Powerwall 3 Installation Manual

with Gateway 3

Notices

For the latest Powerwall 3 installation documents in all supported languages, visit:

www.tesla.com/support/powerwall

This manual applies to Powerwall 3 and Tesla Solar Shutdown Device, and electrical wiring elements manufactured by Tesla. It is explicitly written for qualified professionals ("Installer" or "Installers"), including without limitation licensed electricians and NABCEP-Certified PV Installers.

To secure the full 10-year product warranty, Powerwall 3 must be registered by completing the device setup process and sending system information to Tesla.

Product Specifications

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at Tesla, we reserve the right to make product modifications at any time.

The images provided in this document are for demonstration purposes only. Depending on product version and market region, details may appear slightly different.

Errors or Omissions

To communicate any inaccuracies or omissions in this document, reach out to your Tesla Account Manager.

Electronic Device: Do Not Throw Away

Proper disposal of batteries is required. Refer to local codes for disposal requirements.

For Private Households: Information on Disposal for Users of WEEE

This symbol on the product(s) and / or accompanying documents means that Waste from Electrical and Electronic Equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge. Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For Professional Users in the European Union

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.

For Disposal in Countries Outside of the European Union

This symbol is only valid in the European Union (EU). If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

GENERAL WARNINGS AND INFORMATION

ATTENTION: Read this entire document before installing or using Powerwall. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or can damage Powerwall, potentially rendering it inoperable.

IMPORTANT SAFETY INSTRUCTIONS

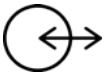
This manual contains important instructions for Powerwall 3 and Gateway 3 that must be followed during installation and maintenance of the system.

NOTE: On detection of abnormal condition for voltage or frequency conditions or in response to a detected unintentional island, the Tesla Powerwall system disconnects from the grid to prevent backfeed.

NOTE: During a Short Circuit event in standalone mode, the following maximum values are expected:

Maximum Peak to Peak Current	133 A
3 Cycle RMS Value	22 A
Duration of Peak Current	16 ms

Symbols Used

	**CAUTION:** Indicates a hazardous situation which, if not avoided, could result in minor injury or damage to the equipment.		**RISK OF ELECTRIC SHOCK:** Indicates components that present risk of electrical shock.
	**WARNING:** Indicates a hazardous situation which, if not avoided, could result in injury or death.		**CAUTION, RISK OF ELECTRIC SHOCK, ENERGY STORAGE TIMED DISCHARGE.** Discharge time is 5 minutes from de-energization.
	**NOTE:** Indicates an important step or tip that leads to best results, but is not safety or damage related.		**BIDIRECTIONAL TERMINAL:** Indicates location of combined input/output connector on the equipment.
	**REFER TO OPERATING INSTRUCTIONS:** Indicates that user should refer to operating or installation instructions before proceeding.		**PROTECTIVE CONDUCTOR TERMINAL:** Indicates location of grounding connection on the equipment.

GENERAL WARNINGS AND INFORMATION

General Information

WARNING: Read this entire document before installing or using Powerwall. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or may damage Powerwall, potentially rendering it inoperable.

WARNING: A battery can present a risk of electrical shock, fire, or explosion from vented gases. Observe proper precautions.

WARNING: Powerwall installation must be carried out only by a competent electrician who is certified by Tesla and who has been trained in dealing with low voltage electricity.

WARNING: Powerwall is heavy. Use of lift equipment is recommended.

WARNING: Use Powerwall only as directed.

WARNING: Do not use Powerwall if it is defective, appears cracked, broken, or otherwise damaged, or fails to operate.

WARNING: Before beginning the wiring portion of the installation, ensure that Powerwall is switched off, and lock out any associated circuit breakers and disconnect switches (if applicable for the installation).

WARNING: Do not attempt to open, disassemble, repair, tamper with, or modify Powerwall. Powerwall and its components are not user serviceable. Batteries in Powerwall are not replaceable. Contact Tesla Support for guidance on repairs.

WARNING: To protect Powerwall and its components from damage when transporting, handle with care. Do not impact, pull, drag, or step on Powerwall. Do not subject Powerwall to any strong force. To help prevent damage, leave Powerwall in its shipping packaging until it is ready to be installed.

WARNING: Do not insert foreign objects into any part of Powerwall.

WARNING: Do not expose Powerwall or its components to direct flame.

WARNING: Do not install Powerwall within 24 inches (610 mm) of heating vents or radiators. Powerwall can be installed in a mechanical room with HVAC equipment.

WARNING: Ensure that concentrated water sources do not drain onto Powerwall or Gateway 3, including downspouts, roofs without gutters, or drains.

WARNING: Do not immerse Powerwall or its components in water or other fluids.

CAUTION: Powerwall is not designed nor warrantied for non-stationary applications.

CAUTION: Do not use solvents to clean Powerwall, or expose Powerwall to flammable or harsh chemicals or vapors.

GENERAL WARNINGS AND INFORMATION

CAUTION: Do not use fluids, parts, or accessories other than those specified in this manual, including use of non-genuine Tesla parts or accessories, or parts or accessories not purchased directly from Tesla or a Tesla-certified party.

CAUTION: Do not place Powerwall in a storage condition for more than one (1) month, or permit the electrical feed on the Powerwall to be severed for more than one (1) month, without placing Powerwall into a storage condition in accordance with Tesla's storage specifications.

CAUTION: Do not paint, coat, or wrap any part of Powerwall, including any internal or external components such as the exterior shell or casing. These may cause Powerwall to overheat, resulting in damage to the product.

Supported Configurations

At the time of publication, the only supported installation configurations are Powerwall 3 (up to (4) units) installed with Backup Switch, Backup Gateway 2, or Gateway 3. When Powerwall 3 is installed with Backup Gateway 2, AC-coupled solar can be installed with the system.

All Site metering must be performed by Backup Switch, Backup Gateway 2, or Gateway 3. Powerwall 3 performs its own Solar metering; if the system includes AC-coupled solar, it must be metered by Backup Gateway 2 Meter Y with Tesla CTs. Neurio meters are not supported at the time of publication.

SPECIFICATIONS

Powerwall 3 Specifications

System Technical Specifications

Model Number	1707000-xx-y
Nominal Grid Voltage (Input & Output)	120/240 VAC
Grid Type	Split phase
Frequency	60 Hz
Overcurrent Protection Device	60 A
Surge Withstand Voltage on AC Ports	4 kV
Surge Withstand Voltage on Communication Ports	2 kV
Radiated RF Immunity	35 V/m
Solar to Battery to Grid Round Trip Efficiency	89%[1,2]
Solar to Grid Efficiency	97%[3]
Supported Islanding Devices	Backup Gateway 2, Backup Switch, Gateway 3
Connectivity	Wi-Fi (2.4 / 5 GHz), Dual-port switched Ethernet, Cellular (LTE/4G[4])
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters
AC Metering	Revenue Grade (+/- 0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters
Customer Interface	Tesla Mobile App
Warranty	10 years

NOTE: The model numbers in this manual call out "-XX-Y" for the suffix of the equipment model number. The wild cards are defined as follows:

- "X" is a number and the one number in the model number representing a style code; form, fit, and function are not changed, and these numbers have no bearing on compliance.
- "Y" is a letter, and the one letter in the model number representing a pedigree; form, fit, and function are not changed, and this letter has no bearing on compliance.

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 V DC
PV DC Input Voltage Range	60 — 550 V DC
PV DC MPPT Voltage Range	60 — 480 V DC
MPPTs	6
Maximum Current per MPPT (I_{MP})	13 A[5]
Maximum Short Circuit Current per MPPT (I_{SC})	15 A[5]

Powerwall 3 with mid-circuit interrupters is an RS2 system for PV Rapid Shutdown.

Battery Technical Specifications

Nominal Battery Energy	13.5 kWh[2]
Maximum Continuous Discharge Power	11.5 kW
Maximum Continuous Charge Power	5 kW
Output Power Factor Rating	0 - 1 (Grid Code configurable)
Maximum Continuous Current	48 A
Load Start Capability (1 s)	185 A LRA
Power Scalability	Up to 4 Powerwall 3 units supported[6]

[1]Typical solar shifting use case.

[2]Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.

[3]Tested using CEC weighted efficiency methodology.

[4]Cellular connectivity subject to network service coverage and signal strength.

[5]Where the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 26 A I_{MP} / 30 A I_{SC}.

[6]Limited to 3 Powerwall 3 units in outdoor wall mount or indoor (except detached garages and storage sheds) configuration.

Mechanical Specifications

Dimensions	43.25 x 24 x 7.6 in (1099 x 609 x 193 mm)
Weight	287 lb (130 kg)
Mounting Options	Floor or wall mount

Environmental Specifications

Operating Temperature	–20°C to 50°C (–4°F to 122°F)[7]
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	–20°C to 30°C (–4°F to 86°F), up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics)
	IP45 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical, <62 db(A) maximum

[7]Powerwall 3 is designed to operate in all climates and in direct sunlight, from temperatures of –4°F to 122°F (-20°C to 50°C). Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

Specification	Standard certified
Tesla Powerwall 3 is certified for Performance category A & B with Abnormal categories II & III	
Safety	UL 1741:2021 Ed.3 Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources
	UL 1973: Batteries for Use in Stationary and Motive Auxiliary Power Applications
	UL9540A: Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
	CSA 107.1 Power Conversion Equipment
Grid Interoperability	UL 1741SB Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources
	IEEE 1547: 2018 - IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces
	IEEE 1547.1:2020 IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces
	Supplement SA to UL 1741 - Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2010 Ed.2 (Supplement SA)+R:15Feb2018]
	With the source requirements document (SRD) v2.0–Hawaii Rule No. 14H Interconnection of Distributed Generating Facilities with the Company's Distribution System Effective: 07/01/2020 Electric Rule No.21 Generating Facility Interconnections Effective: June 30, 2018
	Default New England Bulk System Area Settings Requirement
	PRC-024-3 Frequency and Voltage Protection Settings for Generating Resources
	GOVERNMENT OF PUERTO RICO PUBLIC SERVICE REGULATORY BOARD PUERTO RICO ENERGY BUREAU, Generating Facility and Microgrid Interconnection Regulation ("Regulation"), July 2021
	CSA C22.3 No.9:20 Interconnection of distributed energy resources and electricity supply systems
Energy Storage	Energy Storage Systems and Equipment [ANSI/CAN/UL 9540:2020 Ed.2]
EMC	IEEE 1547.1 IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces
	IEEE C37.90.1 IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
	IEEE C62.41.2 IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits
PV Safety	UL 1699B Photovoltaic(PV) DC Arc Fault Circuit Protection
	UL 3741 Photovoltaic Hazard Control

SPECIFICATIONS

Specification	Standard certified
	UL 1741 Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources
	UL 1741 PCS Power Control Systems
	UL 1998 Software in Programmable Components
	UL 991 Tests for Safety-Related Controls Employing Solid State Devices
	CSA C22.2 No 330 Photovoltaic Rapid Shutdown System
	CSA C22.2 No.9 292 DC Arc Fault Protection for Photovoltaic Applications

Mid Circuit Interrupter Specifications (P/N MCI-1) PV Rapid Shutdown Equipment (PVRSE)

Electrical Specifications

Nominal Input DC Current (I_{MP})	13 A
Maximum Input Short Circuit Current (I_{SC})	19 A
Maximum System Voltage	600 V DC

RSD Module Interface

Maximum MCI per String	5
Control	Power Line Excitation
Passive State	Normally open
Maximum Power Consumption	7 W

Compliance Information

Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
RSD Initiation Method	External System Shutdown Switch or On/Off Enable switch located on Powerwall 3, when labeled as Rapid Shutdown Initiator per NEC 690.12 requirements
UL 3741/PVRSA Compatible Equipment	*UL 3741 Systems using Powerwall 3 and MCI on page 43*

Environmental Specifications

Ambient Temperature	-40°F to 122°F (-40°C to 50°C)
Storage Temperature	-22°F to 158°F (-30°C to 70°C)
Enclosure Rating	NEMA 4X / IP65

Mechanical Specifications

Electrical Connections	MC4 Connector
Housing	Plastic
Height	5 inches (125 mm)
Width	6 inches (150 mm)
Depth	1 inches (22 mm)
Weight	0.77 lb (350 g)

SPECIFICATIONS

Mounting Options	Zep Home Run Clip M4 Screw (#10) M8 Bolt (5/16 inch) Nail / Wood Screw

Mid Circuit Interrupter Specifications (P/N MCI-2) PV Rapid Shutdown Equipment (PVRSE)

Electrical Specifications

Nominal Input DC Current (I_{MP})	13 A
Maximum Input Short Circuit Current (I_{SC})	17 A
Maximum System Voltage (PVHCS)	1000 V DC[1]

[1]Maximum System Voltage is limited by Powerwall 3 to 600 V DC.

RSD Module Interface

Maximum MCI per String	5
Control	Power Line Excitation
Passive State	Normally open
Maximum Power Consumption	7 W

Compliance Information

Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
RSD Initiation Method	External System Shutdown Switch or On/Off Enable switch located on Powerwall 3, when labeled as Rapid Shutdown Initiator per NEC 690.12 requirements
UL 3741/PVRSA Compatible Equipment	*UL 3741 Systems using Powerwall 3 and MCI on page 43*

Environmental Specifications

Ambient Temperature	-49°F to 158°F (-45°C to 70°C)
Enclosure Rating	NEMA 4X / IP65

Mechanical Specifications

Electrical Connections	MC4 or MC4-EVO2 Connector
Housing	Plastic
Height	0.9 inches (22 mm)
Width	6.8 inches (173 mm)
Depth	1.8 inches (45 mm)
Weight	0.26 lb (129 g)

Gateway 3 Specifications

Performance Specifications

Model Number	1841000-x1-y
Nominal Grid Voltage	120/240 VAC
Grid Frequency	60 Hz
Continuous Current Rating	200 A
Maximum Supply Short Circuit Current	22 kA with Square D or Eaton main breaker, 25 kA with Eaton main breaker[1, 2]
IEC Protective Class	Class I
Overvoltage Category	Category IV (USA)
	Category III (CSA)
Pollution Degree	PD3
AC Meter	Revenue accurate (+/– 0.5 %)
Backup Transition	Automatic disconnect for seamless backup
Overcurrent Protection Device	100-200A Service entrance rated; Eaton CSR, BWH, or BW breakers[2]
Internal Panelboard	200 A, 8-space / 16 circuit breakers; Eaton BR, Siemens QP, or Square D HOM breakers rated to 10 - 125A[2]

[1]Only Eaton CSR or BWH main breakers are 25 kA rated.

[2]See *Acceptable Circuit Breakers on page 110* for all allowable main and branch breaker combinations.

Mechanical Specifications

Dimensions	26 x 16 x 6 inches (660 x 411 x 149 mm)
Weight	36 lb (16.3 kg)
Mounting	Wall mount

Environmental Specifications

Operating Temperature	–4°F to 122°F (–20°C to 50°C)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	9843 ft (3000 m)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

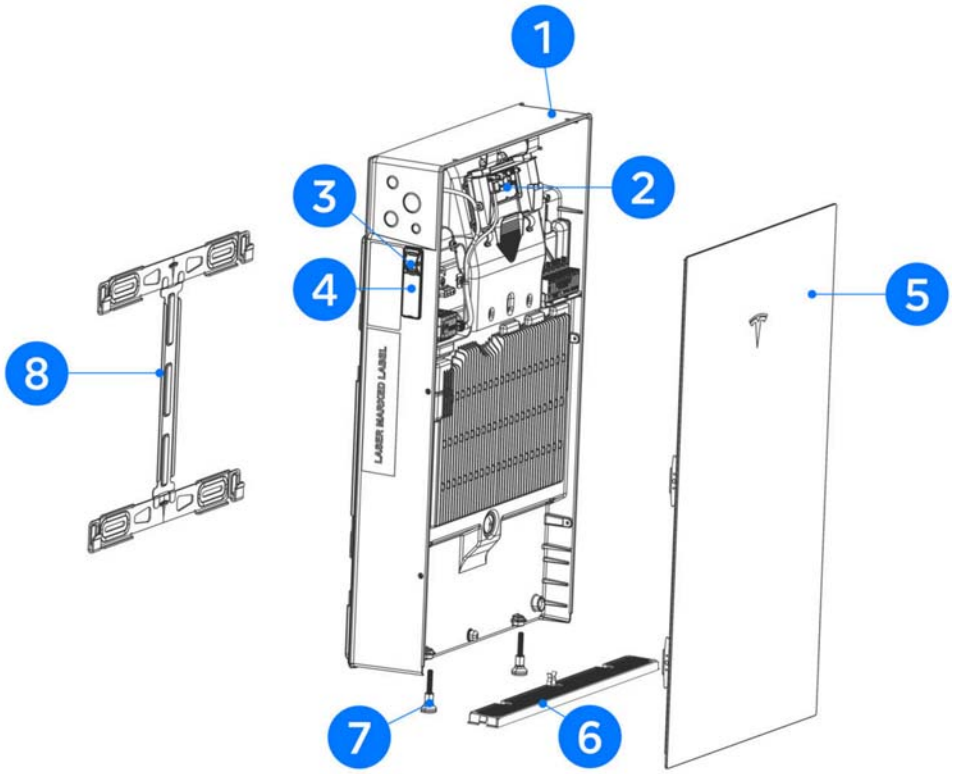
REGISTERING POWERWALL 3

Tesla Powerwall 3 comes with a warranty whose term depends on the connection of Powerwall 3 to the internet. To secure the full 10-year warranty for Powerwall 3, it must be reliably connected to the internet to allow remote firmware upgrades from Tesla. If an internet connection is not established or is interrupted for an extended period, and Tesla is unable to contact the owner, the warranty may be limited to 4 years. To ensure that the owner can receive the full 10-year warranty, be sure to complete the device setup process so that registration information is sent to Tesla.

For more information, refer to the Powerwall 3 Warranty for your region at *www.tesla.com*.

POWERWALL 3 OVERVIEW

Figure 1. Expanded View of Powerwall 3



1	Powerwall 3
2	Tesla Asset Controller
3	On / Off switch
4	Expansion port cover
5	Glass front cover
6	Air intake screen
7	Leveling feet
8	Wall mounting bracket

NOTE: Do not remove the expansion port covers. These are protective covers and Powerwall 3 will not operate when they are removed.

POWERWALL 3 INSTALLATION QUICK GUIDE

View the mobile-friendly Powerwall 3 Installation Quick Guide on Partner Portal

SITE REQUIREMENTS AND PRE-INSTALLATION GUIDANCE

Ensure Installation Meets All Local Codes and Requirements

Powerwall 3 comes with a Gateway 3 to enable integration with the electrical grid. Powerwall 3 communicates with Gateway 3 by means of a wired connection; wiring and conduit (where required) must be provided by the installer and installed to comply with local codes.

AC isolation and interconnection requirements between Powerwall 3 and the electrical panel are subject to local codes. Ensure that the installation meets local isolation and interconnection requirements. All U.S. and Canada electrical installations must be done in accordance with local codes and the National Electric Code (NEC) ANSI/NFPA 70 or the Canadian Electrical Code CSA C22.1.

- The connection requirements of the grid operator must be met.
- The conductors with regards to ampacity, rated temperatures, operating conditions and power loss must be made in accordance with the local standards and the National Electrical Code® ANSI/NFPA 70 or the Canadian Electrical Code® CSA C22.1.
- The conductor type must be copper wire.
- The AC and DC electric circuits are isolated from the enclosure. If required by section 250 of the National Electrical Code®, ANSI/NFPA 70, the installer is responsible for grounding the system.
- The grid voltage must be within the permissible range.

WARNING: When Powerwall 3 is installed in a dwelling unit, fire detection and protection equipment should be installed in accordance with local building and fire codes.

WARNING: Powerwall is not intended for installation in habitable spaces and living spaces in dwelling units.

WARNING: Install Powerwall in a location that prevents damage from flooding.

CAUTION: When installing Powerwall in a garage or near vehicles, keep it out of the driving path. If possible, install Powerwall on a side wall and/or above the height of vehicle bumpers.

CAUTION: Ensure that no water sources are above or near Powerwall, including downspouts, sprinklers, or faucets.

CAUTION: Ensure that snow does not accumulate around Powerwall.

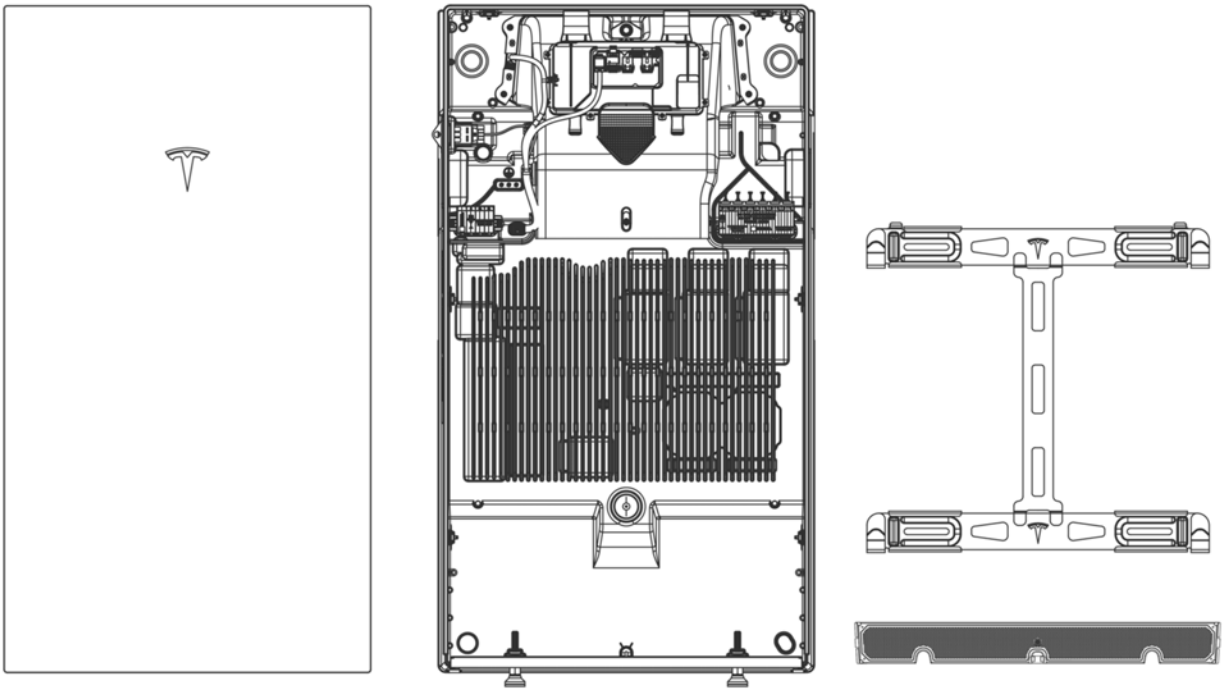
CAUTION: Before installing, disconnecting, and/or adjusting current transformers for metering, ensure the circuits being measured are not energized and the system is completely powered down. Failure to de-energize the system may compromise operator and equipment safety.

CAUTION: Where supplied by a photovoltaic (PV) system, the Powerwall shall not be installed within the PV array boundary as defined in NEC Article 690.

NOTE: All installations must conform to the laws, regulations, codes, and standards applicable in the jurisdiction of installation.

PREPARING FOR INSTALLATION

In the Powerwall 3 Box



- Glass front cover
- Powerwall 3
- Wall mounting bracket
- Air intake screen

In the Powerwall 3 Accessory Bag

Powerwall 3 Accessory Bag: Tesla P/N 1857363-00-x

- (8) M6x17 fasteners for mounting the Powerwall 3 front cover (Tesla P/N 1847553-00-A)

  NOTE: The front cover fasteners are single use. Only (6) fasteners are required, with (2) extra fasteners included in the accessory bag.

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

In the Gateway 3 Box

In the Gateway 3 Accessory Bag

Gateway 3 Accessory Bag: Tesla P/N 1863534-xx-y

- (1) Main circuit breaker adhesive label
- (4) Sealing washers
- (1) Breaker hold-down kit:
    - Breaker hold-down bar
    - (1) Fastener

Powerwall 3 Service Parts, Orderable Parts, and Accessories

NOTE: Some of the parts and kits listed below may not be orderable by Channel Partners; for a list of parts and kits that can be ordered by Channel Partners, please see the *Powerwall Pricing Guide* on Partner Portal.

Tesla Part Number	Name	Description
1856187-xx-y	Powerwall Dolly	Custom-designed dolly for lifting and transporting Powerwall
1913330-xx-y	Custom Powerwall 3 Ramp	Custom ramp designed to safely unload stacked Powerwall 3 units in packaging from a vehicle
1738120-xx-y	Powerwall 3 Mounting Bracket	(1) Additional Powerwall Wall Mounting Bracket (1 bracket is included with every Powerwall) Only needed if original mounting bracket is lost or damaged
1857363-00-y	Powerwall 3 Accessory Bag	Additional Powerwall 3 accessory bag (1 accessory bag is included with every Powerwall)
1763418-01-y	Powerwall 3 Front Cover Assembly	Service replacement glass front cover and (8) fasteners for Powerwall 3
1899124-xx-y	Powerwall 3 On/Off Switch Cover	Service replacement Powerwall 3 On/Off switch cover
1893723-xx-y	Powerwall 3 Expansion Port Cover	Service replacement Powerwall 3 expansion port cover
1808482-xx-y	Powerwall 3 Foot	Service replacement Powerwall 3 leveling foot (quantity 1)
1775504-xx-y	Powerwall 3 Air Intake Screen	Service replacement Powerwall 3 air intake screen
1973446-xx-y	Powerwall 3 Metal PV Shield	Service replacement Powerwall 3 metal PV shield
1857363-02-y	Front Cover Fasteners for Powerwall 3	Additional (8) M6x17 fasteners for securing the Powerwall 3 glass front cover
MCI-1	Tesla MCI-1	First generation Tesla Mid Circuit Interrupter (MCI)
MCI-2	Tesla MCI-2	Second generation Tesla Mid Circuit Interrupter (MCI)

Gateway 3 Service Parts, Orderable Parts, and Accessories

NOTE: Some of the parts and kits listed below may not be orderable by Channel Partners; for a list of parts and kits that can be ordered by Channel Partners, please see the *Powerwall Pricing Guide* on Partner Portal.

Part Number	Name	Description
1930185-xx-y	Gateway 3 Square D Lug Divider Kit	Plastic lug divider with hold-down fastener required when using a Square D main breaker in Gateway 3
1549184-xx-y	2" Conduit Hub Kit	2" conduit hub and bolts
1549184-01-y	1.25" Conduit Hub Kit	1.25" conduit hub and bolts
1534278-50-y	Gateway 3 Top Hatch	Service replacement top hatch for the Gateway 3
1486318-01-y	Gateway 3 Glass Door	Service replacement glass door for the Gateway 3
N/A (purchase from manufacturer)	Schneider Electric HOMFPCP Homeline Filler Plate	Breaker filler plates compatible with Gateway 3 internal panelboard breaker knockouts if needed **NOTE:** There are no filler plates for the main breaker slots. If a main breaker knockout is punched out but not used, the deadfront must be replaced.
	Eaton BRFPP Circuit Breaker Knockout	
	Siemens ECQF3P Filler Plate	

Figure 2. Square D Lug Divider / Main Breaker Hold-down

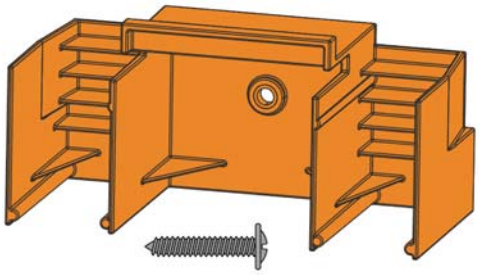


Figure 3. Conduit Hub Kit

Required Tools

General Tools

- Personal protective equipment (safety glasses, gloves, protective footwear)
- Installation tools (level, stud sensor, tape measure, pencil, painter's tape, flashlight)
- Digital camera or smart phone for documenting the installation
- Drill and drill bit for drilling pilot holes in mounting surface (5/32-inch bit for wood studs)
- Hole saw or knockout kit
- Torque screwdriver with 1/4-inch bit holder and T20 Torx bit
- Wire strippers/cutters for 24 AWG to 250 kcmil (0.2 mm^2 to 120 mm^2) wires
- Up to 3/32-inch or 3 mm cabinet or electronics tip slotted screwdriver for communication wiring spring terminals

Powerwall 3 Installation Tools

- Powerwall dolly (preferred, Tesla P/N 1856187-xx-y) OR lift equipment capable of lifting and supporting 287 lb (130 kg)
- ¾-inch hex nut or 19 mm drill socket (if using Powerwall dolly)
- Ratcheting strap to secure Powerwall 3 to lift equipment (if not using Powerwall dolly)
- Up to 3/16-inch or 4.5 mm cabinet or electronics tip slotted screwdriver for AC and PV wiring spring terminals
- Multimeter and Loop Impedance Tester

WARNING: Powerwall 3 is heavy. Wear appropriate personal protective equipment (such as gloves and protective footwear) when handling the unit. Only a sufficient number of trained movers should lift Powerwall 3. Use of lift equipment is recommended.

Gateway 3 Installation Tools

- Torque wrench with 3/8-, and 5/16-, and 7/16-inch hex bits (for Gateway 3 power connections)
- Socket wrench with 7/16-inch hex socket

Required Supplies

- Mounting bracket hardware (see *Appendix A: Powerwall 3 Anchoring Details on page 90*)
- Gateway 3 mounting hardware
- Minimum 10 AWG, 600 V rated, UV resistant, 90°C rated, copper (Cu) wire
  - PV and AC wiring conductors must be made of solid wire, stranded wire or fine stranded wire. Forked wire ferrules are recommended (required for fine stranded wire)
  - AC conductor cross-section intake range: 10 AWG to 4 AWG (6 mm² to 25 mm²)
  - PV conductor cross-section intake range: 10 AWG to 6 AWG (6 mm² to 16 mm²)
- Minimum 600 V rated 4-conductor (twisted pair optional) or double-insulated (with one twisted pair) shielded copper (Cu) cable (for communication connection between Powerwall and the Gateway 3)

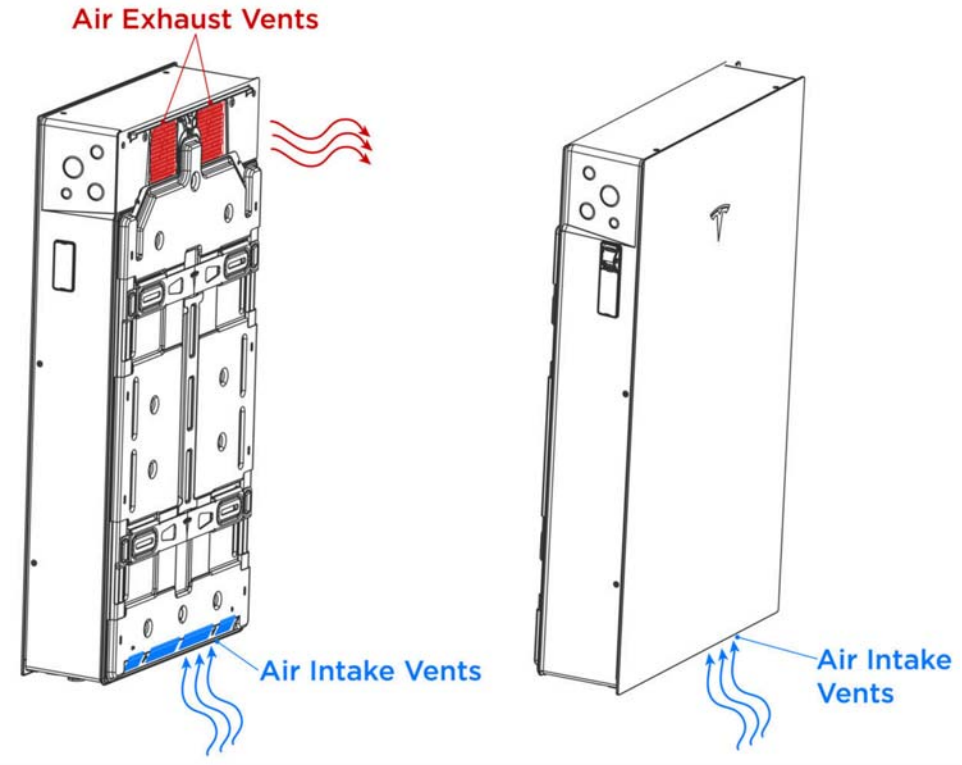
  NOTE: If custom cable is used, it must meet the following specifications:
  - 16 AWG or 18 AWG (according to wiring distance limits defined in *Plan Cable Length Between Components on page 28*)
  - 4-conductor (twisted pair optional)
  - Class 1 Circuit Listed
  - Outdoor-rated
  - Overall shield with drain
- RJ45 connectors for Ethernet wiring
- Metallic conduit for Powerwall 3 AC and PV circuits
- Minimum NEMA 4 (IPX5) or higher conduit hubs. Tesla recommends one of the following options which meet this requirement:
  - ¾ inch PVC-MC cable connector
  - 1 inch PVC-MC cable connector
  - ¾ inch Bridgeport 252-RTI2 connector
  - 1 inch Bridgeport 252-RTI2 connector
  - ¾ inch Rigid metal conduit (RMC) Myers hub with RMC conduit
  - 1 inch Rigid metal conduit (RMC) Myers hub with RMC conduit
  - ¾ inch RMC sealing locknut with RMC conduit
  - 1 inch RMC sealing locknut with RMC conduit
  - 1-¼ inch RMC sealing locknut with RMC conduit
- ¾ inch, 1 inch, and 1-¼ inch conduit sealing washers

STEP 1: PLAN THE INSTALLATION SITE

Choose a Location that Meets Powerwall 3 Clearance Requirements

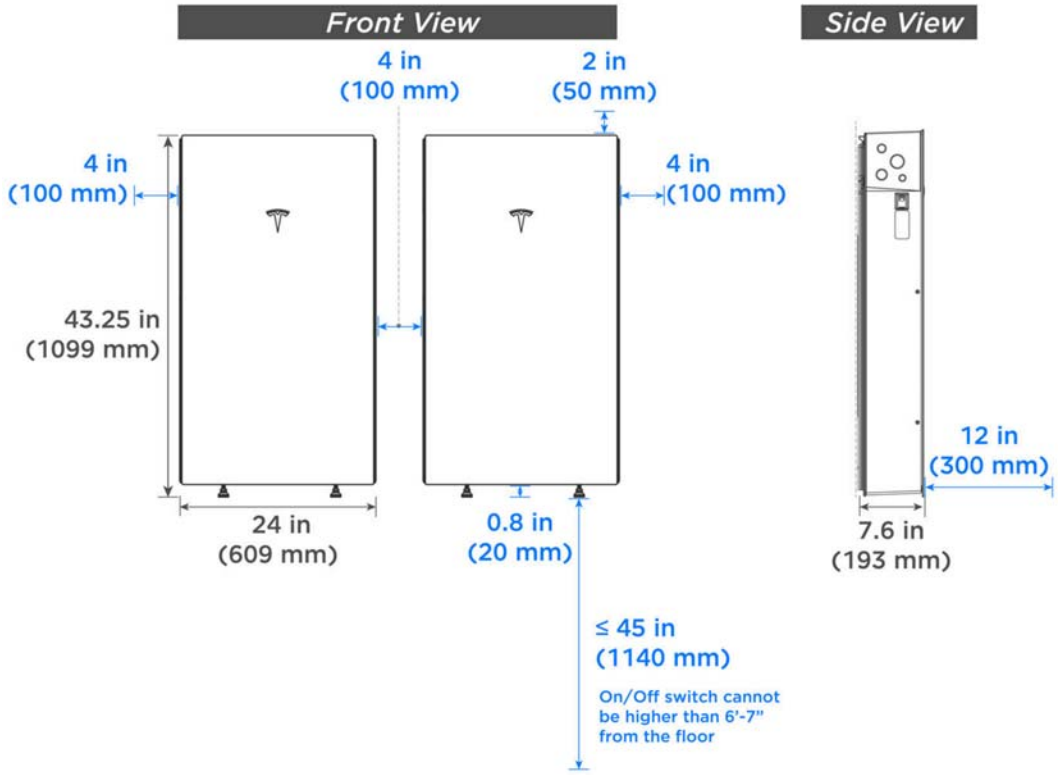
Powerwall 3 requires adequate clearance for installation, cabling, and airflow. The spacing on either side of units and between units is required to ensure there is sufficient clearance for venting and thermal management features. Do not install anything inside the required clearance above Powerwall 3, or anything that might fall and damage the unit. Do not mount Powerwall 3 horizontally or upside down.

Figure 4. Powerwall 3 Air Intake and Exhaust Vents



CAUTION: In addition to meeting all clearance requirements, ensure Powerwall 3 is installed on a flat surface that is clear of obstructions or protrusions that could damage Powerwall or inhibit airflow. The air vents on the rear and lower front of the unit must remain free from obstructions and accumulation of debris (like foliage or dust).

Figure 5. Powerwall 3 Minimum Mounting Clearances



Minimum lateral wall space	32 inches (808 mm)
Minimum clearance from left side	4 inches (100 mm)
Minimum clearance from right side	4 inches (100 mm)
Minimum clearance above Powerwall	2 inches (50 mm)
Minimum clearance below Powerwall	0.8 inches (20 mm)
Minimum clearance between side-by-side Powerwalls	4 inches (100 mm) *
Minimum clearance in front of Powerwall	12 inches (300 mm)**
Maximum height above ground	45 inches (1140 mm) to bottom of unit feet
Maximum slope	+/– 2° side-to-side

*Tesla recommends a minimum of 6 inches (150 mm) between side-by-side units to allow for adequate space for wiring and On/Off switch access.

**This minimum clearance must be maintained at all times, as it ensures adequate airflow for Powerwall 3. A minimum clearance of 36 inches (914 mm) is required in front of Powerwall 3 for sufficient access and working space per NEC 110.26, though that clearance may increase based on local code and/or site conditions.

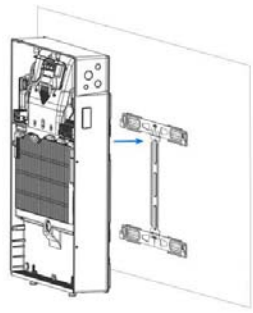
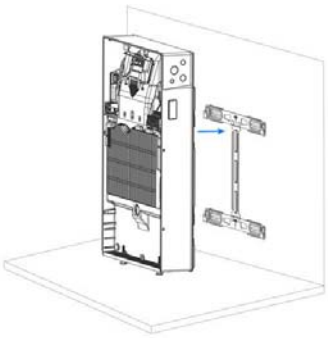
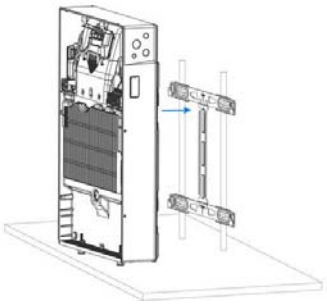
NOTE: Powerwall 3 has a fan that produces a gentle hum during operation, comparable to a typical refrigerator. The noise level depends on the ambient temperature and the power level of operation. Consider this noise level when choosing where to install Powerwall 3.

Plan Powerwall 3 Mounting Configuration

Choose the Powerwall 3 Mounting Configuration

The following table outlines the approved mounting configurations for Powerwall 3. See *Appendix A: Powerwall 3 Anchoring Details on page 90* for which mounting configuration should be used depending on the seismic and wind speed conditions.

Table 1. Powerwall 3 Mounting Configurations

	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 foundation with steel posts
Installation Information	*Installation instructions on page 39*	*Installation instructions on page 95*	*Installation instructions and anchoring details on page 97*
	Anchoring details on page 92	*Anchoring details on page 92*	

Choose a Wall Capable of Supporting Powerwall 3

Choose a wall capable of supporting the full weight of Powerwall 3. Walls with the following characteristics are acceptable:

- Wood studs at regular intervals
- Solid concrete or masonry

Other wall types are also acceptable depending on mounting configuration; see *Anchoring Details for Ground- or Wall-mounting Powerwall 3 with Wall Bracket on Existing Approved Foundation on page 92* for all acceptable wall types when mounting Powerwall 3 on the mounting bracket.

If ground-mounting Powerwall, choose a level surface adjacent to a wall space that meets the above requirements. Ensure the bearing surface is structurally sound and flat, and supports both Powerwall feet.

Plan Cable Length Between Components

Follow the table below for maximum distances between system components. Wire gauge must meet local codes and in some circumstances wire gauge requirements change based on distance. Refer to *Appendix B on page 101* for wire gauge requirements.

	Maximum Cable Length
CAN communication wiring between Gateway 3 and Powerwall(s)*	150 ft (45 m) for 16 AWG (1.5 mm^2) wire
	82 ft (25 m) for 18 AWG (0.8 mm^2) wire
Wired Ethernet connection (minimum Cat5)	328 ft (100 m)
Total PV circuit distance**	525 ft (160 m)

*Total length of communications cable, including daisy-chained connections, through last Powerwall in chain

**Ensure that total DC circuit distance, from + MPPT terminal to - MPPT terminal (including module wire leads, jumper wires and all wiring within the array boundary for any individual string), does not exceed 160 m for single strings

- Total DC circuit distance refers to the entire round trip wire distance, from Powerwall 3 to the roof, then back to Powerwall 3

NOTE: As noted in *Required Supplies on page 25*, minimum 600 V rated 4-conductor (twisted pair optional) or double-insulated (with one twisted pair) shielded copper (Cu) cable is required for the communication connection between Powerwall and the Gateway 3; see *Required Supplies* for custom cable requirements.

CAUTION: Failure to follow minimum cable size and length requirements may result in intermittent or unreliable operation of the Powerwall system. In systems that do not meet these minimum requirements, performance issues may arise even after successful commissioning.

Choose Powerwall Cable Entry

Determine whether cables will be routed into Powerwall from either side or the back of the unit. A conduit fitting or cable gland must be used to seal the entry into the wiring compartment.

CAUTION: The Powerwall 3 knockouts are **not** expandable. Do not drill into the Powerwall 3 enclosure or change any metal surface for any reason.

Figure 6. Powerwall 3 Knockout Locations

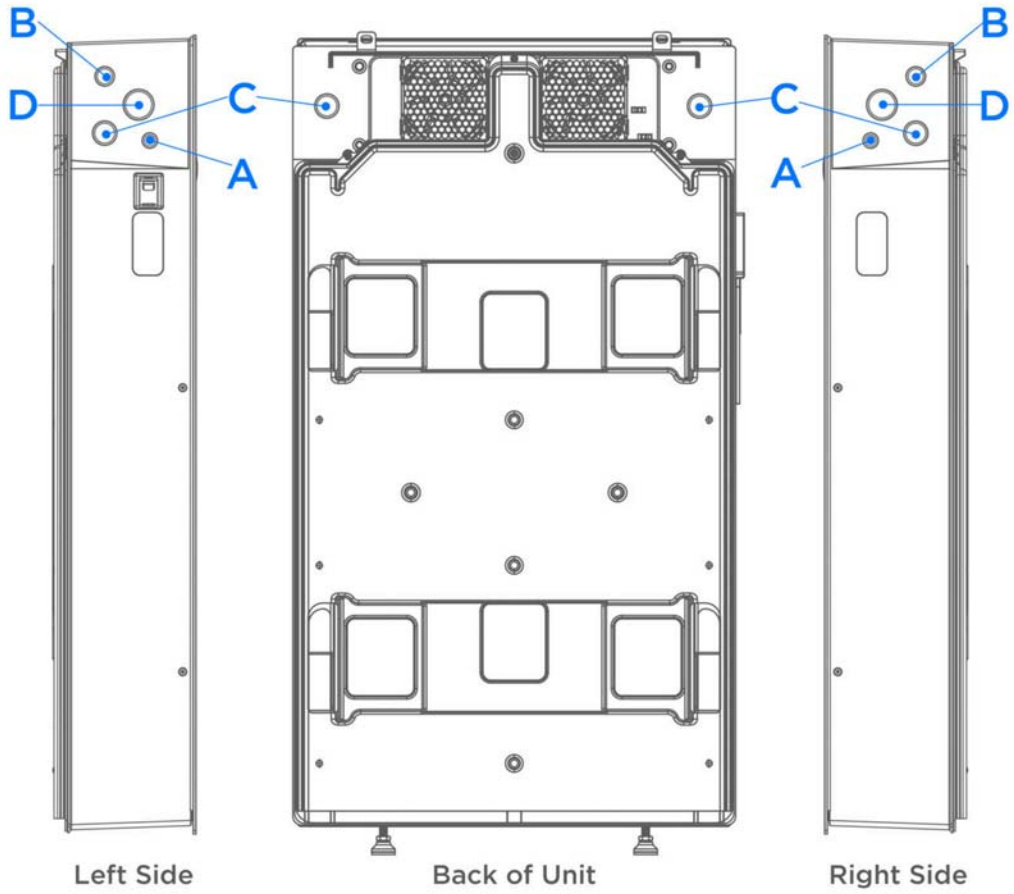
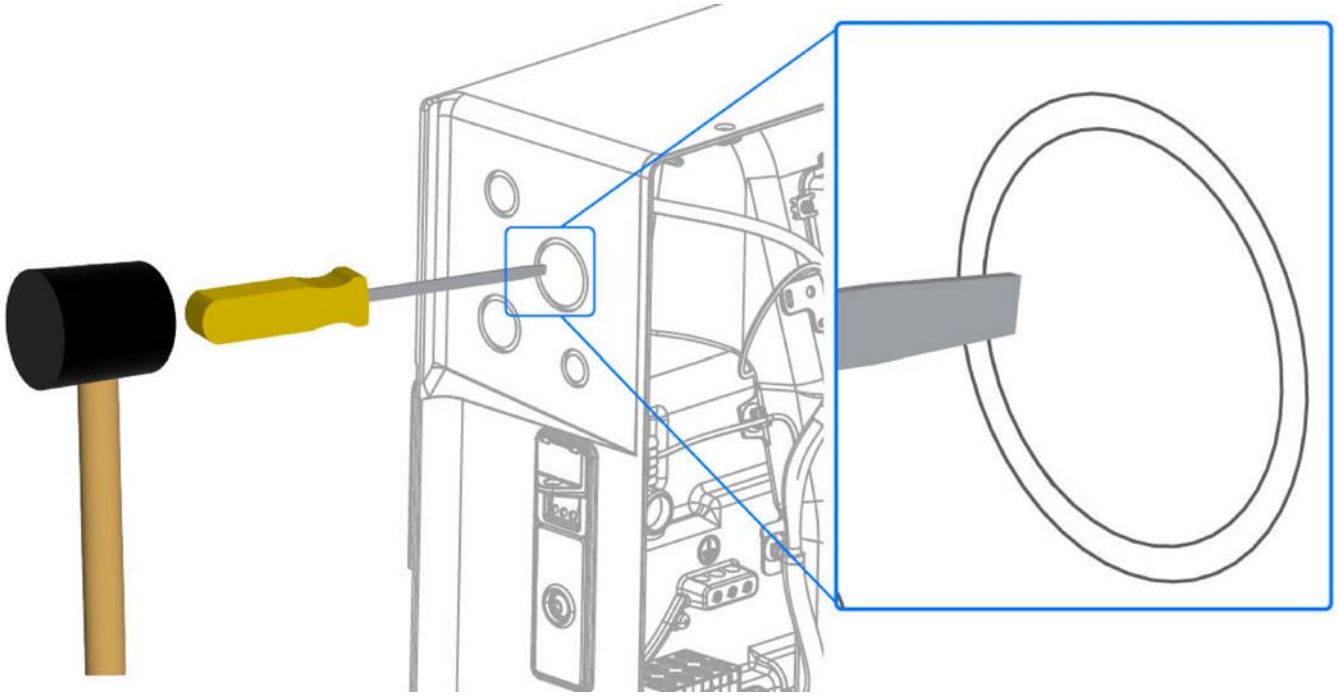


Table 2. Enclosure Knockout Sizes

Knockout	Size
A	½-inch
B	¾-inch
C	1-inch
D	1 ¼-inch

To open a knockout, position the tip of a regular, blade-tip screwdriver near the inside edge of the knockout. Hammer the screwdriver to punch out the metal knockout; one well-placed strike is generally sufficient to dislodge the knockout.



Plan Amount and Size of Conduit or Raceway

Calculate the amount and size of conduit or raceway needed for the installation, based on fill limits and local code requirements. An adapter may be required between the entry into the Powerwall wiring compartment and the conduit.

STEP 2: REMOVE POWERWALL 3 FROM PACKAGING AND TRANSPORT USING THE POWERWALL DOLLY

WARNING: Do not move Powerwall 3 in its packaging while the packaging is standing upright. In this position, the Powerwall 3 unit can shift within the packaging, which may result in Powerwall 3 falling over.

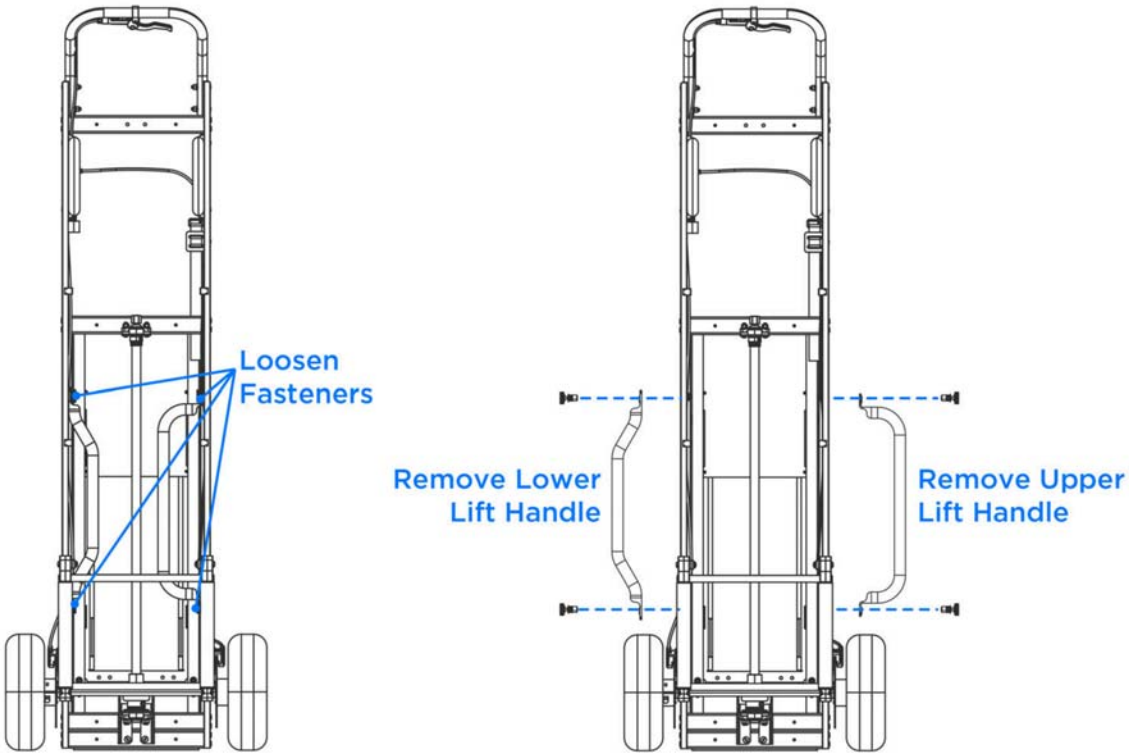
1. Open the Powerwall packaging:
   a. Carefully remove the box containing the glass Powerwall front cover and set it aside on an even surface.

      CAUTION: Handle the glass front cover carefully. Avoid setting the cover on hard, uneven surfaces which could break the glass.

   b. Remove the accessory bag and set it aside.

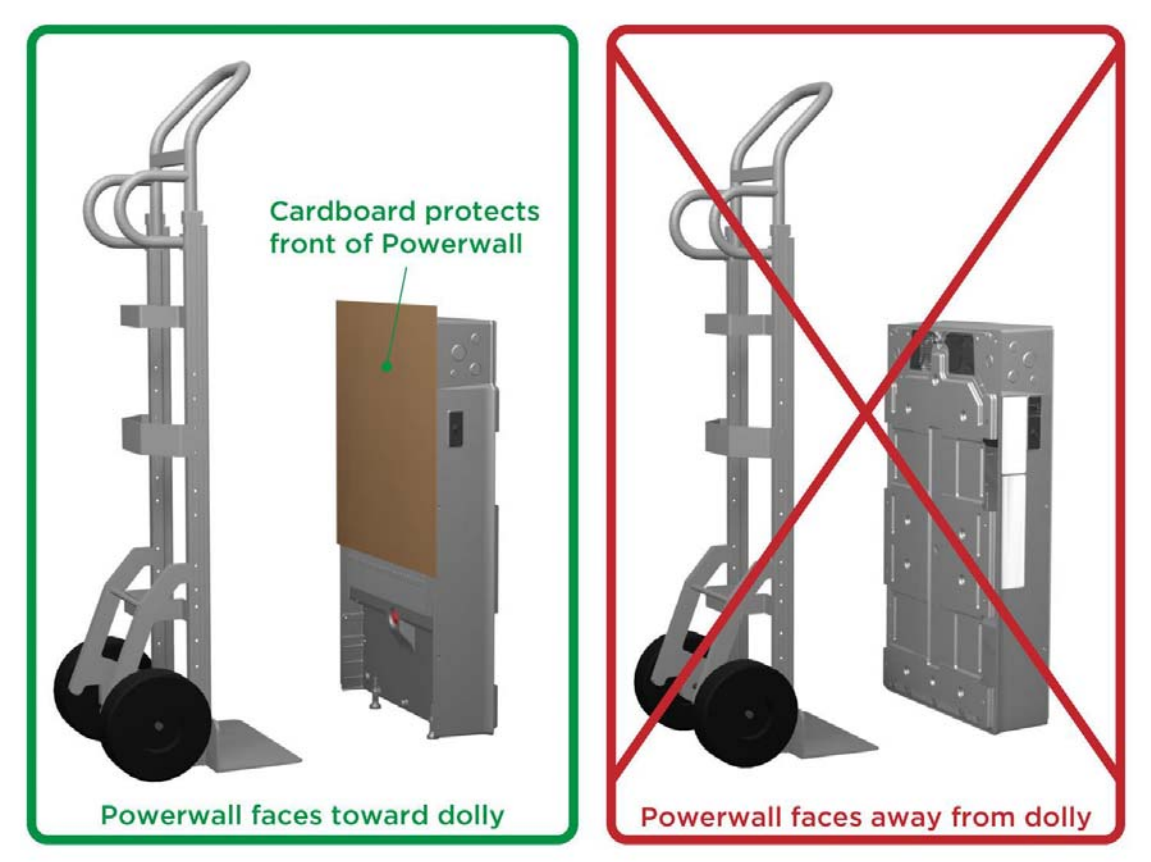
   NOTE: Please return the Powerwall 3 packaging to the warehouse that originally shipped the unit(s).

2. To lift Powerwall 3 using the Powerwall dolly, loosen the (2X) fasteners holding each lift handle in place, then detach the handles.



STEP 2: REMOVE POWERWALL 3 FROM PACKAGING AND TRANSPORT USING THE POWERWALL DOLLY

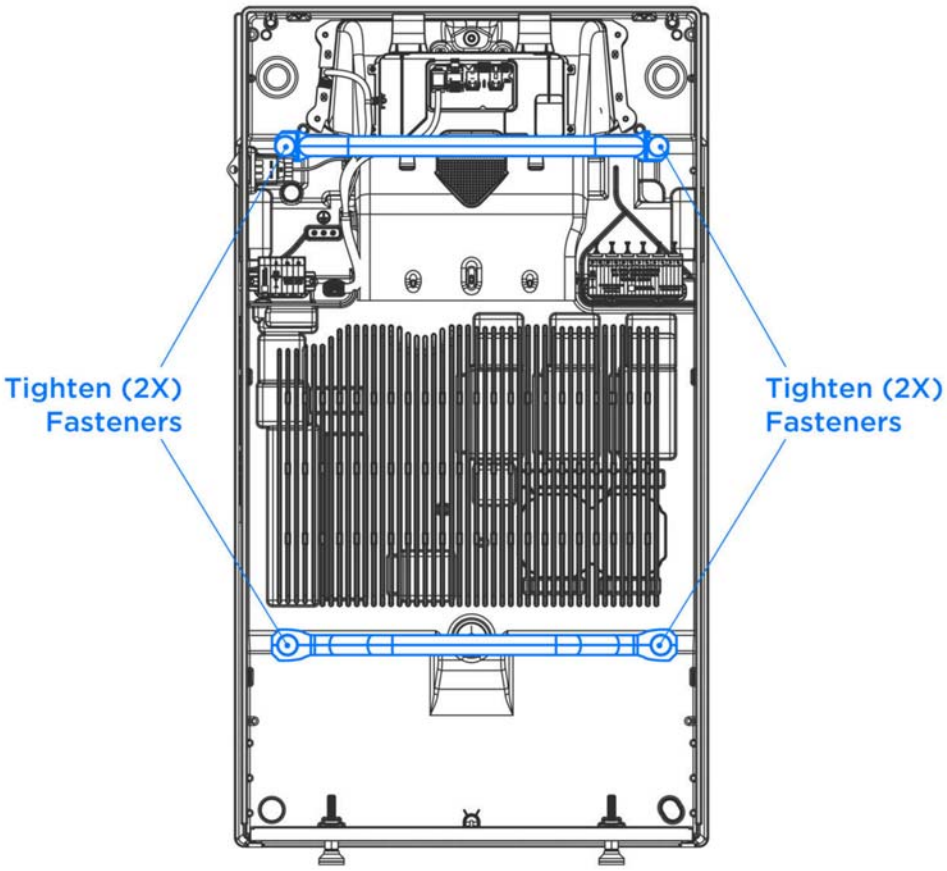
CAUTION: The Powerwall dolly is the recommended method for transporting Powerwall 3. If using another dolly, ensure Powerwall 3 is facing toward the dolly and the front of the unit is protected by a piece of cardboard (for instance the cardboard box the bracket ships in) or a similar material. Use a strap to secure Powerwall to the dolly.



3. With Powerwall 3 still in the packaging, place the two lift handles on the Powerwall and tighten the (2X) fasteners on each handle to hold them in place (**A** below). Note that upper handle is the larger, more rounded handle, and the lower handle is the smaller, more angular handle, and they attach to existing threaded mounting points. Perform a pull test to confirm the handles are secure before proceeding.

WARNING: Do not use the handles to manually lift Powerwall 3. These handles are designed to interface with the dolly; they are not designed to be load bearing, and attempting to lift Powerwall 3 with them could result in dropping and damaging the unit.

STEP 2: REMOVE POWERWALL 3 FROM PACKAGING AND TRANSPORT USING THE POWERWALL DOLLY



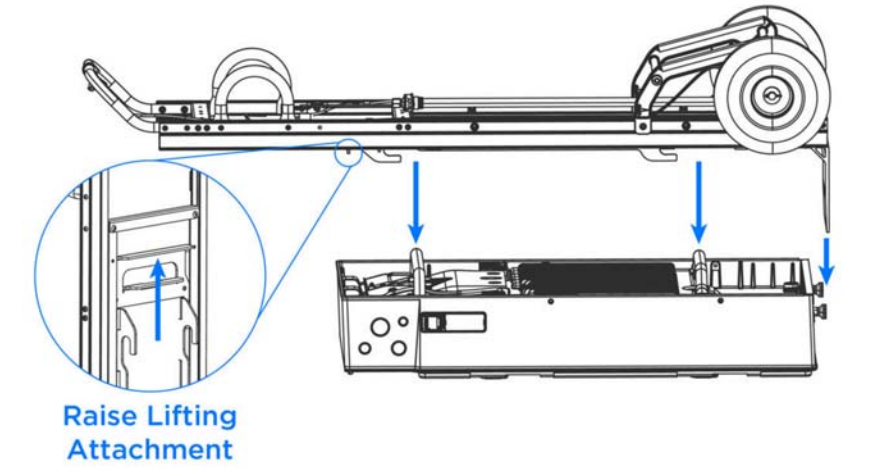
4. Confirm the leveling feet are screwed all the way in to the Powerwall.

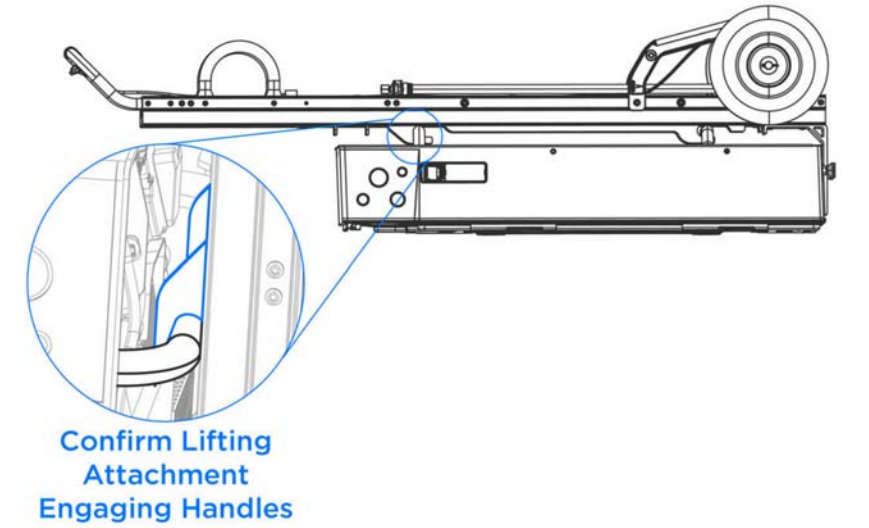
   CAUTION: The leveling feet must remain installed on Powerwall 3, regardless of whether it is wall-mounted. The leveling feet ensure the required clearance is maintained between Powerwall 3 and any surface below it.

5. Engage the Powerwall dolly with the lift handles:
   a. Lift the Powerwall dolly, with one person holding either end.
   b. Raise the lifting attachment and lower the Powerwall dolly, inserting the lifting plate between the Powerwall 3 feet as it is lowered, and lowering the lifting attachment so that it engages the handles.

      CAUTION: Confirm the handles are fully engaged with the dolly before proceeding.

STEP 2: REMOVE POWERWALL 3 FROM PACKAGING AND TRANSPORT USING THE POWERWALL DOLLY

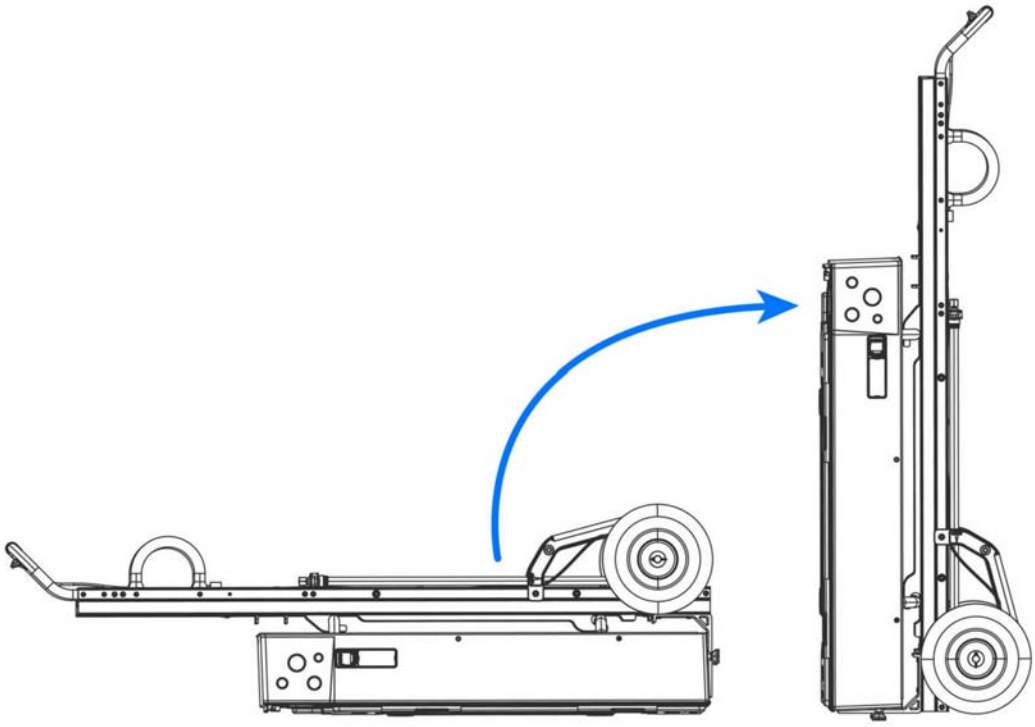




6. Place one foot on the Powerwall packaging as a pivot point, then lift Powerwall and the dolly to a standing position.

> **CAUTION:** Powerwall 3 must be in its packaging when lifting it in this manner; the packaging ensures the corners of the enclosure are protected.

STEP 2: REMOVE POWERWALL 3 FROM PACKAGING AND TRANSPORT USING THE POWERWALL DOLLY



7. Remove the packaging and set it aside.
8. Position Powerwall at the mounting wall.

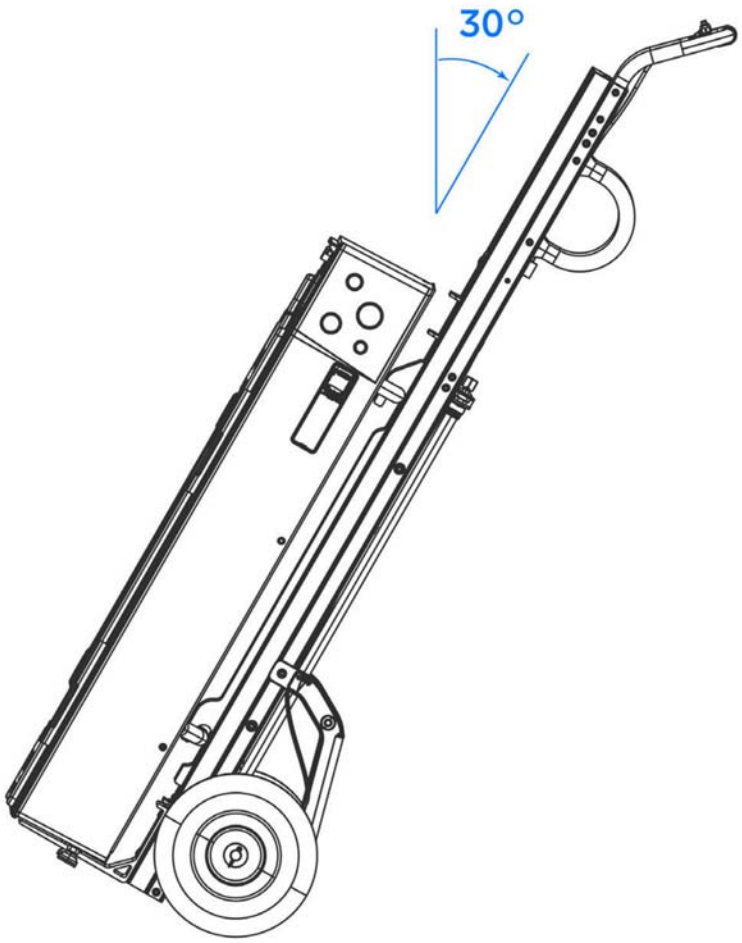
WARNING: Use extreme caution if using the dolly on uneven terrain, such as grass, mud, or loose gravel, or if using on a steep incline.

CAUTION: Always lower the lifting plate to its lowest position before moving the dolly with Powerwall 3 attached.

9. To raise or lower Powerwall 3:

STEP 2: REMOVE POWERWALL 3 FROM PACKAGING AND TRANSPORT USING THE POWERWALL DOLLY

a. Tilt the dolly back 30 degrees to avoid Powerwall tilting forward or catching the wall bracket.

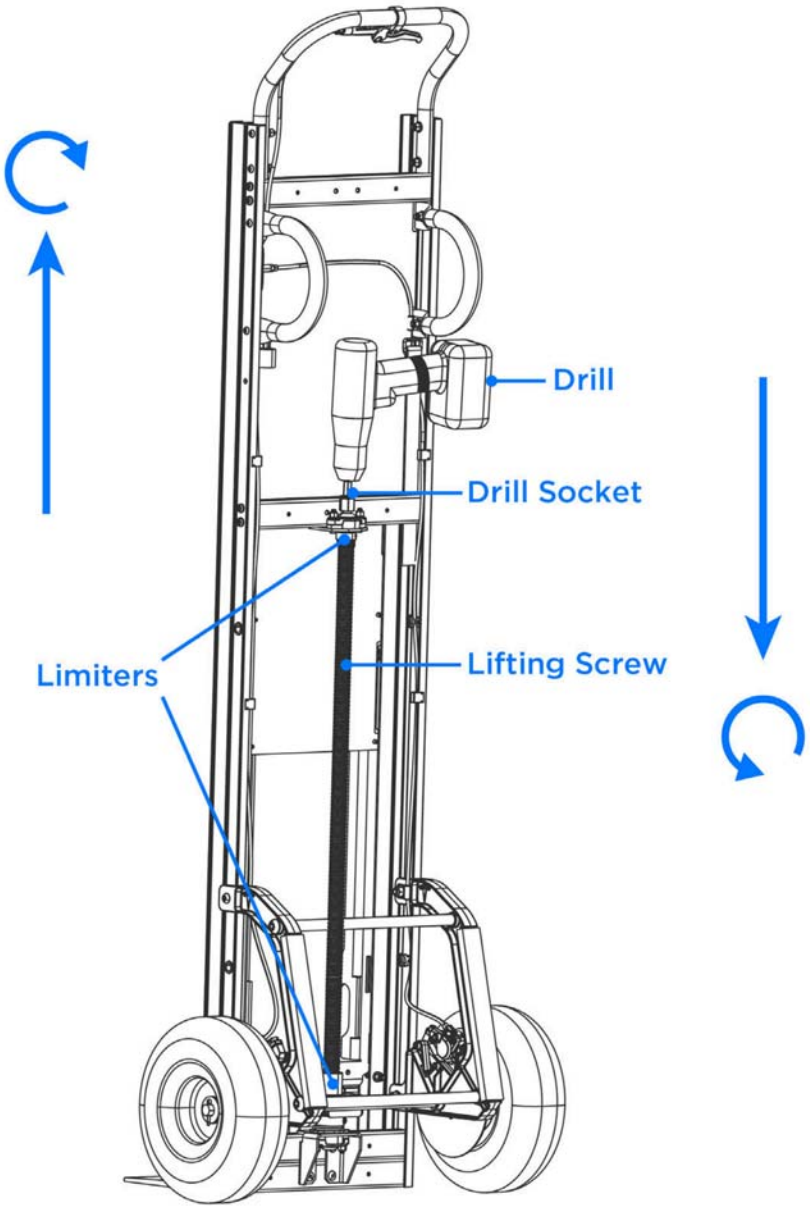


b. Place a ¾-inch hex nut or 19 mm drill socket on the dolly lifting screw.

c. Connect a drill to the hex nut or drill socket, then secure the drill to the side of the dolly using the provided strap.

> **CAUTION:** Do not use an impact drill.

d. Ensure the drill is on the high torque setting (or the slowest setting), then run the drill until Powerwall has been lifted to the desired height. Run the drill in reverse to lower.



CAUTION: Be aware of the limiters on the lifting screw, and do not attempt to drive the screw beyond those limiters.

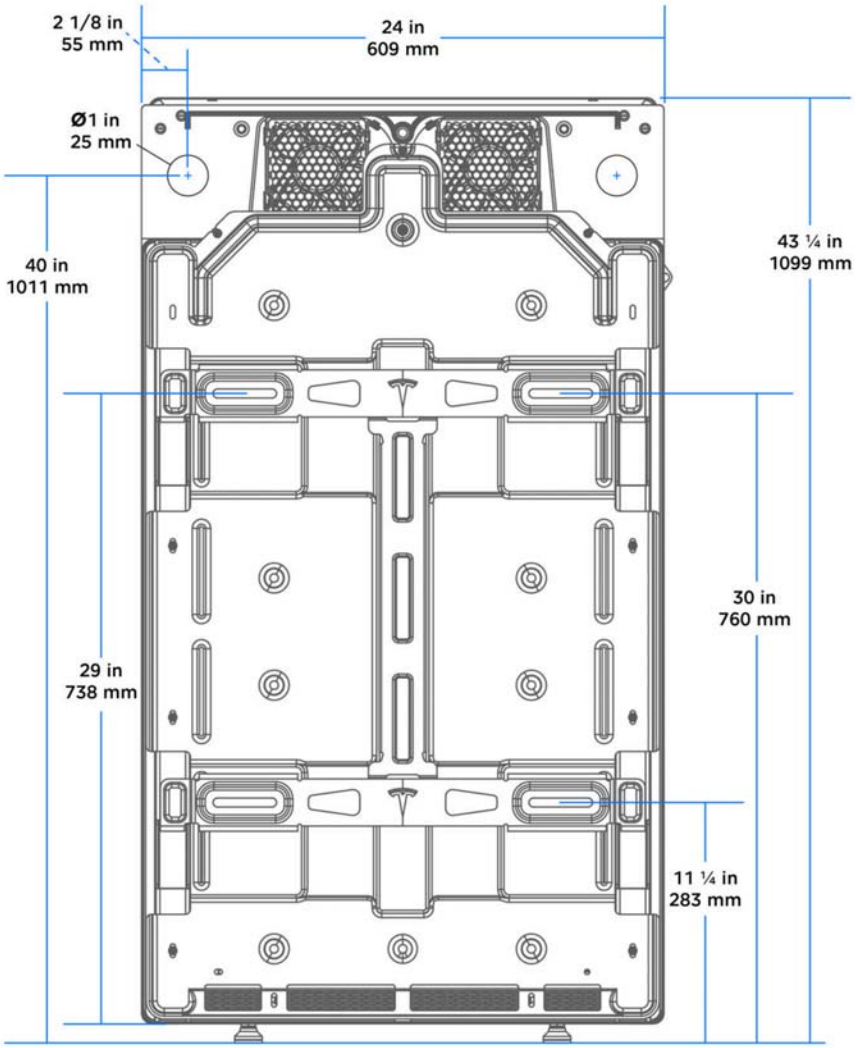
CAUTION: Only lift Powerwall 3 using the Powerwall dolly or a platform lifting tool.

10. To disengage the dolly from Powerwall 3:
    a. Raise the lifting attachment to disengage the dolly from the handles.
    b. Move the dolly away from Powerwall 3.
    c. Using the drill, lower the lifting platform to its lowest position.
    d. Remove the two lifting handles and reattach them to the dolly.

STEP 3: WALL-MOUNT POWERWALL 3 USING WALL BRACKET

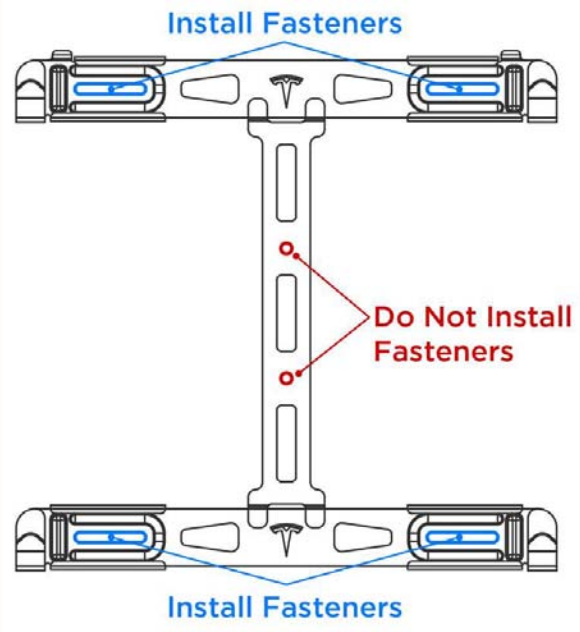
1. Using a drill and level, mount the Powerwall bracket to the selected wall. See *Anchoring Details for Ground- or Wall-mounting Powerwall 3 with Wall Bracket on Existing Approved Foundation on page 92* for additional details on the type and number of fasteners to use.

   Figure 7. Bracket Measurements Relative to Powerwall and Floor

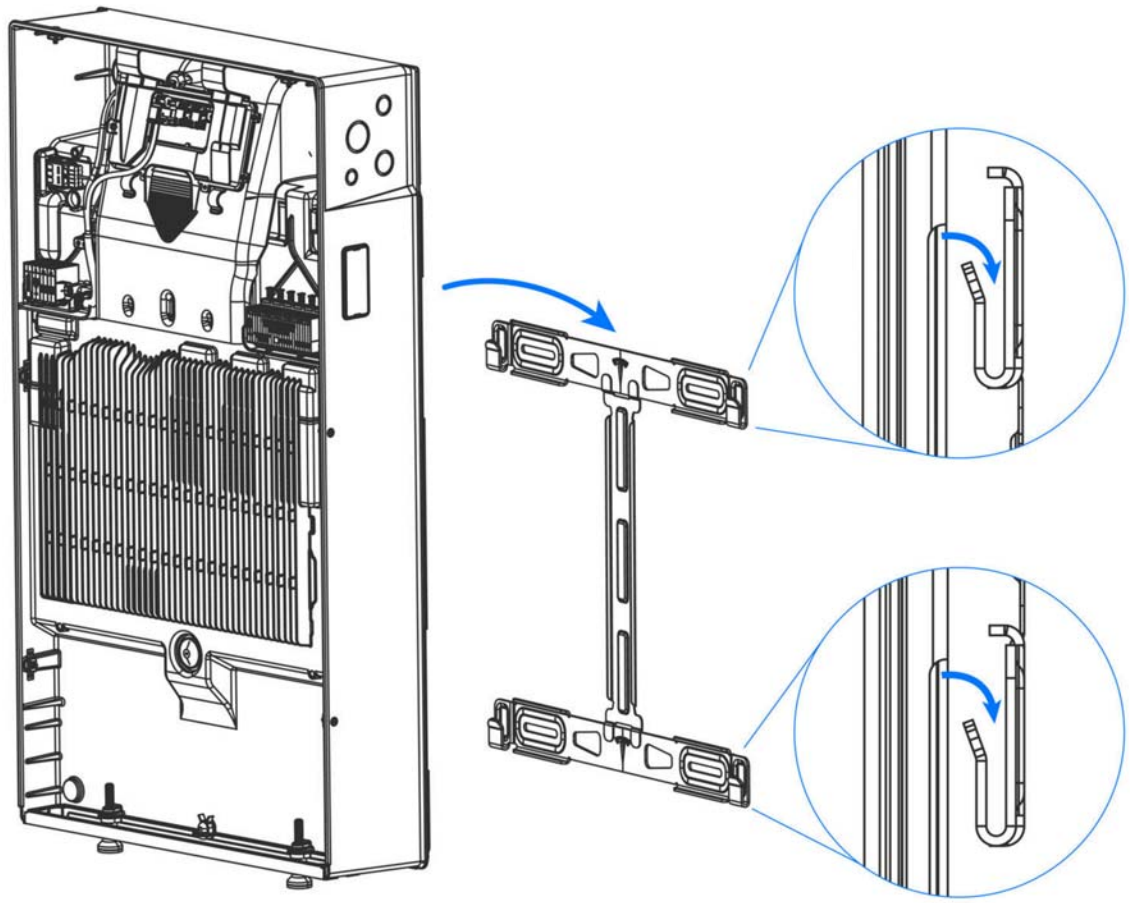


STEP 3: WALL-MOUNT POWERWALL 3 USING WALL BRACKET

WARNING: Only install fasteners in the (4) slots on the horizontal bracket segments. Do not install fasteners on the vertical (center) segment, as these are not structural mounting holes.



2. Move the dolly toward the wall, positioning Powerwall so that the mounting cleats are just above the flanges on the bracket.



STEP 3: WALL-MOUNT POWERWALL 3 USING WALL BRACKET

3. Lower Powerwall until both the upper and lower sets of cleats engage the flanges on the bracket.

   CAUTION: Confirm Powerwall 3 is fully seated on all four cleats before proceeding.

4. If ground-mounting Powerwall, use an 11/16-inch (or 17 mm) wrench to adjust the leveling feet until Powerwall is level. The unit should be level within +/– 2 degrees side-to-side and within +/– 5 degrees front-to-back.

   NOTE: The top of each foot must be visible above the threaded boss; do not unscrew the foot so far that the top is no longer visible.

STEP 4: MAKE SOLAR PV CONNECTIONS

WARNING: Before making any PV wiring connections:

1. Ensure the Powerwall Enable switch is turned OFF.
2. Ensure Powerwall is not connected to AC power.
3. If an external PV disconnect means is available, open the external PV disconnect switch.
4. Ensure that there is no voltage on the PV inputs of Powerwall 3.

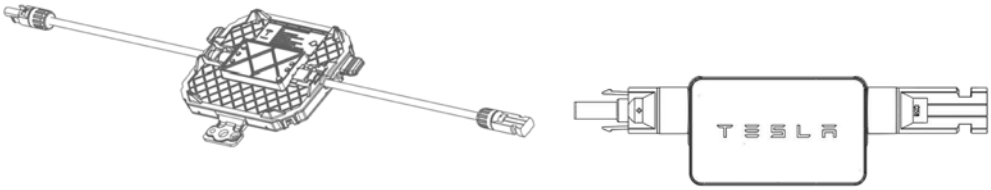
Install Mid-Circuit Interrupters in PV Array

The Tesla Mid-Circuit Interrupter (MCI) is used within PV strings and arrays to meet the Rapid Shutdown requirements of NEC Article 690.12. For information on how the Tesla MCI functions with Powerwall 3 as a Photovoltaic Rapid Shutdown System (PVRSS), see *Appendix D: Solar Rapid Shutdown on page 116*.

NOTE: The Tesla MCI is also referred to as the Tesla Solar Shutdown Device.

NOTE: There are two models of Tesla MCI, MCI-1 and MCI-2. Both perform the same function, but they have unique specifications (see *Specifications on page 7*) and installation methods (outlined in the following installation instructions).

Figure 8. MCI-1 (left) and MCI-2 (right)



MCI Locations

The quantity and placement of MCIs necessary to meet Rapid Shutdown requirements is governed by the UL 3741 (PV Hazard Control System) listing applicable to various array types. The following table lists the systems that have been certified to UL 3741 when installed together with Powerwall 3 and Tesla MCI, and summarizes the required MCI counts and locations to comply with NEC Article 690.12 (B). Refer to the applicable PVHCS datasheets shown in the table for detailed listing and installation instructions to ensure adequate compliance.

WARNING: It is critical that the minimum number of required MCIs is installed; without the appropriate number of MCIs, the MCIs may not function as intended which could lead to equipment damage.

Table 3. UL 3741 Systems using Powerwall 3 and MCI

PVHCS System	Module Model	Required MCIs	PVHCS Datasheet
Tesla ZS Systems (ZS Comp, ZS Span, ZS Ramp, ZS Seam)	Tesla TxxxS modules (where xxx = 405 to 450 W, increments of 5) Tesla TxxxH modules (where xxx = 395 to 415 W, increments of 5) Hanwha Q.Peak Duo Flat PV modules: • Q.PEAK DUO BLK-G5/ SC315-320 • Q.PEAK DUO BLK-G6+/ SC330-345	MCI at one end of string or sub-array, plus 1 MCI per 3 modules[1]	*ZS PVHCS datasheet*
Tesla Solar Roof	Solar Roof V3 Modules (SR60T1, SR72T1, SR72T2)	MCI at one end of string or sub-array, plus 1 MCI per 10 modules	*Solar Roof PVHCS datasheet*
Tesla Solar Roof V3R	Solar Roof V3R Systems (SR72T3R)	MCI required only at +/- ends of strings, and where strings span mounting planes	*Solar Roof V3R PVHCS datasheet*
IronRidge and Ecofasten Systems	Mounting system and module combinations using IronRidge XR Flush Mount, IronRidge Aire Flush Mount, Ecofasten ClickFit, or Ecofasten RockIt	**MCI-1** required only at +/- ends of strings, and where strings span mounting planes	See IronRidge and Ecofasten UL 3741 Addendums for detailed requirements
Generic PV Array (Other Modules and Mounting Systems)	Systems using certified PV modules and mounting systems other than those defined above are covered by Tesla's UL 3741 certification if they are in compliance with the PVHCS listing instructions	MCI at one end of string or sub-array, plus 1 MCI every 165 V_{OC} at low design temperature (typically 1 per 3 modules)	*Generic PV Array PVHCS datasheet*

[1]**Exception**: Tesla solar modules installed in locations where the max V_{OC} for three modules at low design temperatures exceeds 165 V shall be limited to **two** modules between MCIs.

Installation Best Practices

- Ensure that Tesla MCIs are not stored prior to installation in environments with moisture or dirt
- Install the Tesla MCI in line with the PV modules using standard Staubli Type MC4 certified compatible connectors
- Ensure the MCI is minimum 12.7 mm (1/2 in) from glass or backside of a PV module
- For flat plate solar panel installations, ensure the MCIs do not directly contact the roof. For Solar Roof installations, see the *Solar Roof Installation Manual* for proper mounting guidance
- For easier servicing of flat plate solar panel installations, install the MCIs on the perimeter of the array if possible
- Always secure the MCI with appropriate wire management
- Ensure no more than 5 MCIs are connected per PV string
- Ensure that total DC circuit length, from + MPPT terminal to - MPPT terminal (including module wire leads, jumper wires and all wiring within the array boundary for any individual string), does not exceed 160 m for single strings or paralleled strings

- Total DC circuit length refers to the entire round trip wire length, from inverter to the roof, then back to the inverter
- Ensure paralleled strings are the same length, or as close in length as possible (if the paralleled strings are different lengths, it is likely the MCIs will not function properly; this likelihood increases the greater the difference in paralleled string lengths)

- Keep a completed string diagram indicating the layout of the array and the placement of each MCI (either a paper copy, electronic copy available in the field, or both)

Installing MCIs

1. Connect the positive and negative leads of the MCI to the corresponding positive / negative MC4 terminals of the PV modules or solar roof modules.

2. For flat plate solar panel installations, attach the MCI under the module frame.
   a. To attach the MCI using ZEP Home Run wire clips, install the (2X) clips to the module frame and clip both ends of the MCI leads, then slot the MCI underneath the metal frame.

   Figure 9. MCI-1 Attached with Wire Clips