Acrel Meter CT Bundling

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Overview

In a partial home backup configuration, branch circuits may be upstream of the aGate. These circuits may include heavy loads left in the main service panel or an existing non-backed-up sub-panel.

FranklinWH provides a solution for Acrel Split CTs to aggregate upstream metering into the Franklin Home Power system. Since all site loads must be monitored for full system functionality, split CTs will be used. Depending on the panel type, these branch circuits may need to be bundled for CT placement. This is typical if feeder conductors are installed in a way that does not allow CT installation. For information regarding Franklin Home Power system wiring, please refer to the FranklinWH System Installation Guide.

SOP details include:

- aGate Acrel Split CT Meter 1 wiring
- Acrel Split CT Kit installation
- Branch circuit L1 and L2 bundling

Tools And Materials

Estimated Time	15 – 20 minutes per Split CT Kit
Materials	Acrel Split CT Kit SKU: ACCY-CT200V1-US Each kit contains two Acrel CTs with 49’ leads and one parallel termination connector. Depending on the installation type, two kits may be needed. Electrical insulating tape
Tools	Multimeter Standard electrical tools

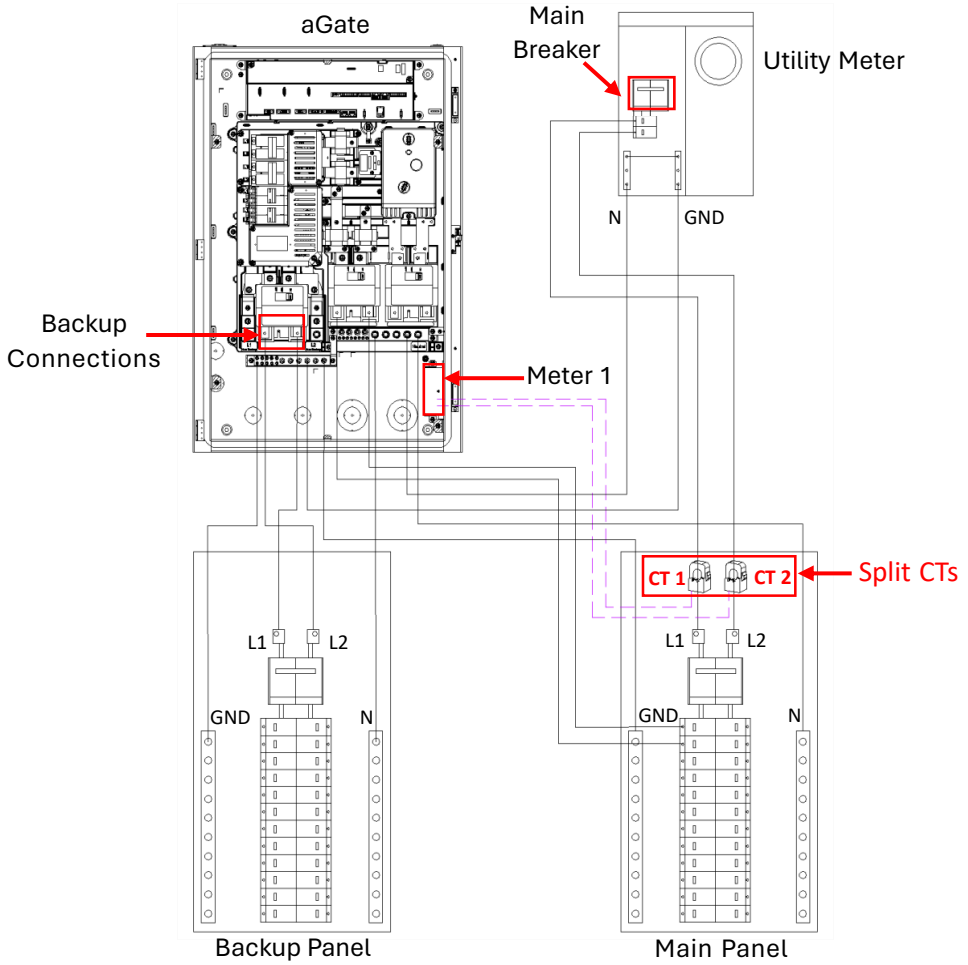
Main Panel Consumption Metering

In the installation diagram in **Figure 1**, the main service panel has home loads upstream of the FranklinWH aGate. Since all site loads must be monitored, a Split CT Kit shall be installed in the main panel.

- **Figure 1** shows a Split CT Kit installed around the L1 and L2 conductors in the main panel.
- Split CTs will be wired in parallel with Meter 1 CTs in the aGate.
- In some instances, CTs may not fit on the feeder conductors in the main panel.
- The following steps detail how to bundle L1 and L2 branch circuits for site monitoring.

IMPORTANT: The Acrel AGF-AE-D/200 is the only approved metering equipment for the FranklinWH aGate. No more than two sets of CTs shall be connected to a single Acrel meter.

Figure 1



Meter 1 Phasing

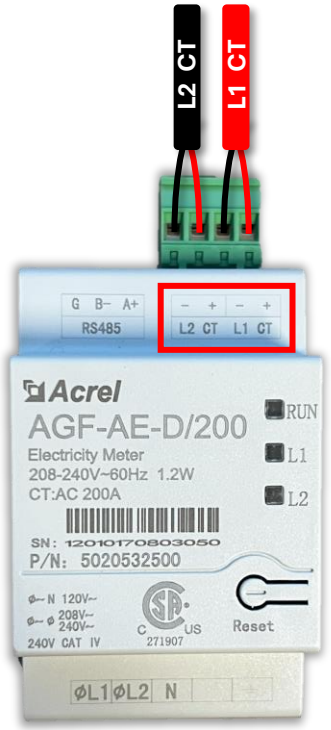
The Acrel meter is factory-wired with the RED CT lead terminated into the L1 CT position. The BLACK CT lead is terminated in the L2 position.

- Each CT lead contains one black and one red wire.
    - Black: - Negative
    - Red: + Positive

- A directional arrow is molded into the CT body and can be viewed once the CT is open.

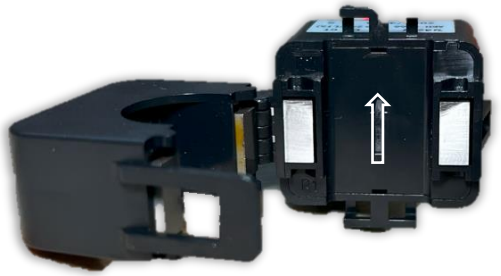
- Acrel CT arrows will face the load.

IMPORTANT: L1 and L2 phasing must be maintained throughout the system. The L1 and L2 current reference for Meter 1 must match the L1 and L2 circuits being monitored by the CTs.



Factory Wired Meter with L1 Black and L2 Red

Factory Installed aGate Meter 1 and Meter 2



Acrel CT Directional Arrow

Step 1 – Wiring Meter 1

Removing The CT Connections

IMPORTANT: Before starting any CT installation or relocation tasks, verify that all AC and DC breakers/disconnects are OFF and that all equipment is de-energized. Use proper lock-out tag-out methods if applicable.

- Begin by locating Meter 1 inside the aGate. **Figure 2**.
- Meter locations are illustrated on the meter cover. **Figure 3**.
- Remove the meter cover screws located at the top and front of the cover. **Figure 3**.
- With only the bottom meter cover screw in place, rotate the cover to the left to expose Meter 1 and Meter 2. **Figure 4**.
- Meter 1 is located to the left of Meter 2 at the back of the aGate.

Figure 2

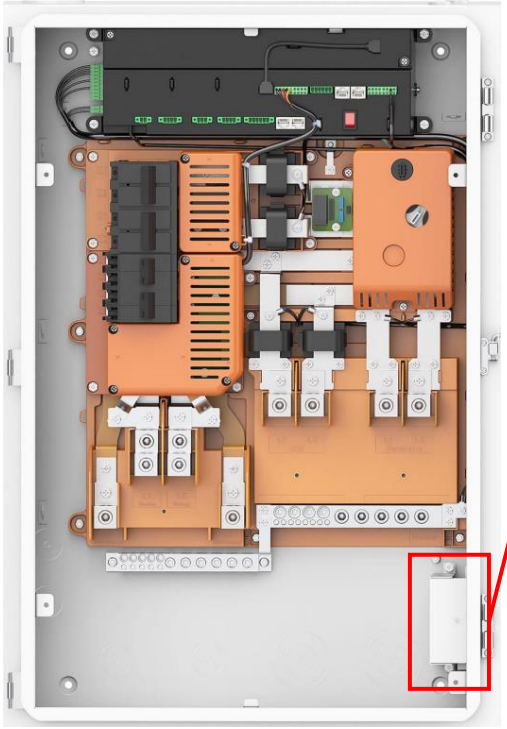


Figure 3

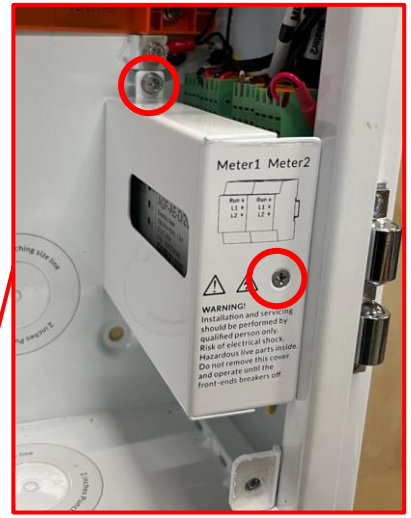
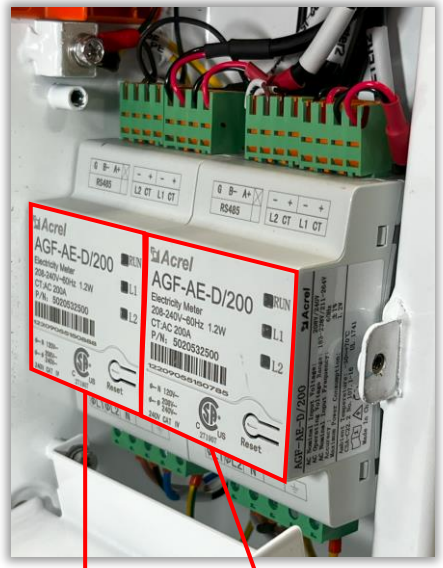


Figure 4



Adding One Split CT Kit

A single Split CT kit will be used when one set of external CTs is needed to monitor additional loads upstream of the aGate. The single Split CT Kit will be wired in parallel with the existing aGate Meter 1 CTs.

- Once Meter 1 is exposed, unplug the L1/L2 CT termination block. **Figure 5**.
- Remove both aGate L1 and L2 internal CT wires from the termination block. If damaged from the previous connection, these wires may need to be cut and stripped. **Figure 6**.
- Using the new connector provided with Split CT Kit, land both the existing aGate CT leads and new split CT leads into the applicable port. **Figure 7**.

NOTE: The RED CT lead is terminated in the L1 position, and the BLACK CT lead is terminated in the L2 position.

Figure 5

Figure 6

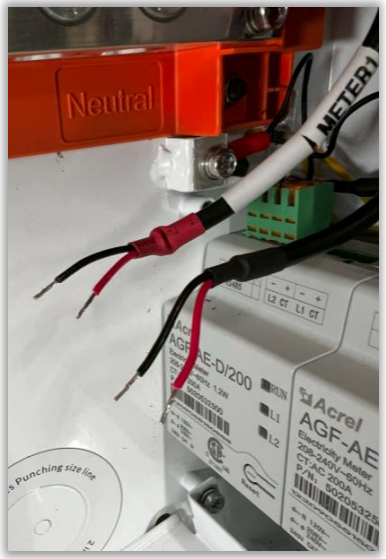
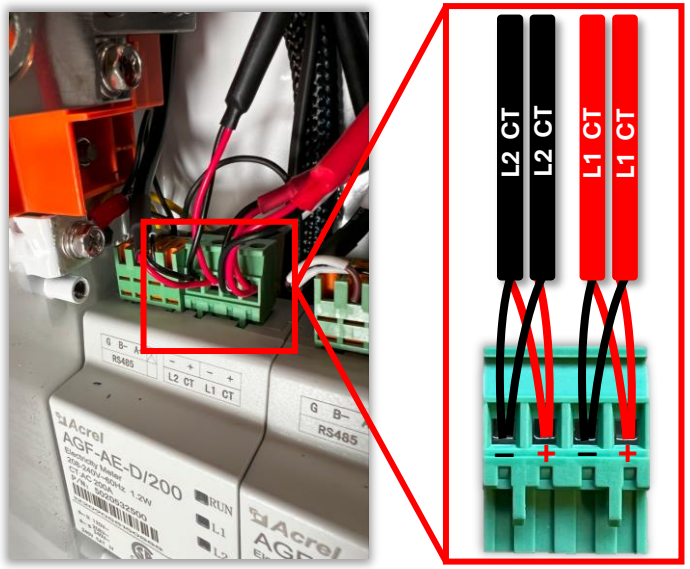


Figure 7



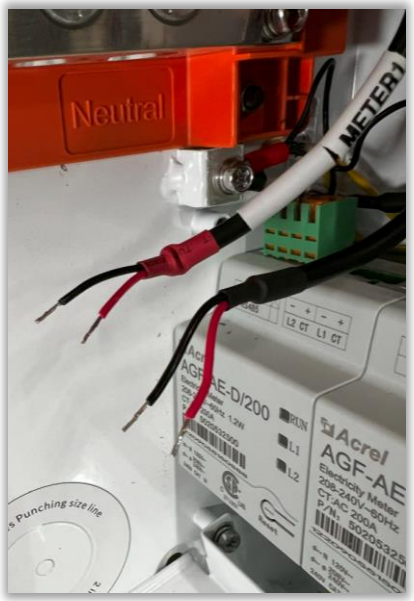
IMPORTANT: If using a single Split CT kit for bundling and the internal Meter 1 CTs, verify that the aGate feeder wires are omitted from the Split CT kit CTs. This may cause measuring loads downstream of the aGate twice.

Adding Two Split CT Kits

When loads upstream of the aGate cannot be monitored with just one set of CTs, two Split CT Kits will be used. The two Split CT Kits will be wired in parallel at Meter 1. The existing Meter 1 CTs in the aGate will not be used.

- Remove the aGate L1 and L2 internal CT wires from the termination block and trim the exposed ends if applicable. **Figure 8**.
- Using electrical insulating tape, cover the ends of each wire. **Figure 9**.
- Once the wire ends are sufficiently insulated with one to two wraps of tape, tuck or cable tie the leads out of the way.
- Using the new connector provided with the Split CT Kit, land the new split CT leads into the applicable port. **Figure 10**.

Figure 8



Example Photo

Figure 9

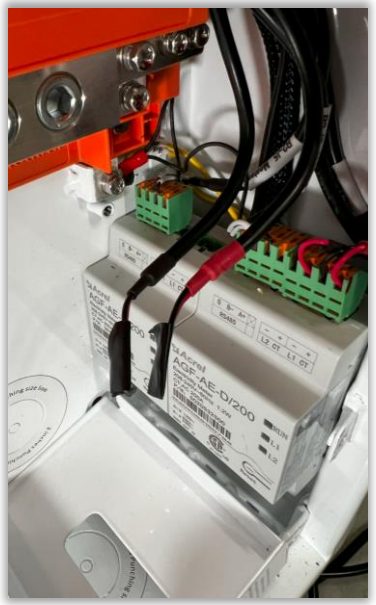


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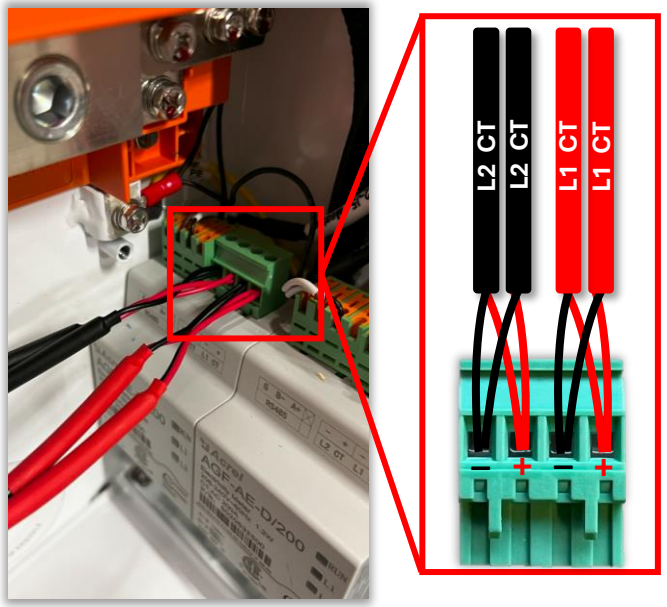
Figure 10



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NOTE: The RED CT lead is terminated in the L1 position, and the BLACK CT lead is terminated in the L2 position.

Bundling L1 and L2 Conductors: One Set Of CTs

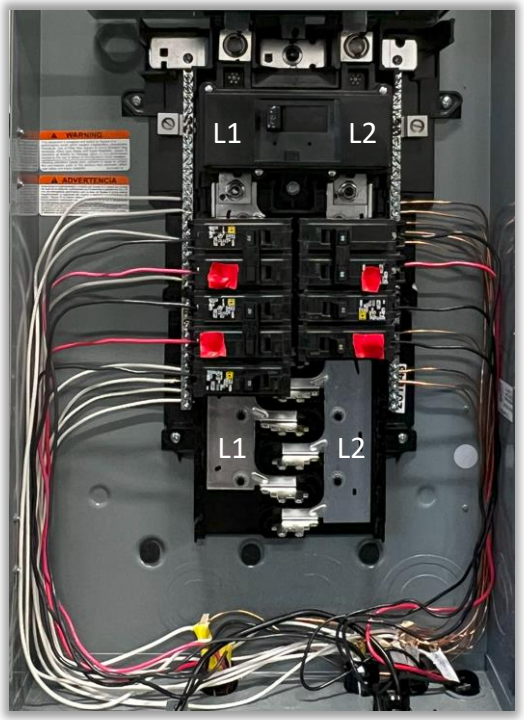
Two methods can be used when bundling CTs to monitor circuits upstream of the aGate.

Method One:

- In **Figure 11**, only one set of CTs is needed to capture all L1 and L2 conductors.
- Begin by identifying L1 and L2 circuits. In **Figure 11**, L2 circuits are marked with red tape on the breaker.
- Bundle all L1 conductors and install the L1 CT (red heat shrink) with the CT arrow facing the load. **Figure 12**.
- Next, bundle all L2 conductors and install the L2 CT (black heat shrink) with the CT arrow facing the load. **Figure 13**.

IMPORTANT: Wire color does not determine L1 or L2. Always confirm phasing before bundling conductors.

Figure 11



Example Photo

Figure 12

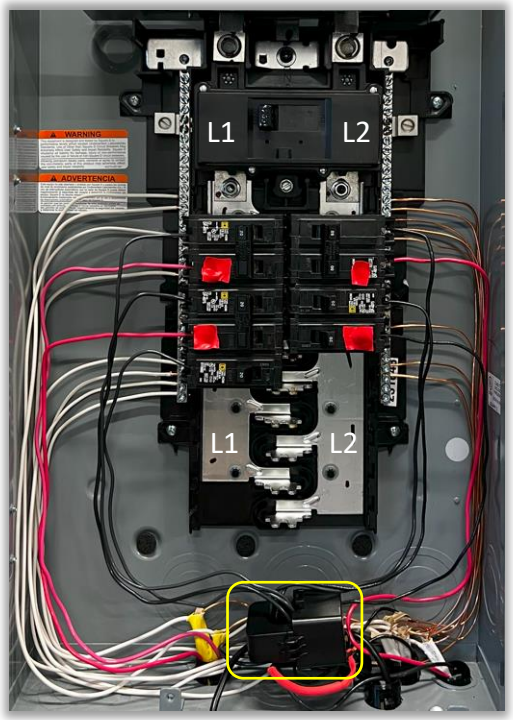


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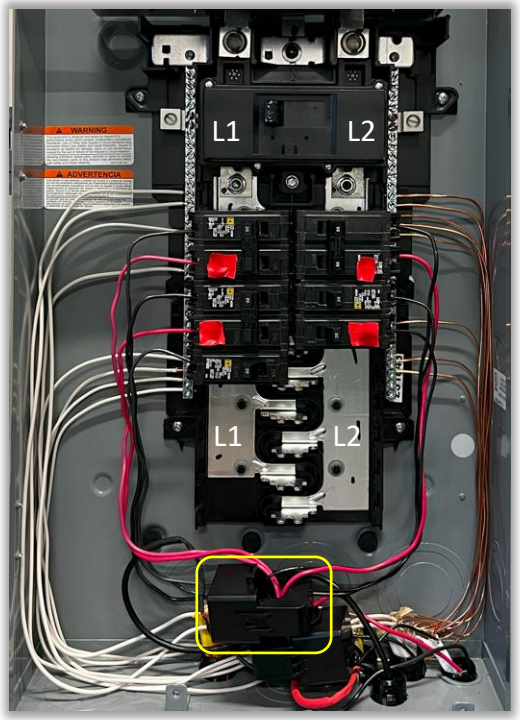
Figure 13



Example Photo

Bundling L1 and L2 Conductors: Two Sets Of CTs

Method Two:

- In **Figure 14**, two sets of CTs will be needed to capture all L1 and L2 conductors.
- Begin by identifying L1 and L2 circuits. In **Figure 14**, L2 circuits are marked with red tape on the breaker.
- Bundle all L1 conductors and install the L1 CTs (red heat shrink) with the CT arrow facing the load. **Figure 15**.
- Next, bundle all L2 conductors and install the L2 CTs (black heat shrink) with the CT arrow facing the load. **Figure 16**.

IMPORTANT: When using two sets of split CTs for site monitoring, the aGate internal site CTs will not be used.

Figure 14

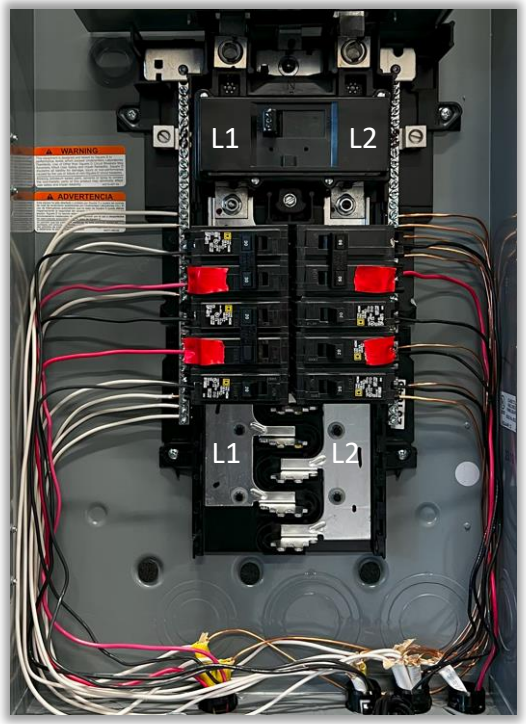


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Figure 15

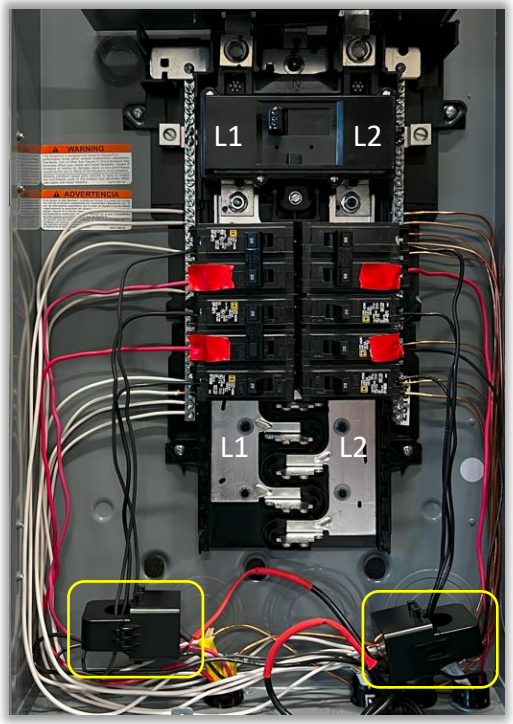

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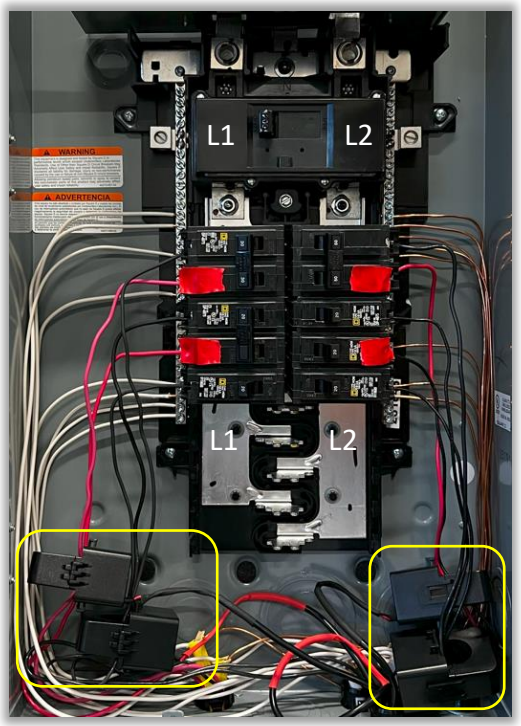
Figure 16



Example Photo

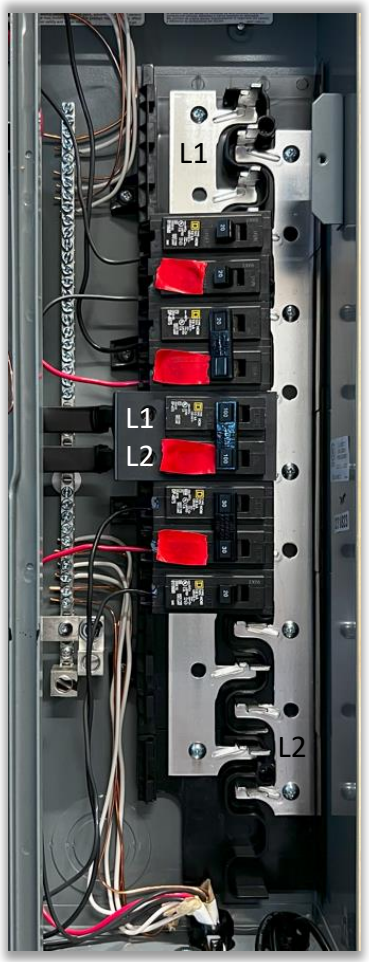
Bundling L1 and L2 Conductors: Center-Fed Main

When installing Split CTs in a center-fed main panel, branch circuits may originate from the top and the bottom of the panel. In this instance, two sets of CTs will be used.

- In **Figure 17**, two sets of CTs will be needed to capture all L1 and L2 conductors.
- Begin by identifying L1 and L2 circuits. In **Figure 17**, L2 circuits are marked with red tape on the breaker.
- Bundle all L1 conductors and install the L1 CTs (red heat shrink) with the CT arrow facing the load. **Figure 18**.
- Next, bundle all L2 conductors and install the L2 CTs (black heat shrink) with the CT arrow facing the load. **Figure 19**.

IMPORTANT: When using two sets of split CTs for site monitoring, the aGate internal site CTs will not be used.

Figure 17



Example Photo

Figure 18

Example Photo

Figure 19

Example Photo

Step 3 – Installation Verification

Verify the following before energizing the Franklin Home Power system:

- ❑ Meter 1 CTs are monitoring the correct phase.
- ❑ Meter 1 CTs are facing the correct direction, with the CT arrow facing the load.
- ❑ Meter 1 CT leads are correctly terminated at the meter. L1 Red and L2 Black.
- ❑ The aGate internal CT leads are sufficiently insulated with one to two wraps of electrical tape if they are not being used.
- ❑ All loads located upstream of the aGate are monitored by Meter 1 CTs.
- ❑ CTs are fully closed and do not interfere with breaker panel dead front installation.
- ❑ All branch circuit breaker connections are tight and torqued to manufacturer specifications.
- ❑ If the aGate internal CTs are still connected, verify that upstream CTs are not monitoring the same circuits.