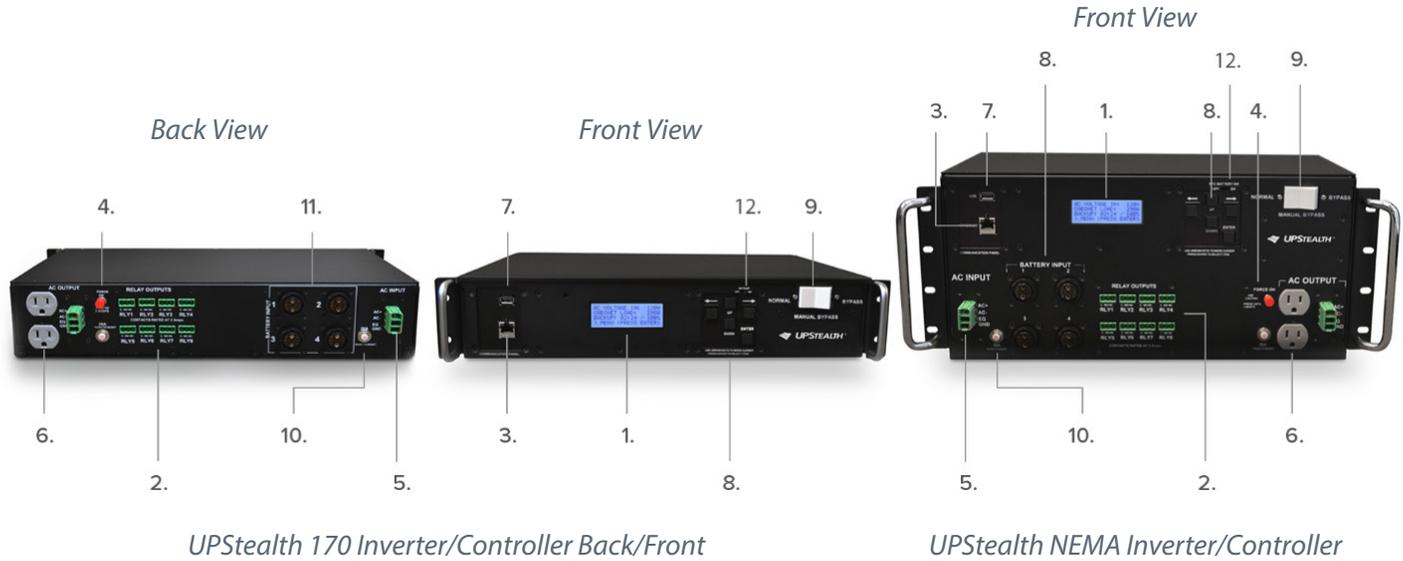
UPS Introduction

The UPS is available in two form factors, please determine which one you have purchased:



Figure 4: UPStealth 170 Inverter/Controller Figure 5: UPStealth NEMA Inverter/Controller

The UPStealth 170 Inverter/Controller and UPStealth NEMA Inverter/Controller utilize an Intelligent Two-Stage Operation. Designed for installation in all signalized and ITS cabinets, the back panel components of the 170 are on the front of the NEMA for front door access cabinets.



UPS Overview

(The numbering system below correlates with the above product photos)

1. **Display**
4 line X 20 Character LCD with White LED Backlight.
2. **8 Programmable Relays**
8 independent programmable relays with NO (normal open) and NC (normal closed). Contacts available for each relay, 2 Amp contacts. Relays can be programmed for the following: Power Failure, Temperature, Time/Date, Flash, Battery Capacity.
3. **Ethernet Port**
Through the Ethernet Port, remotely or locally connect to a UPStealth to view, monitor and manage a system with the RTi Connect desktop application.
4. **Force On**
Manually force the system to battery/inverter mode, enabling quick startup of a dark intersection. Eliminates the need for an on-site generator.
5. **AC Input**
The power receptacle for the utility line power input. An AC Input connection is included in shipment.
6. **AC Output**
The power receptacle for the UPStealth AC power output. An AC Output connection is included in shipment.
7. **USB Port**
Port for field upgrades only.
8. **Keypad**
5-button directional pad for cursor control to navigate through the UPS display menu.
9. **Bypass Switch**
Allows users to bypass battery panels to safely shut-off utility power without providing battery backup.
10. **20A Button**
20 Amp push button breaker for the AC Input and AC Output.
11. **Battery Input**
Four battery inputs for connecting batteries to the UPS. Utilize the supplied interconnect cable with quick connect/disconnect barrel connectors.

12. Coin Cell Battery Switch

The coin cell battery switch is labelled BATTERY OFF/ON above the keypad on the UPStealth Inverter/Controller. The UPStealth Inverter/Controller is shipped with the switch in the OFF position to prevent the coin cell from being discharged during shipping/storage. If the switch is in the ON position the coin cell provides power to the real time clock. The customer should turn the switch to the ON position during installation, which will ensure retention of power failure durations and log entries during extended power failures.

Physical Characteristics

UPStealth 170 Inverter/Controller.....17"W (19" w/ mounting) x 3.5"H x 13"D (17" w/ cable connected) Weight 14 lbs.

UPStealth NEMA Inverter/Controller.....17"W (19" w/ mounting) x 8"H x 9"D (13" w/ cable connected) Weight 15 lbs.

Batteries

Batteries Introduction

The batteries are available in three form factors, please determine which one you have purchased:



Figure 6: 300W UPStealth Living-Hinge Battery Panel

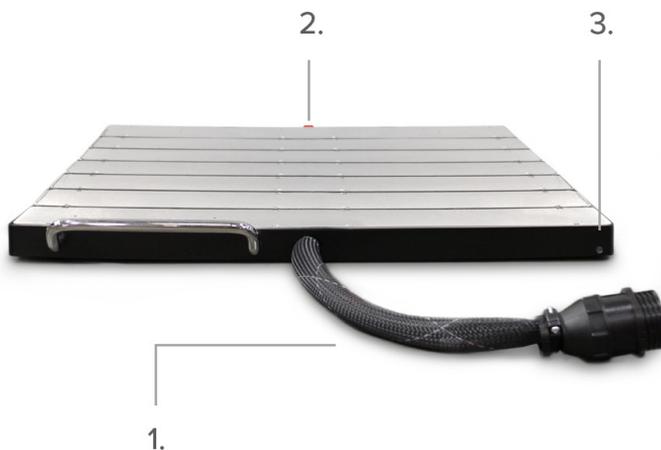


Figure 7: 500W UPStealth Living-Hinge Battery Panel



Figure 8: 500W UPStealth NEMA Battery Panel

UPStealth Living-Hinge Battery Panel and UPStealth NEMA Battery Panels come in different form factors and power levels, but operate on the same nickel-zinc batteries and intelligent battery management system. All Batteries are compatible with both the UPStealth 170 and NEMA Inverter/Controller and can be mixed and matched as needed.



300W UPStealth Living-Hinge Battery Panel



500W UPStealth NEMA Battery Panel

Batteries Overview

1. Battery Cable

The Battery Cable, when connected to an interconnect cable, connects the battery to the UPS.

2. Force On

Manually force the system to battery/inverter mode, enabling quick startup of a dark intersection. Eliminates the need for an on-site generator. Note: On the 500W UPStealth Living-Hinge Battery Panel, the red Force On button is located next to the handle

3. LED Indicator

A multi-color indicator light that provides battery status. See the LED Indicator Guide in the Troubleshooting section of the manual.

Physical Characteristics

300 Watt UPStealth Living-Hinge Battery Panel..... 19"W x 1"H x 19"D Weight 20 lbs.

500 Watt UPStealth Living-Hinge Battery Panel..... 19"W x 1"H x 28.75"D Weight 30 lbs.

500 Watt UPStealth NEMA Battery Panel..... 17"W (19" w/ mounting) x 3.5"H x 10.5"D (12" w/ mounting) 28 lbs.
Weight 28 lbs.

Power Interface Module (PIM)

PIM Introduction

The PIM is available in one form factor: UPStealth Power Interface Module (PIM)

The PIM provides a manual bypass switch function that enables the technician to remove and service the UPS without shutting down utility power. This functionality also enables UPS testing without using the intersection as load.

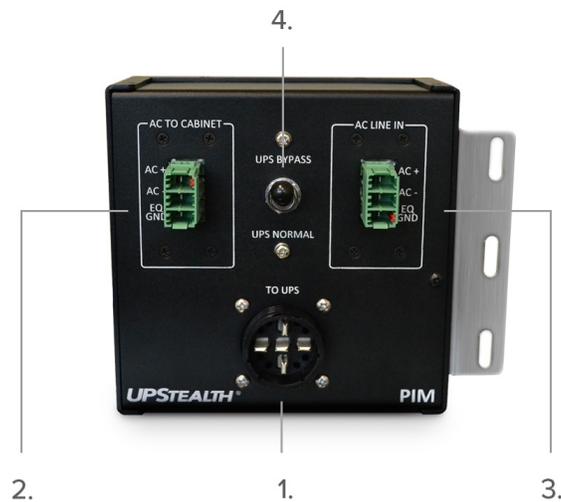


Figure 9: Power Interface Module

PIM Overview

1. TO UPS

Where the UPStealth® connects to the PIM with the PIM cable (included with PIM purchase).

2. AC TO CABINET

Where the cabinet/load is connected to the PIM.

3. AC LINE IN

Where AC power from the utility line is connected to the PIM.

4. UPS BYPASS

When the switch is in the BYPASS position, power flows directly to the cabinet/load and does not go through the UPStealth.

Physical Characteristics

PIM

6"W x 6"H x 2.5"D

Installation

Installation Safety

-  A battery can weigh up to 30 lbs. To avoid injury, use proper lifting techniques when unboxing and installing.

 -  If installing of the UPS or battery(s) on a cabinet shelf above your head is not recommended without the use of properly staged ladders and assistance in, lifting and placing the equipment.

 -  Save the packaging material in the event a return is needed. ZincFive does not warranty product damage from return shipping unless it is shipped in approved packaging.

 -  The UPStealth system should be installed in a restricted access environment and only installed and serviced by authorized personnel.
-

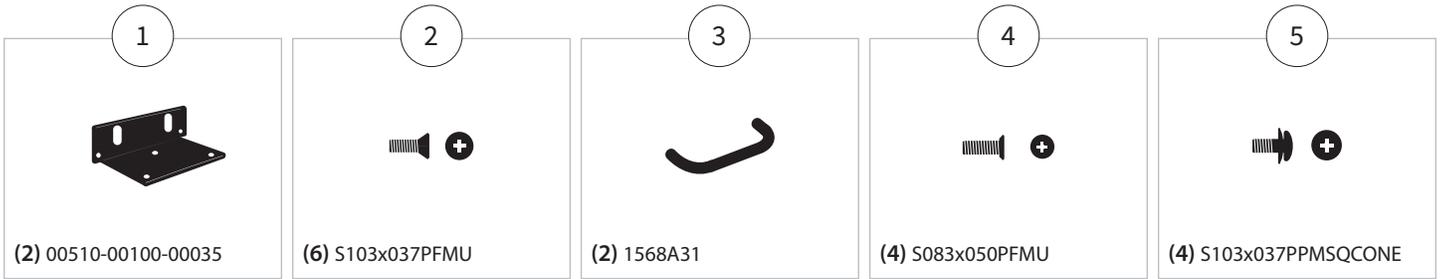
Tools Needed

- **Slotted screwdriver** - (1/8") Used for programmable relay.
 - **Two Phillips screwdrivers** - (#0) Used for input/output connectors and (#2) used for mounting the product.
 - **Wire stripper** - Used for proper stripping for wires.
-

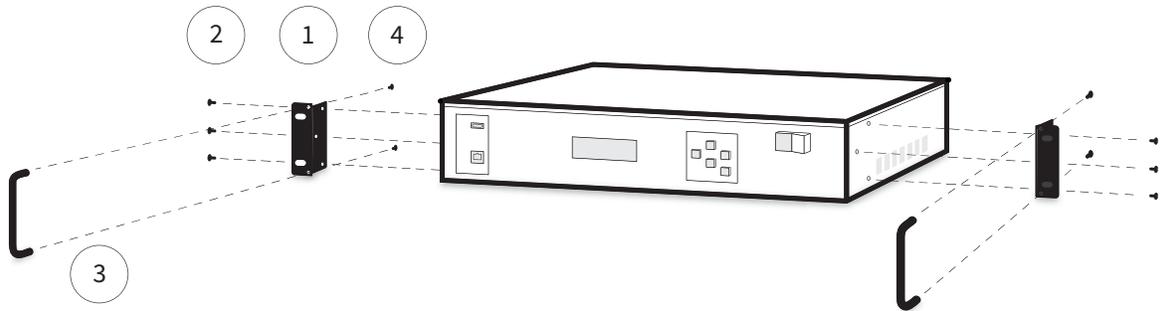
Installing The UPS

Both the UPStealth 170 Inverter/Controller and UPStealth NEMA Inverter/controllers can be rack mounted (EIA standard 19") or placed on a shelf. For shelf installations, no other parts are needed. For rack installations, use the provided brackets and hardware shown in figure 10 and figure 11.

Installing UPStealth 170 Inverter/Controller



Parts & Assembly



Rack Mount

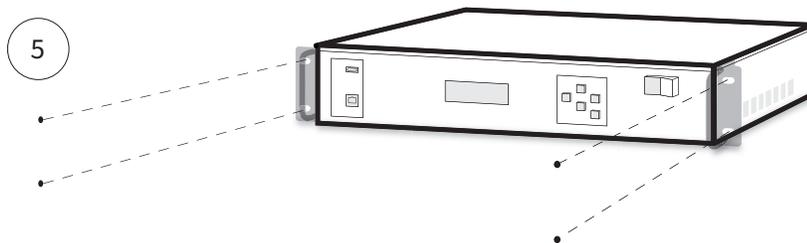
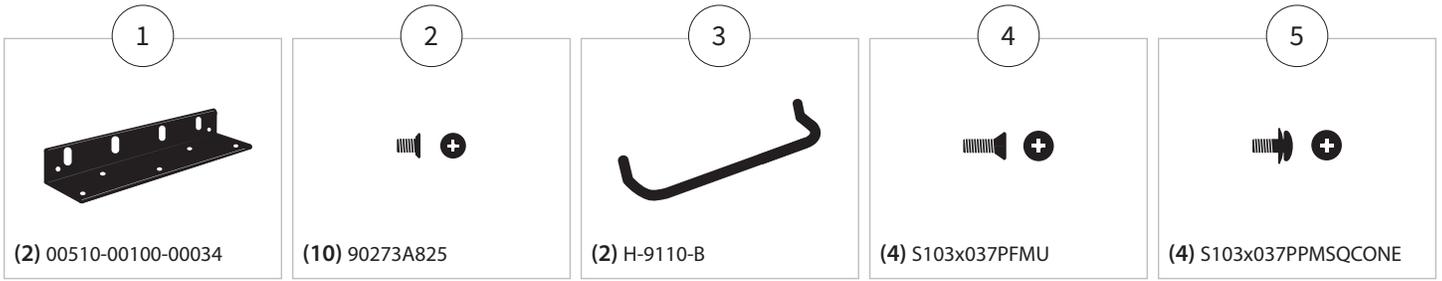
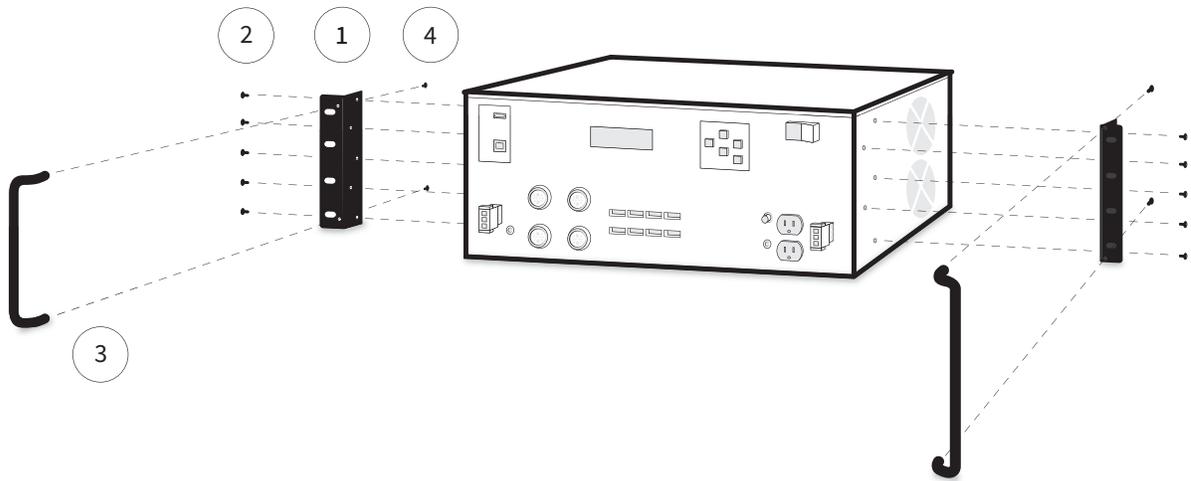


Figure 10 - UPStealth 170 Inverter/Controller w/ mounting brackets

Installing UPStealth NEMA Inverter/Controller



Parts & Assembly



Rack Mount

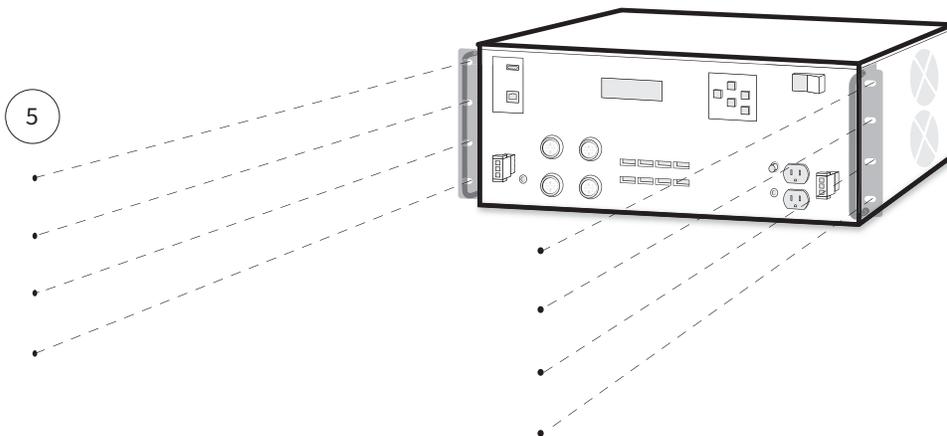


Figure 11 - UPStealth NEMA Inverter/Controller w/ mounting bracket

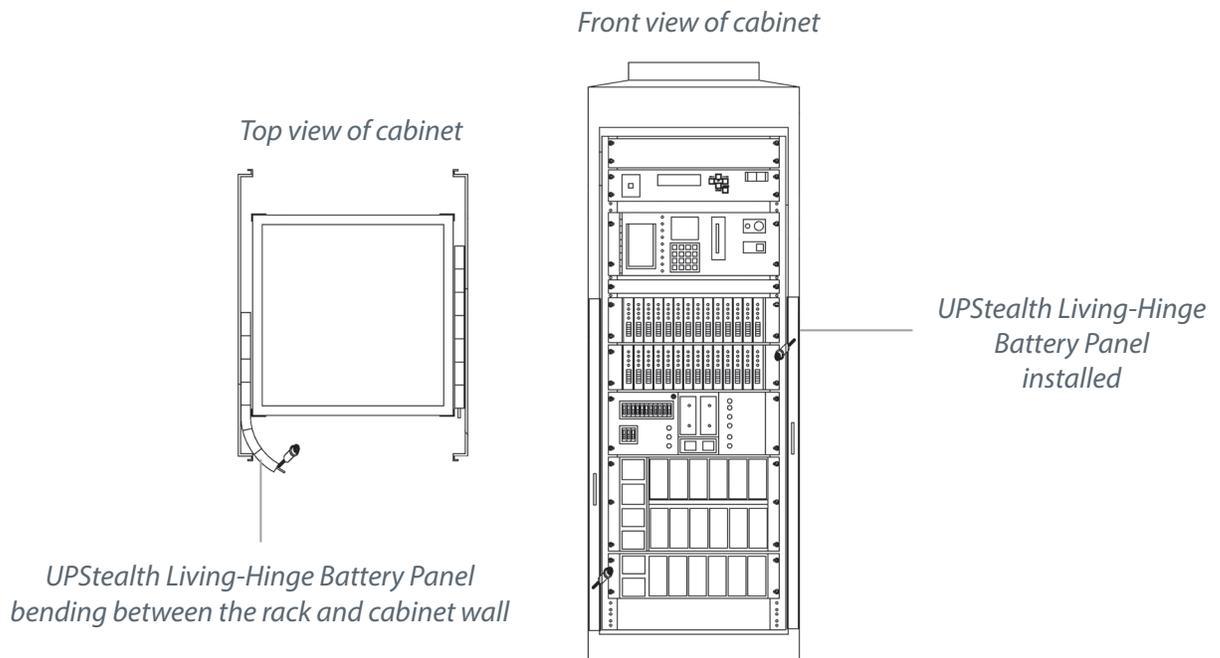
Installing The Batteries

The UPStealth Living-Hinge and NEMA Battery Panels are designed to be installed inside primary traffic cabinets, compatible with 170/2070 33X series and NEMA traffic cabinets. The following figures illustrate how to install your purchased equipment.

Installing UPStealth Living-Hinge Battery Panel

The 300W & 500W UPStealth Living-Hinge Battery Panels are not designed to be rack or shelf mounted. The flex design allows it to bend into the unused space between the rack and cabinet wall of 33X series cabinets as shown in figure 12.

Figure 12 - Installing UPStealth Living-Hinge Battery Panel



Step 1: Spacer Bar

Insert the spacer bar between the rack and cabinet wall at the bottom of the cabinet. This will support the bottom of the battery panel when installed.

Figure 13: Spacer Bar



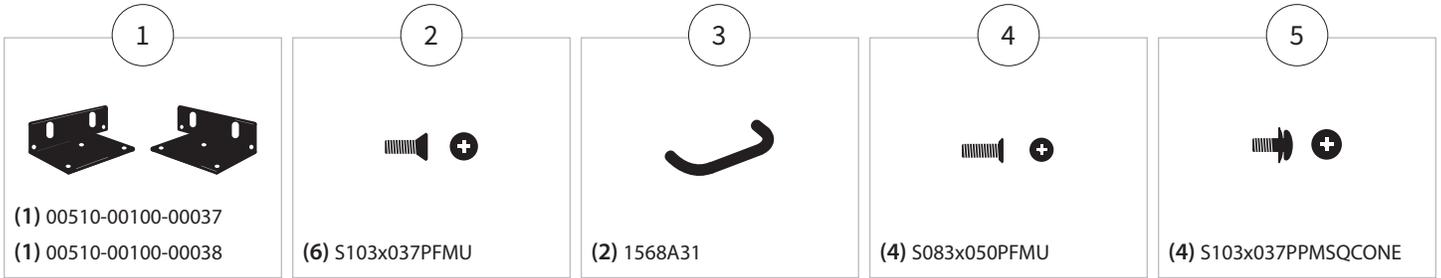
Step 2: Speedy Sleeve

Insert the speedy sleeve between the rack and cabinet wall. Insert the UPStealth 2 Battery Panel between the cabinet wall and speedy sleeve which is up against the rack. When installing the UPStealth 2 Battery Panel, start inserting with the end opposite of the handle going into the cabinet first.

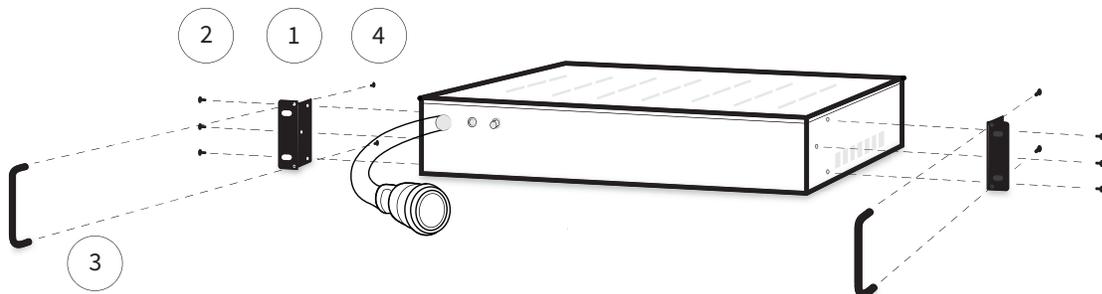
Figure 14: Speedy Sleeve

Installing UPStealth NEMA Battery Panel

The 500W UPStealth NEMA Battery Panel can be either rack mounted (EIA standard 19") or placed on a shelf. For shelf installations, no other parts are needed. For rack installations, use the provided brackets and hardware shown in figure 15. Optional Z-bracket installation is shown in figure 16.



Parts & Assembly



Rack Mount

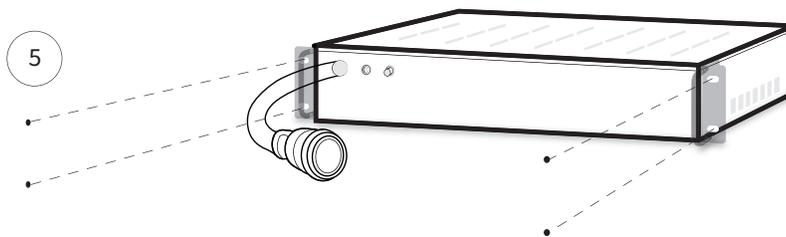


Figure 15: Rack installation of UPStealth NEMA Battery Panel

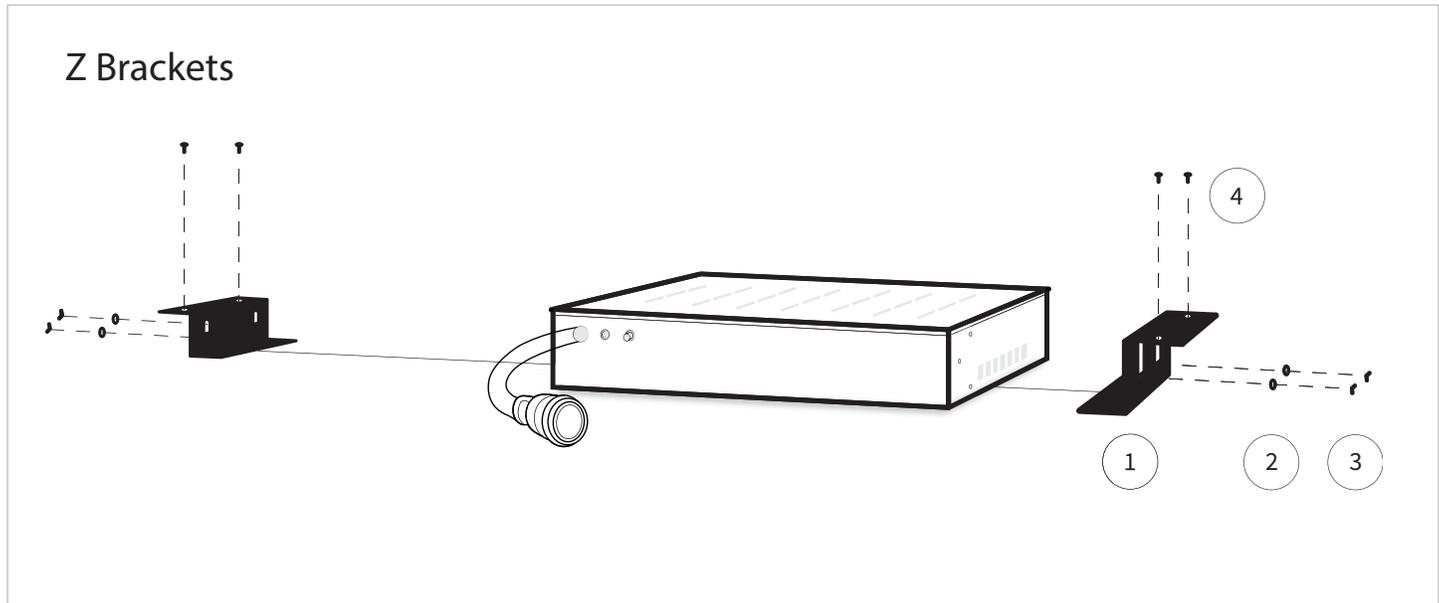


Figure 16: Z-bracket installation of UPStealth NEMA Battery Panel

Installing The PIM

The following section covers how to install the PIM. If you did not purchase a PIM you can skip this section.

The PIM can be either rack mounted (19" EIA standard) or placed on a shelf. For shelf installations, no other parts are needed. For rack installations, use the provided hardware (Qty 3 of S103x037PPMSQCONE) to fasten the PIM to the rack.

Wiring the System

Wiring Safety

 Make sure the incoming utility line power is off before making any wiring connections to or from the UPS.

 Throughout installation, proper cable management is necessary for a clean install.

Wiring The UPS (No PIM Accessory)

To wire the UPS, follow these four steps:

1. Connect to the ethernet port on the UPS (If being used. Ethernet cable is not provided by ZincFive).
2. Connect to the desired programmable relay contact(s) on the UPS (If being used. Wiring is not provided by ZincFive).
3. Connect the load to the UPS output receptacles using a standard NEMA 5-15P plug or the provided connector labelled AC Output. See Figure 17 on following page.

 To prevent accidental shocks to personnel or damage to equipment, verify that the line, neutral, and ground wires to and from the UPS are going to the correct locations shown in Figure 17.

4. Connect the utility line power to the UPS input receptacle using the provided connector labelled AC Input. See Figure 17.
-

Wiring The UPS (PIM Accessory Included)

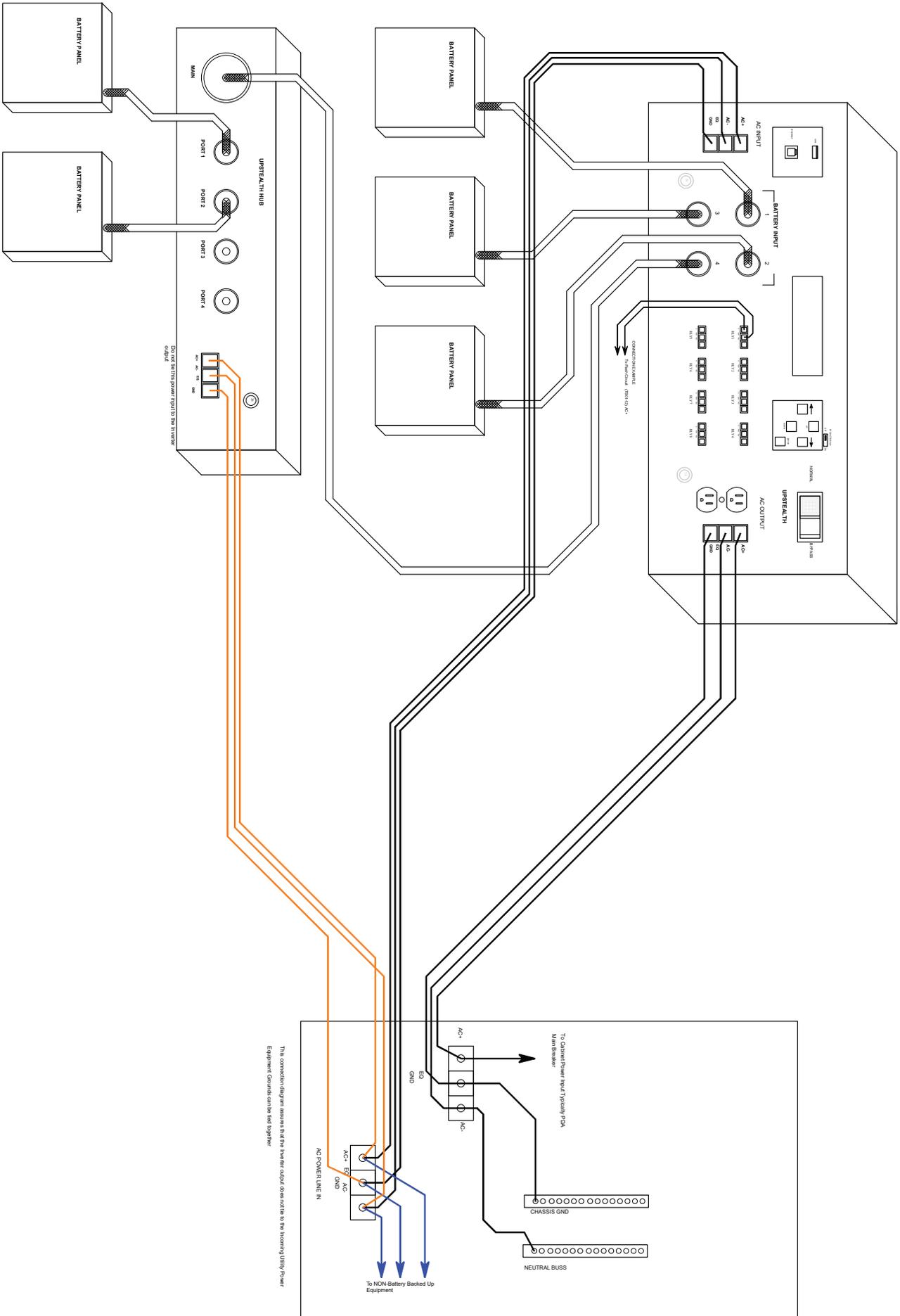
To wire the UPS and PIM accessory, follow these five steps:

1. Connect to the ethernet port on the UPS (If being used. Ethernet cable is not provided by ZincFive).
2. Connect to the desired programmable relay contact(s) on the UPS (If being used. Wiring is not provided by ZincFive).
3. Connect the load to the PIM "AC TO CABINET" using the provided connector labelled AC Output. See Figure 18 on the following page.
4. Connect the UPS to the PIM "TO UPS" using the provided PIM cable. See Figure 18.

 To prevent accidental shocks to personnel or damage to equipment, verify that the line, neutral, and ground wires to and from the PIM are going to the correct locations shown in Figure 18.

5. Connect the utility line power to the PIM "AC LINE IN" using the provided connector labelled AC Input. See Figure 18.

Figure 17: Wiring the UPS (No PIM Accessory)



Connecting Battery and UPS

To connect the battery to the UPS, follow these two steps:

1. Use the provided interconnect cable and attach it to the battery cable and allow the panel LED to flash Red, Green, Blue. See the Troubleshooting section of this manual for the LED Indicator chart.
2. Then, connect the other end of the interconnect cable to one of the battery Inputs on the UPS. See figure 19.

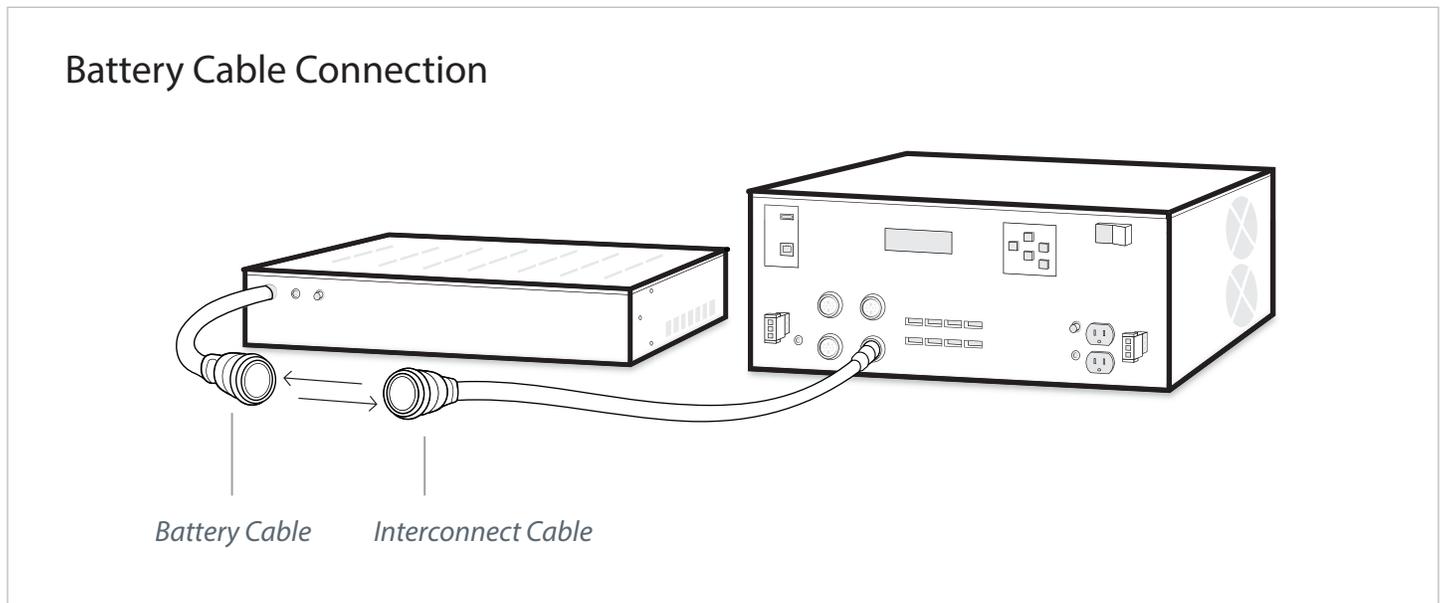


Figure 19: Battery Cable Connection

 Do not leave the interconnect cable attached to the battery without it also being attached to the UPS. This can damage the batteries and void the warranty. An intermittent warning tone will sound, from within the battery, if the interconnect cable is disconnected from the UPS but still connected to the battery. In the event that you would like to store the battery or keep the battery disconnected from the UPS, remove the interconnect cable.

 An intermittent warning tone will sound, from within the battery, if 1) the battery has a cable attached (wall charging adapter or interconnect cable) but is not connected to the UPS, or 2) the battery is connected to the UPS, but the UPS is powered off. In these cases, either connect the battery to a fully-powered UPS, or remove the interconnect cable from the battery.

UPS Operation

Keypad

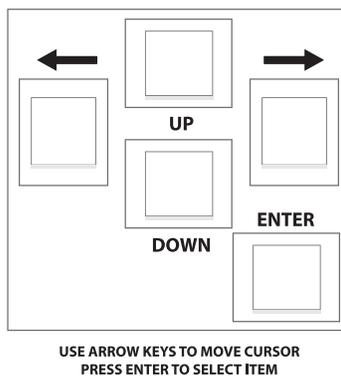
Description:

The UPS has a 5-button directional pad for cursor control to navigate through the display menu.

Controls:

- The on-screen cursor is controlled by pressing the **LEFT/RIGHT/UP/DOWN** keys.
- The cursor follows a default horizontal path and can be moved horizontally by pressing any of the directional keys.
- On-screen commands require the **UP** or **DOWN** keys to configure values on the UPS.
- The **ENTER** key is for completing on-screen commands.

Figure 20: Keypad



Normal Status Display

Description:

This is the primary status screen shown powering up the UPS.

Normal Status Display:

- **AC VOLTAGE IN:** The TRMS AC voltage going into the UPS and powering the system.
- **CABINET LOAD:** Shows the overall intersection power draw.
- **BACKUP:** The shown time (HH:MM) represents the approx. available backup time based on the cabinet load. The percentage represents the overall charge state of the batteries.

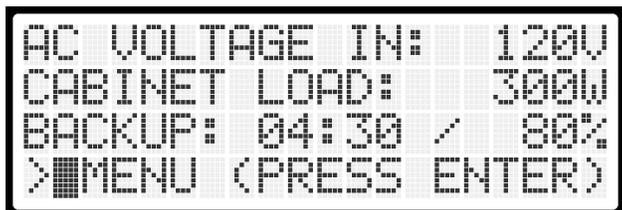


Figure 21: Normal Status Display

Power Failure Display

Description:

If a power failure occurs, the screen will read **POWER FAILED: UPS ON**. The UPStealth is in battery backup.



```
POWER FAILED: UPS ON
CABINET LOAD: 250W
BACKUP: 02:30 / 100%
>■MENU (PRESS ENTER)
```

Figure 22: Power Failure Display

Force On Display

Description:

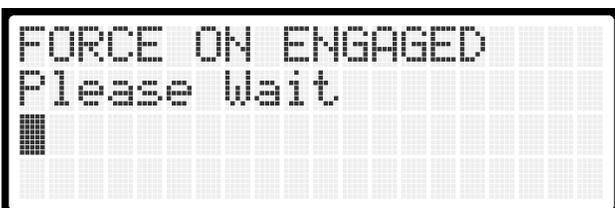
This is the screen that will appear when the UPStealth system is started up using the Force On switch on the battery and UPS. The display will automatically switch to the Power Failure Display after the UPStealth has initialized itself.

Controls:

- To get to the main system menu, press **ENTER**.

Operating Force On:

- Ensure that the battery(s) are connected to the UPS.
- Ensure the UPStealth system is connected to the load as described in the installation section.
- Press and hold the battery(s) **FORCE ON** button until a buzzer tone is emitted from the UPS (generally this takes 10-15 seconds).
- Press and hold the UPS **FORCE ON** button, the UPS will start. Continue to hold the **FORCE ON** button until the UPS shows the **POWER FAILURE DISPLAY**.
- The system is now running in backup mode and will provide AC to the load until either the batteries have been discharged or Utility AC has been restored.



```
FORCE ON ENGAGED
Please Wait
■
```

Figure 23: Force On Display

System Menu

Description:

This is the main System Menu. All UPStealth configuration options can be reached from this screen.

On This Display:

- **TIME/DATE:** Set the UPS date and time clock.
- **PANELS:** View panel detection mode which displays connected panels to verify system configuration.
- **RELAYS:** Brings up the screen for viewing and setting relay triggers.
- **EVENT LOG:** Shows the past 60 system events, such as, power failure, configuration change, internal error, etc.
- **MORE:** Provides access to the AC Switch, Ethernet and Power Factor screen.
- **INVERTER:** Allows for configuring and viewing the brownout thresholds and power monitor sensitivity.
- **BACK:** Returns to the Main Screen.

Controls:

- Use the direction keys to move the cursor.
- To select an option, move the cursor over the appropriate title and press **ENTER**.

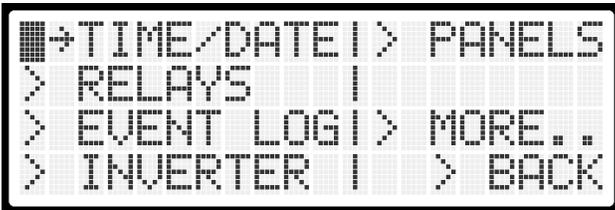


Figure 24: System Menu

System Menu: Time/Date

Description:

This is the screen for setting/viewing the time and date of the system. This clock is used for all time stamps on events and time-based relay triggers. This clock uses a 24hr clock.

On This Display:

- **T:** The current system time, displayed as hh:mm:ss (hh = 0 to 23).
- **D:** The system day, displayed as MM/DD/YY.
- **SET:** Change the date and time of the system.
- **BACK:** Returns to the main system menu.

Controls:

To set the time:

- Move the cursor over **SET**, and press **ENTER**.
- The cursor will now move into the time area of the screen.
- Press **UP/DOWN** to change a value. If it reaches a maximum or minimum value, the value will “rollover” (e.g, if **UP** is pressed when the minutes is 59, it will go to 0).
- Press **LEFT/RIGHT** to select a value, such as hour, min, day, etc.
- When finished, press **ENTER** to save the changes. The cursor will return to the **BACK** option.

Notes:

- The seconds of the system cannot be set.

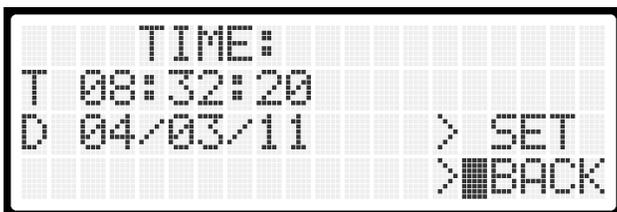


Figure 25: System Menu: Time/Date

System Menu: Panels

Description:

This screen tells the UPS to look for new panels and displays/verifies the connected panels. A simplified diagram of the battery connectors is shown as viewed from the back/front of the UPS.

On This Display:

- **ADD PANEL:** Places the unit into panel detection mode.
- **BACK:** Returns to the main system menu.
- **DIAGRAM:** If the box is marked, the panel in that port has been connected and initialized by the system. An "M" in the box means a HUB with multiple panels is connected to the port.

Controls:

To enter panel detection mode:

- Move the cursor over **ADD/REMOVE**, and press **ENTER**.
- The cursor will now move and the waiting menu will appear.
- Connect panels and wait for the mark(s) to appear in the diagram. Press **ENTER** when finished connecting batteries. It will not automatically exit detection mode, allowing the user to verify each panel as it is installed.

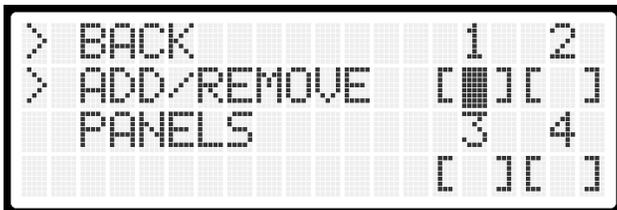


Figure 26: System Menu: Panels

System Menu: Relays

Description:

View all 8-relay settings and select a relay to configure. This display is configured as two columns, one column has the relay number (under the **STATUS** heading) and the second column, **TRIGGER**, shows relays status. When a relay is energized, The **COM** pin and the **NO** (normally open) pin are connected. As the default setting, none of the relays are assigned and are in the **NO** state.

On This Display:

- **RELAY(#)**: Brings up the settings menu for that relay.
- **TRIGGER**: What the relay will trigger on. Values can be:

AC	Triggers on power failure.
TEMP	Triggers on a given temperature inside the enclosure.
TIME	Triggers at a given time window each day.
FLASH	Trigger for intersection flash mode at selected time after power failure.
BATTCAP	Triggers when the batteries have reached a certain capacity.
MULTI	There are multiple triggers; see relay configuration menu or PC software for full settings.
NONE	No trigger

Figure 27 - System Menu Relay Chart

Controls:

- Use the direction keys to select a relay. Press **ENTER** to go to the configuration screen for that relay.
- The screen scrolls, allowing access to all the relays. **BACK** will always be at the very top, and the last relay will always be at the very bottom.

Notes:

- The relay triggers on the UPS are **OR** functions. Meaning, users can set multiple triggers under one relay. The configurations are not prioritized, so whenever a relay configuration parameter is triggered, that relay will be switched on.

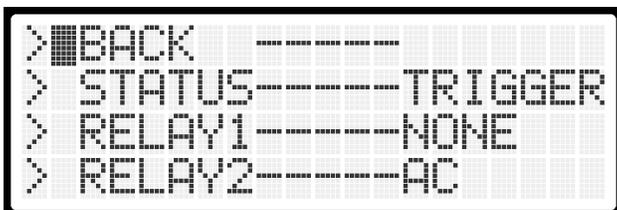


Figure 28: System Menu: Relays

System Menu: Relays Common Panel

Description:

Except when saving, this screen will be displayed as the Common Panel. **TRIG** will display differently depending on what you are triggering in that relay.

On This Display:

- **RLY (#):** The relay that is being configured. This will always be present on every relay configuration menu.
- **NEXT:** Moves to the next trigger configuration panel (Such as from AC to TEMP).
- **SET:** Configure the trigger for the relay. This will move the cursor into the trigger panel, allowing for input of configuration options.
- **BACK:** Returns to the relay selection screen.

Controls:

- Select one of the options with the directional arrows; press **ENTER**.

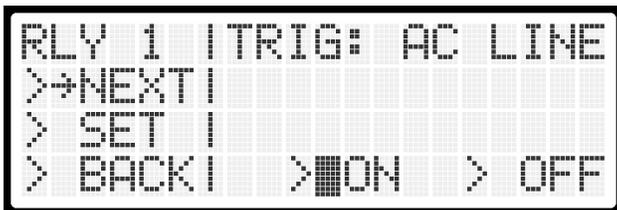


Figure 29: System Menu: Relays Common Panel

System Menu: Relays

Save Panel Display

Description:

This will be displayed over the common panel to confirm the settings before making them active. The common panel will reappear after answering **YES** or **NO**.

On This Display:

- **NO:** Changes will be discarded.
- **YES:** Changes will be saved and made active.

Controls:

- Same as the Common Panel.

Notes:

- The settings to be saved will be exactly as shown on the relays screen, allowing for easy review.

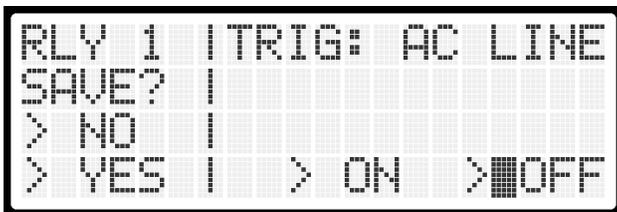


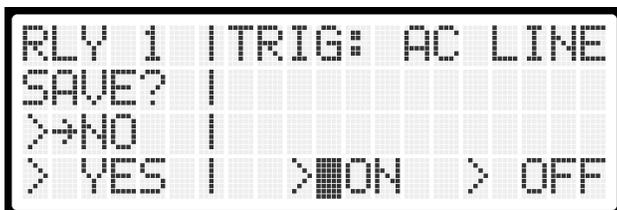
Figure 30: System Menu: Relays Save Panel Display

System Menu: Relays

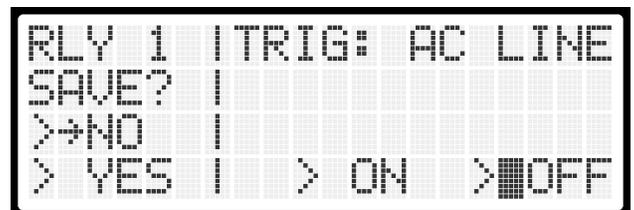
On/Off Display

Description:

This is the screen that will appear when turning relays **ON** or **OFF**.



Trigger is **ON** for that relay



Trigger is **OFF** for that relay

Figure 31: System Menu: Relays ON/Off Display

System Menu: Relays AC Trigger Setting

Description:

This screen shows the user how to activate a relay based on interruption to the AC line.

To Setup an AC Trigger:

- Select **NEXT** to get to the AC trigger screen if not already on it.
- Select **SET**. The cursor will now be in the trigger screen.
- Use the directional arrows to select **ON** or **OFF**.
- Press **ENTER**. The save menu will appear, and the cursor will move to it.
- Review changes and select **YES**.
- The relay is now configured. The Relay will stay enabled for the length of the Power Failure.

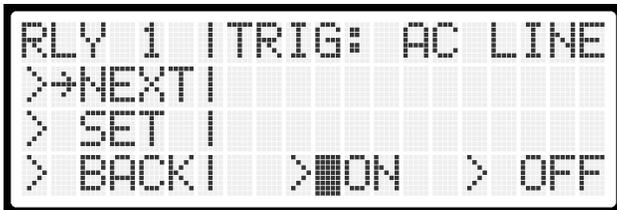


Figure 32: System Menu: Relays AC Trigger Setting

System Menu: Relays

Temperature Trigger Menu

Description:

This screen shows the user how to activate a relay based on setting high and low temperature ranges.

To Setup a Temperature Trigger:

- Select **NEXT** to get to the temperature trigger screen if not already on it.
- Select **SET**. The cursor will now be in the trigger screen.
- Press **LEFT/RIGHT** to move the cursor to the value needing to be changed.
- Press **UP/DOWN** to change the value of a temperature trigger point.
- After entering the bounds, move the cursor to **ON** or **OFF**.
- Press **ENTER**. The save menu will appear and the cursor will move to it.
- Review changes and select **YES**. The relay is now configured.
- The **UPPER** value is the temperature that triggers the relay on as the temperature increases. There is a 10 degree hysteresis before the relay will turn off. The **LOWER** value is the temperature that will turn the relay on when the temperature is decreasing. The below display setup will turn relay 1 on when the temperature is 120F or above. It will shut off when the temperature drops to 110F degrees. Relay 1 will turn on again when the temperature drops to 10F degrees or below and then turns off when the temperature warms up to 20F degrees.

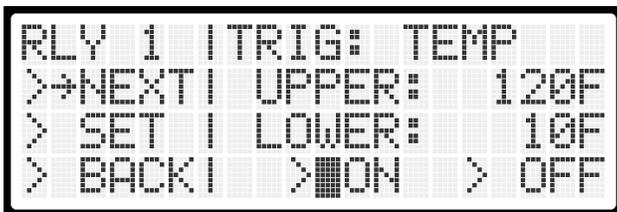


Figure 33: System Menu: Relays Temperature Trigger Menu

System Menu: Relays

Time Trigger Menu

Description:

This screen shows the user how to activate a relay based on the time of day, everyday.

To Setup a Time Trigger:

- Select **NEXT** to get to the time trigger screen if not already on it.
- Select **SET**. The cursor will now be in the trigger screen.
- Press **LEFT/RIGHT** to move the cursor to the value needing to be changed. On this screen, the cursor can move between the hours and minutes of the start and end times, as well as the **ON** and **OFF** buttons.
- Press **UP/DOWN** to configure the times. Note that the system uses military time.
- After entering the start and end times, move the cursor to **ON** or **OFF**.
- Press **ENTER**. The save menu will appear and the cursor will move to it.
- Review changes and select **YES**. The relay is now configured.

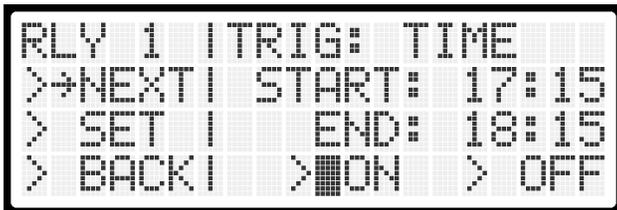


Figure 34: System Menu: Relays Time Trigger Menu

System Menu: Relays

Flash Trigger Menu

Description:

The flash time is the length of time after a power failure is detected that the relay will be energized. The relay can be used to put a cabinet into flash after the power has been out for a certain period of time. It can also be used to inform the traffic center that an area has had a power failure that has lasted a certain amount of time.

To Setup a Flash Trigger:

- Select **NEXT** to get to the flash trigger screen if not already on it.
- Select **SET**. The cursor will now be in the trigger screen.
- Press **LEFT/RIGHT** to move the cursor.
- Press **UP/DOWN** to change the flash time. The time changes in increments of 15 minutes.
- After entering the flash time, move the cursor to **ON** or **OFF**.
- Press **ENTER**. The save menu will appear and the cursor will move to it.
- Review changes and select **YES**. The relay is now configured.

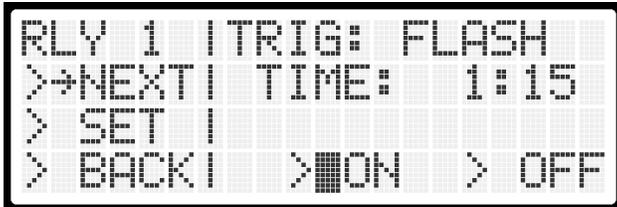


Figure 35: System Menu: Relays Flash Trigger Menu

System Menu: Relays

Battery Capacity Trigger Menu

Description:

This is the screen that will appear when you select **RELAY** and will allow you to control a relay based on battery capacity during a power failure. When the battery capacity drops below the set battery capacity, the relay is turned **ON**. For example, the relay can be used to put the cabinet into Flash so the backup time can be increased. Battery Capacity triggers can be set from 0-80%.

To Setup a Battery Capacity Trigger:

- Select **NEXT** to get to the battery capacity trigger screen, if not already on it.
- Select **SET**. The cursor will now be in the trigger screen.
- Press **LEFT/RIGHT** to move the cursor.
- Press **UP/DOWN** to change the capacity trigger point.
- After entering the capacity point, move the cursor to **ON** or **OFF**.
- Press **ENTER**. The save menu will appear and the cursor will move to it.
- Review changes and select **YES**. The relay is now configured.

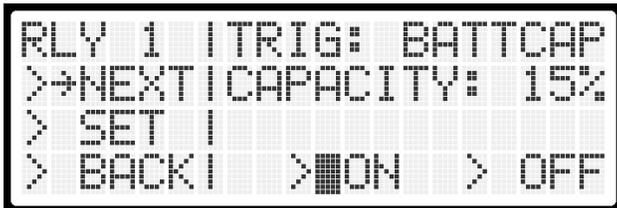


Figure 36: System Menu: Relays Battery Capacity Trigger Menu

System Menu: Relays

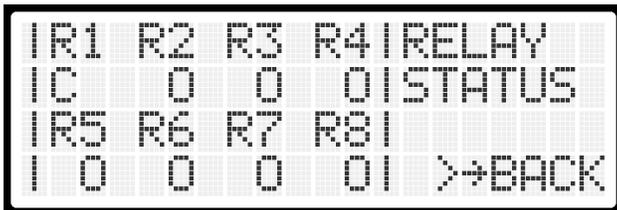
Relay Status Menu

Description:

This is the screen that will appear when you select **STATUS** on the Relay Menu screen. This is a status only screen, nothing can be changed by the user.

Notes:

The real time status of all 8 relays is shown on this display. The **C** under the **R1** relay heading indicates that Relay 1 is energized. The **O** under the other relay headings indicates that the other relays are not energized and the normal open contacts are Open.



```
IR1 R2 R3 R4 I RELAY
IC  O  O  O I STATUS
IR5 R6 R7 R8 I
I O  O  O  O I >→BACK
```

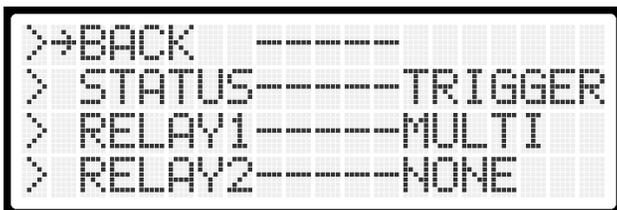
Figure 37: System Menu: Relays Relay Status Menu

System Menu: Relays

Multi - Multiple

Description:

This is the screen that will appear when you select **RELAYS**. Multiple triggers can be set under a single relay. To check if Multiple triggers have been set under a single relay, go to the Relays screen and check for **MULTI** next to that given relay.



```
>→BACK  -----
> STATUS-----TRIGGER
> RELAY1-----MULTI
> RELAY2-----NONE
```

Figure 38: System Menu: Relays Multi - Multiple

Event Log

Description:

This is the screen that will appear when you select **EVENT LOG** and will display the events recorded by the UPS, such as a power failure, configuration change, or other important events.

On This Display:

- **EVENT:** The type of event, such as a power failure.
- **T: and D:** The time and date of the event.
- **BACK:** Returns to the main system menu.

The last line of the screen will display information specific to the type of event. In the pictured example (a power failure), it shows the duration of the event.

Controls:

- Press **LEFT** or **RIGHT** to scroll through the event log.
- To return to the main system menu, press **ENTER**.

Notes:

- The event log will show the newest event first. The oldest event will be furthest to the right, and the newest event will be furthest to the left. The arrows on the top of the screen will reflect this.
- If no events have been recorded, the screen will display **NO EVENTS**.
- Upon reaching the end of the log, the screen will display **END OF LOG**.

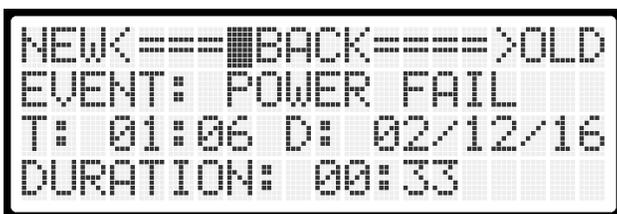


Figure 39: Event Log

More

Description:

This screen displays more of the system, including **AC SWITCH**, **POWER FACTOR** and **ETHERNET**.

On This Display:

- **AC SWITCH:** AC Switch time from power failure to switch-over to the UPS can be set by the user.
- **ETHERNET:** The Ethernet display shows the IP Address and the MAC Address.
- **POWER FACTOR:** The Power Factor display allows the user to compensate for the difference between real power and apparent power flowing into the traffic cabinet.

Controls:

- Select one of the options with the directional arrows, press **ENTER** to view that.

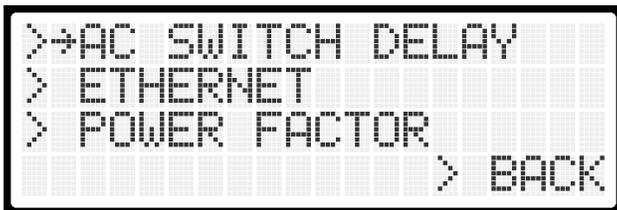


Figure 40: More

More: AC Switch Delay

Description:

The switching time from power failure to switch-over to the UPS can be set by the user. The range is from about 6 ms to 200 ms. The default is 6 ms, which is the fastest time. The user may want to extend the time if they have some equipment that might be upset by the fastest switching times. For example, the user may want some equipment to completely power down during a power failure.

The 00 ms time represents 6 ms. The time can be set in 8 msec steps.

Controls:

- To set the delay time, move the cursor to **SET** and Press **ENTER**.
- Use the UP and Down keys to adjust the value and press **ENTER**.



Figure 41: More: AC Switch Delay

More: Ethernet Communications

Description:

The Ethernet Display shows the IP Address and the MAC Address for the Ethernet Board.

On This Display:

- **IP:** The IP Address for the Ethernet Board.
- **MAC:** The MAC Address for the Ethernet Board.

Controls:

- There is nothing to change or adjust on this display.
- When finished, press **ENTER** to go back to the **MORE** screen

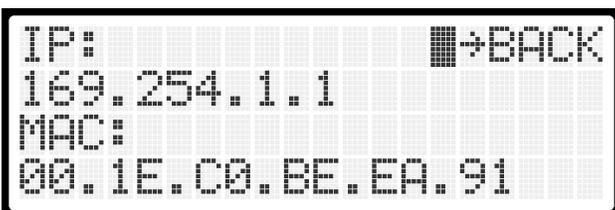


Figure 42: More: Ethernet Communications

More: Power Factor

Description:

The Power Factor display allows the user to compensate for the difference between real power and apparent power flowing into the traffic cabinet. Many of the electrical devices used in today's traffic cabinets such as LED signal heads, controllers and 24 volt power supplies use switching power supplies that are not power factor corrected. The result is that the UPStealth may display a higher load (apparent load) than the real power being used by the intersection. Once properly adjusted, the display on the UPStealth (in watts) should match the real power in amps that is being supplied by the utility. This power factor is very useful to understand the true condition of the equipment in use at the intersection as well as the quality of the switching power supplies. The default Power Factor is set at 0.95 and can be incremented at a step size of 0.05. Users can program between 0.65-1.00.

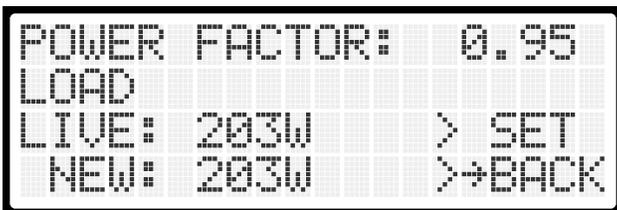
On This Display:

- **POWER FACTOR:** Number to the right indicates the Power Factor.
- **LIVE:** Load without Power Factor correction.
- **NEW:** Load with the Power Factor correction.
- **SET:** Allows the Power Factor to be set.
- **BACK:** Returns to the main system menu.

Controls:

To Set Power Factor:

- Move the cursor over **SET**, and press **ENTER**.
- The cursor will now move into the Power Factor area of the screen.
- Press **UP/DOWN** to change the value.
- When at the favorable Power Factor, press **ENTER** to save the changes. The cursor will return to the **BACK** option.



```
POWER FACTOR:  0.95
LOAD
LIVE:  203W    > SET
NEW:  203W    >→BACK
```

Figure 43: More: Power Factor

Inverter

Description:

This menu sets how the UPS responds to power anomalies. The voltage thresholds for brown out levels and the over voltage point can be set by the user. You can also set how sensitive the UPStealth® is to power line “transients” and dropouts.

On This Display:

- **L THRESH:** Power Failure voltage (or brownout) threshold. The default L THRESH is set at 100V. The range of the L THRESH is 85V-120V, and can be incremented at a step size of 1V.
- **H THRESH:** Upper Power Failure threshold, if concerned about a power surge. The default H THRESH is set at 130V. The range of the H THRESH is 130V-140V, and can be incremented at a step size of 1V.
- **SENSITIVITY:** How sensitive the power monitoring system is. This can be one of five values as listed in the table below. The default SENSITIVITY is set at XLO. The sensitivity value will depend on the level of AC Line noise in the area and the application.
- **SET:** Allows for configuring and viewing the brownout thresholds and sensitivity of the power monitor.
- **BACK:** Returns to the Main Screen.

Controls:

To set the thresholds and sensitivity:

- Select **SET**, and press **ENTER**.
- The cursor will now be in front of the lower threshold.
- Press **LEFT/RIGHT** to select the value to change.
- Press **UP/DOWN** to change the voltages or sensitivity levels.
- When finished, press **ENTER**.

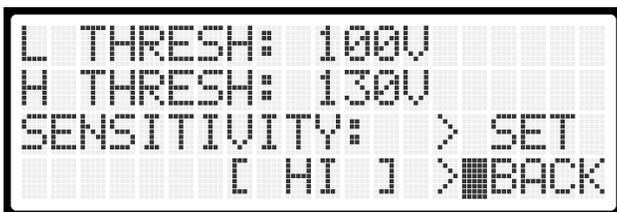


Figure 44: Inverter

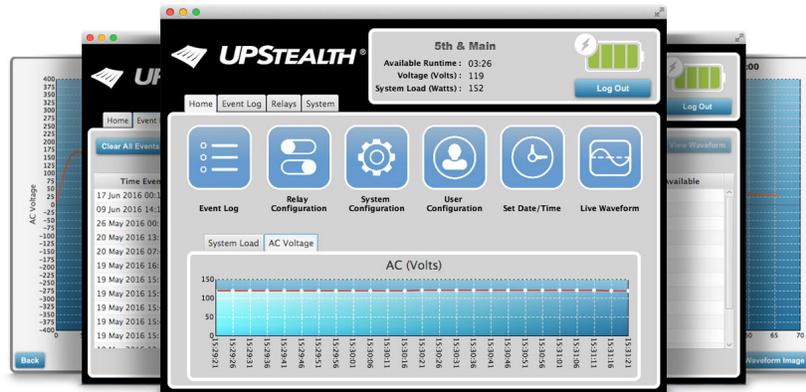
XHI	Very Sensitive - Faster response, more likely to false trigger on noise.
HI	Sensitive
MED	Normal
LOW	Less sensitive
XLO	Very low sensitivity - Slower response, disregards noise.

Figure 45: Inverter Threshold Chart

Communication: RTi Connect™

Introduction

Through a network connection using standard secure Internet protocols (TCP/IP), remotely or locally connect to a UPStealth Uninterruptible Power Supply with RTi Connect desktop application. RTi Connect will link your computer running Windows or OS X, to view, monitor and manage UPStealth performance parameters.



Features

Using RTi Connect desktop application, users have the ability to remotely or locally connect to an individual UPStealth to:

- View individual intersection power status in the event utility power is lost.
- View the battery charge status and runtimes at a specific intersection.
- View real-time cabinet power consumption.
- Configure Simple Network Management Protocol (SNMP) communication to be notified of system status.
- Assign a geographical location to a UPStealth unit allowing users to quickly locate and identify the current status of a specific intersection.
- View the Event Log which allows users to diagnose system power failures.
- View AC Waveforms to help diagnose why an intersection went off-line.
- Set up the control of eight programmable relays.
- View and manage user programmable menu options: Programmable Time and Battery Capacity Relay Triggers, Voltage Thresholds, High/Normal Capacity, and Power Factor.

Application Installation

RTi Connect is a remote or local connection route to the UPStealth inside your traffic cabinet. The following are some easy steps and tips for downloading and operating RTi Connect.

To receive RTi Connect, users must submit a request form at zincfive.com/rti-connect-request. The form will prompt you to provide contact information, once submitted a ZincFive representative will assist you with your request. Your contact information will be used only to notify you of future RTi Connect updates and new releases as they become available.

Application Installation: Windows

Once RTi Connect is downloaded from the web, Windows computers will either start to install the application automatically or wait until you locate and select the download.

When running the installation of the application, the first screen to pop up is a Setup screen which will prompt you to select an installation location for RTi Connect. Choose an installation location where permission to run the application is accessible by you. An example would be your Desktop or in your Application folder.

If you see an installation location where you don't have permission, select Browse and locate an area that is accessible by you. Once you have completed this step, RTi Connect is now ready to install and you can finish the installation. When RTi Connect is finished installing it will run automatically or, if not, you can locate RTi Connect where you gave permission to install.

Login

Click the UPStealth RTi Connect icon to open the desktop application. A login screen will prompt you to insert a Password and UPStealth IP Address. RTi Connect comes with a preset password, the password is **123456**. ZincFive recommends going into the System tab in the Password drop down to create your new password. The IP Address is unique to each UPS at each installed intersection. Users have the ability to configure the IP Address by going to the System tab in the Network drop down.

To find the UPStealth IP Address it can be found using the keypad on your UPS.

1. On your LCD display screen, select the **MENU** option.
2. Select the **MORE** option.
3. Select the **ETHERNET** option and you will find the UPStealth IP Address for that specific UPS.

Once you have entered the required information on the login screen, press Login and you enter RTi Connect.

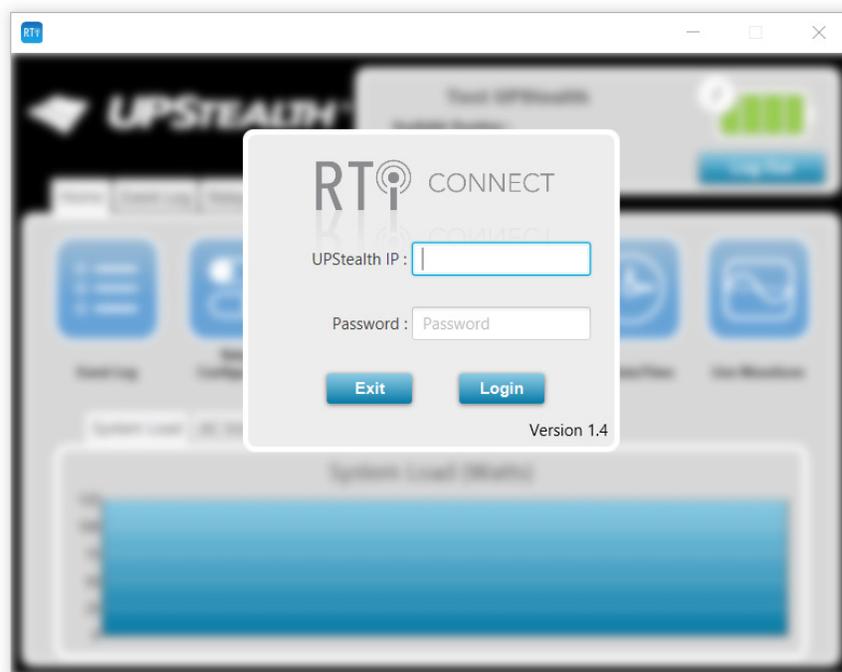


Figure 46: Login Screen

Home Screen

Now that you are logged in and connected to a UPStealth, the Home screen will be your internal look into your traffic cabinet.

1. The Home screen was created as a navigation center and host page for real-time information from your UPStealth.
2. RTi Connect has four tabs that are available to help you navigate to the four pages; Home, Event Log, Relays, and System.
3. On the Home screen are six clickable icons that will help you navigate through RTi Connect: Event Log, Relay Configuration, System Configuration, User Configuration, Set Date/Time, and Live Waveform.
4. At the bottom of the Home page are graphical charts with two tabs System Load and AC Voltage. These graphical charts relay real-time UPStealth data.
5. In the top right corner of the app is a Status Screen that shows real-time data from the UPStealth. The live information includes; Intersection Name or IP Address, Available Runtime, Voltage (Volts), System Load (Watts), and what Power Source the traffic intersection is using.
6. Within the Status Screen are Power Source battery icons indicating the current status of the UPStealth. A lightning bolt in the top left of the green battery icon indicates that the UPStealth is in AC Power Mode. If a power failure occurs an orange battery icon will appear, indicating the UPStealth is in Battery Backup Mode.



Figure 47: Home Screen

Event Log

The Event Log page will be your internal look into what has happened inside your traffic cabinet. The Event Log will list the Time Event Occurred, Event Type, Duration and if there is a Waveform Available to view.

1. By clicking on an event row and pressing the **VIEW WAVEFORM** button, you will get a view of that exact waveform during the event.
2. By clicking the **REFRESH** button, users can update the Event Log.
3. By clicking the **EXPORT LOG** button, users can download a complete view of the existing events in the Event Log.
4. By clicking the **CLEAR ALL EVENTS** button, all events will clear.

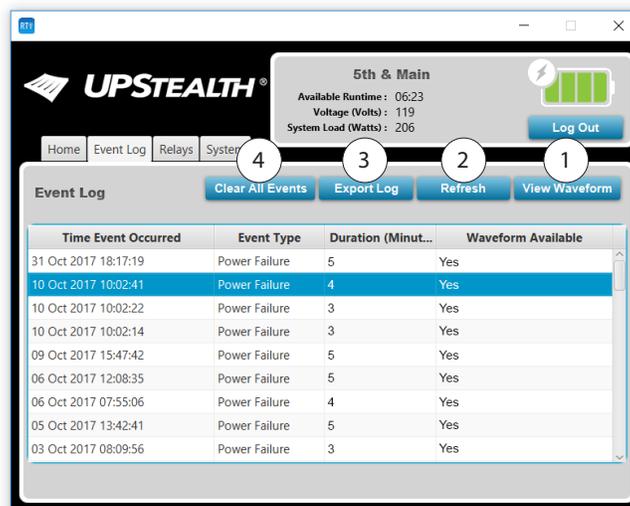


Figure 48: Event Log



Figure 49: Waveform

Relay Configuration

The Relays tab will allow you to turn on or off the eight user programmable relays on the UPS. If certain user defined and preset triggers on the UPS occur, such as Power Failures, Temperature Thresholds, Battery Capacity levels, Time After Power Failure and Time of Day, the UPStealth will activate the associated relay. Some relay configurations are not settable without inputting valid information when asked to do so. RTi Connect has security/safety parameters within the Relays tab so improper information can not be inserted.

The relay triggers on the UPS are **OR** functions. Meaning, users can set multiple triggers under one relay. The configurations are not prioritized, so whenever a relay configuration parameter is triggered, that relay will be switched on.

When you are ready to select a trigger, push the Save Changes button. A pop-up screen will appear to confirm that you are satisfied with the changes you have made. If you are not satisfied with the changes you have made, you can press **CANCEL**.

IMPORTANT: If you leave the Relays tab without pushing the Save Changes button and confirming by pushing Save on the pop-up screen, the relays will not be set.

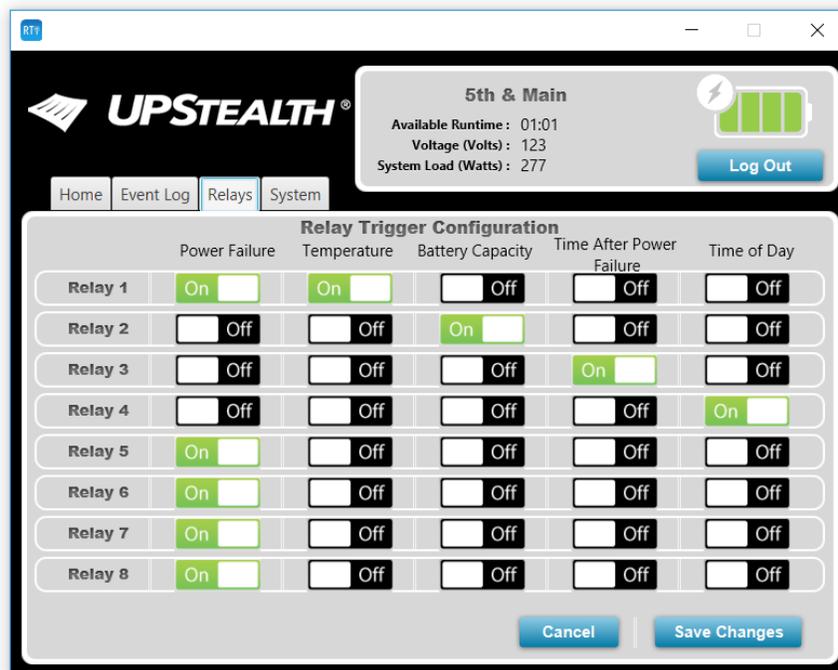


Figure 50: Relay Configuration

System

The System tab has five different drop down sections; System Setting, Time/Date, Network, Security, and SNMP Settings.

System: System Settings

The first drop down tab is the System Settings tab, which allows users to configure and set several RTi Connect features.

1. **UPStealth Name** - Customize the name of a specific UPStealth system. Each UPS has an IP Address, which identifies that specific system. The Naming feature allows you to create a name for the UPS such as a street address indicating geographical location (ex. 5th and Main).
2. **Power Monitoring Sensitivity** - Low, Medium or High. This feature will allow you to set UPStealth sensitivity to utility power voltage transients.
3. **AC Thresholds** - Set Low and High AC thresholds. Setting Low AC and High AC voltage thresholds creates voltage parameters, which determine when the UPS will be activated.
4. **Power Factor** - This feature allows users to correctly measure how much power is being used by electrical loads connected to a UPStealth. Power Factor is a decimal number in the range between 0 and 1.00, which is a ratio of the amount of real power to apparent power in a circuit.

IMPORTANT: If you leave the System Settings drop down without pushing the Save Changes button and confirming by pushing Save on the pop-up screen, the relays will not be set.



Figure 51: System Setting Drop Down

System: Time/Date

The second drop down tab is Time/Date. By setting Time and Date the system will tag power failures on your Event log with an accurate time stamp. The UPS is set with a 24-hour clock.

1. Users have the ability to set the UPStealth system time, which should replicate the time of day using a 24-hour clock.
2. Users have the ability to set the UPStealth system date, which should replicate the day of the year.
3. Users can press the Synchronize Time With Local System button to quickly sync the time. Synchronizing will set the clock to a 24-hour clock.

IMPORTANT: If you leave the Time/Date drop down without pushing the Save Changes button and confirming by pushing Save on the pop-up screen, the relays will not be set.

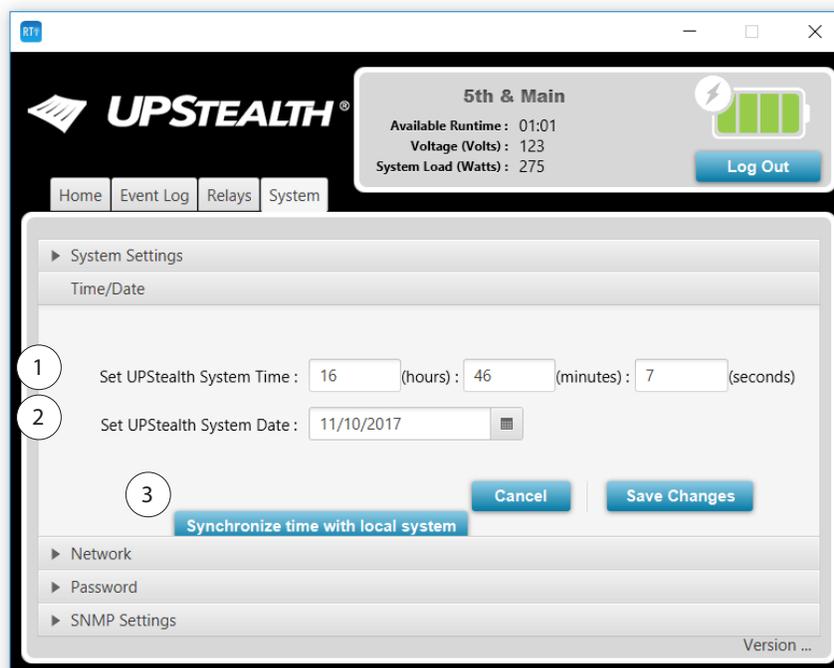


Figure 52: Date/Time Drop Down

System: Network

The third drop down tab is Network, which allows the user to configure UPStealth network settings; including IP Address, DNS, Gateway, Subnet.

1. **DHCP:** Dynamic Host Configuration Protocol. This protocol allows the UPStealth to be assigned an IP Address from a DHCP service located on your network. The UPStealth will populate the network parameters with default values, which can then be changed by selecting the Manual option.
2. **MANUAL:** Allows user to specify their own IP Address and network configuration parameters.

IMPORTANT: If you leave the Network drop down without pushing the Save Changes button and confirming by pushing Save on the pop-up screen, the relays will not be set.



Figure 53: Network Drop Down

System: Password

The fourth drop down tab is Password.

1. Users have the ability to reset the login screen password that was preset by ZincFive.

IMPORTANT: If you leave the Password drop down without pushing the Save Changes button and confirming by pushing Save on the pop-up screen, the relays will not be set.

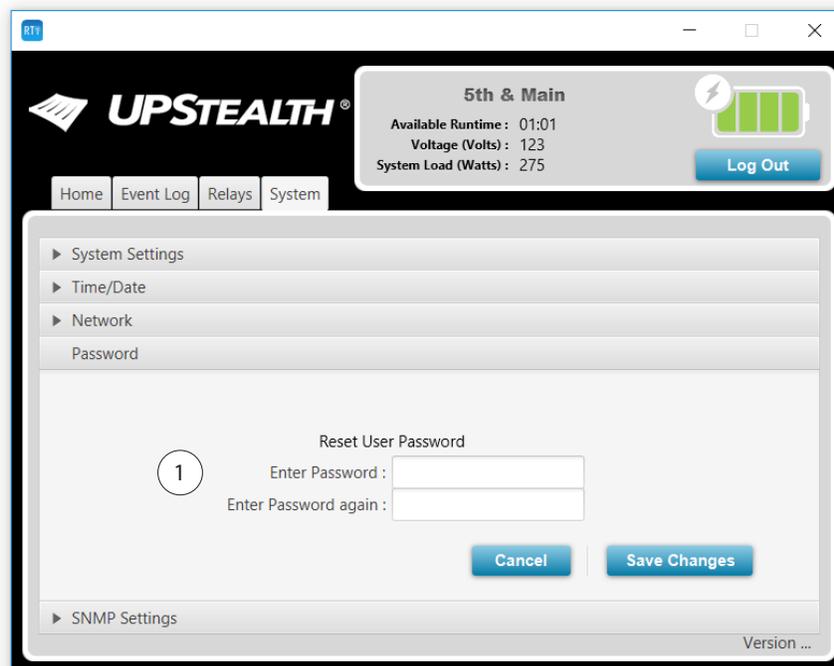


Figure 54: Password Drop Down

System: SNMP Settings

The fifth drop down tab is SNMP Settings, which is where the user can configure triggers that will generate messages to be sent to the specified SNMP server (receiver).

1. **SNMP Traps:** Power Failure, Battery Capacity, Remaining Runtime, and Heartbeat. Heartbeat will send messages to the receiver at the configured interval (sec) to notify that the UPStealth system is available.
2. **RECEIVER:** The IP Address of the SNMP Server.
3. **COMMUNITY:** The value of your SNMP community string.

IMPORTANT: If you leave the SNMP Settings drop down without pushing the Save Changes button and confirming by pushing Save on the pop-up screen, the relays will not be set.

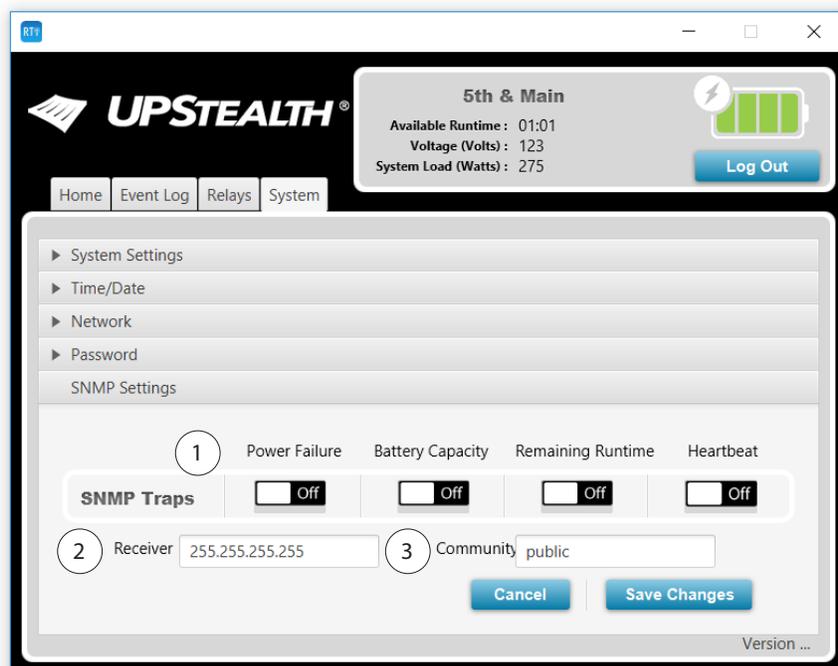


Figure 55: SNMP Settings Drop Down

Troubleshooting

If you are experiencing issues with your UPStealth, use the UPStealth Troubleshooting Guide on the following page in figure 56. If you continue to experience issues, visit the Support section of this manual and contact a ZincFive support representative.

See the Support section of this manual for information on returning the product.

Figure 56: Troubleshooting Guide

Maintenance

The UPStealth is a self-maintained UPS system that does not require periodic or routine maintenance. The self-maintaining capability is enabled by the unique battery management system and nickel-zinc batteries. To obtain system status at any time, view the LED indicator lights on the physical battery panels as well as utilize the RTi Connect software application in either local or remote modes, depending on the network connectivity to the UPStealth system.

Spare Parts

The below chart indicates the parts that come with each UPStealth product. If a part is missing with your shipment, or you have misplaced a part, or you need to replace a part due to damage, contact a ZincFive support representative.

Part #	Part Description								Qty
		500W Living Hinge Battery	500W Living Hinge Battery	500W NEMA Battery	170 Controller (Regular/HD)	NEMA Controller (Regular/HD)	PIM	HUB	
00410-00100-00067	Cable, UPStealth, Wall Charging Adapter								1
00410-00100-00069	Cable, UPStealth, Interconnect Cable 8ft								1
00410-00100-00071	Cable, UPStealth, Bypass Cable								1
00410-00100-00036	Cable, UPStealth, PIM Cable						x		1
00410-00100-00059	Cable, UPStealth, Interconnect Cable 6ft	x	x	x				x	1
00510-00100-00014	Battery Riser Bracket								1
00510-00100-00037	Battery, UPStealth, Left Mounting Bracket, 500W NEMA Battery			x					1
00510-00100-00038	Battery, UPStealth, Right Mounting Bracket, 500W NEMA Battery			x					1
00510-00100-00035	Controller, UPStealth, Mounting Bracket, 170 Controller				x				2
00510-00100-00034	Controller, UPStealth, Mounting Bracket, NEMA Controller					x			2
00510-00100-00039	Battery, UPStealth, Z Bracket, 500W NEMA Battery								2
00520-00100-00006	Accessory, UPStealth, Spacer Bar for Living Hinge panels								1
00520-00100-00005	Accessory, UPStealth, Speedy Sleeve for Living Hinge panels								1
Chrome/brass handle, 3"	Chrome/brass handle, 3"			x	x				2
H-9110-B	Chrome/brass handle, 6"					x			2
8-32 phillips flat top screw, 1/2" length	8-32 phillips flat top screw, 1/2" length			x	x				4
10-32 phillips flat top screw, 3/8" length	10-32 phillips flat top screw, 3/8" length			x	x	x			4 or 6
10-32 phillips pan SEM screw, 3/8" length	10-32 phillips pan SEM screw, 3/8" length			x	x	x	x	x	3, 4 or 8
10-32 phillips flat top screw, 1/4" length	10-32 phillips flat top screw, 1/4" length					x			10
00900-00100-00006	Accessory, UPStealth, Power Input Connector for controller				x	x		x	1
00900-00100-00007	Accessory, UPStealth, Power Output Connector for controller				x	x			1
1778078	Relay contact connector				x	x			8
Flat washer size #10	Flat washer size #10								
10-32 wing nut	10-32 wing nut								
10-32 phillips pan head screw, 1/2" length	10-32 phillips pan head screw, 1/2" length								
09100-00100-00006	Accessory, UPStealth, TBS kit								1

x = included with product purchase

Figure 57: Spare Parts

1 Main Screen

- Main Screen shows "AC VOLTAGE IN".
- Main Screen has correct voltage reading.
- Main Screen has correct wattage reading.
- Main Screen is displaying backup capacity, in time and percentage.

```

AC VOLTAGE IN: 120V
CABINET LOAD: 300W
BACKUP: 04:30 / 88%
>MENU (PRESS ENTER)
    
```

Inverter/Controller Interface

2 When UPStealth® Battery Panel is connected to UPStealth® Inverter/Controller

- Ensure the system is NOT in bypass mode.
- When safe, simulate a power failure by disconnecting the UPStealth® from utility power. It is preferred that utility be cut at the meter breaker.
- Main Screen shows "POWER FAILED, UPS ON".
- Main Screen gives Runtime and Capacity Values.
- Runtime and Capacity Values track accordingly for 10 minutes (Capacity % may take up to 5 minutes to begin tracking). Note that runtime tracking is real time and may fluctuate based on the load.
- After 10 minute outage, restore utility power – UPStealth® switches from battery backup to utility ~3 minutes after the utility line is stable.



UPStealth® Living-Hinge Battery Panel



UPStealth® NEMA Battery Panel



UPStealth® 170 Inverter/Controller



UPStealth® NEMA Inverter/Controller

3 Battery LED Indicator Lights

➔ Status Lights

Alternating Green/Blue	Normal Operation.
Solid Blue	In Battery Backup Mode.
Blinking Blue	In Battery Backup Mode, Battery capacity is at 10%.
Solid Green	Battery Panel is charging with Wall Charging adapter.
Blinking Green	Battery Panel is fully charged when charging with a Wall Charging adapter.
White (Single Blink)	Controller is communicating/ checking status of Battery Panel(s).
Solid Red or Green or Blue (with audible pulsing tone)	Interconnect cable left attached to Battery Panel(s).

! Service Lights

Alternating Red/Green or Blinking Red	Call your representative for assistance.
---------------------------------------	--

DISCLAIMER: The LED behavior is undefined, and may flash red, blue, green or white when the following happens.

1. The user leaves a cable connected to the battery but not a controller/wall outlet, or
2. The controller shuts off while batteries are connected

4 When UPStealth® Battery Panel is connected to Wall Charging Adapter

- **Solid Green:** Normal operation with Wall Charging Adapter, Battery Panel is charging.
- **Flashing Green:** Battery Panel is 100% charged. User can leave Battery Panel connected to the Wall Charging Adapter as long as it remains plugged into an AC power source.

Note: User can choose to disconnect the Battery Panel and store once charged. For storing, Battery Panel shall be disconnected from all cables and ensure the LED indicator on the Battery Panel is off.

5 Inverter/Controller is installed and wired into the signal cabinet but the Inverter/Controller, cabinet and signals have no power.

1. Confirm utility power has been restored to the signal cabinet. Typically this is done by switching the main breaker to the service/meter cabinet on or if there is no service/meter cabinet, connect the utility to the Inverter/Controller input connector.
2. Confirm the utility conductors are wired to the input connector of the Inverter/Controller and the output connector is wired to the load (cabinet power distribution).
3. Confirm the AC+, AC- and GND are wired to the correct terminals of the input and output connectors of the Inverter/Controller. Also, confirm the conductors have been stripped correctly to ensure the terminals are making good contact with the copper wire, not the conductor insulation.

Note: If problem persists, please contact ZincFive for technical support.

6 Inverter/Controller is installed and wired into the signal cabinet and utility power has been restored. The LCD display on the Inverter/Controller is on but the cabinet and signals have no power.

1. Confirm the input and output breakers on the Inverter/Controller have not tripped. Simply press the breakers to confirm.
2. Confirm the signal cabinets main, signal and equipment breakers are on.
3. Confirm the Inverter/Controller output connector has been wired correctly. AC+, AC- and GND conductors have been stripped correctly and wired to the correct terminals of the output connector.
4. Confirm the output of the Inverter/Controller is functioning properly by plugging a small load (such as light fixture) into the output duplex receptacle. If load is powered by the duplex receptacle, re-check items 1 – 3.

Note: If problem persists, please contact ZincFive for technical support.

7 After UPStealth® installation, simulated utility power outage by either switching the main breaker in the service/meter cabinet off or removing utility power directly from the input of the UPStealth®.

A UPStealth® Inverter/Controller, cabinet and signals go dark.

1. Confirm Battery Panel(s) have been properly connected to the Inverter/Controller.
2. Confirm the UPStealth® is not in recovery mode, which will be displayed on the LCD display of the Inverter/Controller. The UPStealth® starts in recovery mode for up to five minutes when the Battery Panels are initially introduced to the Inverter/Controller. This is due to the Inverter/Controller establishing communications with the Battery Panel(s). Battery power will not be available in recovery mode.

B UPStealth® Inverter/Controller is on but the cabinet and signals went dark.

1. Confirm the bypass switch on the Inverter/Controller is in "Normal" position.
2. Confirm the output breaker on the Inverter/Controller hasn't tripped.
3. Confirm the cabinet main, signals & equipment breakers are on.
4. Confirm the Inverter/Controller output connector has been wired correctly and is wired to the correct termination in the cabinet. AC+, AC- and GND conductors have been stripped correctly and wired to the correct terminals of the output connector.
5. If Power Interface Module (PIM) is installed, confirm the switch is in the "UPS Normal" position.

Note: If problem persists, please contact ZincFive for technical support.

8 UPStealth® is installed and operating but unable to locally connect to RTi Connect™.

1. Confirm Ethernet cable is properly seated in the Ethernet ports of both the laptop and the UPStealth® Inverter/Controller.
2. Confirm accurate IP address of the Inverter/Controller by going to the main menu on the LCD display, select More then select Ethernet. The IP address should be displayed.
3. Confirm the laptop being used is on the same subnet. The network IP of the laptop may need to be changed to be one number off the IP address of the Inverter/Controller.
Example: If UPS is 10.128.60.85, change the laptop to 10.128.60.90

Note: If problem persists, please contact ZincFive for technical support.



support@zincfive.com



Support 888.517.7776



zincfive.com/support

Glossary

AC Power

AC+ Utility power typically 120 VAC 60 Hz

AC-

AC Power grounded return

AWG

American Wire Gauge

BBS

Battery Backup System

EG

Equipment Ground

ETHERNET

A system for connecting a number of computer systems to form a local area network to control the passing of information between them

F

Fahrenheit

Firmware

Computer Code that resides in a board level product.

Flash

Nonvolatile Memory

IP

Internet Protocol

KB

Kilobyte

LED

Light Emitting Diode

LCD

Liquid Crystal Display

Living-Hinge

A flexible plastic bearing that allows the UPStealth® Battery Panels to bend

MB

Megabyte

MOS

Metal Oxide Semiconductor

MOV

Metal Oxide Varistor (Transient Suppressor)

MS

Milli-seconds - one thousandth of a second

NC

Normally Closed Contact (circuit completed)

NEMA

National Electrical Manufacturers Association.
(Traffic Cabinet)

Nickel-Zinc

Rechargeable battery chemistry that uses Nickel and Zinc (NiZn)

NO

Normally Open Contact (circuit not complete)

NTCIP

National Transportation Communication for ITS Protocol

PCB

Printed Circuit Board

PDA

Power Distribution Assembly

PWM

Pulse Width Modulation

SNMP

Simple Network Management Protocol - An Ethernet protocol allowing a master computer to poll other computers in a local area network

SOFTWARE

Computer code that usually resides in a PC or higher level computer

VAC

Volts Alternating Current

VDC

Volts Direct Current

UPS

Uninterruptible Power Supply

μSEC

Micro-second - one millionth of a second

Limited Warranty

ZincFive, Inc. ("ZincFive") takes pride in engineering and manufacturing products that meet our customers' needs for quality reliable uninterrupted power solutions. As part of that commitment, we are pleased to provide our customers with this limited warranty.

1. ZincFive offers a Limited Warranty on all new products it sells against defects in material and workmanship under normal use and service for a period of five ("5") years for electronic components and five ("5") years for battery cells. The Limited Warranty commences the later of the date the product(s) is shipped from ZincFive or the date product is shipped direct from an authorized Distributor (not to exceed 90 days from the original ship date from ZincFive).
2. This Limited Warranty provides for replacement, repair, or refund (at ZincFive's sole option) of ZincFive products by ZincFive or by a ZincFive authorized repair service. This Limited Warranty shall not apply to products that have been repaired by service personnel other than those authorized by ZincFive. ZincFive's products that have been altered or modified without the express written consent of ZincFive will void this Limited Warranty.
3. This is an exclusive warranty. Any remedies are restricted to repair or replacement of the effected product at ZincFive's sole discretion. ZincFive is not liable for damages, which may include; uninterrupted or error free operation, loss of profits, loss of use, costs of installation or removal of defective equipment. ZincFive is not responsible for any damage or injury directly or indirectly incurred due to design, operation or defect of its products. There are no warranties for loss of data. No other warranties are expressed or implied.
4. This Limited Warranty only applies to defects which may have arisen from system failures related to components or workmanship of ZincFive product(s) and does not apply to any other defects which may have been due, but not limited to the following restrictions and exclusions:
 - a) Accidental damage caused by abuse, misuse, mistreatment, abnormal stress or strain or vehicular accident;
 - b) Damage as a result of misuse, exposure to harsh conditions, such as, temperatures below or above the operational limits outlined in the User's Manual, electrical power spikes, negligence, improper installation including but not limited to incorrect wiring or improper grounding, improper battery storage including exposure to corrosion, damage by vermin, damage relative to immersion in water or other liquids, lack of proper care and/or preventative maintenance;
 - c) Use or maintenance of ZincFive products in any manner not approved or recommended by ZincFive including unauthorized servicing, repair, and/or maintenance;
 - d) Alterations or repair of our products other than approved in writing by ZincFive;
 - e) Alteration of serial numbers or identification marks; and
 - f) Acts of God, which may include earthquakes, storm damage, lightning strikes, flooding or any other cause beyond the range of intended use.
5. This limited warranty does not provide to the customer or other parties any remedies other than those outlined above. No representational warranty regarding product performance, whether expressed or implied, by any representative of ZincFive or agent of ZincFive, shall be binding upon ZincFive.
6. ZincFive reserves the right to inspect and render final decision on each limited warranty case. If it is deemed necessary to repair or replace a ZincFive product the replacement product assumes the original warranty date.

Warranty decisions are solely at the discretion of ZincFive.

7. ZincFive reserves the right to improve or make product modifications without incurring obligation to update, retrofit or install such modifications on previously sold products. However, ZincFive may make upgrades and product improvements available to end users free-of-charge or for an upgrade fee at ZincFive's sole discretion.
8. ZincFive will not cover the shipping costs of authorized returned goods, but will pay for return shipping if product is deemed to qualify under this Limited Warranty. Returned products must be shipped in authorized packaging materials. Any repairs required due to improperly packaged equipment will be the financial responsibility of the shipping party.
9. This Limited Warranty is only valid to original purchaser or to upon transfer to an original end user.
10. An extended warranty can be purchased at time of original purchase on a per year basis up to three additional (3) years.
11. Written authorization for the warranty return of merchandise (RMA) must be obtained from ZincFive, Inc. at 20170 SW 112th Avenue, Tualatin, OR 97062 or emailing support@zincfive.com or call 888.517.7776.
12. ZincFive will perform warranty repairs at its place of business, or designated repair facility per its standard warranty procedures. All communications with the end customer will be handled via Purchaser's representative. In the event that Product is returned and repairs are required or requested that are not covered as a warranty, ZincFive will provide such repairs only after receiving written authorization from Purchaser. ZincFive will then invoice Purchaser for such repair and Purchaser will make payment upon receipt of invoice.

THIS LIMITED WARRANTY SUPERCEDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. ZincFive NEITHER ASSUMES NOR AUTHORIZES ANY OTHER ENTITY TO ASSUME ANY OTHER LIABILITY OR LIMITED WARRANTY IN CONNECTION WITH THE SALE OR SERVICE OF ANY ZincFive PRODUCTS.

Notes



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