AIMS POWER™

HYBRID POWER INVERTER

PART #: PIHY4600 & PIHY9600

About This Manu

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About This Manual

This manual provides product information, guidelines for installation, operation, maintenance and troubleshooting for the following AIMS Power hybrid models:

PIHY4600
PIHY9600

AIMS Power recommends keeping this manual in a safe area, to use as a resource.
1.2 Intended Audience
This manual is intended for qualified personnel operating the inverter. **The tasks described in this manual should only be performed by qualified personnel with electrical, solar and battery experience and knowledge.**
Settings and parameters may be different than what is in this manual. Periodic upgrades are performed on the inverter.

Safety & Symbols

Safety Precautions

1. Installation should be performed by qualified solar installers / electricians.
2. The solar panels and inverter must be connected to earth ground.
3. Do not open the inverter's access panel for 5 minutes after disconnecting both DC and AC power supplies.
4. The inverter can get very warm during use. To prevent harm to passersby or damage to sensitive materials, install in a location where the heat from the inverter will not impact close objects.
5. Install the inverter on a wall or stable structure, in a upright position. Make sure the wall or structure can support the weight of the inverter.
6. The inverter is IP65 rated, thus splash proof. However, AIMS Power recommends installing indoors in a dry and cool location to minimize the unpredictability of the elements.

Symbol Definitions

The AIMS Power inverter complies with relevant safety standards. Please read and follow all of the instructions and cautions during installation, operation and maintenance.

	Danger of Electric Shock The inverter contains fatal DC and AC power. All work performed on the inverter must be carried out by a qualified solar installer or electrician.
	Beware of Hot Surface The inverter's housing may reach uncomfortably hot temperatures up to 60 (140°F) under high power operation. Do not touch the inverter enclosure wh hot.
	Residual Power Discharge Do not open the inverter's access panel for 5 minutes after disconnecting both DC and AC power supplies.
	Important Notes Read all instructions carefully. Failure to follow these instructions, warnings and precautions may lead to inverter malfunction or bodily harm.
	Do not dispose of any electronics in standard trash.
	Refer to manual before servicing.

Product Introduction

The NEW REVOLUTIONARY AIMS Power Hybrid Inverter gives you total control of your power. It combines solar power and battery backup into one complete, easy to use solution, that utilizes the FREE power from the sun and independence from the grid. In addition, the AIMS Power Hybrid Inverter can reduce or eliminate electric bills, provides power during outages, and allows customers to monitor their system from anywhere.

Where the AIMS Power Hybrid Inverter makes an immediate impact is in its ability to be programmed to do exactly what you want it to do. Think of an orchestra without a conductor. It may have all the talent and potential in the world, but without a way to organize and direct it, you may as well listen to radio static. The AIMS Power Hybrid Inverter is essentially the conductor for every source of power that you have in your house.

Instead of sending the suns power straight to the power company where they dictate the rate, you can decide how to use YOUR power. On a sunny day, you can program it to fill up your batteries first, and then power your house. If you are not home, you can pump the excess power back to the Utility Co. and offset your power bill.

Have an EV car? When you get home, you can charge from batteries or use FREE solar power. You can program it to power your house at night with batteries and recharge during the day with sunlight.

Did the grid go down? In the blink of an eye, it automatically switches over to batteries.

Sun not shining? You can charge your batteries using the grid when rates are low and power your house at specified times.

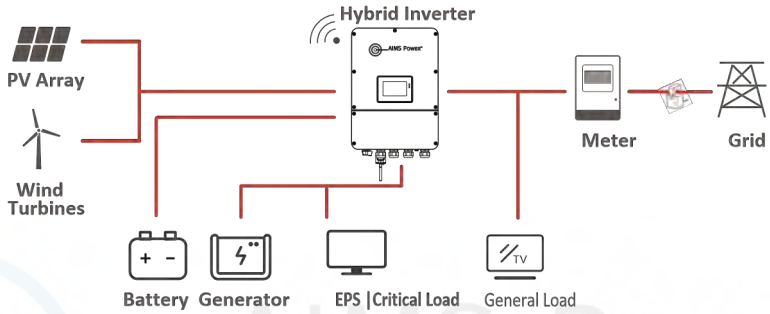
Have a generator? Use it to charge your batteries instead of using the grid or solar.

AIMS Power Hybrid Inverter gives you complete control and autonomy over your own power needs because that is exactly what homeowners deserve. The hybrid inverter also includes an APP for remote monitoring which is easy to set up and operate using your cell phone. No matter where you are, you will have the ability to do exactly as you see fit with your power.

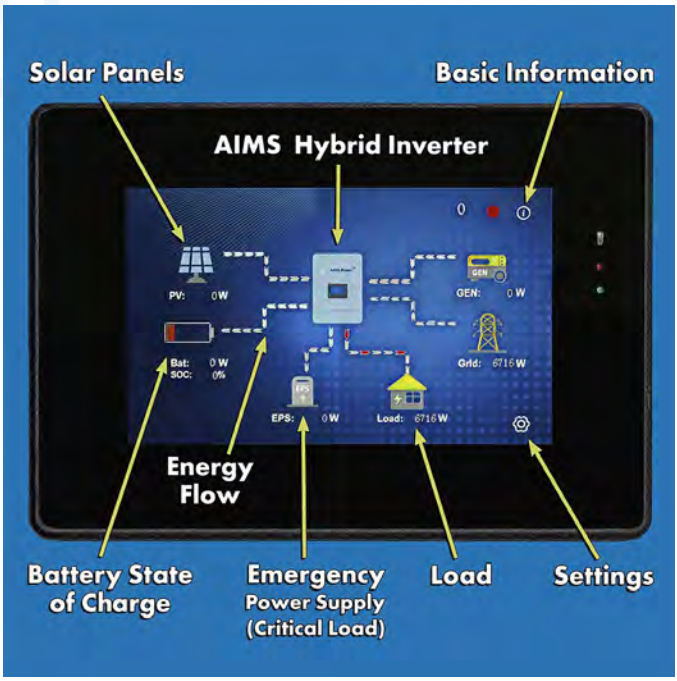
While there may be other similar products on the market, our hybrid inverters are much more efficient than the competition because of the higher voltage that they run at. This puts less stress on the entire system and ensures extended durability and improved safety, which is something that we pride ourselves in providing for our customers.

In addition to being more durable, efficient, and safe than others on the market, all of the easy to use optional kits that are designed for the AIMS Power Hybrid Inverter are from the same manufacturer. This means that instead of having to call three different customer service lines to troubleshoot issues, you will be able to avoid the runaround and work through them with one trusted and competent company. We believe that taking the headache out of troubleshooting is what our customers deserve, and that is what separates us from the competition.

The AIMS Power hybrid inverter charger is designed to provide grid-tie and off-grid solar power management in one product. Its simple but comprehensive design eliminates the need for extra equipment, providing an efficient solution for users interested in off-grid battery backup, net metering, and load sharing all in one product. Energy management is based on time-of-use and demand charge rate structures, significantly reducing the amount of energy purchased from the public grid and optimized self-consumption. Backed by a 10 year warranty and lifetime tech support. This inverter is designed to work with solar panels and/or a battery bank and is interactive with the grid. You don't need both solar and batteries.



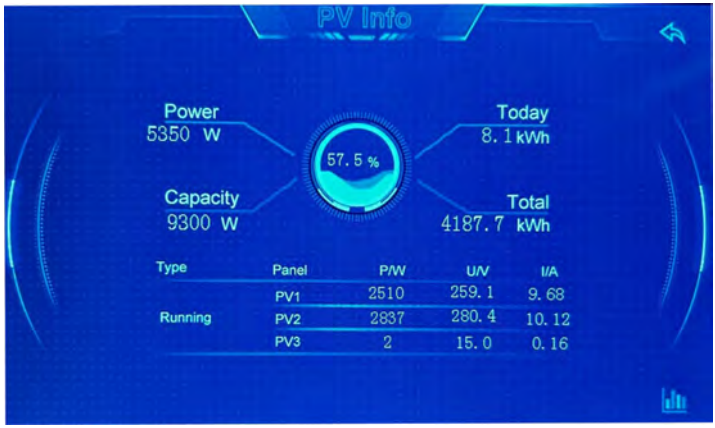
Main LCD Home Screen



Home Screen Summary

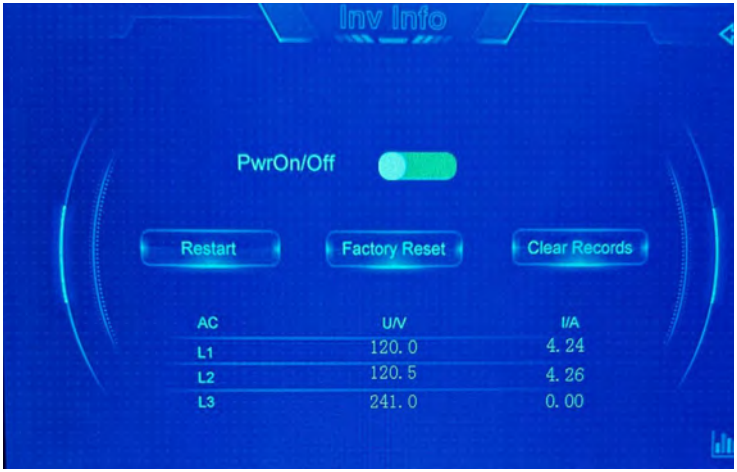
Solar Panel

The PV screen provides information for the solar array. Simply tap the solar icon on the main screen to view.



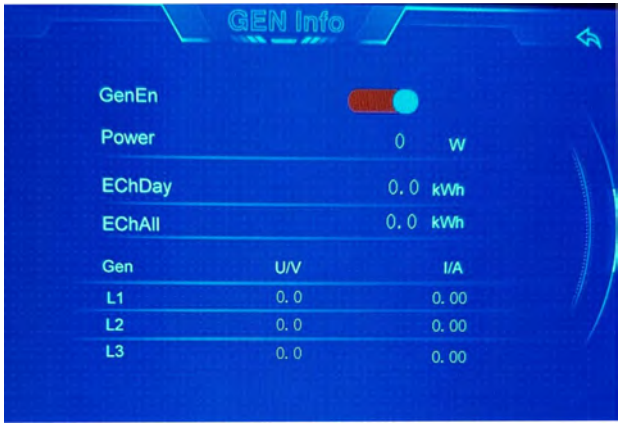
Inverter

The inverter section provides basic information about the inverter's status. Tap the inverter icon on the main home screen to view.



Generator

If using a generator, this screen displays the status of the generator. This is the only way to access the generator info. Tap the generator icon on the main screen to view.

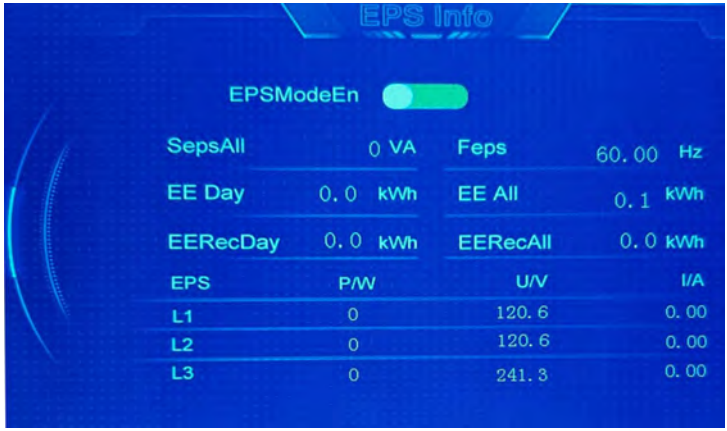


Battery

This is the main section you will use to view battery status and set parameters. You will also be able to set Timing Control parameters in the General Modes (more info later in the manual). Tap the battery icon on the main screen to view. If using lithium batteries, the inverter has a lithium default setting for the AIMS Power lithium batteries **LFP230V96A-M & LFP230V96A-S.** If you choose to use a different lithium battery, you **MUST** contact AIMS Power prior to programming the inverter and to check compatibility.

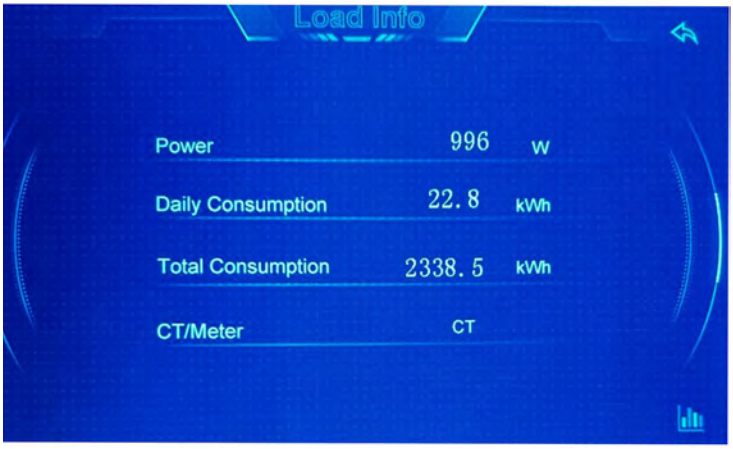
EPS Emergency Power Supply (critical load)

The EPS section allows you to view and change the EPS parameters. Tap the EPS icon on the home main screen to view.



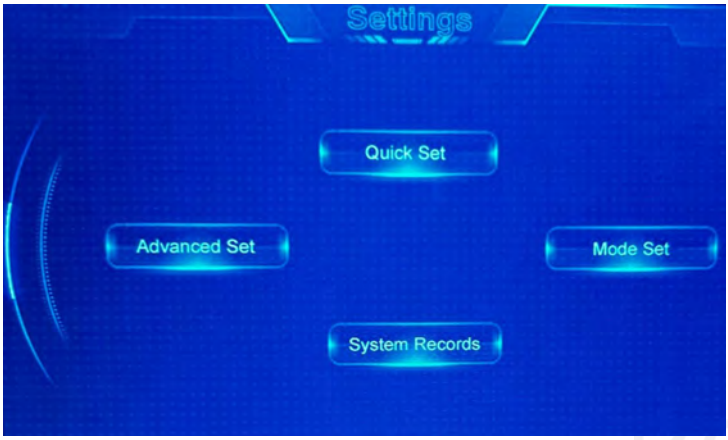
Load

The load screen provides info regarding the load and consumption.



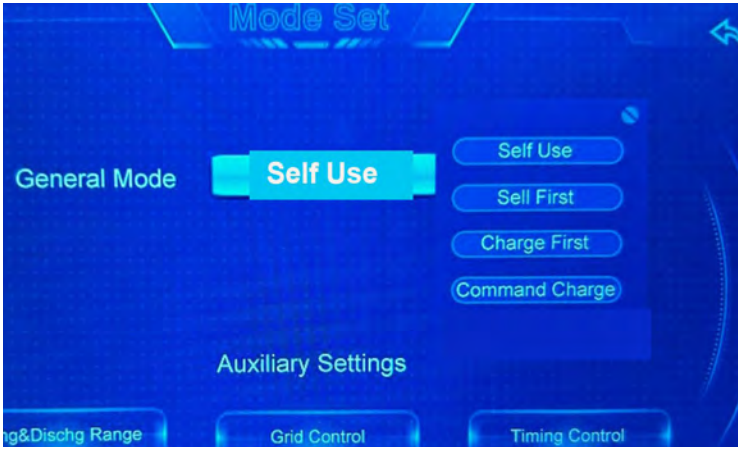
Settings

The Settings section allows you to access all settings and modes within the inverter. Detailed info later in the manual.



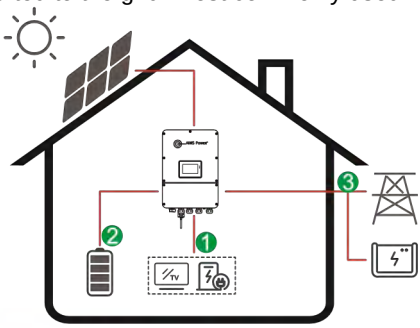
General Mode Overview

From the main screen, click on the settings icon in the bottom right corner. Click on Mode Set. There are four General Modes. To access each mode, click in the highlighted field and select the mode you want to set. See page 31 for setting instructions.



Self Use

The Self Use mode is for regions with low feed-in tariff and high electricity prices. The energy produced by the PV solar system is used to optimize self-consumption needs. The excess energy is used to recharge the batteries and any remaining energy is then exported to the grid. Most commonly used.

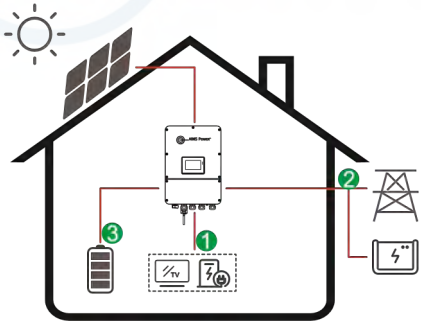


Energy flow:

PV → Load → Battery → Grid

Selling First

The Selling First mode is used when using solar is main priority. The panels will power the loads first and any excess energy will go back to the grid if PV is producing more than the load.

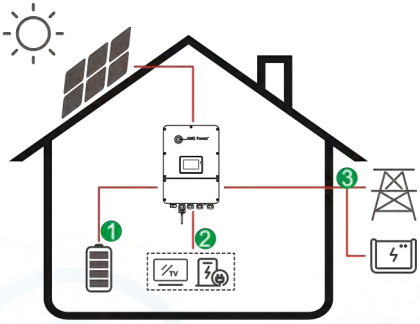


Energy flow:

PV → Load → Grid → Battery

Charge First

Charge First mode is aimed at the areas of instability of electrical energy. The panels will charge the battery bank first and any excess energy will then power the electrical loads. The remaining energy will go back to the grid. This setting will also allow you to use solar and grid to recharge the batteries if the solar panels can't produce enough power to charge the batteries.

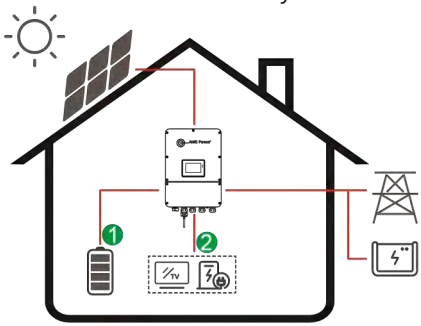


Energy flow:

PV → Battery → Load → Grid

Command Charge

This mode will allow you to force charge the battery using the grid first. The command charge will charge the battery when the voltage is low, or the user can change the charge time to a time when the grid rates are lower. If the grid is not available, the battery can only be charged by the PV array (if not using a generator). Some users will use this mode if the battery was over discharged.



Energy flow:

Grid or PV → Battery → Load

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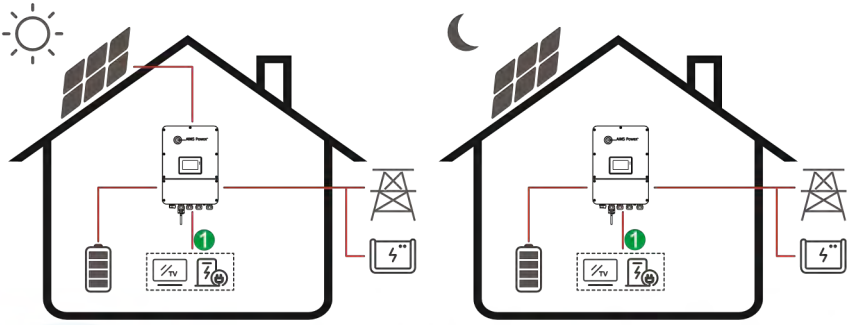
GENERAL NOTE: No Grid Power

Depending on the General Mode you have set for your system, PV and battery will supply the loads. If the solar panels produce excess power, the system will power the load and charge the battery bank. The back up loads will be powered by both the PV and battery bank.



Energy flow: PV and Battery → Load

Installation

Pre-installation

Unpacking & Packing List

Unpacking

Upon receiving the inverter, please confirm all components are included and there is no damage to the inverter. Contact AIMS Power directly for support if there is any damage or missing components.

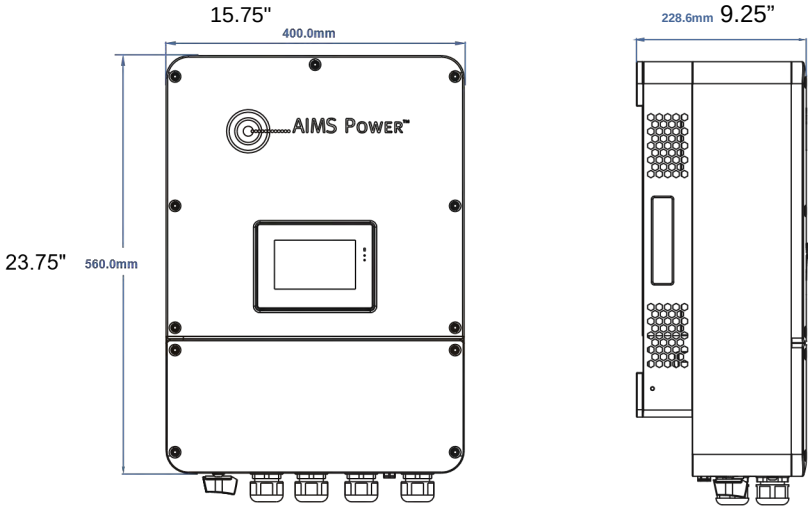
Package List

Open the package and verify all components are included.

.5

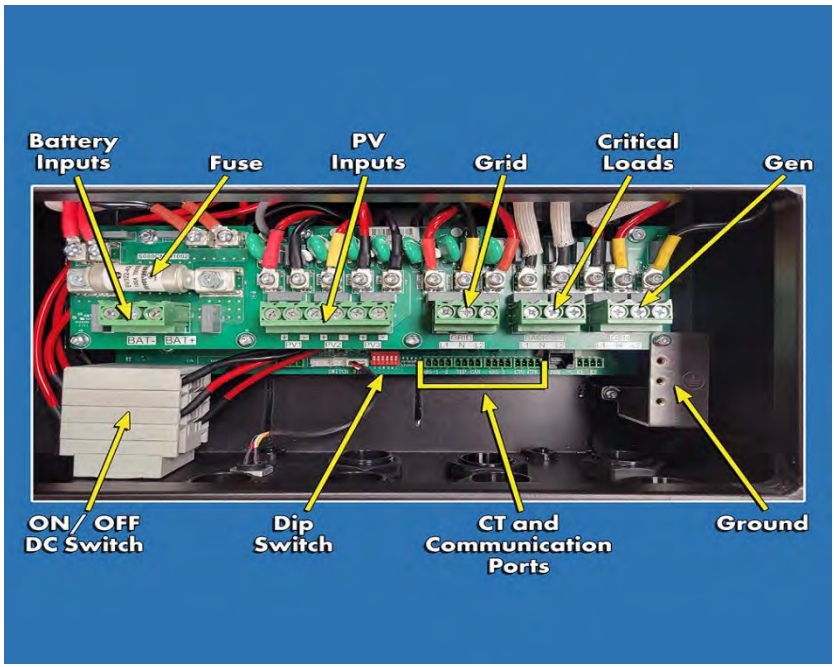
NUM	QTY	Description	NUM	QTY	Description
1	1	Hybrid Inverter	8	1	Security Lock Screw
2	1	Wall Mounting Bracket	9	3	Wall Anchors
3	1	Quick Installation Instructions	10	3	Bolts
4	1	Inspection Certificate	11	18	Battery Terminals
5	1	Warranty Card	12	4	Earth Terminals
6	1	WiFi Dongle Monitor Instructions	13	1	WiFi Dongle (stick logger)
7	2	CT Meters	14	20	Power Connectors (red and black)
			15	4	Communication Connectors

Product Overview

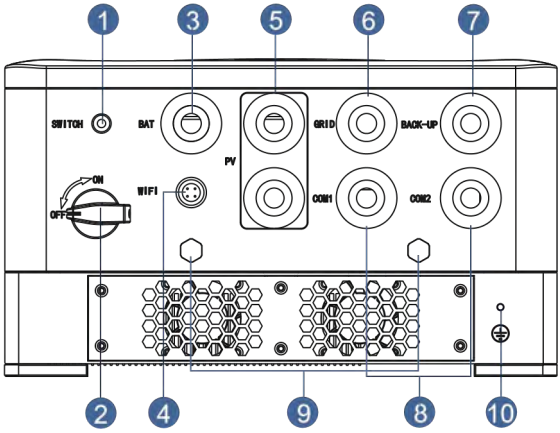


55 lbs

FRONT ACCESS PANEL



Inverter Terminals



1.	Emergency Stop	6.	Grid Port
2.	DC Disconnect Switch	7.	Back-up Port (*EPS)
3.	Battery Port	8.	Communication Port
4.	Wi-Fi Port	9.	Waterproof Ventilating Valve*
5.	5 PV Port	10.	Ground Screw

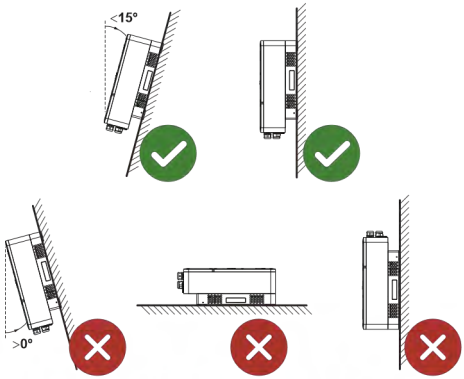
* Do NOT remove waterproof plug

Mounting Location

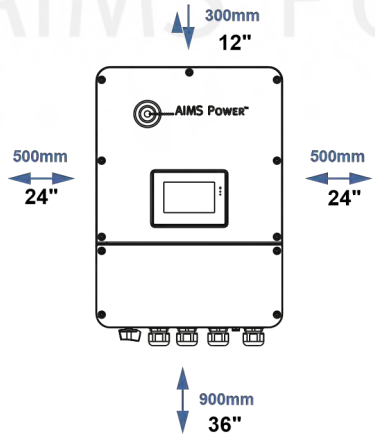
The inverter is designed for indoor and outdoor installation (IP65), to increase the safety, performance and lifespan of the inverter. Please select the mounting location carefully based on the following criteria:

- The inverter should be installed on a solid surface, far from flammable materials.
- Mount in a suitable location that will support the inverter's weight and dimensions. Clearance recommendation can be found on the following page.
- The ambient temperature should be within -25℃ to 60℃ (between -13 °F and 140°F).
- Installation of the inverter should be protected under shelter. Do not expose the inverter to direct sunlight, water, rain, snow, sprays, or lightning.
- The LCD should be out of the sun and not exposed to direct UV light.
- It’s recommended that the location is free from dust and remains sanitary.

- The inverter should be installed vertically on a wall, or should lean back with a limited tilted angle. Please refer to the picture below.



- Leave the enough space around inverter for easy access to all sides.



Recommended Minimum Distance Clearance

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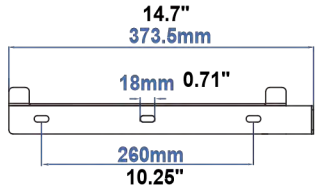
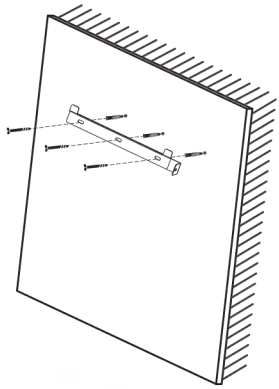
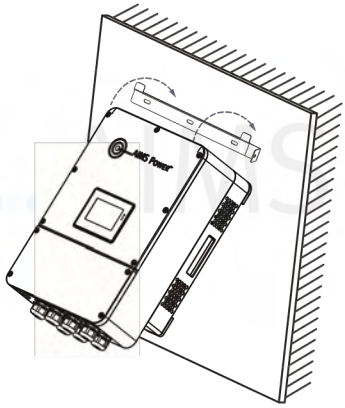
Mounting

Step 1 Step 1



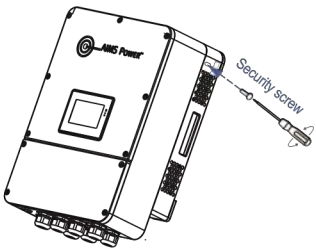


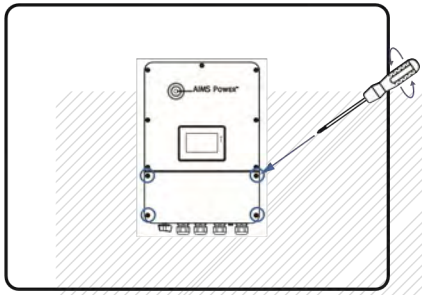
Step 2



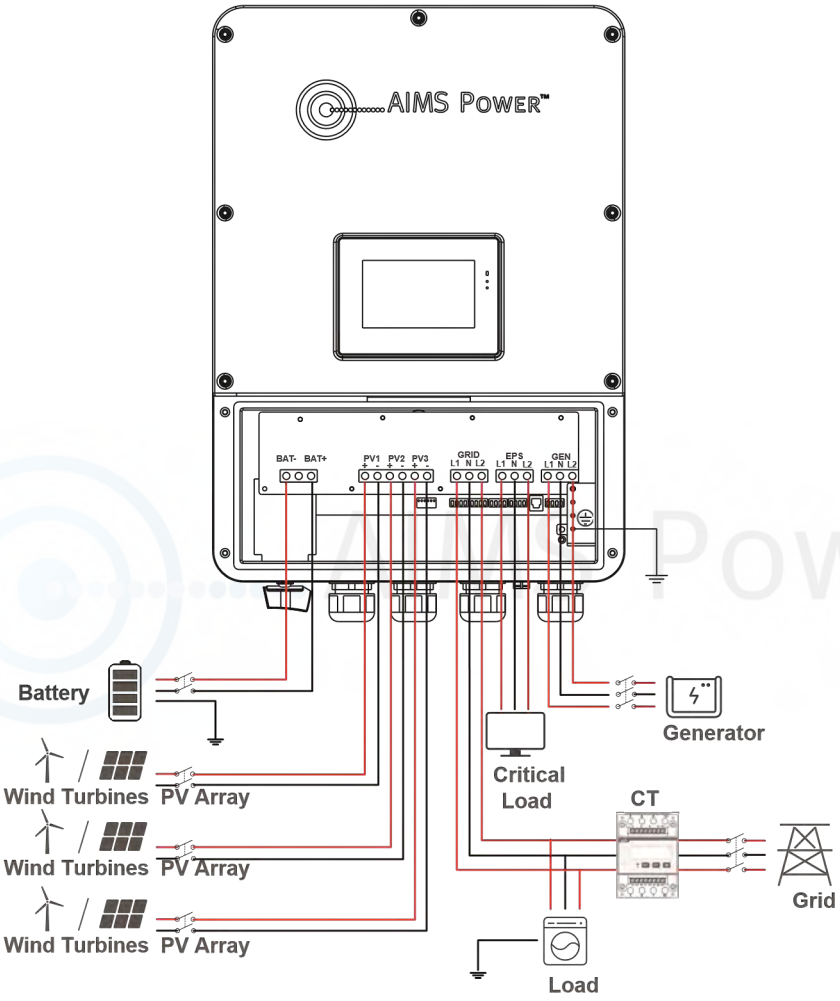
Step 3

Note: T20 & T25 torx heads needed



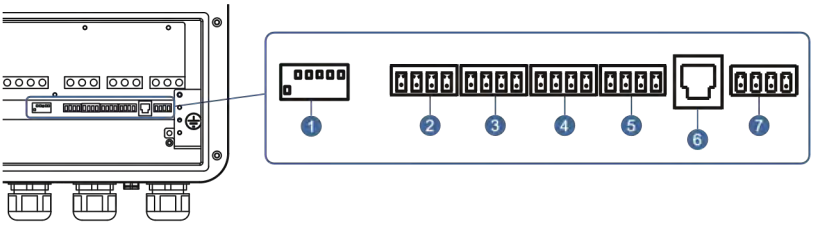


Electrical Connection



Communication

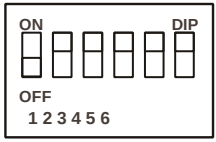
Communication terminals and dip switches are located inside the access panel on the bottom of the inverter.



No.	Item	Switch
1	User control	Dip Switches
2	Communication terminal	BAT485 and Meter
3	Communication terminal	NTC and BAT CAN
4	Communication terminal	RS485
5	Communication terminal	CT1 and CT2
7	Communication terminal	Dry Connector

***Number 6 is not for US market. Do not use.**

Dip Switch

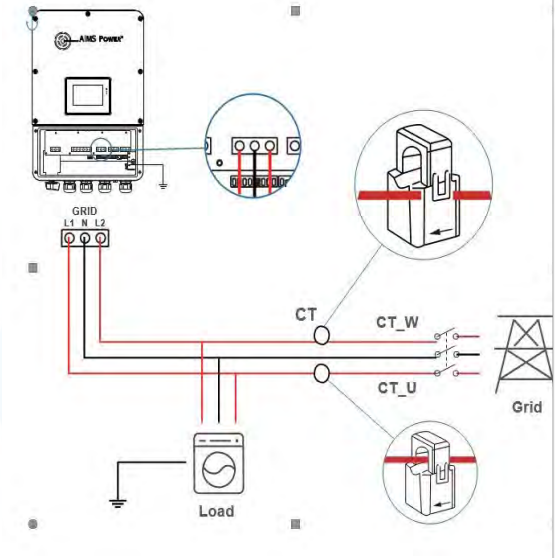


1. Emergency Switch, default is off
2. CAN-BAT – ON
3. CT485 – ON
4. BAT485 – ON
5. R485_2 – ON
6. RS485WiFi - ON

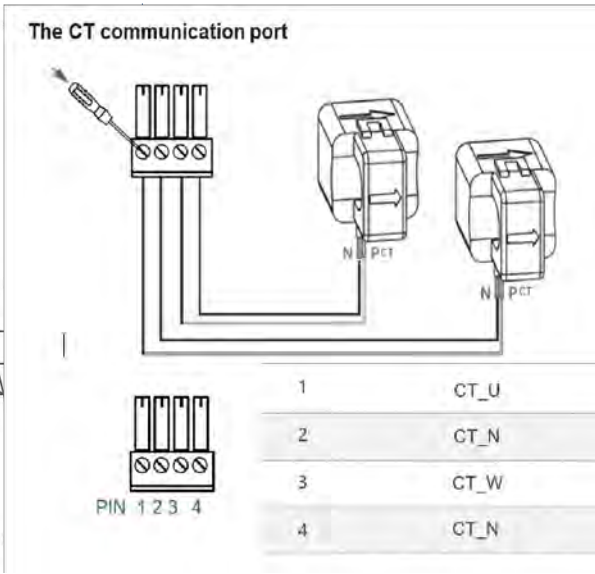
CT Meter

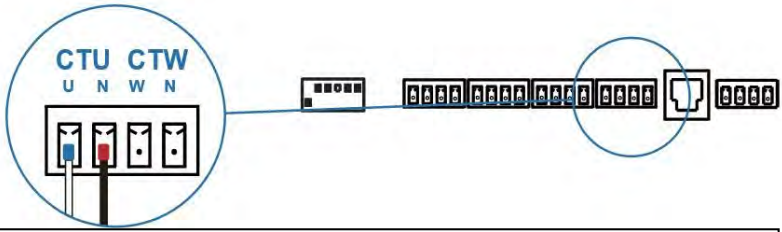
A current sensor (CT below) is used to detect current direction of the local load and the grid. The output control function of the inverter will be activated based on the detected data.

STEP 1



STEP 2





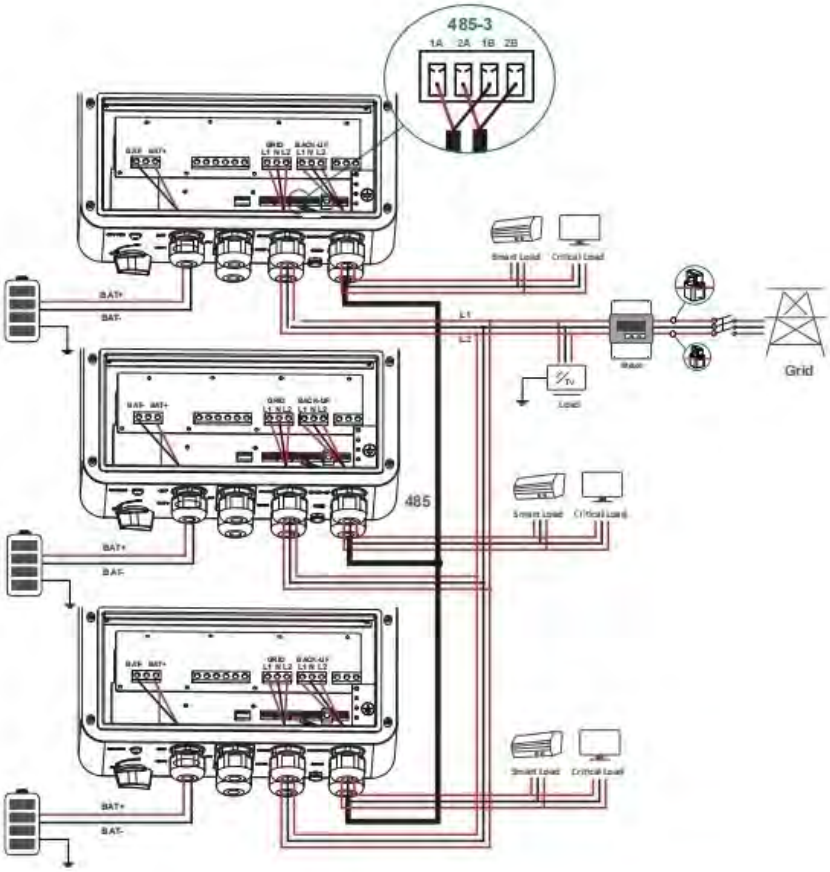
The CT1 wire is connected to port 1.3, and the CT2 wire is connected to port 7.9. L1, L2, and L3 are connected to port 2,8,10 with 4-6mm cables.

Note:

Make sure AC cable is completely isolated from AC power before connecting CT. The hybrid inverter uses 2 CTs per inverter.

Adaptation Switch

RS485-3 connector is for multi-inverter parallel communication connection. Please check with your local distributor or AIMS Power for more information if using multiple inverters.

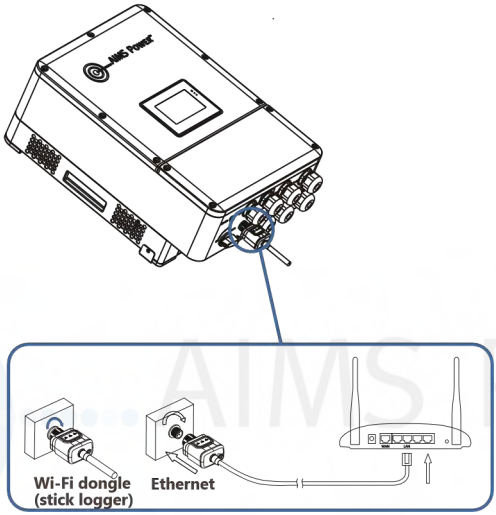


Wi-Fi/GPRS/LAN

The Wi-Fi/GPRS/LAN module will transmit data to a cloud server, and display data on a PC(personal computer), tablet and smart-phone.

Install the Wi-Fi / Ethernet / GPRS / RS485 Communication

Turn on the AC power supply and the AC breaker and wait for the LED indicator on the Wi-Fi/GPRS/ LAN module to start flashing.



When setting the communication module, router, and to complete account registration, review the Wi-Fi/GPRS/LAN connection manual or contact AIMS Power. You can also scan this QR code.

Wi-Fi Instructions

SCAN ME

Google & Apple Hybrid APP

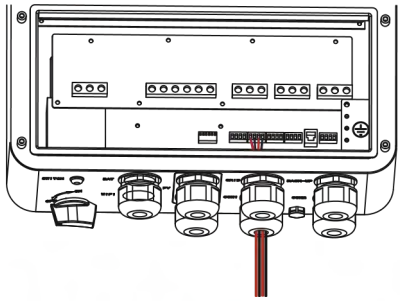
Hybrid App

BAT-CAN/NTC

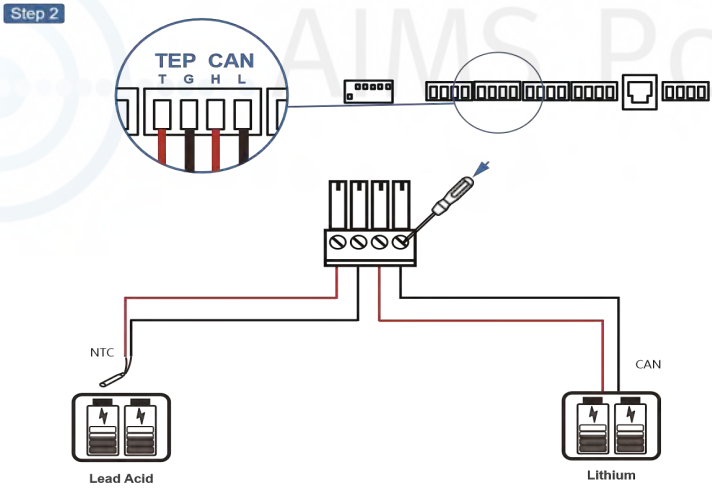
A temp sensor (optional) can be used and installed on the surface of lead-acid batteries by connecting the lead wire to the TEP T terminal of the inverter. If the inverter is connected to an AIMS Power lithium battery, it supports communication via CAN and RS485 and a temp sensor is not required. For instructions on how to connect please refer to page 27.
SEE NOTE BELOW FOR LITHIUM BATTERIES.

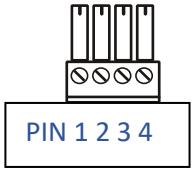
The PIHY inverters are compatible with AIMS Power lithium batteries only (Part #s: LFP230V96A-M & LFP230V96A-S) and the lithium charge default setting is for the AIMS Power batteries. Also compatible with all lead acid battery types (gel, AGM, open). If you prefer to use a different lithium battery you MUST contact AIMS Power tech support to check compatibility and charging programming. No exceptions.

Step 1



Step 2





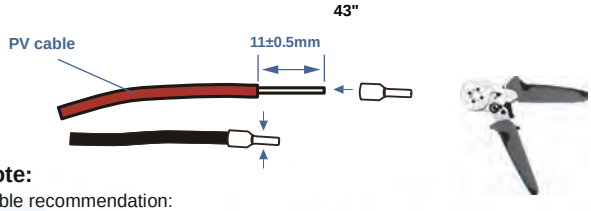
PIN	BAT NTC & CAN
1	TEP T
2	TEP G
3	CAN H
4	CAN L

PV Connection

The PIHY series hybrid inverters allow up to three PV MPPT inputs (strings of solar panels). Ensure the following requirements are met before connecting PV panels and strings to the inverter.

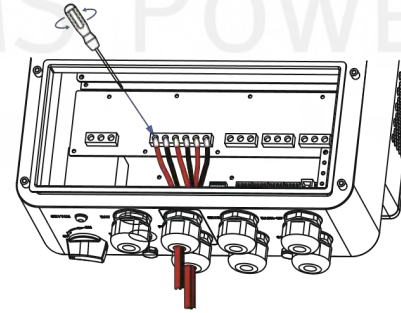
- Turn off and open all of the PV (DC) switches before wiring
- The open-circuit voltage and short-circuit current of the PV string should not exceed the specifications of your inverter
- The isolation resistance between PV string and ground should exceed 300 kΩ
- Ensure the polarity of PV strings is correct
- AIMS Power recommends using the DC plugs included with your inverter purchase.

Step 1



Note:
Cable recommendation:
Cross-section 10-12AWG

Step 2



- PV input wire ≥10 AWG, stripping length 11±0.5mm (.43"), and the stripped PV input wire should be tightly crimped into the connectors. PV wire gauge needs to be sufficient to carry maximum current generated by your solar system.
- Pass the PV input wire with crimped terminals through the waterproof connector and follow the system connection diagram as shown above. Insert the black wire PV1-, PV2-, PV3- and the red wire PV1+, PV2+, PV3+ into the terminals on the PCB, and tighten the screws. NOT ALL SYSTEMS WILL HAVE 3 PV INPUTS.

Warning:

Fatal high voltage may be present on the PV string. Please comply with electric safety guidelines on page 3 when performing all connections. Please make sure the polarity is correct from the PV strings to the inverter. **Otherwise, damage may occur and VOID the warranty.**

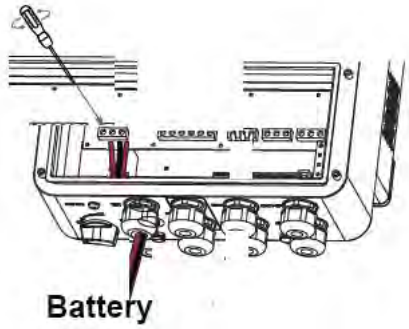
Battery Connection

The hybrid inverter is compatible with lead (AGM, Gel, Open) and lithium batteries. If using lithium batteries, the PIHY series hybrid inverters are compatible with AIMS Power lithium batteries only (Part #s: LFP230V96A-M & LFP230V96A-S). **If you prefer to use a different lithium battery you MUST contact AIMS Power tech support to check compatibility and charging programming. No exceptions. AIMS Power assumes no liability if damage occurs.** If using lead, you will need to enter the battery parameters for the batteries you are using on the LCD screen during set up.

Note:
To set battery type and manufacturer, refer to page 27 (Setting up Inverter).

BMS (Battery Management System) communication is needed between inverter and all lithium batteries.

Battery type, voltage and capacity must be set prior to use. 4 AWG wire is recommended.



AC Connection

There are three AC terminals marked with "GRID", "EPS" and "GEN".

Before connecting to the inverter, a separate AC breaker between the inverter and AC input power is necessary. This will ensure the inverter is disconnected during maintenance and fully protected from AC input current. An extra AC breaker is needed for On-Grid connection to be isolated from the grid when necessary. Below are requirements for the On-Grid AC-breaker.

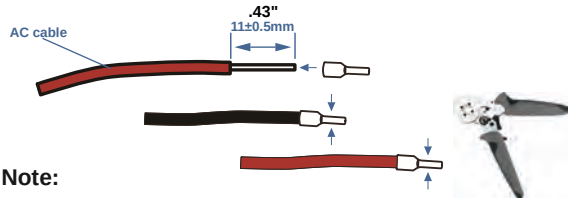
Inverter Model	AC breaker specification
PIHY4600	63A/240V/208V AC breaker
PIHY9600	100A/240V/208V AC breaker

	Wire Size	Cable (mm²)	Torque Value
4.6 & 9.6kW	8-10AWG	6-8	1.2Nm

Grid Connection • Connect DC fuse or breaker before connecting.

• Remove insulation sleeve 11mm (0.43") length, unscrew the bolts, and insert the AC input wires according to proper polarities indicated on the terminal. Block and tighten the terminal screws.

Step 1

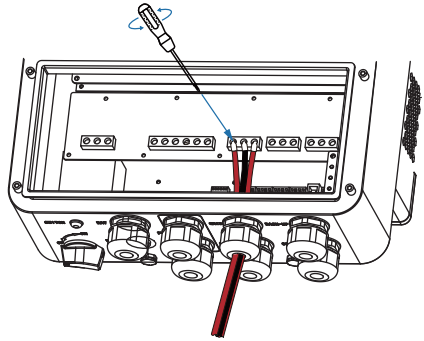


Note:

Note:
A qualified electrician is required for the wiring. Wire size must always exceed maximum current flow that is possible going through the system.

Cable recommendation:
Cross-section 8-10 AWG

Step 2

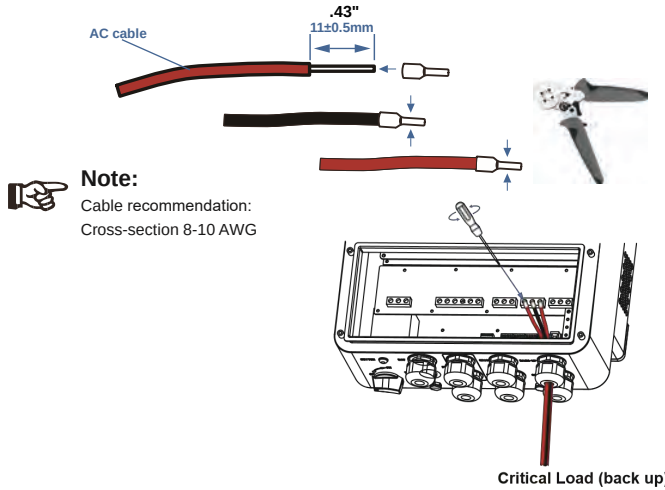


GRID

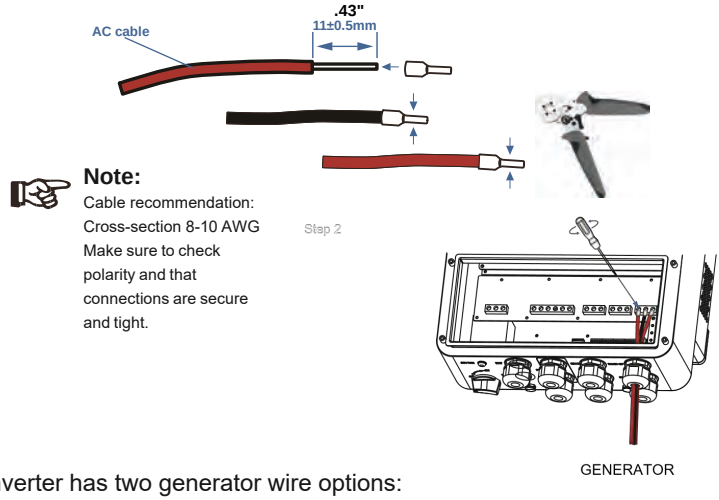
Warning
Make sure that all AC power sources are off before connecting.

Emergency Power Supply Connection (EPS) or Back-Up

If installing in a off grid application the EPS will run to main breaker panel with no Grid or Utility power supplied. When running on battery backup and solar during a Grid/Utility power outage, only the EPS will supply AC to loads and should be connected to sub panel.



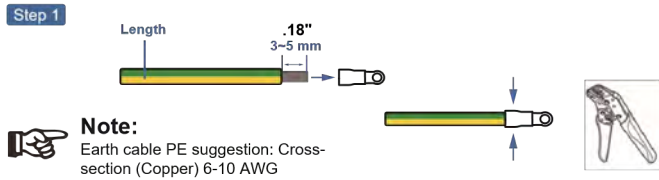
Generator Connection



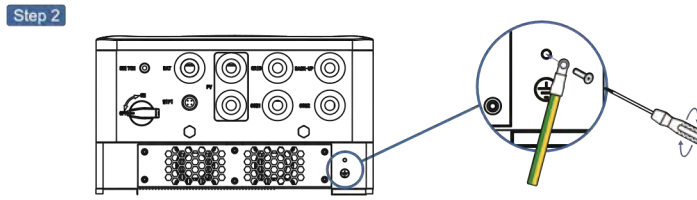
The hybrid inverter has two generator wire options:
K1 = Auto Gen Start (no grid) . The generator must have a 2 wire open close feature.
K2 = Manual

The inverter will provide 4.6kw or 9.6kw (depending on model), to the EPS.
The recommended generator size should be 1.5 times of the inverter size to support inverting and charging. An example, if using our 4600 watt inverter, the generator should be @7000 watts. Insert stripped AC output wires into the terminal block according to the proper polarities and tighten the terminal. Corresponding Neutral (N) wires and Protective Earth (PE) wires to the AC terminal should be inserted as well.

Earth Connection



Note:
Earth cable PE suggestion: Cross-section (Copper) 6-10 AWG



Attach the grounding screw to the grounding connection of the inverter's housing.

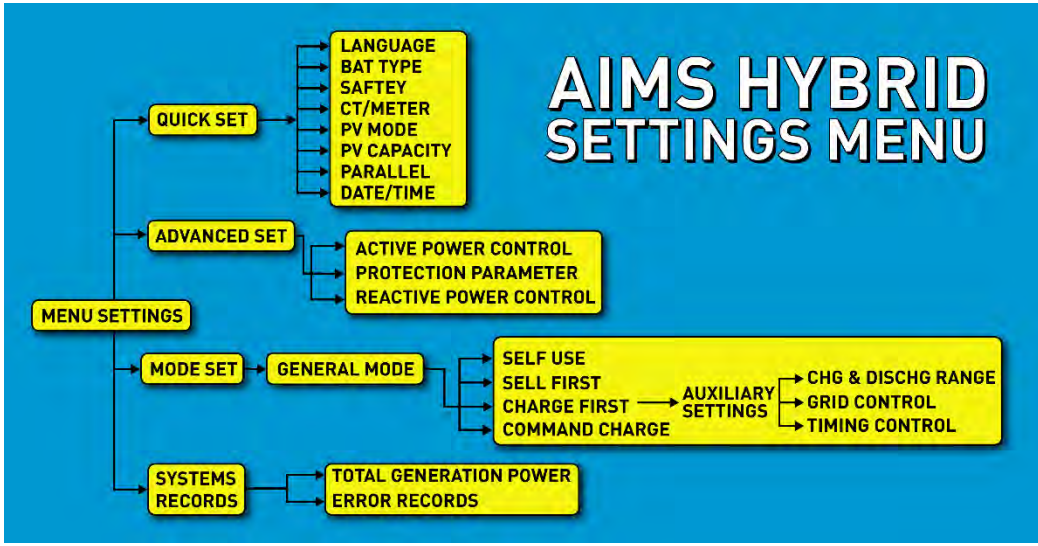
A second protective earth (PE) terminal should be connected to the inverter. This prevents electric shock if the original protective PE wire fails.

Note:
Make sure the earth cables on the inverter and solar panel frame are separated.

Power Sequence

For Grid Tie Startup

Turn on AC grid breaker in main panel. Go to main menu and set all parameters in the Quick Set mode. Starting on page 32.



Press battery icon on home screen and setup correct battery type and voltages if using lead acid or a non-AIMS lithium (must speak with AIMS techs if using non-AIMS lithium). Turn on battery breaker or connect fuse. Turn on PV switch of inverter.

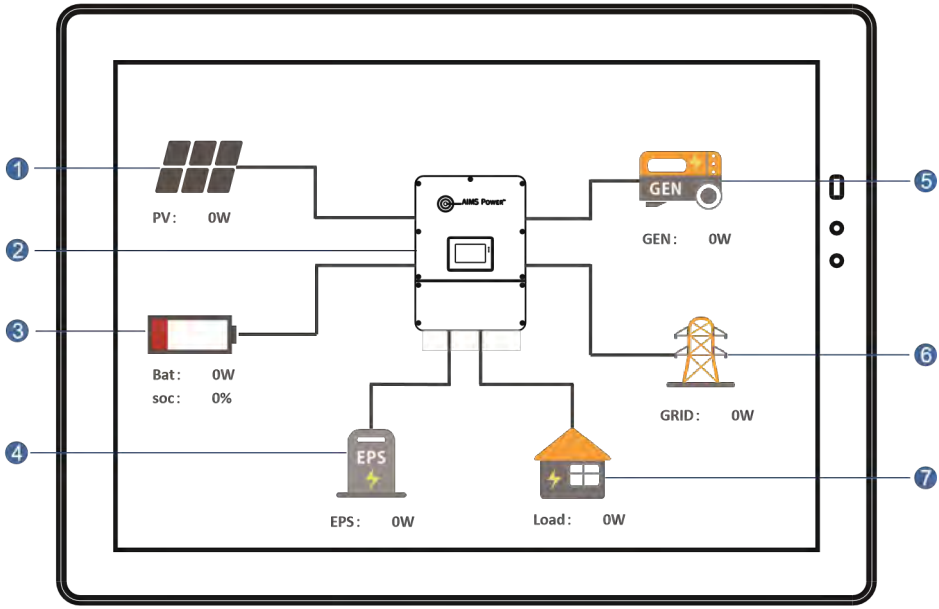
For Off Grid Startup

Turn on breaker for which the EPS is connected in the emergency breaker panel. Turn on PV switch of inverter.
Go to main menu and set all parameters in Quick Set starting on page 32.

Press battery icon on home screen and setup correct battery type and voltage if using lead acid or a non-AIMS lithium(must speak with AIMS techs if using non-AIMS lithium).

Operation

Control Panel



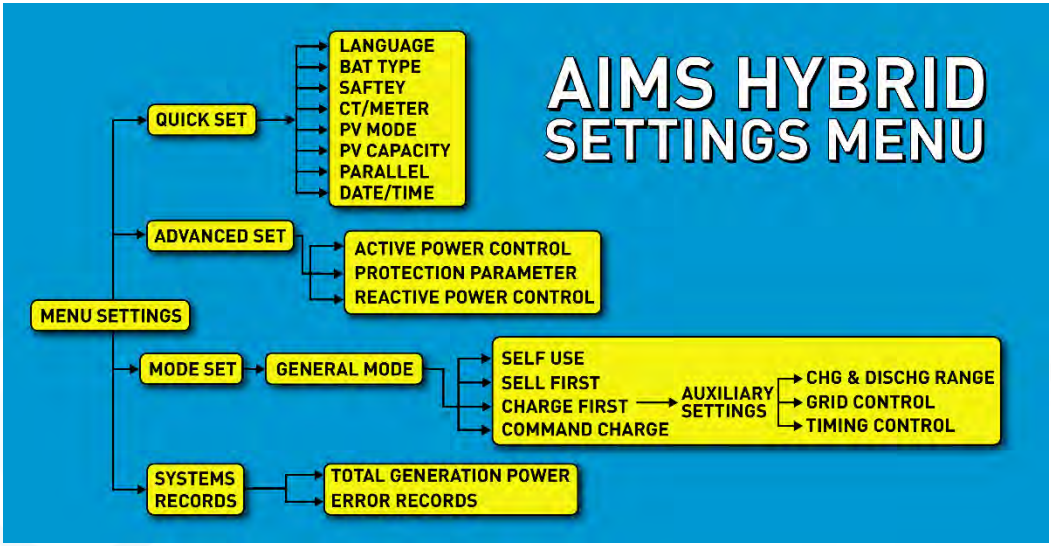
#	Description	#	Description
1	PV Info	5	GEN Info
2	Inv Info	6	Grid Info
3	Bat Info	7	Load Info
4	EPS Info		

NOTE:

After the parameter settings are complete, you need tap the check mark in the lower right corner of the screen to save the setting. Not all modes and parameters require this so it is ok if there is a screen that doesn't have a check mark.

Settings Menu Overview

The PIHY series hybrid inverters have a color LCD touch screen for programming and operating.



This screen can be found from the main screen. Tap the settings icon (looks like a gear) on bottom right corner of the main screen.

Inverter Programming

Quick Set

Language → Set language

Bat Type

Lithium

Simulated

Lead-Acid →

None

Brand	Name	Lead-acid battery manufacturer.
Capacity	0-1000Ah	Capacity range.
BatResComp	0-1000mΩ	Resistance compensation.
BatTempcomp	0-500mV/	Temperature compensation.
VConstvolt	0-850V	Constant voltage charging voltage.
VDiSchgEnd	0-850V	Discharge termination voltage.
Series Qty	#	Number of batteries in series.
VPackNorm	0-85V	One lead-acid battery voltage rating.
VPackEmerChgSt	0-85V	One lead-acid battery emergency charging starting voltage.
VPackEmerChgEn	0-85V	One lead-acid battery emergency charging stop voltage.
VPackMax	0-85V	One lead-acid battery voltage overvoltage threshold.
VPackMin	0-85V	One lead-acid battery voltage undervoltage threshold.
VPackChgEnd	0-85V	One lead-acid battery voltage charging upper limit.
VPackDisChgEnd	0-85V	The lower limit of the discharge voltage of a lead-acid battery.

Safety → Select country and/or voltage used

CT/Meter → Select CT, Meter or None (inverter includes CT)

PV Mode → Independent, Parallel, None

PV Capacity → Solar array total watts

Parallel

Parallel	Parallel/Switch	Parallel
	Qty	Number of inverters in parallel
	M/S	Master/Slave
	Address	Address of slave
	NOTES:	
	Only slave can choose address. Once the parameters are set, you need to tap the check mark in the lower right corner of the screen to SAVE. When address is set to 0, it is the host, and the others are the slave.	

Date/Time → Set date/time

Mode Set (operating settings)

Mode

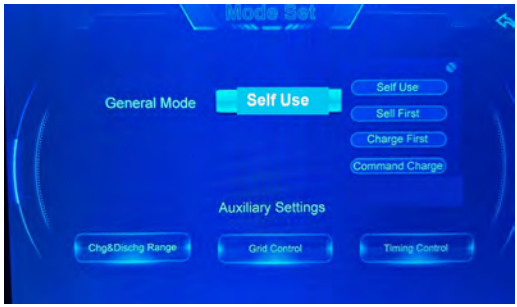
↓

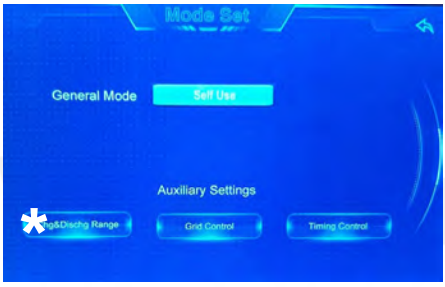
General

↓

Self
Sell
Charge
Command

Each mode has Aux Settings





Auxiliary Settings

Chg&Dischg range (does not apply if using AIMS Power lithium batteries)

Chg&Dischg Range → Battery charge / discharge setting.

SocMax
0.0%
SocMin
0.0%
VBatMax
0.0V
VBatMin
0.0V
IChgMax
0.00A
IDChgMax
0.00A

1. Battery end-of-charge capacity.
2. Battery charging starting capacity.
3. Battery Overvoltage Threshold.
4. Battery undervoltage threshold.
5. Battery maximum charging current.
6. Maximum battery discharge current.

Note:

Once the parameters are set, you need to tap the check mark in the lower right corner of the screen to SAVE the settings.

Grid Control

Note:

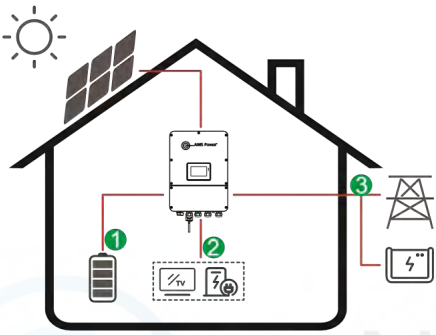
Once the parameters are set, you need to tap the check mark in the lower right corner of the screen to SAVE the settings.

Timing Control Description

The Auxiliary settings are only effective for the times you set in timing control.

This mode allow you to bypass the General Mode settings and you can change the priority of the inverter during certain times of the day.

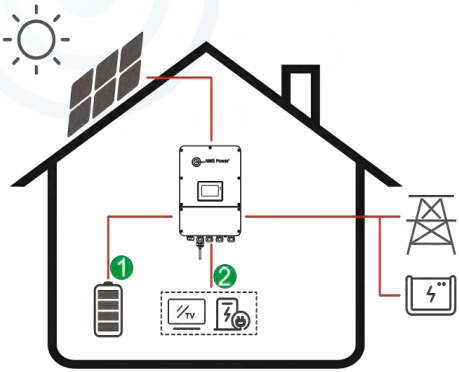
Force Charge Mode



Energy flow:

PV → Battery → Load → Grid

AC Charge Mode



AC Charge Mode

Energy flow:

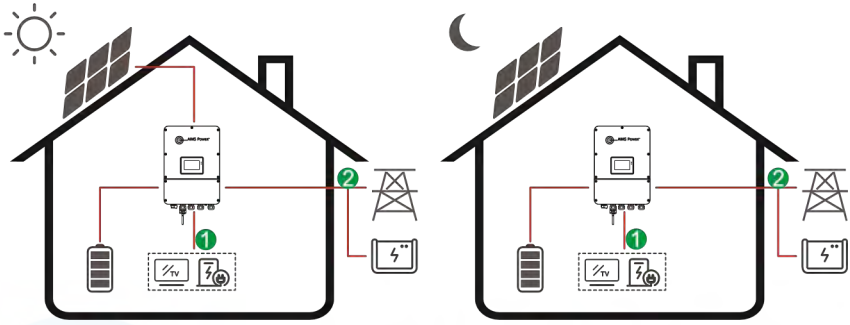
PV and Grid → Battery → Load

Note:

PV will charge the battery but if PV is not producing enough power, grid will also charge and power loads.

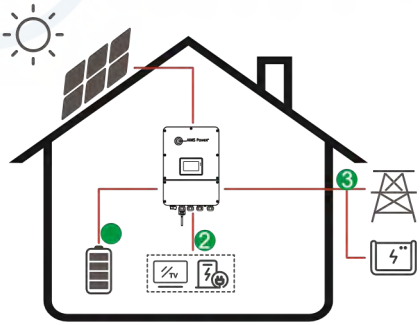
Force Discharge

Illustration during battery discharge



Energy flow: PV → Load → Grid **if no** PV then Battery→Load→Grid

Forbidden Charge



Energy flow:

PV → Battery → Load → Grid

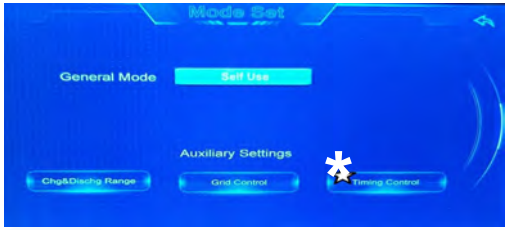
Illustration during Forbidden Charge. The battery will charge first if using battery other PV to Load.

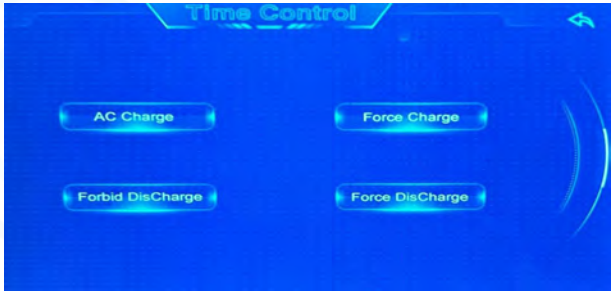
Timing Control

Mode Set

General Mode

Timing Control





AC Charge

ACChg - charging enable

SOC Max	%	
Chg Pwr%	%	SOC Max — AC charging maximum Soc
Tim1 Start	0:00	Chg Pwr% — AC charging Percentage.
Tim1 End	0:00	Tim1 Start — AC charging start time1.
Tim2 Start	0:00	Tim1 End — AC charging end time 1.
Tim2 End	0:00	
Tim3 Start	0:00	**NOTE:**
Tim3 End	0:00	

1. Forced charging can be set up to three time periods.
2. Once the parameters have been set, to SAVE the settings you need to tap the check mark in the lower right corner.

Force Charge

Force	- Force Charge enable	
SOC Max	%	
Chg Pwr%	%	SOC Max — Forced charging maximum SOC
Tim1 Start	0:00	Chg Pwr% — Forced charging Percentage.
Tim1 End	0:00	Tim1 Start — Forced charging start time1.
Tim2 Start	0:00	Tim1 End — Forced charging end time 1.
Tim2 End	0:00	
Tim3 Start	0:00	
Tim3 End	0:00	

NOTE:

1. Forced charging can be set to three time periods.
2 Once the parameters have been set, to SAVE the settings you need to tap the check mark in the lower right corner.

Force Discharge

Force	- Force Discharge enable	
SOC Max	%	
Chg Pwr%	%	SOC Max — Forced discharging maximum SOC
Tim1 Start	0:00	Chg Pwr% — Forced discharging Percentage.
Tim1 End	0:00	Tim1 Start — Forced discharging start time1.
Tim2 Start	0:00	Tim1 End — Forced discharging end time 1.
Tim2 End	0:00	
Tim3 Start	0:00	
Tim3 End	0:00	

NOTE:

1. Forced discharge can be set to three time periods.
2. Once the parameters have been set, to SAVE the settings you need to tap the check mark in the lower right corner.

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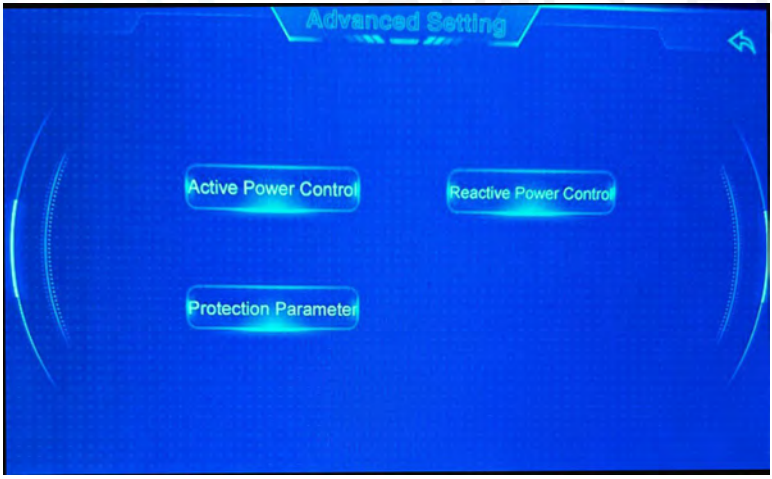
Forbid DisCharge

Force	- Force Discharge enable	
SOC Max	%	
Chg Pwr%	%	SOC Max — Forced discharging maximum SOC
Tim1 Start	0:00	Chg Pwr% — Forced discharging Percentage.
Tim1 End	0:00	Tim1 Start — Forced discharging start time1.
Tim2 Start	0:00	Tim1 End — Forced discharging end time 1.
Tim2 End	0:00	
Tim3 Start	0:00	
Tim3 End	0:00	

NOTE:

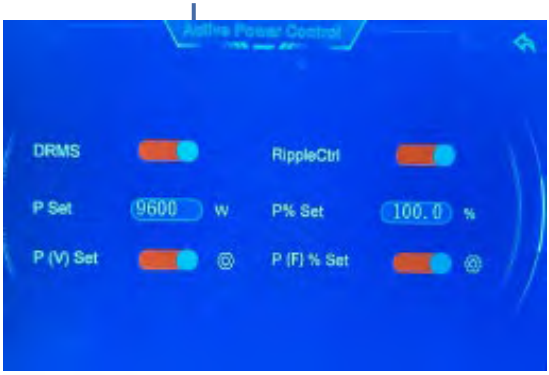
1. Forbid discharging can be set up to three time periods.
2. Once the parameters have been set, to SAVE the settings you need to tap the check mark in the lower right corner.

Advanced Setting



The settings in this section should only be changed by qualified installers. The Advance Settings are usually used for specific grid and regions that require modifications that accommodate grid tolerances.

Active Power Control



DRMS
RipleCtrl
P Set
P%Set
P(V)Set
P(F)%Set

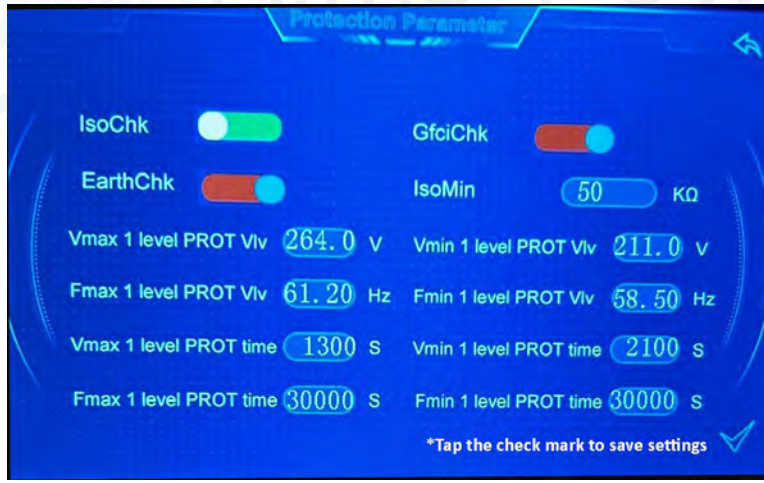
Reactive Power Control

Reactive Power Control
ON/OFF
Q set Var
Pf Set
QByV
PfByP
QByP

Protection Parameter

IsoChk	Switch
GfciChk	Switch
EarthChk	Switch
RSSEn	Switch
ISOmin	
0KΩ	
Vmax 1 level PROT Vlv	0.0V
Vmin 1 level PROT Vlv	0.0V
Fmax 1 level PROT Vlv	0.00HZ
Fmin 1 level PROT Vlv	0.00HZ
Vmax 1 level PROT time	0.00s
Vmin 1 level PROT time	0.00s
Fmax 1 level PROT time	0.00s
Vmin 1 level PROT time	0.00s

1. Insulation resistance detection.
2. Leakage current detection.
3. Ground detection.
4. Restart enable.
5. Impedance lower limit.
6. Grid level one overvoltage protection value.
7. Power grid first-level undervoltage protection value.
8. The first-level high-frequency protection value of the power grid.
9. The first-level low frequency protection value of the power grid.
10. Power grid first-level overvoltage protection time.
11. Power grid first-level undervoltage protection time.12. Power grid first-level high-frequency protection time.
12. Power grid first-level low frequency protection time.



NOTE:

Once the parameters have been set, to SAVE the settings you need to tap the check mark in the lower right corner.

System Records

System Records

↓

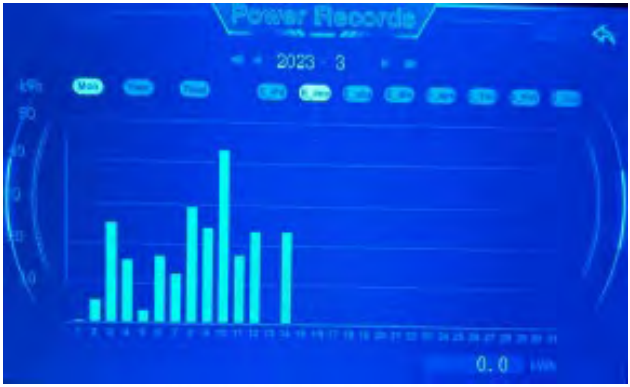
Total Generation
Error Records

↓

Total Generation

This screen provides power generated by day, month and year.

E_PV
E_inv
E_cha
E_dis
E_eps
E_ToG
E_FrG
E_ToU.



This screen provides a log of all errors.

1. Error code
2. Error description
3. Start time/date and end time/date.

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Maintenance & Troubleshooting

Maintenance

Periodic maintenance is necessary. Follow steps as below:

- Check PV connection: twice a year
- Check AC connection(Grid and EPS) : twice a year
- Check battery connection: twice a year
- Check earth connection: twice a year
- Clean the heat sink with a dry towel once a year. Depending on the environment, this may need to be done more often. Make sure the inverter is off and all breakers are open. Allow the inverter to cool first before touching.

Troubleshooting

Fault messages are displayed when a fault occurs. Check the troubleshooting table and find related solutions.

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Fault Code and Troubleshooting

Type of fault	Code	Name	Description	Recommend Solution
PV Fault	A01	PvConnectFault	PV connection type different from setup	Check PV modules connection •Check PV Mode setup
	A02	IsoFault	ISO check among PV panels/ wires and ground is abnormal.	•Check PV modules wires, if wires are soaked or damaged, and they may carry out rectification. •If the fault occurs continuously and frequently, please ask help for local distributor or AIMS Power.
	A03	PvAfciFault	PV current arcing	• Check PV module wires and connectors. If broken or loose connections they may carry out rectification.
	A04	Pv1OverVoltFault	PV Voltage over	•Reconfiguration of PV strings. Reduce the panel number of a PV string by reducing inverter PV input voltage.
	A05	Pv2OverVoltFault		
	A06	Pv3OverVoltFault		
	A07	Pv4OverVoltFault		
	A08	Pv5OverVoltFault		
	A09	Pv6OverVoltFault		
	A10	Pv7OverVoltFault		
	A11	Pv8OverVoltFault		
	A12	Pv9OverVoltFault		
	A13	Pv10OverVoltFault		
	A14	Pv11OverVoltFault		
	A15	Pv12OverVoltFault		
	A16	PV1ReverseFault	PV(+) and PV(-) reversed Connection	• Check PV(+) and PV(-) connections to ensure polarity is not reversed. • If reversed, make correction.
	A17	PV2ReverseFault		
	A18	PV3ReverseFault		
	A19	PV4ReverseFault		
	A20	PV5ReverseFault		
	A21	PV6ReverseFault		

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Type of Fault	Code	Name	Description	Recommend Solution
	A22	PV7ReverseFault		
	A23	PV8ReverseFault		
	A24	PV9ReverseFault		
	A25	PV10ReverseFault		
	A26	PV11ReverseFault		
	A27	PV12ReverseFault		
	A33	Pv1AbnormalFault	PV(+) and PV(-) reversed Connection	• Check PV modules for damaged cells. •Check PV module wires and connectors to ensure they are not broken or loose. Repair if needed.
	A34	Pv2AbnormalFault		
	A35	Pv3AbnormalFault		
	A36	Pv4AbnormalFault		
	A37	Pv5AbnormalFault		
	A38	Pv6AbnormalFault		
	A39	Pv7AbnormalFault		
	A40	Pv8AbnormalFault		
PV Fault	A41	Pv9AbnormalFault		
	A42	Pv10AbnormalFault		
	A43	Pv11AbnormalFault		
	A44	Pv12AbnormalFault		
	A45	Pv13AbnormalFault		
	A46	Pv14AbnormalFault		
	A47	Pv15AbnormalFault		
	A48	Pv16AbnormalFault		
	A49	Pv17AbnormalFault		
	A50	Pv18AbnormalFault		
	A51	Pv19AbnormalFault		
	A52	Pv20AbnormalFault		
	A53	Pv21AbnormalFault		
	A54	Pv22AbnormalFault		
	A55	Pv23AbnormalFault		
	A56	Pv24AbnormalFault		

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Type of fault				
Battery Fault	B01	PcsBatOverVoltFault	Battery voltage over or under	• Check inverter's connected battery cables and connectors. If broken or loose, repair. • Checkfor abnormabatteryvoltage.May need maintenance or replacement. •Check if battery voltage is abnormal, then perform battery maintenance or replace battery.
	B02	PcsBatUnderVoltFault		
	B03	PcsBatInsOverVoltFaul		
	B04	PcsBatReversedFault	Bat. (+) and Bat. (-) are reversed.	• Check Bat.(+) and Bat.(-) connections are not reversed. • Make correction If reversed.
	B05	PcsBatConnectFault	Battery wires loose	•Check battery cables and connectors. If broken or loose, repair.
	B06	PcsBatComFault	Battery communication abnormal	•Check the battery side communication wires. If damaged or loose connections, repair. •Check if battery is off or any other abnormalities. Maintenance to battery or replacement may be required.
	B07	PcsBatTempSensorOpen	Battery temperature sensor abnormal	•Check battery temperature sensor and all connected wires for damage.
	B08	PcsBatTempSensorShort		
	B09	BmsBatSystemFault	All these faults will be detected or reported by the battery BMS.	• If specific high or low temperature fault, battery may be in an environment too extreme and may need to change site. •Try to restart battery, •If this fault occurs continuously and frequently, please ask help for local distributors or AIMS Power.
	B10	BmsBatVolOverFault		
	B11	BmsBatVolUnderFault		
	B12	BmsCellVolOverFault		
	B13	BmsCellVolUnderFault		
	B14	BmsCellVolUnbanceFau		
	B15	BatChgCurOverFault		
	B16	BatDChgCurOverFault		
	B17	BatTemperatureOverFa		
	B18	BatTemperatureUnderF		
	B19	CelTemperatureOverFa		
	B20	CelTemperatureUnderF		
	B21	BatIsoFault		
	B22	BatSocLowFault		
	B23	BmsInterComFault		
	B24	BatRelayFault		

Battery Fault	B25	BatPreChaFault		
	B26	BmsBatChgMosFault		
	B27	BmsBatDChgMosFault		
	B28	BMSVolOVFault		
	B29	BMSVolLFault		
	B30	VolLockOpenFault		
	B31	VolLockShortFault		
	B32	ChgRefOVFault		
	C01	GridLossFault	Grid lost (islanding)	• Inverter will restart automatically when the grid returns to normal. • Check inverter's connected to grid and that the connectors and cables are normal
	C02	GridUnbalanVoltFault	Grid Voltage unbalanced.	•The inverter will restart automatically when grid power returns to normal. •Check inverter connections.
	C03	GridInstOverVoltFault	Grid instantaneous over voltage	•The inverter will restart automatically when grid power returns to normal. •Check with local power company if the protection parameters need to be adjusted.
	C04	Grid10MinOverVoltFault	Grid voltage Over for 10 Minutes	•The inverter will restart automatically when grid power returns to normal. •Check with local power company if the protection parameters need to be adjusted.
	C05	GridOverVoltFault	Grid voltage over	•The inverter will restart automatically when grid power returns to normal.
	C06	GridUnderVoltFault	Grid voltage under	
	C07	GridLineOverVoltFault	Grid line voltage over	
	C08	GridLineUnderVoltFault	Grid line voltage under	
	C09	GridOverFreqFault	Grid Frequency over	•The inverter will restart automatically when grid power returns to normal.
	C10	GridUnderFreqFault	Grid Frequency under	

	D01	UpsOverPowerFault	0ff-grid over load over	• Reduce loads. • Occassional over loads may be ignored. Power from inverter may recover automatically. • If experiencing continuous and frequent faults contact local distributor or AIMS Power.
Grid Fault	D02	GridConflictFault	Grid connected to Back-up terminal	•Ensure the off-grid port connection is correct, disconnect both off-grid and grid ports.
	D03	GenOverVoltFault	GenOverVoltFault	•Adjust generator running parameters, ensure the output voltage, frequency are within allowed range.
	D04	GenUnderVoltFault	GenUnderVoltFault	
	D05	GenOverFreqFault	GenOverFreqFault	
	D06	GenUnderFreqFault	GenUnderFreqFault	
Fault	E01	Pv1HwOverCurrFault	PV over current, triggered by hardware protection circuit	• Power off, then restart.
	E02	Pv2HwOverCurrFault		
	E03	Pv3HwOverCurrFault		
	E04	Pv4HwOverCurrFault		
	E05	Pv5HwOverCurrFault		
	E06	Pv6HwOverCurrFault		
	E07	Pv7HwOverCurrFault		
	E08	Pv8HwOverCurrFault		
	E09	Pv9HwOverCurrFault		
	E10	Pv10HwOverCurrFault		
	E11	Pv11HwOverCurrFault		
	E12	Pv12HwOverCurrFault		
	E13	Pv1SwOverCurrFault	PV over current, triggered by Software logic.	• Power off, power on then restart.
	E14	Pv2SwOverCurrFault		
	E15	Pv3SwOverCurrFault		
	E16	Pv4SwOverCurrFault		
	E17	Pv5SwOverCurrFault		
	E18	Pv6SwOverCurrFault		
	E19	Pv7SwOverCurrFault		
	E20	Pv8SwOverCurrFault		

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Fault	E21	Pv9SwOverCurrFault		
	E22	Pv10SwOverCurrFault		
	E23	Pv11SwOverCurrFault		
	E24	Pv12SwOverCurrFault		
	E33	Boost1SelfCheck(boost)Fault	PV boost circuit abnormal when self checking	• Power off, then restart
	E34	Boost2SelfCheck(boost)Fault		
	E35	Boost3SelfCheck(boost)Fault		
	E36	Boost4SelfCheck(boost)Fault		
	E37	Boost5SelfCheck(boost)Fault		
	E38	Boost6SelfCheck(boost)Fault		
	E39	Boost7SelfCheck(boost)Fault		
	E40	Boost8SelfCheck(boost)Fault		
	E41	Boost9SelfCheck(boost)Fault		
	E42	Boost10SelfCheck(boost)Fault		
	E43	Boost11SelfCheck(boost)Fault		
	E44	Boost12SelfCheck(boost)Fault		
	E45	BusHwOverVoltFault	Bus over voltage	• Power off, then restart
	E46	BusHwOverHalfVoltFault		
	E47	BusSwOverVoltFault		
	E48	BusSwOverHalfVoltFault		
	E49	BusSwUnderVoltFault	Bus under voltage as running	
	E50	BusUnbalancedFault	DC Bus voltage unbalanced	
	E51	BusBalBridgeHwOver-CurFault	Bus Controller over current	• Power off, then restart. If those faults continuously and frequently, please ask help for local distributors.
	E52	BusBalBridgeSwOver-CurFault		
	E53	BusBalBridgeSelf-CheckFault	Bus Controller abnormal when self checking	
	E54	BDCHwOverCurrFault	BiDC over current	• Power off, then restart • those faults continuously and frequently, ask help from local distributors or AIMS Power
	E55	BDCSwOverCurrFault		
	E56	BDCSelfCheckFault	BiDC abnormal as self checking	
	E57	BDCSwOverVoltFault	BiDC over voltage	
	E58	TransHwOverCurrFault	BiDC over current	

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	E59	BDCFuseFault	BiDC fuse broken	• Change fuse.
	E60	BDCRelayFault	BiDC relay abnormal	• Power off, then restart •
INV Fault	F01	HwOverFault	All over current/ voltage by protection hardware	• Power off, then restart
	F02	InvHwOverCurrFault	Ac over current by protection hardware	
	F03	InvROverCurrFault	R phase over current	
	F04	InvSOverCurrFault	S phase over current	
	F05	InvTOverCurrFault	T phase over current	
	F06	GridUnbalanCurrFault	On-grid current unbalanced	
	F07	DcInjOverCurrFault	DC injection over current	
	F08	AcOverLeakCurrFault	Ac side leakage over current	•Check AC insulation and ground wires • Power off, then restart
	F09	PLLFault	PLL abnormal	• Power off, then restart
	F10	GridRelayFault	Grid relay abnormal	
	F11	UpsRelayFault	Ups relay abnormal	
	F12	GenRelayFault	Generator relay abnormal	
	F13	Relay4Fault	Relay4 abnormal	
	F14	UpsROverCurrFault	Off-grid output over current	•When off-grid, the load in rush current is over rated spec, reduce the in rush current load. • Power off, then restart
	F15	UpsSOverCurrFault		
	F16	UpsTOverCurrFault		
	F17	GenROverCurrFault	Generator over current	• Check the generator output voltage and frequency is stable, and adjust generator. • Power off, then restart
	F18	GenSOverCurrFault		
	F19	GenTOverCurrFault		
	F20	GenReversePowerFault	Active power injected to generator	

C Fault	F21	UpsOverVoltFault	Off-grid output over voltage or under	• Power off, then restart
	F22	UpsUnderVoltFault		
	F23	UpsOverFreqFault	Off-grid output under or over frequency	
	F24	UpsUnderFreqFault		
	F25	DcInjOverVoltFault	Off-grid DC injection over voltage	
stem Fault	G01	PV1CurAdChanFault	Sampling hardware abnormal	• Power off, then restart
	G02	PV2CurAdChanFault		
	G03	PV3CurAdChanFault		
	G04	PV4CurAdChanFault		
	G05	PV5CurAdChanFault		
	G06	PV6CurAdChanFault		
	G07	PV7CurAdChanFault		
	G08	PV8CurAdChanFault		
	G09	PV9CurAdChanFault		
	G10	PV10CurAdChanFault		
	G11	PV11CurAdChanFault		
	G12	PV12CurAdChanFault		
	G13	BDCCurrAdChanFault		
	G14	TransCurAdChanFault		
	G15	BalBrigCurAdChanFault		
	G16	RInvCurAdChanFault		
	G17	SInvCurAdChanFault		
	G18	TInvCurAdChanFault		
	G19	RInvDciAdChanFault		
	G20	SInvDciAdChanFault		
	G21	TInvDciAdChanFault		
	G22	LeakCurAdChanFault		
	G23	VoltRefAdChanFault		
	G24	UpsRCurAdChanFault		

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system Fault	G25	UpsSCurAdChanFault		
	G26	UpsTCurAdChanFault		
	G27	GenRCurAdChanFault		
	G28	GenSCurAdChanFault		
	G29	GenTCurAdChanFault		
	G30	UpsRDcvAdChanFault		
	G31	UpsSDcvAdChanFault		
	G32	UpsTDcvAdChanFault		
	G37	TempAdChanFault	All temperature sensors abnormal	• Power off, then restart
	G38	VoltAdConflictFault	The sample value of PV, battery and BUS voltage inconsistent	
	G39	CPUAdConflictFault	The sample value between master CPU and slave CPU inconsistent	
	G40	PowerCalcConflictFault	Power value between PV, battery and AC output inconsistent	
	G41	EnvirOverTempFault	Installation environment temperature over or low	•Change or improve the installation environment's temperature within operating specification • Power off, then restart
	G42	EnvirLowTempFault		
	G43	CoolingOverTempFault	Cooling temperature over or low	
	G44	CoolingLowTempFault		
	G45	OverTemp3Fault	Temperature over or low	
	G46	LowTemp3Fault		
	G47	CpuOverTempFault	CPU temperature over	
	G48	ModelConflictFault	Version conflict with inverter	• Power off, then restart
	I01	InterFanWarning		• Remove any foreign object lodged into the fan.
	I02	ExterFanWarning		
	I03	Fan3Warning		

pe of Fault	Code	Na me	Descrip tion	Recomm end Solution
	I04	EnvirTempAdChan-Warning	Some temperature sensors abnormal	• Power off, then restart
	I05	CoolingTempAdChan-Warning		
	I06	Temp3AdChanWarning		
	I07	ExtFlashComWarning	Flash abnormal	• Power off, then restart
Warning	I08	EepromComWarning	Eeprom abnormal	
	I09	SlaveComWarning	Communication between slaver CPU and master CPU abnormal	
	I10	HmiComWarning	HMI abnormal	
	I11	FreqCalcConflictWarning	Frequency value abnormal	
	I12	UnsetModel	Running model is not initial	• Initialize inverter. Installers only.
	J01	MeterComWarning	CT abnormal	• Check the connection or connectors. Ensure they are correct, and not loose. • If abnormal, repair or change. • Power off, then restart
	J02	SohWarning	Battery SOH low	• Contact with Battery manufacturer.
Outside Warning	J03	GndAbnormalWarning	Earth impedance too high	•Check earth line connection or earth connecting impedance. • if abnormal, then adjust it. • Power off, then restart
	J04	ParallelComWarning	Communication between master inverter and slave	• Ensure the parallel connected communication wires for damage and are not loose. Verify the connection is in the correct port • Power off, then restart

PV INPUT	PIHY4600 4600 WATT (4.6kW)	PIHY9600 9600 WATT (9.6kW)
Max Input Power (kW)	6.9	15
Max PV Voltage (V)	660	
MPPT Range (V)	80-550	
Nominal Voltage	360	
Startup Voltage	100	
Max Input Current (A)	15.5 x 2	15.5 x 3
Max Short Current (A)	26 x 2	26 x 3
BATTERY PORT		
Max Charge/Discharge Power (kW	6.9 | 6.9	11.5 | 10.3
Max Charge/Discharge Current(A)	50	
Battery Voltage (V)	230	
Battery Voltage Range (V)	80- 495	
Battery Type	Lithium | Lead (if using non AIMS lithium batteries requires custom programming)	
AC GRID		
Max Continuous Power(kVA)	4.6	9.6
Max Continuous Current(A)	19.5 | 22.5	40 | 46.5
Nominal Grid Voltage (V)	211 to 264 @ 240 | 183 to 229 @ 208 (not 3 phase, split phase)	
Nominal Grid Frequency (Hz)	60	
Output Power Factor	.99 adjustable	
Current THD(%)	<3	
AC BACK-UP & GENERATOR		
Max Continuous Power(kVA)	4.6	9.6
Max Continuous Current(A)	19.5 | 22.5	40 | 46.5
Max Peak Currenty (A)(10 min)	28.8 | 33.2	47.9 | 49.5
Max Peak Power(kVA)(10 min)	6.9 | 6.9	11.5 | 10.3
Nominal AC Voltage L-L(V)	240 | 208 (not 3 phase)	
Nominal AC Voltage L-N(V)	120 | 120	
Nominal AC Frequency(Hz)	60	
Switching Time(ms)	<10	
Voltage THD(%)	<3	
EFFICIENCY		
CEC Efficiency(%)	97	
Max Efficiency(%)	97.6	
PV to Battery Efficiency(%)	98.1	
Battery to AC Efficiency(%)	96.8	
PROTECTION		
PV Reverse Polarity Protection	YES	
Battery Reverse Polarity Protectio	YES	
Over Current/Voltage Protection	YES	
Anti-Islanding Protection	YES	
AC Short Circuit Protection	YES	
Residual Current Detection	YES	
Ground Fault Monitoring	YES	
Insulation Resister Detection	YES	
PV Arc Detection	YES	
Rapid Shut Down	YES	
Enclosure Protect Level	IP65 | NEMA4X	
GENERAL DATA		
Cooling	Natural Convection	Thermal Fan
Relative Humidity	0-100%	
Operating Temerature Range	-25 to 60C | -77 to 140F	
Operating Altitude	< 4000 m | <13123 ft without derating	
Noise Emission (dB)	<25	<40
Stanby Consumption (W)	<10	
Mounting	Wall Bracket	
Communication with RSD	SUNSPEC	
Display & Communication Interfac	Full Color LED, RS485, CAN, Wi-Fi	
Certification & Approvals	UL 1741 SA | CSA 2202 No. 107-01 |UL 1998 | Rules21 | HECO Rule 14 | IP65 | CEC | PR	
EMC	FCC Part 15 Class B	
Warranty	10 Year Limited	