TYCON Solar™

UPS-ST-120
UPSPro®
Outdoor UPS System

- Wireless Base Stations and Client Devices

- Surveillance Cameras

- Mission Critical Backup Power

- Remote Sensors

Congratulations! on your purchase of the UPSPro®Outdoor UPS backup power system. Please take a moment to review this Qwik Install Guide before assembly or battery installation.

STOP

DANGER! Avoid Powerlines!
You Can Be Killed!

When following the instructions in this guide take extreme care to avoid contact with overhead power lines, lights and power circuits. Contact with power lines, lights or power circuits may be fatal. We recommend to install no closer than 20 feet to any power lines.

Safety: For your own protection, follow these safety rules.

- **Perform as many functions as possible on the ground**
- **Do not attempt to install on a rainy, windy or snowy day or if there is ice or snow accumulation at the install site or if the site is wet.**
- **Make sure there are no people, pets, etc. below when you are working on a roof or ladder.**

**Recommended Tools:** Phillips Screwdriver, Flat Blade Screwdriver, 13mm and 10mm Wrench, 5/16" nut driver,

Please help preserve the environment and return used batteries to an authorized depot

Qwik Install

STEP 1: Add Grounding Wire Between Door and Enclosure: Remove plastic covers on copper studs on inside of door and inside of enclosure. Add jumper wire between 2 copper studs and use copper washers and nuts to secure.

STEP 2: Remove the bottom cover and replace it with the PowerVent™ included with the package. Add wire feedthrus and any necessary connectors into the bottom PowerVent™ plate.
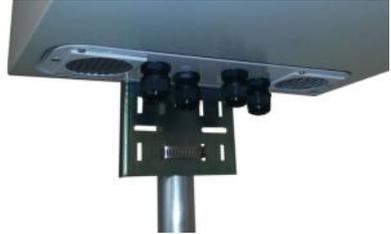
STEP 3: Install hole plug in drain hole in bottom right corner of the enclosure.

STEP 4: Mount the DIN rail to the door using screws provided. Mount any extra equipment to the orange backplate and secure the backplate in the enclosure. Note: The DIN rail can also be mounted to the orange backplate or sides of enclosure if desired.

STEP 5: If pole mounting the enclosure, assemble the pole mount kit to the back of the enclosure and mount the enclosure to a pole using the 6 hose clamps provided. The enclosure can also be wall mounted using the 4 holes in the back of the enclosure.
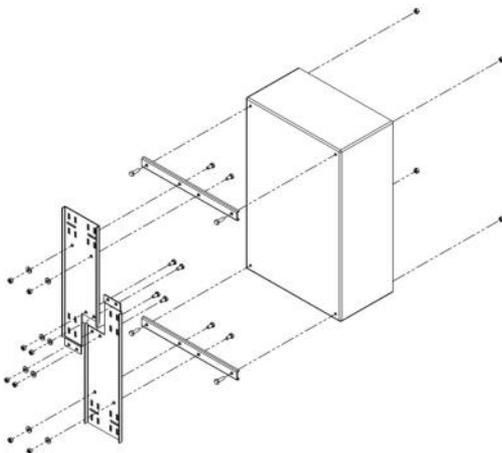
STEP 6: Insert the battery platform in the bottom of the enclosure. The battery platform has cutouts so wires can be routed under the battery as needed.

STEP 7: Attach the Green DIN Rail adapters to the charge controller using the screws provided. Use 1 screw per adapter. Clip the controller to the DIN rail.

STEP 8: Install 1 or 2 batteries in a 12V or 24V configuration, depending on which system you purchased. Remove the battery cable fuse before connecting the batteries to avoid any accidental shorting. Connect battery cables and PowerVent fan cables to the Solar Controller battery input (Battery Symbol), then to battery terminals. Observe proper polarity. Red wire is always V+.

STEP 9: Connect the 120W 12V or 24V battery charger to the Solar Controller PV input (Solar Panel Symbol). Make sure to observe proper polarity. Red wire is always V+. The controller has a pluggable 2 wire AC cord. You can cut this cord to hardwire into the mains. You can also mount conduit to the enclosure if local codes require it. During operation the charger will be very warm to the touch. This is normal.

STEP 10: Mount any customer electronics to the inside of the enclosure. Connect any loads to the Solar Controller LOAD output. (Light Bulb Symbol). Press red button to turn on/off the LOAD output.

Note: There are multiple cable gland feedthrough in the bottom of the enclosure. If you are not using any of the feedthrough you can cut a short piece of wire, put it through the cable gland and tighten the cable gland on the wire to seal it.

STEP 11: Double check wiring and then re-install the battery cable fuse to energize the system, The solar controller display shows battery voltage, charging current, load current and temperature.

CAUTION: Reverse polarity connections will damage the equipment.

STEP 12: Make sure lid gasket is clean and free from any particles, then close the cover, making sure that wires are clear of the seam and hinge area.

STEP 13: The UPSPro® is Solar Ready™ so a solar panel can be added at any time to provide supplemental or full time power. Solar panel will be connected to PV input (Solar Panel Symbol) in parallel with AC Power supply. Solar panels must have blocking diodes which is the standard for most solar panels.
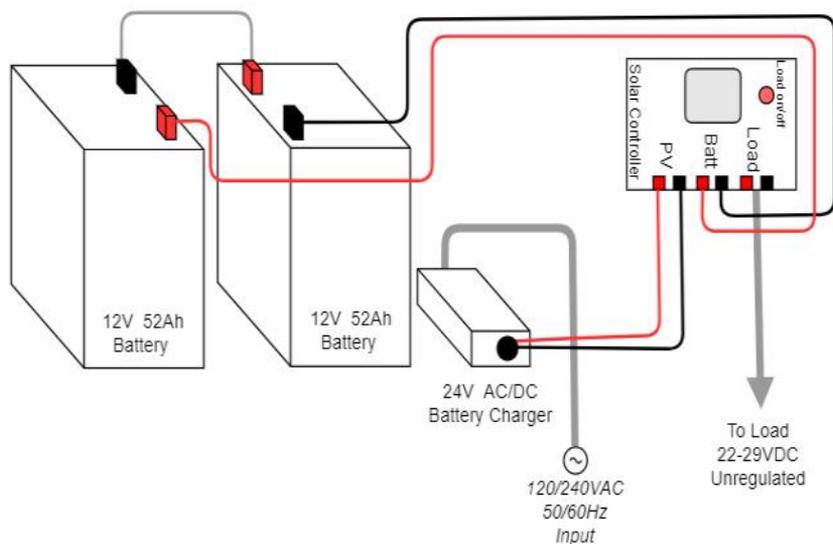
2 Battery 24V Layout
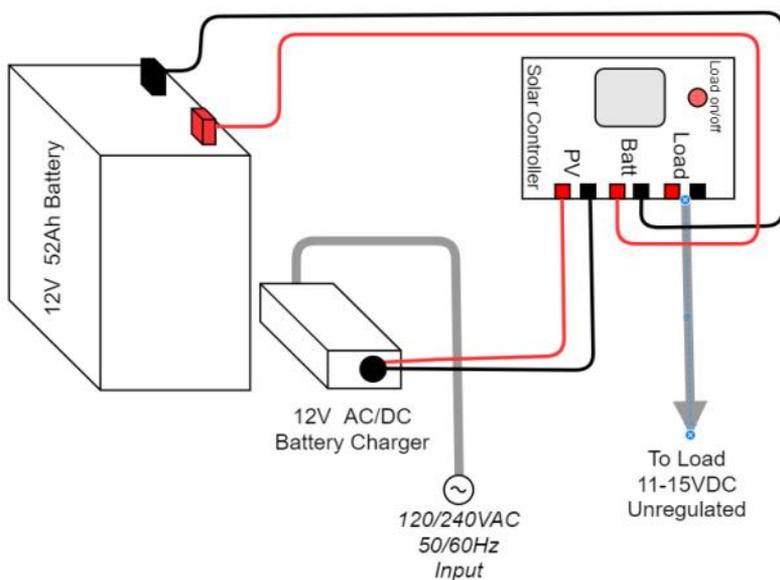

1 Battery 12V Layout

SPECIFICATIONS

Battery Voltage (DC)	12V or 24V
Load Output Voltage (DC)	11-15VDC / 22-29VDC
Suggested Max Load	100W
AC Input Voltage	120/240VAC 50/60Hz 2.5A Max
Battery Charge Voltage	14.4V / 28.8V
Battery Charge Current	8.3A / 4.35A
Battery Charge Capacity	120W
Capacity	9Ah to 36Ah
Battery Type	Valve Regulated Sealed Lead Acid / Absorbent Glass Mat (AGM)
Battery Life	5 Years
Controller Type	20A PWM with status display and load control
Overcharge Protection	14.4V / 28.6V
Over-discharge protection	11V / 22V
Over-discharge recovery voltage	12.5V / 25V
Controller Self Consumption	<0.3W
Enclosure Type	Powder Coated Steel
Enclosure External Size	24 x 15 x 14" (610 x 381 x 356mm)
Enclosure Internal Size	23 x 14 x 12" (584 x 356 x 305mm)
Operating Temperature	-30°C to +60°C
System Weight (without batteries)	55lb (25kg)
Battery Weight (each)	37lb (17kg)

UPS-ST-120 24V 2 Battery Configuration

Solar Controller

Load on/off

PV   Batt   Load

12V 52Ah
Battery

12V 52Ah
Battery

24V AC/DC
Battery Charger

120/240VAC
50/60Hz
Input

To Load
22-29VDC
Unregulated

UPS-ST-120 12V 1 Battery Configuration

Solar Controller

Load on/off

PV   Batt   Load

12V 52Ah Battery

12V AC/DC
Battery Charger

120/240VAC
50/60Hz
Input

To Load
11-15VDC
Unregulated

TECH CORNER

1.**CONTROLLER:** The controller turns off power to the load at 11V (22V if 24V array) and reconnects when the battery reaches 12.5V (25V if 24V array). This protects battery from over-discharge and increases battery life and performance.

2. **CAPACITY:** With a typical AP running 4W average. A single 12V 52Ah battery should be able to provide backup power for up to 75 hours at room temperature. For cold temperatures the capacity is reduced by 20-30%.

3. **VENTING:** The enclosure is vented thru the included PowerVent™. The fan is thermostatically controlled to turn on when the temperature inside the enclosure exceeds 45C. It runs on 12V to 24VDC.

4. **DUAL INPUTS:** The UPS-ST-120 can be used with AC Power alone or Solar Power alone or a combination of both.

5. **SOLAR PANEL:** The controller used in the UPS-ST-120 can handle a maximum panel size of 320W. Do not exceed 20A into the solar panel input of the solar controller.

6. **BATTERY HOOKUP:** Always connect the battery first and disconnect the battery last. The controller should not be run without a battery connected.

7. **BATTERY MAINTENANCE:** The batteries used in the UPSPro systems don't require any maintenance. They should last up to 5 years in normal use. **Note: Never store batteries for any length of time in a discharged state or it will kill the battery.**

8. **BATTERY OVERDISCHARGE**: We highly recommend hooking all equipment loads to the controller load output. This output will disconnect the load if the battery voltage is too low and this will protect the battery from over-discharge. If batteries get completely discharged because the equipment was connected directly to the battery, you will reduce the battery life.

9. **LOAD OUTPUT:** The LOAD output on the Solar Charge Controller is unregulated. What that means is the voltage output follows the battery voltage. This is typically 11-15V for a 12V system and 22-29V for a 24V system. It is up to the user to make sure the connected load is compatible with these voltages. A voltage regulator can be added to provide regulated output voltages.

Limited Warranty

The UPSPro® products are supplied with a limited 36 month warranty which covers material and workmanship defects. This warranty does not cover the following:

▫ Parts requiring replacement due to improper installation, misuse, poor site conditions, faulty power, etc.

▫ Lightning or weather damage.

▫ Physical damage to the external & internal parts.

▫ Products that have been opened, altered, or defaced.

▫ Water damage for units that were not mounted according to user manual.

▫ Usage other than in accordance with instructions and the normal intended use.

NOTES