

A1-HYBRID G2/ A1-AC G2

3.8 kW / 5.0 kW / 6.0 kW / 7.6 kW

User Manual

Version 13.0

www.solaxpower.com

eManual in the QR code or at www.solaxpower.com

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About This Manual

Scope of Validity

This manual is an integral part of the A1-HYB-G2 series / A1-AC-G2 series / A1-SMT-G2 series inverter. It describes the assembly, installation, commissioning, maintenance and failure of the product. Please read it carefully before operating.

This manual is valid for the following inverter models:

- A1-HYB-G2

  A1-HYB-3.8K-G2 | A1-HYB-5.0K-G2 | A1-HYB-6.0K-G2 | A1-HYB-7.6K-G2

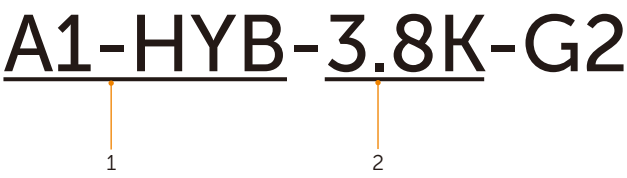
- A1-AC-G2

  A1-AC-3.8K-G2 | A1-AC-5.0K-G2 | A1-AC-6.0K-G2 | A1-AC-7.6K-G2

- A1-SMT-G2

  A1-SMT-3.8K-G2 | A1-SMT-5.0K-G2 | A1-SMT-6.0K-G2 | A1-SMT-7.6K-G2

Model description



Item	Meaning	Description
1	Product family name	"A1-HYB": PV grid-supported storage inverter. "A1-AC": energy storage inverter. There may be no solar module connected to inverter, and the PV power option will be deactivated. "A1-SMT": PV grid-supported inverter. No battery is connected to the inverters and the battery option will be deactivated.
2	Power	"3.8K": rated output power of 3.8 kW.

Target Group

The installation, maintenance and grid-related setting can only be performed by qualified personnel who:

- Are licensed and/or satisfy state and local regulations.
- Have good knowledge of this manual and other related documents.

Conventions

The symbols that may be found in this manual are defined as follows.

Symbol	Description
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION!	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury, device damage, power generation loss or unanticipated results.
NOTICE!	Provides tips for the optimal operation of the product.

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1 Safety

1.1 General Safety

A1-HYB-G2 series inverter has been meticulously designed and thoroughly tested to comply with North American and international safety standards. Nevertheless, like all electrical and electronic equipment, safety precautions must be observed and followed during the installation of the inverter to minimize the risk of personal injury and ensure a safe installation.

All US electrical installations must comply and be in accordance with all the state, local, utility regulations, and National Electrical Code ANSI/NFPA 70.

Please thoroughly read, comprehend, and strictly adhere to the comprehensive instructions provided in the user manual and any other relevant regulations prior to the installation of the inverter. The safety instructions in this document serve as supplementary guidelines to local laws and regulations.

SolaX shall not be liable for any consequences resulting from the violation of the storage, transportation, installation, and operation regulations outlined in this document. Such consequences include, but are not limited to:

- Inverter damage caused by force majeure events, such as earthquakes, floods, thunderstorms, lightning, fire hazards, volcanic eruptions, and similar events.
- Inverter damage due to human causes.
- Usage or operation of the inverter in violation of local policies or regulations.
- Failure to comply with the operation instructions and safety precautions provided with the product and in this document.
- Improper installation or usage of the inverter in unsuitable environmental or electrical conditions.
- Unauthorized modifications to the product or software.
- Inverter damage occurring during transportation by the customer.
- Storage conditions that do not meet the requirements specified in this document.
- Installation and commissioning performed by unauthorized personnel who lack the necessary licenses or do not comply with state and local regulations.

1.2 Safety Instructions

WARNING!

- This document does not replace and is not intended to replace any local, state, provincial, including without limitation applicable in the jurisdiction of installation. SolaX assumes no responsibility for the compliance or non-compliance with such laws or codes in connection with the installation of the product.

DANGER!

- Danger to life due to high voltages in the inverter!
- Before connecting the product to the electrical utility grid, contact the local utility company.
- Children should be supervised to ensure that they do not play with the appliance.

WARNING!

- Do not operate the inverter when the device is running.

WARNING!

- Risk of electric shock!

WARNING!

- When handling battery, adhere to all manufacturer safety instructions!

WARNING!

- Only accessories shipped with the inverter are recommended for use. Using other accessories may result in a fire or injury to the user.

WARNING!

- Do not disassemble any parts of the inverter which are not mentioned in the installation guide. It contains no user-serviceable parts. See warranty for instructions on obtaining service. Attempting to service the inverter yourself may result in a risk of electric shock or fire and will void your warranty.

WARNING!

- The inverter input and output circuits are isolated from the enclosure. This system does not include an isolation transformer and should be installed with an ungrounded PV array in accordance with the requirements of ANSI/NFPA 70, NEC 690.41.
- Equipment grounding is the responsibility of the installer and must be performed in accordance with all applicable Local and National Codes.

WARNING!

- Before operating the inverter, ensure that the inverter is grounded properly. This product must be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the product.

WARNING!

- When a ground fault is indicated, normally grounded conductors may be ungrounded and energized or normally ungrounded conductors may be grounded.

WARNING!

- Keep away from flammable and explosive materials to avoid fire. Do not install or store the system in a corrosive environment where it may be exposed to ammonia, corrosive gases, acids, or salts (e.g.: chemical plant, fertilizer storage areas, tanneries, near volcanic ash eruption).

WARNING!

- Neither touch the positive nor the negative pole of the PV connecting device. Never touch both poles at the same time.

CAUTION!

- A1-HYB series inverter only supports a certain type of lithium-ion battery! (Manufacturer certified battery)

CAUTION!

- Possible damage to health as a result of the effects of radiation! Do not stay closer than 7.87 in/20 cm to inverter for a long time.

⚠ CAUTION!

- Danger of burn injuries due to hot enclosure parts! During operation, the enclosure may become hot.

⚠ CAUTION!

- Risk of electric shock from energy stored in the capacitor.
- Never operate on the inverter couplers, the Mains cables, battery cables and PV cables when power is applied. After switching off the PV, battery and Mains, always wait for 5 minutes to fully discharge the intermediate circuit capacitors before unplugging DC, battery and Mains couplers.

⚠ CAUTION!

- The unit contains capacitors that remain charged to a potentially lethal voltage after the MAINS, battery and PV supply have been disconnected. Hazardous voltage will be present for up to 5 minutes after disconnection from the power supply.

⚠ CAUTION!

- When accessing the internal circuit of the inverter, it is very important to wait 5 minutes before operating the power circuit or demounting the electrolyte capacitors inside the device. Do not open the device beforehand since the capacitors require time to sufficiently discharge!

⚠ CAUTION!

- Use insulated tools when installing the device. Individual protective tools must be worn during installation, electrical connection and maintenance.

NOTICE!

- The inverter is heavy. Use of lift equipment is recommended.

NOTICE!

- Make sure that existing wiring is in good condition and that wire is not undersized.

NOTICE!

- Measure the voltage between terminals UDC+ and UDC- with a multi-meter (impedance at least 1Mohm) to ensure that the device is discharged before working (35VDC) inside the device.

Lightning and surge protection

A1-HYB-G2 series inverter is designed and certified to meet stringent UL1741 / IEEE 1547 and ANSI / IEEE 62.41 / 62.42 lighting and surge requirements.

However, every PV installation is unique. Additional external UL / NEC AC and DC surge protection and solid grounding practices are recommended.

Battery safety instructions

A1-HYB-G2 Series inverter should be coupled with a high voltage battery. The battery must comply with UL 1973 and must be intrinsically safe.

As accumulator batteries may contain potential electric shock and short-circuit current dangers, the following warnings should be observed during battery replacement to avoid accidents that might be thus resulted:

- Do not wear watches, rings or similar metallic items.
- Use insulated tools.
- Put on rubber shoes and gloves.
- Do not place metallic tools and similar metallic parts on the batteries.
- Switch off loads connected to the batteries before dismantling battery connection terminals.
- Only personnel with proper expertise should carry out the maintenance of accumulator batteries.

1.3 Symbols on the Label and Inverter

This section gives an explanation of all the symbols shown on the inverter and on the label.

Symbol on the Inverter

Symbol	Explanation
	Equipment grounding conductor (PE)

Symbol on the Label

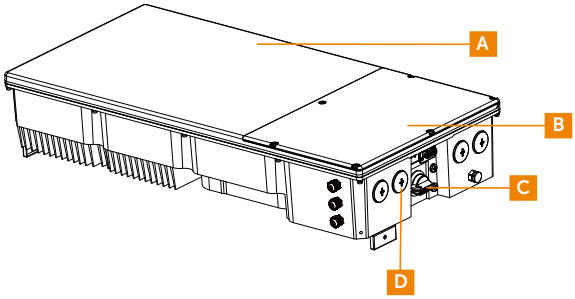
Symbol	Explanation
	CSA certified.
	Type 1 Arc-Fault Circuit-interrupter on PV side
	Beware of hot surface. The inverter will become hot during operation. Avoid any contact during operation.
	Danger of high voltages. Danger to life due to high voltages in the inverter!
	Read the enclosed documents.
	Danger to life due to high voltage. There is residual voltage existing in the inverter after powering off, which needs 5 minutes to discharge. Wait 5 minutes before opening the upper lid or the DC lid.

2 Product Overview

2.1 Product Introduction

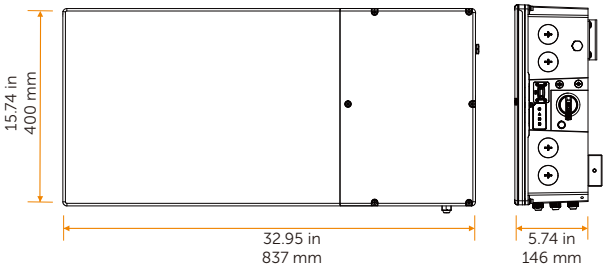
A1-HYB-G2 series inverter is transformerless type without galvanic isolation. It is designed and certified to fulfill the directives of ANSI/NFPA 70, NEC 690.41, UL 1741, UL 1741 SA, IEEE 1547 and IEEE 1547.1. The inverter converts the DC power generated by PV strings into AC power and stores the energy into the battery bank or feeds the power into the power grid.

2.2 Overview of the Inverter

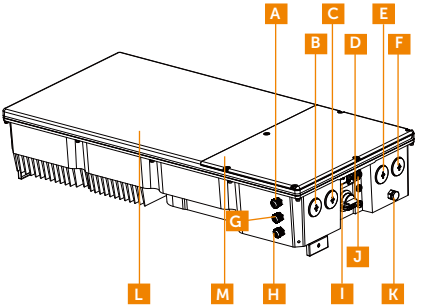


Item	Description	Remarks
A	Inverter power box	It is the essential part of the inverter. This part is debugged and sealed before ex-factory and there is no user-servable part inside this part. Opening the part is prohibited.
B	Wiring box	It is the compartment where all the wiring are connected. Open the wiring box cover to complete all the wiring connection.
C	DC power	It is the power switch that allows for the DC power to be off or on for the inverter.
D	Conduit plugs	There are four 1 inch openings for wiring connection. Each conduit opening is fitted with a conduit plug which needs to be removed before installation and wiring connection.

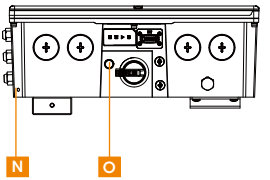
2.3 Dimensions of the Inverter



2.4 External Terminals of the Inverter



Right side view



Front view

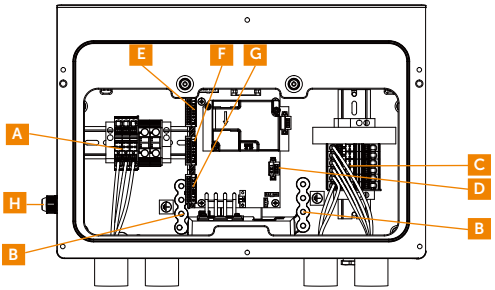
Item	Description
A	BAT+
B	AC connection
C	Inverter communication connection
D	DC switch
E	PV connection
F	PV connection
G	Battery communication connection
H	BAT-
I	Inverter indicator
J	Communication port or USB port for upgrading
K	Waterproof valve

Item	Description
L	Inverter power box
M	Wiring box
N	Ground terminal with battery
O	Power button

NOTICE!

- The inverter power box (section L) is sealed at the factory and there are no user-serviceable parts inside.

2.5 Internal Terminals in the Wiring Box

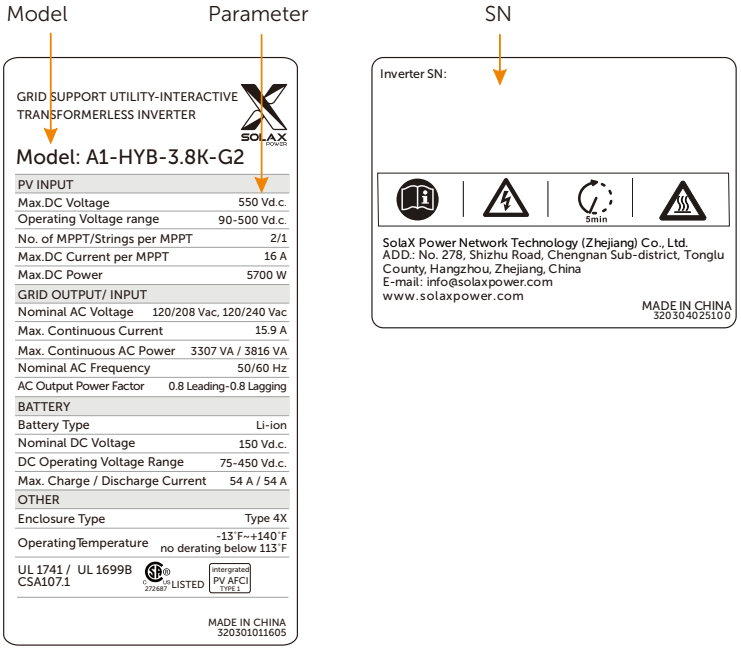


Item	Description
A	AC terminals
B	Grounding bar
C	PV terminals
D	MLPE terminal
E	COMM in terminal
F	COMM out terminal
G	AUX terminal
H	Battery terminals

NOTICE!

- Not all communication wirings connected with the terminals on the communication board are shown in the picture.

2.6 Identification of A1-HYB-G2 Series



1. Every A1-G2 series product corresponds to a unique serial number. The serial number is divided into five parts: type (3 bits)+ power (3 bits)+ year/month (2 bits)+ work order number (3 bits)+ stream number (3 bits), a total of 14bits.

2. The standard series number (SN) rules is as follows:

AH2	076	E	7	0	0	1	0	0	1
Model	Power	Year	Month	Work Order Number			Serial Number		

AH2: A1-HYB-G2; AA2: A1-AC-G2; AS2: A1-SMT-G2

076: Power ---- 7.6 kW

E: Year ---- I: 2022 (A: 2014; B: 2015.....)

7: Month ---- July (October: A; November: B; December.....)

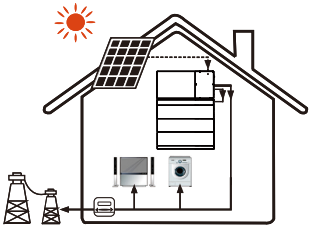
001: Work order number ---- 001: 001~999 (Monthly zero clearing)

001: Serial number ---- 001: 001~ZZZ (It will be cleared for next work order.)

2.7 Work Modes

A1-HYB-G2 series inverter provides multiple work modes based on different requirements. Some basic work modes of A1-HYB-G2 are shown below.

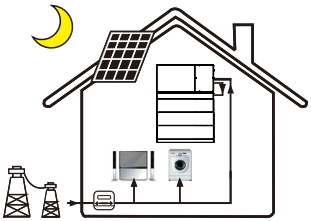
Contact us for additional or more complex application requirements.



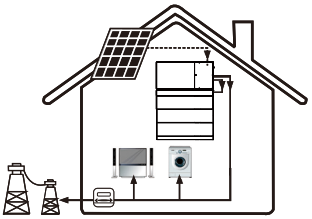
Work mode: Self Use
The self-use mode is suitable for areas with low feed-in tariffs and high electricity prices.

(1) When the power of PV is sufficient
The power generated from PV will be used to supply the local loads first, then proceed to charge the battery bank.
If the battery is fully charged, the excess power will be exported to the public grid.(The inverter will limit the output if Feed-in limit or zero feed-in is needed)
(PV > Load, PV → Load → Battery → Grid)

(2) When the power of PV is insufficient
The power from PV and battery will be used to supply the local loads. If the power is still not enough, the remaining power will be taken from the grid.
(PV < Load, PV + Battery + Grid → Load)



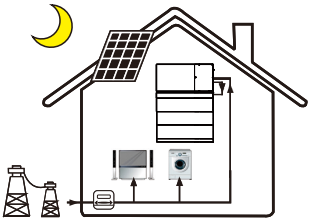
(3) Without PV power
The power from battery will be used to supply the local loads firstly. If the battery power is not enough, the remaining power will be taken from the grid. The inverter will enter into the standby state.
(PV = 0, Battery + Grid → Load)



Work mode: Feed-in priority
The Feed-in priority mode is suitable for areas with high feed-in tariffs, but has feed-in power limitation.

(1) When the power of PV is sufficient
The power generated from PV will be used to supply the local loads firstly, and the excess power will feed-in to the grid.
(PV > Load, PV → Load → Grid)

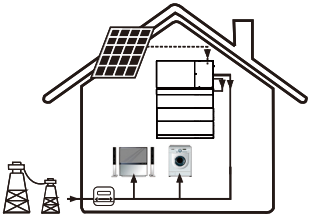
(2) When the power of PV is insufficient
The power from PV and battery will be used to supply the local loads.
If the power is still not enough, the remaining power will be taken from the grid.
(PV < Load, PV + Battery + Grid → Load)



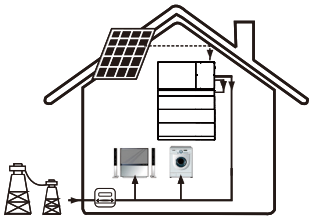
(3) Without PV power
The power from battery will be used to supply the local loads firstly. If the battery power is not enough, the remaining power will be taken from the grid. The inverter will enter into the standby state.
(PV = 0, Battery + Grid → Load)

Work mode: Backup mode

Priority: battery > load > grid
This mode applies to regions with frequent power outages. This work mode will ensure the battery to reserve a minimum capacity for grid outage.



In this work mode, the battery will be charged at the set time and will never discharge when the grid is on. You can also choose whether to charge from the grid or not.



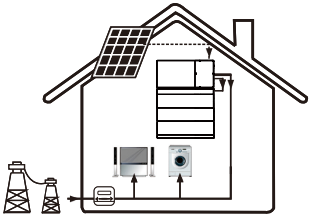
Work mode: Time of Use mode

The Time of Use mode applies to areas that have different electricity prices depending on the day, time and season.

Priority: load > battery > grid (when discharging)
Priority: battery > load > grid (when charging)

The power generated from PV will be used to supply the local loads first, then proceed to charge the battery bank. The excess power will be exported to the public grid.

Charges the battery during two available charging windows from PV or grid (if enabled), then functions as in Self-use mode.



Work mode: Demand Mode

The demand mode is suitable for the areas with high Critical Peak Pricing or areas with limited capacity of distribution transformers.

In this mode, battery discharges during two discharge windows to limit demand charge (if enabled) (Similar to Time of Use mode but on Demand Mode the system will allow grid consumption up to a threshold limit defined by the user.)

3 Solution

3.1 System Components

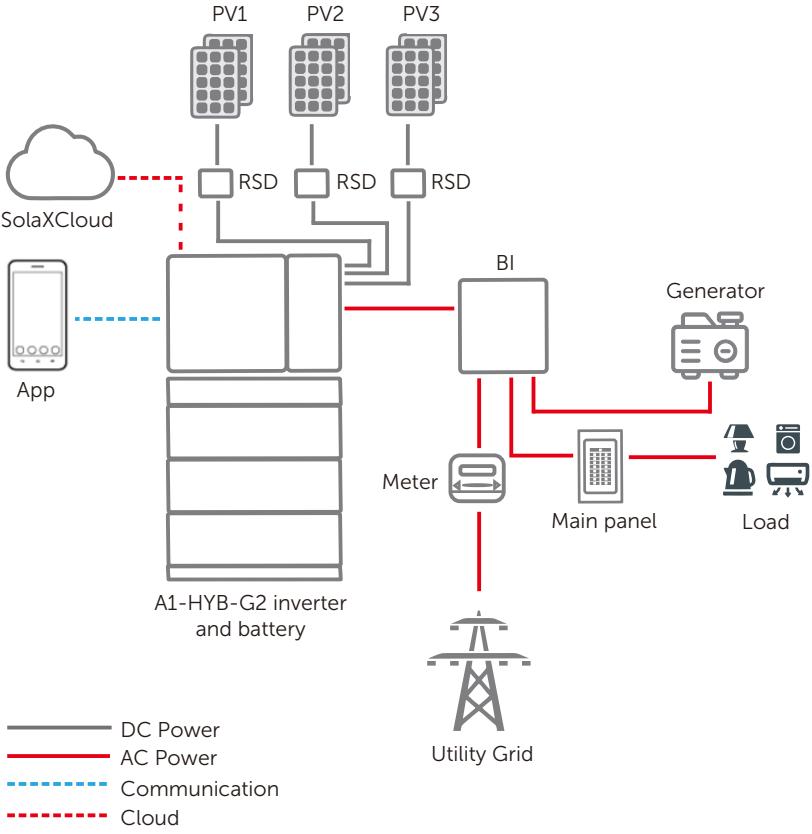
A1-HYB-G2 series inverter can provide back up solution with BI/BI PRO and none back up solution without BI.

- **Back up solution with BI/BI PRO**: The system can use batteries to power critical loads during a grid outage and realize automatic switching between grid-connected mode and off-grid mode by using backup interface (BI).
- **None back up solution without BI:**
  - » **PV Only**: The PV Only mode allow the A1-Hybrid inverter to operate without BI and batteries.
  - » **Grid Support**: The Grid Support mode allow the A1-Hybrid inverter to operate without BI.

The general system components are as follows.

Item	Description
A1-HYB-G2 inverter	The A1-HYB-G2 series inverter manages system energy.
PV Array	The PV array works in MPPT mode. For 3.8 kW, 5.0 kW and 6.0 kW inverter, the number of PV string is two. For 7.6 kW inverter, the number of PV string is three.
RSD	The RSD provides an automatic disconnect of residential or small commercial PV systems, fully compliant with the rapid shutdown requirements of National Electric Code (NEC), ANSI/NFPA 70 Sections 690.12.
Battery (Optional)	The A1-HYB-G2 series inverter should be coupled a high voltage battery. The battery communicate with inverter via BMS and must comply with the specification of UL 1973.
Backup Interface (Optional)	The backup interface supports multi-inverter parallel connection, controls disconnection of house loads from the grid in case of a power outage and integrates the energy meter, microgrid interconnection device and generator to enable grid-tied solar backup.
SolaXCloud	SolaXCloud is an intelligent, multifunctional monitoring platform that can be accessed either remotely or through a hard wired connection. With the SolaXCloud, the operators and installers can always view key and up to date data.
Grid Meter (Optional)	The meter is a in an outdoor rated enclosure to monitor the home grid interconnect point.

3.2 Back up solution with BI

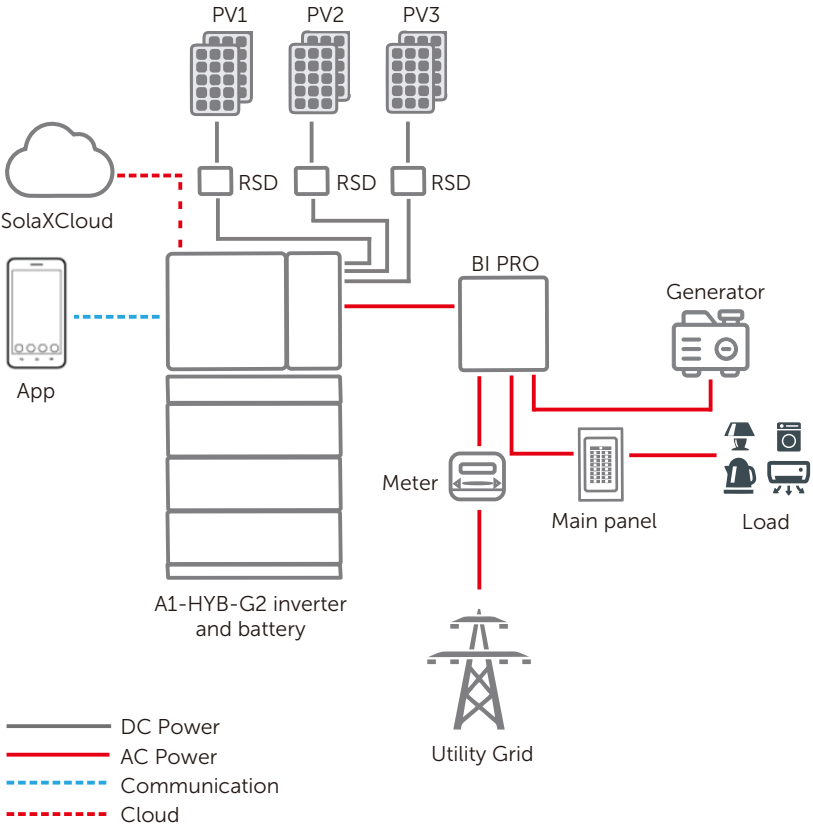


NOTICE!

- If the packaging carton of BI is **labeled with "Version 2"**, please refer to "A1-ESS-G2 (A1-BI-200-G2 V2) Installation Guide" by scanning the QR code.

- If the packaging carton of BI is **not labeled with "Version 2"**, please refer to "A1-ESS-G2 System (A1-BI-200-G2) Installation Guide" by scanning the QR code.

3.3 Back up solution with BI PRO

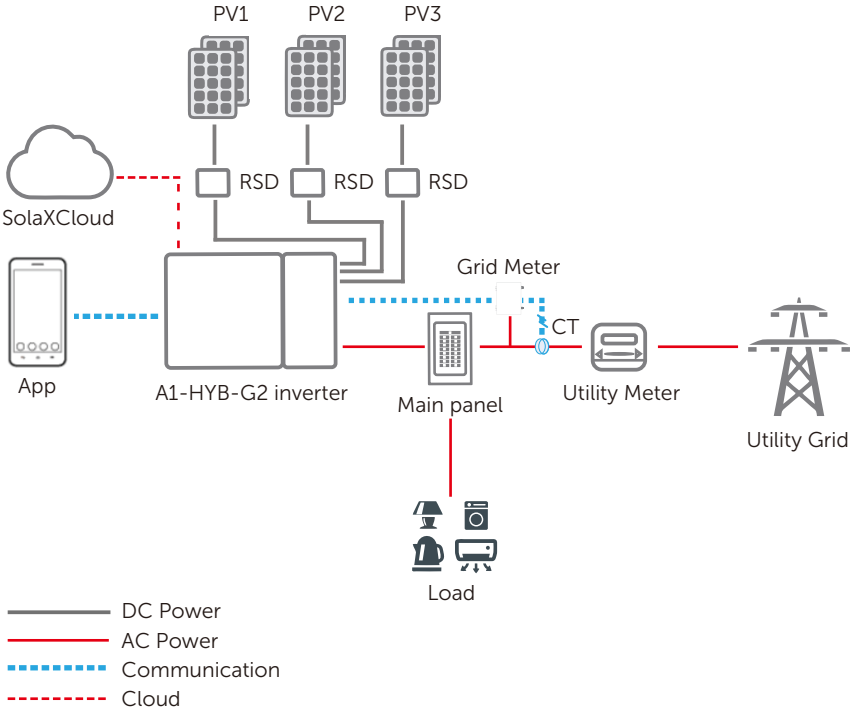


NOTICE!

- Please refer to "A1-ESS-G2 (A1-BI PRO-200-G2) Installation Guide" by scanning the QR code.

3.4 None back up solution without BI

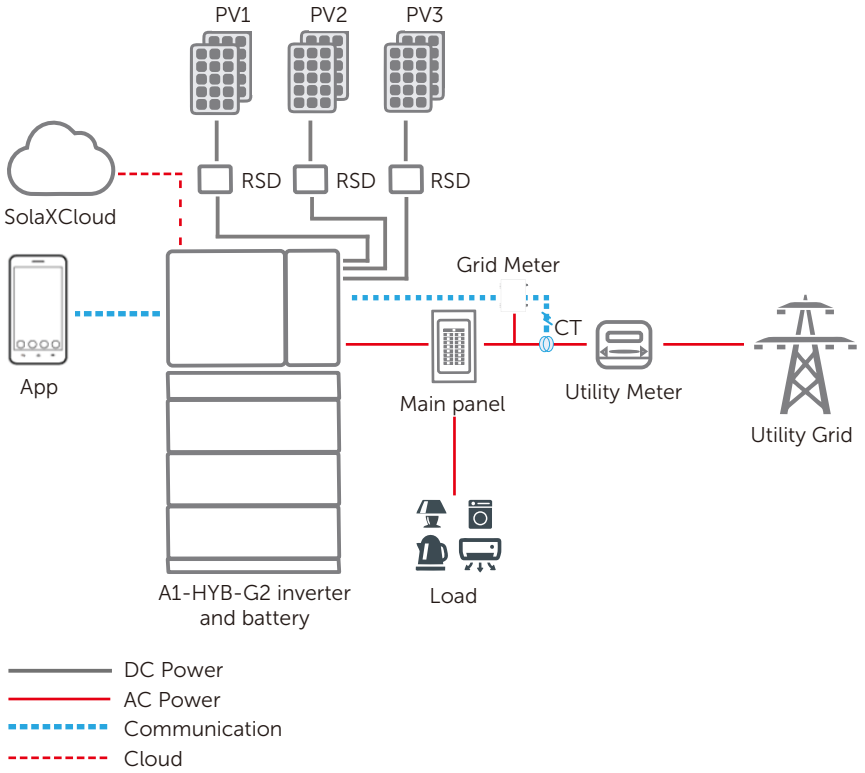
3.4.1 PV Only Scenario



NOTICE!

- For PV Only scenario, the inverter needs to be used with solar kit. Please refer to "SolaX PV Only Mode User Manual" by scanning the QR code.

3.4.2 Grid Support Scenario



NOTICE!

- For Grid Support scenario, the inverter needs to be used with Grid Support kit. Please refer to "SolaX Grid Support Mode User Manual" by scanning the QR code.

4 Monitoring Connection

The inverter provides a **Dongle** terminal, which can transmit data of the inverter to the monitoring website via WiFi / WiFi+LAN / WiFi+4G Dongle (Optional). (Purchase products from SolaX if needed.)

Dongle connection procedure

a. Plug the dongle to the inverter.

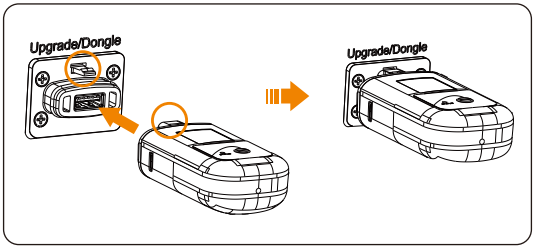


Figure 4-1 Dongle connection procedure

5 System Commissioning

NOTICE!

- If the solution does not include the battery, the following steps regarding the battery can be ignored.

5.1 Checking before power-on

Step 1: Ensure the system is properly mounted.

Step 2: Ensure all grounding wire to the grounding bus-bar are connected properly.

Step 3: Ensure all the communication wirings are connected properly.

Step 4: Ensure all the DC wirings and AC wirings are completed.

Step 5: Ensure the CT is connected properly.

Step 6: Ensure the battery is connected properly.

Step 7: Ensure all loads are connected properly, and that the combined ratings of all backed-up loads are within the rating capacity of the system without grid support.

Step 8: Ensure the PV arrays are connected properly.

Step 9: Ensure the battery has been turned off, and all the indicator light of the battery are off.

5.2 Powering on the System

Step 1: Before closing any wiring cover, please take photos of the completed wiring in the inverter, battery and BI.

Step 2: Install the wiring box cover of the inverter and secure it firmly with the original screw.

Step 3: Install the internal cover of the BI.

Step 4: Switch on the BI power button (turn to "AUTO").

Step 5: Switch on the AC circuit breakers for the BI and inverter.

Step 6: Make sure that the battery has been turned off, and all the indicator light of the battery are off.

Step 7: Switch on the circuit breaker of battery.

Step 8: Switch on the PV DC switch of the inverter (turn to "ON" position).

Step 9: Press the battery POWER button to start the battery.

Step 10: Install the outer cover of the BI.

The system will start up. Check the status of indicators on inverter, battery and BI for more information on the codes displayed for error and warning messages, refer to "6 Indicator Light and Button of Inverter".

Step 11: Download and configure the APP.

NOTICE!

- Before you switch on the circuit breaker of the battery, make sure that the battery has been turned off, and all the indicator light of the battery are off. If the battery has been turn on, then you switch on the circuit breaker of the battery, the inverter and the battery may be damaged.

NOTICE!

- If the left indicator do not turn green please check the below points:
  - All the connections are correct.
  - All the external breakers are switched on.
  - The DC switch on the inverter is in the "ON" position.

6 Indicator Light and Button of Inverter

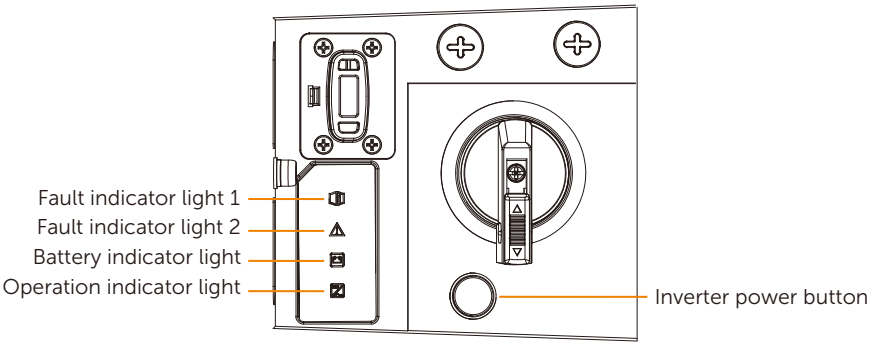


Table 6-1 Indicator light and button of inverter

Fault LED 1 and Fault LED 2

LED1 flashes green (0.5s on, 0.5s off) and LED2 is red when arc fault occurs.
LED1 flashes green (2s on, 2s off) and LED2 is red when ground fault occurs.
LED1 flashes green (0.5s on, 0.5s off) and LED2 is off when PV voltage fault occurs.
LED1 flashes green (2s on, 2s off) and LED2 is off when Grid error occurs.
LED1 flashes green (0.5s on, 0.5s off) and LED2 flashes red (0.5s on, 0.5s off) when firmware upgrading is ongoing.
LED1 is green and LED2 is red when other fault occurs.
LED1 is off and LED2 is off when no fault occurs.



Operation LED (Free / Secondary)

Green when the inverter is in normal status or in backup status.

Flashing green (1s on, 1s off) when the inverter is in waiting or checking status.

Off when the inverter has a fault.



Operation LED (Primary)

Green for 2s and then quick flashing green for 1s (0.2s on, 0.2s off) when the inverter is in normal or backup status.

Flashing green for 2s (1s on, 1s off) and then quick flashing green for 1s (0.2s on, 0.2s off) when the inverter is in waiting or checking status.

Off for 2s and quick flashing green for 1s (0.2s on, 0.2s off) when the inverter has a fault.



BAT LED

Green when the battery communication is normal and working.

Flashing green (1s on, 1s off) when the battery communication is normal and the battery is in idle status.

Off when the battery does not communicate with inverter.

All LEDs

All LEDs flash (0.5s on, 0.5s off) when firmware upgrading has been completed but the U drive is still connected.
All LEDs will be back to the normal state if the U drive is unplugged after the upgrading finished.



Inverter power button

Press the button for 0.5 second: Clear EPS OverLoad Fault / EPS Bat Power Low / BI_TransformerImbalanceHighFault / BI_VoltImbalanceFault / BatBreakOpen Fault.
Press the button for 1 second: Turn on the inverter if it has been turned off.
Press the button for 1 second: Turn off the inverter if it has been turned on. The control circuitry remains powered up.
Press the button for 5 seconds: Run arc self-test if there is no arc fault.
Press the button for 5 seconds: Clear arc fault if arc fault occurs.

7 Operation on SolaX App and Web

7.1 Downloading and Installing App

Method 1: Scan the QR code below to download the App. The QR codes are also available on the login page of our official website (www.solaxcloud.com), and the installation guide of the dongle.

Figure 7-1 QR code

Method 2: Search for **SolaXCloud** in Apple Store App or Google Play, and then download the App.

7.2 Operation Guide on the SolaXCloud App

For instructions on the related operations, see the online documents on the SolaXCloud App.

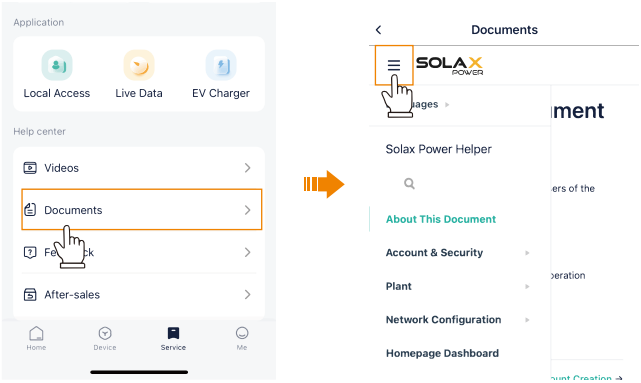


Figure 7-2 Online help on SolaXCloud

NOTICE!

- The screen shots in this chapter correspond to the SolaXCloud App V6.2.0, which might change with version update and should be subject to the actual situations.

7.3 Operations on SolaXCloud Web Page

Open a browser and enter www.solaxcloud.com to complete registration, login, add site and other related operations according to the guide.

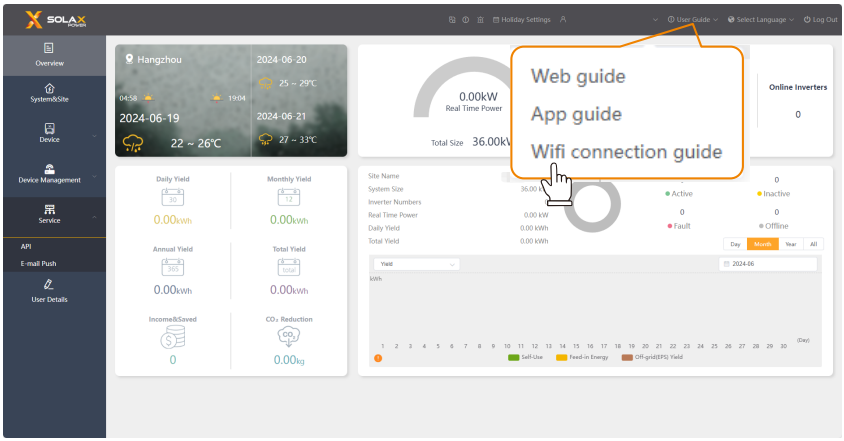


Figure 7-3 Guide on web page

8 Troubleshooting and Maintenance

8.1 Power Off

NOTICE!

- If the solution does not include the battery, the following steps regarding the battery can be ignored.

Step 1: If the system is on, press the inverter POWER button for 1 second to turn off the inverter.

Step 2: Switch off the PV DC switch of the inverter (turn to "OFF" position).

Step 3: Press the battery POWER button to turn off the battery.

Step 4: Switch off the circuit breaker of the battery.

Step 5: Switch off the AC circuit breakers for the BI and inverter.

8.2 Troubleshooting

This section contains information and procedures for solving possible problems with A1-HYB-G2 inverters, and provides you with troubleshooting tips to identify and solve most problems that could occur with A1-HYB-G2 series inverters.

This section will help you narrow down the source of the problems you may encounter. Please read the following troubleshooting steps.

Check warnings or fault messages on the SolaXCloud. If a message is displayed, record it before doing anything further operation.

Table 8-1 Troubleshooting list of inverter

Faults	Diagnosis and solution
AFD Self Check Fault	AFD Self Check • Please check if the AFDI module connects normally. • Contact SolaX for help.
Arc Detect Fault	DC Arc occurs or DC Arc Check Fault • Please check if there is any visible arc vestige firstly. • Clear the PV input and solar battery board connects normally. • If Arc is detected five times in one hour, please manually clear Arc. Otherwise, it will re-connect to grid in five minutes.

Faults	Diagnosis and solution
PV Conn Dir Fault	PV Reverse Connection Fault • Re-connect the PV correctly.
BAT Volt Fault	Battery Voltage Over high or Over low Fault • Check if the battery input voltage is within the normal range. • Contact SolaX for help.
E-Stop Fault	Emergency stop Activated or Inverter Emergency Off
BI Comm Fault	Communication Fault between Inverter and BI • Check if the RS485 communication cable of BI connects to communication board of inverter. • Contact SolaX for help.
Update File Fail	File Upgrade Fault • Check if the file and the folder are correct. • Contact SolaX for help.
Udisk Update Fault	U Disk Upgrade Fault • Check if the U disk is correctly plugged and the file is correct. • Contact SolaX for help.
Meter Fault	Meter Communication Fault • Check if the communication cable between inverter and BI connects normally. • Contact SolaX for help.
BMS_Lost	BMS Communication Lost • Check the communication connection between the battery and the inverter. • Contact SolaX for help.
Update Fault	Software Upgrade Fault • Check if the communication cable between inverter and BI and re-upgrade the software. • Check the communication cable between control board and communication board and re-upgrade the software. • Check the communication cable between inverter and battery. • Contact SolaX for help.
PV Volt Fault	PV Voltage Out of Normal Range • Decrease the PV voltage. • Contact SolaX for help.
DCI OCP Fault	DCI over current protection Fault • Contact SolaX for help.
DCV OVP Fault	DCV EPS over voltage protection Fault • Contact SolaX for help.

Faults	Diagnosis and solution
Bat Current Imbalance	The Firmware Fault of Battery Charge • Contact SolaX for help.
Bat ConDir Fault	The Positive and Negative Pole of Battery Connected Reversely • Re-connect the battery.
InvEEPROMFault	Inverter EEPROM Fault • Contact SolaX for help.
EPSBatPowerLow	Battery Power Low in EPS Mode • Turn off high power device and charge for the battery.
EPS OverLoad Fault	Over Load in EPS Mode. • Turn off some device and clear the error.
Grid Over Freq Fault	Grid Frequency Out of Range • System will reconnect if the utility is back to normal. • Contact SolaX for help.
Grid Over Volt Fault	Grid Voltage Out of Range • System will reconnect if the utility is back to normal. • Contact SolaX for help.
Grid Relay Fault	GIRD Relay Fault • Contact SolaX for help.
Grid Under Freq Fault	Grid Frequency Out of Range • System will reconnect if the utility is back to normal. • Contact SolaX for help.
Grid Under Volt Fault	Grid Voltage Out of Range • System will reconnect if the utility is back to normal. • Contact SolaX for help.
Bus Volt Fault	Bus Voltage Out of Normal Range • Contact SolaX for help.
Sample Fault	Gird Frequency or Voltage Sample Fault • Contact SolaX for help.
Inter Com Fault	Internal Communication Fault • Check the connection between inverter and BI connects normally. • Contact SolaX for help.
Isolation Fault	Isolation Fault • Check if the insulation of electric wires are damaged or too wet. • Contact SolaX for help.
Mgr EEPROM Fault	Manager EEPROM Fault • Contact SolaX for help.

Faults	Diagnosis and solution
Other Device Fault	CPU Self-check Fault or Internal Flash Fault or RAM Fault • Contact SolaX for help.
UnderTemp Fault	Temperature Below the Limitation or Temperature Sensor Fault • Contact SolaX for help.
Over Temp Fault	Temperature over the limitation • Check if the environment temperature is over limitation. • Check if the internal fan is fault. • Contact SolaX for help.
RC OCP Fault	Leakage Current Fault • Check if the insulation of electric wires are damaged or too wet. • Contact SolaX for help.
Bat Break Open Fault	Battery Break Open Fault • Check if the circuit break of battery is open.
Fan Fault	Inverter Internal Fan Fault • Contact SolaX for help.
SW OCP Fault	Battery Charge and Discharge Over Current Fault or PV Over Current Fault or Inverter Over Current • Contact SolaX for help.
RCD Fault	Residual Current Device Sensor Fault • Contact SolaX for help.
Rtc Fault	Rtc Fault • Contact SolaX for help.
SoftVerFault	Program Write Fails or Incorrent Program Written in • Re-write the program • Contact SolaX for help.
Grid Lost Fault	Grid Lost Fault • System will reconnect if the utility is back to normal. • Check if the grid is normal.
TZ Protect Fault	The Firmware of PV or Inverter or Battery Over Current Fault • Contact SolaX for help.

Contact the SolaX customer support for further assistance. Be prepared to describe details of your system installation and provide model and serial number of the unit.

8.3 Maintenance

8.3.1 Maintenance Routines

Regular maintenance is required for the inverter. Please check and maintain the following items based on the instructions below to ensure the optimal performance of the inverter. For inverters working in inferior conditions, more frequent maintenance is required. Please keep maintenance records.

⚠ WARNING!

- Only qualified person can perform the maintenance for the inverter.
- Only spare parts and accessories authorized by SolaX can be used for maintenance.

Table 8-2 Proposal of maintenance

Item	Check notes	Maintenance interval
Inverter	• Check if the indicators of the inverter are in normal state, check if the keys of the inverter are in normal state. • Check that if the input and output wires are damaged or aged.	Every 6 months
DC Switch	• Check the installation for signs of overload, overheating, and that the terminals do not exceed the limit of 167°F (75°C) under full load. • By operating the switch a few times (5x), the contacts will clean themselves and the switch will have a longer life.	Every 12 months

8.3.2 Firmware Upgrading

The inverter firmware can be upgraded via a U-disk.

Upgrade Preparation

Ensure the inverter is powered on.

The inverter must be connected to the PV panels and the battery must be operating while the firmware upgrade is in progress.

Please prepare a PC and an U-disk.

⚠ WARNING!

- Make sure the PV input power is more than 150 V (operate the upgrade on a sunny day), otherwise it may result in serious failure during upgrading.

Upgrading Steps

Step 1: Contact our service support to get the update files, and extract it into your U-disk as follow:

- "update\ARM\618.XXXXX.XX_A1_Hybrid_G2_Manager_VX.XX_XXXX.usb"
- "update\DSP_Primary\618.XXXXX.XX_A1_Hybrid_G2_Primary_VX.XX_XXXXXX.usb"
- "update\BI\618.XXXXX.XX_A1_Hybrid_G2_BI_VX.XX_XXXX.usb"
- "update\BMS_Primary\618.XXXXX_TP001_T50_M_VX.XX_XXXXXXXX.bin"
- "update\DSP_Secondary\618.XXXXX.XX_A1_Hybrid_G2_Secondary_VX.XX_XXXXXX.usb"

The software version can be found in the "Me" display of APP. Check the software version from the "Me" screen as follows by accessing the "**Me > About**" display.

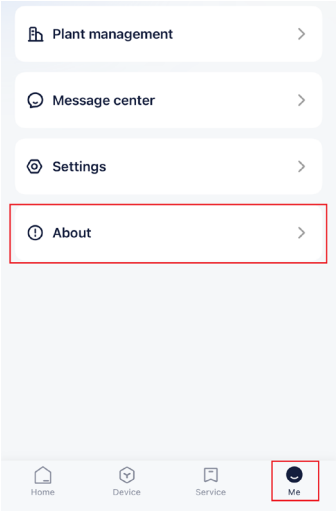


Figure 8-4 Check the software version

WARNING!

- Make sure the directory is in strict accordance with the above form!
- Do not modify the program file name, or it may cause the inverter to stop running!

Step 2: Switch on the inverter; make sure the operation indicator light is blinking and other indicator lights are off before inserting USB. Then insert the U-disk into the WiFi port on the right side of the inverter.

Step 3: Please refer to "6 Indicator Light and Button of Inverter" for the indicator status when upgrading and upgrading finished.

Table 8-3 Time needed for upgrading

Upgrading File	Time Needed for Upgrading
ARM	15-20 s
BI	2.0-2.5 min
BMS_Primary	2.0-2.5 min
DSP_Primary	2.5-3.0 min
DSP_Secondary	1.0-1.5 min

Step 4: Remember to pull out the U-disk.

WARNING!

- If upgrading is failed, ensure the inverter is steadily powered on and re-insert the U-disk.

9 Decommissioning

9.1 Disassembling the Inverter

Step 1: Disconnect the inverter from DC Input, AC output, BI and battery.

Step 2: Wait for 5 minutes for de-energizing.

Step 3: Disconnect communication and optional connection wires.

Step 4: Remove the inverter from the wall bracket.

Step 5: Remove the bracket if necessary.

9.2 Packaging the Inverter

If possible, always pack the inverter in its original carton and secure it with tension belts. If the original package is no longer available, you can also use an equivalent carton that meets the following requirements.

- Suitable for the weight of product.
- Easy to carry.
- Be capable of being closed completely.

9.3 Storage and Transportation

Store the inverter in a dry environment where ambient temperature stays between 13°F/-25°C and 167°F/75°C. Take care of the inverter during the storage and transportation, keep less than 5 cartons in one stack.

9.4 Disposing of the Inverter

Do not dispose of faulty inverters or accessories together with household waste. Please accordance with the disposal regulations for electronic waste which is applied at the installation site at that time.

10 Technical Data

10.1 PV Input

Model	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
Max.recommended PV power [W]	7600	10000	10000	15200
Max.MPPT power [W]	5700	7500	9000	11400
Max.DC voltage [V]	550			
Norminal DC operating voltage [V]	360			
Max. input current [A]	A:16/B:16			A:16/B:16/C:16
Max. short circuit current [A]	A:20/B:20			A:20/B:20/C:20
MPPT voltage range [V]	90–500			
MPPT voltage range [V](full load)	176–500	232–500	278–500	235–500
Start input voltage [V]	120			
No. of MPP trackers	2			3
Strings per MPP tracker	A:1/B:1			A:1/B:1/C:1
DC disconnection switch	Yes			
AFCI	Yes			
Max. inverter backfeed current to the array [A]	27 A rms / 1 cycle, 400 A peak / 0.02 ms			

10.2 AC Input/Output

Model	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
Norminal AC power [VA]	3307/3816	4347/5016	5200/6000	6594/7608
Max. apparent AC power [VA]	3307/3816	4347/5016	5200/6000	6594/7608
Rated grid voltage [V]	208/240			
Rated grid Frequency [Hz]	50/60			
Norminal AC current [A]	15.9	20.9	25	31.7
Max. Output Continuous current [A]	15.9	20.9	25	31.7

Model	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
Maximum output fault current and duration [A/ms]	48/90			
Maximum output fault peak current and duration [A/ms]	515/5			
Displacement power factor	0.8 leading to 0.8 lagging			
Total harmonic distortion (THD, rated power)	<3%			
Parallel operation	Yes			
Maximum output overcurrent protection [A/P]	20/2	25/2	30/2	40/2

10.3 General Data

Model	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
Dimensions (WxHxD) [in/mm] ①	33.5 × 17.9 × 5.8 / 850 × 455 × 148			
Weight [lb/Kg] ①	75 / 34			
Cooling concept	Natural convection with internal fan			
Topology	Transformerless			
Communication	RS485, CAN, WiFi (optional) / 4G (optional), Dry Contact			
Revenue Grade Data, ANSIC12.20	0.5% revenue grade (optional)			

Note:
① : The Dimensions and Weight data is for an inverter containing a metal cover.

10.4 Battery Input/Output

Model	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
Battery type	Lithium (LFP)			
Input/output voltage range [V]	75–450			
Rated input/output voltage [V]	150			
Maximum input power [W]	4060	5336	6383	8094
Maximum output power [W]	3816	5016	6000	7600
Maximum Input/output current [A]	54			
Reverse-Polarity Protection	Yes			
Cycle efficiency charging to discharging (PCS Only)	88.5%	90.5%	91.5%	92.5%

10.5 Efficiency, Power Consumption and Standard

Model	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
CEC Weighted Efficiency (PV to GRID)	97.5%			
Maximum Inverter Efficiency	98.0%			
Power consumption				
Internal consumption(night) [W]	<3			
Standard				
Safety and Certifications	UL 1741, UL 1741 SA, UL 1741 SB, UL 1741 PCS, UL 1699B, UL 1998, UL 991, CSA C22.2 No.107.1-16, CSA C22.2 No.292-18, CSA C22.2 No.330-17, IEEE Std 1547-2018, IEEE 1547-2019, IEEE Std 1547.1-2020, Rule 21, HECO SRD V2.0			
EMC	FCC part 15 class B			
RoHS	Yes			

10.6 Environment Limit

Environment limit	A1-HYB-3.8K-G2	A1-HYB-5.0K-G2	A1-HYB-6.0K-G2	A1-HYB-7.6K-G2
Protection class	NEMA 4X			
Operating Temperature Range [°F (°C)]	-13 to +140 (-25 to +60)			
De-rating start temperature [°F (°C)]	113 (45) or above			
Storage temperature Range [°F (°C)]	-13 to +167 (-25 to +75)			
Humidity	0%–95% RH			
Altitude [ft (m)]	9843 (3000) MAX			
Noise emission(typical) [dBA]	< 30			
Overvoltage category	IV (electric supply side), II (PV side)			

Warranty Registration

Please visit the website: https://www.solaxcloud.com/user-center/ to complete the warranty registration. For more detailed warranty terms, please visit SolaX official website: www.solaxpower.com.

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