FranklinWH System User Manual

aPower 2, SKU: APR-10K15V2-US;

Power 1.3, SKU: APR-05K13V1-US; aPower S, SKU: APRS-10K15V1-US

aGate X, SKU: AGT-R1V2-US; AGT-R1V3-US

Meter Adapter Controller, SKU: MAC-R1V1-US

July 24, 2026

Experience Whole Home Energy Freedom

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Please visit *FranklinWH Support* for the latest FranklinWH documents.

All brands and trademarks mentioned in this document are the property of their respective owners, and their use in this document does not imply the sponsorship or recognition of their products or services.

Please read this document carefully to ensure the best reliability of the product and your warranty eligibility. For further information about the warranty, please refer to the ***FranklinWH Limited Warranty***.

Information or recommendations in this document constitute any express or implied warranty.

Product Information

FranklinWH System is composed of aPower, aGate, Meter Adapter Controller (hereinafter referred as MAC 1) and other electrical components.

FranklinWH Energy Storage Inc. (FranklinWH) reserves the right to make any improvements to the product, and the contents in this document shall be subject to updates without further notification.

All images and pictures provided in this Manual are only for demonstration purposes and may differ in detail from the product, based on the product version.

Feedback

If you have any questions or comments, please send us an email at: *service@franklinwh.com*

Disposal of Scrapped Products

Scrapped products (including their internal chemicals and electrical materials) should not be disposed of with household waste. Please refer to your local laws and regulations regarding disposal.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

MPE caution (if an FCC certified RF module is inserted in and the separation distance is indicated in the FCC grant of RF module)

To satisfy FCC / IC RF exposure requirements, a separation distance of 8in. (20 cm) or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1) L'appareil ne doit pas produire de brouillage;

2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Safety Statements

This Guide includes important information about the FranklinWH System. Please read this Guide carefully before installation, maintenance, or use. Failure to follow any instruction in this Guide may lead to risks of equipment damage, electric shock, severe personal injury and even death, and may also void the warranty (*FranklinWH Support*).

Only FranklinWH certified and qualified technicians may install, maintain, or replace equipment or wiring.

The safety messages labeled DANGER, WARNING, CAUTION, and NOTE are supplemental to the safety instructions in this guide and do not address all possible hazards or conditions.

Safety Symbols

Type	Symbol	Definition
ANSI Z535 Safety Alert Symbols		
DANGER		Indicates a hazardous situation that, if not avoided, will result in serious injury or death.
WARNING		Indicates a hazardous situation that, if not avoided, could result in serious injury or death.
CAUTION		Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTE		Indicates information considered important, but not related to personal injury.
IEC Standard Graphical Symbols		
PROTECTIVE GROUNDING TERMINAL		This indicates the position of grounding connection on the equipment.
WAIT TIME		It means there are electric shock risks inside the equipment, please wait 5 minutes before proceeding.
ELECTRONIC DEVICE: DO NOT THROW AWAY		Scrapped electronic products and batteries cannot be disposed of together with household waste. Please consult your local laws and regulations for further information.

Safety Instructions

Electrical Hazards	**DANGER** Electrical shock and chemical exposure hazards. Will result in electric shock, burns, serious injury, or death. Do not open the cabinet or disassemble the product without specific direction from the FranklinWH service team.
Risk of fire and explosion hazard	**WARNING** Fire hazard. Excessive temperatures, flammable materials, or blocked ventilation could result in fire, serious injury, or equipment damage. Keep the ambient temperature below 122° F (50° C), keep the FranklinWH product away from flammable materials, and do not block the cooling system or ventilation openings.
Risk of battery hazard	**DANGER** Battery thermal runaway, leakage, smoke, or fire. Will result in fire, explosion, toxic fume exposure, serious injury, or death. If the aPower battery is leaking electrolyte, smoking, or catching fire, and if it is safe to do so, disconnect the AC power from the FranklinWH System and turn off the aPower switch to stop charging and discharging the battery.
Risks of installation and handling hazards	**NOTE** During the transport and handling of aGate, aPower units or other FranklinWH devices, extreme care is required to avoid dropping, bumping, stomping, or inverting the equipment. To prevent potential damage, please keep all units in their packaging until ready to install.
Risks associated with environmental and site hazards	**WARNING** Proximity to heat sources or ignition sources during installation. Fire or equipment damage may result. The installation site should be away from heating devices, or any source of heat and/or fire.
	WARNING Presence of flammable or explosive materials near the installation area. Fire or equipment damage may result. The installation area should be away from flammable and explosive materials.

	WARNING Foreign objects entering aPower, aGate, or other FranklinWH devices. Equipment damage, short circuit, or malfunction may result. Prevent foreign objects from entering any aPower, aGate, or other FranklinWH devices.
	WARNING Outdoor installation, maintenance, or handling during severe weather conditions. Electric shock, fire, equipment damage, or serious injury may result. It is strictly forbidden to install, maintain, or handle the system outdoors during bad weather conditions, such as lightning, thunder, rain, snow, or strong winds.
	WARNING Presence of overhead or nearby water sources at the installation site. Water ingress may result in equipment damage, electric shock, or fire. The installation site should have no water source above it or in the vicinity, including water pipes, shower, faucet, and containers of liquids.
Critical Safety Practices	**WARNING** Unauthorized disassembly, repair, modification of aGate/aPower, or opening of the battery pack chamber. Serious safety hazards and voidance of product warranty. Do not disassemble, repair or modify aGate/aPower or other FranklinWH devices without FranklinWH authorization. It is prohibited to open the battery pack chamber in any situation.
	WARNING Working on or operating the system alone. Potential safety risks with no on-site assistance in case of emergencies. Always ensure another person is present to provide assistance during system operation or servicing.

	WARNING Operating damaged or malfunctioning devices. Personal injury and equipment failure may occur. If a FranklinWH device is found damaged (except for minor defects in exterior painting) after it is unboxed or malfunctioning on installation, please do NOT operate it and contact service support at +1 888-851-3188 or email *service@franklinwh.com* for assistance.
	NOTE Do NOT use paint on any part of a FranklinWH product, whether internal or external, especially on the protective cover except for exterior paint that has been worn out or damaged in the transportation, installation, or maintenance process. The damaged part can be repaired using a water-based paint or topcoat of the same color.

Warranty Statement

To meet warranty requirements, the FranklinWH System must be installed and operated properly according to the instructions in related FranklinWH documents.

To secure the full warranty (aGate: 12 years, MAC 1: 15 years, aPower 1.3: 12 years, aPower 2: 15 years, aPower S: 15 year), the FranklinWH System must be reliably connected to the internet to access remote services provided by FranklinWH. If an internet connection is not established or is interrupted for an extended period, and FranklinWH is unable to contact you, the warranty may be limited to less than 5 years.

The operation of the FranklinWH System requires an Internet connection. Extended offline operation may result in a voided warranty.

Please visit us at *FranklinWH Support* to learn more about the warranty.

Service and Maintenance

Service

- Keep leaves and other foreign materials away from the aPower batteries. Especially keep them from the top and between the units and the back wall.
- Keep the aPower away from direct sunlight.
- Keep all FranklinWH equipment in an environment with acceptable temperature and humidity.
- Clean the equipment surface using a soft cloth. If water is needed, please make sure the cloth is slightly damp (water only) and the equipment is completely de-energized.
- Don’t block the vents.
- Keep all units away from flammable, explosive, and/or poisonous materials.
- Keep the equipment operating within the allowed power range and avoid overloading.
- Make sure all cables are wired reliably, and all connectors are free of stress.
- Keep the equipment away from hazardous zones and potential risks.
- A nearby smoke detector is recommended if the equipment is installed indoors.

Maintenance

- Please check the running status of your equipment on your mobile app. If an alarm is found, please contact the qualified service group.
- Please regularly check that the aPower button status is consistent with the FranklinWH App setting.
- Never attempt to repair the system by yourself. Contact the professionals qualified by FranklinWH.

System Overview

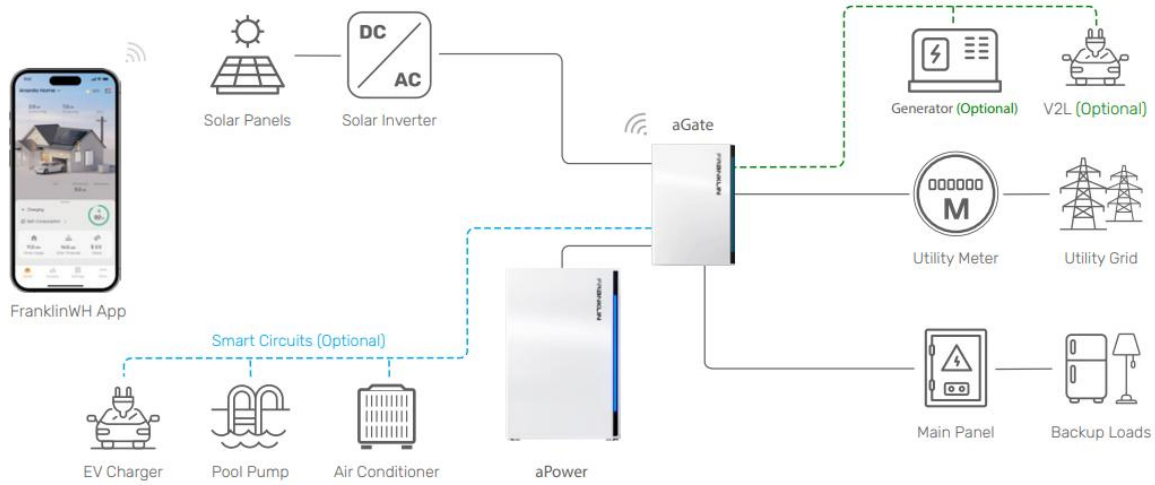
The FranklinWH System is a whole home energy solution for residential users. The two key components are the aGate or Meter Adapter Controller (MAC 1), an energy management unit for whole-home power control, and the aPower, an energy storage battery with a built-in inverter. Users can monitor and operate their FranklinWH Systems remotely via the FranklinWH mobile phone app.

System Design

The FranklinWH System backup options include whole-home backup and partial backup. Load selection for different options must be completed during the system design phase.

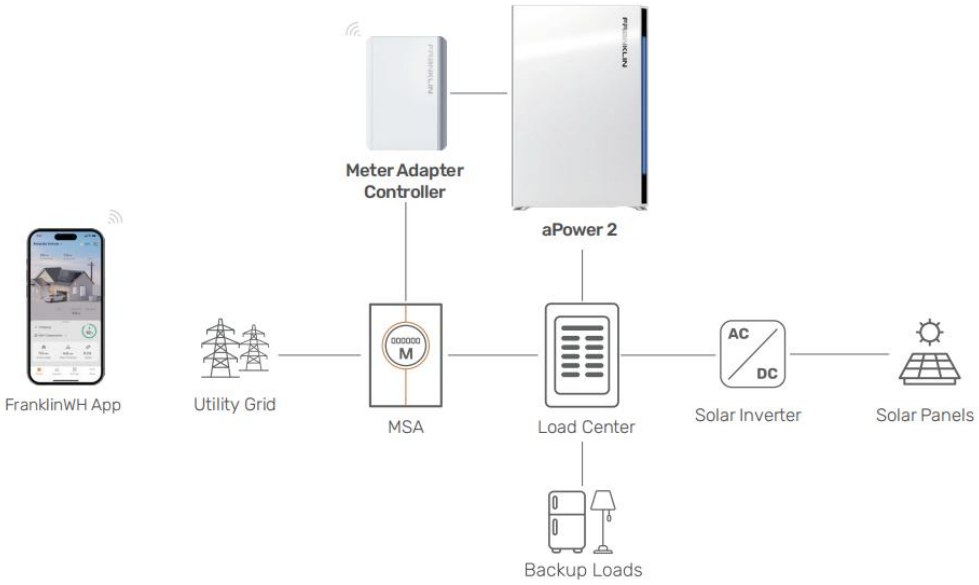
Whole-home Backup (aGate option)

In the whole-home backup option, all household loads, except for Smart Circuit loads, are connected via the Main Panel to the backup port of the aGate. If the grid fails, the FranklinWH System power can support all household energy loads.



Whole-home Backup (MAC option)

MSA are currently designed to support whole-house power backup specially. If the grid fails, the FranklinWH System can power all household energy loads and maintain full household functionality.

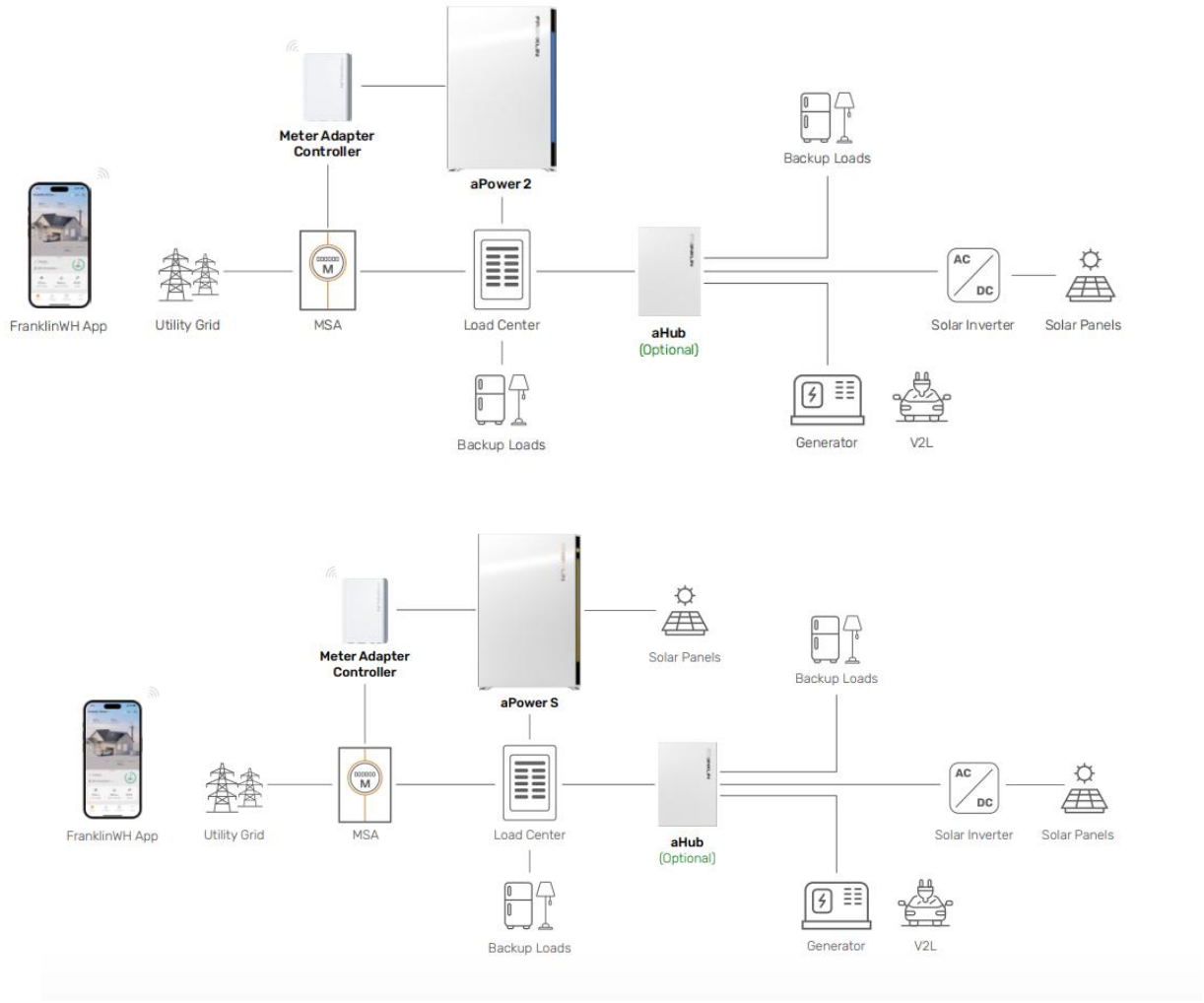


NOTE

- All the AC PV devices that connected to the main distribution panel must adhere to all applicable grid connection standards and regulations. Additionally, its rated power capacity should not exceed the total maximum charging power of the configured aPower.
- When an aPower 2 is connected to the system, the system for whole-home backup is as shown above. When an aPower S is connected to the system, DC PV can be connected to aPower S.
- AC Coupling is called AC PV.
- DC Coupling is called DC PV.

Whole-Home Backup (MAC & aHub option)

The MSA is designed for whole-home backup power. When paired with the MAC & aHub, the FranklinWH System can supply power to all household energy loads during grid failures, while also enabling smart control of aHub-connected devices. It also supports connection to generator/ V2L as emergency power supply, providing more options and a better experience for users.

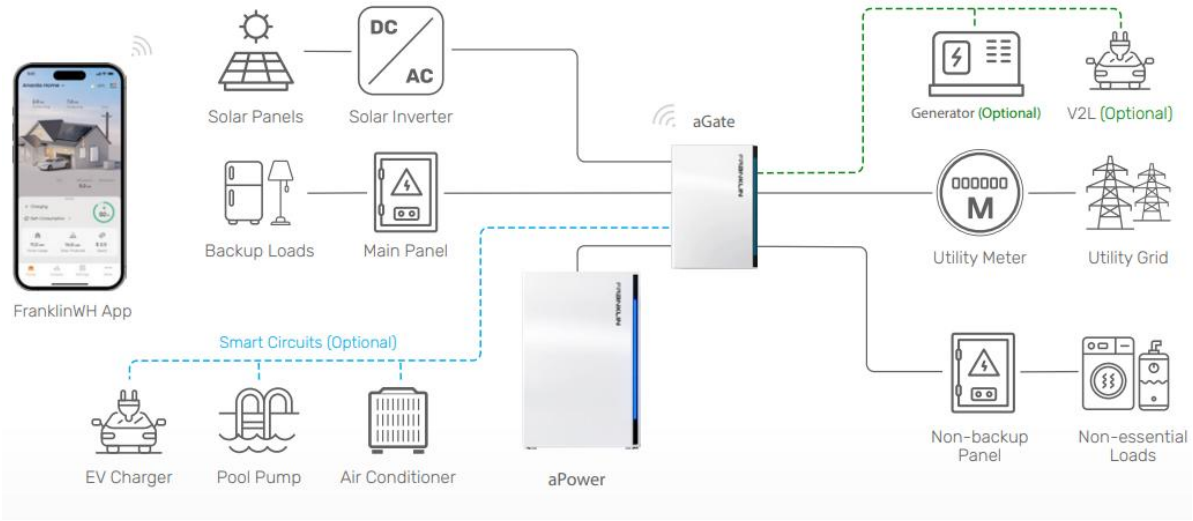


NOTE

- The main panel must comply with all applicable grid code compliances and regulations.
- aHub is optional. When a generator/V2L is connected, all AC PV systems must be connected through aHub. When there is no generator/V2L configuration, AC PV can be connected to the main panel, but the rated total charging power cannot exceed the maximum total charging power allowed by aPower.

Partial Backup

If you select a partial backup configuration, you need to identify backup loads during system configuration. Connect the backup loads (except for the Smart Circuit loads) to the backup port of the aGate, and connect the non-backup loads (non-essential loads) to the non-backup ports of the aGate. If the grid fails, the FranklinWH System will only power the backup loads during the outage.



NOTE

A combiner box is required for multiple aPower units' installation, except when 2 aPower units are installed with Quadplex breakers.

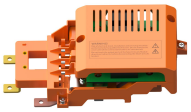
System Components

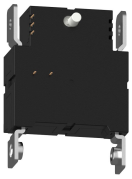
Component	Description	SKU
aGate	The aGate controls system operations with a built-in Energy Management System (EMS), power distribution and communications modules, and optional Smart Circuits and generator modules, providing power management and backup power for household loads.	AGT-R1V2-US; AGT-R1V3-US
MAC	The MAC is an energy management unit equipped with multiple wireless communication capabilities, including Wi-Fi, 4G, and Bluetooth. Additionally, it monitors household grid quality and measures municipal power consumption. The MAC supports two MSA models: the EQB MIM from Neworld Energy and the IslandDER MSA from ConnectDER. By controlling these MSA devices, the MAC supports both on-grid and off-grid functionalities	MAC-R1V1-US

aPower 1.3 	The aPower batteries store a charge provided by photovoltaic systems, the grid, or generators. They use an integrated inverter to convert AC power into stored DC, then convert the energy back to AC for use in a two-way energy flow. aPower batteries are modular, and can be scaled from a single battery to fifteen batteries controlled by a single aGate.	APR-05K13V1-US
aPower 2 		APR-10K15V2-US
aPower S 	aPower S integrates battery inverter and solar inverter internally; A battery inverter can convert DC power into AC power to supply power or electricity to a load. Solar converter can convert solar direct current into low-voltage direct current to charge batteries, and can also convert solar direct current into alternating current to supply power or electricity to loads.	APRS-10K15V1-US

aPbox (Optional) 	The aPbox can be used to measure the amount of electricity generated by a PV system, and can also be used as a disconnect to sever the connection to the PV system when the photovoltaic over-generation is triggered. It supports access to up to two PV systems with a total current of no more than 65A.	ACCY-RCV1-US
aHub (Optional) 	aHub can be used for control of smart loads and connection of AC photovoltaic system, generator, and V2L. Its multipurpose interfaces can be flexibly configured. A single aHub can connect up to 4 smart loads (240V)/8 smart loads(120V), 3 PV systems(240V) , and 1 generator(240V)/V2L. The 8 circuits can receive energy management commands for independent metering and on/off control. The internal Busbar has a rated capacity of 100A.	ACCY-AHUBV1-US
Split CT Kit (Optional) 	In some home wiring situations, the solar (PV) panels or electrical load sub-panels are connected in a way that does not allow the aGate to properly measure the power flow through the internal CTs. FranklinWH provides a Split CTs solution to aggregate the sub-panel metering into the FranklinWH System.	ACCY-CT200V2-US

aGate Built-in Optional Parts

Component	Description	SKU
Smart Circuits Module 	The FranklinWH System can use the Smart Circuits Module to provide homeowners with direct control of three unique circuits. The Smart Circuits Module is an optional component of the aGate.	ACCY-SCV2-US
Generator Module	The FranklinWH System can connect to a household backup power generator. This connection is an optional component of the aGate. When the FranklinWH System is working off-grid, the generator may serve as a backup power source for the household load and to recharge the aPower. The combination of a generator and the	ACCY-GENV2-US

	FranklinWH System can provide uninterrupted power to homes for a long time period, lowering the fuel consumption over time of the generator.	
Main Load Relay 	When the optional Main Load Relay is installed, the system will automatically disconnect load-side electrical appliances, so that the PV will only charge the aPower battery, significantly improving black start success rate. Without the module, you will need to manually disconnect electrical appliances.	ACCY- MRV2 – US
Backup Expansion Lug Kit 	The aGate has one (1) set of backup load terminals reserved to meet the needs of most households. When there are many household backup loads, they are scattered, or when the number of connected aPowers are greater than the capacity of the aPower interface, it is necessary to group the loads or connect the excess aPowers to the backup port. The FranklinWH System provides an optional Backup Expansion Lugs to meet your needs.	ACCY- BLV2 – US

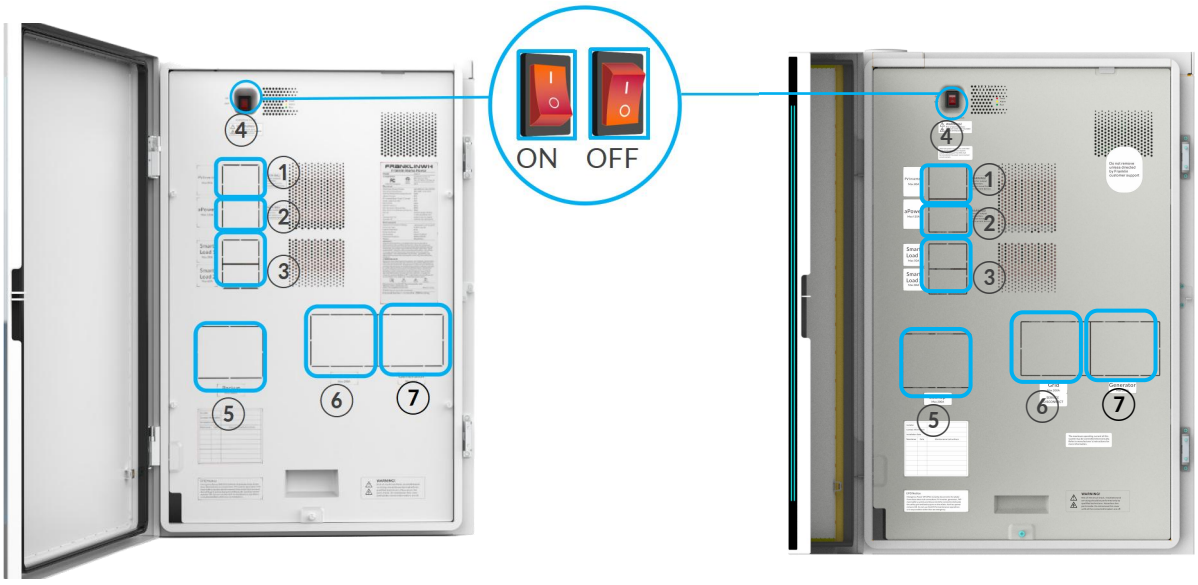
DANGER:

- Shutting down or disconnecting a device remotely, via the FranklinWH App, does NOT mean it has been physically powered off. Therefore, any maintenance and before connecting any new load to the system, the circuit breaker on the Smart Circuits Module needs to be disconnected in advance.
- Do not touch the output ports of Smart Circuits Module directly or indirectly through conductive material, before disconnecting the circuit breakers.
- Disconnect the upstream circuit breaker and downstream circuit breaker for aHub in advance and shut down generator/V2L output, ensuring the power is disconnected.

NOTE

- If the FranklinWH System is likely to work off the grid for a long time (e.g., due to any adverse weather condition, inspection, or intentional shutting down the grid power supply when the house is idle), it is necessary to connect the high-power devices that may automatically start up, such as an EV charger, to the Smart Circuits.
- If the Expansion Lugs are not installed, there is only one (1) pair of backup load lugs, and the circuit breaker can be added. If an Expansion Lugs is installed, the backup load port is divided into two sets of lugs, which is suitable for scattered loads, but a circuit breaker can't be added. It is necessary to install a circuit breaker in the sub-backup panel. The total current may not exceed 200A.

aGate Overview



aGate 1.3

aGate 1.3.1

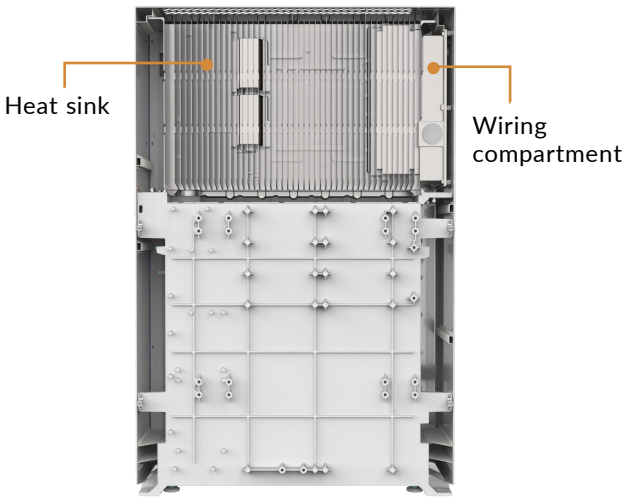
① PV Breaker
② aPower Breaker
③ Smart Circuit Breakers
④ aGate Power Switch
⑤ Backup Breaker
⑥ Grid Breaker
⑦ Generator Breaker

Note: *The circuit breaker are optional parts and must be provided by the installer.*

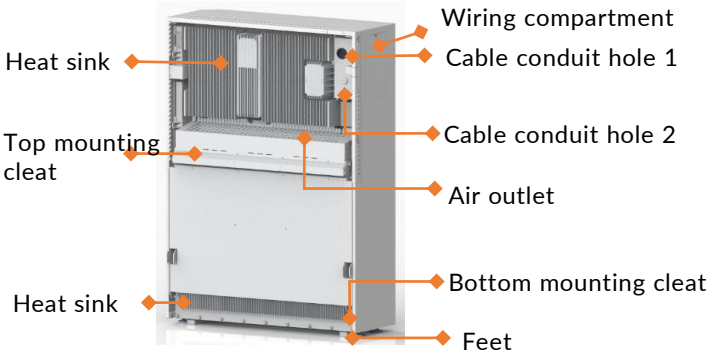
MAC Overview

① Power switch
② Ethernet port
③ Indicator
④ RS485 port
⑤ CAN port
⑥ EPO/RSD
⑦ CT port

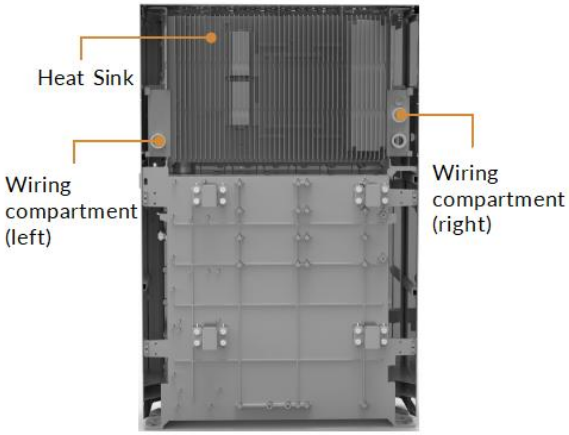
aPower 2 Overview



aPower 1.3 Overview



aPower S Overview



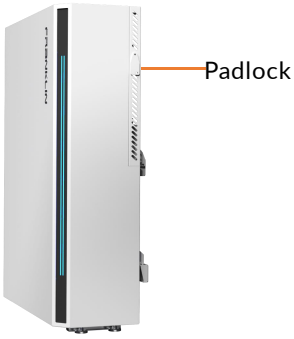
- aPower switch: Starts up or shuts off aPower power transfer.
- LED strip: Turns on when the aPower is started, indicates the battery power level.
- Leveling screws: Keeps the equipment leveled when the floor is not.
- Heat sink: Used to cool the aPower components.
- Top/Bottom mounting cleat: Must be snapped onto the mounting bracket to support the aPower body.
- Wiring compartment: The location for electric terminals and communications cable terminals.
- Cable conduit hole 1: Used to keep the power cables in position. A 1″ electrical conduit may be used if the hole-plug 1 is removed.
- Cable conduit hole 2: Used to keep the signal cables in position. A ½″ electrical conduit may be used if the hole-plug 2 is removed (If a signal cable hole is needed).
- Air outlet: Outlet where heat is removed, it must NOT be blocked.
- Feet: Support the aPower.

NOTE:

According to the requirements of NEC 706.15, a lockable cover needs to be added for the aPower power switch.

Users need to provide their own padlock. Please select an appropriate lock based on the lock hole diameter (d= 0.31 in. (7.87 mm)) and the available space to ensure smooth installation.

It is recommended for users to choose an outdoor waterproof lock and to keep the key secure.



aPower 1.3 (example for reference)

Operating Modes

The FranklinWH System supports several operating modes, including Emergency Backup, Self-Consumption, and Time of Use.

Emergency Backup Mode

When the FranklinWH System operating mode is set to the Emergency Backup, the FranklinWH System will prioritize charging the aPower battery to 100 % State of Charge (SOC) from solar and the utility grid.

In the event of a grid failure, the aPower battery will automatically power the household loads. As soon as the grid is restored, the system will automatically return to charging the aPower battery.

Self-Consumption Mode

When the FranklinWH System operating mode is set to the Self-Consumption, the FranklinWH System stores the excess electricity generated by the solar system after powering for the household loads in real-time. If the solar production is insufficient to power all the household loads, the FranklinWH System will discharge as a supportive power source, thus reducing the amount of electricity imported from the grid.

If the SOC value of the backup reserve is set 100 %, the FranklinWH System will start charging to full power (aPower battery actual SOC value = 100 %) from solar and does not discharge. In the event of a grid failure, the FranklinWH System will power the household loads.

Time of Use Mode

If the electricity rate in the homeowner's area changes throughout the day, based on demand, the homeowner can select the Time of Use mode to customize the on-peak and off-peak times according to the electricity rate. The FranklinWH System will select solar and aPower battery power during peak rate periods. During the off-peak periods, the system will use power from the grid, the PV system, and the batteries in balance according to household loads.

If the SOC value of the backup reserve is set 100 %, the FranklinWH System will start charging to full power (aPower battery actual SOC value = 100 %) from solar on off-peak period and does not discharge. In the event of a grid failure, the FranklinWH System will power the household loads.

Key Functions

Storm Hedge

When the Storm Hedge function is enabled, the FranklinWH App will receive a weather forecast from the local authority about a serious weather event, and send a warning message via the app. Then the FranklinWH System will automatically enter emergency backup mode to power household loads during the weather event. When the extreme weather passes, the FranklinWH System will automatically revert to the previous settings.

NOTE

The Storm Hedge function may be enabled under both the Self-Consumption and Time of Use modes.

Emergency Stop

In an emergency, manually turn off the external Emergency Power Off (EPO) switch, if installed. Otherwise remove the EPO plug. The FranklinWH System shuts down after the EPO is triggered.

NOTE

After the emergency shutdown, the home will lose power. When the emergency issue has passed, reset the EPO switch/plug to restore home power supply.

On-grid to Off-grid

When the grid fails or is abnormal (for example, under-voltage “brownout,” overvoltage, or abnormal frequency), the FranklinWH System automatically switches to the off-grid mode. When off-grid, the solar, generator (if connected) and FranklinWH System will power the household loads.

Off-grid to On-grid

The FranklinWH System automatically switches to the on-grid mode when the grid is restored. The grid, solar system, generator (if connected) and FranklinWH System will power the household loads.

Photovoltaic Over-Generation Protection

If the FranklinWH System is connected to the grid but is not allowed to export solar production to the grid, or when the home is off-grid, the photovoltaic over-generation protection function will be enabled when the photovoltaic output power is greater than the sum of the absorbable and load power of the FranklinWH System. The photovoltaic system will automatically be disconnected. When the photovoltaic output power is lower than the sum of the recharging power and load power of the FranklinWH System, the photovoltaic system will automatically be reconnected to the FranklinWH System.

Full Charge Protection

When the FranklinWH System is off-grid, the solar system will automatically disconnect as soon as one aPower battery in series is full (SOC = 100 %). After the FranklinWH

System meets the recovery conditions, the solar system automatically connects to it and outputs power.

Black Start

When solar power is insufficient, the grid power is unavailable, and the aPower battery available power is exhausted, the Smart Circuits will be automatically disconnected and the system enters sleep mode, waiting for a black start attempt.

Automatic Black Startup

The system will automatically start at specified times every day. If the solar energy supply is sufficient, the electricity generated by the photovoltaic system will charge the aPower battery. If the solar power is insufficient, the system will re-enter sleep mode, waiting for the next automatic startup.

Manual Black Startup

When the solar energy supply is sufficient, you can manually start the system instead of waiting for the automatic black startup. Manually turn off the round button switch on the side of the aPower, turn it back on 20 seconds later, and the system will be started.

NOTE

- Repeated startup attempts may result in system lockdown. In order to increase the success rate of black startup, please make sure that the heavy electrical loads have been turned off, until the aPower is charged to 20 % SOC or higher.
- If the grid is restored when the system is in sleep mode, the system will start immediately.

Smart Circuits

The FranklinWH System provides three Smart Circuits which can be controlled with the FranklinWH App based on their personalized needs. This helps minimize household expenses while on-grid and saves battery consumption while off-grid.

On-grid

Based on local peak-valley settings and personal habits (such as pumping water into the swimming pool or charging the EVs), users may set a time plan for economic power usage through the FranklinWH App. One or two time periods may be set for every 24 hours, to achieve the most economical use of electricity for Smart Circuits.

Off-grid

Users may control the on/off status of Smart Circuits by creating a time plan and setting a State of Charge (SOC) threshold. Users may set a SOC threshold (between 6 % and 100 %) based on the backup sustainability of the Smart Circuits on the FranklinWH App, where a lower SOC value means a longer backup period for the Smart Circuit. When the actual SOC falls below the set threshold, or the time is outside the time period set in the time plan, the Smart Circuit will be turned OFF. When the aPower actual SOC rises above the threshold, the aGate will reconnect with the Smart Circuit.

The Smart Circuits will not be reconnected until the aPower actual SOC is 5 % higher than the SOC threshold. For example, if the SOC threshold is set to 25 %, regular backup loads will be connected when the SOC reaches 25 %, but the Smart Circuits will not be reconnected until the SOC reaches 30 %.

Manual Control

Users may control the on/off status of the Smart Circuits through the FranklinWH App. The manual control of the Smart Circuits on/off status has higher operation priority, so that the current time schedule can be overridden, disabled, and reactivated in the next time period.

The Smart Circuits Module can remotely control the on/off status of three Smart Circuits, which may be set and controlled separately. Smart Circuit 1 and Smart Circuit 2 may be set flexibly based on user needs and the configuration on the FranklinWH App, choosing two 1-pole breakers or one 2-pole breaker, while Smart Circuit 3 must work with one 2-pole breaker. Smart Circuit 3 is only used for 240V loads without neutral wire. No device requiring a neutral wire should be connected to Smart Circuit 3.

Generator compatibility

The aGate connects the generator module with the FranklinWH App to provide an intelligent generator-based power backup system. The FranklinWH System supports Manual and Auto mode configuration parameters.

Auto Mode

In Auto Mode, generator access and disconnection can be controlled by a preset state of charge (SOC) value or can be controlled intelligently by setting up the time periods.

SOC Control

The generator will be activated automatically when the FranklinWH System is working in off-grid mode and after battery SOC falls below the set level (20 % default. Adjustable between 10 % and 80 %). The system will activate the generator to power the load, with the surplus power generated sent to charge the aPower.

When there is power supply from the grid or the FranklinWH System battery level reaches the upper SOC (80 % default, adjustable 20-100 %), the generator will be automatically shut off and other sources will power the loads.

Charging Schedule

Based on their own habits, users may set up a charging schedule through the FranklinWH App for the time periods when power supply from the grid is interrupted. The settings allow up to three non-overlapping time periods in a single calendar day. Once the charging schedule is enabled, when the generator is activated to power the loads, it also charges the aPower. When the charging period ends, the generator will be shut off.

Manual Mode

When the power supply from the grid is interrupted, users may manually start/shutdown the generator. For example, when a power outage occurs, the user may start the generator manually before leaving, to charge the FranklinWH System in advance, and may shut off the generator via the app before they return home, so that the FranklinWH System will take over as the power source. This helps to manage the noise produced by the generator, so that customers may enjoy a quieter home environment.

Vehicle to Load (V2L)

With a Generator Module installed, the aGate unlocks versatile V2L functionality, allowing users to power home appliances directly from the vehicle's battery in emergency situations, which is literally compatible with any 240 V V2L EV model.

**NOTE: The support is currently limited to the Ford F-150 Lightning. The expansion of compatibility to include additional electric vehicle (EV) brands and models is expected to be announced.*

aPbox Application

While the aGate has a PV breaker as an optional component, there are some situations in which the PV system cannot be connected through the breaker or where there are multiple PV connections needed. In those instances, an aPbox can be used to connect the solar source to the aGate or the grid.

There are two scenarios that define how the external connections with an aPbox are connected.

PV on the load side of the FranklinWH System

Installation of an aPbox is required to meter the production of and cutoff the connection to an individual PV system installed on the load side of the FranklinWH System due to:

- Existing constraints, such as the location of the PV system and the aGate, preventing the PV system connection to the aGate internal PV interface.
- Multiple PV systems on-site prevent a distinct PV system from being connected to the aGate.
- The total PV system output power exceeds the power rating of the aGate internal PV interface.
- The total amount of the PV production exceeds the aPower energy capacity.

One aGate supports up to two aPbox connections on the load side. The FranklinWH System controls the PV system connection according to whether the photovoltaic over-generation in the off-grid mode.

PV on the line side of the FranklinWH System

The installation of an aPbox is to monitor the generation of the PV system and provide data to the FranklinWH System.

In this scenario, one aGate only supports one aPbox connection.

NOTE

When there is a grid outage, the line side separated PV system will disconnect from the grid and shut down.

PV on the aGate Solar Meter Upstream

When the total amount of power generated by the PV system installed upstream of the aGate solar meter exceeds the aPower energy capacity, connecting the PV system directly to the aGate internal PV interface may result in exceeding the feeder limit in on-grid mode or the photovoltaic over-generation in off-grid mode. In this scenario, installing an aPbox in front of the aGate PV interface can split the output line of the PV system into two, one of which passes through the aPbox and then connects to the aGate PV interface.

When the PV system output power is too high, the aGate can control the aPbox to disconnect one PV input to reduce the PV power connected to aGate. The benefit of this is that the FranklinWH System can avoid directly cutting off the operation of the entire PV system and ensure that the PV system can continue to be used normally.

Heating blanket (Cold temperature performance)

The operating temperature range for the aPower 2 and aPower S is -4° F to 122° F (-20° C to 50° C). The aPower unit is rated IP67 and designed for both indoor and outdoor installation. Low cell temperatures impact charging performance more significantly than discharge performance. Each aPower 2 and aPower S unit includes an integrated heating blanket, optimized to support performance across the wide temperature range.

This enables dependable operation in outdoor installations, even in harsh environments, without compromising efficiency. The heating blanket helps mitigate temperature-related deration by maintaining optimal cell temperatures. For regions with prolonged extreme cold, indoor installation is a best practice to maximize performance. Prolonged low temperatures in extreme cold regions are often far below the minimum operating temperature and below the minimum storage temperature of -22° F (-30° C) where non-warrantied battery cell damage may occur.

LED Light Strip Color Settings (for aPower 2)

You can customize the color and brightness of the LED light using the FranklinWH App.

Download FranklinWH App and sign in with your FranklinWH account, then go to **Settings** > **aPower LED**.

- **LED switch**: Turn on or off the LED lights of all the aPowers in parallel.
- **Light-on schedule**: Schedule a time period to turn on the LED lights. (The time period must be less than 24 hours.)
- **LED settings**: Adjust the color and brightness of the LED lights. The default color of the LED lights is blue.

The 42 LED beads of the light strip indicate the SOC ranging from 0% to 100%, lighting up in a bottom-to-top sequence.

Status	LED light behavior	Descriptions
Charging	Slow breathing	5% < SOC ⩽ 100%: The LEDs breathe at a 10 second cycle proportionally to the SOC.
Discharging/ Standby	Solid on	5% < SOC ⩽ 100%: The LEDs are illuminated in proportion to the SOC.
	Flash	SOC ⩽ 5%: The last two LEDs flash at a 2.5 second cycle. The remaining LEDs are off.
Sleep	Off	All the LEDs are off.
Error	Fast breathing	All the LEDs breathe simultaneously every second.

LED Strip Light color Settings (for aPower S)

You can customize the LED strip light color through the app.

The current will be displayed on the settings page. (factory default color: Golden, R:215, G:175, B:55).

If the LED switch is set to Off, then all light strips will not be lit.

If set to On, the light strip will display according to the following strategy:

The light strip will have 42 LEDs (tentative) to indicate SOC from 0% to 100%, starting from the bottom and going upwards.

The light strip color displays according to the settings, default color is Golden (R:215, G:175,B:55)

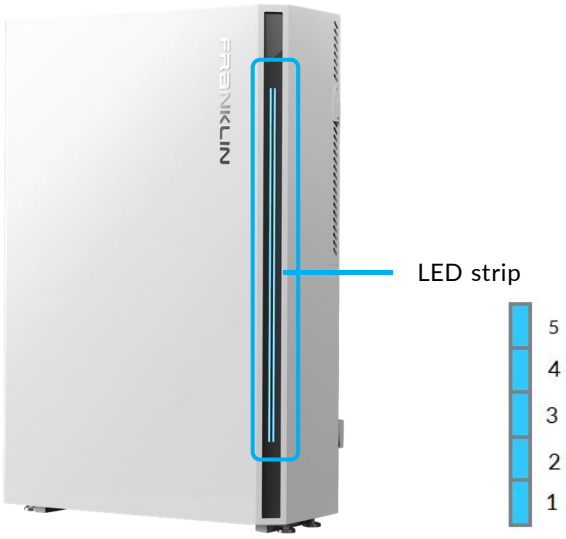
Standby	0% < SOC≤100%: The LEDs are lit proportionally to the SOC (e.g., if SOC is 30%, the bottom 12 LEDs are lit, and the rest are off).
Charging	SOC=0%: The last LED flashes slowly (On for 400ms, Off for 2100ms), and the rest of the LEDs are Off.
Charging	0%≤SOC≤100%: The LEDs are breathing proportionally to the SOC For example, if the SOC is 30%, the bottom 12 LEDs will breathe, and the rest will be off. Breathing cycle: 10 seconds.
Error	All LED beads flash synchronously. Flashing cycle: 1 second.
Sleep	The light strip is Off.

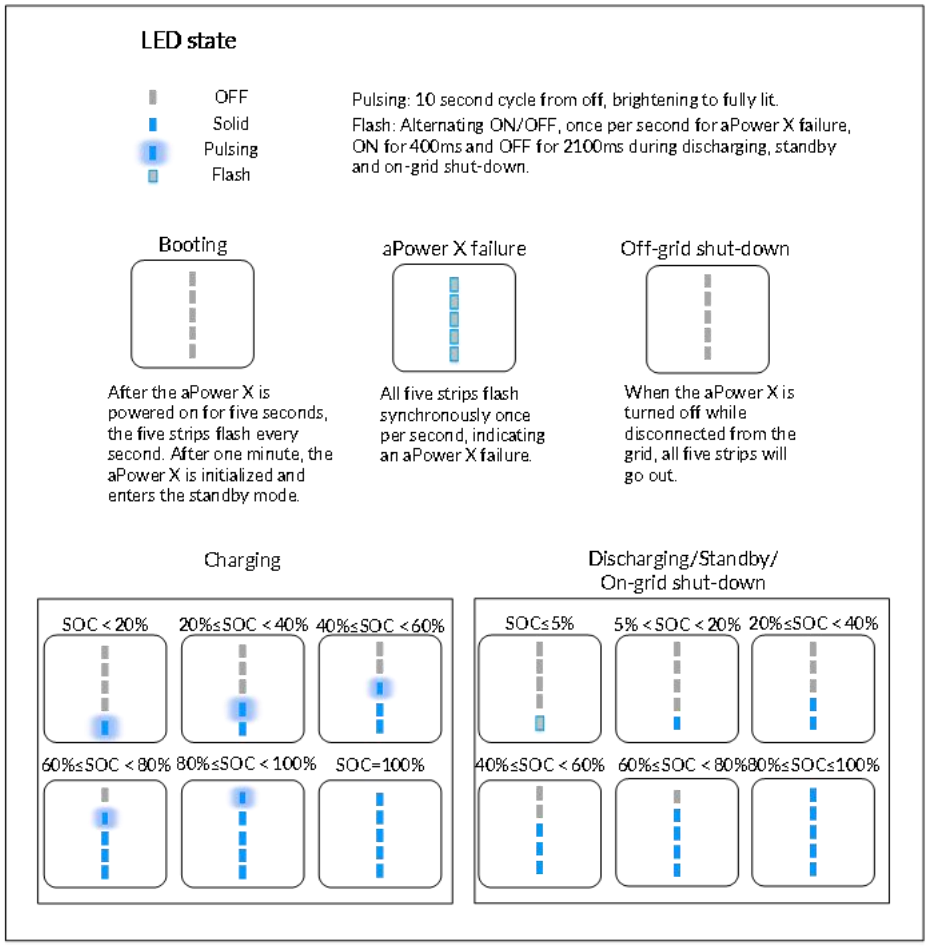
NOTE

1. The S-shaped light is located at the top of the LED strip. When it is lit, it indicates that the DC PV system is generating power; otherwise, it will be off.
2. There is a quick-access button for the default golden glow color in

the app. If users want to restore the apower S's golden glow SOC light strip to its factory default settings with a single tap, they can do so easily.

LED Light Strip Lighting (for aPower 1.3)





Fault Recording

The software records real-time voltage and current data in the RAM for a specific duration. In case of a fault, the RAM data is securely stored in flash memory, ensuring that voltage and current waveform data can still be retrieved both before and after the fault, even if the load has been powered off.

Multiple Power Setting Options(for aPower 2 & aPower S only)

In on-grid mode, the rated power of a single aPower can be configured. The available options are: aPower2: 10 kW, 9.6 kW, 7.6 kW, 5 kW; aPower S: 11.5 kW, 10 kW, 9.6 kW, 7.6 kW, 5 kW

aHub Busbar Protection

aHub has Busbar Protection feature. The Busbar rated current is 100A, and when the current exceeds 100A, it will automatically adjust the interface. The circuit that causes an overload after it’s been connected will be the first to be disconnected. During installation and configuration, it's best to ensure that the total current of branch loads for each aHub does not exceed 100A, or that the total current of branch PV system does not exceed 100A.

System Operation

The FranklinWH System can be operated locally or remotely, but local operation is preferred for maintenance and inspection. It is recommended that the FranklinWH System be restarted and maintained locally. During maintenance or inspection, local operation must be used to ensure circuit safety.

Startup Steps (aGate Option)

1. Ensure that the grid breaker, the generator breaker, the backup breaker, and the solar breaker are all in the OFF position (for initial use).
2. Ensure that the aGate power switch on aGate is in the ON position.
3. Turn on the aPower breaker.
4. Press the aPower switch to ensure that the switch is on. When the aGate power switch indicator on the aGate lights up, wait until the bottom of the LED strip on the aPower lights up, which indicates that the aGate is successfully powered without connecting to the grid.
5. After about 60 seconds, the photovoltaic relay turns on automatically. If the aPower has power output, that indicates that the aPower has successfully started without connecting to the grid.
6. If the grid is normal, turn on the aGate grid breaker. After the grid relay is turned on, the grid icon on the FranklinWH App homeowner home screen will light up, indicating that the aPower is successfully connected to the grid.
7. Turn the generator breaker (if the Generator Module is installed) and solar breaker to the ON position.
8. Turn on the Smart Circuit breakers (if the Smart Circuits Module is installed), the backup breaker and the breakers in the load panel.

NOTE

The initial startup process includes steps 1 to 8, while the general restart process is as follows: turn off the aGate power switch and the aPower switch, wait for 5 seconds after the LED strip on the aPower goes out, then turn on the aGate power switch, and follow the instructions in steps 3 to 8.

Startup Steps (MAC option)

Situation 1 The FranklinWH System has been completely installed, including the MSA which is also connected between the main distribution panel and the homeowner's electricity meter.

NOTE: After the MSA is connected to the main distribution panel, when a single mains power is detected to be normal, the grid relay will automatically close the circuit.

1. Ensure that the grid breaker is in the OFF position (for initial use).
2. Turn on the power switch of MAC. When the power switch indicator on your MAC lights up, it means that your MAC has successfully received power from the grid.
3. Turn on the grid breaker.
4. Turn on the aPower breaker.
5. Press the aPower switch to ensure that the switch is on. When the bottom of the LED strip on the aPower lights up, which indicates that the aPower is successfully powered. If the grid is normal, the grid icon on the FranklinWH App homeowner home screen will light up, indicating that the aPower is successfully connected to the grid.

Situation 2 The MSA is not connected to the main distribution panel, and the homeowner’s meter is not removed.

1. Ensure that the grid breaker is in the OFF position (for initial use).
2. Ensure that the MAC power switch is in the ON position.
3. Press the aPower switch to ensure that the switch is on. When the MAC power switch indicator on the MAC lights up, wait until the bottom of the LED strip on the aPower lights up, which indicates that the MAC is successfully powered without connecting to the grid.
4. If the grid is normal, turn on the grid breaker and the aPower breaker.
5. Wait for the power bureau staff to install the MSA. The aPower inverter will remain inactive until the MSA connects to the main distribution panel.
6. After the completion of the MSA installation, once the MAC confirms that the mains power is stable, it will automatically drive the grid relay to close the circuit.
7. After the grid relay is turned on, the grid icon on the FranklinWH App homeowner home screen will light up, indicating that the aPower is successfully connected to the grid.

Startup Steps (MAC & aHub option)

Situation 1 The FranklinWH System has been completely installed, including the MSA which is also connected between the main distribution panel and the homeowner's electricity meter.

Note: After the MSA is connected to the main distribution panel, when a single mains power is detected to be normal, the grid relay will automatically close the circuit.

1. Ensure that the grid breaker is in the OFF position (for initial use).
2. Turn on the power switch of MAC. When the power switch indicator on your MAC lights up, it means that your MAC has successfully received power from the grid.
3. Turn on the grid breaker.
4. Turn on the aPower breaker.
5. Press the aPower switch to ensure that the switch is on. When the bottom of the LED strip on the aPower lights up, which indicates that the aPower is successfully powered. If the grid is normal, the grid icon on the FranklinWH App homeowner home screen will light up, indicating that the aPower is successfully connected to the grid.
6. Close the aHub circuit breaker on the main panel. When the aHub power indicator turns on, it indicates that aHub has been successfully connected to the backup power.
7. If a Standby generator is configured, set the generator to AUTO mode; if not configured, skip this step.
8. Close all circuit breakers on the branches of aHub. The system can now operate normally.

Situation 2 The MSA is not connected to the main distribution panel, and the homeowner's meter is not removed.

1. Ensure that the grid breaker is in the OFF position (for initial use).
2. Ensure that the MAC power switch is in the ON position.
3. Press the aPower switch to ensure that the switch is on. When the MAC power switch indicator on the MAC lights up, wait until the bottom of the LED strip on the aPower lights up, which indicates that the MAC is successfully powered without connecting to the grid.

4. If the grid is normal, turn on the grid breaker and the aPower breaker.
5. Wait for the power bureau staff to install the MSA. The aPower inverter will remain inactive until the MSA connects to the main distribution panel.
6. After the completion of the MSA installation, once the MAC confirms that the mains power is stable, it will automatically drive the grid relay to close the circuit.
7. After the grid relay is turned on, the grid icon on the FranklinWH App homeowner home screen will light up, indicating that the aPower is successfully connected to the grid.
8. Close the aHub circuit breaker on the main panel. When the aHub power indicator turns on, it indicates that aHub has been successfully connected to the backup power.
9. If a Standby generator is configured, set the generator to AUTO mode; if not configured, skip this step.
10. Close all circuit breakers on the branches of aHub. The system can now operate normally.

Shutdown Steps

1. Turn off the grid breaker if connected to the grid.
2. Press the aPower switch on all aPower batteries to the OFF position (extended, flush with the case), and each LED strip will go out.
3. Turn off the aPower breaker.
4. Turn off the PV breaker.
5. Turn off the generator breaker if connected to a generator.
6. Turn off the Smart Circuits and backup breakers if applicable.
7. Turn off the aGate power switch inside the aGate.
8. Turn off the circuit breakers on the branch and main ports of aHub if aHub installed.

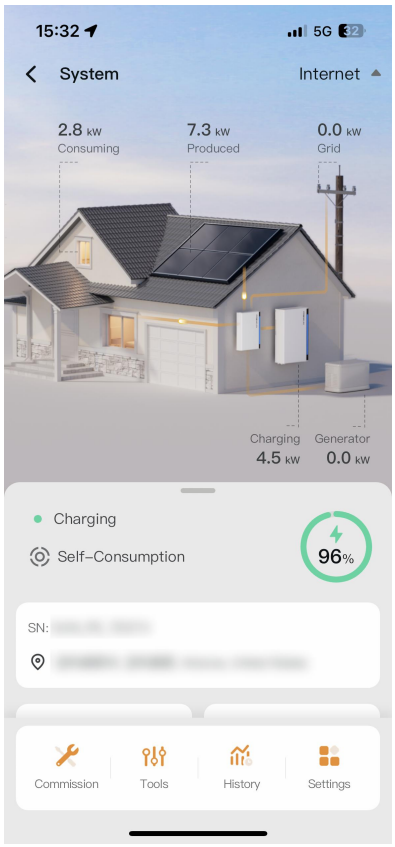
NOTE

If the family plans to be gone for a long time, please keep the grid or PV power, aPower breaker, aPower switch and aGate power switch on. Otherwise, the energy stored in aPower will eventually be depleted, resulting in a startup failure.

Remote Operation and Monitoring Using FranklinWH App

The FranklinWH App provides remote operation and monitoring of the whole house energy system at anytime from anywhere. It allows personalized household electricity plans to make your life easier.

The home screen of the FranklinWH App displays real-time data from the FranklinWH System to help you understand the working status of your home power system. Please refer to the *Energy Data* at ***https://www.franklinwh.com/support/overview/energy-data*** for more information.



*__Note:__ *If the generator is disabled, the generator icon will not appear.*

Common Problems and Solutions

No.	Problems	Solutions
1	aPower LED on the aPower keeps flashing once per second.	Check if the aGate EMS module is working normally: i. Check that the aGate power switch is ON (closed) and the indicator is lit. ii. Check if the aGate is connected to an external EPO (Emergency Power Off) switch. If yes, check that the EPO switch is closed. iii. Check that the aPower breaker on the aGate is in the ON position.
2	aPower starts off-grid and fails to discharge.	Check whether the aPower breaker on the aGate is in the ON position. If not, flip it on and then check the aPower status after 1 minute. If aPower discharges properly, the equipment is back to normal.
3	After startup, the aGate failed to activate the Wi-Fi access point (AP).	Turn off the aGate power switch and turn it on after 10 seconds. Scan for the aGate hotspot on your mobile phone. If your mobile phone is connected to it, the Wi-Fi access point has returned to normal.
4	“Device offline” is displayed on mobile app.	Check whether the aGate communication network is normal: i. If the aGate is communicating via hard-wired ethernet, please check the network connectivity. ii. If the aGate is communicating via Wi-Fi, please check the signal strength. The aGate does not currently support 5GHz Wi-Fi network connection. Please ensure that a 2.4GHz Wi-Fi network is available. iii. If a 4G cellular network is used, please check the network conditions at the aGate location. If the signal strength is poor, contact your installer to purchase a 4G cellular network enhancement option. iv. In off-grid mode, if the battery is completely drained and enters sleep mode, this will cause the

		device to go offline. In this situation, you can either perform a black start or wait for the utility power to be restored.
5	A prompt of “Low battery, black start attempts” is displayed on the mobile app.	Check whether the grid power is down and whether the solar system is out of operation or there is insufficient sunlight. i. Low battery and black start indicate that the battery capacity is very low, the backup power and auxiliary power will be disconnected, and the system will enter sleep mode. Once the system enters sleep mode, it will automatically recover and charge the batteries the next day if there is sufficient sunlight. ii. By default, the system black start times are approximate 10:00, 12:00 and 14:00. There may be some deviations in time in sleep mode. iii. During black start, please turn off all household loads to ensure that FranklinWH System can be started normally. iv. Manual black start is also an alternative to automatic. Manual Start: Turn off the aPower switch on the side of aPower (extended, flush with case), and turn it back on (depressed) 20 seconds later. The system will start up. v. Black start will consume the reserve capacity, it is recommended to attempt a manual start only when there is enough solar production. Otherwise, the system may lock.
6	A prompt message of “Black start failed” is displayed on the mobile app.	i. Check if there are household electrical devices running when the system attempts to start. Ensure that all the household electrical devices are shut down, to help the system successfully start. ii. Check whether the solar system is operating normally and whether there is sufficient sunlight.

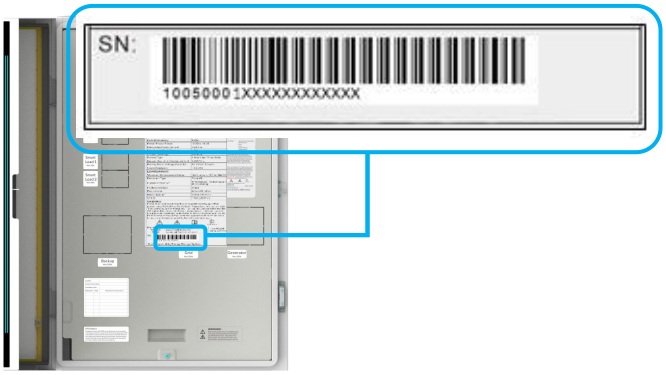
No.	Problems	Solutions
7	“Off-grid overload” is displayed on the mobile app.	i. Check if the grid is available. ii. Check if there are large electrical devices running. If yes, shut down the unessential devices to allow the system to operate normally. iii. Due to the special characteristics of the battery, the system power is slightly reduced at temperatures below 50 °F (10 °C) to guarantee the service life of the battery. If an off-grid overload occurs in this case, shut down the large electrical devices to allow the system to operate normally. iv. If the system experiences an off-grid overload during multiple aPower units starting, turn off all electrical devices and turn them back on in sequence after the aPower units have been successfully started.
8	The system shuts down after an air conditioner or a pump is started.	i. Check if the grid is available. ii. During a grid outage, due to the power required to start the air conditioner or pump, the system may shut down while other large electrical devices are running when trying to start the air conditioner or pump. Because of this, it is recommended that you shut off other large electrical devices and restart them after the air conditioner or pump has been successfully started.
9	PV string is already connected, but it's not generating electricity.	i. Make sure the aPower Solar is already enabled on the **Solar Settings** screen during the commission process.
10	The App prompts a PV X reverse connection fault.	i. The PV+ and PV- of the circuit X are reversed, please confirm and switch the wiring.
11	The App prompts a low insulation impedance fault.	i. Insulation impedance of PV+ and PV- to ground is too low, please check whether there is a short circuit to ground in the PV string wiring.

Technical Support

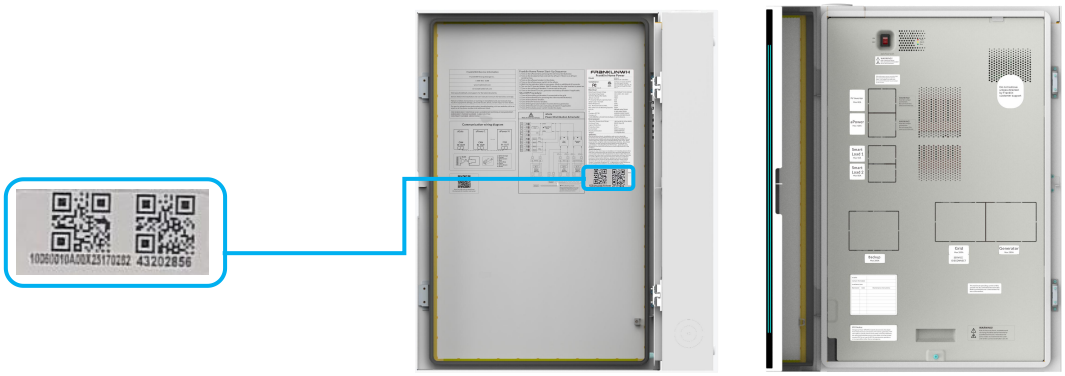
For further support, please contact the installer or FranklinWH service team at: *FranklinWH Support*. Please be prepared to provide the following information before you contact FranklinWH:

- Owner name
- Your preferred desired contact method (name, phone number, email)
- The serial number of your aGate and aPower
- A brief description of your problem

aGate X serial number

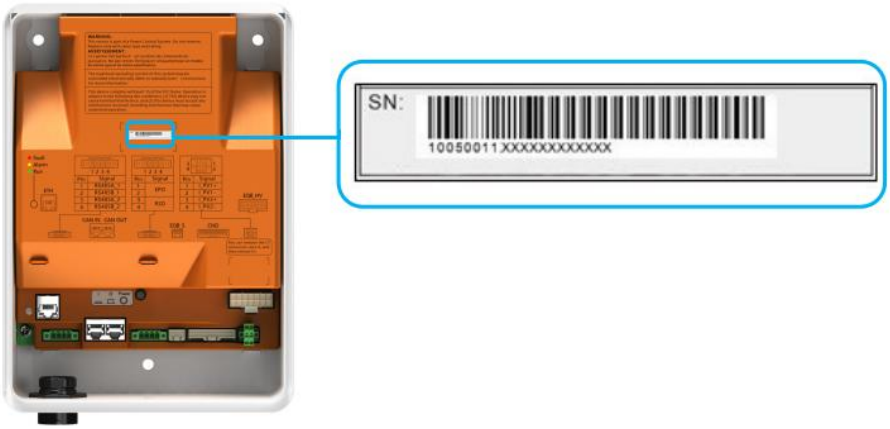


aGate 1.3

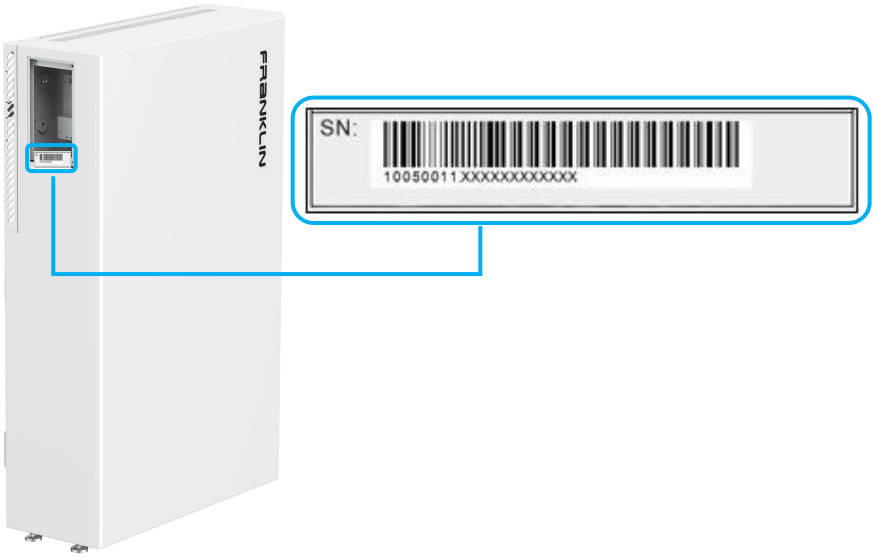


aGate 1.3.1

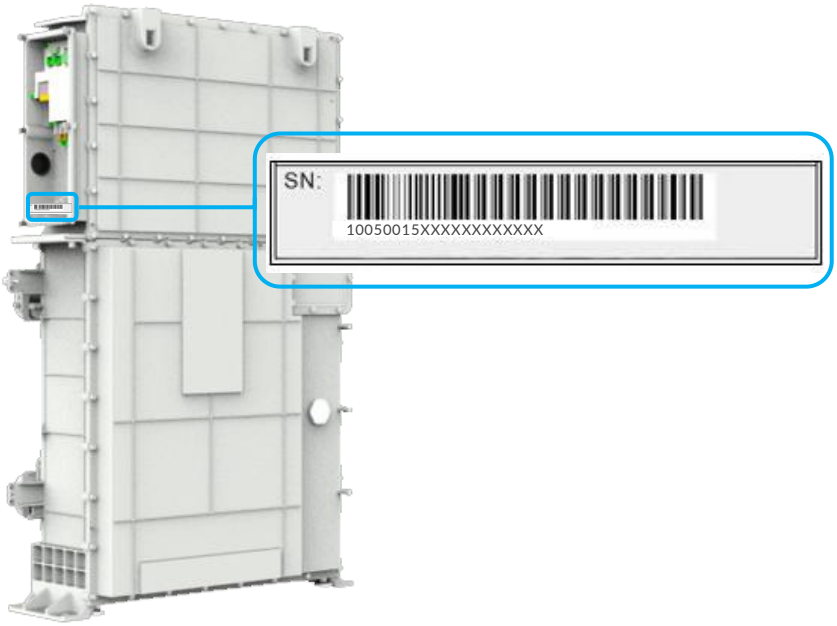
MAC serial number



aPower 1.3 serial number



aPower 2 serial number



Emergency Response

In any hazardous situation that may damage health and cause serious injury, follow the recommended actions:

- Evacuate to a safe area.
- Contact 911 as soon as it is safe to do so.

In case of fire

- Shut off the aPower breaker on the aGate, when it is safe to do so.
- Evacuate to a safe area.
- Contact 911 as soon as it is safe to do so.
- Use approved fire extinguishing devices, if it is safe to do so.

In case of flooding

- If the wiring sections of an aGate or aPower are submerged, please keep away from the water. It is an electrocution hazard.
- Drain the water to protect your FranklinWH equipment, if it is safe and possible.

- If water reaches the battery, please call your installers for an inspection. If the water level is below the battery, please completely dry the site and your FranklinWH equipment before use.

In case of abnormal noise, odor or smoke

- Check to ensure the air vent of the aPower is not blocked.
- Keep the installation site well ventilated.
- Call your installer for support.

Appendix: Revision History

REVISION	DATE	DESCRIPTION
V1.2	July 24, 2026	Updated safety instructions to align with ANSI Z535.6 by reclassifying safety messages using appropriate signal words and restructuring them using the Hazard-Consequence-Avoidance format.
V1.1	April 30, 2026	Updated the heating blanket feature
V1.0	December 30, 2024	Initial release