FRANKLINWH

Split CT Installation Guide

aGate X 1.3.1, SKU: AGT-R1V3-US
Split CT Kit, SKU: ACCY-CT200V2-US

May 8, 2025

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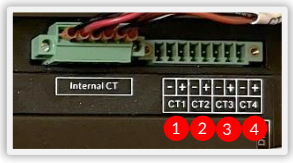
Overview

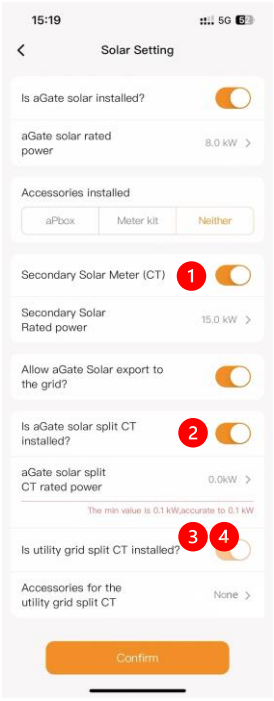
In some setups, solar panels or subpanels with loads are connected in a way where the CTs inside the aGate are not able to correctly measure the electricity flow.

The FranklinWH System uses a set of CTs to include that part of measurement into the energy calculation of the aGate, showing the household's real-time energy production and consumption in a more precise way. The customer will then be able to base their energy usage decisions on the remaining backup hour and other factors measured by the CTs.

NOTE

- Only FranklinWH accessories are compatible. Do not attempt to use third-party meter accessories or those from other brands, as they are not supported and may result in system issues.
- CTs leads should not exceed 50 ft (15 m).
- CT1, CT2, CT3, and CT4 labels are included in the accessories package. Use the appropriate label to identify each external CT.
- The app images provided in this document are for demonstration purposes only. Depending on product version, details may appear slightly different.





External CT Ports	Function	Limitation
1 CT1	Isolated PV Metering - Measure the independent PV system at the aGate line-side.	CT1 must be installed on the L2 line of the PV output.
2 CT2	Isolated PV Metering - Measure the independent PV system at the aGate non-backup port.	CT2 must be installed on the L2 line of the PV output.
3 4 CT3 - CT4 Pair	Dedicated grid consumption measurement for line-side loads.	CT3 and CT4 are designed exclusively for grid consumption measurement and cannot be used for PV measurement.

Typical Grid Consumption & PV Production Metering

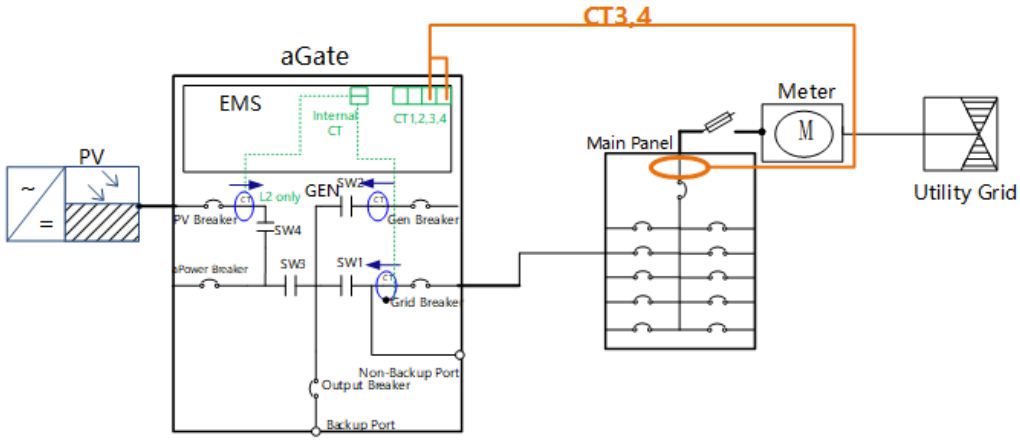
Grid Consumption Metering

NOTE

For Split CT installation, please refer to the CT Installation section.

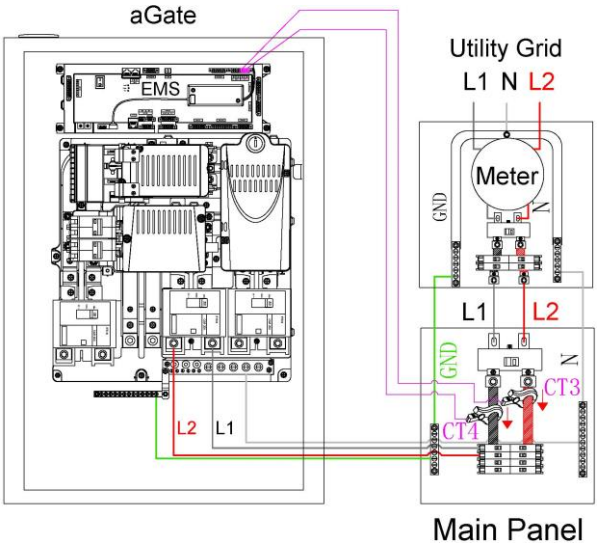
Scenario A: Main Panel Consumption Metering

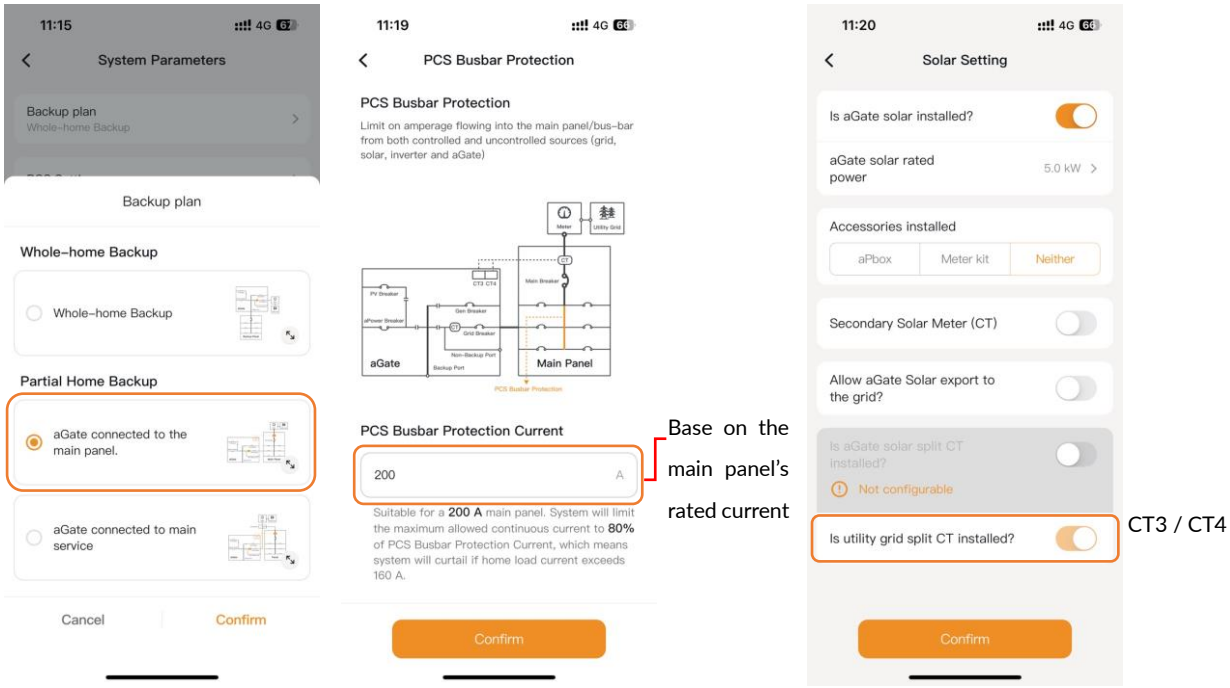
The aGate and line-side loads are connected to the grid via the main panel.



Recommendation: On the upper end of the service wire that connects the main panel with the utility grid, install a pair of CTs connected to the CT3 and the CT4 ports of the EMS module inside the aGate. Wiring method and settings in the FranklinWH App are shown below.

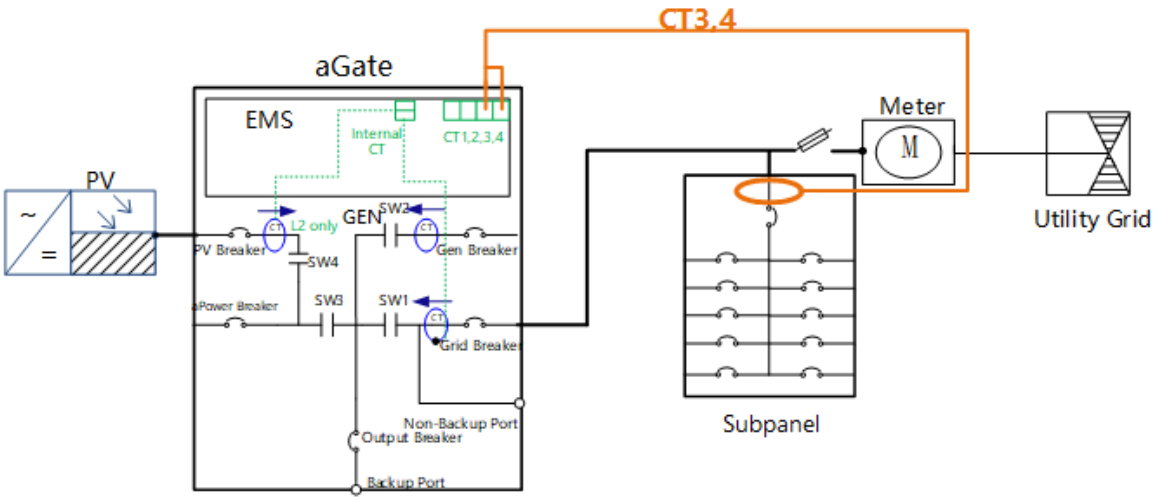
Installing a grid breaker in the aGate will switch the positions of the L1 and L2 connections. Without the grid breaker, the L1 is connected to the port on the left and the L2 is on the right. After adding the grid breaker, the L1 will be on the right and the L2 will be on the left.



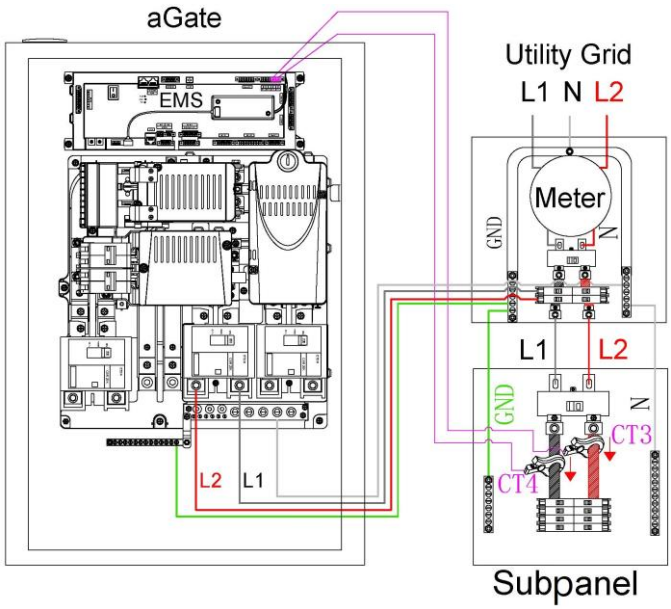


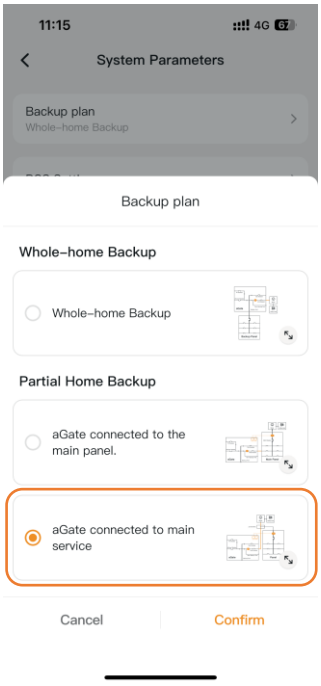
Scenario B: Line-Side Subpanel Consumption Metering

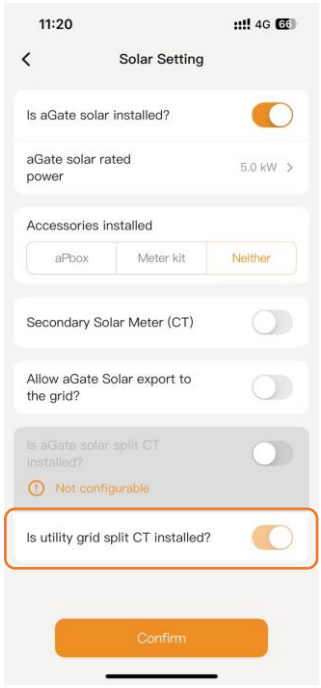
The wiring of line-side loads is combined on a subpanel which is connected to the grid without passing its wires through the aGate.



Recommendation: On the upper end of the wire that connects the subpanel with the grid, install a pair of CTs connected to the CT3 and the CT4 ports of the EMS module inside the aGate. Wiring method and settings in the FranklinWH App are shown below.


aGate
EMS
L2
L1
Utility Grid
L1 N L2
Meter
GND
N
L1
L2
GND
N
CT3
CT4
Subpanel


11:15
4G
System Parameters
Backup plan
Whole-home Backup
Backup plan
Whole-home Backup
Whole-home Backup
Partial Home Backup
aGate connected to the main panel.
aGate connected to main service
Cancel
Confirm

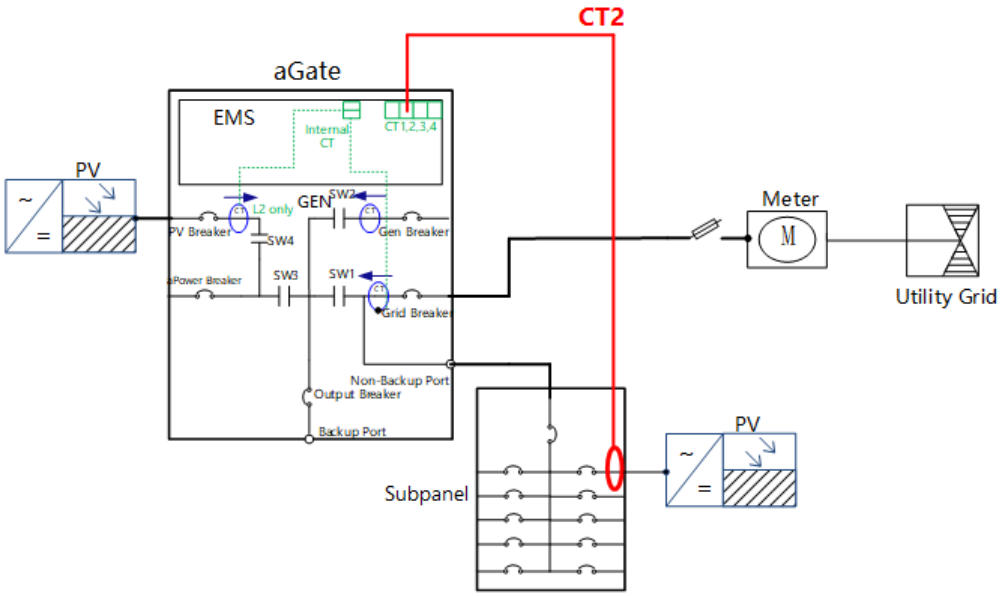

11:20
4G
Solar Setting
Is aGate solar installed?
aGate solar rated power
5.0 kW
Accessories installed
aPbox
Meter kit
Neither
Secondary Solar Meter (CT)
Allow aGate Solar export to the grid?
Is aGate solar split CT installed?
Not configurable
Is utility grid split CT installed?
Confirm

CT3 / CT4

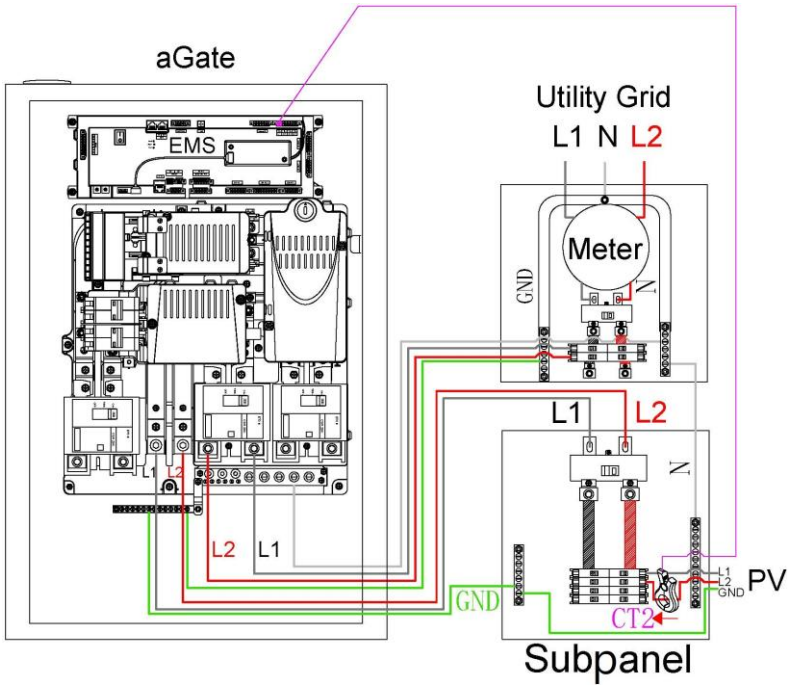
PV Production Metering

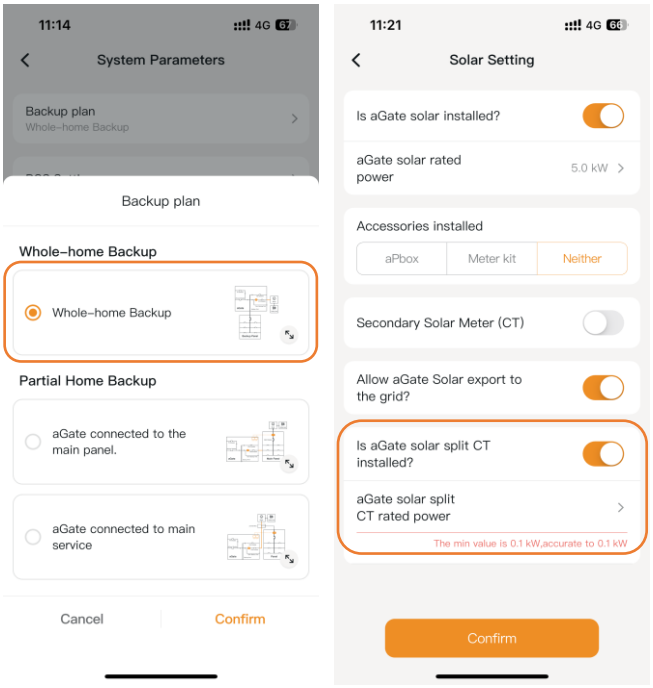
Scenario C: A PV System Connected to the aGate Non-Backup Port Subpanel

When a PV system is connected to the non-backup port of the aGate via a subpanel, the aGate cannot measure the production from that PV system.



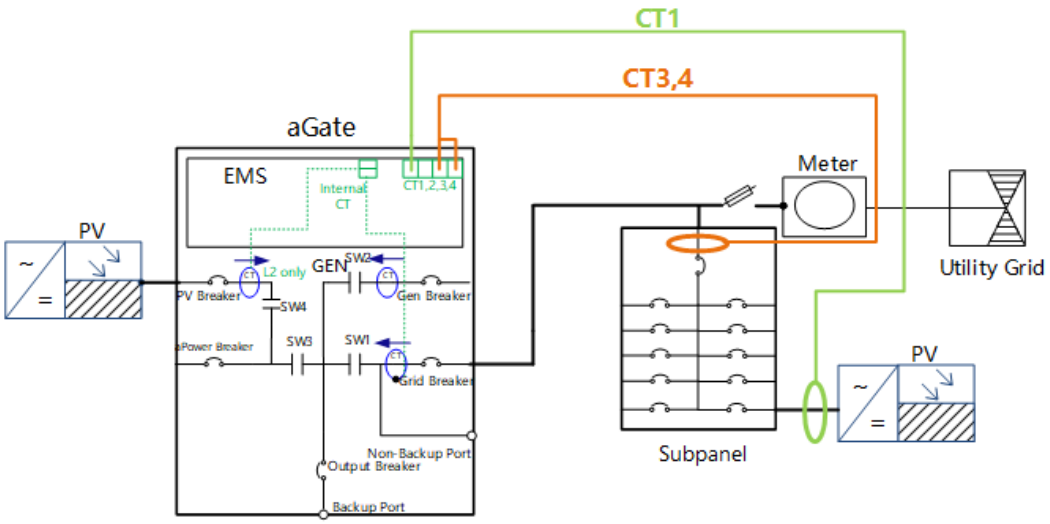
Recommendation: Install a CT on the L2 line of the subpanel connected to the separate PV system to measure the PV output. The CT terminal is then connected to the CT2 port of the EMS module inside the aGate. Wiring method and settings in the FranklinWH App are shown below.





Scenario D: A Line-Side Subpanel with PV System Metering

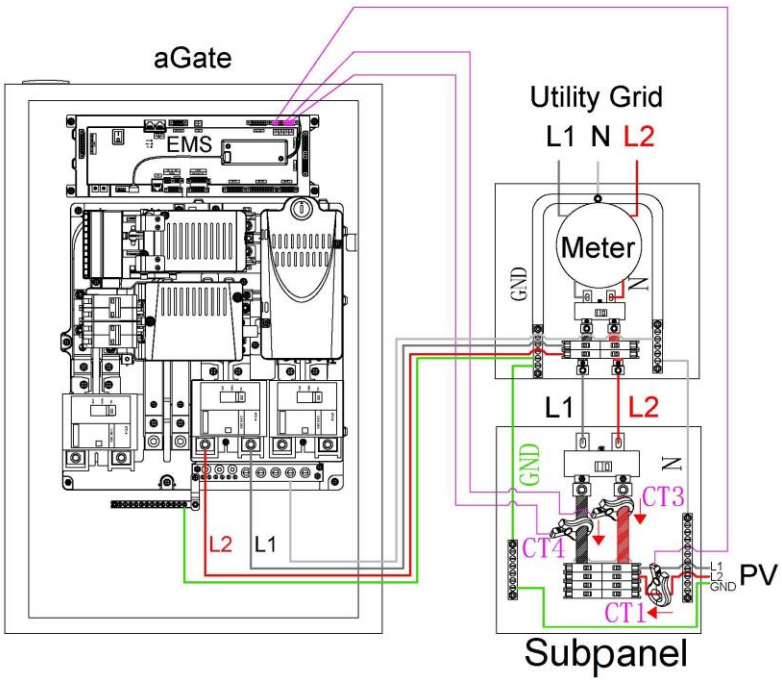
A PV system is connected to the utility grid via a line-side subpanel. The wiring of line-side loads is combined into the same subpanel external to the aGate.

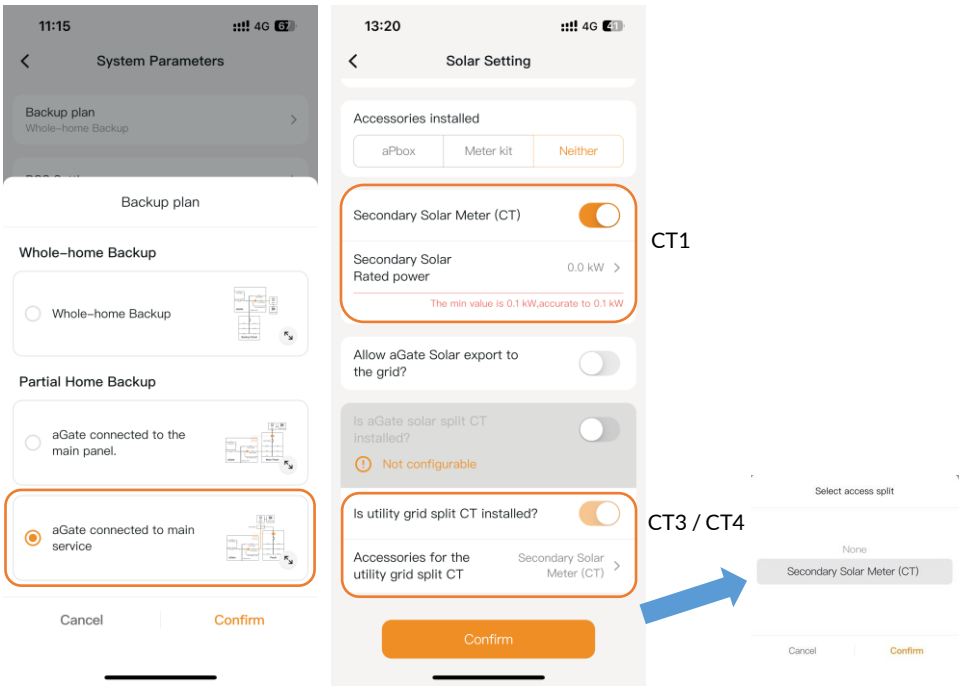


Recommendation: To accurately measure both the PV production and the consumption of line-side loads, it is recommended to install another three CTs on the line-side subpanel:

- Install a CT on the L2 line of the subpanel connected to the separate PV system, with its terminal connected to the CT1 port of the EMS module inside the aGate.
- On the upper end of the wire that connects the same subpanel to the utility grid, install two more CTs connected to the CT3/CT4 ports of the EMS module inside the aGate.

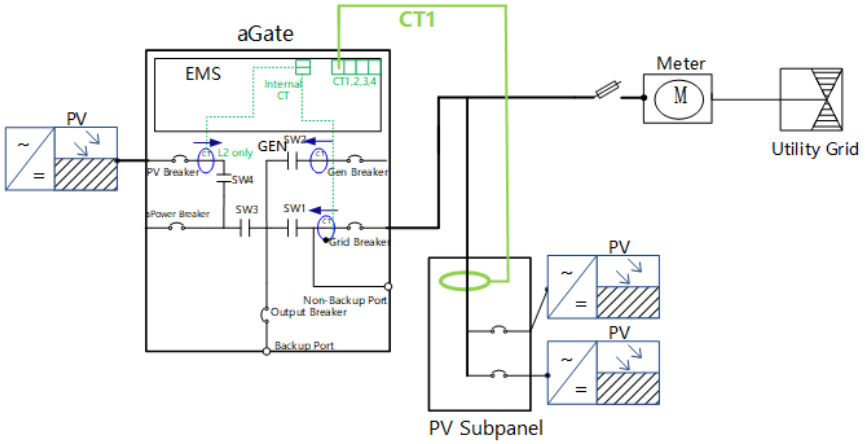
Wiring method and settings in the FranklinWH App are shown below.


aGate
EMS
L2
L1
Utility Grid
L1 N L2
Meter
GND
N
L1
L2
GND
N
CT3
CT4
L1
L2
GND
PV
CT1
Subpanel

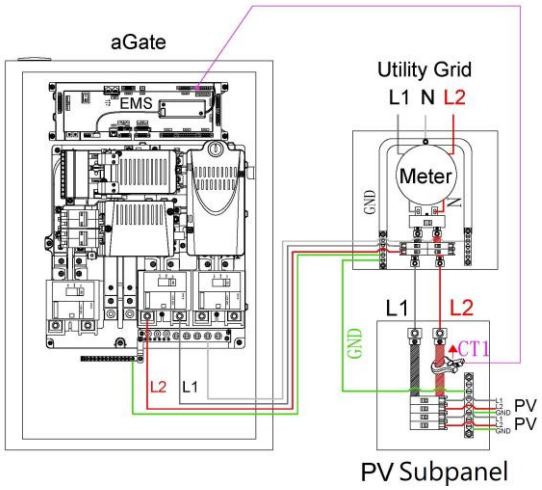

11:15
4G
System Parameters
Backup plan
Whole-home Backup
Backup plan
Whole-home Backup
Whole-home Backup
Partial Home Backup
aGate connected to the main panel.
aGate connected to main service
Cancel
Confirm
13:20
4G
Solar Setting
Accessories installed
aPbox
Meter kit
Neither
Secondary Solar Meter (CT)
Secondary Solar Rated power
0.0 kW
The min value is 0.1 kW,accurate to 0.1 kW
Allow aGate Solar export to the grid?
Is aGate solar split CT installed?
Not configurable
Is utility grid split CT installed?
Accessories for the utility grid split CT
Secondary Solar Meter (CT)
Confirm
CT1
CT3 / CT4
Select access split
None
Secondary Solar Meter (CT)
Cancel
Confirm

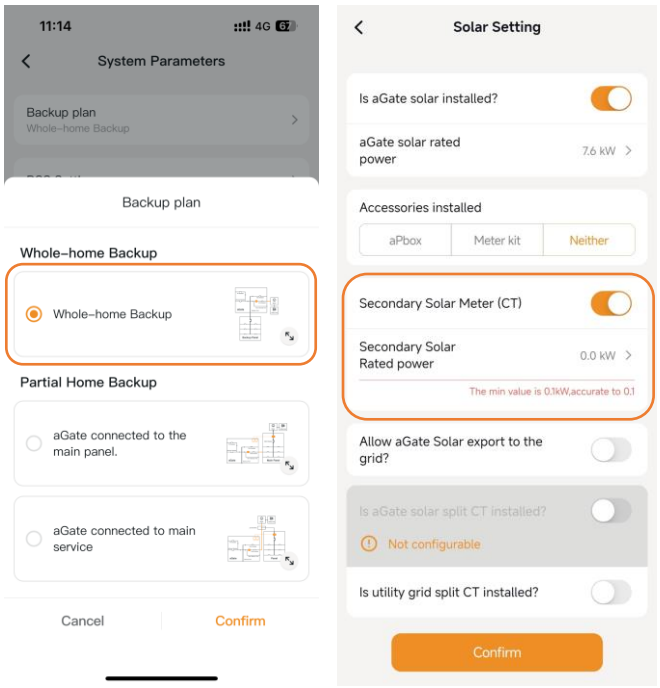
Scenario E: A Line-Side PV Systems Metering

Multiple PV systems are directly connected to the utility grid via a PV subpanel.



Recommendation: Install a CT on the L2 line on the PV subpanel, connected to the CT1 port on the aGate EMS. Wiring method and settings in the FranklinWH App are shown below.



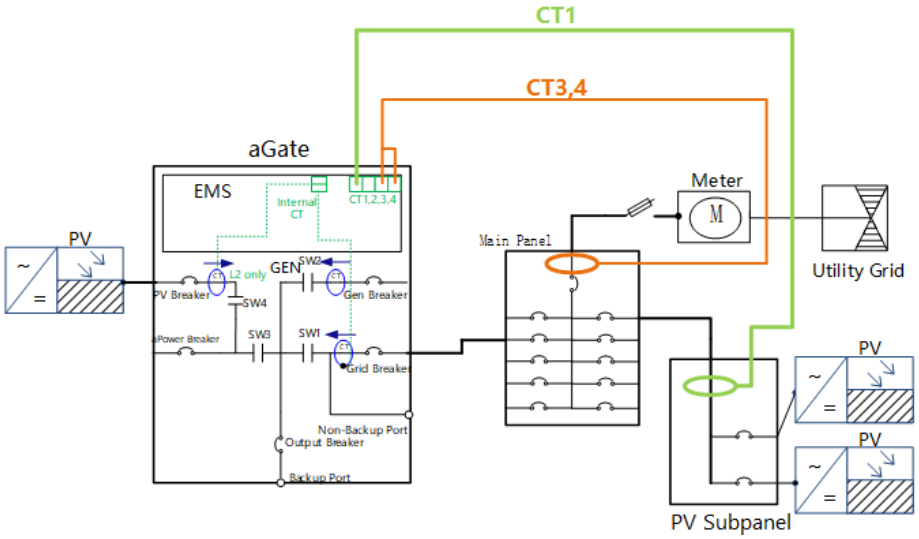


CT1

Scenario F: A Main Panel with PV System Metering

The aGate is connected to the grid via the main panel, and line-side loads are connected to the grid via the same main panel. PV systems are connected to the main panel through a separate PV subpanel.

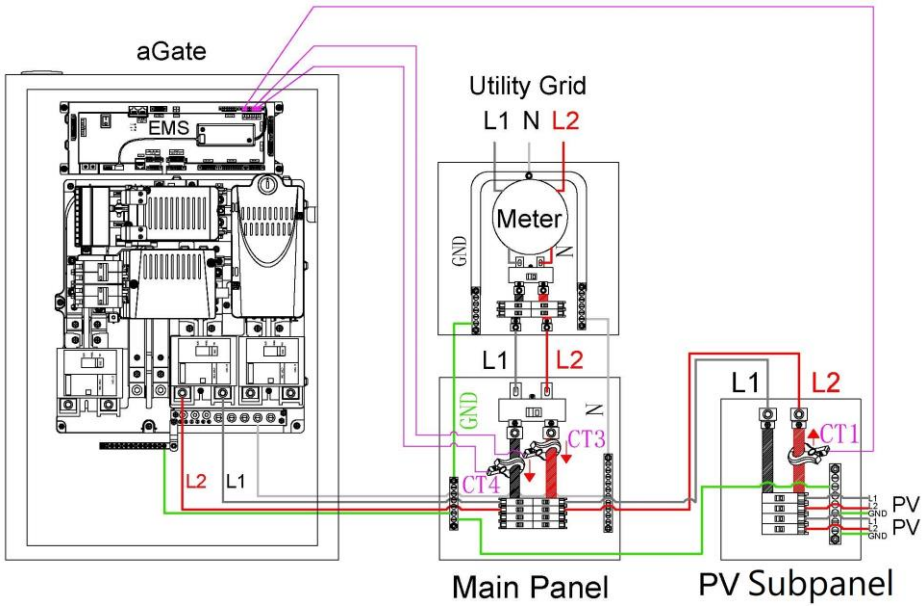
In this scenario, the aGate is unable to measure either the production from the PV systems or the consumption from the line-side loads.

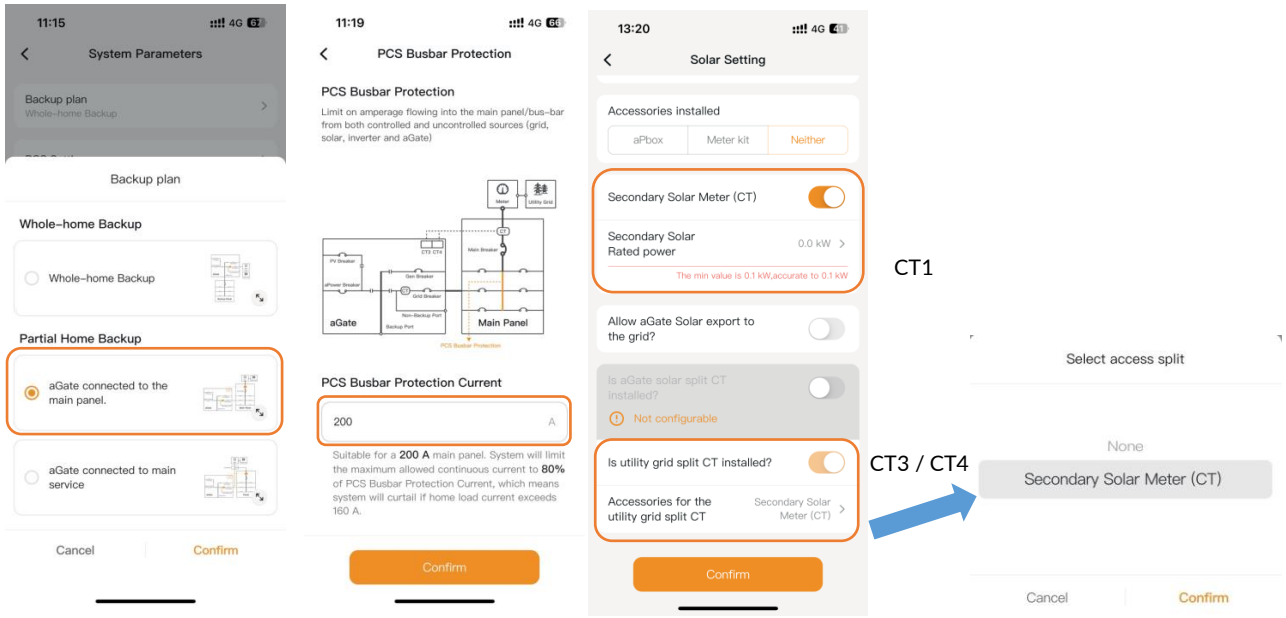


Recommendation:

- Install a CT on the L2 line of the PV subpanel to measure the output of the separate PV system. The CT terminal is then connected to the CT1 port of the EMS module.
- On the upper end of the wire of the main panel with loads, install two CTs connected to the CT3/CT4 ports on the EMS. This measures the consumption from the line-side loads external to the aGate, and the measurements will be counted as a part of the total energy consumption by the aGate.

Wiring method and settings in the FranklinWH App are shown below.





Notice: Add an aPbox for PV metering if the CT location is at a greater distance than standard CT extension wiring specification allows, please refer to the aPbox installation guide.

CT Installation

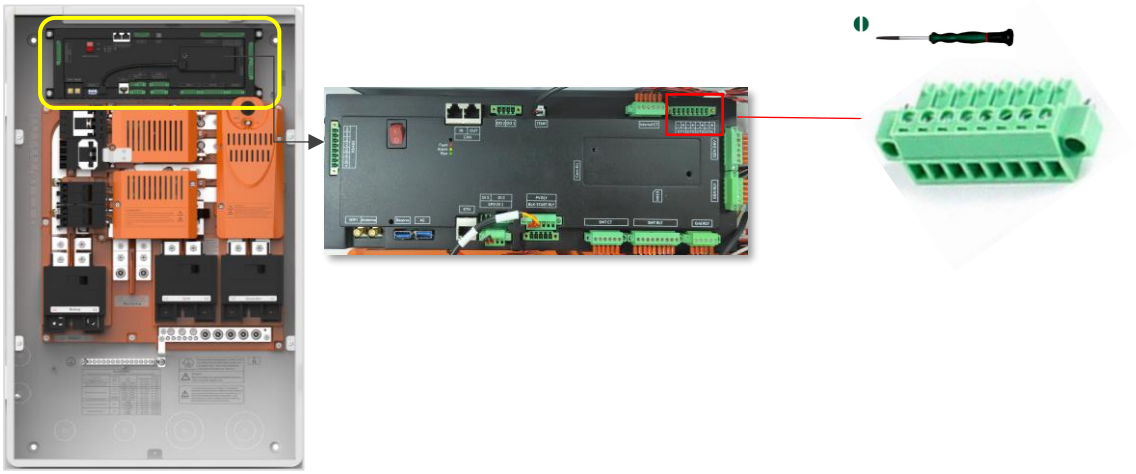
WARNING

1. Ensure that CT's clamp joint is in tight contact for measurement accuracy.
2. Ensure that CTs are installed and wired correctly with correct polarities.

Please refer to the following steps to install additional CTs.

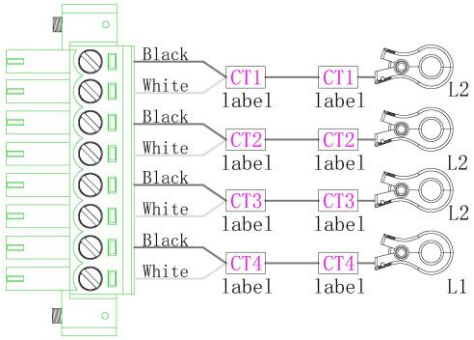
Step 1. Power down the system, turn off and lock the upstream and downstream circuit breakers. Wait at least 5 minutes before the installation.

Step 2. The EMS module is inside the aGate with a terminal block preassembled near its top right corner. Remove the terminal block using a 2 mm screwdriver on both ends.



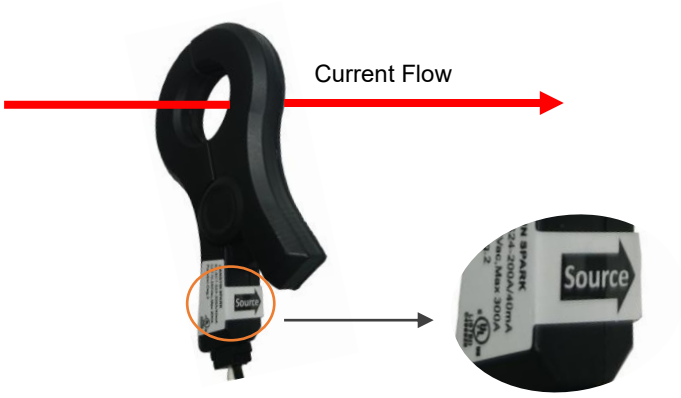
Step 3. Strip the CTs wires with a stripping length of 0.32 in. (8 mm).

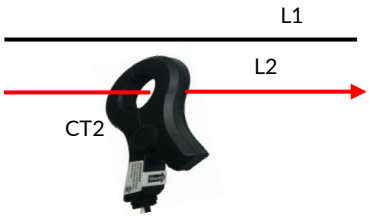
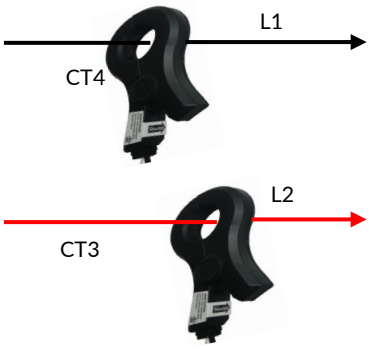
Step 4. Label both ends of each CT wire (CT1, CT2, CT3, CT4) as shown below.



Step 5. Connect the CT wires to their corresponding ports on the connector of the EMS module.

Step 6. Pass the L1 wire and the L2 wire through the CTs respectively, in the same direction as the arrow labelled on each CT, as shown in the following table.



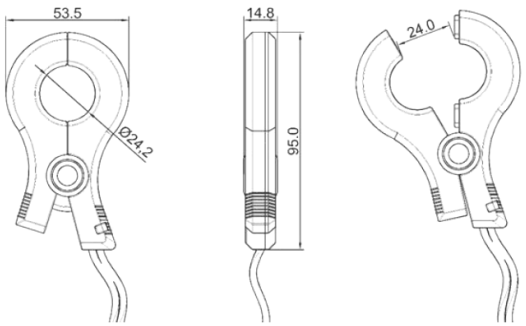
CT Number	CT Install Direction
CT1	From PV To subpanel/grid
CT2	From PV  To subpanel
CT3/CT4	From Grid  To subpanel

Appendix 1: App Settings

For detailed app parameter settings, please refer to ***FranklinWH Commissioning Guide***.

Appendix 2: CT Specifications

CT Appearance

CT specifications are shown in the table below.

Type	Specification	Mechanical Specification (mm)
ϕ24	200 A / 40 mA