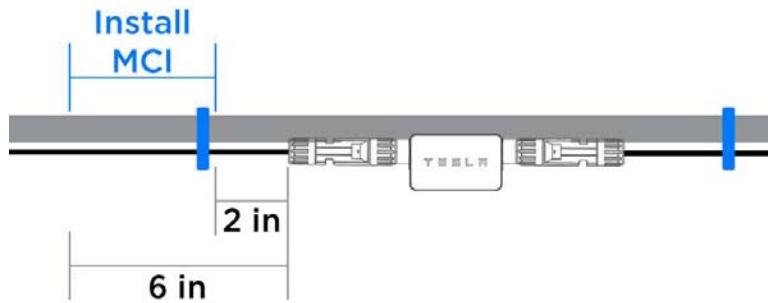


STEP 4: MAKE SOLAR PV CONNECTIONS

Figure 10. MCI-2 Attached with Wire Clips

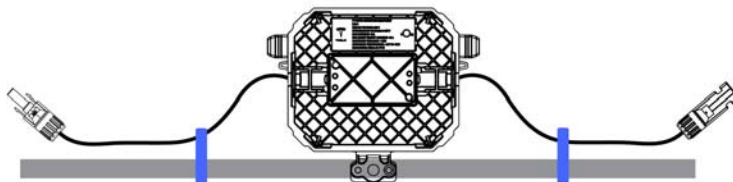


NOTE: Install the wire clips at least two inches from the end of the MC4 connector, but no more than six inches from the connector. Ensure the MCI is not directly contacting the roof.



CAUTION: Do not twist the MC4 connectors on MCI-2. Twisting the connectors damages the electrical contacts inside, likely resulting in MCI failure.

- b. To bolt the MCI to an existing hole in the frame, align the MCI through hole with the frame and use the appropriate mounting hardware as defined in [MCI Mounting Hardware Sizing on page 47](#).



NOTE: This option is only available for MCI-1.

- Follow all module manufacturer's instructions before mounting the MCI to the module frame. Ensure there is at least 0.5 in (13 mm) between the MCI and the module substrate, and only mount the MCI using existing holes in the module frame.
- For rail PV systems, use any of the mounting holes to mount the MCI directly to the rail (see [MCI Mounting Hardware Sizing on page 47](#) for mounting hardware sizes) or use the manufacturer's module level power electronic mounting bracket and mount the MCI to the bracket.

3. To install MCI-1 on Solar Roof installations, mount the MCIs directly to the roof, directly above the Tile Footlaps and positioned at a slight angle as pictured below. Use the appropriate mounting hardware as defined in the table below.

STEP 4: MAKE SOLAR PV CONNECTIONS

Figure 11. MCI-1 Installed with Solar Roof Tiles (V3 and earlier generations)

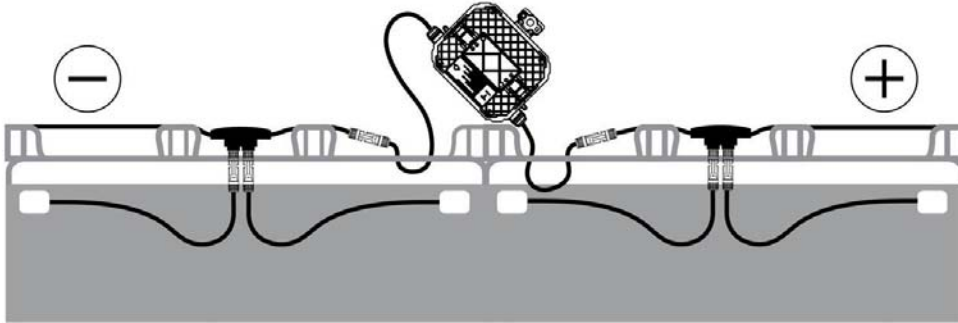
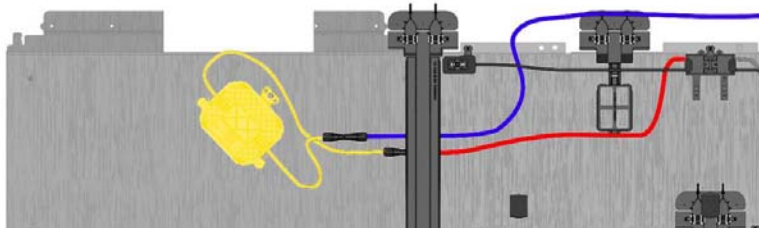


Figure 12. MCI-1 Installed on End of Solar Roof V3R String



STEP 4: MAKE SOLAR PV CONNECTIONS

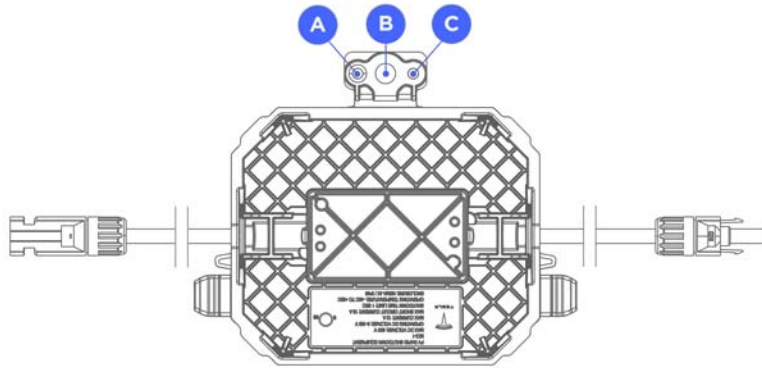
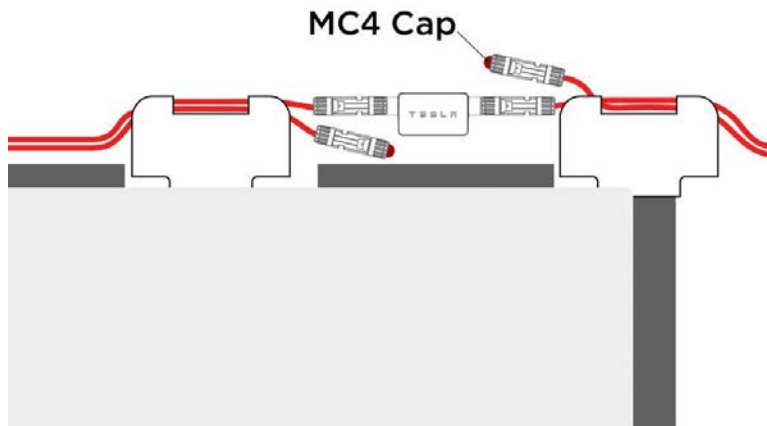


Table 4. MCI Mounting Hardware Sizing

Through Hole	Hardware
A	Wood Screw (No. 8)
	Screw (up to M4 (5/32"))
B	Bolt (up to M8 (5/16"))
C	Nail (8D)
	Screw (up to M4 (5/32"))

- To install MCI-2 on Solar Roof installations, attach each lead of the MCI to the corresponding Staubli MC4 connector, and place an MC4 cap on each of the remaining MC4 connectors. Secure the cables in the wire management clips.



CAUTION: Do not twist the MC4 connectors on MCI-2. Twisting the connectors damages the electrical contacts inside, likely resulting in MCI failure.

STEP 4: MAKE SOLAR PV CONNECTIONS

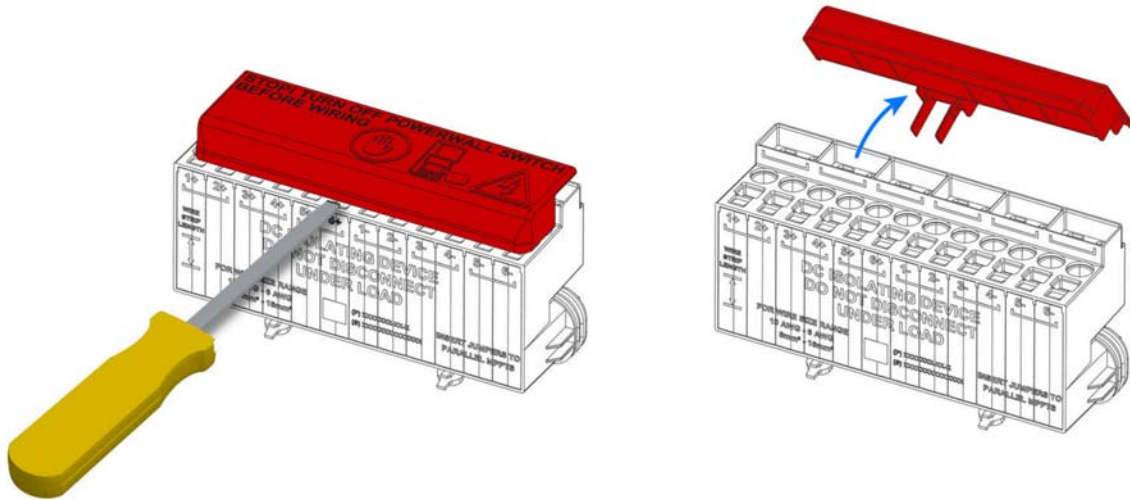
Make PV Power Connections

1. Turn Powerwall 3 OFF to de-energize the system.



WARNING: Wiring Powerwall 3 while it is energized may result in injury and/or product damage. Confirm lack of voltage at the PV terminals before proceeding.

2. A warning cover is installed over the PV connector to remind installers to turn Powerwall 3 OFF before connecting any PV conductors. To remove the warning cover:
 - a. Position a flat head screwdriver above MPPT 6+ and pry the warning cover off of the PV connector, exposing the terminals.



CAUTION: Be careful not to damage the PV connector.

- b. Recycle the warning cover.
3. Route the PV conductors and PV array equipment grounding conductor into the enclosure.
 4. Connect the PV array equipment grounding conductor to an equipment grounding terminal in Powerwall:
 - a. Strip the conductor insulation up to 3/4-inch (19 mm).
 - b. Insert the grounding conductor in an equipment grounding terminal and tighten the screw in the Earth terminal to 35 in-lb (4 Nm).

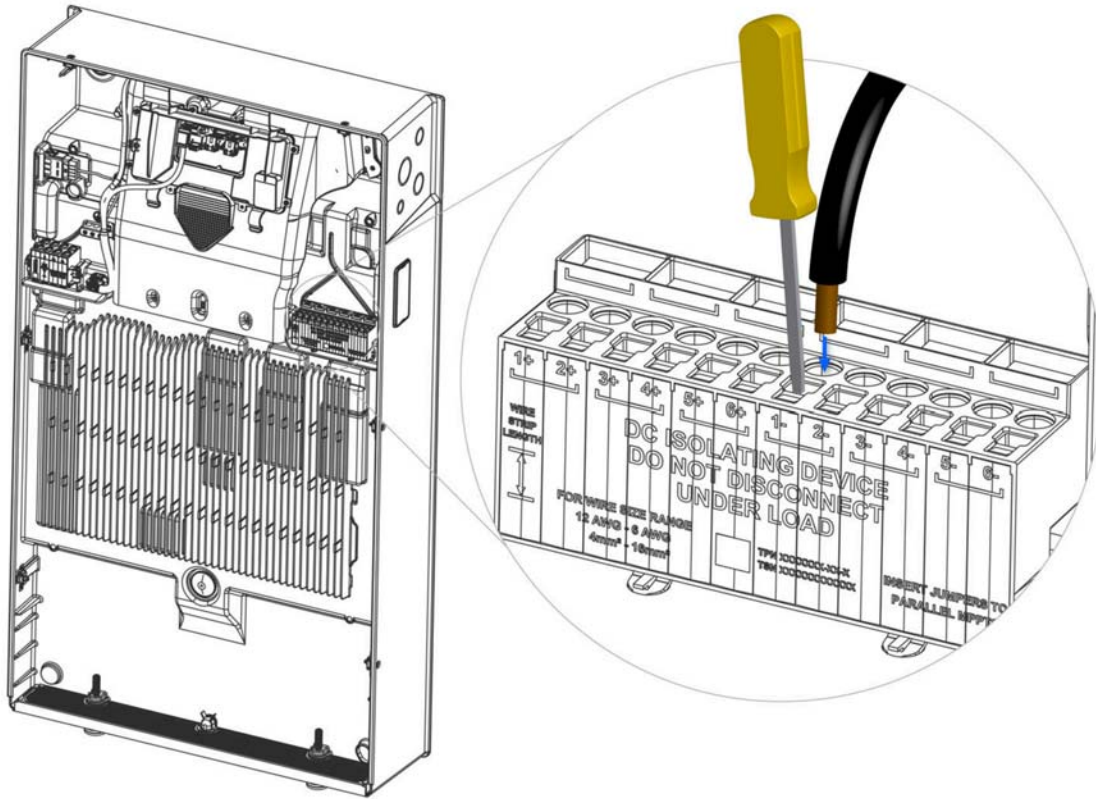


CAUTION: Any wire routing must be done through the wire management tabs at the top of the enclosure. Do not route loose wires through the front of the enclosure or over the Tesla Asset Controller.

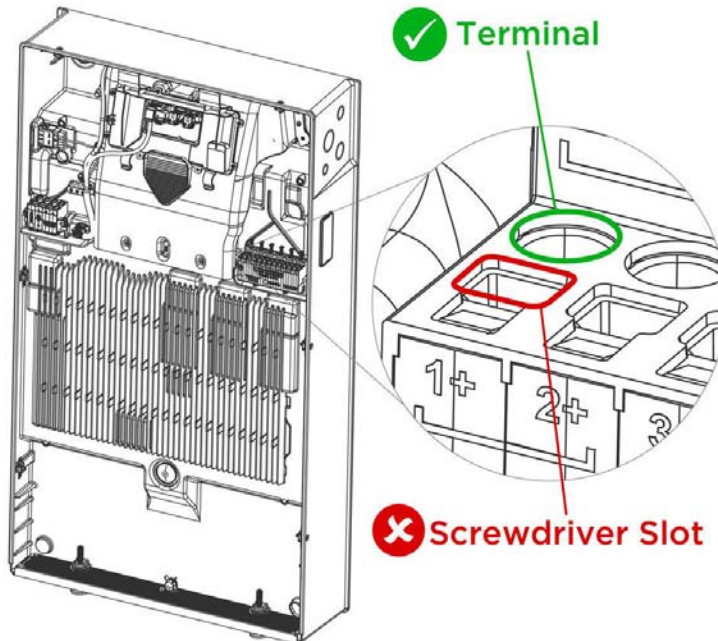
5. For each PV input:
 - a. Strip the conductor insulation up to 3/8-inch (9.5 mm). Add a ferrule if the conductor is finely stranded.
 - b. Insert a cabinet or electronics tip slotted screwdriver (up to 3/16-inch or 4.5 mm) into the actuation shaft to open the terminal.
 - c. Insert the conductor as far as possible into the terminal and remove the screwdriver from the actuation shaft to close the terminal.

STEP 4: MAKE SOLAR PV CONNECTIONS

Figure 13. Spring Terminal with Screwdriver and Insert Conductor in Terminal



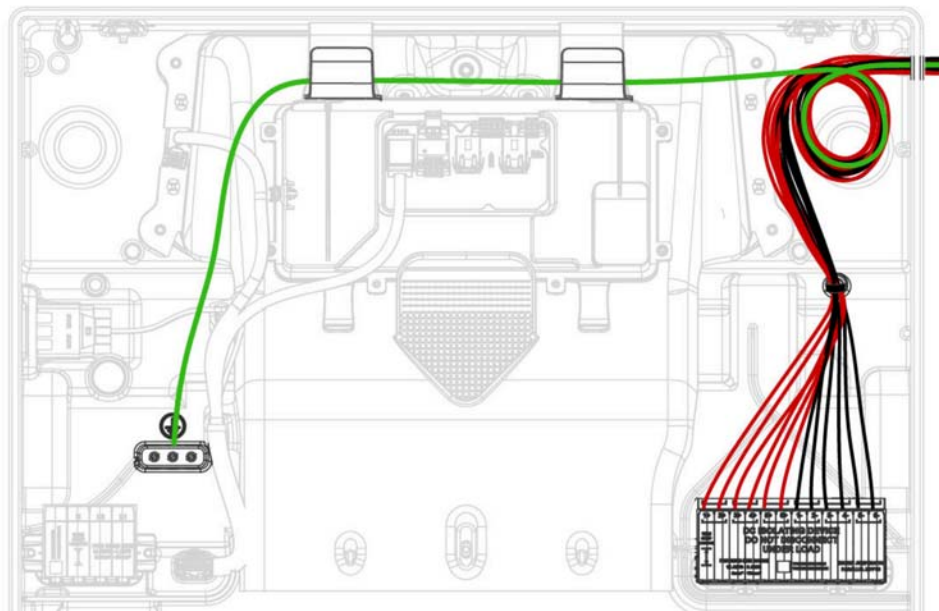
WARNING: Ensure the conductors are inserted into the round terminals and not the rectangular screwdriver slots. Inserting the conductors in the screwdriver slots can result in fire.



- d. Perform a pull test on each conductor (pulling straight up) to confirm it is fully seated in the terminal. Push the conductor back in after the pull test.

STEP 4: MAKE SOLAR PV CONNECTIONS

Figure 14. Powerwall 3 PV Wiring and Equipment Grounding Conductor



- e. After installing all PV conductors, gather them and secure them with the provided cable tie as shown above.

 **NOTE:** The building and the system shall be marked in accordance with Section 690.56(C) of the NEC (NFPA 70) “Only conductors leaving the footprint of the array are controlled” on PV wiring.

STEP 4: MAKE SOLAR PV CONNECTIONS

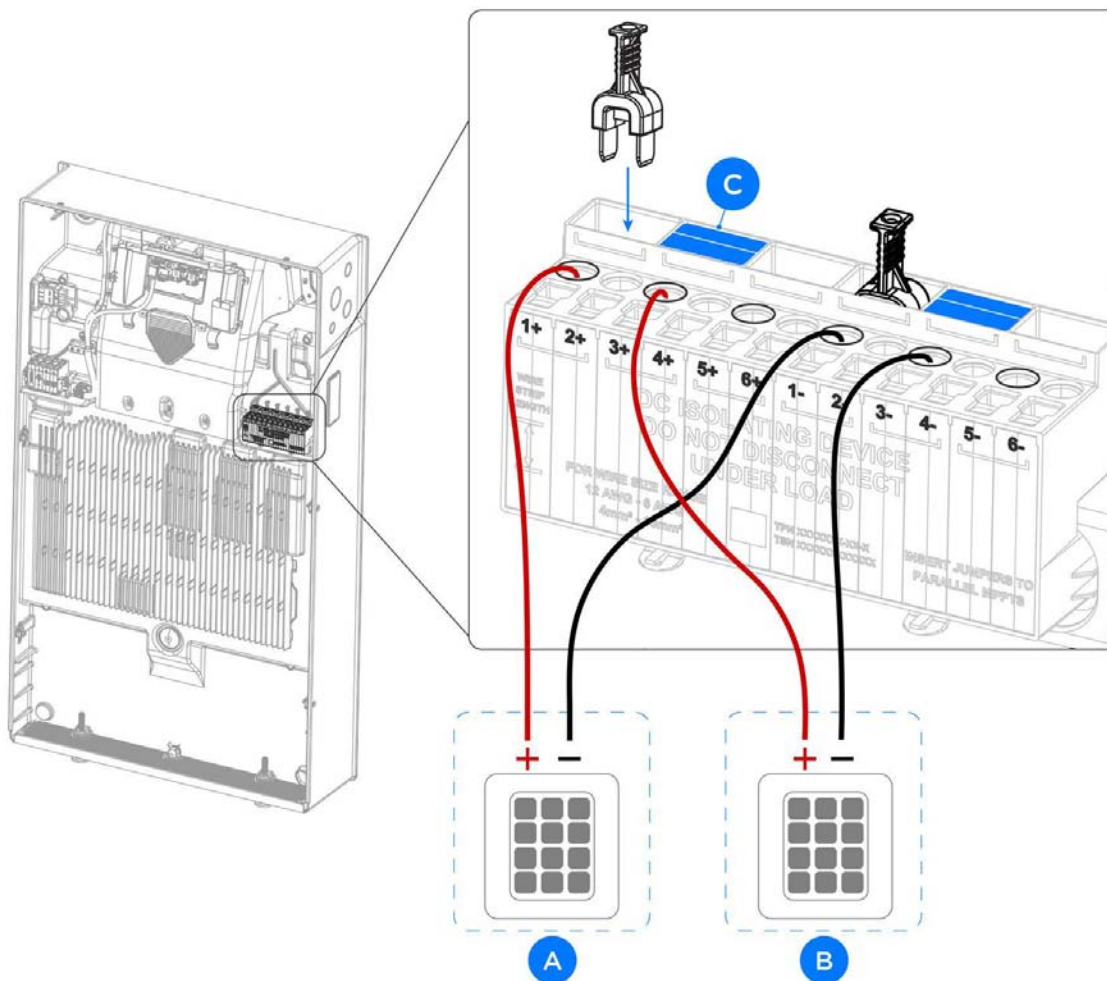
Install MPPT Jumpers (Optional)

Where the PV input current exceeds the maximum current rating per MPPT (I_{MP}) of 13 A, jumpers can be used to parallel MPPTs to double the total PV input current capacity to 26 A.

 **NOTE:** The Powerwall 3 jumpers (Tesla P/N 1784893-xx-y) included in the Powerwall 3 accessory bag are the only compatible jumpers. Do not attempt to install any other type of jumper.

1. For a string with $I_{MP} > 13$ A, connect the string to terminals [1+ and 1-] or [5+ and 5-].
2. Install a jumper to combine the MPPTs. Combine inputs 1 and 2 (installing jumpers from 1+ to 2+ and from 1- to 2-) or combine inputs 5 and 6 (installing jumpers from 5+ to 6+ and 5- to 6-).
 - **A** in the following diagram represents a string where $I_{MP} > 13$ A, so jumpers are installed from MPPT 1 to MPPT 2.
 - **B** in the following diagram represents a single string where $I_{MP} < 13$ A, so no jumpers are required

 **NOTE:** MPPT PV inputs 3 and 4 cannot be combined and are closed from the factory. Do not remove the factory-installed components closing these inputs (**C** in the following diagram).



STEP 5: INSTALL GATEWAY 3

Plan the Electrical Service Connection to Gateway

The Gateway 3 is service entrance rated. When installed at the service entrance, appropriate overcurrent protection must be installed in the Gateway 3. The Gateway 3 can accommodate a main circuit breaker between 100 and 200 A. Breaker sizing and installation must comply with the local code requirements.



NOTE: Gateway 3 is not to be used as service entrance equipment in Canada.

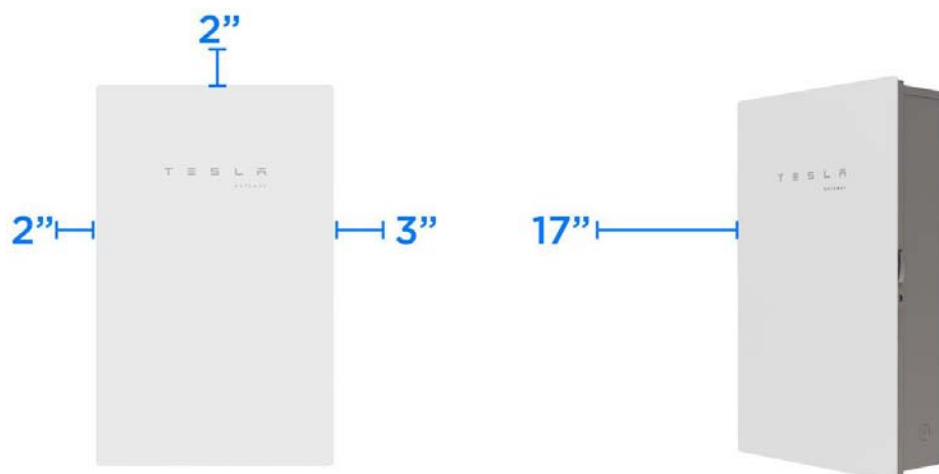
Clearance Requirements

Follow local code for the required spacing around the enclosure. At a minimum, maintain the following clearances around Gateway 3.

Top	2" (50 mm)
Left Side	2" (50 mm)
Right Side	3" (75 mm)
Front	17" (430 mm)



NOTE: Front clearance is required to install and open the Gateway door. Additional front clearance requirements may be required by local code.



STEP 5: INSTALL GATEWAY 3

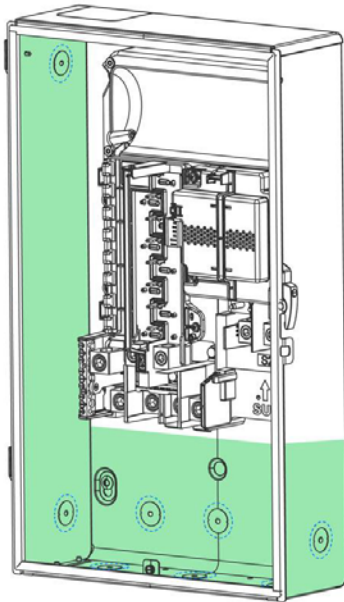
Mount Gateway 3

1. Using a knockout kit, punch out the necessary conduit entrance knockouts in the Gateway 3. All cable knockouts are $\frac{3}{4}$ inch in diameter but can be expanded to 2- $\frac{1}{2}$ inches. Additional knockouts can be made in the area highlighted green in the image below.

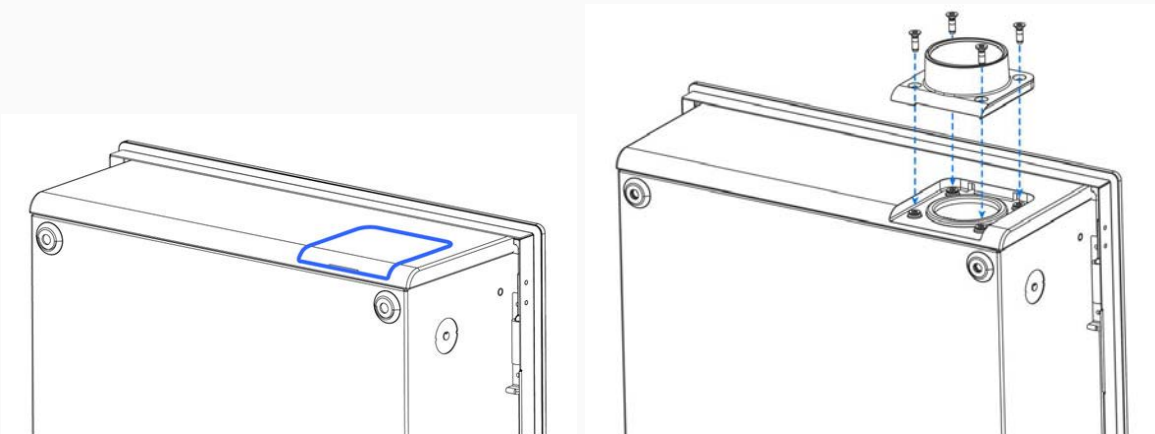


CAUTION: If drilling into the enclosure, exercise caution and clean any metal shavings out of the enclosure after drilling. Only drill into the areas of the enclosure indicated in green in the image below. Drilling elsewhere could result in damage to the Gateway 3 and/or water ingress (if drilling into the top of the enclosure).

Figure 15. Cable Access Drill Guides



NOTE: For conduit entry at the top of the Gateway enclosure, a Tesla Top Hub must be used in order to maintain enclosure ingress protection. If using top cable entry, remove the Top Hub Cap from the enclosure and install the Tesla Top Hub (Tesla P/N 1549184-00-A (2-inch kit) or Tesla P/N 1549184-01-A (1 $\frac{1}{4}$ -inch kit)).



2. Using a drill, level, and $\frac{1}{4}$ inch screws, mount the Gateway 3 enclosure to a structurally sound wall. At least two fasteners must be secured to a structural member.

STEP 5: INSTALL GATEWAY 3

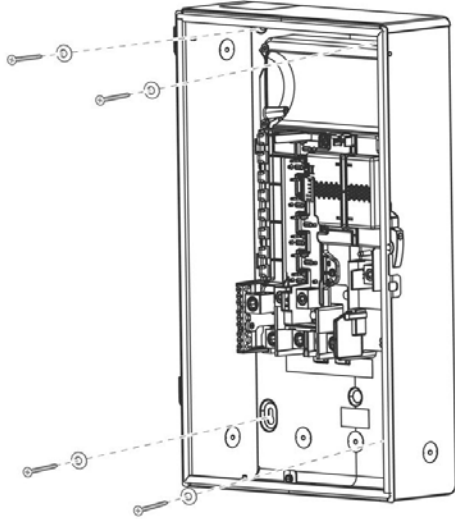


NOTE: The provided sealing washers must be used when mounting the Gateway 3.



NOTE: Mount the Gateway 3 vertically, in the orientation shown below. Do not mount the Gateway 3 enclosure horizontally or upside down.

Figure 16. Gateway 3 Enclosure Mounting Holes



STEP 5: INSTALL GATEWAY 3

Remove the Main Neutral-Ground Bonding Screw from Gateway 3 if Not Installed as Service Equipment

Proper earth connection and neutral-to-ground bonding is required for safe operation of the system and for compliance with local code requirements. There must be exactly one Neutral-Earth bond in the electrical panel closest to the utility feed.

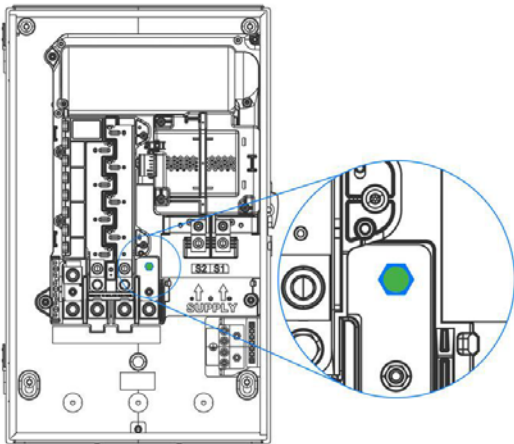


WARNING: To ensure safe operation in Backup Mode, a local earth connection must be present on the site such as by earth rod or ground electrode. Connection of earth rod must comply with local codes.

Gateway Installed as Service Equipment (Contains Main Breaker)

When Gateway 3 includes the main service disconnect, it must contain the Neutral-Earth bond, so the factory-installed main neutral-ground bonding screw must be left installed.

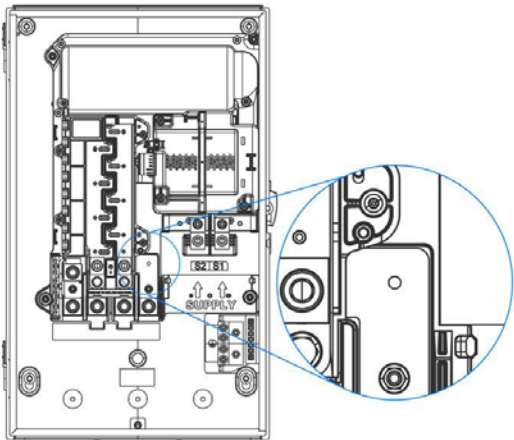
Figure 17. Neutral-Ground Bonding Screw Installed from Factory



Gateway NOT Installed as Service Equipment (Panel Upstream of Gateway)

When Gateway 3 does not include the main service disconnect (when there is an electrical panel upstream of the Gateway), the factory-installed main neutral-ground bonding screw must be removed.

Figure 18. Neutral-Ground Bonding Screw Removed



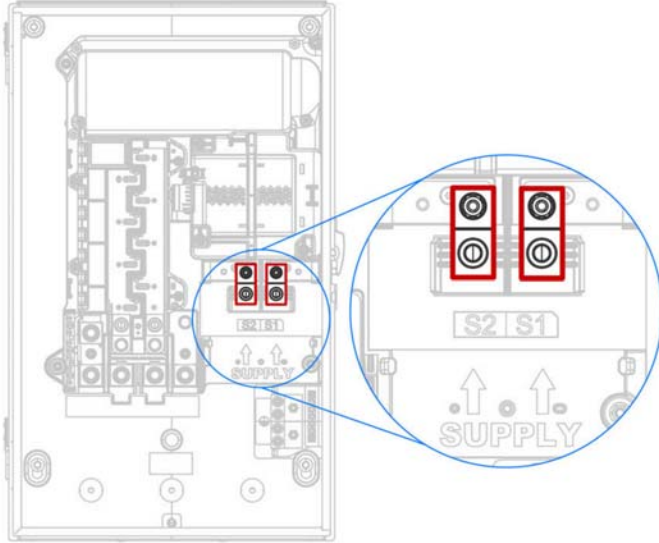
- If removing the bonding screw, use a 7/16-inch socket to remove the main neutral-ground bonding screw.
- If replacing the main neutral-ground bonding screw, torque to 80 in-lbs (9 N-m).

STEP 5: INSTALL GATEWAY 3

Install Main Breaker in Gateway 3

When Gateway 3 is installed as Service Equipment, a main breaker must be installed.

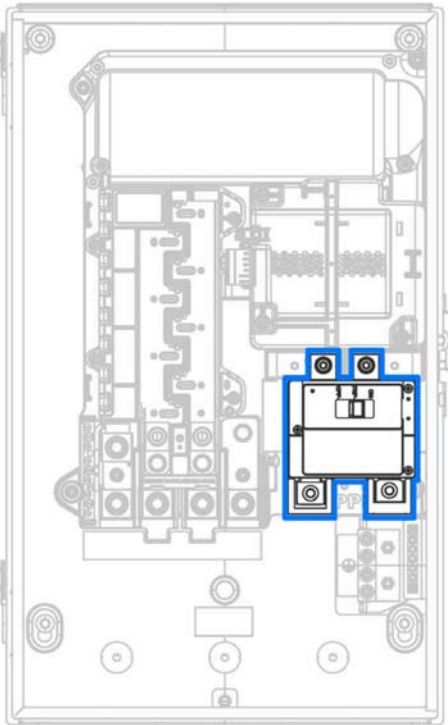
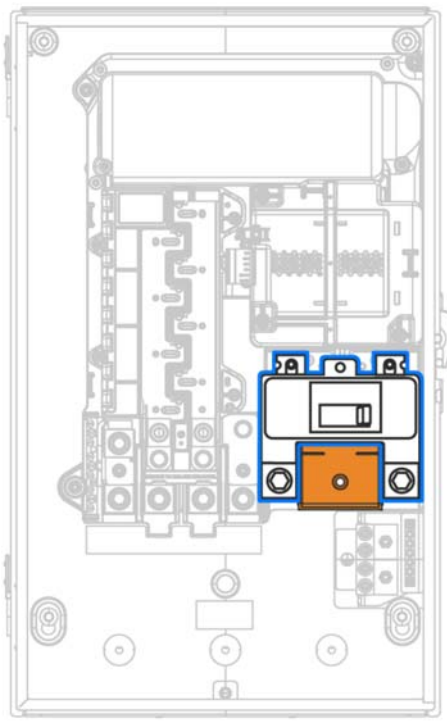
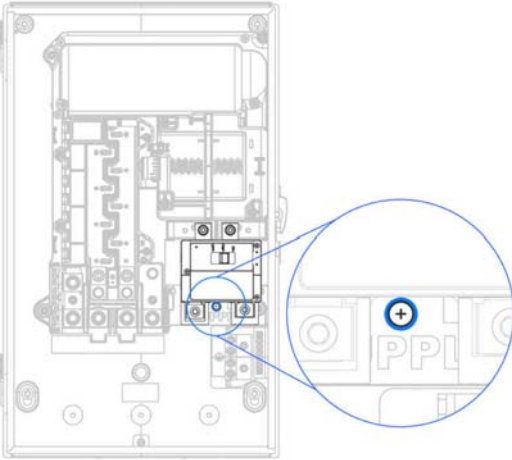
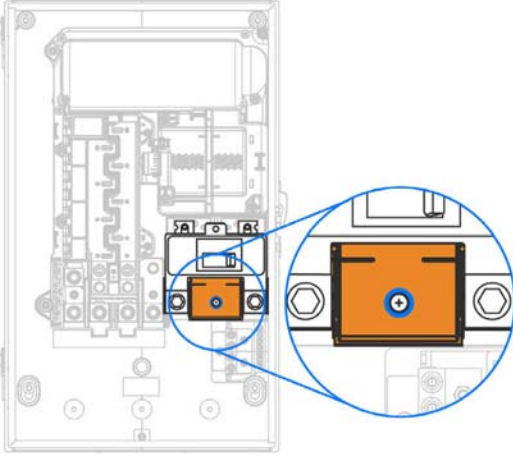
1. Remove the S1 and S2 supply lugs using a 7/16-inch hex socket. Recycle the lug divider.



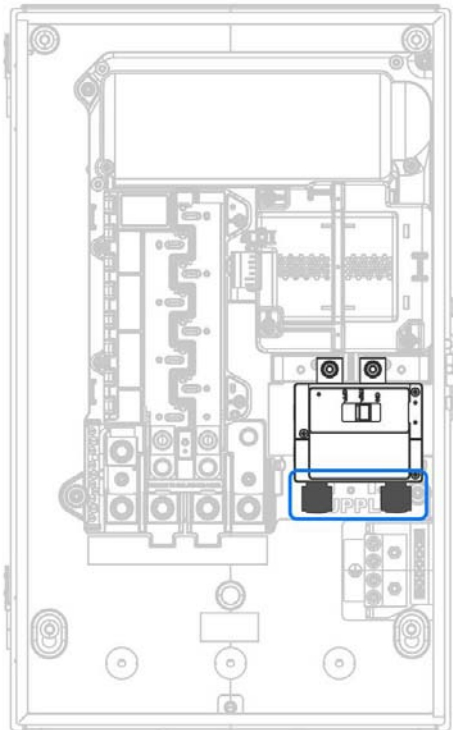
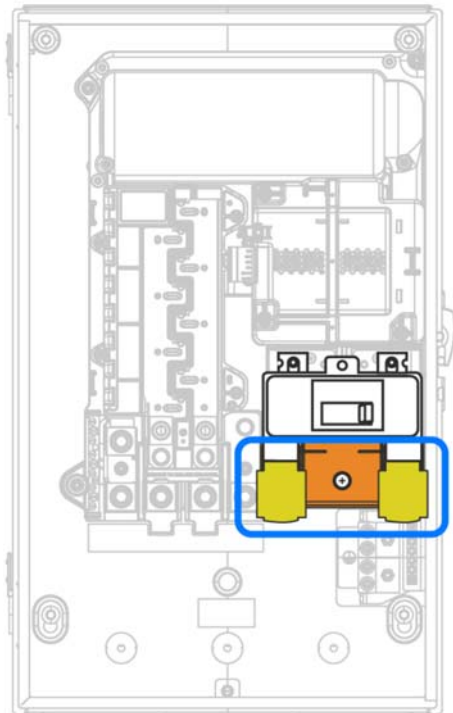
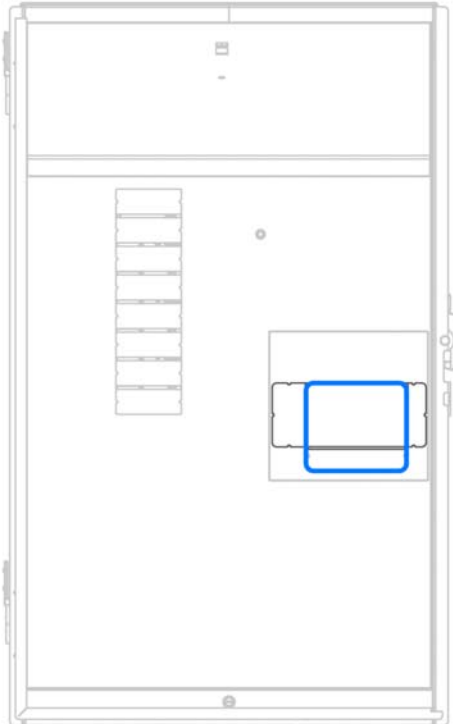
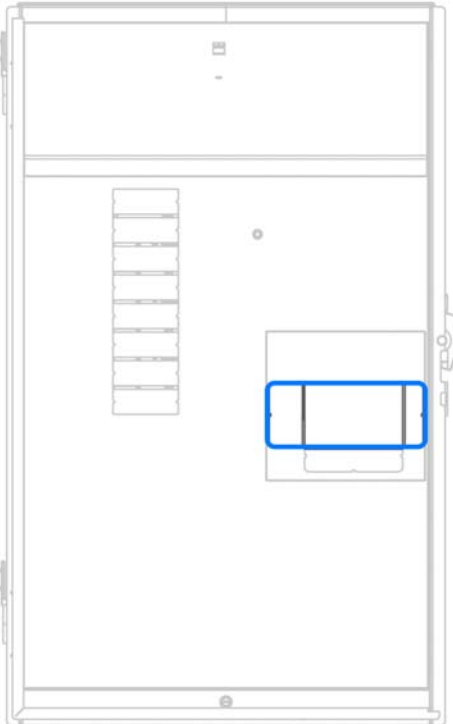
2. Install an Eaton or Square D main breaker (see [Acceptable Circuit Breakers on page 110](#) for all compatible breakers):

Action	Square D Main Breaker Only
Install the Square D lug divider (Tesla P/N 1930185-xx-y).	A sequence of two diagrams showing the installation of a Square D lug divider. The first diagram shows an orange lug divider being moved towards the main breaker area. The second diagram shows the lug divider installed in the main breaker area, with the word 'SUPPLY' and upward arrows visible below it.
Remove and discard the fastener included with the Square D main breaker. It will not be used.	A diagram of a Square D main breaker. A red arrow points from the top of the breaker to a red circle with a diagonal slash through it, indicating that the fastener should be removed and discarded.

STEP 5: INSTALL GATEWAY 3

Action	Eaton Main Breaker	Square D Main Breaker
Install the main breaker and torque the two S1 and S2 nuts to 65 in-lb (7.4 N-m) using a 7/16-inch hex socket.	 A technical line drawing of an electrical panel showing the internal components. A main breaker is highlighted with a blue rectangular box. The breaker is a white rectangular unit with two large terminal blocks on top. The panel shows various other components like busbars, smaller breakers, and mounting hardware.	 A technical line drawing of an electrical panel similar to the Eaton one. A main breaker is highlighted with a blue rectangular box. This breaker is a white unit with a prominent orange square base or mounting plate. The panel layout and other components are consistent with the Eaton diagram.
Secure the main breaker with the hold-down screw.	 The diagram shows the same Eaton panel as above, but with a circular callout. The callout shows a close-up of the main breaker's base, which is secured to the panel by a blue screw. The screw is shown passing through the breaker's base into the panel's mounting rail. Use the hold-down screw provided with the breaker	 The diagram shows the same Square D panel as above, but with a circular callout. The callout shows a close-up of the main breaker's base, which is secured to the panel by a blue screw. The screw is shown passing through the breaker's base into the panel's mounting rail. Use the hold-down screw provided with the lug divider kit

STEP 5: INSTALL GATEWAY 3

Action	Eaton Main Breaker	Square D Main Breaker
If required by local code, install the lug covers provided with the main breaker.	 A technical line drawing of an electrical panel's internal components. At the bottom center, a main breaker is highlighted with a blue rectangular box. The breaker has two black lug covers on its base.	 A technical line drawing of an electrical panel's internal components. At the bottom center, a main breaker is highlighted with a blue rectangular box. The breaker has a central orange body and two yellow lug covers on its base.
Remove the appropriate main breaker knockout from the Gateway 3 deadfront.	 A technical line drawing of the front door (deadfront) of the electrical panel. A rectangular knockout hole is located in the lower right quadrant, highlighted with a blue rectangular box.	 A technical line drawing of the front door (deadfront) of the electrical panel. A rectangular knockout hole is located in the lower right quadrant, highlighted with a blue rectangular box.



NOTE: If a main breaker knockout is punched out but not used, the deadfront must be replaced.

STEP 5: INSTALL GATEWAY 3

Make AC Power Connections to Supply and Load / Generation Panels

In each of the following steps:

- Strip the ends of the wires and insert into the corresponding Gateway 3 terminal lugs.
- Using an appropriate torque tool, tighten the lugs according to the table on the following page.
- Use copper or aluminum wire only.

 **WARNING:** Always ensure all equipment is safely de-energized and locked out prior to working, to prevent risk of electric shock. To avoid shock hazard, never power on the system without a connection to Earth at the Gateway 3.

 **WARNING:** Incorrect wiring of AC conductors presents a risk of electrical shock or damage to equipment. Before energizing the system, ensure all connections are made correctly according to the instructions in this document and in accordance with local wiring codes and regulations.

Refer to [Gateway 3 Wiring Overview on page 106](#) for all Gateway 3 wiring requirements and recommendations, including wire colors and gauges.

Refer to [Gateway 3 Wiring Diagrams on page 111](#) for additional example system wiring diagrams.

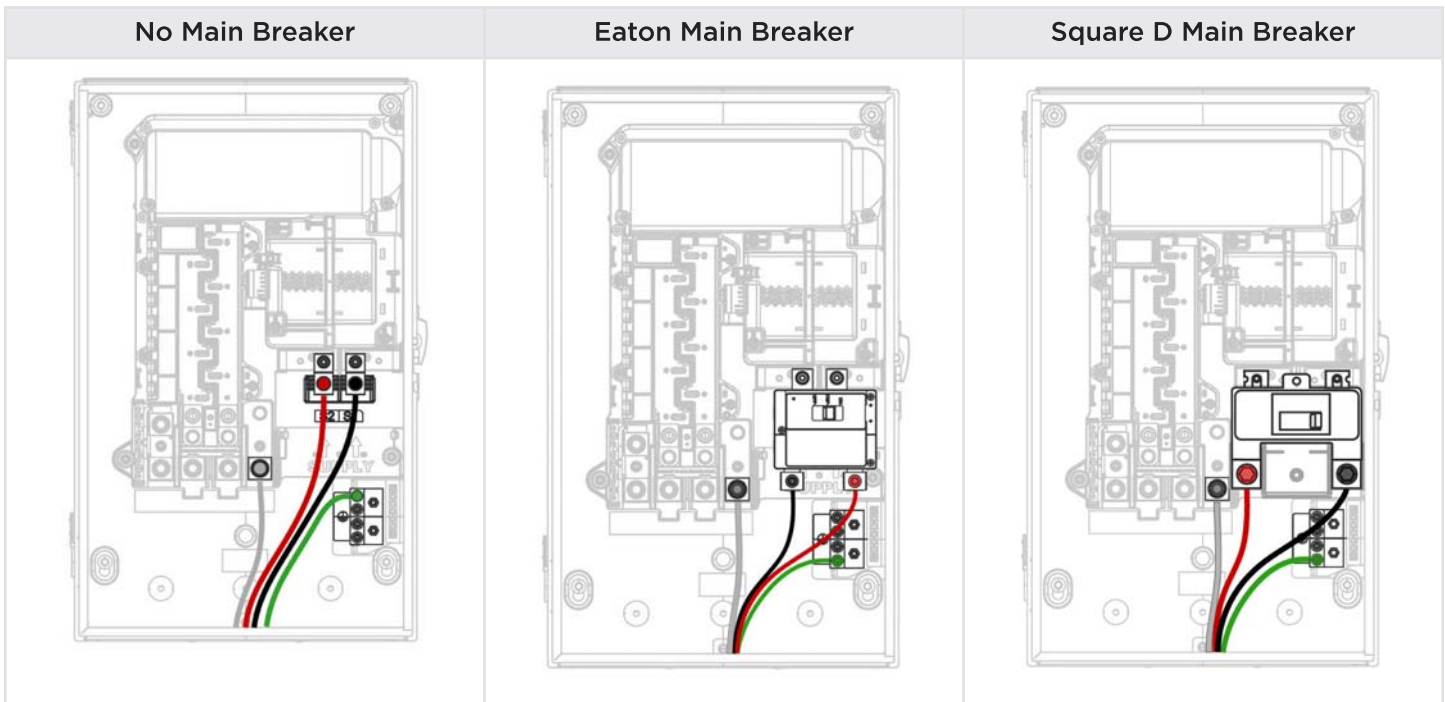
STEP 5: INSTALL GATEWAY 3

Make Gateway 3 Supply Connections

1. Connect the supply conductors to the Gateway 3 Supply terminals or main breaker terminals.
2. Connect the supply Neutral to a main Neutral terminal on the Grid side.
3. Connect the supply Ground to a main Ground terminal.



NOTE: When an Eaton main breaker is installed, S1 and S2 are swapped.



Component	Recommended Wire Color	Wire Gauge ¹	Tool Size	Wire Strip Length	Torque
Supply Terminals	Black, Red	6 AWG - 250 kcmil	5/16-inch hex	1 ¼-inch (32 mm)	275 in-lb, 23 ft-lb
Main Neutral Terminals	White	(1x) #4 AWG - 250 kcmil (2x) #4 AWG - 4/0 stranded ^{2, 3}	3/8-inch hex	1 ¼-inch (32 mm)	250 in-lb, 21 ft-lb
Main Ground Terminals	Green or Bare	6 AWG - 2/0	3/16-inch hex	¾-inch (20 mm)	120 in-lb, 10 ft-lb

¹ Use copper or aluminum conductors rated to a minimum of 75°C.

² Conductors must be the same size and material when terminating more than one conductor under these terminals.

³ Double lugging is allowed only when conductors are paralleled to increase ampacity for a single circuit.



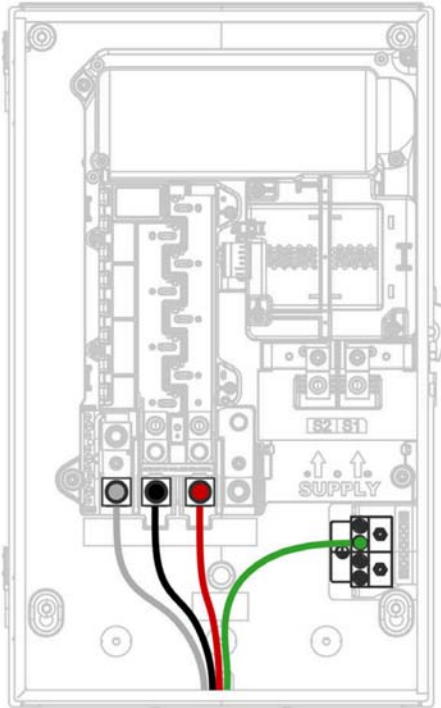
CAUTION: Do not modify the factory lug configuration.

STEP 5: INSTALL GATEWAY 3

Connect Load / Generation Panels to Gateway 3

1. Connect the backup home load (and/or generator) panel conductors to the Gateway 3 Backup terminals.
2. Connect the backup Neutral to a main Neutral terminal on the Load side.
3. Connect the backup Ground to a main Ground terminal.

 **NOTE:** Two sets of conductors can be connected to the Gateway 3 Backup terminals so long as the conductors are the same size and material. See [Backup Lugs on page 108](#) for more information.



Component	Recommended Wire Color	Wire Gauge ¹	Tool Size	Wire Strip Length	Torque
Backup Terminals	Black, Red	(1x) #4 AWG - 250 kcmil	3/8-inch hex	1 ¼-inch (32 mm)	250 in-lb, 21 ft-lb
		(2x) #4 AWG - 4/0 stranded ²			
Main Neutral Terminals	White	(1x) #4 AWG - 250 kcmil	3/8-inch hex	1 ¼-inch (32 mm)	250 in-lb, 21 ft-lb
		(2x) #4 AWG - 4/0 stranded ^{2, 3}			
Main Ground Terminals	Green or Bare	6 AWG - 2/0	3/16-inch hex	¾-inch (20 mm)	120 in-lb, 10 ft-lb

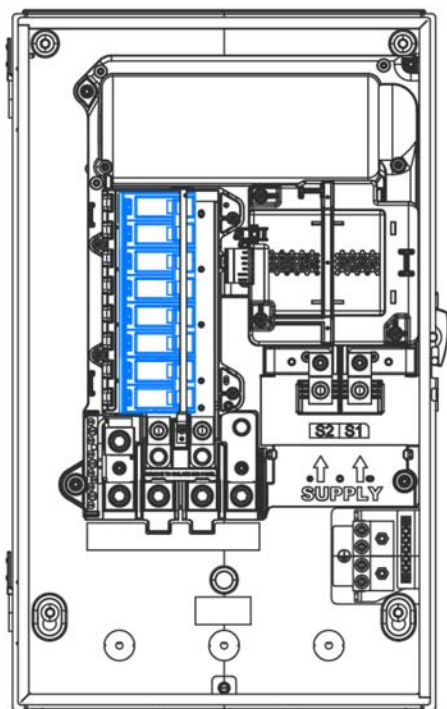
¹ Use copper or aluminum conductors rated to a minimum of 75°C.

² Conductors must be the same size and material when terminating more than one conductor under these terminals.

STEP 5: INSTALL GATEWAY 3

³Double lugging is allowed only when conductors are paralleled to increase ampacity for a single circuit.

Install Load / Generation Breakers on Internal Panelboard



The Gateway 3 internal panelboard can be used for generation sources and/or backup loads.

1. Install listed breakers on the internal panelboard, noting the phasing (top position is L2).



NOTE: See [Acceptable Circuit Breakers on page 110](#) for all acceptable branch circuit breakers.

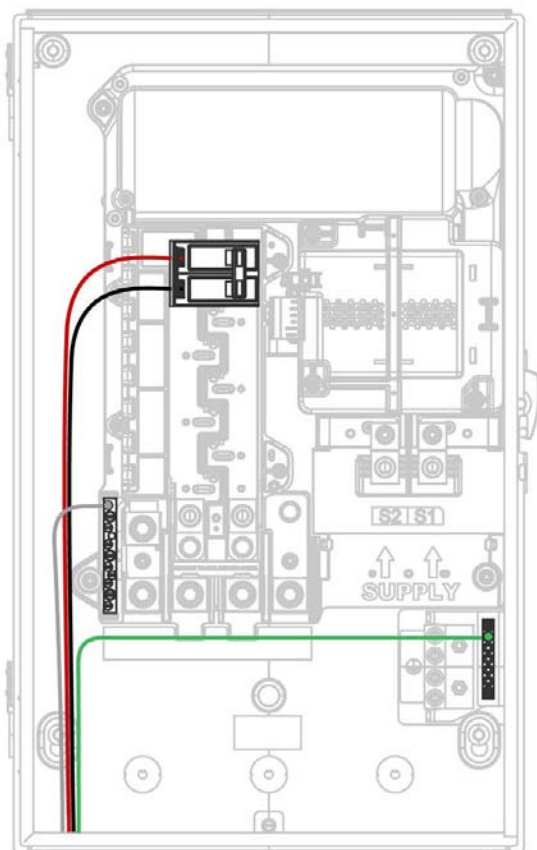


NOTE: If there are non-generation loads on the internal panelboard, Tesla recommends installing breakers in the following order:

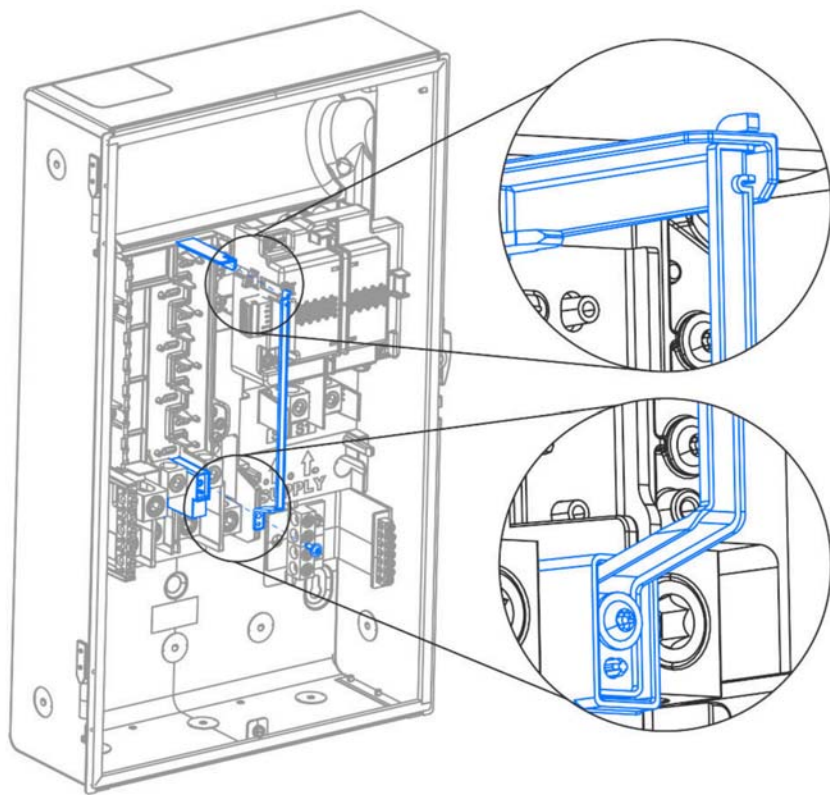
- Solar breaker(s) in the top breaker slots
- Powerwall breaker(s)
- Wall Connector breaker(s)
- Load breaker(s) in any remaining breaker slots at the bottom

2. For each breaker, connect the accompanying Neutral to the Neutral bar, and the accompanying Ground to the Ground bar.

STEP 5: INSTALL GATEWAY 3



3. After the breakers are installed, insert the top of the hold-down bracket into the opening above the internal panelboard. Fasten the bottom of the hold-down bracket using the provided T20 Torx head screw.



STEP 5: INSTALL GATEWAY 3



NOTE: The breaker hold-down is used to mechanically secure back-fed breakers onto the internal panelboard. The breaker hold-down kit may be required by the local authority having jurisdiction.

Internal Panelboard Design Considerations

The internal panelboard is 200 A-rated and supports 8x 1-inch breaker spaces (16 circuits) using branch circuit breakers up to 125 A maximum.

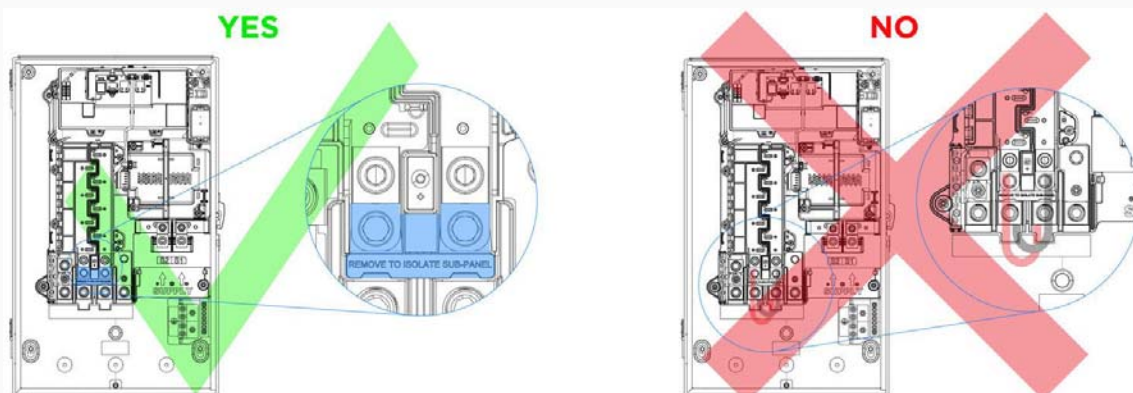


NOTE: These breakers serve as circuit protection for the equipment. Breaker sizing and installation must comply with the National Electric Code.



NOTE: The Gateway 3 utilizes a **jumper bridge** to connect the internal panelboard to the backup lugs, as described in [Appendix A: Backup Lugs on page 108](#) and highlighted in the image below. This jumper bridge can be removed to install a disconnect before the internal panelboard (see [Gateway 3 Wiring Diagrams on page 111](#) for a wiring diagram).

The previous generation of Gateway, the Backup Gateway 2, required the installation of factory-made jumpers to supply power to the internal panelboard; the installer could choose to connect the internal panelboard to either the Backup or Non-Backup terminals.



STEP 5: INSTALL GATEWAY 3

Wire Communication Connection from Gateway 3 to Powerwall 3

WARNING: Before terminating any conductors inside Powerwall 3, ensure that the Enable switch is turned OFF to de-energize the system. Confirm lack of voltage at the AC and PV terminals before proceeding.

1. Choose one of the following options to run the communication wiring to Gateway 3:
 - Use PVC MC cable with integrated communication wiring (enters Gateway 3 via a single knockout)
 - Run the communication wiring through the same conduit as the Powerwall 3 AC conductors (enters Gateway 3 via a single knockout)
 - Run communication wiring by itself through conduit or cable gland (enters Gateway 3 via its own knockout)

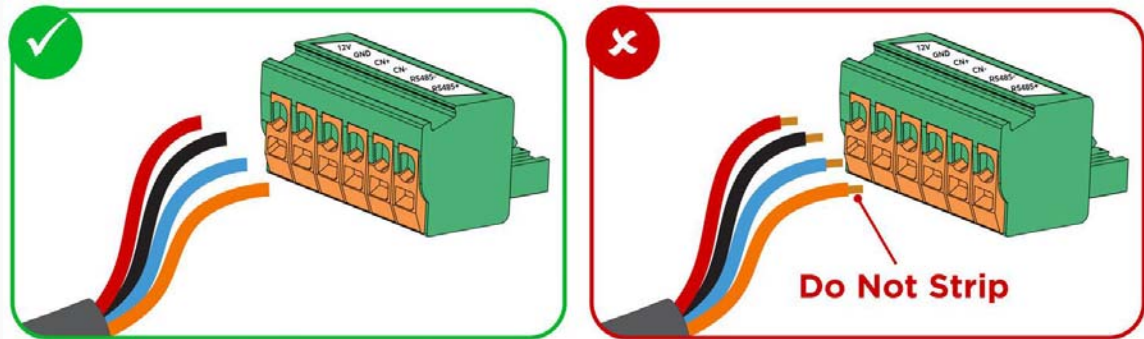
NOTE: Installer preference, Utility, and/or AHJ requirements will dictate how communication wiring is run.

2. Wire the 4-conductor communication cable to the Gateway 3 connector:

CAUTION: Always wire the Gateway 3 connector **before** plugging it in to Gateway 3. The force exerted to lock each terminal can potentially damage Gateway 3, so wires must be placed and terminals locked before plugging the connector into Gateway 3.

- a. Strip the communication wire jacket about 3 inches. Do not strip the individual communication wires.

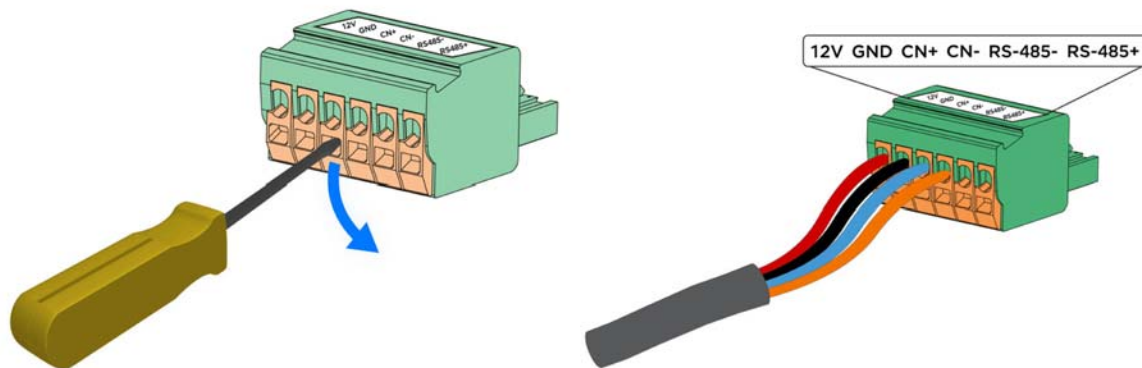
NOTE: The communication connector is insulation displacing, meaning it pierces the insulation of the unstripped wires to make strong electrical contact. Stripping the individual wires may result in wires jamming the connector.



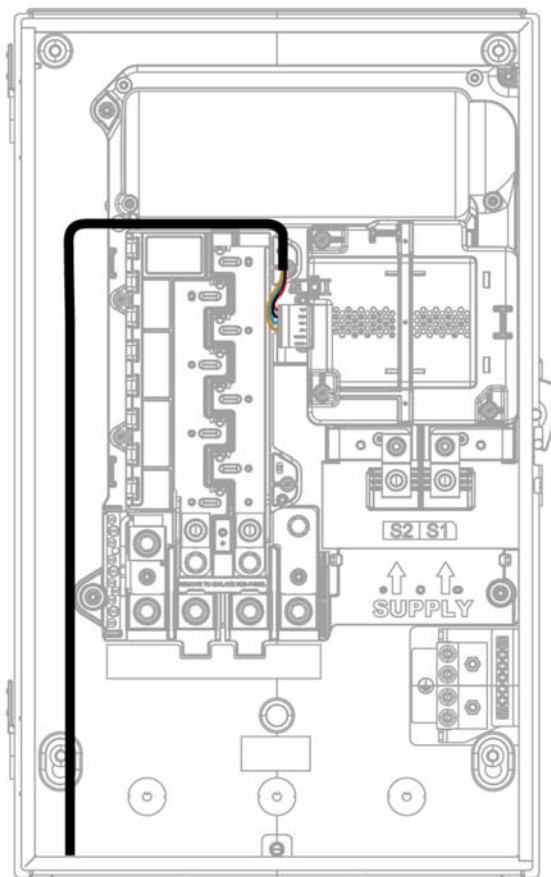
- b. Cut back the drain wire. **The drain wire should be terminated at the Powerwall 3 ground terminal only.**
- c. Insert a cabinet tip or electronics tip slotted screwdriver (up to 3/32-inch or 3 mm) to open each connector lever.
- d. Insert each conductor as far as possible into the terminal and then use the screwdriver to close the connector lever.

NOTE: Reference [Gateway 3 Communication Wiring on page 107](#) for the correct wire order in the Gateway 3 connector.

STEP 5: INSTALL GATEWAY 3



3. Plug the connector into the corresponding connector socket labeled "Powerwall" in the Gateway 3.
4. Route the communication cable up and around the internal panelboard. Do not route the cable across the internal panelboard, as it could impede door installation.



5. Wire the 4-conductor communication cable to the Gateway 3 Communication connector in the Powerwall 3 enclosure:
 - a. Strip the communication wire jacket so that it does not extend past the edge of the fan duct. This ensures the individual conductors lie flat, leaving room for the front cover to be installed.
 - b. Strip each conductor 5/16 inch (8 mm).

STEP 5: INSTALL GATEWAY 3

- c. Route the four conductors to the connector as shown below, using the wire management tab to prevent them from blocking the Tesla Asset Controller.

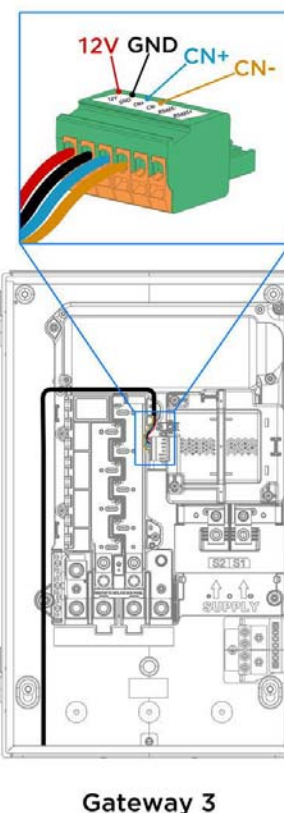
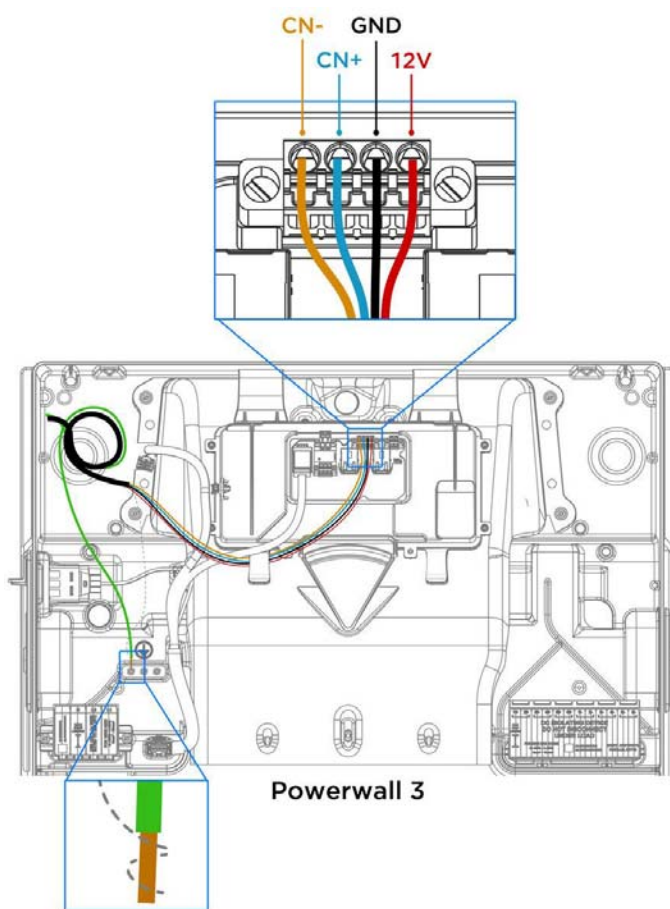


CAUTION: Tesla recommends routing the communication wiring into the left side of the enclosure; always use the wire management tabs to ensure wires do not block the Tesla Asset Controller. Do not route loose wires through the front of the enclosure.

- d. Insert a cabinet tip or electronics tip slotted screwdriver (up to 3/32-inch or 3 mm) into each screwdriver slot to open the terminal.
- e. Insert each conductor as far as possible into the terminal and remove the screwdriver from the screwdriver slot to close the terminal.



CAUTION: Excessive force may damage the connector; do not apply more force than is necessary to open the terminal and insert the conductor (do not lean on connectors when prying them open).



- f. Wrap the communication cable drain wire around the equipment grounding conductor lead and insert the wires in the equipment grounding terminal. Tighten the screw to 40 in-lb (4.5 Nm).



NOTE: See [Plan Cable Length Between Components on page 28](#) for the maximum distance between components.

STEP 6: CONNECT POWERWALL 3 TO AN OVERCURRENT PROTECTION DEVICE



WARNING: Before terminating any conductors inside Powerwall 3, ensure that the Enable switch is turned OFF to de-energize the system. Confirm lack of voltage at the AC and PV terminals before proceeding.

1. Disconnect the AC circuit breaker of the main service disconnect and secure it against reconnection.
2. Connect the Powerwall 3 AC power conductors to the main panel or sub panel according to the electrical service type.



NOTE: Each Powerwall 3 requires a 60 A circuit overcurrent protection device. This device serves as the disconnect for Powerwall 3 and must be wired in accordance with local wiring codes and regulations.



NOTE: Tesla recommends a 60 A circuit breaker for overcurrent protection, as a circuit breaker can easily be reset by the homeowner if needed. As such, the required overcurrent protection device is referred to as the Powerwall 3 circuit breaker throughout this manual. Alternative overcurrent protection devices, such as a fused disconnect, may be used and may result in a poor customer experience if the homeowner cannot reset the system in the unlikely event of a trip.

3. (Conduit installations only) Run conduit as needed and attach the conduit fitting to the Powerwall 3 AC wiring knockout.
4. Run the AC power conductors and the equipment grounding conductor from the main panel through the conduit or cable gland, pulling 24 inches (610 mm) of wiring into the enclosure. Route the conductors to the appropriate terminals, creating a service loop with the extra wiring (see [Powerwall 3 AC Wiring on page 70](#) for an example of a service loop).



CAUTION: Any wire routing must be done through the wire management tabs at the top of the enclosure. Do not route loose wires through the front of the enclosure or over the Tesla Asset Controller.

5. Clear out any debris that may be present in the AC wiring terminals.

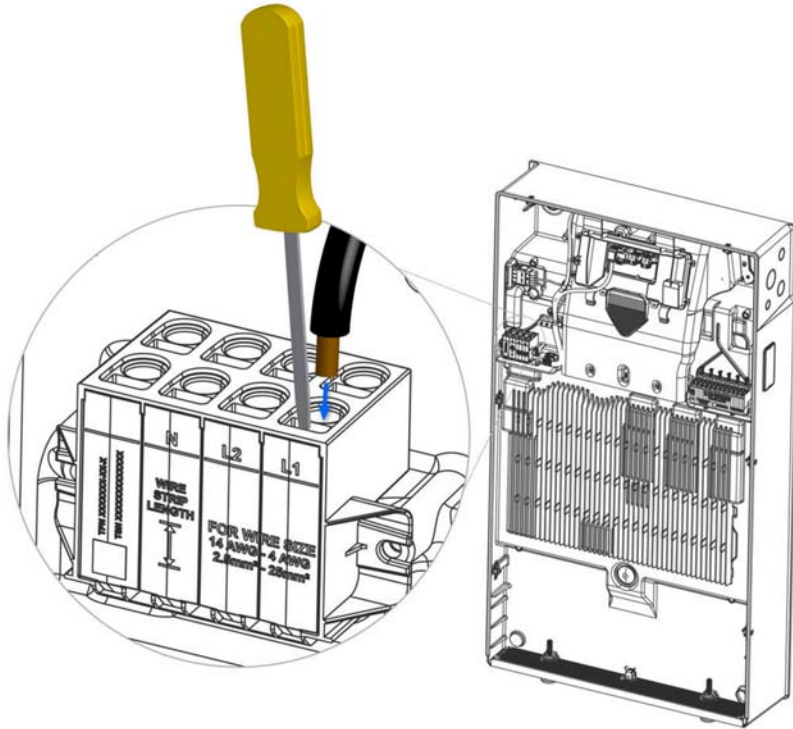


DANGER: Metal debris like loose wires or metal shavings could create a high voltage risk when Powerwall is turned on.

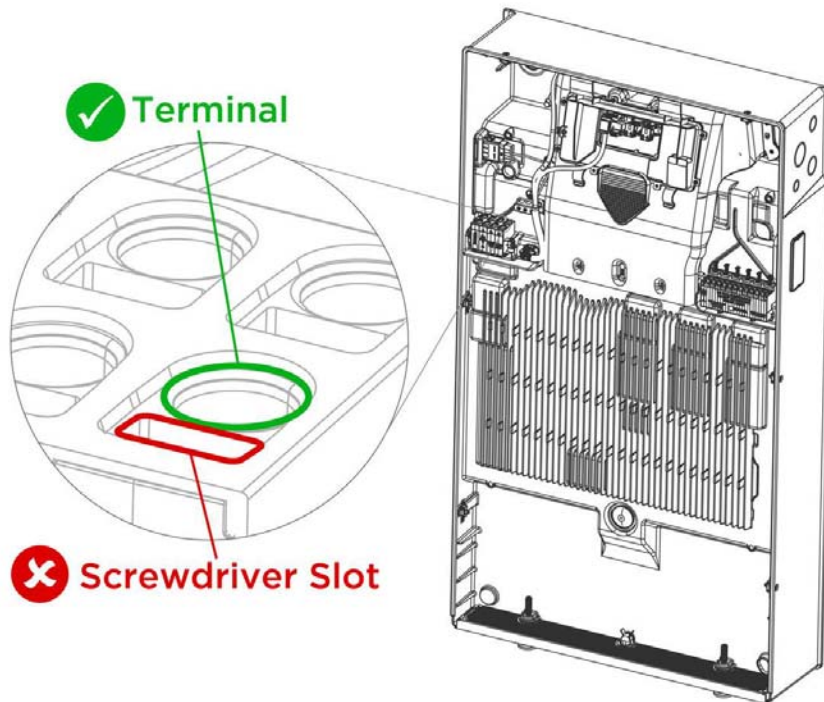
6. Connect the Powerwall 3 equipment grounding conductor:
 - a. Strip the conductor insulation up to 3/4-inch (19 mm).
 - b. Insert the grounding conductor in an equipment grounding terminal and tighten the screw in the Earth terminal to 35 in-lb (4 Nm).
7. For each AC conductor:
 - a. Strip the conductor insulation up to 7/16-inch (11 mm). Add a ferrule if the conductor is finely stranded.
 - b. Insert a cabinet or electronics tip slotted screwdriver (up to 3/16-inch or 4.5 mm) into the screwdriver slot to open the terminal.
 - c. Insert the conductor as far as possible into the terminal and remove the screwdriver from the screwdriver slot to close the terminal.

STEP 6: CONNECT POWERWALL 3 TO AN OVERCURRENT PROTECTION DEVICE

Figure 19. Spring Terminal with Screwdriver and Insert Conductor in Terminal



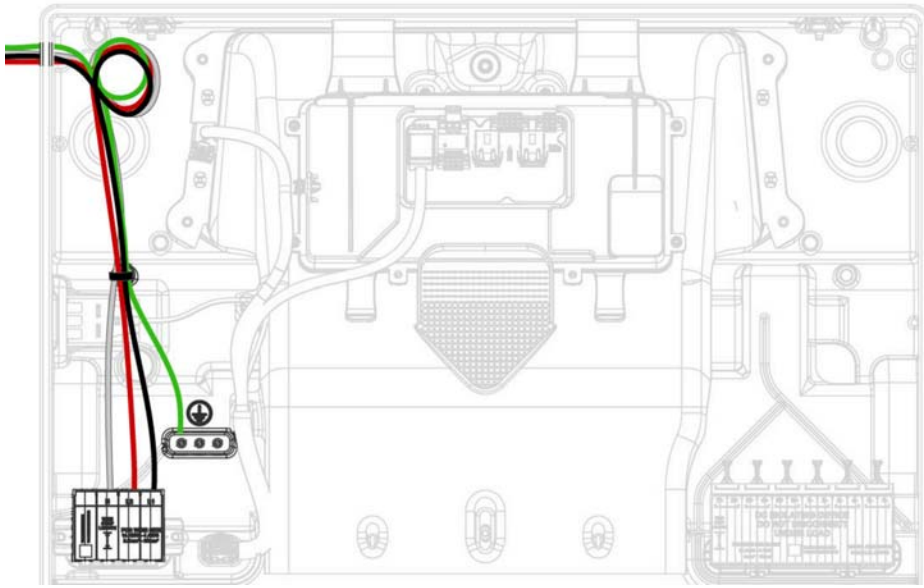
WARNING: Ensure the conductors are inserted into the round terminals and not the rectangular screwdriver slots. Inserting the conductors in the screwdriver slots can result in fire.



- d. Perform a pull test to ensure the conductor is fully seated in the terminal. Push the conductor back in after the pull test.

STEP 6: CONNECT POWERWALL 3 TO AN OVERCURRENT PROTECTION DEVICE

Figure 20. Powerwall 3 AC Wiring



- e. After installing the AC conductors and equipment grounding conductor, gather them and secure them with the provided cable tie as shown above.

Required UL 1741 PCS Compliance Information

 **NOTE:** The Tesla Powerwall 3 system is certified to UL 1741 PCS for the energy storage system (ESS) operating modes of import and export only. The installer can select three modes of operation for the system: No Site Export, PV Only Export, and PV, Battery Export.

1. **NO SITE EXPORT:** The battery and solar will not export beyond the site meter, other than inadvertent export.
2. **PV ONLY EXPORT:** The battery will not export beyond the site meter, other than inadvertent export. The export at the site meter will be limited to the export from as measured by the solar meter.
3. **PV, BATTERY EXPORT:** The battery and solar will export beyond the site meter.

 **NOTE:** To achieve UL 1741 PCS Import Only behavior, either **PV ONLY EXPORT** or **NO SITE EXPORT** must be selected. When the selected Grid Code applies to a region that requires UL 1741 PCS, such as California UL 1741 SA, the default setting is **PV ONLY EXPORT**. In the locally hosted Configuration Interface it is possible to further restrict the system to **NO SITE EXPORT**; however once set, it is not possible to change back to **PV ONLY EXPORT**. It is not possible to configure the system to allow **BATTERY EXPORT** in this mode.

 **NOTE:** To achieve UL 1741 PCS Export Only behavior, **PV, BATTERY EXPORT** must be selected and the import rule must be set to charge only from solar (and not charge from the grid). When the selected Grid Code applies to a region that requires UL 1741 PCS, such as California UL 1741 SA, the default setting is **PV ONLY EXPORT**. In the locally hosted Configuration Interface it is possible to further restrict the system to **NO SITE EXPORT**; however once set, it is not possible to change back to **PV ONLY EXPORT** or **PV, BATTERY EXPORT**.

 **NOTE:** This system is equipped with a power control system (PCS) which is suitably rated to provide branch circuit overcurrent protection. The controlled current setting shall not exceed the rating of any controlled busbars or conductor ampacity.

STEP 6: CONNECT POWERWALL 3 TO AN OVERCURRENT PROTECTION DEVICE



NOTE: The PCS controlled current setting for each PCS controlled conductor or bus bar shall be indicated with a field applied marking label on the conductor or in close proximity to the busbar.

Figure 21. PCS Field Marking Label

PCS Controlled Current Setting: _____ A

The maximum output current from this system towards the main panel is controlled electronically. Refer to the manufacturer's instructions for more information.



WARNING: Only qualified personnel shall be permitted to set or change the setting of the maximum operating current of the PCS. The maximum PCS operating current setting shall not exceed the busbar rating or conductor ampacity of any PCS controlled busbar or conductor.



WARNING: Configuration of power control settings system or changes to settings shall be made by qualified personnel only. Incorrect configuration or setting of the power control settings may result in unsafe conditions.



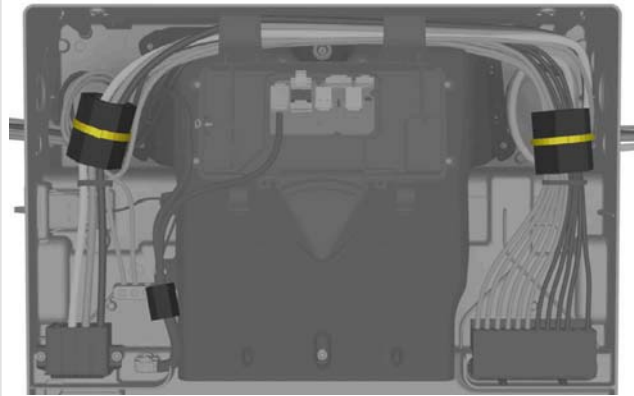
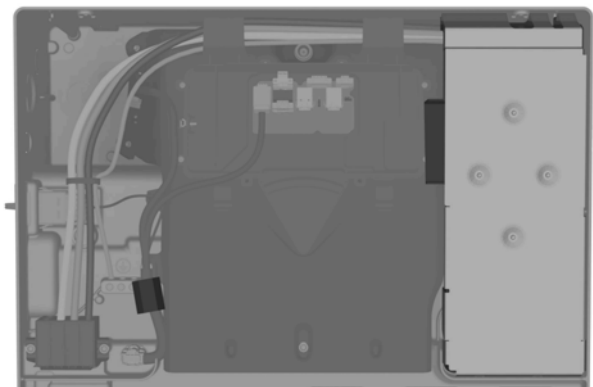
NOTE: The maximum operating currents in controlled busbars or conductors are limited by the settings of the power control system (PCS) and may be lower than the sum of the currents of the connected controlled power sources. The settings of the PCS controlled currents may be used for calculation of the design currents used in the relevant sections of NEC Article 690 and 705.



NOTE: Maximum PCS Controlled Current setting: 200 A.

STEP 7: INSTALL CLAMP-ON FERRITE CORES / METAL PV SHIELD

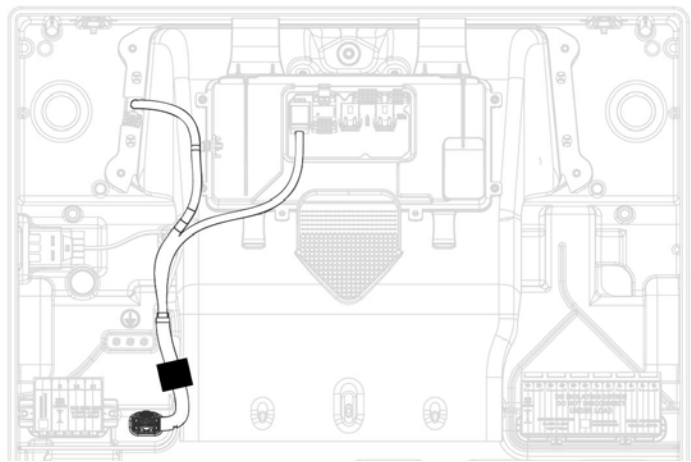
Powerwall 3 ships with either (3) clamp-on ferrite cores or (1) clamp-on ferrite core and metal PV shield. Review the following table to learn which parts ship with Powerwall 3 depending on Powerwall 3 part number:

Powerwall 3 P/N 1707000-00-H and lower	Powerwall 3 P/N 1707000-00-J and higher
• (2) large clamp-on ferrite cores with (2) cable ties for the AC and PV conductors • (1) small clamp-on ferrite core for the factory-installed low voltage harness	• (1) metal PV shield for PV conductors • (1) small clamp-on ferrite core for the factory-installed low voltage harness
	

 **CAUTION:** Ferrite cores are fragile; handle with caution.

 **NOTE:** Equipment grounding conductors do not need to be included in ferrite cores.

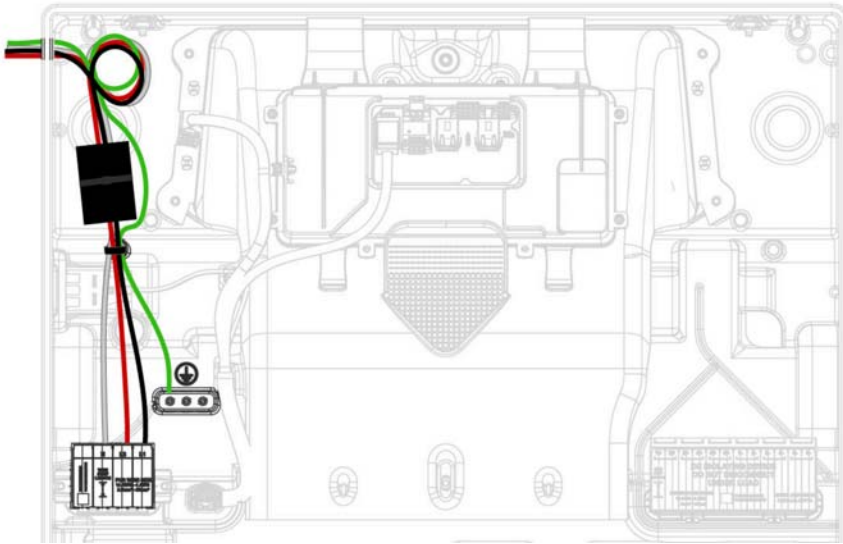
1. Install the provided small clamp-on ferrite core around the factory-installed low voltage harness.
Figure 22. Ferrite Ring Around LV Harness



STEP 7: INSTALL CLAMP-ON FERRITE CORES / METAL PV SHIELD

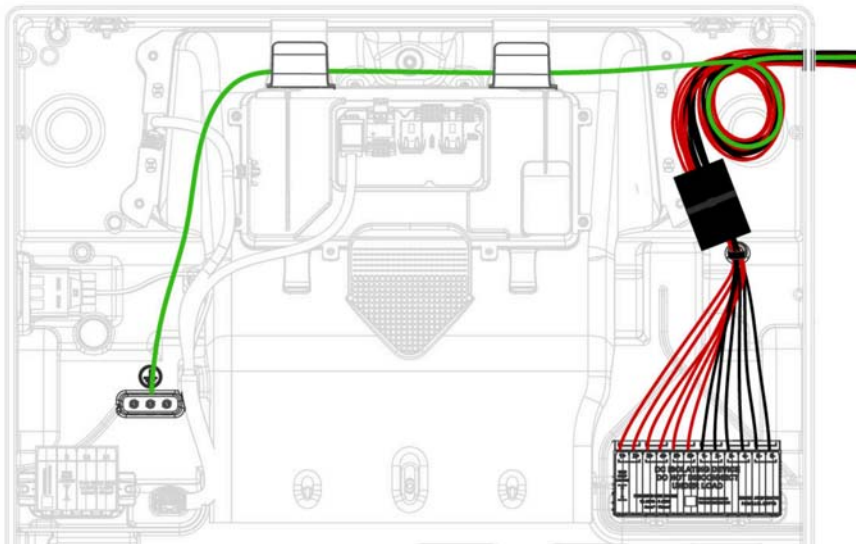
2. For **Powerwall 3 P/N 1707000-00-H and lower**, install the large clamp-on ferrite cores:
 - a. Install one of the provided large clamp-on ferrite cores around the AC conductors.

Figure 23. Ferrite Ring Around AC Conductors



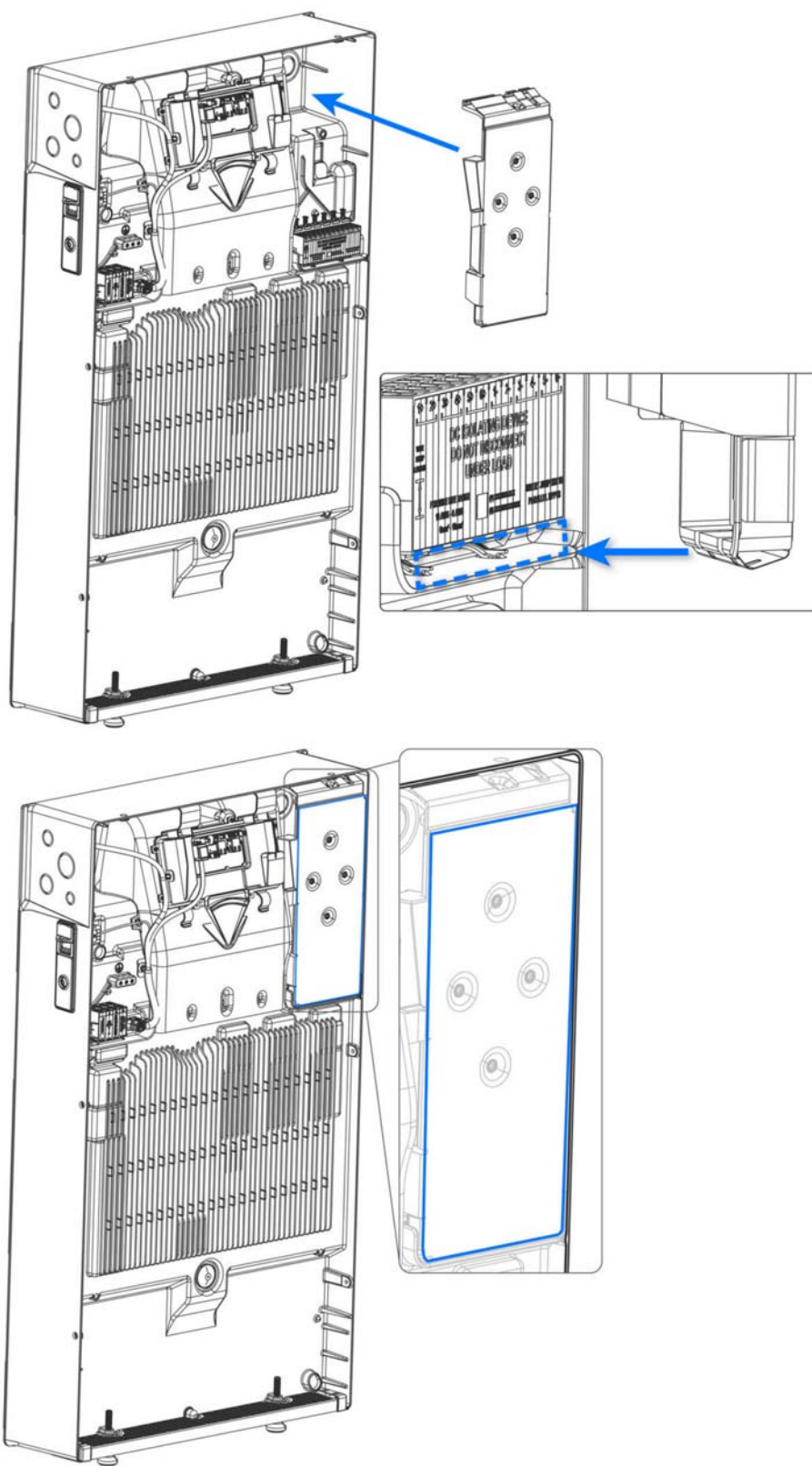
- b. Secure the ferrite core closed with the provided cable tie.
 - c. Install one of the provided large clamp-on ferrite cores around the PV conductors.

Figure 24. Ferrite Ring Around PV Conductors



- d. Secure the ferrite core closed with the provided cable tie.
3. For **Powerwall 3 P/N 1707000-00-J and higher**, install the metal PV shield:
 - a. Inspect the PV shield and confirm the metal is not warped or bent.
 - b. Align the bottom edge of the PV shield with the space between the PV connector and the metal enclosure. Push the PV shield into place.
 - c. Confirm the edges of the PV shield do not protrude past the edges of the Powerwall 3 enclosure.

STEP 7: INSTALL CLAMP-ON FERRITE CORES / METAL PV SHIELD



NOTE: When the metal PV shield is installed, additional ferrite cores are not required on the AC and PV wires.

STEP 8: INSTALL SYSTEM SHUTDOWN SWITCH WHERE REQUIRED

Where required by local code, Powerwall 3 can be wired to a remote System Shutdown Switch that manually initiates rapid shutdown, disabling solar output.

The Powerwall 3 On/Off switch is also certified to UL 1741 as a means of manually initiating rapid shutdown. See [Appendix D: Solar Rapid Shutdown on page 116](#) for more information on the function of both the Enable switch and the System Shutdown Switch.

Install the System Shutdown Switch



WARNING: Before terminating any conductors inside Powerwall 3, ensure that the Enable switch is turned OFF to de-energize the system. Confirm lack of voltage at the AC and PV terminals before proceeding.

1. Remove the factory-installed jumper from the RSD IN / RSD Out ports on the Powerwall 3 RSD connector. See [Appendix B: Wiring Reference on page 101](#) for a detailed wiring reference.
2. Wire the 2-conductor communication wire (minimum 24 AWG conductors) to the RSD ports:
 - a. Strip the communication wire jacket so that it does not extend past the edge of the fan duct. This ensures the individual conductors lie flat, leaving room for the front cover to be installed.
 - b. Strip each conductor 5/16 inch (8 mm).
 - c. Route the two conductors to the connector as shown below, using the wire management tab to prevent them from blocking the Tesla Asset Controller.



CAUTION: Tesla recommends routing the communication wiring into the left side of the enclosure; always use the wire management tabs to ensure wires do not block the Tesla Asset Controller. Do not route loose wires through the front of the enclosure.

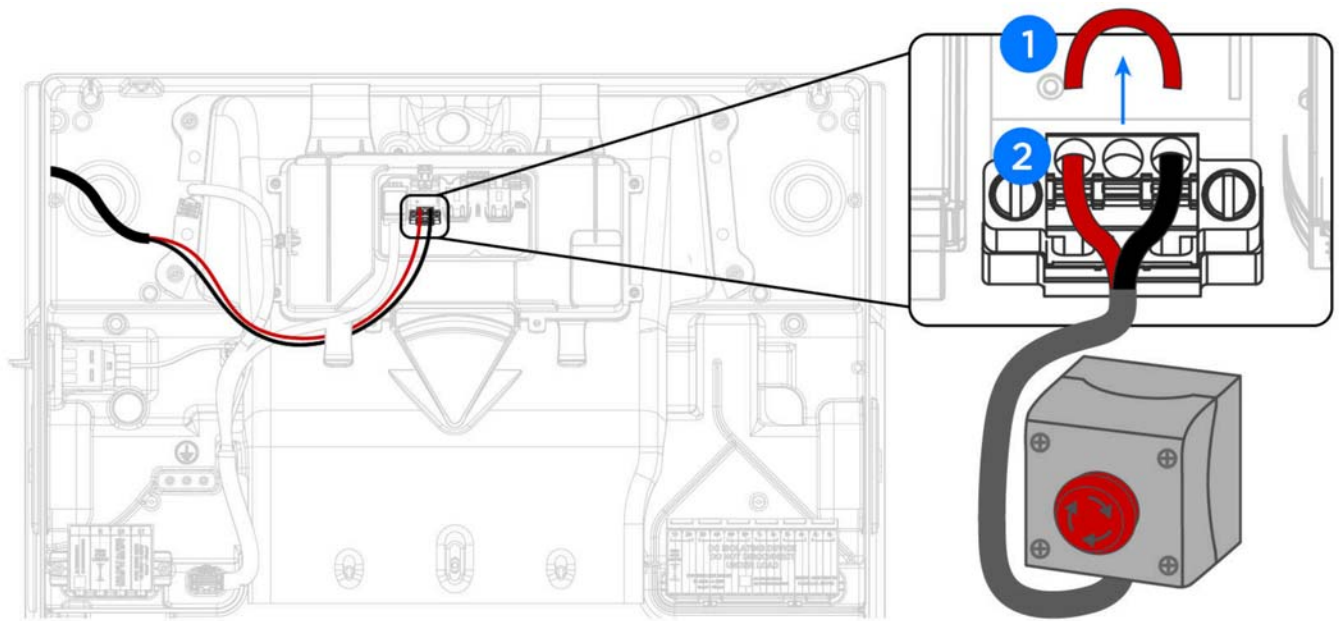
- d. Insert a cabinet tip or electronics tip slotted screwdriver (up to 3/32-inch or 3 mm) into each screwdriver slot to open the terminal.
 - e. Insert each conductor as far as possible into the terminal and remove the screwdriver from the screwdriver slot to close the terminal.



CAUTION: Excessive force may damage the connector; do not apply more force than is necessary to open the terminal and insert the conductor.

3. Connect the 2-conductor communication wire to a suitable DC switch (requirements below).

STEP 8: INSTALL SYSTEM SHUTDOWN SWITCH WHERE REQUIRED



Switch Requirements

System Shutdown Switches shall meet the following requirements.

- Listed or Recognized as "Emergency Stop Button", "Emergency Stop Device", "Emergency Stop Unit", meeting one of the following standards:
 - UL 508 "Industrial Control Equipment"
 - UL 60947-1 "Low-voltage switchgear and control gear- Part 1: General Rules" AND Part 5-1: Control Circuit Devices and Switch Elements - Electromechanical Control Circuit Devices" AND UL 60947-5-5: Mechanical and functional performance requirements
- Normally Closed (NC) switch contacts
- Rated for at least 12 V, 1 A
- Outdoor rated (NEMA 3R or higher)
- Terminals must accept 24 AWG wire or larger

STEP 8: INSTALL SYSTEM SHUTDOWN SWITCH WHERE REQUIRED

Recommended Switch Components

The following product (composed of all parts listed below) meets all above requirements for this application:

Emergency Stop Button Option 1: Eaton	Eaton M22-PVT	Emergency Stop Button
	Eaton M22-I1-PG	Emergency Stop Enclosure
	Eaton M22-K01PV6	Emergency Stop Contactor Block (240V, 6A)
Emergency Stop Button Option 2: Schneider	Schneider XALD01H7	Emergency Stop Enclosure
	Schneider ZB5AT84	Emergency Stop Button
	Schneider ZB5AZ009	Emergency Stop Collar
	Schneider ZBE102	Emergency Stop Contact Block
	Schneider ZBZ1605	Emergency Stop Guard Yellow
	Schneider ZBZ1602	Emergency Stop Guard Black
Low voltage communication wire (Powerwall 3 communication cable preferred)		
½-inch Strain Relief or equivalent		
(4) Fasteners and anchors for the 5/16-inch (8 mm) mounting holes on the enclosure		

Installation Guidelines for the System Shutdown Switch

- Up to three Powerwall 3 units can be connected to a single System Shutdown Switch
- Installed externally in a readily accessible location, preferably near utility meter
- Maximum low voltage wire run from switch does not exceed 150 ft (45 m)
- Control circuit must be installed as Type TC-ER or within an appropriate raceway

STEP 9: INSTALL ENERGY METERING FOR THE SYSTEM

Visibility on power and energy data is needed for the Powerwall 3 system to operate properly. An energy meter accomplishes this by measuring voltage (by voltage tap) and current (by Current Transformer, CT) at certain points in the system.

There are many possible configurations for installing metering depending on system design. However, there are two goals:

- **Metering the Site** – Site meters show the overall power flow to/from a site from the Grid's perspective. Thus, Site meter(s) must be installed upstream of all solar production, Powerwalls, and loads.
- **Metering Solar** – Solar meters capture production from PV inverter(s). There must not be any loads or Powerwalls behind the Solar CTs. This would result in under- or over-estimation of solar production. In this system, Powerwall 3 performs its own Solar metering. No other Solar metering is possible, as additional solar is not supported in Powerwall 3 systems with Gateway 3.

Site Metering for Gateway 3

Gateway 3 makes metering simple with its built-in Site meter (Meter Z). Meter Z may be used for a whole home backup configuration only, with no additional steps required during installation. No additional meters can be configured as Site.

STEP 10: COMPLETE THE INSTALLATION

Plan Internet Connection for Powerwall

Internet connectivity is required to receive the full 10-year Powerwall warranty, and for the customer to see their system in the Tesla App.

Cellular is available for commissioning and as a backup connection when Wi-Fi or Ethernet connections are lost. Once Powerwall has been registered to the customer, they can configure a Wi-Fi connection using the Tesla app. For customers without a strong Wi-Fi connection, install an Ethernet connection as follows.

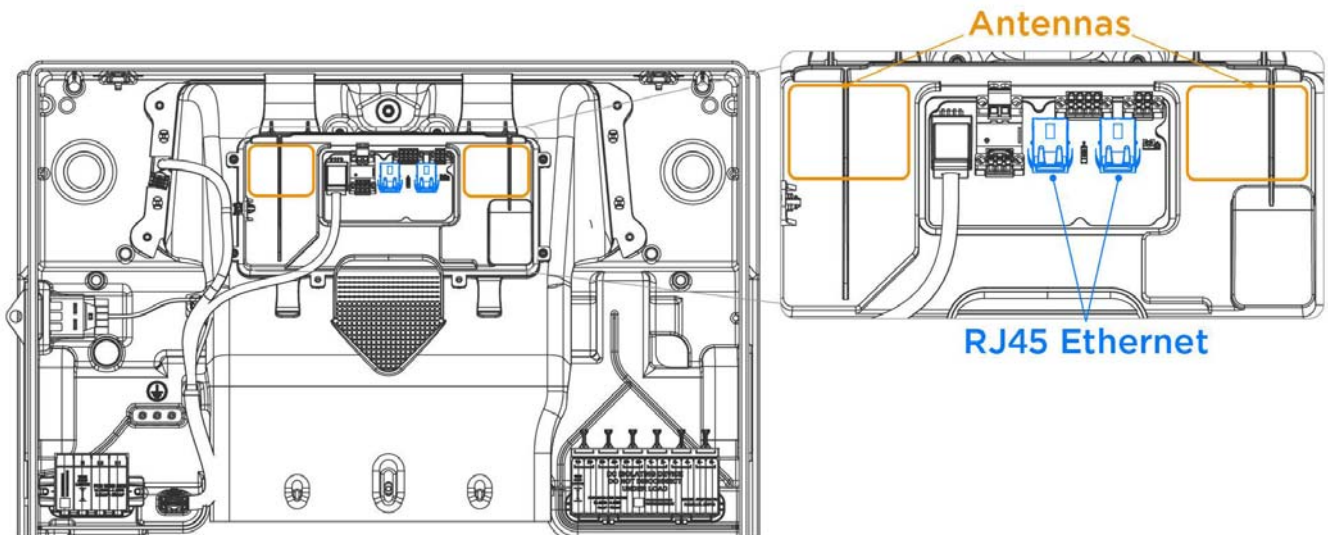
 **NOTE:** If the customer Wi-Fi network is available during the installation, the Wi-Fi connection can be configured during Device Setup.

Install Ethernet Connection

- Ethernet cable must be CAT5 cable at minimum.
- If not possible to run an Ethernet cable directly to the customer's network router, Powerline Ethernet socket adapters may be used.

 **NOTE:** If installing Powerline Ethernet socket adapters, ensure they are installed in the backup circuit.

- Connect the Ethernet cable to one of the RJ45 Ethernet terminals in the Powerwall 3:



 **NOTE:** See [Prepare Ethernet Wiring with RJ45 Connectors on page 105](#) for instructions to crimp RJ45 connectors on CAT5 or CAT6 cable.

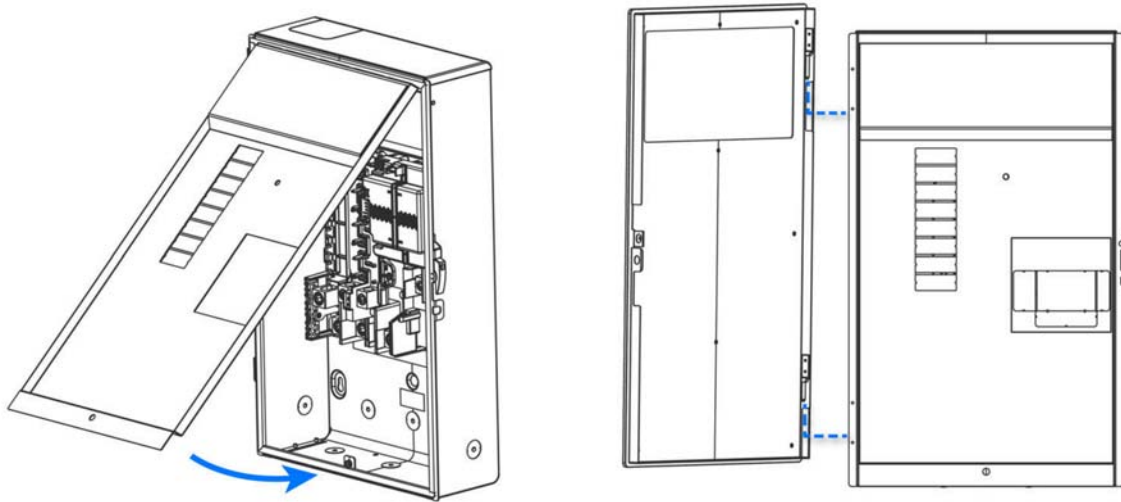
 **NOTE:** Do not block the cellular or Wi-Fi antennas, which are highlighted in the image above, with wiring or other obstructions.

STEP 10: COMPLETE THE INSTALLATION

Close Wiring Compartments

1. **Before closing any installed hardware**, take photos of the completed wiring in the Powerwall, Gateway 3, and main distribution board.
2. Inspect the AC and PV wiring terminals to ensure all wire strands are properly inserted.
3. Ensure that all conduit junctions and cable entry points are secure and properly sealed.
4. Install the Gateway 3 dead front cover and secure it firmly with the original screw. Mount the Gateway 3 door, and latch it shut.

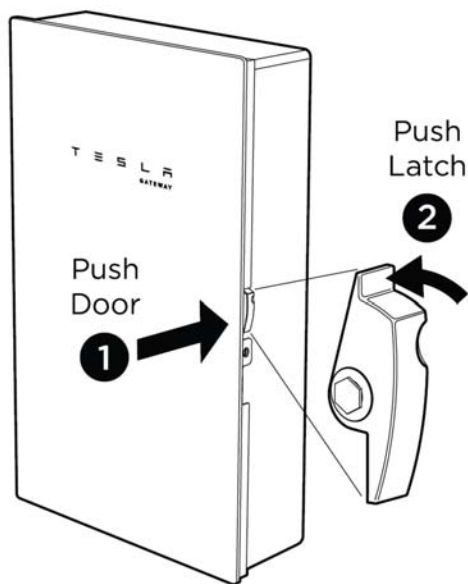
Figure 25. Install the Dead Front Cover and Glass Door



NOTE: During the commissioning process, installers will need to scan a QR code located behind the dead front cover.



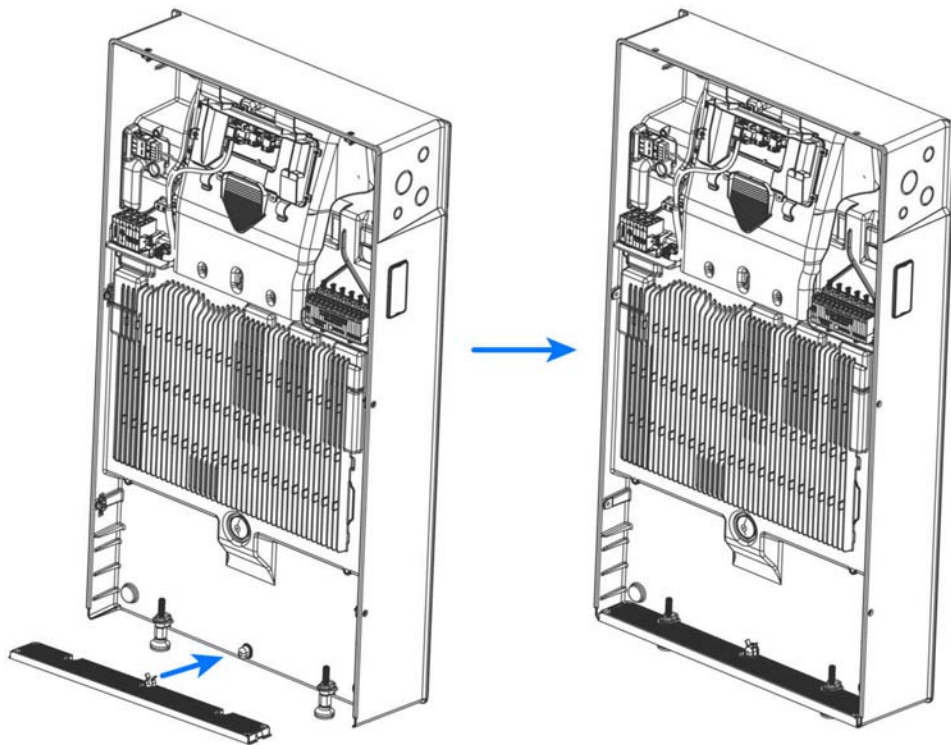
NOTE: To open the door once it has been installed, simultaneously apply inward pressure on the door while pressing in on the top of the latch (located on the right-hand side of the enclosure) as shown below.



5. Arrange all wires neatly inside the Powerwall wiring compartment.

STEP 10: COMPLETE THE INSTALLATION

6. Install the air intake screen over the opening at the bottom of Powerwall, ensuring it snaps into place.

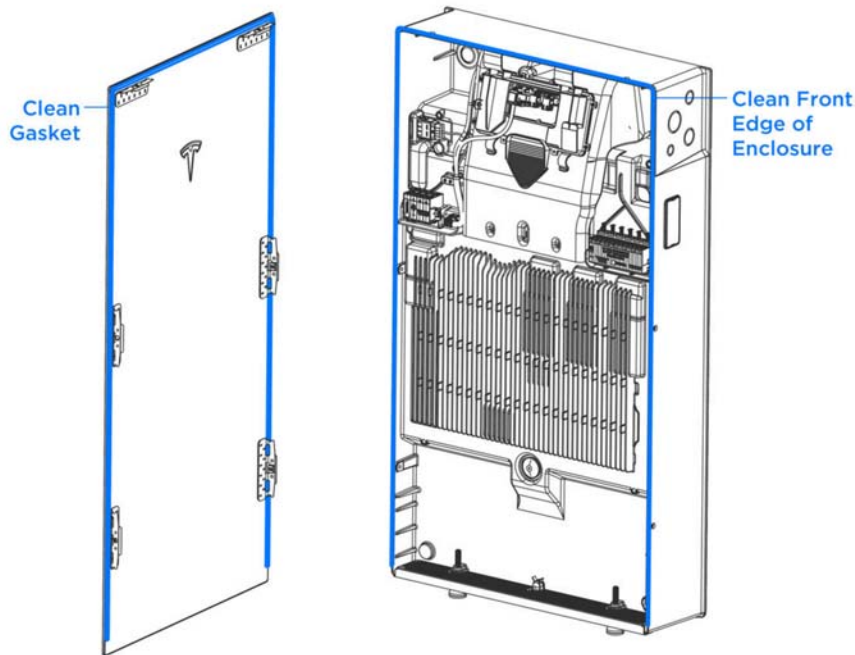


7. Clean the front edge of the Powerwall enclosure with a microfiber cloth to remove any debris that might interfere with the seal.
8. Carefully remove the glass front cover from its packaging and, using a microfiber cloth, clean the sealing gasket around the edge of the front cover to remove any debris that might interfere with the seal.



CAUTION: Take extreme care when handling the sealing gasket. Damage to or contamination of the gasket or its mating surface could compromise Powerwall's ingress protection, resulting in product damage.

STEP 10: COMPLETE THE INSTALLATION

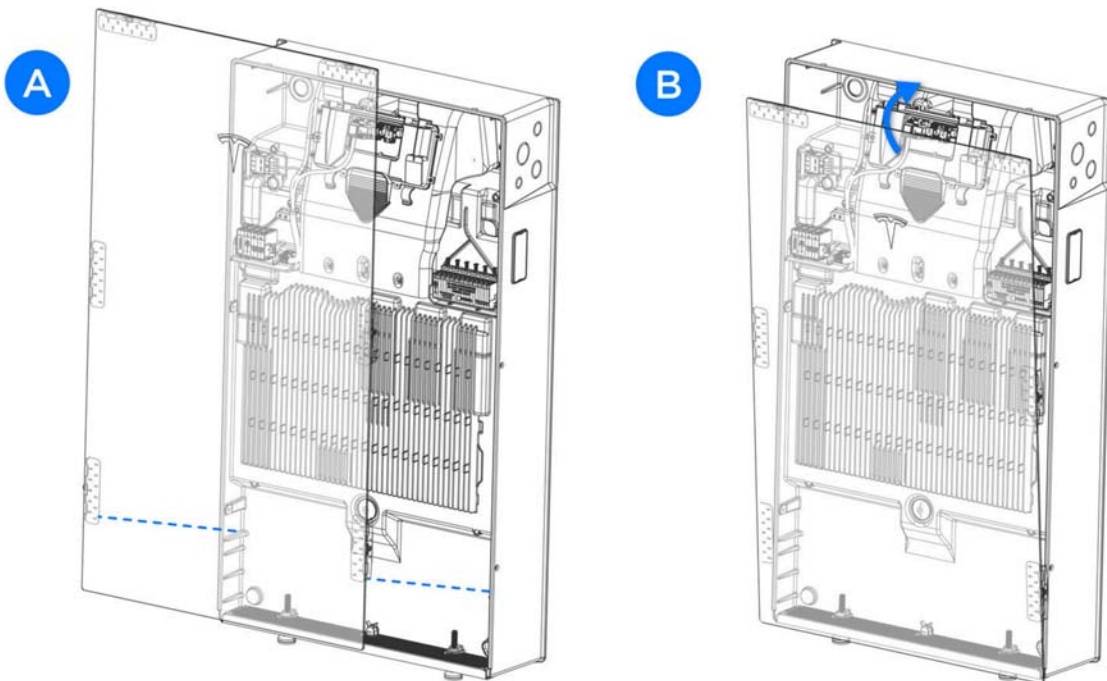


9. Carefully install the glass front cover:

- Align the lower mounting tabs with the two alignment shelves in the enclosure (A).
- Rotate the front cover toward the enclosure to engage the top mounting tabs with the enclosure (B). Maintain pressure (15-20 lb force) on the front of the cover to compress the sealing gasket.



CAUTION: Maintain pressure to keep the sealing gasket compressed until all fasteners are installed and tightened. If the sealing gasket is not compressed, the fasteners may thread form in the enclosure, breaking the front cover mounting tabs.



STEP 10: COMPLETE THE INSTALLATION

- c. Install and tighten the top (2X) T20 fasteners in the fastener slots (C).

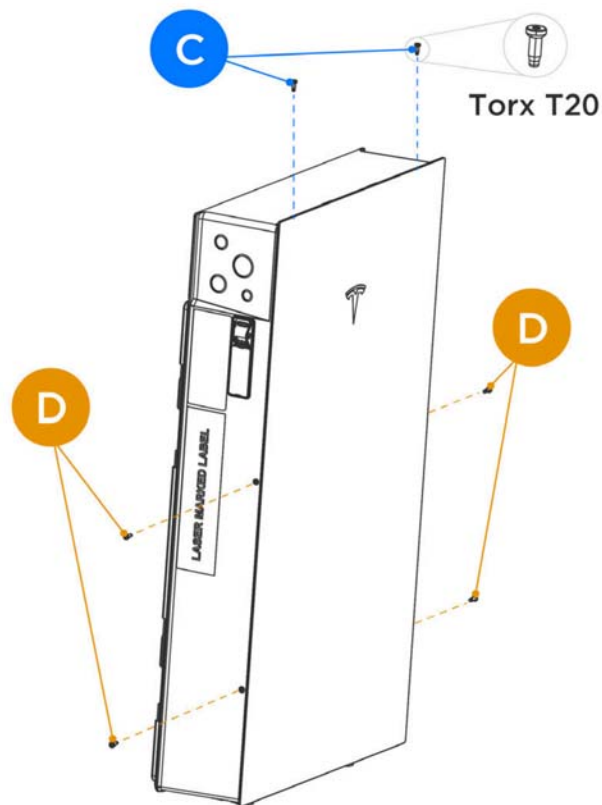


NOTE: The included T20 fasteners (Tesla P/N 1847553-00-A) are single use. (2X) extra fasteners are included in the accessory bag.

- d. Install and tighten the remaining (4X) T20 fasteners in the fastener slots on the sides of the unit (D).
- e. Tighten each fastener to approximately 25 in-lb (2.8 Nm) or hand-tight.



CAUTION: Do not use an impact driver to torque the fasteners.



10. Clearly label all circuit breakers.

STEP 11: TURN ON AND COMMISSION THE SYSTEM

 **WARNING:** Turn the Powerwall 3 Enable switch OFF to de-energize the system before terminating any conductors inside Powerwall 3. Confirm lack of voltage at the AC and PV terminals before proceeding.

Prepare the System for Commissioning

Installation Scenario			Actions		
Powerwall Installation Complete?	Solar Installed?	Does Utility / AHJ allow the system to run pre-PTO?*	Enable (On / Off) Switch	Powerwall 3 Breaker	Commissioning
Yes	Yes	No	Leave the Enable switch OFF	Leave the Powerwall 3 breaker CLOSED (ON)	See Commission the System After Powerwall and Solar Installation on page 85
Yes	Yes	Yes	Leave the Enable switch ON	Leave the Powerwall 3 breaker CLOSED (ON)	See Commission the System After Powerwall and Solar Installation on page 85
Yes	No	N/A (system not ready to be turned on)	Leave the Enable switch ON	Leave the Powerwall 3 breaker CLOSED (ON)	See Commission the System Ahead of Solar Installation on page 85
Yes, but commissioning could not be completed (could not resolve errors with troubleshooting)	N/A (applicable whether solar is installed or not)	N/A (system not ready to be turned on)	Leave the Enable switch OFF	Leave the Powerwall 3 breaker CLOSED (ON)	Commissioning cannot be completed at this time (schedule a second site visit to complete)
No (no AC service, install crew unable to complete, etc.)	No	N/A (system not yet installed)	Leave the Enable switch OFF	Leave the Powerwall 3 breaker CLOSED (ON)	Commissioning cannot be completed at this time (schedule a second site visit to complete)

*In some cases, the Utility or AHJ may not allow the system to be turned on at the time of install. Instead, once PTO is received the customer can be notified to turn their system on.

STEP 11: TURN ON AND COMMISSION THE SYSTEM

Commission the System After Powerwall and Solar Installation

1. Close the AC circuit breaker for Powerwall 3 and Gateway 3.
2. Turn the Powerwall 3 switch **ON**.



3. Launch the **Tesla One** app.



NOTE: Ensure Tesla One is updated to version 7.9.1 or greater, or [install Tesla One](#) if using for the first time.

4. Navigate to **Device Setup** to begin commissioning.
5. Select **Scan** and scan the Powerwall 3 QR label to connect to the TeslaPW Wi-Fi network.
6. Address any alerts to complete commissioning. See the [Powerwall 3 Device Setup commissioning guide](#) for additional instructions.



NOTE: The Backup Test can be performed during the Gateway 3 device update. There is no need to wait for the update to complete before performing the Backup Test.

7. Leave the system running in Tesla One.
8. Leave the Powerwall switch **ON** and the breaker **CLOSED** to enable charging.



NOTE: The Powerwall 3 On / Off switch has a locking mechanism. When the switch is locked it cannot be turned on. See [Powerwall 3 Switch Locking Mechanism on page 123](#) for more information.

Commission the System Ahead of Solar Installation

Powerwall Installation Crew Instructions

1. Close the AC circuit breaker for Powerwall 3 and Gateway 3.
2. Turn the Powerwall 3 switch **ON**.
3. Launch the **Tesla One** app.



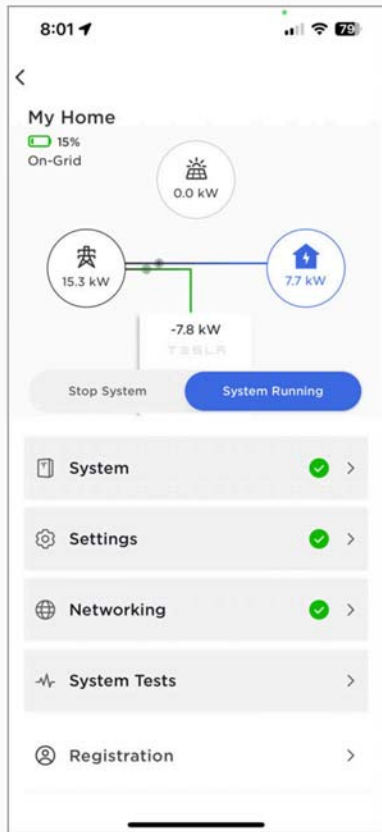
NOTE: Ensure Tesla One is updated to version 7.9.1 or greater, or [install Tesla One](#) if using for the first time.

4. Navigate to **Device Setup** to begin commissioning.
5. Select **Scan** and scan the Powerwall 3 QR label to connect to the TeslaPW Wi-Fi network.
6. Address any alerts to complete commissioning, skipping PV commissioning steps.

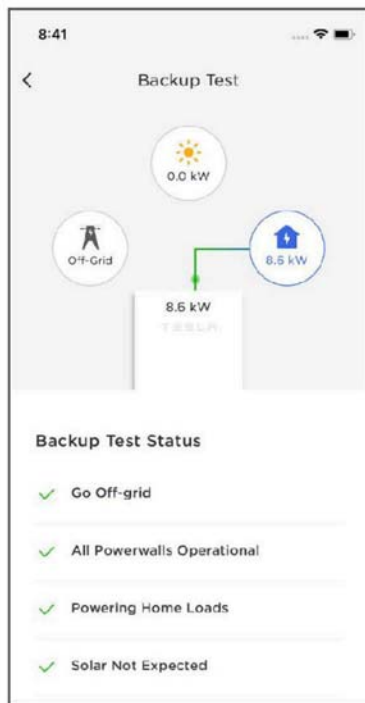
STEP 11: TURN ON AND COMMISSION THE SYSTEM



NOTE: When commissioning a system with no solar, Powerwall will charge from grid until State of Energy (SOE) is 20%. This is expected behavior.



7. Perform the Backup Test, selecting **Solar not required**.



STEP 11: TURN ON AND COMMISSION THE SYSTEM



NOTE: The Backup Test can be performed during the Gateway 3 device update. There is no need to wait for the update to complete before performing the Backup Test.

8. Leave the system running in Tesla One.
9. Leave the Powerwall 3 switch **ON** and the breaker **CLOSED** to enable charging.
10. Leave the Powerwall 3 **OFF**.
11. Leave the following accessories with the customer, for use by the Solar installation crew:
 - Extra T20 fasteners for front cover
 - Installation quick guide (for guidance on correctly installing PV wiring)



NOTE: See the [Powerwall 3 Device Setup commissioning guide](#) for additional instructions on navigating Setup App.

Solar Installation Crew Instructions

1. Retrieve the Powerwall 3 accessories from the customer. These should have been left by the Powerwall crew.
2. Turn the Powerwall 3 switch OFF to de-energize the system; see [Appendix H: Shutting Down Powerwall 3 on page 132](#) for complete de-energization instructions.



WARNING: Confirm lack of voltage at the AC and PV terminals before proceeding.

3. See [STEP 4: Make Solar PV Connections on page 42](#) for instructions to complete the solar installation.
4. Re-energize Powerwall 3:
 - a. Remove the lock / tag and breaker hasp from the Powerwall 3 breaker, then turn the breaker ON.
 - b. Turn the Powerwall 3 switch ON.



5. Launch the **Tesla One** app.



NOTE: Ensure Tesla One is updated to version 7.9.1 or greater, or [install Tesla One](#) if using for the first time.

6. Navigate to **Device Setup** to begin commissioning.
7. Select **Scan** and scan the Powerwall 3 QR label to connect to the TeslaPW Wi-Fi network.
8. Address any alerts to complete commissioning.
9. On the Powerwall 3 *Device* page, compare the MPPT voltages with those listed on the planset to confirm the installation matches what is expected for the strings.

STEP 11: TURN ON AND COMMISSION THE SYSTEM

10. Perform the Backup Test with solar.
11. Install the Powerwall 3 front cover, fastening with the new T20 fasteners that were left with the customer.
12. Leave the system running in Tesla One.
13. Leave the Powerwall switch **ON** and the breaker **CLOSED** to enable charging.



NOTE: See the [Powerwall 3 Device Setup commissioning guide](#) for additional instructions on navigating Device Setup in Tesla One.



NOTE: The Powerwall 3 On / Off switch has a locking mechanism. When the switch is locked it cannot be turned on. See [Powerwall 3 Switch Locking Mechanism on page 123](#) for more information.

STEP 12: DEMONSTRATE THE INSTALLATION

1. Ask the homeowner to download and install the Tesla mobile app, log in or create a new Tesla account, and assist them with registering their product.
2. Show the homeowner the location of the serial number sticker on the left side of Powerwall, below the On/Off switch.
3. Demonstrate the capabilities of the Tesla mobile app, such as how to change the operation mode.
4. Simulate an outage by opening the main breaker and show that Powerwall is powering backup loads.
5. Archive the photos from the installation.

Technical Support

Resources for Certified Installers, including the latest versions of installation manuals, are available within the Tesla Partner Portal:

<https://partners.tesla.com>

Maintenance

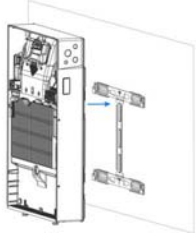
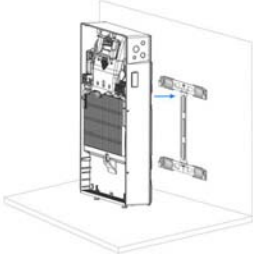
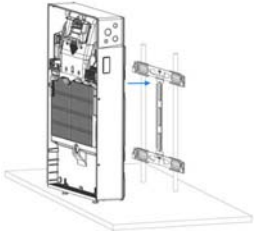
Powerwall 3 does not require pre-scheduled preventative maintenance. The only maintenance required by an owner is to keep the unit connected to the internet and free and clear of debris, especially around the air intake and exhaust. When needed, the air intake vent can be removed and hosed off.

To clean Powerwall 3, use a soft, lint-free cloth. If needed, the cloth can be dampened with mild soap and water only. Do not use cleaning solvents to clean Powerwall 3, or expose Powerwall 3 to flammable or harsh chemicals or vapors.

APPENDIX A: POWERWALL 3 ANCHORING DETAILS

A1

Table 5. Mounting Design Guidelines Based on Seismic and Wind Speed Conditions

	Ground- or Wall-mount Powerwall 3 with Wall Bracket	Ground-mount Powerwall 3 on Poured Concrete	Ground-mount Powerwall 3 on Poured Concrete with Steel Posts
			
Wall and Foundation	Existing structural wall and existing approved foundation	Existing structural wall and poured concrete foundation	Poured concrete with steel posts
Seismic Design Category	A, B, C, or D	A, B, C, or D	A, B, C, or D
Max Wind Speed	180 mph Exposure Category C	180 mph Exposure Category C	180 mph Exposure Category C
Installation Information	Installation instructions on page 39	Installation instructions on page 95 (A10 - A11)	Installation instructions and anchoring details on page 97 (A12 - A15)
	Anchoring details on page 92 (A6 - A9)	Anchoring details on page 92 (A6 - A9)	

 **NOTE:** There is no wind speed limitation on Powerwall and anchoring equipment when mounting in interior locations.

The following conditions will require additional site-specific evaluation by the installing company's structural engineering team:

- Wind Exposure Category D
- Wind speeds greater than 180 mph
- Poured concrete pad and steel post construction in regions with seismic above $S_S = 2.37$ will require site-specific calculations
- If needed, reference the linked third party resource for Seismic Categories, Wind Speeds and Exposure Categories: <https://asce7hazardtool.online/>