POINT ZERO ENERGY

Titan Boost User Manual

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SAFETY INSTRUCTIONS

To avoid personal injury or damage to the solar generator or any connected products, carefully read, understand, and comply with all instructions before use. Keep this manual for future reference.

Observe all Input/Output watt ratings: To avoid possible hazards, observe all ratings on unit, and products you intend to use; check manuals for more information.

Use in a well ventilated area: Ensure proper ventilation while in use and keep away from any combustible materials or gases. Do not stack anything on top of the unit in storage or in use. Inadequate ventilation and/or improper storing may cause damage to the unit.

DO NOT operate in wet conditions: In order to avoid short circuits or electric shock do not allow unit to get wet. Let unit dry completely before using.

Keep the unit clean and dry: Inspect the unit for dirt, dust, or moisture on a regular basis.

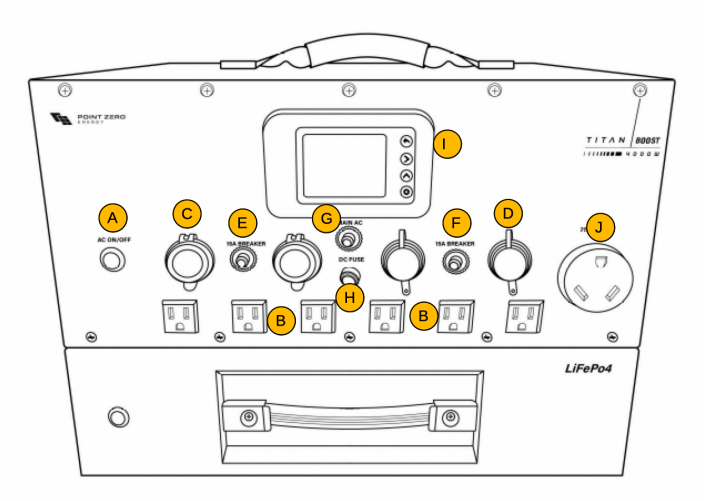
DO NOT insert foreign objects into outputs or ventilation holes.

DO NOT open the Titan solar generator; there are no user serviceable parts inside.

Any misuse, or manipulation to the unit or its components, will void all warranties.

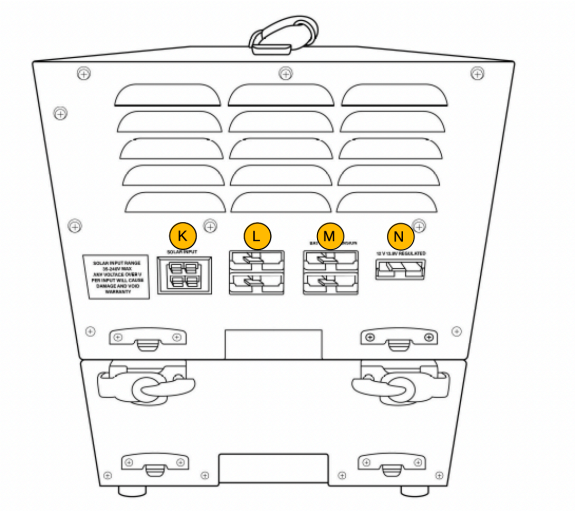
PRODUCT OVERVIEW

Front View



A- AC power button (Pressed in will turn AC power on to the 6 15A outlets and the one 30A outlet)
B- 120V AC sockets 15A per set of 3 (left three combined 15A, and right 3 combined 15A max)
C- 12V DC sockets Total 12V DC output of 20A (this includes both cigarette ports, and the 12V output on the side.
D- USB charging ports. Total of 2 USBC (65W each) and 2 USBA (3A each)
E- Reset breaker for left 3 outlets (15A)
F- Reset breaker for right 3 outlets (15A)
G- Reset breaker for all AC outlets, including RV outlet (30A)
H- 20A fuse for 12V DC sockets
I- Battery Display
J- 30A RV outlet (max 3,000 watts continuous, 6,000 watts peak)

Side View



K- Solar input ports (per port)

Max charging 1,000 watts (more will not cause damage)

Max input amps: 30A

Max voltage: 240V per port (voltages over 240V will void warranty)

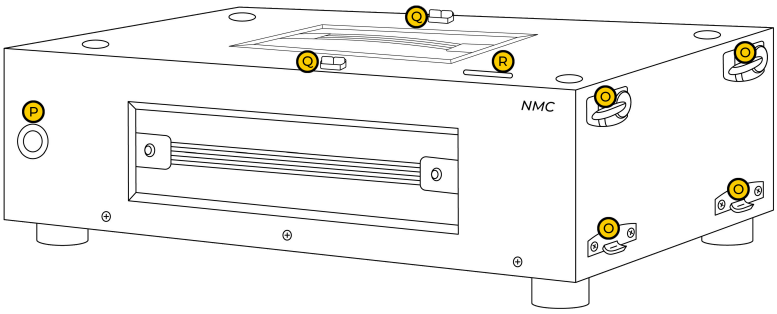
Min Voltage: 35V (lower voltage will not charge)

L- Aux port, used for AC charger, external MPPTS, and 24VDC output

M- Battery expansion port, used to connect external batteries to the Titan

N- 12V (13.8V regulated) output (max 20A total 13.8V)

Battery



O- Battery latch. Ensure battery is secure with all four latches closed before use
P- Power button
Q- SB50 battery connectors
R- BMS port cover. Factory serviceable- DO NOT OPEN!

TECHNICAL SPECS

Power Module	
Weight	37 lbs
Dimensions	18.5 x 12 x 8.5
Solar Input	volts: up to 240VDC watts: up to 2000 w
Output Voltage	120V AC Pure sine wave
Continuous Power Output	3,000 watts
Peak Power Output	6,000 watts for 5 seconds
Outlets	(6) 120V 15A, (1) 120V 30A
USB	(2) USBC (2) USBA
Warranty	5 year Limited Warranty + 5 years extended
Battery	
Chemistry	24V Lithium Iron Phosphate
Capacity	2,500 watt-hours per battery pack
Life Cycle	Up to 8,000 cycles
Weight	48 lbs
Warranty	5 year Limited Warranty + 5 years extended

CHARGING YOUR POWER STATION

There are two ways to charge your Titan Boost power station: from solar, or using an AC wall charger.
The Titan is capable of charging from all sources at the same time.

*IMPORTANT: ALL SOURCES OF CHARGING COMBINED SHOULD NOT EXCEED 1300 watts PER BATTERY.

CHARGING FROM THE WALL

1.Plug the AC Battery Charger into any wall outlet.
2.Connect the red Anderson plug end of the AC Battery Charger to the Titan Boost Aux port.
3.Your batteries are fully charged when Charger light changes to Green.

It does not hurt to leave your AC charger connected even after the batteries are fully charged.
You can use up to 4 AC wall chargers by using SB50 splitters (two AC chargers per sb50 aux port). Each charger can charge up to 600 watts (depending on battery state of charge).

CHARGING FROM SOLAR

If you purchase solar panels from Point Zero Energy, follow the diagrams shown on your Quick Start Guide or on our website at **https://www.pointzeroenergy.com/learn/wiring-diagrams/**

If you purchase solar panels from another source, make sure your panels are configured to keep the open circuit voltage under 240V. This is not the rating of the solar panel but the **ACTUAL OPEN CIRCUIT VOLTAGE** (which will change depending on temperature and sun). Solar panels can and do produce higher voltages than the rated VOC on the panel when they are cold. If you have questions regarding this, please contact us at 208-722-1342

CHARGING FROM SOLAR (CONT.)

There are two ways to charge with solar using the Titan boost. One is using the internal MPPT charge controllers, and the other is to use external MPPT's. Both charge controllers are identical, however, by using external MPPT's, you can expand the solar charging up to 4,000 watts.

1. Place your solar panels where they will get as much direct sunlight as possible.
2. Connect solar panels to the generator in the correct configuration (see Point Zero Energy wiring diagrams).
3. Your batteries are fully charged when the Meter reads 100% if the meter has been calibrated correctly, or until there is no more charging even with the sun hitting the solar panels.

It does not hurt to leave your solar panels connect even after the batteries are fully charged.

Solar Charging with the internal MPPT

There are two sets of Anderson plugs on the side of the power module labeled "Solar Input" that are designed for solar charging (see "Side View" under **Technical Specs**).
Each solar set is capable of charging up to 1000 watts (240v max). You can connect more than 1000 watts per MPPT, however, the generator will limit charging to 1000 watts per set. This can be beneficial if you want to limit the charge rate of the battery and get more power in low sun conditions.
It is critical to NOT EXCEED 240V of SOLAR INPUT PER MPPT.

Charging from external sources (MPPT, car, alternator)
You can charge from any external source, however, we recommend using Point Zero Energy products as they will be designed to work correctly with our batteries. To use external charging, simply plug the charger into the Aux port on the Titan Boost power module.

SAFETY MODE
When the battery has been depleted below normal operating levels, the Titan battery will go into safety mode. During safety mode, the Titan will not turn on with the power switch. To take it out of safety mode, the battery must be charged.

To do this, simply connect a charging source (AC charger, or solar). As soon as it starts charging, the Batteries will go out of safety mode. It is recommended that you fully charge your batteries after being in safety mode.

OPERATING INSTRUCTIONS

Due to it's unique design, there is a specific way to initially setup the Titan power station so it can read correct charge/discharge information and function properly. **PLEASE FOLLOW INSTRUCTIONS CAREFULLY.**

Setting up the Titan Boost is easier by using the app, but not necessary. You can install the app from these QR codes:

Android

Apple

INITIAL SETUP

1. CONNECT THE BATTERY PACK(S) TO THE TITAN POWER MODULE

1. Ensure the power button on the battery is OFF (in the out position) on all batteries being connected.
2. If you have multiple batteries, remove the protective plates from underneath all batteries, except the bottom battery. Stack the batteries.
3. Ensure the power switch on the Titan Power module is in the OFF position (in the out position).
4. Stack all batteries together ensuring the rubber feet are aligned on top of the circle indentations of the battery pack. When connected, all of the led lights on the batteries should be off.
5. Stack the Titan power module on top of the battery (or batteries), ensuring the rubber feet are aligned on top of the circle indentations of the battery pack.
6. Tighten the four metal latches on the sides of each battery, and the power module. You may need to press down on the generator to close the latch.
7. The battery (or batteries) are now connected.

2. PROGRAM THE TITAN METER

1. Turn on all batteries by ensuring the button on each battery is pressed in. The led lights on the batteries only indicate there is power at the terminals. This is a safety feature rather than an indicator the battery is on. Turning on one battery will light all buttons on all connected batteries, however only batteries with the button pressed in will be in use.
2. Turn the Titan Power Module to ON.
3. Program the meter to the combined AMP-HOURS of ALL battery packs that will be in use:
   a) Determine the total amp hours of batteries connected. If using LiFePo4, each battery is 90ah, if using NMC, each battery is 74ah. For example if you have 3 LiFePo4 batteries, your total amp hours is 3x90= 270 ah.
   b) Open your app on your phone, and program the meter to the correct amp hours. You can see instructions on how to use the app in section

c) Alternately you can program the meter by following the instructions in the battery meter section.

3. CALIBRATE THE METER (Step 2 must already be done)
    1. If not already on, turn on all batteries and the Titan Power Module.
    2. Check the battery voltage on the Titan display screen. If the battery voltage is over 26.0V, drain the battery to 26.0V or less (this must be done in order for the battery to calibrate correctly).
    3. Charge your batteries using the provided AC charger or solar, following the previous instruction.
    4. Fully charge the batteries until the led light is green on the external AC charger. If using solar you will need to charge until the rate is under 50 watts while the solar panels are getting good direct sunlight.
    5. If the batteries are fully charged, however the meter does not read 100%, press the > button on the display for 3 seconds to manually calibrate the meter.

Important: Do not unplug or stop the charger until it has fully charged. If you do, or for some reason the charging stops before the meter calibrates, you must drain the battery back down to 26.0V and charge again.

BATTERY METER

Both the built in display, and the app provide the same information, and can be used to program the display.

Note: Only the amps, volts, and watts will be accurate when the meter is not calibrated. The other readings need the meter to be calibrated for an accurate display.

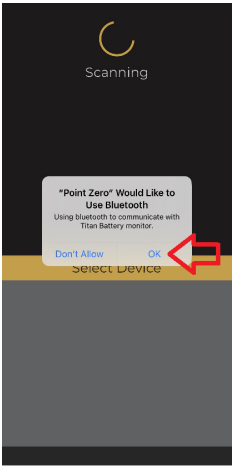
The Battery display shows the status of the battery, including:
State of charge in a percentage: This is the percentage of the remaining battery ranging from 0% to 100%.
Ah: This is the remaining amp hours of the battery.
Remaining time: This is the time left until the battery will be empty (based on the current rate of discharge), or the time until the battery will be full (based on the current charge rate).
Amps: This is the amps coming out or going into the battery. Do

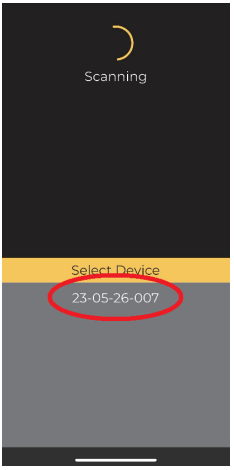
not confuse this with AC amps being used by appliances. Because the battery has a lower voltage than the AC output, the battery amps will be much higher.
Volts: This is the current voltage of the battery.
Watts: This is the current draw or charge in watts from the battery..

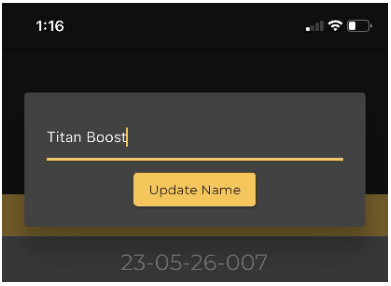
USING THE APP

After downloading the app, open it to begin initial setup. When the app first opens, it will prompt you to enable BlueTooth when using the app. Select “ok” to enable BlueTooth. The app must have BlueTooth enabled in order to connect to the Titan Battery monitor.

After enabling BlueTooth, the app will scan for local Titan units to connect to. Once it successfully scans local units, the unit name will appear at the bottom. Note, in order for the app to successfully detect nearby Titan units, those units must be turned on.
The units listed will have a manufacturer’s device name, usually written in numbers. Select the device, and you will be prompted to rename it.

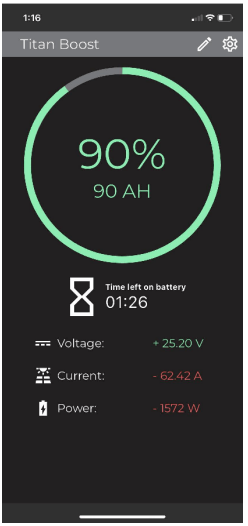


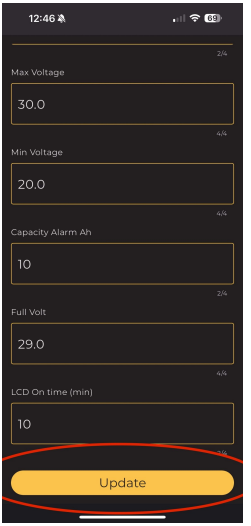




You will know which Titan you are connected to when the white BlueTooth icon on the Titan's display screen turns blue. If you'd like to, you can rename the device (this is especially helpful for customers with multiple Titan devices). After renaming the device, select "Update Name" this will lock in the new name on the device and bring you to the app's home screen.
Notice several things on the home screen:

1. In the middle of the screen you'll find the battery current state of charge shown as a percentage with the amp hours listed as well.
2. On the upper left is a gear icon. Select this to enter the settings menu and change the Titan's settings.
3. Further down, you'll find an hourglass symbol with an estimated time remaining for the battery. This estimated time is dependent on the load applied to the battery.
4. The remaining numbers in order from top to bottom are as follows:
    - •Voltage: which tells you the current voltage of the battery.
    - •Current: which tells you the DC load or charging rate being applied to the battery. In this example screenshot there is a load of 62.42 DC amps being drawn from the battery.
    - •Power: which tells you the rate in watts of how high the load or charge is. In the example screenshot there is a load of 1572 watts being drawn from the battery.





PROGRAMMING

Select the gear icon on the upper right of the home screen in order to enter the settings menu.

1. Without the proper amp hours set, the app will not properly track the state of charge, and will give inaccurate information. The amp hours needs to be the total amp hours of your batteries. For example if you have two LFP batteries the amp hours would be 90 X 2 = 180. If you also have two external 12v 100 amp hour batteries wired in series for 24v (you have to have a 24v external battery). Then the total would be 280 (amp hours only add when connecting parallel).
2. Max voltage: This tells the display screen what the maximum voltage of the batteries should be. If this voltage is hit, an alarm will go off. This voltage should not ever be reached under normal conditions. For both the Titan NMC and LiFePo4 batteries, go ahead and leave this at 30.
3. Min Voltage: This will tell the Titan display screen when to calibrate to 0%. You can leave this at 20V.
4. Capacity Alarm Ah: This will allow you to receive an alarm when the battery amp hours have dropped to a certain number. For example, if you have 1 LiFePo4 Battery (90ah) and want to be alerted when the battery has depleted to half, set this to 45. At 45 amp hours the Titan will make a chirping noise to alert you.
5. Full Volt: This will tell the display screen when the voltage of the battery is full and the screen should calibrate to 100%. The normal setting for this is 29.0V for both the Titan NMC and LiFePo4 batteries. This voltage is not always reached even when the battery is fully charged due to slight inaccuracies in voltage meters. If it does not auto calibrate even when the battery is full, you can adjust this down (28.8, or 28.6 usually fixes it), or manually calibrate when it is full.
6. LCD On time (min): This tells the display screen how long to stay on (in minutes) for example, if you want your display screen to stay on for 10 minutes then set this to 10.

After inputting the appropriate settings for your unit, select “Update” this will lock in the settings and bring you back to the home screen where you can then monitor your Titan unit.

PROGRAMING USING THE DISPLAY SCREEN

1. Enter the display screen settings by pressing the gear button located on the bottom right of the display screen.
2. Once you are in the settings menu, press the gear button again to access the settings.

You'll notice 6 different settings.
The max volt and min volt settings will already be properly set from Point Zero Energy. You should not need to adjust these settings unless otherwise stated from a Point Zero Energy support agent.

The other 4 settings are as follows:
Full Volt (v): Full Volt: This will tell the display screen when the voltage of the battery is full and the screen should calibrate to 100%. The normal setting for this is 29.0V for both the Titan NMC and LiFePo4 batteries. This voltage is not always reached even when the battery is fully charged due to slight inaccuracies in voltage meters. If it does not auto calibrate even when the battery is full, you can adjust this down (28.8, or 28.6 usually fixes it), or manually calibrate when it is full.
CAPACITY: Without the proper amp hours set, the app will not properly track the state of charge, and will give inaccurate information. The amp hours needs to be the total amp hours of your batteries. For example if you have two LFP batteries the amp hours would be 90 X 2 = 180. If you also have two external 12v 100 amp hour batteries wired in series for 24v (you have to have a 24v external battery). Then the total would be 280 (amp hours only add when connecting parallel).
ALARM: This will tell the unit to alert you when your batteries have depleted to a certain level. For example, if you have 1 LiFePo4

battery (90ah) and want to be alerted when your batteries are at half, set this to 45.
LCD ON (MIN): How long you would like to keep the display screen on (in minutes) before the display screens goes into sleep mode.
3. After you've pressed the gear button again, you'll notice that the first number will flash in red. This will let you know that you are now in programming mode for the settings. The number flashing red will be the current number you are on and have access to change.
4. Press the RIGHT arrow button to move between selections. Note that when you press this button, the adjacent number will flash. Continue pressing this button to move to the number you'd like to change.

5. Press the ^ button to change the settings of the number you have selected.
6. After finishing your new settings, press the gear button to save the settings. You'll know it is saved when no more numbers are flashing red.
7. Press the BACK arrow button to exit the programming menu and return the home screen. Now your unit should be properly set to calibrate and measure the state of charge of the batteries correctly.

Using your Titan Power Station
After initial setup, your Titan power station is ready to use. The Titan station has two modes of use: DC ONLY and DC/AC.
Any time the batteries are connected and turned on, DC mode is on. Pressing the power button on the Boost power module will turn on the AC as well providing both AC and DC.

DC Mode: If you only need DC power for charging cellphones, tablets, lights, etc., you can save power by using the DC ONLY mode. However, none of the AC outlets will work in this mode. To use DC only mode, simply turn on all the batteries, but do not press the power button on the Titan power module.
The DC mode turns on the battery display the USB ports, cigarette ports, 12V sb50 ports, and the aux port (24v).
* IMPORTANT: The two 12v cigarette ports and 12v sb50 outlets are capable of up to 20 amps each, however, they are also limited to a combined amperage of 20 amps total. For example, you can use 20 amps in one port, OR 10 amps in two ports.
If you go over 20 amps the fuse will blow and will need to be replaced.

DC/AC Mode: To use this mode, turn on all the batteries, as well as the power button on the power module. This mode turns on DC power as explained above, as well as the six 15 amp 120v AC outlets and the 120v RV outlet.
The six 15 amp 120v outlets are separated into two 15 amp breakers. The left three outlets are on one breaker and the right three outlets are on the other. This means, the left three outlets are capable of 15 amps per outlet with a total of 15 amps combined. The right three are also capable of 15 amps per outlet with a total of 15 amps combined.
This means, if you want to run a total of more than 15 amps of AC power, you will need to plug 15 amps or less into the left side and 15 amps or less into the right side.

RV Outlet: The 30 amp RV plug can be connected to RV's or any load where you need more than 15 amps.

The Titan power station can power various appliances such as refrigerators, freezers, microwave ovens, and cooking appliances. It's pure sine wave power output will safely run power tools, electronics, and medical equipment such as CPAP machines.

When deciding on what to power, you will need to calculate the continuous and peak loads of each appliance you want to run simultaneously to determine if the total amount of watts is within the capacity of the generator. Remember, run times will vary depending on the number of batteries and solar panels.

Inductive loads
Inverters have a rated watts based on a resistive load (heaters, lights, etc). However they can also run inductive loads such as microwaves, motors, etc. Inductive loads create a larger load on the inverter (actually feeding back power, and then producing it again). So even though the total output of an inductive load, and the power pulled from the battery may be within the inverter rating, it may overload it. If the Titan overloads on an inductive load when pulling less than the rated output (3,000 watts), this is normal, and it means you need to reduce the load in order to run it. This is not just the Titan, but all inverters.

Peak power
The Titan boost can run 2X the continuous load for up to 5 seconds. This allows it to start appliances with a large load better than most generators. However, if the load stays over 3,000 watts for more than 5 seconds it will turn off due for overload protection. If this happens, you must turn the unit off, and then back on.

Low battery turn off and restart
When the battery gets low (around 21V) it will beep a single beep every few seconds letting you know the battery is extremely low. If the battery is drained more (down to around 20v), it will beep twice every few seconds, and turn the inverter off. The inverter will stay off until the battery voltage is raised to around 25V (around 15%). At that point the unit will stop beeping, and turn back on.

If the battery is drained even further (the AC will be off, but DC can still use the battery, plus there is a small no load power draw), the battery will go into safety mode turning everything off. If solar is connected, it will charge once there is sun, turning the whole system back on. If no solar is available, it will need to be charged by another source to get it out of safety mode.

UPS (uninterrupted power supply)
The Titan Boost uses double conversion UBS. This type of ups provides the cleanest power possible, with zero downtime when the power goes out.

Battery charging
The battery has automatic charge limiting. This limiting current is triggered when its charging current goes over 50A (about 1300 watts). It is best to have enough batteries to be able to charge at your full potential (if you have 2,000 watts of solar connected have at least 2 batteries). If the charging limit is reached, and the battery goes into limiting charge current, the display screen may reach maximum voltage and automatically calibrate to 100%. If this happens you need to reduce your charging, or increase the number of batteries, and recalibrate your meter following the steps in the initial setup section. Or alternatively, you can allow it to charge slowly until the battery is full (stays at 27.2v even when the charging is removed). Just remember that until the battery is completely charged, the meter will not show an accurate state of charge.

When using large amounts of AC power when the battery is low, the inverter may turn off earlier than normal with useable battery capacity still remaining. If this happens, turn the Titan solar generator off and back on again. Try reducing the amount of power being used or charge the batteries.

Temperature range
You should not use your Titan power station in temperatures below 32 deg F, or above 100 degF. You may store your system at lower temperatures, but it must be warmed up and dried out before using.

STORING YOUR POWER STATION

The Titan solar generator will retain a charge for up to 5 years. However, for optimal battery life, you should use 10% of the battery once per year. Make sure each battery pack is charged to at least 50% capacity and the POWER SWITCH on both the Titan power module and all batteries are **turned to OFF before storing**.
Store your Titan solar generator in cool, dry environments and away from any combustible materials or gases.
If stored in a location under 32 deg F, you must allow the Titan to warm up, and any condensation to fully dry. We suggest leaving it in a warm location for at least 3-6 hours before use.

*FAILURE TO STORE AND MAINTAIN YOUR TITAN SOLAR GENERATOR PROPERLY WILL VOID THE PRODUCT WARRANTY.

TROUBLESHOOTING

For troubleshooting issues, please visit our knowledge base on our website at https://www.pointzeroenergy.com/support/knowledge-base/

WARRANTY & RETURNS

For information on product warranty, visit our website at **https://www.pointzeroenergy.com/warranty-returns/**