5.4 Wiring Rapid Shutdown

5.4.1 Internal Rapid Shutdown

NOTE

The inverter is available with an optional internal rapid shutdown transmitter. It is essential that the brand of this transmitter matches the receivers being installed with the PV modules. Failure to comply with this requirement will result in the voiding of the inverter warranty.

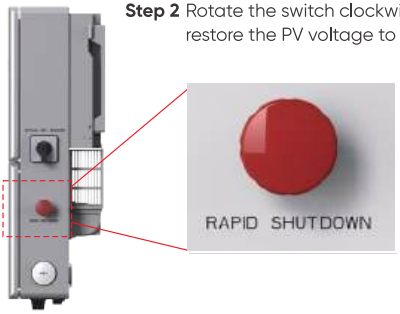
The inverter accomplishes rapid shutdown at the module level in the following way:

The internal transmitter produces a PLC signal upon receiving AC power. This signal ascends through the PV strings to the receivers connected to the PV modules. Upon receiving this signal, the receivers activate, enabling the string voltage to increase. If the receivers lose the signal, they deactivate. When the receivers are off, each PV module generates approximately 0.6V DC.

The red Rapid Shutdown (RSD E-Stop) switch works in the following way:

Step 1 Press the switch button inward to deactivate the internal transmitter. This will trigger a rapid shutdown of the PV, reducing the PV voltage.

Step 2 Rotate the switch clockwise to activate the transmitter again. This will restore the PV voltage to its normal level.



NOTE

Rapid shutdown will only initiate if receivers have been installed on the PV modules.

Without the receivers, rapid shutdown is not possible.

Further Information Regarding Rapid Shutdown

- With rapid shutdown receivers in place, the voltages of the PV strings should be significantly reduced.

  Depending on the receiver type, you should measure between 0.6 and 0.7 Vdc for each module. For instance: x10 modules = 6V-7V for the entire series.
- If the PV string voltages are low, ensure that the AC breaker is switched on to provide the inverter with AC voltage, and confirm that the rapid shutdown switch is in the 'popped out' position. To check, twist the switch clockwise to make sure it is properly engaged.
- The receivers can receive the PLC signal from the internal transmitter without the DC switch turned on. However, if an external DC switch is present, make sure it is turned on; otherwise, the receivers will be unable to receive the PLC signal from the transmitter.
- Refer to the Compatibility Sheet for information regarding the available internal transmitter options for the Jackery HomePower hybrid inverter.

5.4.2 External Rapid Shutdown

If the inverter is installed in a location that is not accessible to first responders, an external rapid shutdown switch must be placed in an accessible location.

Install an external Rapid Shutdown initiation switch in the following way:

Step 1 Install the external RSD switch and connect two wires from it to the inverter.

Step 2 Remove the red jumper from the RSD_IN and RSD_OUT terminals.

NOTE

Remove the jumper solely when installing an external rapid shutdown switch. In all other situations, please do not remove the jumper, as it could lead to the inverter shutting down.

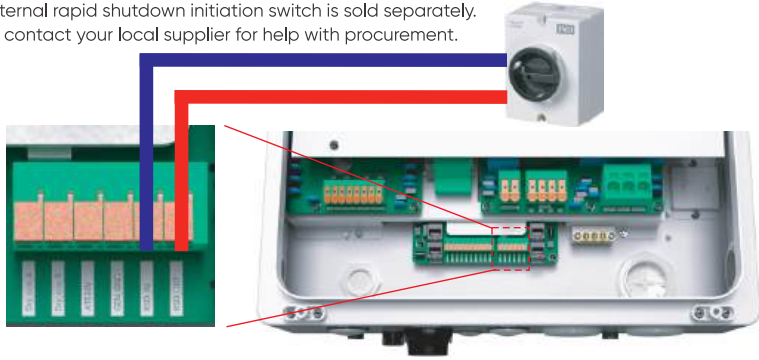
Step 3 Connect one end of the two wires to the RSD_IN and RSD_OUT terminals respectively.

Step 4 Connect the other end of the two wires to the external RSD switch.

NOTE

The RSD switch located on the inverter wire box will still trigger rapid shutdown. Ensure that the transmitter is activated by turning the switch clockwise when you are prepared to power up the system.

The external rapid shutdown initiation switch is sold separately. Please contact your local supplier for help with procurement.



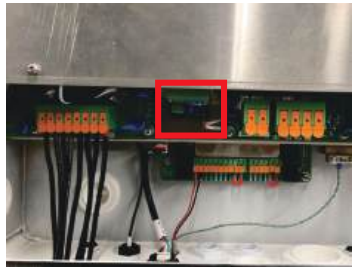
An external transmitter can be installed, but the internal transmitter needs to be disabled to prevent any interference between the two. Additionally, the transmitter must be compatible with PVRSS and the hybrid inverter.

Step 1 Ensure that the inverter is fully powered down. Before moving forward, both the DC and AC disconnect switches should be opened. Utilize a multimeter to confirm that the AC voltage at the inverter terminals reads 0V.

Step 2 Pull down on the small black terminal block.

Step 3 If the block is removed, the transmitter will lose power and become inoperable.

You can leave the terminal block disconnected; it won't harm the equipment.



Step 4 In order for the PV to produce power in backup mode, the external transmitter needs to receive power from the inverter's backup circuit. Alternatively, you can obtain 12V DC from the internal transmitter.

NOTE

- The red jumper connects the positive (+) side, thereby completing the 12V DC circuit.
- Refer to the RSD user manuals for guidance when installing any RSD components.

5.5 Wiring Battery to Inverter

NOTE

Before connecting the battery, please take the time to thoroughly read the product manual and follow the installation instructions precisely as outlined in the battery manual.

DANGER

- Do not short-circuit the positive and negative electrodes.
- Use a torque wrench to tighten DC connections in the inverter properly.
- Ensure that the DC breaker on the Control Unit is OFF.
- Connect all grounding cables securely before any other electrical connections are made.

Step 1 Check and ensure that the battery is powered off and use a multimeter to measure the battery voltage (0V) .

Step 2 Strip the jacket about ½ inch at the other ends of the battery power wires.

Step 3 Insert a cabinet tip or electronic tip slotted screwdriver (up to 3/16-inch or 4.5 mm) into the rectangular screwdriver slots to open the terminal.

Step 4 Insert the conductor and release the screwdriver.

Step 5 Gently tug on the cable to verify that the connection is secure.

Step 6 If the connection seems loose, go through steps 3-5 once more, ensuring to insert the cable further into the terminal before letting go of the lever.

NOTE

Please refer to the battery user manual for instructions on how to turn on the battery, and ensure that the system is completely installed before powering it on.

NOTE

The battery fuse in the inverter wire box is replaceable. The replacement can only be done by a technician authorized by Jackery.

Fuse specification: 750V, 63A.

Model	GVI-HR-(3.8-5)K-USG	GVI-HR-(7.6-11.4)K-USG
Maximum Wire Size Accepted by Terminals for Battery Connection	8 AWG	6 AWG

5.6 AC Wiring

5.6.1 AC Terminals

The inverter features two AC outputs: (1) connected to a backup service panel and (2) connected to the main service panel that interfaces with the utility grid. In the event of a utility power outage, the grid-side of the inverter will turn off, while the backup-side remains operational as long as there is sufficient PV and battery power to meet the demands of the backup loads. Additionally, the inverter can be connected in parallel with other HomePower hybrids to enhance support for the backup loads.

Table 5-1 AC cable size limitations

Model	GVI-HR-(3.8-5)K-USG	GVI-HR-(7.6-11.4)K-USG
AC Grid Cable	6 AWG	4 AWG
AC Backup Cable	8 AWG	6 AWG

Over-Current Protection Device (OCPD) for AC Circuits

To safeguard the inverter, it is recommended to install a device for protection against over-current and leakage, as indicated by the current ratings listed in the following table.

Inverter Model	Grid		Backup	
	Max. Output Current	Max. Input Current	Rated Output Current	Max. Output Current (10s)
GVI-HR-3K8-USG	15.8A	23.8A	15.8A	25.4A
GVI-HR-5K-USG	20.8A	31.2A	20.8A	33.3A
GVI-HR-7K6-USG	31.7A	47.6A	31.7A	50.7A
GVI-HR-10K-USG	41.7A	62.6A	41.7A	66.7A
GVI-HR-11K4-USG	47.5A	71.3A	47.5A	76A

5.6.2 Installing the AC Cables

WARNING

Conductors connected to the backup ports of the inverter must be linked to an isolated load center that is not directly tied to the utility. This is necessary to meet anti-islanding regulations.

Connect the AC grid and backup conductors in the following manner:

Step 1 Route the AC cables for the backup loads panel (backup) and the main service panel (grid) into the inverter wire box. Ensure that the backup loads panel is not directly connected to the main service panel.

Step 2 Remove ½ inch of insulation from both ends of each cable.

Step 3 Place a technician screwdriver into the small opening above the wire terminal.

Step 4 Apply pressure with the screwdriver and insert the wire into the terminal.

Step 5 Release the screwdriver, allowing the terminal clamp to secure the wire.

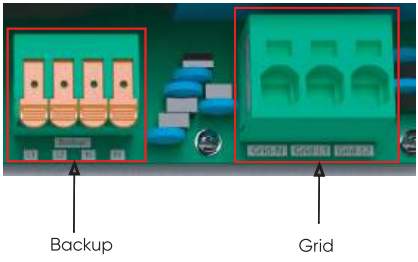
Step 6 Perform a gentle tug test on the wire to confirm it is firmly in place.

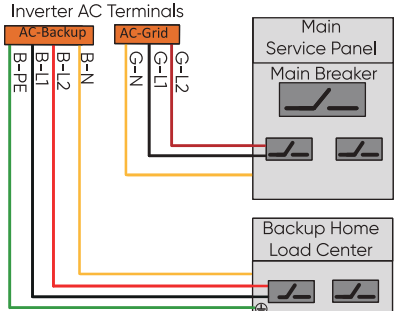
Step 7 If the wire appears to be loose, go through steps 3-6 again.

Step 8 Connect the other ends of the AC cables to a breaker and the neutral bus in the main service panel.

Step 9 Connect the opposite ends of the AC cables in the backup service panel to the panel lugs or to a circuit breaker.

Step 10 Keep the breakers and AC bypass switch in the OFF position; activate them during the commissioning process.





5.6.3 Installing the Backup Load Center

Step 1 After identifying the breakers that provide power to the devices you want to back up, label them clearly so you can easily recognize them when the panel cover is removed.

Step 2 Turn off the power to the house to ensure it is safe to work on the main panel (or subpanel).

Step 3 Take off the panel cover and use a multimeter to confirm that the panel is not energized.

Step 4 Switch off the breakers that need to be relocated, disconnect the wires from them, and temporarily cap the wires. Next, remove the breakers and install them into the backup loads panel.

Step 5 Install individual wires from the main panel (or subpanel) to the backup loads panel. Each

breaker that you are moving will require its own dedicated wire.

Step 6 In the main panel, connect the cables you routed to the backup loads panel to the circuit cables that you previously capped off. You can use wire nuts or a similar connector for this task.

Step 7 In the backup panel, connect the wires to the breakers that you relocated from the main panel.

Step 8 Ensure that the breakers in the backup load panel are clearly labeled for easy identification.

5.6.4 AC Bypass Switch

This failsafe switch controls the power supply for the inverter backup circuit. In the event of an inverter failure or a critical alarm, the backup circuit will deactivate. If this happens, setting the switch to 1 enables power to flow from the grid through the inverter to the backup.

BYPASS (1) indicates that the backup circuit receives power directly from the grid. If the inverter fails, the backup loads will experience a loss of power. Keep the bypass switch in position (1) until the issue is resolved.

OFF (0) indicates that the backup circuit is disconnected from the inverter. Switching OFF will cut power to the backup loads.

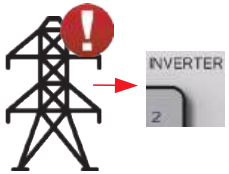
INVERTER (2) indicates that the backup circuit is directly supplied by the inverter. During a grid outage, the inverter will provide power to the backup loads using energy from the PV system and the battery.

NOTE

The AC bypass switch should not be confused with the AC disconnect switch for the inverter.

The backup circuit will be disconnected from the inverter when in the OFF position.

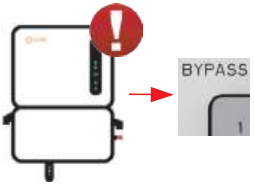
Unstable Grid



Systems that encounter frequent grid blackouts or have an inherently unstable grid should set the Inverter (2) option on the bypass switch. This guarantees that the backup loads stay powered, regardless of the grid's quality or availability.

- Provides backup power support √
- Assists with malfunctioning equipment. ×

Unreliable Equipment



For systems experiencing issues with equipment that lead to shutdowns, the Bypass (1) setting should be utilized. When configured to Bypass (1), the inverter will directly supply power from the grid to the backup loads, even if it is unable to generate power on its own using PV and battery sources.

- Provides backup power support √
- Assists with malfunctioning equipment ×

Transfer of Power

The 3.8-5kW models transfers up to 7.6kW from the grid to the loads.

The 7.6-11.4kW models supports a maximum capacity of 11.4kW. Please do not switch the bypass to the BYPASS position during overload faults.

NOTE

If the circuit breaker in either service panel trips, do NOT use the bypass switch.

Start by diagnosing the on-site issue. Ensure that the breaker is not experiencing an overload.

5.6.5 Connecting Multiple Hybrid Inverters in Parallel

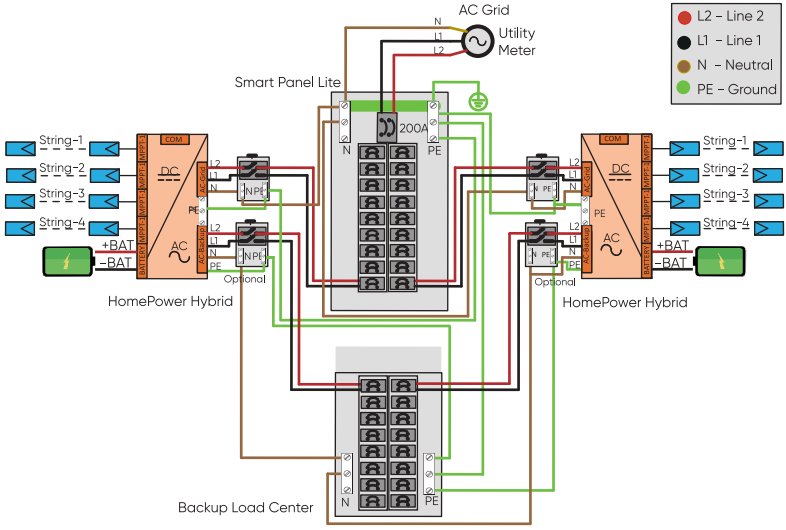
A maximum of three hybrid inverters can be installed in parallel on the backup side of the system. Each inverter's backup ports should connect to individual overcurrent protection devices.

Inside the backup load center, the three inverters are connected together using Ethernet cables.

Backup Combiner Load Center

This manual illustrates a Backup Combiner Load Center in addition to the Backup Load Center. While the Combiner is not mandatory, it offers extra breaker slots for accommodating multiple inverter breakers and a generator breaker, should one be installed.

A single backup load center may be installed if there is sufficient space to accommodate all the home load breakers along with the inverter breakers, as long as it adheres to NEC regulations.



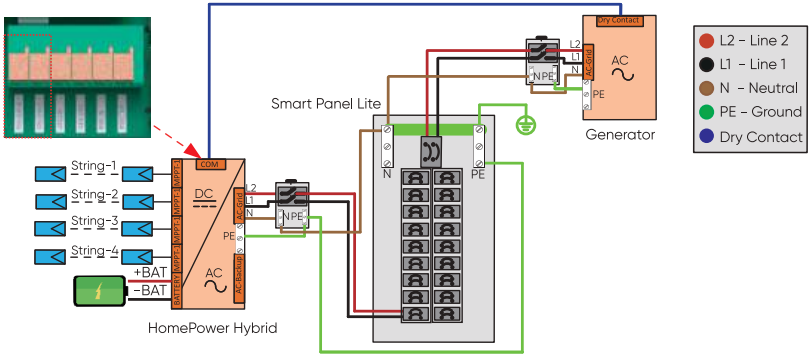
During the commissioning process, one inverter is assigned as the master. The two inverters will work together, adjusting their output power to meet the home's energy requirements. If one inverter fails, the other will continue to function normally. The maximum backup output current is

the combined total of both inverters. For instance, two 11.4K inverters can deliver up to 95A (47.5A each) of continuous backup power, with the capability of providing up to 152A of surge current for a duration of ten seconds.

5.6.6 Generator Integration

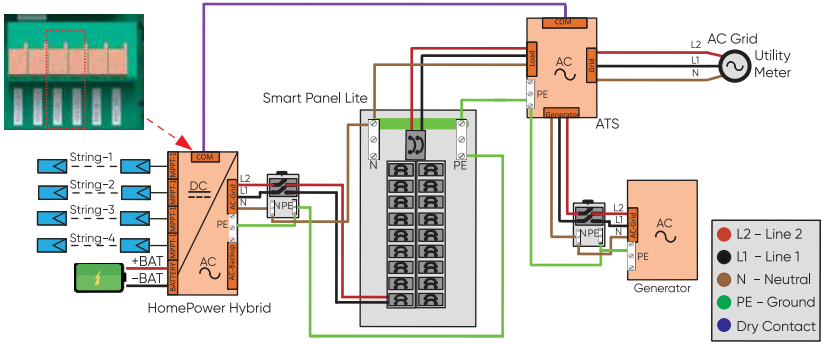
The generator should be connected to the grid interface of the inverter. In completely off-grid setups, a generator can serve as a substitute for the grid. The inverter employs a dry contact to activate the generator when the battery's state of charge (SOC) falls below a predetermined threshold. The generator's output is utilized to charge the batteries and supply power to home loads during times when PV power is inadequate. The generator will shut down once the battery SOC reaches a different specified threshold.

Connect the generator's dry contact to the Dry_con_A and Dry_con_B pins on the inverter.



An on-grid setup that incorporates an Automatic Transfer Switch (ATS) and a generator can also work with a Jackery hybrid inverter. The ATS connects to the inverter through a 12-24V start wire. When the grid goes down, the ATS will disconnect from the grid, but it will not initiate the generator until it receives a start signal from the inverter. The inverter will issue this start signal once the battery's State of Charge (SOC) hits the predetermined start SOC level.

Connect the ATS to the ATS12V port on the inverter.



NOTE

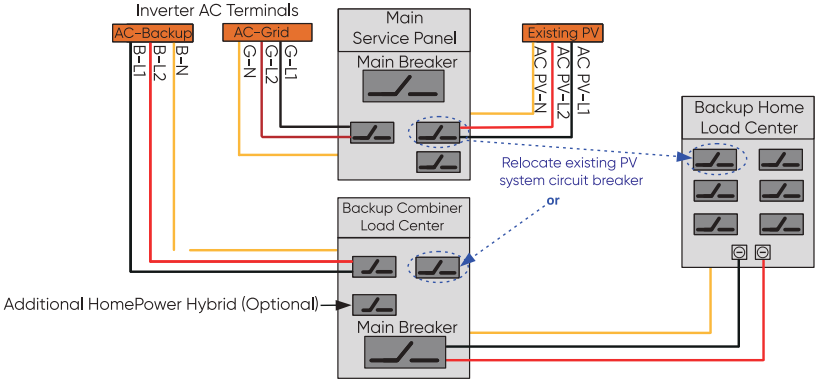
The generator should be connected to the grid interface of the inverter. Do NOT connect the backup interface of the inverter to the generator.

NOTE

The generator needs to be connected in a 240V split-phase configuration; otherwise, it could lead to phase loss in the inverter, rendering it inoperable.

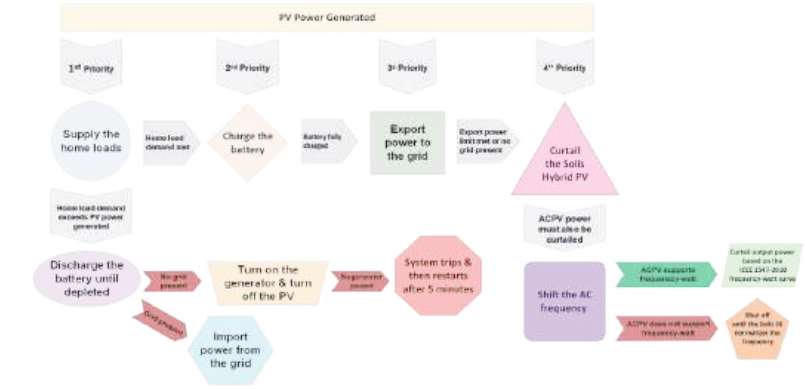
5.6.7 AC-Coupled PV Systems for Power Backup

An existing PV system can be connected to the backup side using AC coupling, allowing it to function even during grid outages. The term "ACPV" will be used as a generic reference for any existing PV system. This will be AC-coupled with the energy storage and backup system, setting it apart from "PV," which connects to the DC side of the HomePower energy storage system instead. The breaker for the ACPV system must be moved to the backup load center to ensure it stays energized during a grid outage.



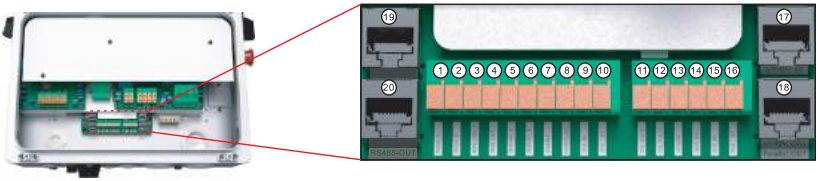
The HomePower hybrid system does not communicate with the AC-coupled PV system directly.

The inverter modulates the output of the ACPV system by using frequency-shifting techniques. It adheres to the frequency-watt curve specified in the IEEE 1547-2018 standard. In backup mode, the HomePower hybrid will start to adjust the AC frequency when it senses that the total power generated by all PV sources, including the ACPV, exceeds the power being consumed. This frequency adjustment will be recognized by the ACPV system. If the ACPV system is compatible with the IEEE 1547-2018 frequency-watt curve, its output power will decrease in accordance with that curve. If the ACP system does not support frequency-watt functionality, it will shut down as the frequency changes and will restart once the HomePower hybrid stabilizes the frequency.



5.7 Inverter Communication

5.7.1 Communication Terminals



The communication terminal block of the inverter is made up of 16 ports.

The table below, arranged from left to right, illustrates the function of each port.

Table 5-2 Description of Inverter Communication Terminals

NO.	Port	Function	Acceptable Wire Size
1	Meter_A	Used for RS485 communication between the inverter and the external energy meter, this is essential for enabling the complete functionality of the hybrid inverter	22-16 AWG
2	Meter_B		
3	BMS_CAN_H	Used for CAN communication between the inverter and a compatible battery	
4	BMS_CAN_L		
5	BMS485_A	Used for RS485 communication with compatible batteries that employ RS485 instead of CAN	
6	BMS485_B		
7	ENABLE		
8	Enable_GND		
9	EPO_IN	Emergency Power Off signal	
10	EPO_OUT		

11	Dry con_A	A dry contact for connecting a generator	22-16 AWG
12	Dry con_B		
13	ATS24V	For Supplementary ATS connection	
14	GEN GND		
15	RSD_IN	For both sides of the optional external rapid shutdown initiation switch	
16	RSD_OUT		
17	Parallel_IN	For daisy-chaining of HomePower hybrid inverters in parallel	RJ45
18	Parallel_OUT		
19	RS485-IN	1. To connect the Jackery Hub.	
20	RS485-OUT	2. The default setting is for RS485 communication, with both RS485 connections internally wired in parallel.	

NOTE

The COM1 and COM2 conduit knockouts are designed for ½ inch cable glands or conduit fittings. Do not run communication cables in the same conduit as high voltage conductors, as this may lead to communication problems.

The communication cables are connected in the following manner:

Step 1 Strip ¼ inch from the end of the communication wire.

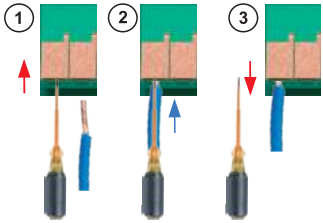
Step 2 Insert a technician screwdriver into the slot of the orange tab and gently lift it upward.

Step 3 Place the stripped COM wire into the terminal.

Step 4 Take out the screwdriver, and the terminal will secure itself onto the wire.

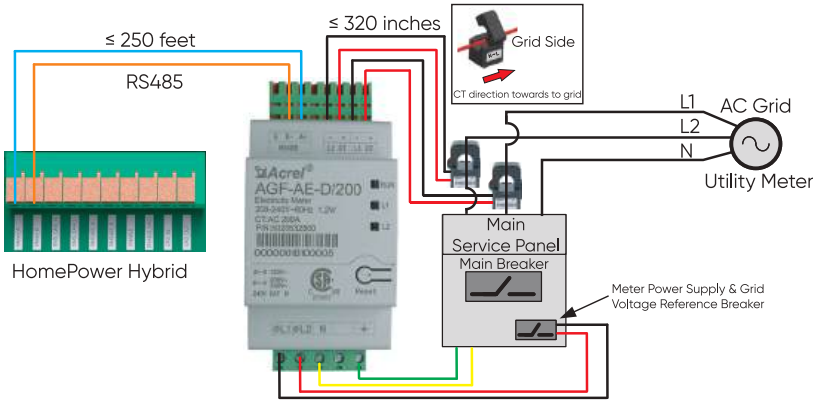
Step 5 Gently tug on the cable to verify that the connection is secure.

If the connection seems loose, go through steps 2-5 once more, ensuring to insert the cable further into the terminal before letting go of the lever



5.7.2 Communication with External Energy Meter

The Acrel AGF-AE-D energy meter is included with the inverter. To connect the meter's RS485 communication wires, refer to the diagram below and attach them to the Meter_A and Meter_B pins on the inverter's communication terminal block.



To ensure a fully operational system, the Acrel meter needs to be installed. Without the meter, essential features such as export power control and default energy storage modes will not be available. However, the system can function without the meter by navigating to the meter-select menu and selecting "No Meter."

Once the meter is installed, measure the voltage between grid L1 and meter L1 with a multimeter to verify proper wiring. The voltage should range from 0 to 5V, and the same applies to L2. If the readings are beyond this range, check the wiring for accuracy.

Refer to the Acrel meter manual for detailed installation instructions.

NOTE

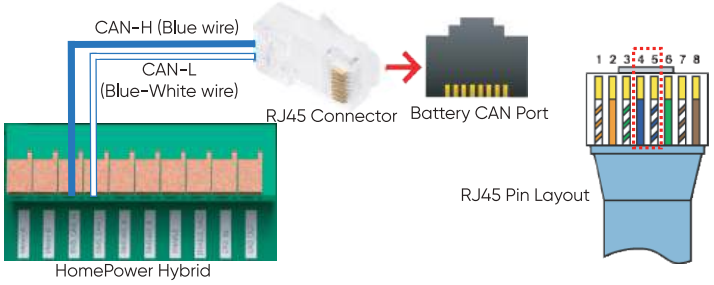
When both phase imbalance and anti-backflow features are activated, and one phase is exporting power while another is importing, a possible wiring error may occur to the meter. Please check the meter wiring for accuracy.

Export power is represented as a positive value, while import power is indicated as a negative value. If the power flow at the power grid port does not align with the anticipated logic, verify that the CT direction is correct.

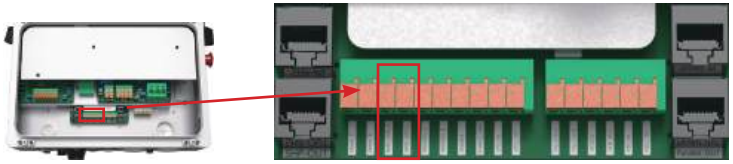
5.7.3 Battery Communication

Communication via CAN

Attach a CAT5 cable to the battery CAN port and route it to the inverter. At the inverter end, split the cable and connect the blue wire (pin #4) to BMS_CAN_H and the blue-white wire to BMS_CAN_L (pin #5).



Connect the comm cable to the BMS port of the Hybrid Inverter.

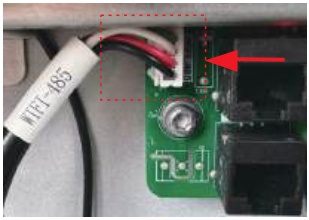


Communication via RS485

Establish an internal connection to the inverter's RS485, but you'll need to obtain a 4-pin male JST connector. Refer to the figure below for the RS485 pinout of the inverter.

1. Attach the male end of a 4-pin JST connector to the end of an RS485 cable.
2. Disconnect the RS485 cable that is currently plugged into the "WIFI-485" port.
3. Connect the JST connector of the RS485 cable to the WIFI-485 port.

   Note that a female JST connector can be used as an alternative. Disconnect the RS485 cable from the top of the logger port and then connect the female end in its place.



RS485 Pinout

Green	RS485B
White	RS485A
Red	Enable
Black	Ground

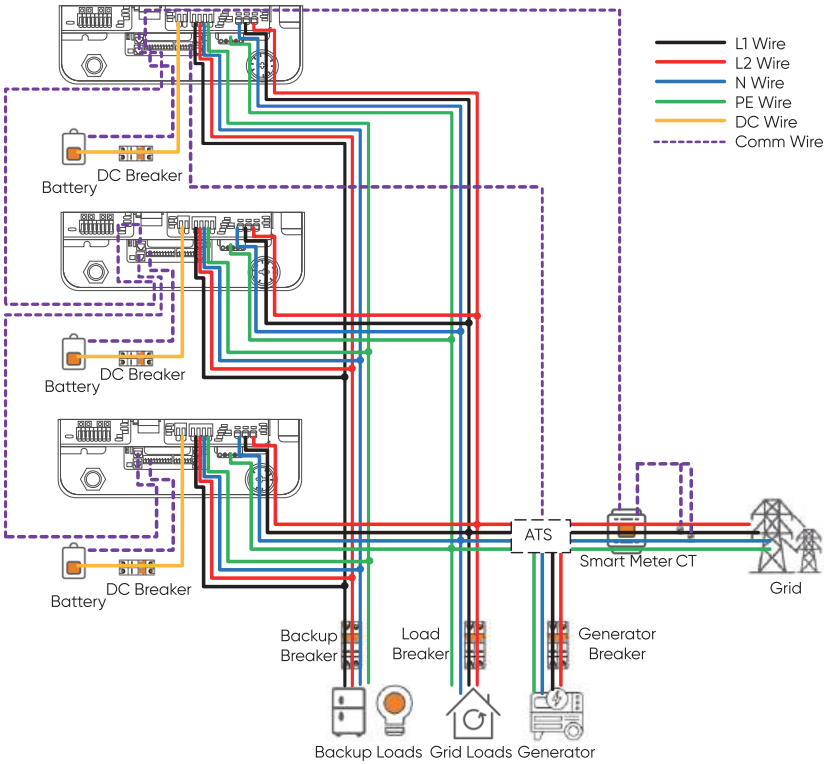
Install a 4-pin JST connector

5.7.4 Parallel Inverter Installation

- Only inverters of the same models can be connected in parallel. For example, pair a 11.4KW inverter with another 11.4KW inverter. Avoid paralleling inverters of varying sizes.
- Prior to establishing a parallel connection, ensure that inverters are running on the same firmware version.
- A maximum of three hybrid inverters can be installed in parallel.
- The meter and data logger only need to connect to the master. However, to update the

firmware, each inverter must have its own data logger.

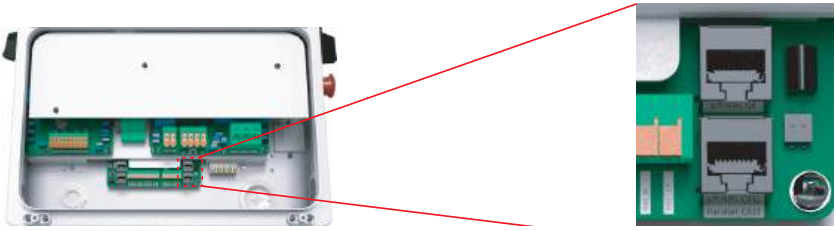
- When using multiple inverters in parallel, connect all inverters to the same grounding point to prevent any voltage potential differences between their ground connections.
- Connect each inverter to its own PV strings in accordance with the inverter's PV input specifications.
- Connect each inverter individually to a 120-500V battery system.
- Connect the power grid output and backup output from the inverter in parallel, as illustrated in the diagram below.



Before proceeding with the parallel setup, ensure that each inverter operates normally on its own. This step helps prevent any issues that may arise from the original parameter settings of an individual inverter when they are connected in parallel.

Configure each inverter individually, ensuring they operate correctly without any alarms. Once confirmed, proceed to connect the parallel cable as previously described.

Two RJ45 ports are designated exclusively for communication between HomePower hybrid inverters. These ports utilize CAN communication and cannot be employed for any other functions apart from the daisy-chaining of HomePower hybrid inverters.



Use a double-CAT5 terminated network cable that includes a reinforced shielding layer to connect two inverters in a daisy-chain configuration as follows:

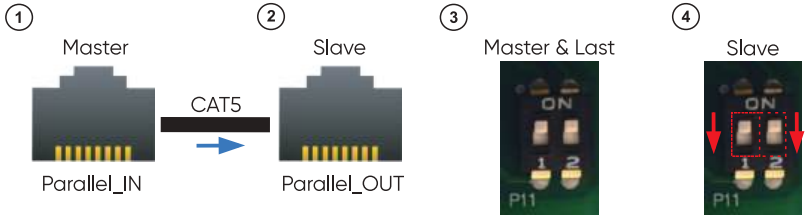
Step 1 Plug one end of the cable to the Parallel_IN port on the master inverter.

Step 2 Plug the opposite end of the cable to the Parallel_OUT port of the slave inverter.

Step 3 Switch both DIP switches 1 and 2 to the ON position (up) for the master inverter.

Step 4 Switch both DIP switches 1 and 2 to the OFF position (down) for the slave inverter.

Step 5 Switch both DIP switches 1 and 2 to the ON position (up) for the last inverter.



Before using both inverters, it is recommended to finish the system commissioning process. This involves checking all connections, polarities, and voltages to avoid potential problems related to the specific parameter configurations of each inverter.

NOTE

The status of the BYPASS switch in the parallel system must remain consistent; otherwise, it could lead to system malfunctions.

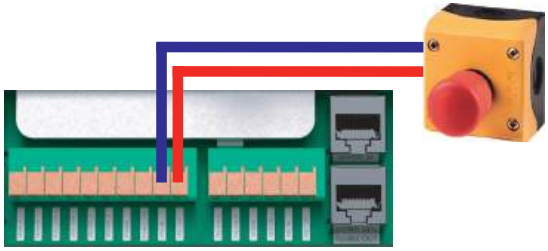
NOTE

The master inverter is responsible for controlling the output power of the slave inverter. In the event of a fault in the master inverter, the slave inverter will automatically assume the role of the master to ensure continued operation. Once the master inverter is restored, the slave will automatically return to its original role.

Emergency Power Off (EPO)

An external EPO switch can be incorporated into the system. When this switch is activated, the inverter will stop functioning and the AC backup will also be turned off.

The communication terminal block has two pins allocated for this switch. To install the external switch, connect a 2-wire cable from the switch to the inverter. Attach the two wire from the switch to the EPO_IN and EPO_OUT ports of the inverter.

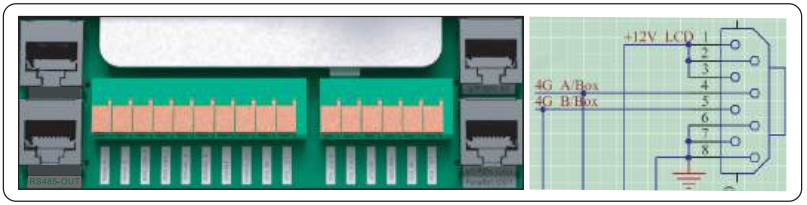


5.7.5 RS485 Connection

There are three methods to access the inverter via RS485.

- Use RS485 IN/OUT for external RS485 communication. The RJ45 4PIN and 5PIN connectors are designated for wiring related to external 485 communication.

  RS485 IN and RS485 OUT are internally connected in parallel and can be connected to any interface.



- The Logger USB port offers a direct connection to RS485. For internal connections, there is a 4-pin plug located to the left of the SPH RJ45 ports.
  1. Insert the male end of the USB cable into the port utilized by the Jackery datalogger.

     Note that Jackery monitoring is unavailable while the RS485 connection is active.
  2. Split the female end of the USB cable. You will usually find four wires: red, green, black, and white.
  3. Check the DC voltage between the pins. The voltage between RS485A and RS485B should be approximately 1.6VDC, with RS485A being positive and RS485B being negative. In the cable depicted below, the green wire corresponds to RS485B, while the white wire represents RS485A.

USB Port

Splilt USB Cable

6. PRODUCT MAINTENANCE

Before operating the devices, ensure you are wearing Electro-Static Discharge (ESD) clothing, ESD gloves, and safety boots. Additionally, take off any conductive items like jewelry and watches to prevent electric shocks or burns.

6.1 Inverter Shutdown Procedure

Step 1 Switch off the AC breaker or disconnect switch to cut off AC power to the inverter.

Step 2 Press the RSD Initiation Switch and then switch off the inverter's DC switch.

Step 3 Disable the battery breaker on the BMS.

Step 4 Utilize a multimeter to confirm that both the battery and AC voltages read 0V. If RSD is in use, the voltages should be within safe levels.

6.2 Inverter Maintenance

The HomePower hybrid inverter does not need any routine maintenance. However, maintaining a clean heatsink will help the inverter effectively dissipate heat, thereby extending its lifespan.

Grease stains on the inverter chassis can be removed using soap and water.

> ⚠ **CAUTION**
>
> Avoid contacting the surface of the inverter while it is in operation, as some components may be hot and could result in a minor burn. Please turn off the inverter (see Section 6.2) and allow it to cool down before performing any maintenance or cleaning.

If the LED status indicator lights become too dirty to read, they can be cleaned with a damp cloth.

> ⚠ **CAUTION**
>
> Never use any solvents, abrasives, or corrosive materials to clean the inverter.

7. PRODUCT TROUBLESHOOTING

The inverter has been engineered to meet international safety and electromagnetic compatibility standards. Prior to leaving the manufacturing facility, it undergoes a series of tests to verify its operational reliability.

If there is a problem with the inverter, it may manifest in one of the following ways:

(1) the LED indicator light on the inverter (circle) will flash orange,

(2) the inverter status will display an alarm code,

(3) an alarm code will appear on Jackery Home,

or (4) the inverter may be completely off.

The following pages will provide guidance on how to troubleshoot each alarm code. If you suspect the issue is originating from the DC side of the system, turn off the inverter to allow for safer testing of the PV strings.

Alarm Message	Failure description	Solution
ARC-FAULT	ARC detected in DC circuit	1. Check if there is an arc in the PV connection and restart inverter.
AFCI Check FAULT	AFCI module self check fault	1. Restart inverter or contact installer.
DCinj-FAULT	High DC injection current	1. Restart inverter or contact installer.
DSP-B-FAULT	Comm. failure between main and slave DSP	1. Restart inverter or contact installer.
DC-INTF	DC input overcurrent	1. Restart inverter. 2. Identify and remove the string related to the faulty MPPT. 3. Change power board.
G-IMP	High grid impedance	1. User design function allows the protection limit to be adjusted if it is allowed by electrical company.
GRID-INTF01/02	Grid interference	1. Restart inverter. 2. Change power board.
IGBT-OV-I	Over IGBT current	
IGFOL-F	Grid current tracking fail	1. Restart inverter or contact installer.
IG-AD	Grid current sampling fail	
ILeak-PRO 01/02/03/04	Leakage current protection	1. Check AC and DC connection. 2. Check inverter inside cable connection.
IN I-FAULT	Initialization system fault	1. Restart inverter or contact installer.
LCD show initializing all the time	Can not start-up	1. Check if the connectors on the main board or power board are secure. 2. Check if the DSP connection to the power board is secure.
NO-Battery	Unconnected battery	1. Ensure the battery is connected properly. 2. Verify the output battery voltage is correct.

No power	Inverter no power on LCD	1. Check PV input connections. 2. Check DC input voltage (single phase >120V, three phase >350V). 3. Check if PV+/- is reversed.
NO-GRID	No grid voltage	1. Check connections and grid switch. 2. Verify the grid voltage is correct on the AC Terminals inside the inverter wiring box.
OV-BUS	Over DC bus voltage	1. Check inverter inductor connection. 2. Check driver connection.
OV-DC01/02/03/04	Over DC voltage	1. Reduce the module number in series.
OV-DCA-I	DC input overcurrent	1. Restart inverter. 2. Identify and remove the string of the faulted MPPT. 3. Change power board.
OV-G-V01/02/03/04/05	Over grid voltage	1. Resistance of AC Cable is too high. Increase the gauge of grid cables. 2. Adjust the protection limit if it is permitted by electrical company.
OV-G-I	Over grid current	1. Restart inverter. 2. Change power board.
OV-G-F01/02	Over grid frequency	1. User design function allows the protection limit to be adjusted if it is permitted by electrical company.
OV-IgTr	AC side transient overcurrent	1. Restart inverter. 2. Return-factory repair.
OV-ILLC	LLC hardware overcurrent	
OV-VBackup	Backup overvoltage fault	
OV-TEM	Over Temperature	1. Check inverter surrounding ventilation. 2. Determine if there is direct sunlight on the inverter during hot weather.
OV-Vbatt1	The detection of battery overvoltage	1. Verify the protection point for over voltage is set correctly. 2. Restart inverter.
OV-Vbatt-H	Battery overvoltage hardware fault	1. Check if any part of the battery input circuit is tripped, ie. battery fuses, battery circuit breaker. 2. Restart inverter.
Over-Load	Backup overload fault	1. Check the load of Backup port is over rating output power or not. 2. Reduce the load of Backup port, then restart inverter.

PV ISO-PRO01/02	PV isolation protection	1. Remove all DC input, reconnect and restart inverter one by one. 2. Identify which string cause the fault and check the isolation of the string.
RelayChk-FAIL	Relay check fail	1. Restart inverter or contact installer.
UN-BUS01/02	Under DC bus voltage	1. Check inverter inductor connection. 2. Check driver connection.
UN-G-F01/02	Under grid frequency	1. Use user define function to adjust the protection limit if it's allowed by electrical company.
UN-G-V01/02	Under grid voltage	
12Power-FAULT	12V power supply fault	1. Restart inverter or contact installer.

NOTE

If the inverter shows any alarm messages mentioned in the above Table, please switch off the inverter and wait for 5 minutes before turning it back on. If the alarm continues, please reach out to Jackery's after-sales service or email us at hello@Jackery.com.

If you're unable to resolve the alarm code with the troubleshooting steps provided, or if the alarm code you encounter is not listed, please reach out to Jackery service team.

To expedite the resolution process, we suggest collecting the following information prior to contacting them.

Item	Supplemental Information
Inverter serial number (SN)	Serial number can be found on the spec label
Inverter Firmware Version	A six character number that can be found in the information section of the inverter interface page - requires Bluetooth connection
Alarm history	Codes found in the Inverter section of the interface Utilize the Bluetooth tool to access the Info page, then navigate to the Inverter tab. Scroll down to Alarm History, and either take a screenshot or note down the alarms along with their corresponding dates and times.
DC voltages	Use a multimeter to measure the voltages
Detailed description of the problem	Frequency of the occurrence and any other relevant details about the issue
Battery serial number and Firmware version	Consult the battery product manual to determine how to collect this information
Is the system reporting to Jackery Home?	Yes/ No - if yes, what is the site ID?
Take pictures showing all the cable connections in the system (Videos preferred)	If this is possible, it will help us to troubleshoot

8. INVERTER STORAGE

If the inverter is not installed immediately, please follow the storage guidelines and environmental conditions outlined below.

- Repack the inverter using the original box, ensuring to include the desiccant inside. Seal the box securely with adhesive tape.
- Keep the inverter in a clean, dry location that is free from dust and dirt. The storage temperature should be maintained between -40°F and 158°F, with humidity levels ranging from 0% to 100%, non-condensing.
- Do NOT stack more than two (2) inverters on a single pallet, and do not stack pallets higher than two (2) units.
- Keep the box(es) away from corrosive substances to prevent harm to the inverter enclosure.
- Regularly check the packaging. If you find any damage (such as moisture or pest infestations), repackage the inverter immediately.
- Place the inverter on a flat, stable surface. Do not position it on an incline or upside down.
- Do NOT discard the desiccant packet that comes with the inverter. It is provided to quickly absorb any remaining moisture.
- Restarting after a prolonged period of inactivity necessitates an inspection of the equipment. In certain instances, it may be necessary to remove any oxidation and dust that has accumulated inside.
- Conduct a yearly visual inspection of the inverter box to check for any signs of damage.
- If the inverter has been taken out of the box and then put back in, place dehumidifying packets inside the inverter wire box to keep the internal components dry.
- Do NOT the inverter outdoors or in an area lacking environmental controls.

A TECHNICAL SPECIFICATIONS

A.1 3.8kW and 5 kWh

Model	GVI-HR-3K8-USG	GVI-HR-5K-USG
Photovoltaic (PV) DC Input		
Max. PV Power (W) (Recommended)	6,080	8,000
Max. DC Input Voltage (V)	600	
Rated DC Voltage (V)	380	
Startup Voltage (V)	80	
MPPT Voltage Range (V)	80 to 520	
Full Load MPPT Voltage Range (V)	140 to 450	
Max. DC Input Current per String (A)	16	
Max. Short Circuit Current per String (A)	25.6	
MPPTs/Strings per MPPT	2/1	
Energy Storage		
Battery Type	Lithium-ion	
Voltage Range (VDC)	120 to 500	
Max. Charging/Discharging Current (A)	25	
Battery Communications	CAN/RS485	
AC Input and Output (On-Grid)		
Rated Output Power (kW)	3.8	5
Rated Output Current (A)	15.8	20.8
Rated Output Voltage (V)	240	
Max. Apparent Output Power (kVA)	3.8	5
Max. Output Current (A)	15.8	20.8
Max. Input Current (A)	23.8	31.2
Input Voltage Range (V)	211 to 264	
Rated Frequency (Hz)	60	
Frequency Range (Hz)	58.8 to 61.2	
Current THD	<3%	
AC Output (Backup and Off-Grid)		
Rated Output Power (kW)	3.8	5
Rated AC Output Current (A) (Continuous)	15.8	20.8
Phase Power	240V Split-Phase	
Rated Output Voltage (L1-L2)/(L1/L2-N) (V)	240	

Max. Apparent Output Power (kVA) (10s)	6.1	8
Max. Output Current for 10s (A)	25.4	33.3
Max. Output Current for 300 ms (A)	28.62	37.44
Output Voltage Range (V)	211 to 264	
Rated Frequency (Hz)	60	
Back-up Switch Time (ms)	<10	
Max. Allowable Phase Imbalance	100%	
Power Factor Rating	>0.99 (0.8 leading to 0.8 lagging)	
Voltage THD (@Linear Load)	<3%	
Efficiency		
PV Maximum Efficiency	97.0%	
PV CEC Efficiency	96.5%	
Max. Battery Charging Efficiency (PV to BAT)	98.50%	
Max. Battery Charging/Discharging Efficiency (BAT to AC)	97.0%	
General Features		
Topology	Transformerless	
Backup Support	Whole-home and dedicated loads	
Night Time Power Consumption (W)	< 20	
Cloud Platform	Jackery Home	
Communications	RS485, Cellular, Wi-Fi, Bluetooth, LAN (Optional)	
Generator Support	Yes	
Protection		
Ground Fault Detection	Yes	
Leakage Current Detection	Yes	
DC Arc-Fault Circuit Protection	Yes	
DC Reverse-Polarity Protection	Yes	
Manual inverter bypass switch	Yes	
Rapid Shutdown NEC 2017	Integrated SunSpec-certified Transmitter	
Protection Class/Overvoltage Category	I/II	
Mechanical Specifications		
Weight (lb/kg)	59.52/27	
Dimensions (H×W×D) (in/mm)	28.35×19.21×8.66/720×490×220	
Installation	Wall-mounted	
Cooling	Natural	

NEMA/Ingress Protection Rating	Type 4X/IP66
Noise Emission (dB(A))	<30
Environmental Specifications	
Operating Temperature (℉ /℃)	13 to 140/-25 to 60
Operating Altitude (ft/m)	≤13,120/4000
Compliance and Certificates	
Grid Code	IEEE 1547-2018, IEEE 1547.1-2020, California Rule 21, HECO Rule 14H
Safety	UL1741, UL1741 SA, UL1741 SB, UL1699B, UL1998, NEC 690.12-2020, CAN/CSA C22.2 No.107.1-1
EMC	FCC Part 15 Class B

A.2 7.6kWh, 10 kWh and 11.4kWh

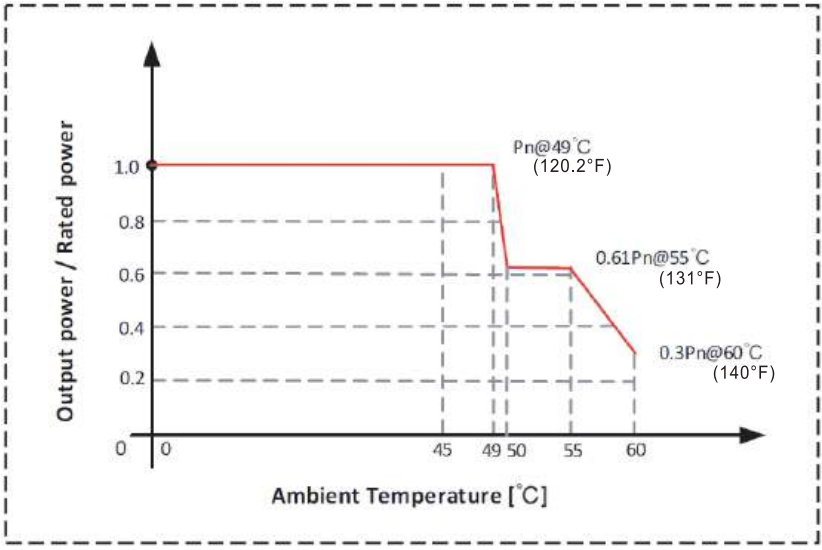
Model	GVI-HR-7K6-USG	GVI-HR-10K-USG	GVI-HR-11K4-USG
Photovoltaic (PV) DC Input			
Max. PV Power (W) (Recommended)	12160	16,000	18240
Max. DC Input Voltage (V)	600		
Rated DC Voltage (V)	380		
Startup Voltage (V)	80		
MPPT Voltage Range (V)	80 to 550		
Full Load MPPT Voltage Range (V)	175 to 450	230 to 450	245 to 450
Max. DC Input Current per String (A)	16		
Max. Short Circuit Current per String (A)	25.6		
MPPTs/Strings per MPPT	4/1		
Energy Storage			
Battery Type	Lithium-ion		
Voltage Range (VDC)	120 to 500		
Max. Charging/Discharging Current (A)	50		
Battery Communications	CAN/RS485		
AC Input and Output (On-Grid)			
Rated Output Power (kW)	7.6	10	11.4
Rated Output Current (A)	31.7	41.7	47.5
Rated Output Voltage (V)	240		
Max. Apparent Output Power (kVA)	7.6	10	11.4
Max. Output Current (A)	31.7	41.7	47.5

Max. Input Current (A)	47.6	62.6	71.3
Input Voltage Range (V)	211 to 264		
Rated Frequency (Hz)	60		
Frequency Range (Hz)	58.8 to 61.2		
Current THD	<3%		
AC Output (Backup and Off-Grid)			
Rated Output Power (kW)	7.6	10	11.4
Rated AC Output Current (A) (Continuous)	31.7	41.7	47.5
Phase Power	240 Split-Phase		
Rated Output Voltage (L1-L2)/(L1/L2-N) (V)	240		
Max. Apparent Output Power (kVA) (10s)	12.2	16	18.2
Max. Output Current for 10s (A)	50.7	66.7	76
Max. Output Current for 300 ms (A)	57.06	75.06	85.5
Output Voltage Range (V)	211 to 264		
Rated Frequency (Hz)	60		
Back-up Switch Time (ms)	<10		
Max. Allowable Phase Imbalance	100%		
Power Factor Rating	>0.99 (0.8 leading to 0.8 lagging)		
Voltage THD (@Linear Load)	<3%		
Efficiency			
PV Maximum Efficiency	97.6%		
PV CEC Efficiency	97.0%		
Max. Battery Charging Efficiency (PV to BAT)	98.5%		
Max. Battery Charging/Discharging Efficiency (BAT to AC)	97.0%		
General Features			
Topology	Transformerless		
Backup Support	Whole-home and dedicated loads		
Night Time Power Consumption (W)	< 20		
Cloud Platform	Jackery Home		
Communications	RS485, Cellular, Wi-Fi, Bluetooth, LAN (Optional)		
Generator Support	Yes		
Protection			
Ground Fault Detection	Yes		
Leakage Current Detection	Yes		

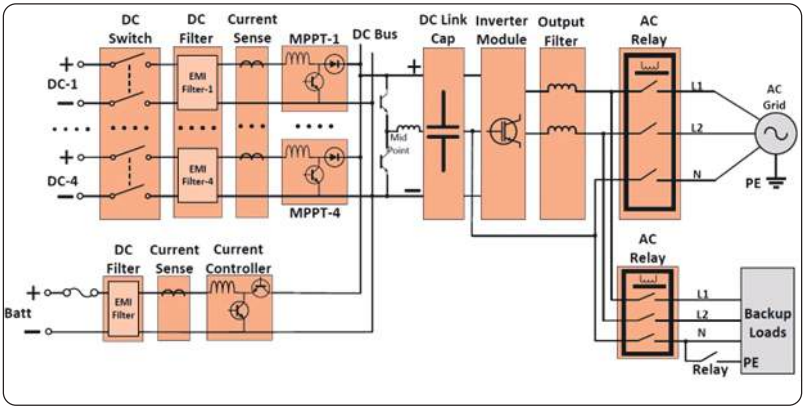
DC Arc-Fault Circuit Protection	Yes
DC Reverse-Polarity Protection	Yes
Manual inverter bypass switch	Yes
Rapid Shutdown NEC 2017	Integrated SunSpec-certified Transmitter
Protection Class/Overvoltage Category	I/II
Mechanical Specifications	
Weight (lb/kg)	71.74/32.54
Dimensions (H×W×D) (in/mm)	29.53×22.05×8.66/750×560×220
Installation	Wall-mounted
Cooling	Natural
NEMA/Ingress Protection Rating	Type 4X/IP66
Noise Emission (dB(A))	<30
Environmental Specifications	
Operating Temperature (°F /℃)	13 to 140/-25 to 60
Operating Altitude (ft/m)	≤13,120/4000
Compliance and Certificates	
Grid Code	IEEE 1547-2018, IEEE 1547.1-2020, California Rule 21, HECO Rule 14H
Safety	UL1741, UL1741 SA, UL1741 SB, UL1699B, UL1998, NEC 690.12-2020, CAN/CSA C22.2 No.107.1-1
EMC	FCC Part 15 Class B

B APPENDIX

B.1 Temperature Derating Curve



B.2 Internal Topology of HomePower Hybrid Inverter



B.3 Default Grid Setting for IEEE1547-2018

Parameter	Adjustment Range (p.u.)	Default (p.u.)	Description
OV-G-V01	1. 10< V ≤1.21	1. 10 p.u.	Set grid over-voltage protection 01 value
OV-G-V01-T	0. 1-13 S	13 S	Grid over-voltage protection 01 trip time
OV-G-V02	1.20< V ≤1.30	1.20 p.u.	Set grid over-voltage protection 02 value
OV-G-V02-T	0. 1-5 S	0. 16 S	Grid over-voltage protection 02 trip time
UN-G-V01	0.5≤ V <0.88	0.88 p.u.	Set grid under-voltage protection 01 value
UN-G-V01-T	2.0-50 Sec.	21 S	Grid under-voltage protection 01 trip time
UN-G-V02	0.45≤ V <0.70	0.5 p.u.	Set grid under-voltage protection 02 value
UN-G-V02-T	0. 16-21 S	2 S	Grid under-voltage protection 02 trip time
UN-G-V03	0.050< V <0.5	0.5 p.u.	Set grid under-voltage protection 03 value
UN-G-V03-T	0. 16-21 S	2 S	Grid under-voltage protection 03 trip time
OV-G-F01	60.5< F <66 Hz	61.2 Hz	Set grid over-frequency protection 01 value
OV-G-F01-T	180-1000 S	300 S	Set grid over-frequency protection 01 trip time
OV-G-F02	61.2< F <66 Hz	62 Hz	Set grid over-frequency protection 02 value
OV-G-F02-T	0. 16-1000 S	0. 16 S	Set grid over-frequency protection 02 trip time
UN-G-F01	50< F <59 Hz	58.5 Hz	Set grid under-frequency protection 01 value
UN-G-F01-T	180-1000 S	300 S	Set grid under-frequency protection 01 trip time
UN-G-F02	50< F <58 Hz	56.5 Hz	Set grid under-frequency protection 02 value
UN-G-F02-T	0. 16-1000 S	0. 16 S	Set grid under-frequency protection 02 trip time
Reconnection Voltage	0.88≤ V ≤0.95 1.05≤ V ≤1.06	0.917p.u. 1.05 p.u.	Set grid recovery voltage range after grid fault
Reconnection Frequency	59≤ F ≤59.9 60. 1 ≤ F ≤61	59.5Hz 60. 1 Hz	Set grid recovery frequency range after grid fault
Reconnection Time after Fault	0-600 S	300 S	Set reconnection time after a fault is cleared
Ramp-up Slew Rate	0. 10-100%	100%W/S	Set Ramp-up power slew rate during start-up
Reconnect Slew Rate	0. 10-100%	0.33%W/S	Set Ramp-up power slew rate during reconnect
Volt Watt P3Tau	0.5-60 S	10 S	Set the time to ramp up to 90% of the new active power target in response to the change in voltage

Volt Var Q3Tau	1-90 S	5 S	Set the time to ramp up to 90% of the new reactive power target in response to the change in voltage
Dead Band-OF	60.017-61 Hz	60.036Hz	Set OV frequency start dead band for power derate
Droop-OF	2-5 %	5 %	Set OV frequency derate droop slope
Response Time	0.2-10 S	5 S	Set frequency derate response time
Dead Band-UF	59-59.983 Hz	59.964 Hz	Set UN frequency start dead band for power derate
Droop-UF	2-5 %	5 %	Set UN frequency derate droop slope
Droop Pmin	0-100 %	0 %	Set frequency droop P minimum
Volt-Watt	Enabled/Disabled	Enabled	Set Volt - Watt function
V1	Hybrid: 0.40≤V≤1.00 Grid-tied: 0.90≤V≤1.30	Hybrid: 0.5 p.u. Grid-tied: p.u.	Set grid voltage V1 limit for Volt-Watt control
P1	0-100 % Pn	100% Pn	Set power P1 for Volt-Watt control
V2	Hybrid: 0.60≤V≤1.05 Grid-tied: 1.00≤V≤1.35	Hybrid: 0.7 p.u. Grid-tied: p.u.	Set grid voltage V2 limit for Volt-Watt control
P2	0-100 % Pn	100% Pn	Set power P2 for Volt-Watt control
V3	1.05≤ V ≤1.09	1.06 p.u.	Set grid voltage V3 limit for Volt-Watt control
P3	0-100 % Pn	100% Pn	Set power P3 for Volt-Watt control
V4	1.06≤V≤1. 10	1. 10 p.u.	Set grid voltage V4 limit for Volt-Watt control
P4	0-100 % Pn	20% Pn	Set power P4 for Volt-Watt control
Volt-Var	Enabled/ Disabled	Enable	Set Volt-Var function
V1	0.77≤V≤1.03	0.92 p.u.	Set grid voltage V1 limit for Volt-Var control
Q1	0-60% Sn	+44% Sn	Set reactive power Q1 for Volt-Var control
V2	0.92≤V≤1.05	0.98 p.u.	Set grid voltage V2 limit for Volt-Var control
Q2	-60-60% Sn	0 % Sn	Set reactive power Q2 for Volt-Var control
V3	0.95≤V≤1.08	1.02 p.u.	Set grid voltage V3 limit for Volt-Var control
Q3	-60-60% Sn	0 % Sn	Set reactive power Q3 for Volt-Var control
V4	0.97≤V≤1.23	1.08 p.u.	Set grid voltage V4 limit for Volt-Var control
Q4	-60-0% Sn	-44% Sn	Set reactive power Q4 for Volt-Var control
Fixed PF	-0.8 - +0.8	1	Set Fixed Power Factor limit
Reactive Power	-60 -60 %	0%	Set Reactive Power level

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