



TESLA



# Powerwall+ Owner's Manual & Safety Instructions

For the latest Powerwall+ documents in all supported languages, including the Warranty, visit [www.tesla.com/support/powerwall](http://www.tesla.com/support/powerwall).

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



**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 can damage Powerwall+, potentially rendering it inoperable.

## Product Specifications

This manual applies to the following products:

- Powerwall+ (1850000-xx-y)
- Backup Gateway 2 (1232100-xx-y)
- Backup Switch (1624171-xx-y)

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 manual, send an email to: [energy-pubs@tesla.com](mailto:energy-pubs@tesla.com).


## Electronic Device: Do Not Throw Away

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



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	<b>TESLA</b>	Tesla	Tesla Motors	Powerwall
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- Important Safety Instructions..... 2
- Powerwall+ Warranty..... 5
- Care and Maintenance..... 6
- About Powerwall+..... 7
  - System Design..... 7
  - System Components.....9
  - Powerwall+ Overview..... 10
- System Operation.....11
  - Monitoring Your System.....11
  - Troubleshooting..... 11
    - Backup Troubleshooting..... 13
    - Connect Powerwall+ to Wi-Fi.....15
  - Technical Support.....15
- What to Do in Case of an Emergency.....16
- System Information..... 18



# IMPORTANT SAFETY INSTRUCTIONS

## SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

Powerwall+ installation and service require knowledge of high voltage electricity and should only be performed by Tesla Certified Installers. Tesla assumes no liability for injury or property damage due to repairs attempted by unqualified individuals or a failure to properly follow these instructions. These warnings and cautions must be followed when using Powerwall+.

## Symbols in This Document

This manual uses the following symbols to highlight important information:



**WARNING:** indicates a hazardous situation which, if not avoided, could result in injury or death.



**CAUTION:** indicates a hazardous situation which, if not avoided, could result in minor injury or damage to the equipment.



**NOTE:** indicates an important step or tip that leads to best results, but is not safety or damage related.

## 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 can damage Powerwall+, potentially rendering it inoperable.



**WARNING:** Electric shock hazard. The DC conductors of this PV system are normally ungrounded but will become intermittently grounded without indication when the inverter measures the PV array isolation. Energy stored in capacitor. Do not remove cover until 5 minutes after disconnecting the equipment. Power fed from more than one source. Disconnect all sources of supply before servicing.



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



**WARNING:** This product can expose you to chemicals including cobalt and lithium compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov). You cannot be exposed to these chemicals without opening the external casing. Only members of the Tesla Service team and other Tesla-certified technicians should open the external casing.



**WARNING:** Powerwall+ installation must be carried out only by Tesla Certified Installers who have been trained in dealing with high 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.



# IMPORTANT SAFETY INSTRUCTIONS

 **WARNING:** Before beginning the wiring portion of the installation, ensure that the Powerwall+ is switched off, and open 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 the Tesla Certified Installer who installed the system for any 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+ near heating equipment.


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


 **CAUTION:** Risk of electric shock. Do not remove cover, there are no user serviceable parts inside. Refer servicing to qualified personnel.


 **CAUTION:** Both AC and DC voltage sources are terminated inside this equipment. Each circuit must be individually disconnected before servicing.


 **CAUTION:** When the PV array is exposed to light, it supplies a DC voltage to this equipment.

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

 **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 any part of Powerwall+, including any internal or external components such as the exterior shell or casing.

 **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.



# IMPORTANT SAFETY INSTRUCTIONS

## Environmental Conditions



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



**WARNING:** Operating or storing Powerwall+ in temperatures outside its specified range might cause damage to Powerwall.



**WARNING:** Do not expose Powerwall+ to ambient temperatures above 60°C (140°F) or below -30°C (-22°F).



**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+.



## POWERWALL+ WARRANTY

Tesla Powerwall+ comes with a warranty whose term depends on the connection of Powerwall+ to the Internet.

To secure the full 10-year warranty for Powerwall+, 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 you, the warranty may be limited to 4 years.

For more information, refer to the Tesla Powerwall+ Warranty for your region at [tesla.com/support/energy/powerwall/documents](https://tesla.com/support/energy/powerwall/documents).



# CARE AND MAINTENANCE

## Environmental Requirements

Powerwall+ is capable of charging and discharging within the operating temperature range specified below. At the extremes of the temperature range, Powerwall+ may limit charge or discharge power to improve battery lifespan.


For best performance, the average ambient temperature over the system's lifetime should fall within the optimum temperature range specified below.


Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Optimum Temperature	0°C to 30°C (32°F to 86°F) <sup>1</sup>

## Care and Cleaning

If it is installed outside, keep the sides of Powerwall+ clear of leaves and other debris to maintain optimal airflow.

 **CAUTION:** Do not lean on, stack anything on top of, or hang anything from Powerwall+ or from wires or conduit leading to Powerwall+.

 **CAUTION:** To clean Powerwall+, use a soft, lint-free cloth. If needed, the cloth can be dampened with mild soap and water only.

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

## Maintenance

Powerwall+ does not require pre-scheduled preventative maintenance. The only maintenance required by an owner is to keep the Powerwall+ unit free and clear of debris, especially around the air intake and exhaust.





# ABOUT POWERWALL+

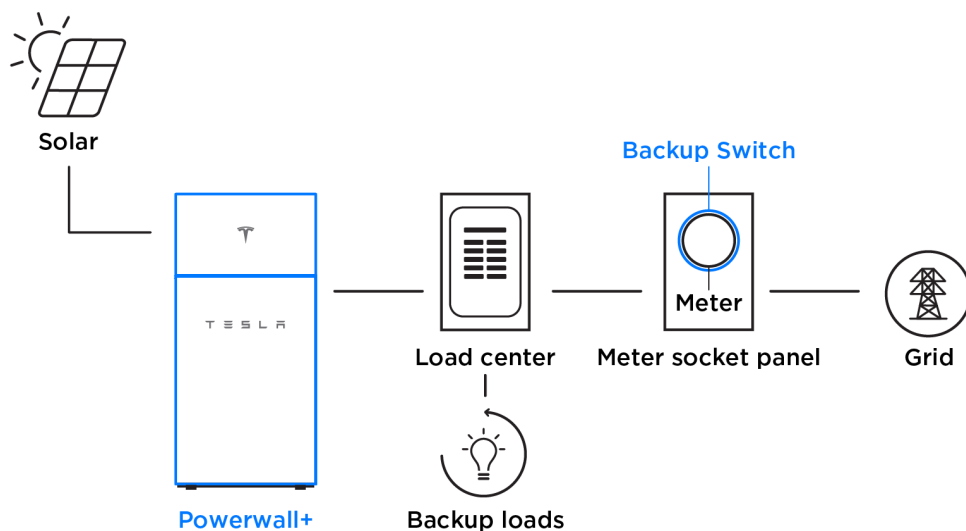
## System Design

Powerwall+ is an integrated AC battery system that stores energy from solar production. Its solar inverter converts energy from solar panels or Solar Roof, and its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, load shifting, or off-grid use. Powerwall+ is installed with either Backup Switch or Backup Gateway 2 to control the system's connection to the grid and monitor home energy consumption.

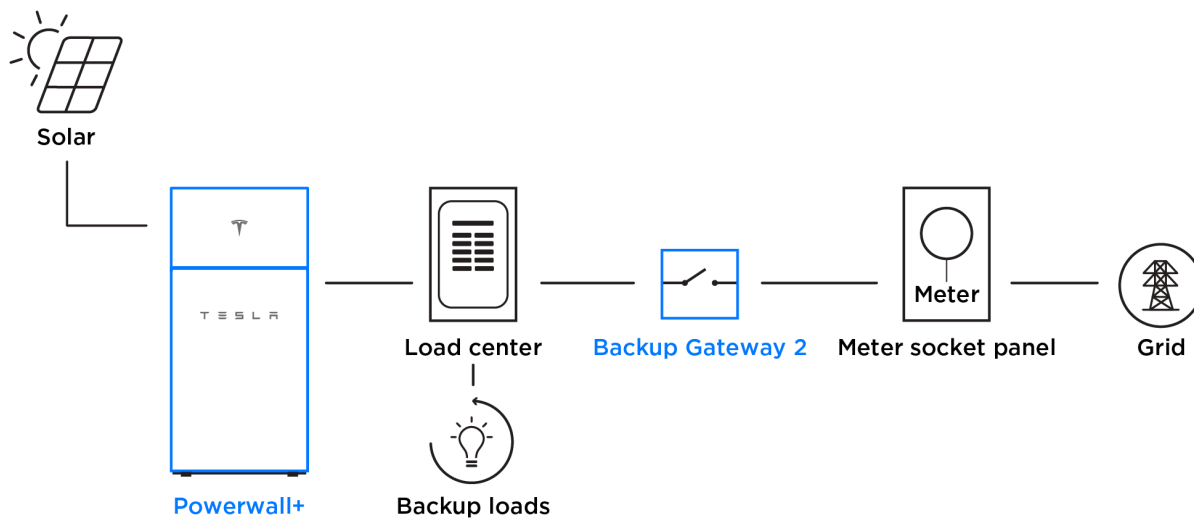
## Whole Home Backup System

A Powerwall+ system for whole home backup is designed to store energy from the grid or solar, and power the entire home during a grid outage.

**Figure 1. Powerwall+ with Backup Switch**



**Figure 2. Powerwall+ with Backup Gateway 2**



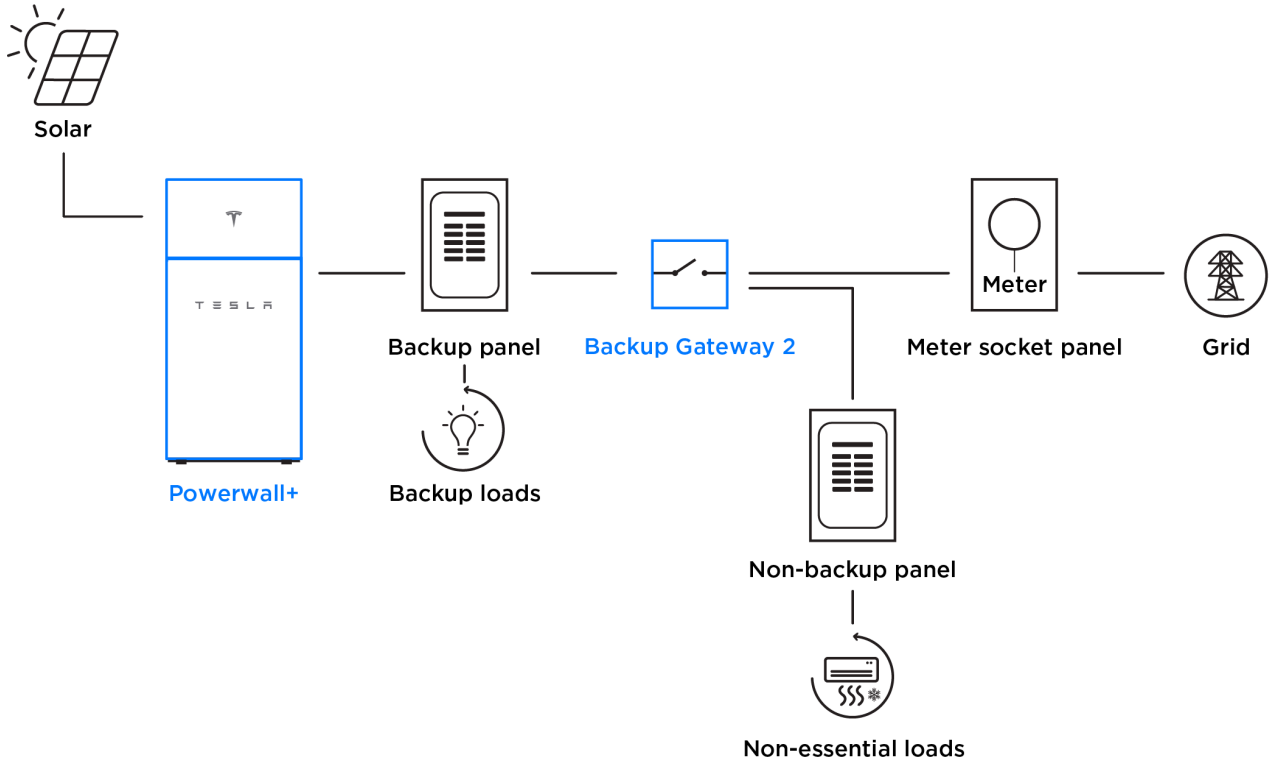


# ABOUT POWERWALL+

## Partial Home Backup System




A Powerwall+ system for partial home backup is designed to store energy from the grid or solar, and can power some home loads during a grid outage. These loads are selected during the system design phase, and the installer configures the system at installation to exclude all other loads from backup.

**Figure 3. Powerwall+ with Backup Gateway 2**





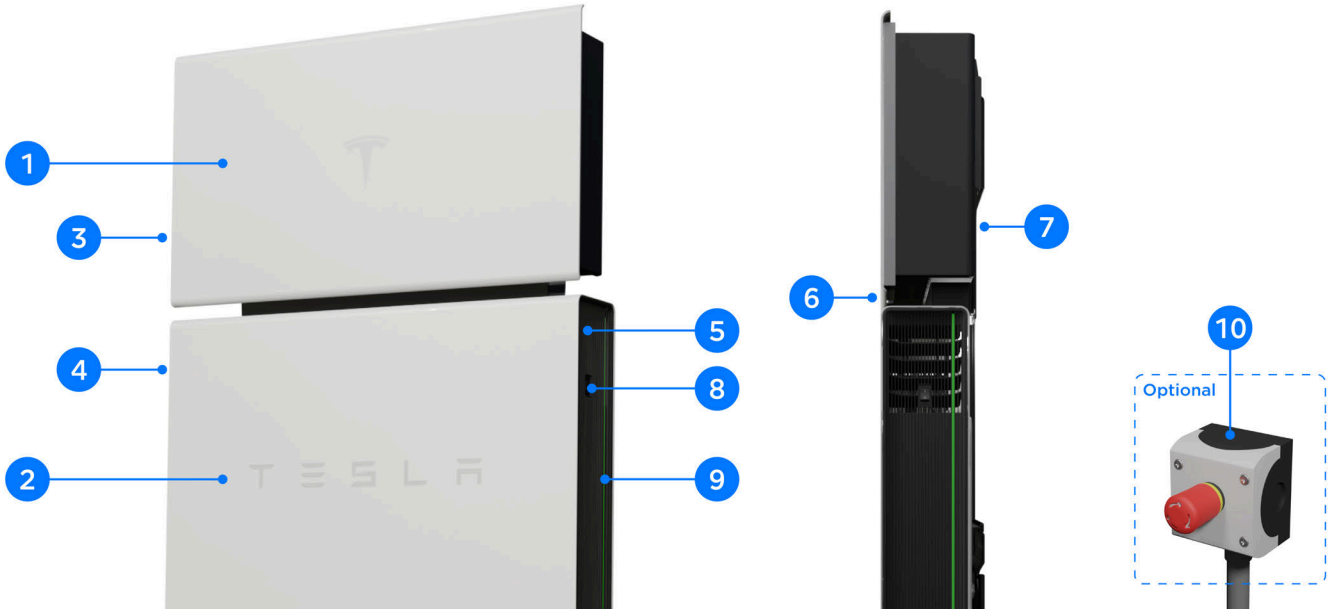
## System Components

Component	Description	Tesla Part Numbers
<p><b>Powerwall+</b></p> 	<p><b>Powerwall+</b> is an integrated AC battery that stores energy from solar production. It converts energy from solar panels or Solar Roof to be used by the home, and stores excess energy for future use. Every system contains at least one Powerwall+, with additional Powerwalls installed depending on your home's energy consumption.</p>	<p>1850000-xx-y</p>
<p><b>Backup Switch</b></p> 	<p><b>Backup Switch</b> can be installed in whole home backup systems. When installed with Powerwall+, the Backup Switch detects grid outages and manages the system's transition to and from backup operation. It also performs home energy metering.</p>	<p>1624171-xx-y</p>
<p><b>Backup Gateway 2</b></p> 	<p><b>Backup Gateway 2</b> can be installed in partial and whole home backup systems.</p> <p>When installed with Powerwall+, Backup Gateway 2 detects grid outages and manages the system's transition to and from backup operation. It also performs home energy metering.</p>	<p>1232100-xx-y</p>



## Powerwall+ Overview

Powerwall+ includes the following components and features:




Component/Feature	Name
1	Solar Assembly
2	Battery Assembly
3	Wiring Compartment
4	Battery Assembly Air Intake
5	Battery Assembly Air Exhaust
6	Solar Assembly Air Exhaust
7	Solar Assembly Air Intake
8	Enable Switch <sup>1</sup>
9	LED Indicator
10	System Shutdown Switch (optional) <sup>1</sup>

<sup>1</sup>The Enable Switch and optional System Shutdown Switch both act as Rapid Shutdown (RSD) initiators. These switches are used by emergency responders to trigger rapid shutdown of the solar array in the event of an emergency.




# SYSTEM OPERATION

Powerwall+ control and monitoring is available through the Tesla app. During normal operation, the Powerwall+ Enable switch should remain in the ON position. When troubleshooting Powerwall+ operation, it may be necessary to turn off Powerwall+ or refer to its LED indicator to confirm that it is operating properly.

 **WARNING:** Do not operate Powerwall+ unless all covers are in place.

 **WARNING:** Do not disconnect anything from or add anything to Powerwall+.

 **CAUTION:** Do not try to communicate with Powerwall+ using third party tools or diagnostics between Powerwall+ and the Backup Switch or Backup Gateway.

## Monitoring Your System


Using the Tesla app, you can monitor the system operation from your mobile device, including the following:


- Real-time power usage
- Energy consumption history
- Relative amounts of energy used from solar, grid, and Powerwall storage

To download the latest version of the Tesla app, visit [tesla.com/support/tesla-app](https://tesla.com/support/tesla-app).

## Troubleshooting

If the system is not working correctly, perform the following steps.

 **CAUTION:** Powerwall+, the Backup Switch, and the Backup Gateway are not user-serviceable and must be repaired by a Tesla Certified Installer.

 **WARNING:** Do not open the door of the Powerwall+ Solar Assembly, nor the deadfront cover inside the Gateway. Exposed wiring can present a risk of electrical shock.

Check the LED on the right side of Powerwall+ to determine its status:

LED State	Indication
On (solid)	Powerwall+ idle, no faults
On (fading)	Powerwall+ enabled and charging or discharging OR generating solar energy
On (flashing slowly)	Powerwall+ faulted at < 30 V solar (safe)
On (flashing rapidly)	Abnormal fault present
Off	Powerwall+ not enabled or switched off



## SYSTEM OPERATION

If it is not possible to communicate with Powerwall+ through the Tesla app, ensure that the home Internet connection is working. If the home Internet connection is working and communication through the Tesla app is still not possible, see [Connect Powerwall+ to Wi-Fi on page 15](#) for instructions to update your Wi-Fi connection.

If Powerwall+ is unresponsive, it may be necessary to turn off or power cycle the system. Note that power cycling the system must be done in the proper sequence as defined below.



**WARNING:** On Powerwall+ systems with additional interconnected solar, always turn off the solar inverter or disconnect the solar source before turning off the Powerwall+ unit.

1. Turn off Powerwall+ by setting its Enable switch to the OFF position.
2. Turn off any additional Powerwalls by setting the On/Off switch to the OFF position.
3. Turn off the AC breaker to Powerwall+ and any additional Powerwall AC breaker(s).
4. If the system has a Backup Gateway, turn off the AC breaker to the Backup Gateway (for whole-home backup systems, this may be a breaker inside the Backup Gateway).
5. Wait for at least one minute.
6. Turn the AC breaker(s) back on.
7. Turn on Powerwall+ and any additional Powerwalls.



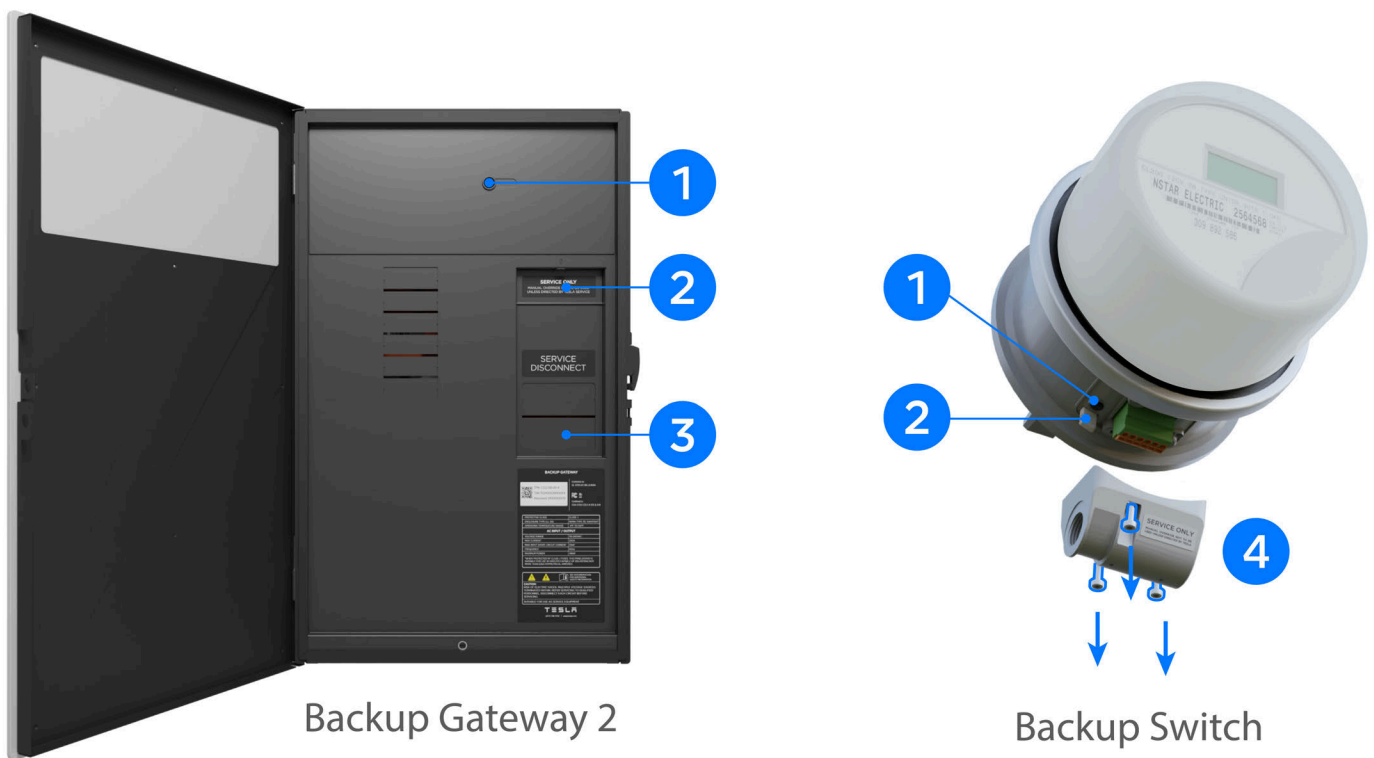
## Backup Troubleshooting

- If a brownout or blackout is experienced during backup operation, reduce the loads and check that the load breakers have not opened.



**NOTE:** See <https://www.tesla.com/support/energy/powerwall/own/best-practices-during-power-outages> for best practices to extend the backup duration of your system during an outage.

- If it is necessary to restart the Backup Gateway or Backup Switch, Tesla support may direct you to press the Reset button on the device.
- If it is necessary to manually reconnect to the grid, Tesla Support may direct you to operate the manual override switch on the Backup Gateway or the Backup Switch.



Component	Name
1	Backup Gateway / Backup Switch RESET button
2	Backup Gateway / Backup Switch manual override switch
3	Backup Gateway circuit breaker (in most whole-home backup systems)
4	Backup Switch conduit hub <sup>1</sup>

<sup>1</sup>The Backup Switch conduit hub must be removed to access the Backup Switch Reset button or manual override switch. To remove the conduit hub, use a Phillips PH2 screwdriver to loosen the (3) captured fasteners holding it in place, then remove the hub. Once any service actions have been completed, replace the conduit hub and tighten the (3) fasteners.

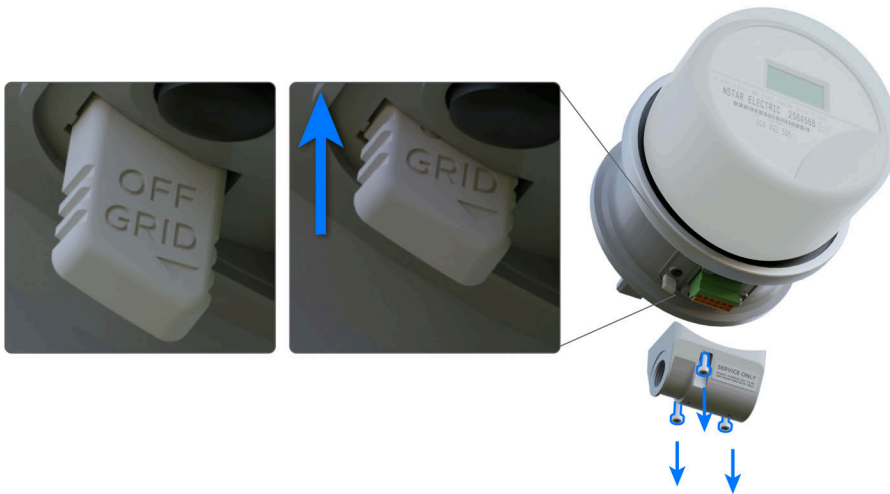


## Operating the Backup Switch Manual Override

**WARNING:** Improper operation of the manual override switch may damage the unit, and could void the product warranty. Do not remove the conduit hub or operate the manual override switch unless directed to do so by Tesla Support, or in the event that the grid is present but you are experiencing an outage. Contact Tesla Support if you are not sure whether you should operate the manual override switch.

**WARNING:** Do not make any modifications or adjustments to the Utility Meter; only interact with the Backup Switch.

To manually connect the system to the grid, push the Backup Switch manual override switch in.



## Backup Switch LED Status

The Backup Switch LED is located near the Reset button under the conduit hub. To view the Backup Switch LED and determine its status, remove the conduit hub as described above.

LED State	Indication
On (solid)	Power is on, communication established with Powerwall+
On (flashing)	Power is on, no communication with Powerwall+
Off	Power is off





## Connect Powerwall+ to Wi-Fi

You can connect your Powerwall+ to a Wi-Fi network or change existing Wi-Fi settings through your Tesla Mobile App. Your Powerwall+ is supported on 2.4 or 5.0 Ghz Networks with WEP/WPA1/WPA2 personal security as well as Hidden SSIDs.

### *Connect Powerwall+ to Wi-Fi for the First Time*

1. Locate the **Home Energy Gateway** menu on the Tesla Mobile App home screen.
2. Select **Connect your Powerwall to Wi-Fi**.
3. Select your preferred Wi-Fi network.
4. Enter your network password if you are prompted to do so.
5. Once you see a confirmation message on the screen, your Powerwall+ is officially connected to the internet.

### *Update Your Existing Powerwall+ Wi-Fi Settings*

1. Locate the **Home Energy Gateway** menu on the Tesla Mobile App home screen.
2. Select **Customize**.
3. Select **Configure Wi-Fi**.
4. Select the Wi-Fi network you would like the Powerwall+ to connect to.
5. Enter your network password if you are prompted to do so.
6. Once you see a confirmation message on the screen, your Powerwall+ is officially connected to the internet.



**NOTE:** If you are unable to set up Wi-Fi from the Tesla Mobile App, please visit <https://www.tesla.com/support/energy/powerwall/own/monitoring-from-home-network> for additional instructions.

## Technical Support

If you need further assistance, contact the Tesla Service team via the **Contact Us** page:

<https://www.tesla.com/support/energy/more/additional-support/contact-us>

Have the following information available when contacting Tesla:

- Owner name
- Best way for Tesla to contact you (name, phone number, email)
- Powerwall+ and Backup Gateway or Backup Switch serial numbers (see [System Information on page 18](#))
- Brief description of the issue



## WHAT TO DO IN CASE OF AN EMERGENCY

In the event of any threat to health or safety, always begin with these two steps before addressing the other suggestions below:

1. Immediately contact the fire department or other relevant emergency response team.
2. Notify all people who might be affected and ensure that they can evacuate the area.



**WARNING:** Only perform the suggested actions below if it is safe to do so.

- Turn off any additional solar inverter(s), then turn off the AC breaker for each additional solar inverter.
- Turn off Powerwall+, then turn off the AC breaker to Powerwall+.
- Turn off any additional Powerwall(s), then turn off the AC breaker for each additional Powerwall.
- Turn off the AC breaker to the Gateway.
- Acceptable fire extinguisher types are water, CO2, and ABC.
- Avoid type D (flammable metal) extinguishers.

In case of flooding:

- Stay out of the water if any part of the battery, Gateway, or wiring is submerged.
- Turn off any additional solar inverter(s), then turn off the AC breaker for each additional solar inverter.
- Turn off Powerwall+, then turn off the AC breaker to Powerwall+.
- Turn off any additional Powerwall(s), then turn off the AC breaker for each additional Powerwall.
- Turn off the AC breaker to the Gateway.
- If possible, protect the system by finding and stopping the source of the water, and pumping water away.
- If any part of the unit was submerged, note the depth and duration of the flooding.
- Contact Tesla Support to determine if the unit can be safely turned back on.
- If Tesla Support has confirmed that it is safe to turn the unit back on, let the area dry completely before use.

If there is an unusual smell or smoke:

- Turn off any additional solar inverter(s), then turn off the AC breaker for each additional solar inverter.
- Turn off Powerwall+, then turn off the AC breaker to Powerwall+.
- Turn off any additional Powerwall(s), then turn off the AC breaker for each additional Powerwall.
- Turn off the AC breaker to the Gateway.
- Ensure nothing is in contact with Powerwall+.
- Ventilate the room.




# WHAT TO DO IN CASE OF AN EMERGENCY

If Powerwall+ is making unusual noises:

- Turn off Powerwall+, then turn off the AC breaker to Powerwall+.
- Turn off any additional Powerwall(s), then turn off the AC breaker for each additional Powerwall.
- Turn off the AC breaker to the Gateway.
- Ensure that nothing is in the vent on either side of Powerwall+ or in the fan.

If Powerwall+ is leaking coolant:

 **WARNING:** According to the U.S. Environmental Protection Agency, coolant can be absorbed through the skin and cause damage to internal organs. Ensure that it does not touch or enter any part of the body including, but not limited to, skin, eyes, and mouth.

- Turn off Powerwall+, then turn off the AC breaker to Powerwall+.
- Turn off any additional Powerwall(s), then turn off the AC breaker for each additional Powerwall.
- Turn off the AC breaker to the Gateway.
- Ventilate the area.

When cleaning up spilled coolant:

- Wear safety goggles, rubber gloves, long trousers, a long sleeved shirt, and closed shoes.
- Avoid further coolant spills by putting a bucket under the leak. Powerwall+ holds up to 2.3 L (2.4 qt) of coolant.
- Pour cat litter, sawdust, or other absorbent material on the spill immediately.
- Allow the material to absorb as much of the coolant as possible.
- Use paper towels to collect the used absorbent material and discard the soiled paper towels in a sealed plastic bag. Place the sealed plastic bag into the garbage.
- Clean up anything that remains using soap and warm water.

In all cases, once the situation is stable, contact the Tesla Certified Installer who installed the system.

For first responder information, see [tesla.com/firstresponders](https://tesla.com/firstresponders).




## SYSTEM INFORMATION

The serial numbers for your system can be found on their product labels.

### Powerwall+ Serial Number



 **NOTE:** To remove the Powerwall+ side cover, carefully pry the plastic tab at the bottom of the cover to detach it from the Powerwall+ unit, then detach the cover from the clips along the length of the unit. After viewing the Powerwall+ product label, realign the side cover with the unit and snap the clips in place along the length of the Powerwall+.



# SYSTEM INFORMATION

## Backup Switch Serial Number



## Backup Gateway 2 Serial Number





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Revision A