



# Powerwall 2 AC 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 2 AC (1092170-xx-y, 2012170-xx-y, or 3012170-xx-y)
- Gateway (1099752-xx-y)
- Backup Gateway (1118431-xx-y)
- Backup Gateway 2 (1232100-xx-y)
- Backup Switch (1624171-xx-y)
- Gateway Meter (1112484-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.



©2021 TESLA, INC. All rights reserved.

All information in this document is subject to copyright and other intellectual property rights of Tesla, Inc. and its licensors. This material may not be modified, reproduced or copied, in whole or in part, without the prior written permission of Tesla, Inc. and its licensors. Additional information is available upon request. The following are trademarks or registered trademarks of Tesla, Inc. in the United States and other countries:



TESLA

Tesla

Tesla Motors

Powerwall

All other trademarks contained in this document are the property of their respective owners and their use herein does not imply sponsorship or endorsement of their products or services. The unauthorized use of any trademark displayed in this document or on the product is strictly prohibited.

Important Safety Instructions..... 2

Powerwall Warranty..... 5

Care and Maintenance..... 6

About Powerwall..... 7

    System Design..... 7

    System Components..... 9

    Powerwall Overview..... 11

System Operation..... 12

    Monitoring Your System..... 12

    Troubleshooting..... 12

        Additional Troubleshooting Steps for Backup  
        Systems..... 14

    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:** 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.




**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).



# IMPORTANT SAFETY INSTRUCTIONS


 **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:** 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:** Do not connect Powerwall directly to photovoltaic (PV) solar wiring.

 **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 and the Gateway do 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

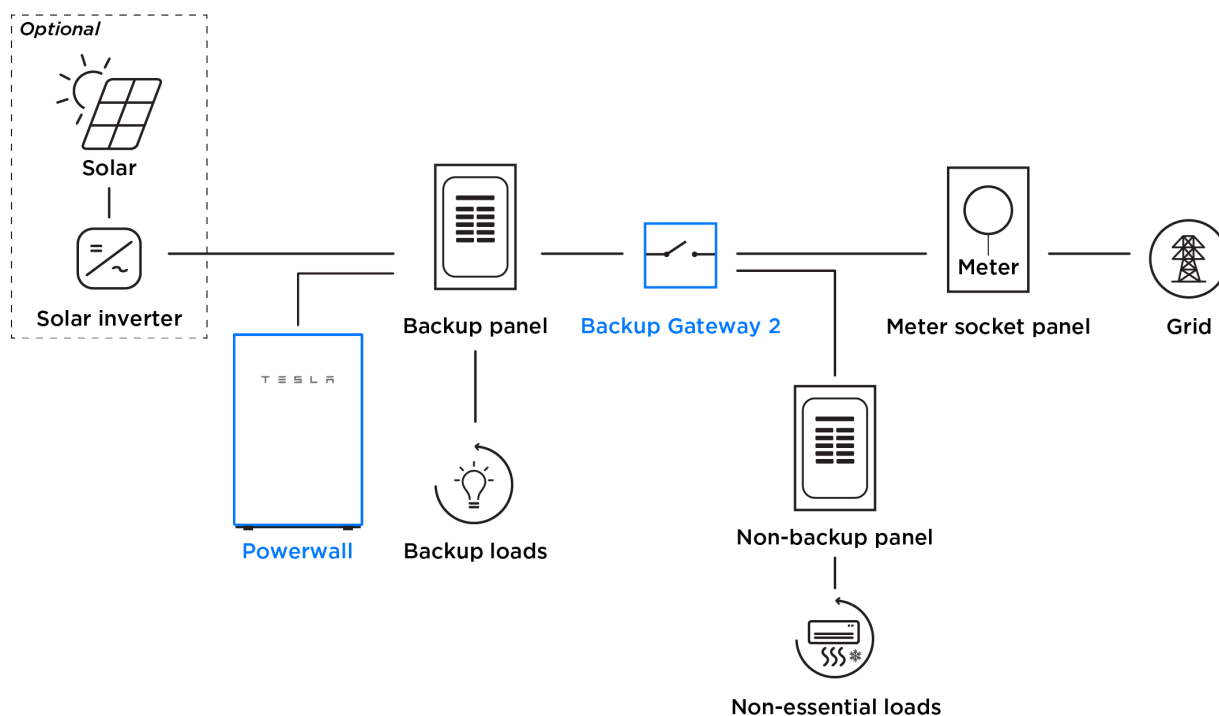
## System Design

Powerwall 2 AC is a fully integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, load shifting, or off-grid use. The Tesla Energy Gateway controls the operation of the system and allows remote monitoring of energy usage.

For Powerwall systems with solar, excess solar energy can be stored and used at night. For systems without solar, Powerwall can charge from the grid during the day when electricity costs are low, and discharge at night when electricity costs are high.

## 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.

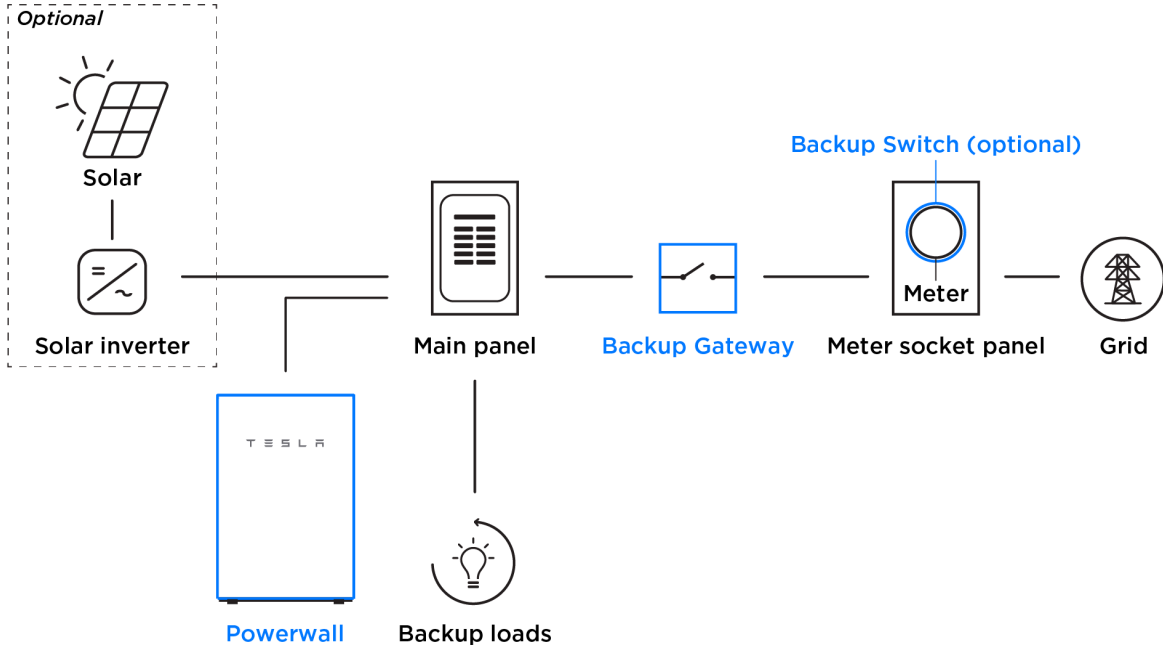




# ABOUT POWERWALL

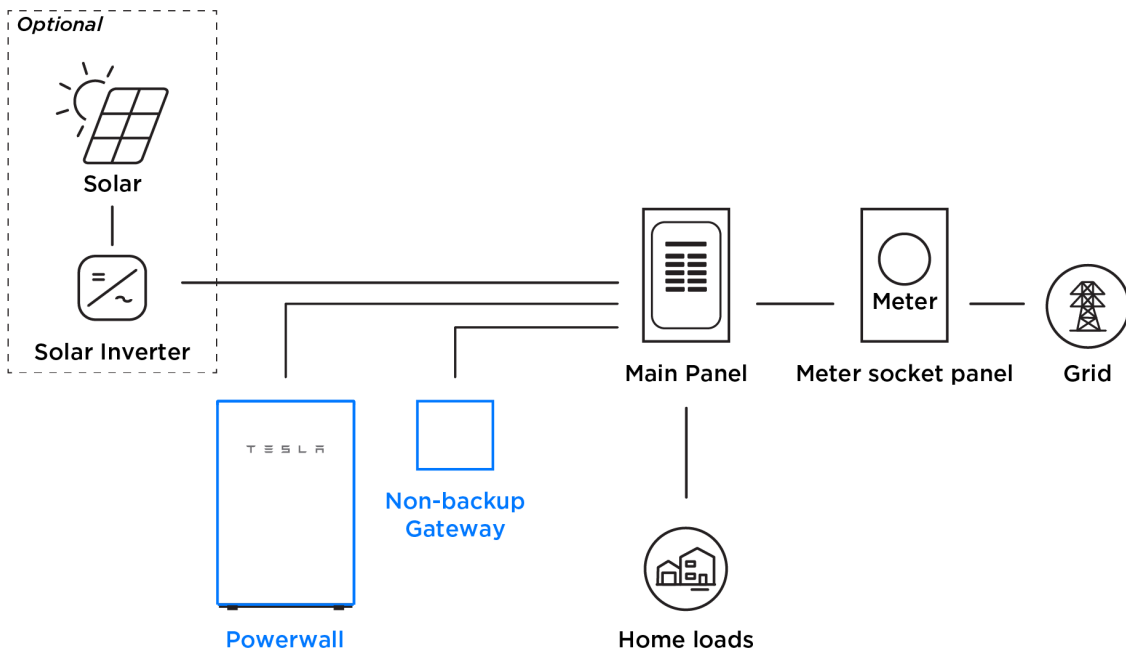
## Whole Home Backup System

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.



## Non-Backup System


A non-backup Powerwall system is designed to store energy from the grid or solar, but does not operate during a grid outage.





## System Components




### Powerwall

Component	Description	Tesla Part Numbers
	<p><b>Powerwall 2 AC</b> is the rechargeable battery that stores energy for your home. Every system contains at least one Powerwall, with additional Powerwalls installed, depending on your home's energy consumption.</p> <p>Powerwall is installed with one of the following Tesla Gateways.</p>	1092170-xx-y 2012170-xx-y 3012170-xx-y




# ABOUT POWERWALL

## Tesla Energy Gateway

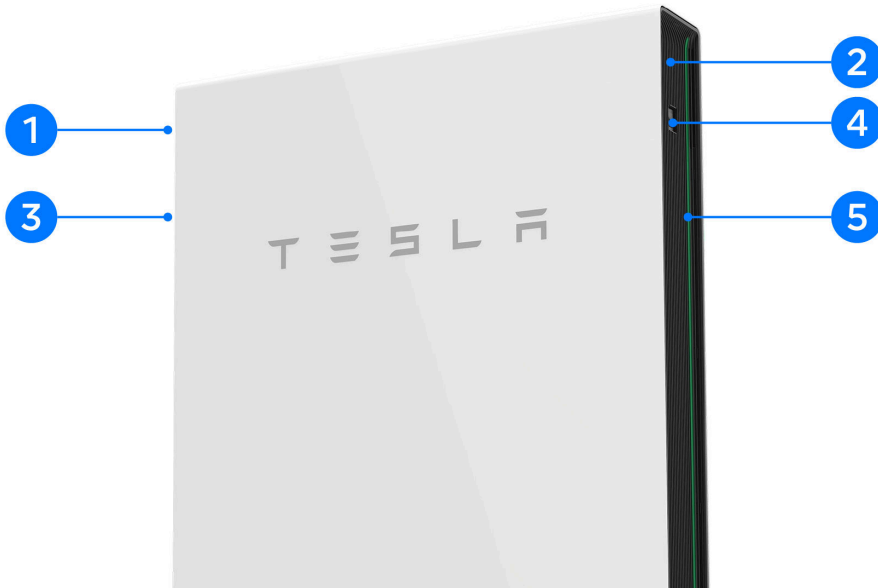
Component	Description	Tesla Part Numbers
	<p>The <b>Tesla Non-Backup Gateway</b> is installed in non-backup systems.</p> <p>The Non-Backup Gateway controls the operation of the system and allows remote monitoring of energy usage.</p>	1099752-xx-y
	<p>The <b>Tesla Backup Gateway 1</b> is installed in partial and whole home backup systems.</p> <p>The Backup Gateway 1 is a legacy product. It controls the operation of the system, allows remote monitoring of energy usage, and manages the transition to and from backup operation.</p>	1118431-xx-y
	<p>The <b>Tesla Backup Gateway 2</b> is installed in partial and whole home backup systems.</p> <p>The Backup Gateway 2 controls the operation of the system, allows remote monitoring of energy usage, and manages the transition to and from backup operation.</p>	1232100-xx-y

## Tesla Backup Switch

Component	Description	Tesla Part Numbers
	<p>The <b>Tesla Backup Switch</b> is installed in whole home backup systems. When installed with the Tesla Backup Gateway 2, it detects grid outages and manages the transition to and from backup operation while the Backup Gateway controls the operation of the system.</p>	1624171-xx-y

## Powerwall Overview

Powerwall includes the following components and features:



Component/Feature	Name
1	Air Intake
2	Air Exhaust
3	Wiring Compartment
4	On/Off Switch
5	LED Indicator



# SYSTEM OPERATION

The Gateway provides control and monitoring capability through the Tesla app. During normal operation, Powerwall is controlled by the Gateway, and the Powerwall On/Off 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 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 and the Gateway are not user-serviceable and must be repaired by a Tesla Certified Installer.



**WARNING:** Do not open 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 enabled/Communication with Gateway
On (flashing)	Powerwall enabled/No communication with Gateway
On (pulsing)	Powerwall enabled and charging or discharging
Off	Powerwall not enabled or switched off

If it is not possible to communicate with the Gateway through the Tesla app, ensure that the home Internet connection is working.



## SYSTEM OPERATION

If the Gateway and Powerwall are both 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 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 On/Off switch to the OFF position.
2. Turn off the AC breaker to Powerwall.
3. Turn off the AC breaker to the Gateway (for whole-home backup systems, this may be a breaker inside the Backup Gateway).
4. Wait for at least one minute.
5. Turn the AC breakers back on.
6. Turn on Powerwall.



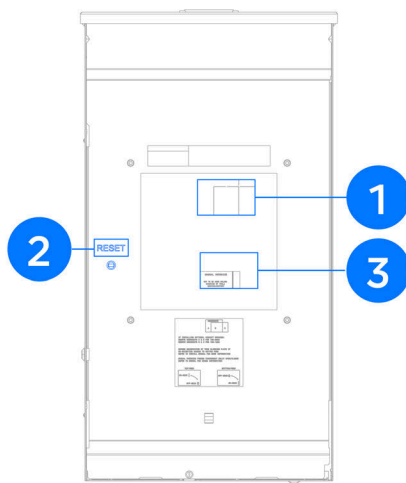
## Additional Troubleshooting Steps for Backup Systems

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

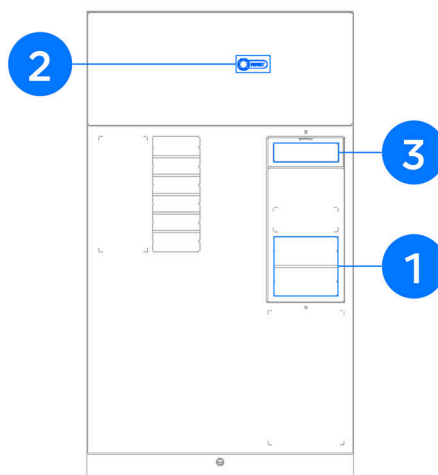


**NOTE:** See <https://www.tesla.com/support/energy/powerwall/own/best-practices-during-power-outages> for best practices to extend the backup duration of your system during an outage.

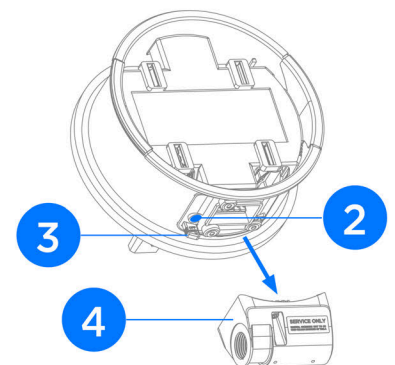
- If it is necessary to restart the Gateway or Backup Switch, Tesla support may direct you to press the Reset button on the device.
- If it is necessary to manually disconnect/reconnect to the grid, Tesla Support may direct you to operate the manual override switch on the Backup Gateway or the Backup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



Backup Gateway 1



Backup Gateway 2



Backup Switch

Component	Name
1	Backup Gateway circuit breaker (in most whole-home backup systems)
2	Backup Gateway / Backup Switch RESET button
3	Backup Gateway / Backup Switch manual override switch
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.



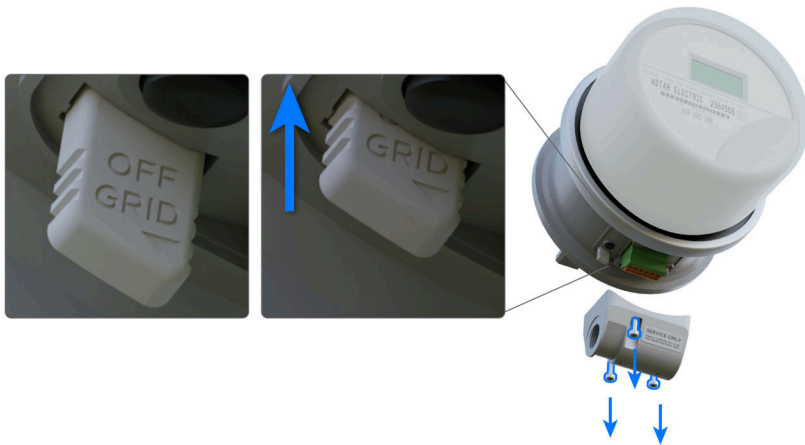


## Operating the Backup Switch Manual Override

**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

## 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, Gateway, and 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 Powerwall, then turn off the AC breaker to 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 Powerwall, then turn off the AC breaker to 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 Powerwall, then turn off the AC breaker to 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 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 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

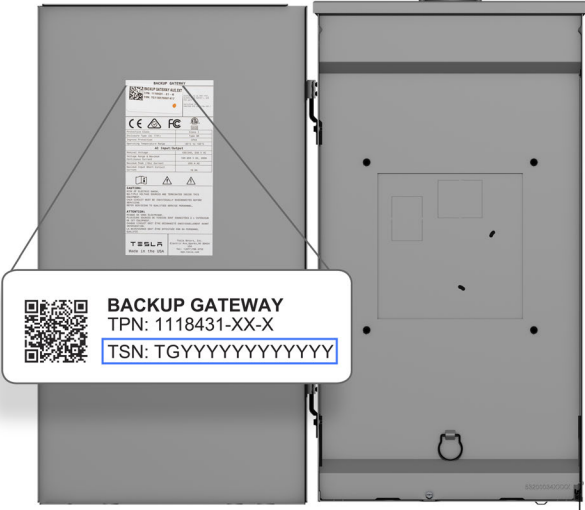


 **NOTE:** To remove the Powerwall side cover, carefully pry the plastic tab at the bottom of the cover to detach it from the Powerwall unit, then detach the cover from the clips along the length of the unit. After viewing the Powerwall product label, realign the side cover with the unit and snap the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



# SYSTEM INFORMATION

## Backup Gateway 1 Serial Number



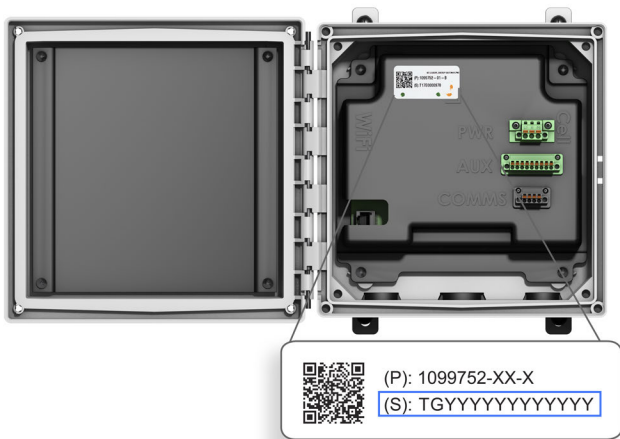
## Backup Gateway 2 Serial Number



### Backup Switch Serial Number



### Non-Backup Gateway Serial Number





Published May 2021

Revision H