

# Powerwall+

Powerwall+ is an integrated solar battery system that stores energy from solar production. Powerwall+ has two separate inverters, one for battery and one for solar, that are optimized to work together. Its integrated design and streamlined installation allow for simple connection to any home, and improved surge power capability brings whole home backup in a smaller package. Smart system controls enable owners to customize system behavior to suit their renewable energy needs.

## Key Features

- Integrated battery, inverter, and system controller for a more compact install
- A suite of application modes, including self-powered, time-based control, and backup modes
- Wi-Fi, Ethernet, and LTE connectivity with easy over-the-air updates.



# Powerwall+ Technical Specifications

## Photovoltaic (PV) and Battery Energy Storage (BESS) Specifications

Powerwall+ Model Number	1850000-xx-y
Solar Assembly Model Number	1538000-xx-y
Nominal Battery Energy	13.5 kWh <sup>1</sup>
Nominal Grid Voltage (Input / Output)	120/240 VAC
Grid Voltage Range	211.2 - 264 VAC
Frequency	60 Hz
Phase	240 VAC: 2W+N+GND
Maximum Continuous Power On-Grid	7.6 kVA with sun / 5.8 kVA no sun <sup>1,2</sup>
Maximum Continuous Power Off-Grid	9.6 kW with sun / 7 kW no sun <sup>1</sup>
Peak Off-Grid Power (10 s)	22 kW full sun / 10 kW no sun <sup>1</sup>
Maximum Continuous Current On-Grid	32 A output
Maximum Continuous Current Off-Grid	40 A output
Load Start Capability	98 - 118 A LRA <sup>3</sup>
Overcurrent Protection Device	50 A breaker
Output Power Factor Rating	+/- 0.9 to 1 <sup>4</sup>
PV Maximum Input Voltage	600 VDC
PV DC Input Voltage Range	60 - 550 VDC
PV DC MPPT Voltage Range	60 - 480 VDC
MPPTs	4
Input Connectors per MPPT	1-2-1-2
Maximum Current per MPPT (Imp)	13 A <sup>5</sup>
Maximum Short Circuit Current per MPPT (Isc)	17 A <sup>5</sup>
Allowable DC/AC Ratio	1.7
Maximum Supply Fault Current	10 kA
Round Trip Efficiency	90% <sup>1,6</sup>
Solar Generation CEC Efficiency	97.5% at 208 V 98.0% at 240 V
Customer Interface	Tesla Mobile App
Internet Connectivity	Wi-Fi, Ethernet, Cellular (LTE/4G) <sup>7</sup>
PV AC Metering	Revenue grade (+/-0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), PV Rapid Shutdown
Warranty	10 years

<sup>1</sup>Values provided for 25°C (77°F), 3.3 kW charge/discharge power.

<sup>2</sup>7.6 kW with sun / 5 kW no sun at power factor of 1.

<sup>3</sup>Load start capability may vary.

<sup>4</sup>Power factor rating at max real power.

<sup>5</sup>Where the DC input current exceeds an MPPT rating, jumpers can be used to allow a single MPPT to intake additional DC current up to 26 A Imp / 34 A Isc.

<sup>6</sup>AC to battery to AC, at beginning of life.

<sup>7</sup>Cellular connectivity subject to network service coverage and signal strength.

# Powerwall+ Technical Specifications

## Environmental Specifications

<b>Operating Temperature</b>	-20°C to 50°C (-4°F to 122°F) <sup>8</sup>
<b>Operating Humidity (RH)</b>	Up to 100%, condensing
<b>Storage Conditions</b>	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
<b>Maximum Elevation</b>	3000 m (9843 ft)
<b>Environment</b>	Indoor and outdoor rated
<b>Enclosure Type</b>	Type 3R
<b>Solar Assembly Ingress Rating</b>	IP55 (Wiring Compartment)
<b>Battery Assembly Ingress Rating</b>	IP56 (Wiring Compartment) IP67 (Battery & Power Electronics)
<b>Noise Level @ 1 m</b>	< 40 db(A) optimal, < 50 db(A) maximum

<sup>8</sup>Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).

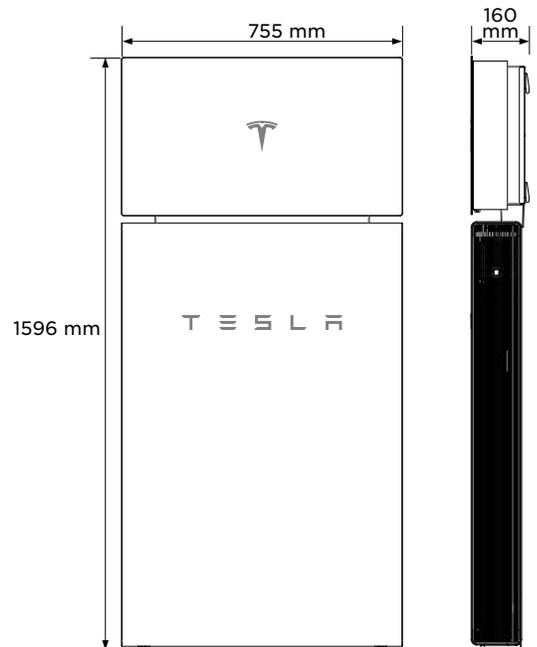
## Compliance Information

<b>PV Certifications</b>	UL 1699B, UL 1741, UL 3741, UL 1741 SA, UL 1741 SB, UL 1998 (US), IEEE 1547-2018, IEEE 1547.1
<b>Battery Energy Storage System Certifications</b>	UL 1642, UL 1741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1973, UL 9540, IEEE 1547-2018, IEEE 1547.1, UN 38.3
<b>Grid Connection</b>	United States
<b>Emissions</b>	FCC Part 15 Class B
<b>Environmental</b>	RoHS Directive 2011/65/EU
<b>Seismic</b>	AC156, IEEE 693-2005 (high)

## Mechanical Specifications

<b>Dimensions</b>	1596 x 755 x 160 mm (62.8 x 29.7 x 6.3 in)
<b>Total Weight</b>	140 kg (310 lb) <sup>9</sup>
<b>Battery Assembly</b>	118 kg (261 lb)
<b>Solar Assembly</b>	22 kg (49 lb)
<b>Mounting Options</b>	Floor or wall mount

<sup>9</sup>The total weight does not include the Powerwall+ bracket, which weighs an additional 9 kg (20 lb).



# Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Powerwall+, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications	Model	MCI-1	MCI-2
	Nominal Input DC Current Rating ( $I_{MP}$ )	12 A	13 A
	Maximum Input Short Circuit Current ( $I_{SC}$ )	19 A	17 A
	Maximum System Voltage (PVHCS)	600 V DC	1000 V DC <sup>10</sup>
	<sup>10</sup> Maximum System Voltage is limited by Powerwall+ to 600 V DC.		
RSD Module Performance	Maximum Number of Devices per String	5	5
	Control	Power Line Excitation	Power Line Excitation
	Passive State	Normally Open	Normally Open
	Maximum Power Consumption	7 W	7 W
	Warranty	25 years	25 years
Environmental Specifications	Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
	Storage Temperature	-30°C to 70°C (-22°F to 158°F)	-30°C to 70°C (-22°F to 158°F)
	Enclosure Rating	NEMA 4X / IP65	NEMA 4X / IP65
Mechanical Specifications	Electrical Connections	MC4 Connector	MC4 Connector
	Housing	Plastic	Plastic
	Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
	Weight	350 g (0.77 lb)	120 g (0.26 lb)
	Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip
Compliance Information	Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)	
	RSD Initiation Method	External System Shutdown Switch	

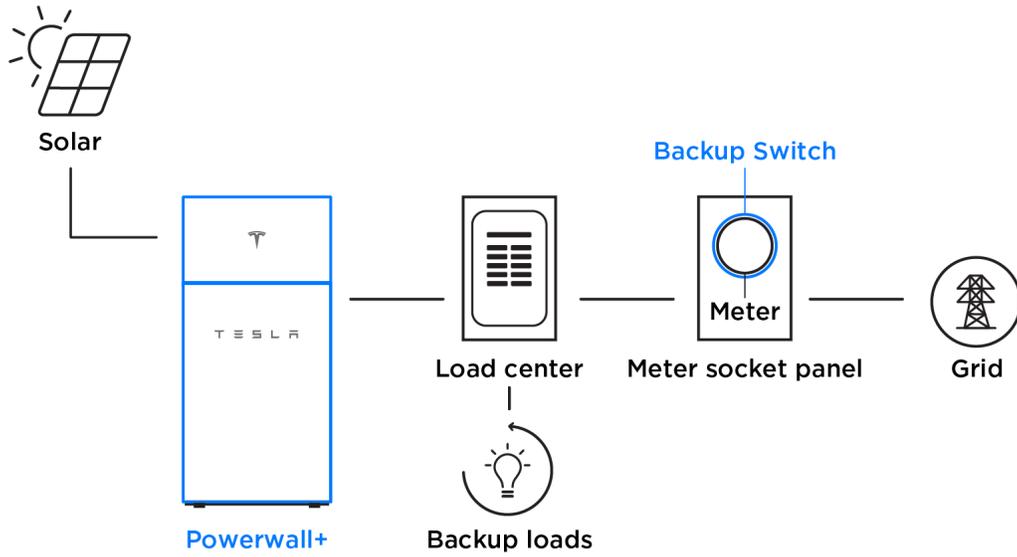
## UL 3741 PV Hazard Control (and PVRSA) Compatibility

The following categories of solar module meet the UL 3741 PVHCS listing when installed with Powerwall+ and Solar Shutdown Devices.

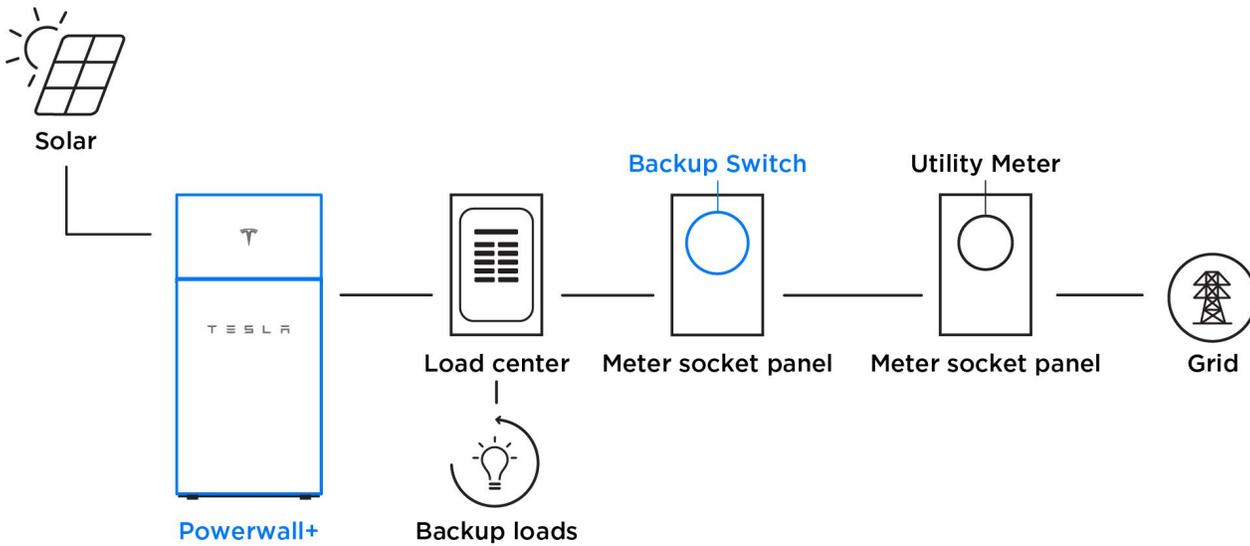
Tesla Solar Roof	<a href="#">PV Hazard Control System: BIPV compliance document</a>
Tesla or Hanwha (Q.Peak Duo BLK or BLK-G6+) Modules certified for use with ZEP racking	<a href="#">PV Hazard Control System: ZS PVHCS compliance document</a>
Other module and racking combinations	<a href="#">PV Hazard Control System: Generic PV Array compliance document</a>

# Powerwall+ Example System Configurations

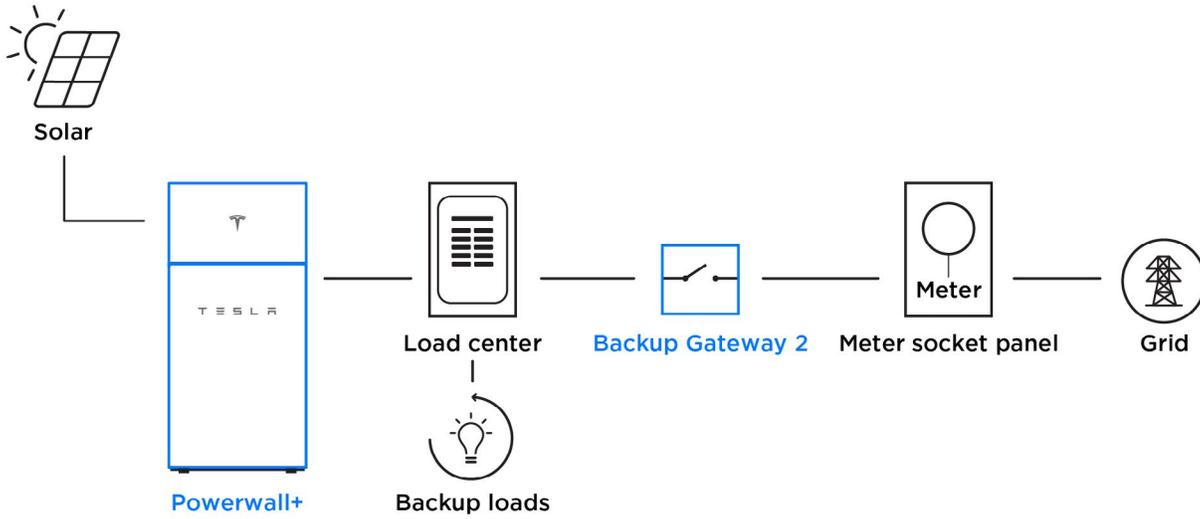
Powerwall+ with Backup Switch Installed Behind Utility Meter



Powerwall+ with Backup Switch Installed Downstream of Utility Meter



### Powerwall+ with Backup Gateway 2 for Whole Home Backup



### Powerwall+ with Backup Gateway 2 for Partial Home Backup

