



## FranklinWH Generator Module Installation Guide

Version 1.1.02

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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**.

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Please read this document carefully before installing or using the Franklin Home Power equipment. Failure to follow any instructions or warnings in this document may result in damage to the equipment, personal electric shock, severe injury, or even death.

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## Product Information

This document applies only to the following products: aGate X and the FranklinWH generator module.

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

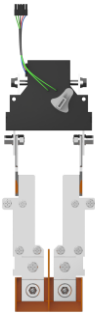
If you have any questions or comments, please send us an email at: [service@franklinwh.com](mailto:service@franklinwh.com)

## 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.



## Overview



The Franklin Home Power system (FHP) provides integration for third party standby generators through the built-in Generator Module, which is optional and can be easily installed without any external components. When the utility grid and solar are not available, during a prolonged outage or at night, the aPower battery charge may be depleted. In such situations, a generator may serve as a backup power source for the household loads and to recharge the aPower battery. The addition of a generator to the FHP can provide uninterrupted power to homes during prolonged outages.

### Key features of the FHP generator integration:

- Compatible with most standby generators models.
- The generator can both power home loads and charge aPower batteries.
- The auto-exercise function can maintain good generator performance.
- Customize generator operation based on homeowner preferences.

### Auto Mode

**SOC Control:** The generator will be automatically started when the FHP is working in off-grid mode and the battery SOC falls below the set level (20% default, adjustable 10-80%). The system will activate the generator to power the home, with the surplus power charging the aPower X batteries.

When grid power resumes, morning comes and the solar array returns to producing energy, or the FHP battery level reaches the upper SOC (80% default, adjustable 20-100%), the generator will be automatically shut off and other sources will power the home loads.

**Charging Schedule:** Based on their own habits, homeowners 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. When the generator is activated to power the loads, it also charges the batteries. When the charging periods ends, the generator is shut off.

### Manual Mode

When the power supply from the grid is interrupted, users may manually operate generator through the app. For example, when a power outage occurs, the user may start the generator when leaving the home, to charge the FHP system in advance, and may shut off the generator via the app before they return home, so that the FHP 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.

### Supported generator start-up types:

- Voltage sensing
- Two-wire
- ATS



**NOTE:** The FHP does not support 3-phase generators or 120V single-phase generators. Only 240V split-phase generators with a 4-wire connection (L1, L2, neutral and ground) are supported.

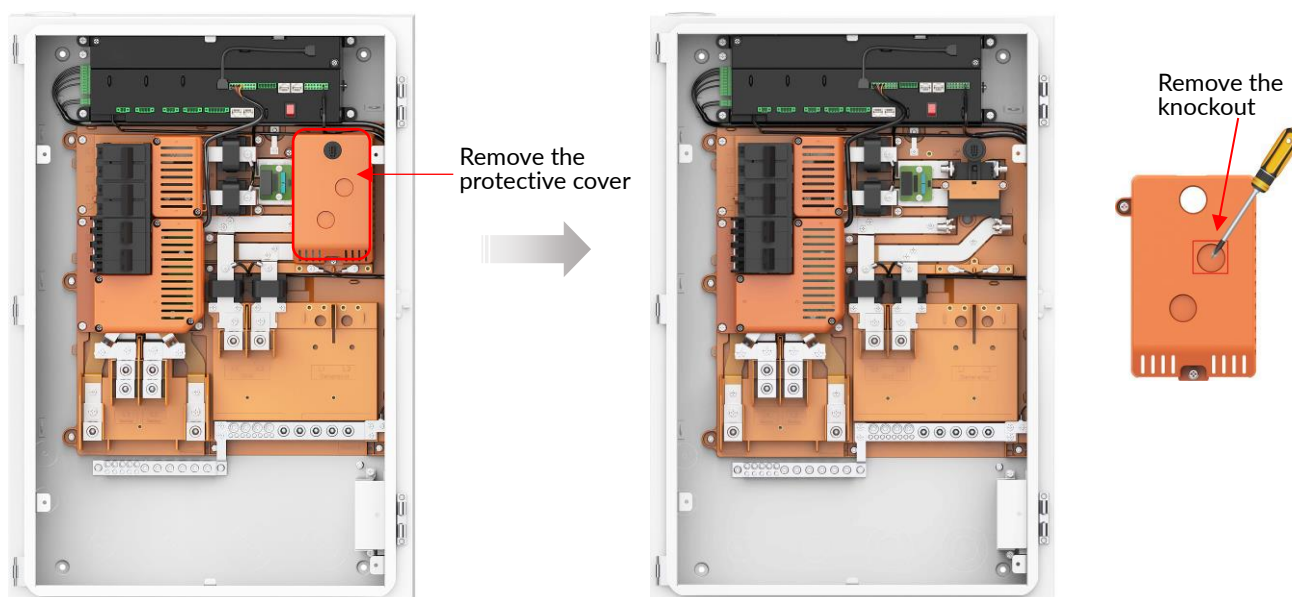
## Preparation

The Generator Module does not come with breakers, or the wiring and conduit necessary to connect the generator to the aGate. Before heading to the installation site, evaluate the installation needs and bring all necessary components.

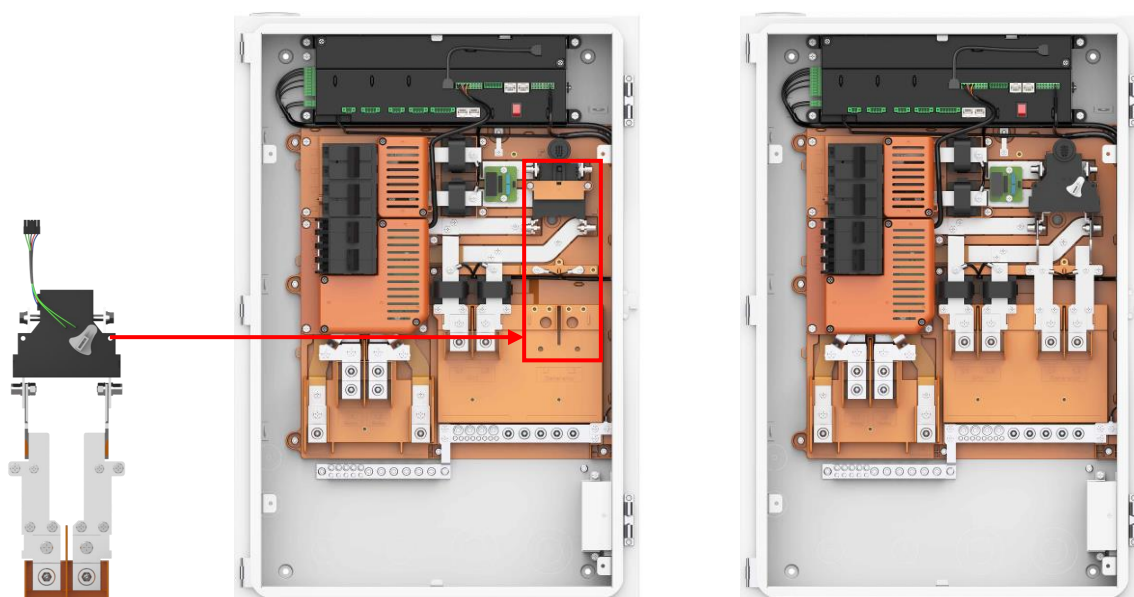
## Generator Module Installation

Before installation, make sure all breakers in the aGate and all switches connected to the aGate are disconnected. Use a multimeter to check the voltages at both input and output terminals of aGate are zero (0).

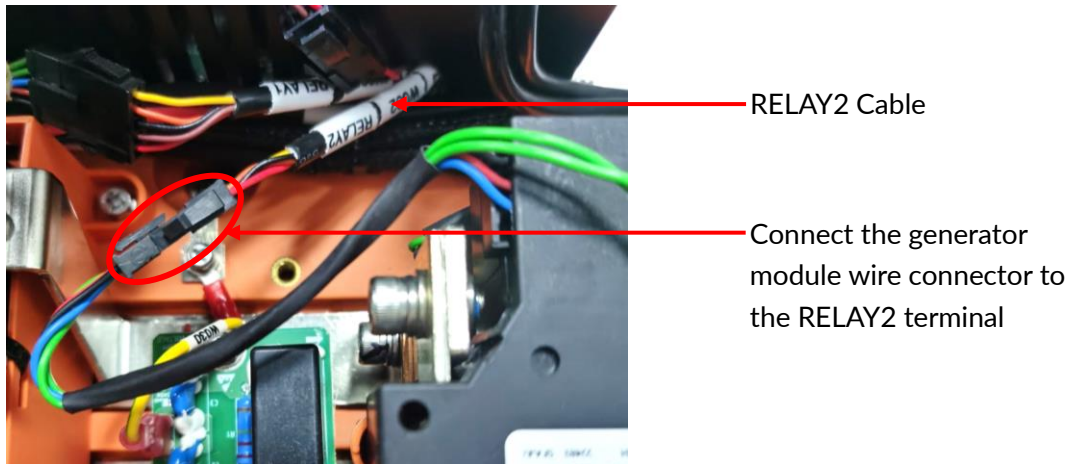
1. Use a Phillips head screwdriver to loosen the two M5 captive screws on the protective cover. Remove the cover. Then remove the knockout using a Phillips head screwdriver, as shown below. Store the cover in a safe location.



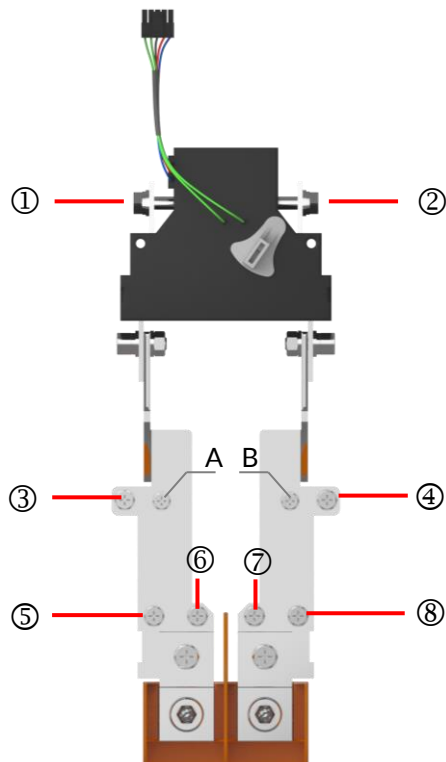
2. Place the Generator Module in the proper position and check that all installation holes have been properly aligned.



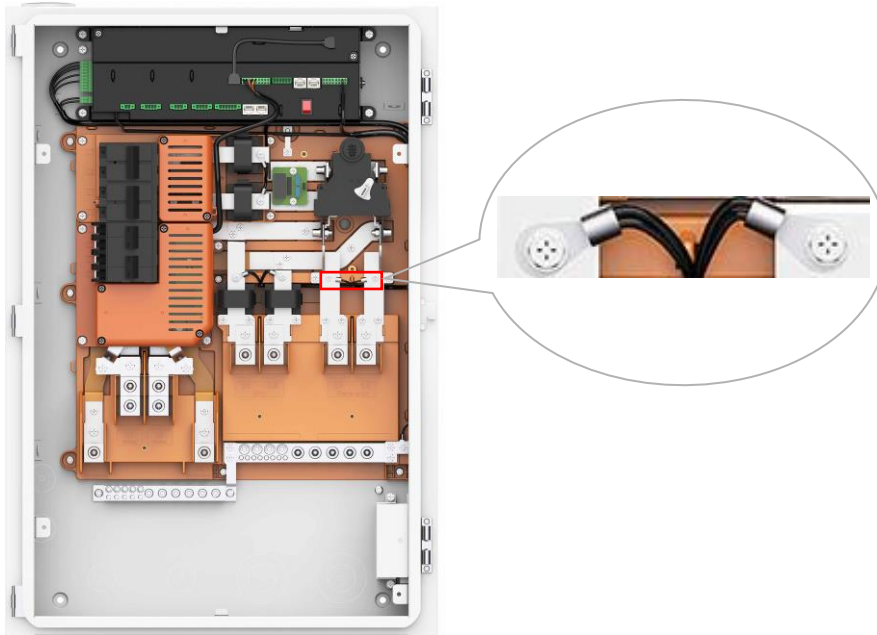
3. Remove the thermoplastic casing from the voltage sampling wire. Connect the wire connector to the aGate RELAY2 cable terminal, as shown in the image below.



- a) Fasten the two M6 x 12 combination screws at positions marked as ① and ② using a 0.2 in. (5 mm) Allen key
- b) Fasten the six M5 x 12 screws at positions ⑤ through ⑧ using a Phillips head electric torque screwdriver.



4. After the voltage sampling wire GEN L1 has been connected to terminal A and the GEN L2 wire has been connected to terminal B, tighten them to the recommended torque using a Phillips head torque screwdriver.



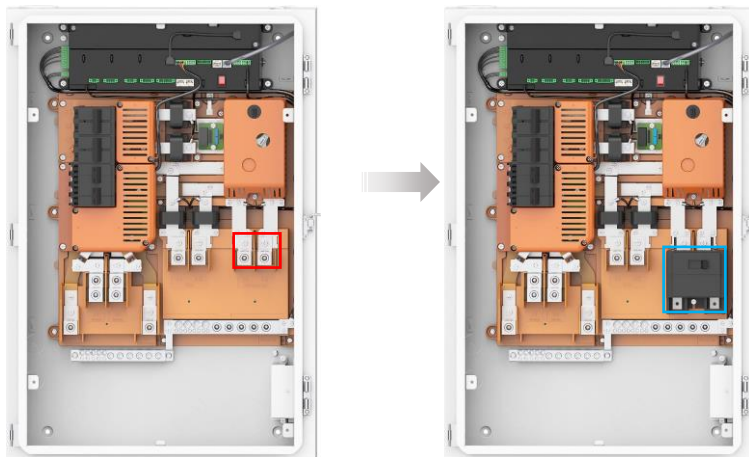
5. Re-install the protective cover and fasten the two M5 captive screws using an electric screwdriver, and then tighten them to 2.21 lbf·ft (3.0 Nm) using a Phillips head screwdriver.

## Generator breaker installation (if needed)

Install a generator breaker according to local laws, regulations, standards, and the National Electric Codes (NEC), ANSI/NFPA 70 or Canadian Standards Association CSA C22.1. The generator breaker is not included and must be ordered separately. Refer to [Appendix 1](#) for compatible breakers.

Before installing a generator breaker, remove the connected lugs. When a generator breaker is not installed, the conductors can be directly connected to these lugs. Follow the instructions below to remove the lugs and install a generator breaker:

1. Using a Phillips head screwdriver, remove the two M6 x 16 combination bolts holding the lugs and save it for later use. Then remove the lugs.
2. Use the two M6 x 16 combination bolts to attach the breaker. Then use the M4 x 10 screw to secure the breaker. Using a Phillips head torque screwdriver, tighten the M4 screw to 1.03 lbf·ft (1.4 Nm).
3. Stick the provided **L2 Generator L1** labels below generator breaker.



## Connect a standby generator to the aGate



**WARNING:** For **Voltage sensing** or **ATS** generator wiring, buy and install the FranklinWH Smart Circuits Module first to implement the generator auto-operation.

**NOTE:** For Generac generators:

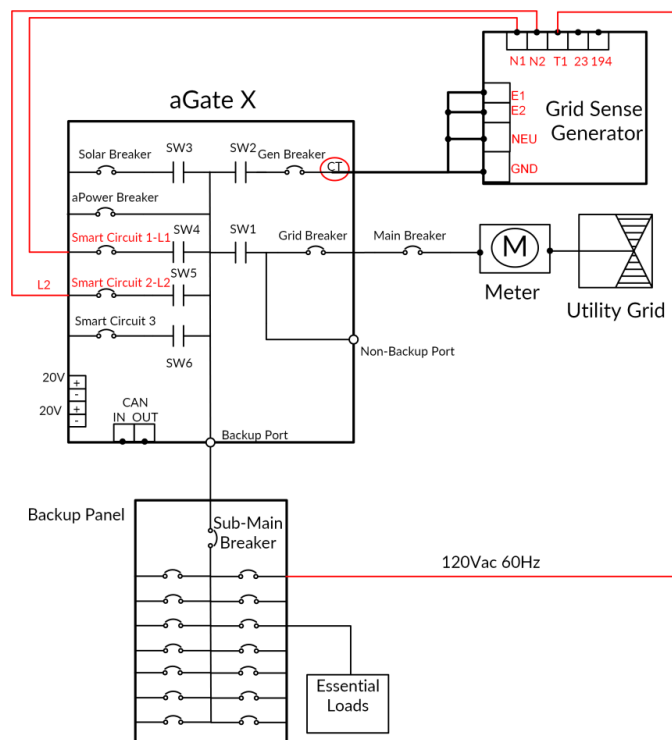
- Always connect with your local Generac dealer.
- Unless it is removed by a certified Generac dealer, the existing Generac ATS has to be left in place as part of the integration.
- If you working with the local Generac dealer, the best implementation of generator controls is a low voltage, two-wire start. That conversion can be done by them.



Follow the procedures below to connect a standby generator to the aGate. Refer to [Appendix 2](#) for wiring requirements.

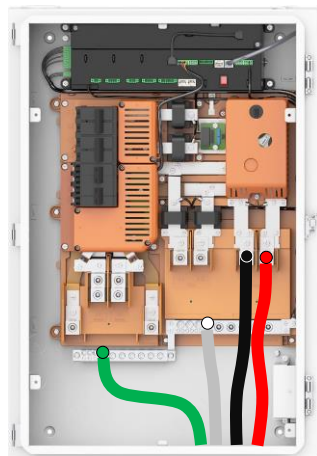
## Voltage Sensing generator connection

The following wiring diagram is for reference only. Refer to the generator manufacturer's instructions for specific wiring requirements.

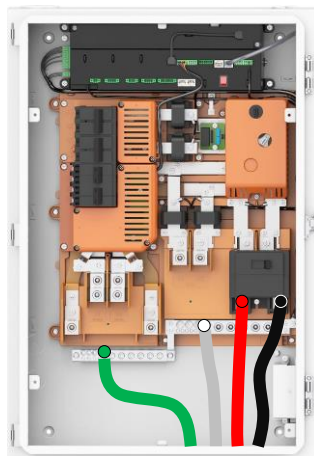


1. Connect the generator power output wires (E1, E2, NEU, GND) to the generator input terminals or generator breaker inside the aGate, as shown below.

**Without a generator breaker**



**With a generator breaker**



**NOTE:**

The positions of L1 and L2 will swap sides after a breaker is installed.

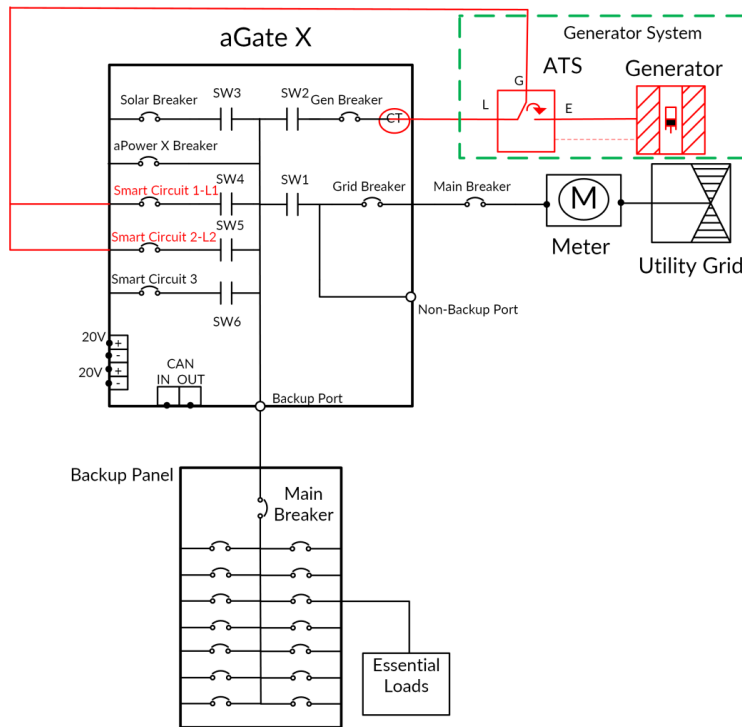
2. Install or replace the Smart Circuit 1 and Smart Circuit 2 breakers. A 15 Amp 2-pole breaker is recommended.

S/N	Model	Current	Description
1	CH215	15 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 15 A/240 V

3. Connect the generator control wires (N1, N2) to the Smart Circuit 1-L1 and Smart Circuit 2-L2 terminals in aGate respectively.
4. Connect the generator battery charge terminal (T1) to a branch circuit of the Backup Panel.

## ATS generator connection

The following wiring diagram is for reference only. Refer to the generator manufacturer's instructions for specific wiring requirements.

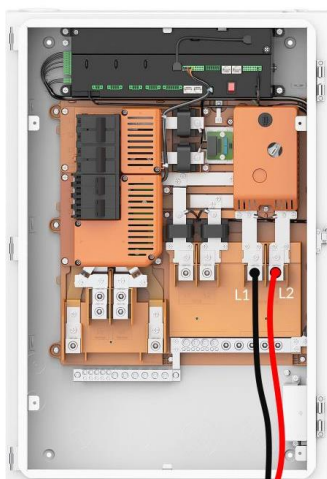


1. Remove the grid input cable from the generator.
2. Install or replace the Smart Circuit 1 and Smart Circuit 2 breakers. A 15 Amp 2-pole breaker is recommended.

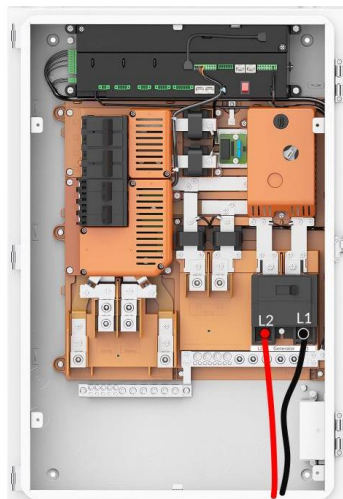
S/N	Model	Current	Description
1	CH215	15 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 15 A/240 V
2	CHF215	15 A	Eaton#Circuit Breaker; 2-Pole, 22 kAIC, 15 A/240 V

3. Connect the aGate Smart Circuit 1-L1 and Smart Circuit 2-L2 terminals to the generator's grid input terminals.
4. Connect the generator output terminals to the aGate generator input terminals or generator breaker.

Without a generator breaker



With a generator breaker

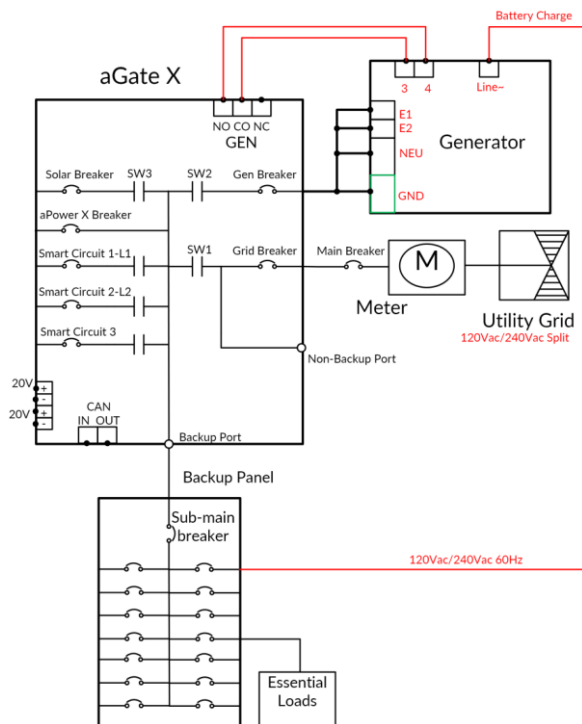


### NOTE:

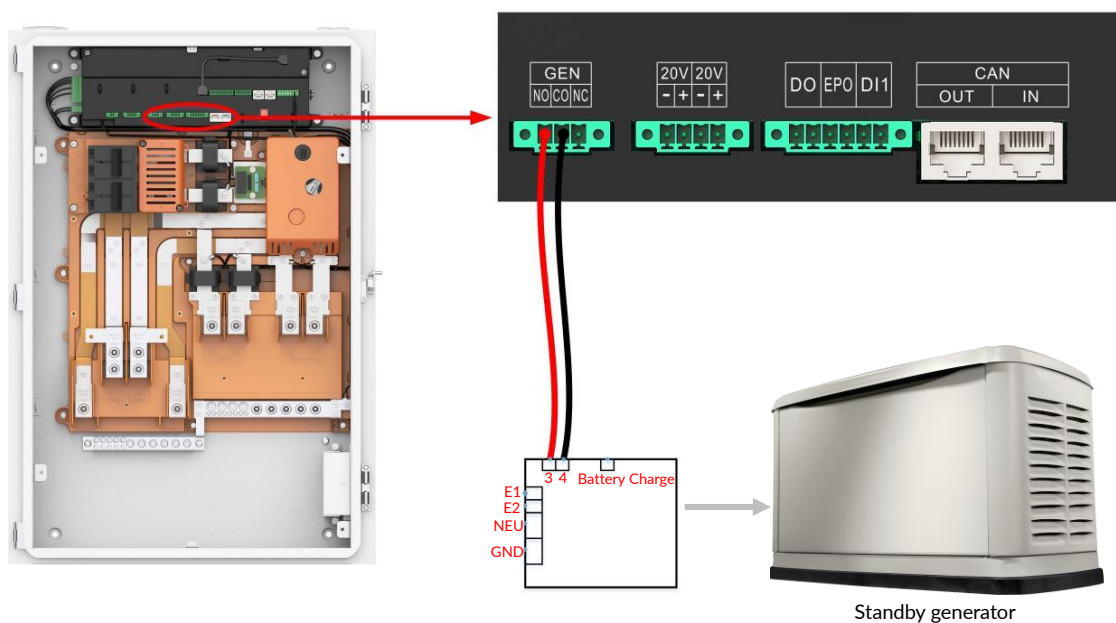
After installation of a generator breaker, L1 and L2 will swap sides for connections (L2 is located to the left while L1 is to the right).

## Dry Contact generator connection

The following wiring diagram is for reference only. Refer to the generator manufacturer's instructions for specific wiring requirements.



1. Connect the generator power output wires (E1, E2, NEU, GND) to the aGate generator input terminals or generator breaker.
2. Connect the aGate Gen NO, CO terminals, respectively, to the generator startup signal input 3, 4 terminals (3, 4), as shown below.

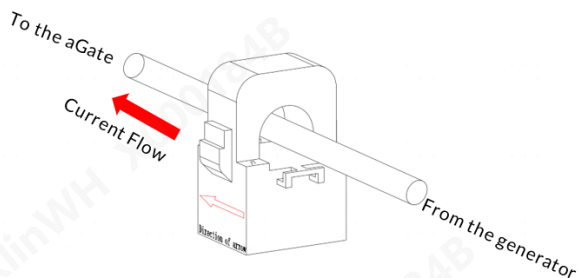


3. Connect the generator Battery Charge terminal to a branch circuit of Backup Panel.

## Generator CT Installation

The generator CT is shipped with the Generator Module. Follow the instructions below to install the generator CT.

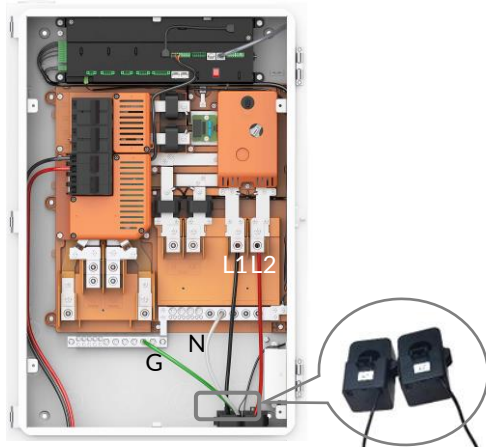
1. Lift the clip and put it on the cable with the arrow pointing from the generator towards the aGate.



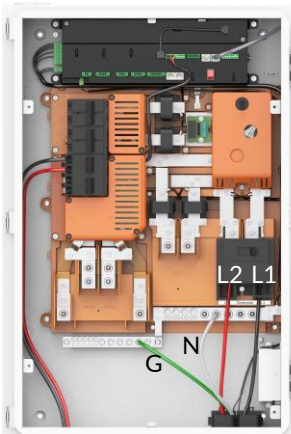
If there is no generator breaker installed, the L1/L2 connectors on the CT should correspond with the L1/L2 marks printed on the plastic.

If there is a generator breaker installed, the L1/L2 connectors on the CT should correspond with the L1/L2 marks on the tags.

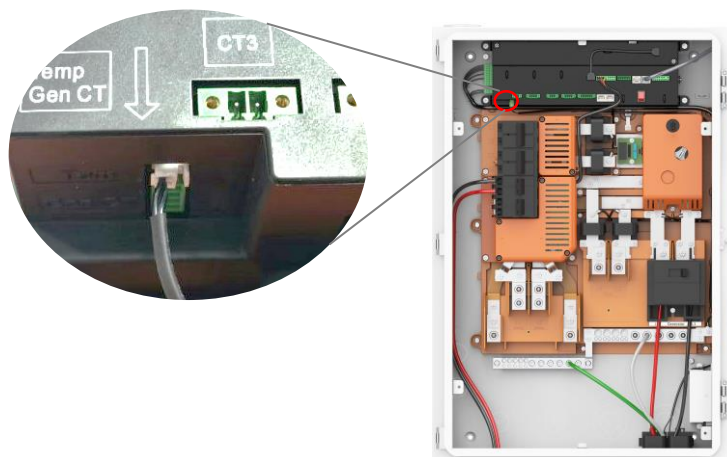
Without a generator breaker



With a generator breaker



2. Connect the CT wires to the terminals shown in the figure below. The CT wires are positioned on the inner wall of the aGate. Use cable ties for the CT wires at the positions, then remove the excess.

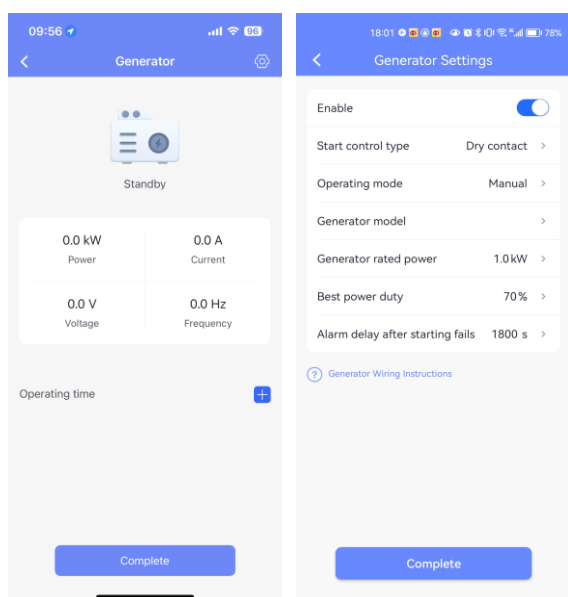


3. Close the CT snap joints.

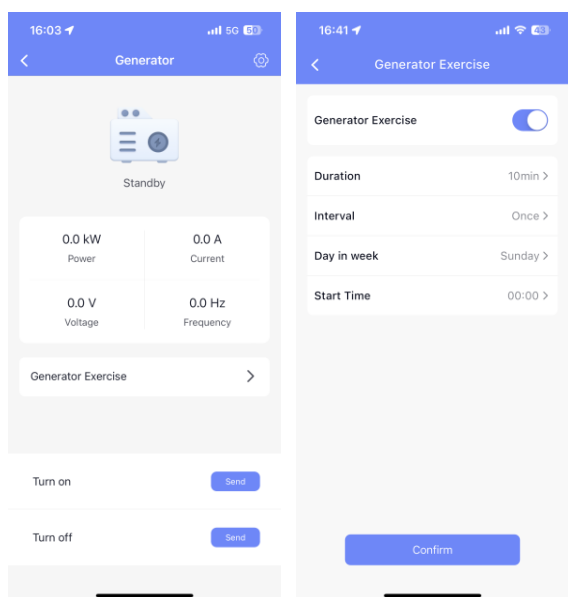
## Configure the generator using the FranklinWH App

After system installation and wiring, login to the FranklinWH App on the installer account and navigate to the **Generator** screen.

1. Click on the Settings icon (the gear) in the upper right corner to enter **Generator Settings** page.
2. Click the toggle button to enable the generator function.
3. Set the **Start control type** according to the generator type.
4. Set the **Operating mode**.
5. Input the **Generator rated power** according to the generator nameplate.
6. Configure the **Best power duty** to 50%.



7. Go to **Generator Exercise** page and configure the **Generator Exercise** function.



For more information, refer to [Franklin Home Power Commissioning Guide](#).

## Functional Verification Procedure

After completing generator commissioning, follow the steps below to verify the generator function.

1. Start the system:

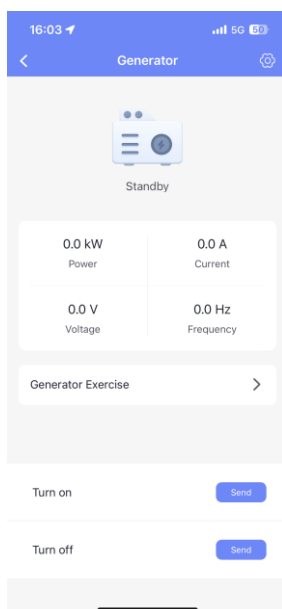
- a) Turn on the aGate power switch
- b) Turn on the aPower breaker on the aGate
- c) Turn on all other switches between the aGate and the aPower unit(s)
- d) Turn on the aPower switches on the side of each aPower



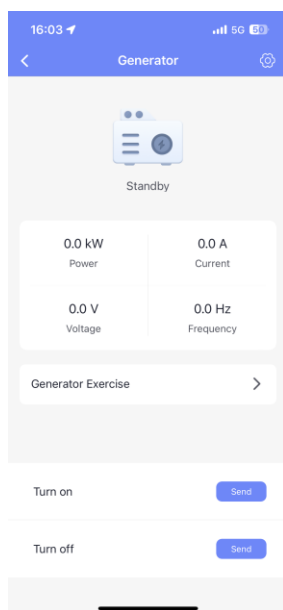
**NOTE:** If there are multiple aPower batteries in an FHP system, turn on aPower switches in sequence. Check whether the FranklinWH App reports any alarm for each activation.

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- e) Turn on the generator breaker (if any) inside the aGate
- f) Turn on the generator switch
- g) Login the FranklinWH App with the homeowner account, navigate to **Generator** page, click **Send** under **Turn on**. Note that the generator status must be **Standby** when performing this action.
- h) Manually turn on the generator, then wait and observe if there are voltage and frequency readings showing on the **Generator** page in the app.

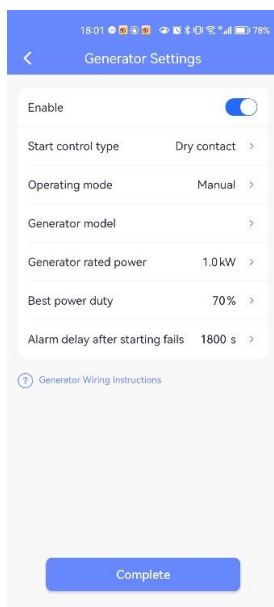


2. Observe whether the parameter readings on the Generator screen are as the settings documented in the previous section.



If the generator failed to boot up after more than 10 mins, go to the **Generator Settings** page in the app, and perform the following actions :

- a) Click the toggle button to disable the generator function, then click **Complete** to save the configuration.
- b) Re-click the toggle to enable the generator function, then click **Complete** to save the configuration.



3. Click **Send** under **Turn off** in the **Generator** screen on the installer app to disconnect the generator.
4. Turn off the generator power switch.
5. Restore the generator operation mode according to the configuration during commissioning.

## Appendix 1 Recommended Generator Breakers

S/N	Model	Current	Description
1	CSR2100	100 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 100 A/240 V
2	CSR2125N	125 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 125 A/240 V
3	CSR2150N	150 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 150 A/240 V
4	CSR2175N	175 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 175 A/240 V
5	CSR2200N	200 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 200 A/240 V
6	BW2100	100 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 100 A/240 V
7	BW2125	125 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 125 A/240 V
8	BW2150	150 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 150 A/240 V
9	BW2175	175 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 175 A/240 V
10	BW2200	200 A	Eaton#Circuit Breaker; 2-Pole, 10 kAIC, 200 A/240 V
11	BWH2100N	100 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 100 A/240 V
12	BWH2125N	125 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 125 A/240 V
13	BWH2150N	150 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 150 A/240 V
14	BWH2175N	175 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 175 A/240 V
15	BWH2200N	200 A	Eaton#Circuit Breaker; 2-Pole, 25 kAIC, 200 A/240 V

## Appendix 2 Wiring

Terminal Name	Wire Gauge	Tool	Strip Length	Torque
Dual-lug terminal	4 AWG-250 MCM CU/AL	8 mm hex wrench 5/8-18 UNF hex screw	1 in. (upper) 2 in. (lower)	3/0 AWG-250 MCM 275 LB-IN 4 AWG-2/0 AWG 110 LB-IN
Single-lug terminal	4 AWG-250 MCM CU/AL	8 mm hex wrench 5/8-18 UNF hex screw	1 in	3/0 AWG-250 MCM 275LB-IN 4 AWG-2/0 AWG 110LB-IN
Neutral bar terminal lug	4 AWG-250 MCM CU/AL	8 mm hex wrench 5/8-18 UNF hex screw	1 in	3/0 AWG-250 MCM 275 LB-IN 4 AWG-2/0 AWG 110 LB-IN
	14 AWG-2/0 AWG CU/AL	5 mm hex wrench 7/16-20 UNF hex screw	1 in.	3 AWG-2/0 AWG 110 LB-IN 14 AWG-4 AWG 35 LB-IN
	14 AWG-4 AWG CU/AL	Straight screwdriver 1/4-28 UNF	0.6 in.	14 AWG-4 AWG 26 LB-IN
Ground bar terminal lug	14 AWG-2/0 AWG CU/AL	5mm hex wrench 7/16-20 UNF hex screw	0.8 in.	3 AWG-2/0 AWG 110 LB-IN 14 AWG-4 AWG 35 LB-IN
	14 AWG-4 AWG CU/AL	Straight screwdriver 1/4-28 UNF	0.4 in./0.8 in.	14 AWG-4 AWG 26 LB-IN