



TESLA

## POWERWALL+

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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

PHOTOVOLTAIC (PV) AND BATTERY ENERGY STORAGE SYSTEM (BESS) SPECIFICATIONS

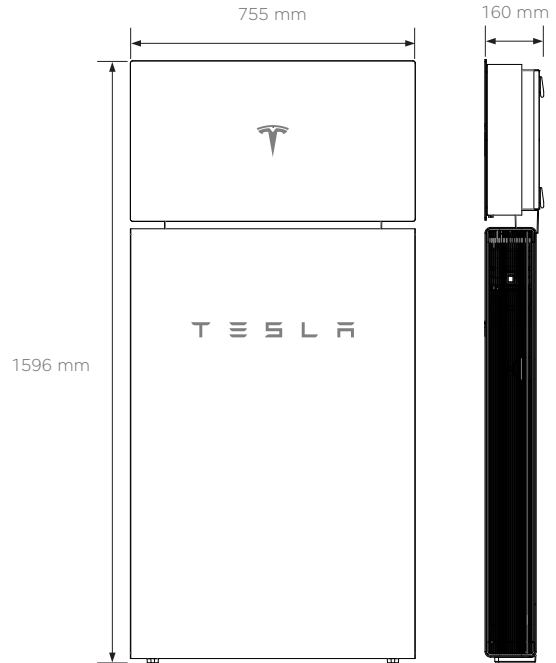
<b>Powerwall+ Model Number</b>	1850000-xx-y
<b>Solar Assembly Model Number</b>	1538000-xx-y
<b>Nominal Battery Energy</b>	13.5 kWh
<b>Nominal Grid Voltage (Input / Output)</b>	120/240 VAC
<b>Grid Voltage Range</b>	211.2 - 264 VAC
<b>Frequency</b>	60 Hz
<b>Phase</b>	240 VAC: 2W+N+GND
<b>Maximum Continuous Power On-Grid</b>	7.6 kVA full sun / 5.8 kVA no sun <sup>1</sup>
<b>Maximum Continuous Power Off-Grid</b>	9.6 kW full sun / 7 kW no sun <sup>1</sup>
<b>Peak Off-Grid Power (10 s)</b>	22 kW full sun / 10 kW no sun <sup>1</sup>
<b>Maximum Continuous Current On-Grid</b>	32 A output
<b>Maximum Continuous Current Off-Grid</b>	40 A output
<b>Load Start Capability</b>	98 - 118 A LRA <sup>2</sup>
<b>PV Maximum Input Voltage</b>	600 VDC
<b>PV DC Input Voltage Range</b>	60 - 550 VDC
<b>PV DC MPPT Voltage Range</b>	60 - 480 VDC
<b>MPPTs</b>	4 (or 2 combined strings)
<b>Input Connectors per MPPT</b>	1-2-1-2
<b>Maximum Current per MPPT (I<sub>mp</sub>)</b>	13 A (26 A for combined strings)
<b>Maximum Short Circuit Current per MPPT (I<sub>sc</sub>)</b>	15 A
<b>Allowable DC/AC Ratio</b>	1.7
<b>Overcurrent Protection Device</b>	50 A breaker
<b>Maximum Supply Fault Current</b>	10 kA
<b>Output Power Factor Rating</b>	+/- 0.9 to 1 <sup>3</sup>
<b>Round Trip Efficiency</b>	90% <sup>4</sup>
<b>Solar Generation CEC Efficiency</b>	97.5% at 208 V 98.0% at 240 V
<b>Customer Interface</b>	Tesla Mobile App
<b>Internet Connectivity</b>	Wi-Fi, Ethernet, Cellular LTE/4G <sup>5</sup>
<b>PV AC Metering</b>	Revenue grade (+/-0.5%)
<b>Protections</b>	Integrated arc fault circuit interrupter (AFCI), PV Rapid Shutdown
<b>Warranty</b>	10 years

COMPLIANCE INFORMATION

<b>PV Certifications</b>	UL 1699B, UL 1741, UL 3741, UL 1741 SA, UL 1998 (US), IEEE 1547, IEEE 1547.1
<b>Battery Energy Storage System Certifications</b>	UL 1642, UL 1741, UL 1741 PCS, UL 1741 SA, UL 1973, UL 9540, IEEE 1547, 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>6</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



ENVIRONMENTAL SPECIFICATIONS

<b>Operating Temperature</b>	-20°C to 50°C (-4°F to 122°F) <sup>7</sup>
<b>Recommended Temperature</b>	0°C to 30°C (32°F to 86°F)
<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>1</sup>Values provided for 25°C (77°F).

<sup>2</sup>Load start capability may vary.

<sup>3</sup>Power factor rating at max real power.

<sup>4</sup>AC to battery to AC, at beginning of life.

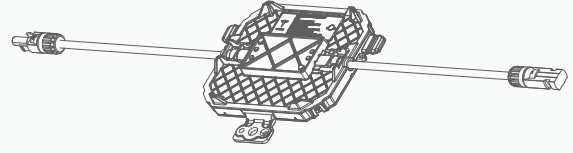
<sup>5</sup>Cellular connectivity subject to network service coverage and signal strength.

<sup>6</sup>The total weight does not include the Powerwall+ bracket, which weighs an additional 9 kg (20 lb).

<sup>7</sup>Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).

# SOLAR SHUTDOWN DEVICE

The Tesla Solar Shutdown Device 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 turning the Powerwall+ Enable switch off, or by pushing the System Shutdown Switch if one is present.



## ELECTRICAL SPECIFICATIONS

<b>Nominal Input DC Current Rating (<math>I_{MP}</math>)</b>	12 A
<b>Maximum Input Short Circuit Current (<math>I_{SC}</math>)</b>	15 A
<b>Maximum System Voltage</b>	600 V DC

## RSD MODULE PERFORMANCE

<b>Maximum Number of Devices per String</b>	5
<b>Control</b>	Power Line Excitation
<b>Passive State</b>	Normally open
<b>Maximum Power Consumption</b>	7 W
<b>Warranty</b>	25 years

## COMPLIANCE INFORMATION

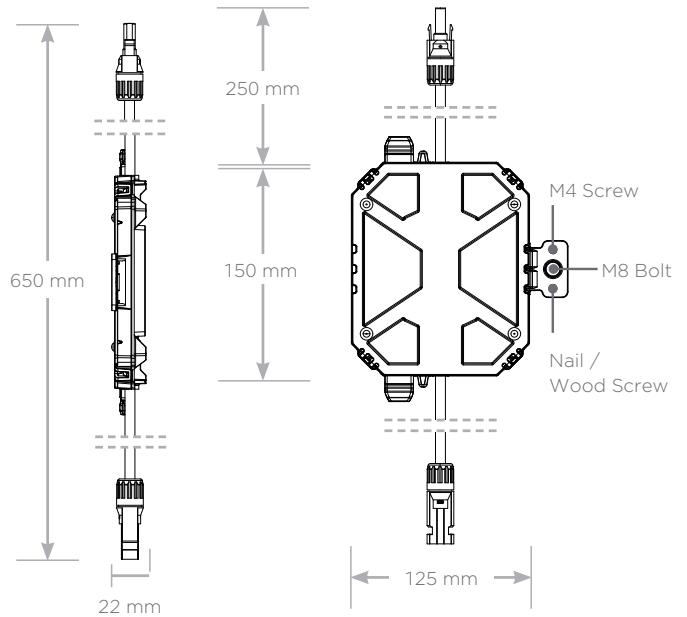
<b>Certifications</b>	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
<b>RSD Initiation Method</b>	External System Shutdown Switch
<b>Compatible Equipment</b>	See <i>Compatibility Table</i> below

## ENVIRONMENTAL SPECIFICATIONS

<b>Ambient Temperature</b>	-40°C to 50°C (-40°F to 122°F)
<b>Storage Temperature</b>	-30°C to 60°C (-22°F to 140°F)
<b>Enclosure Rating</b>	NEMA 4 / IP65

## MECHANICAL SPECIFICATIONS

<b>Electrical Connections</b>	MC4 Connector
<b>Housing</b>	Plastic
<b>Dimensions</b>	125 mm x 150 mm x 22 mm (5 in x 6 in x 1 in)
<b>Weight</b>	350 g (0.77 lb)
<b>Mounting Options</b>	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw



## UL 3741 PV HAZARD CONTROL (AND PVRSA) COMPATIBILITY

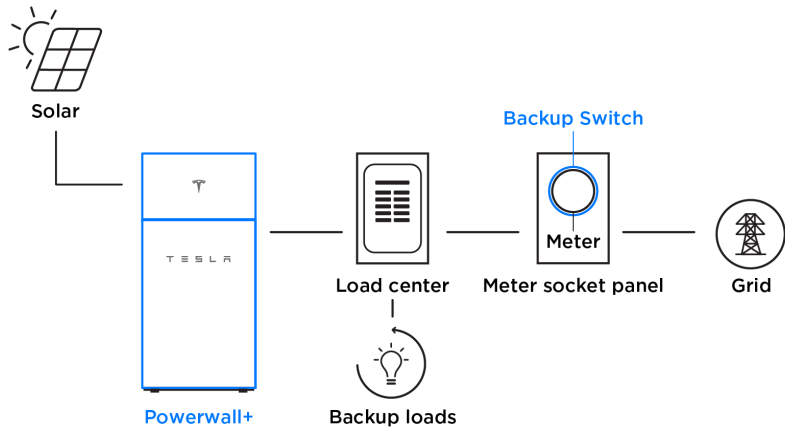
Tesla Solar Roof and Tesla/Zep ZS Arrays using the following modules are certified to UL 3741 and UL 1741 PVRSA when installed with the Powerwall+ and Solar Shutdown Devices. See the Powerwall+ Installation Manual for detailed instructions and for guidance on installing Powerwall+ and Solar Shutdown Devices with other modules.

Brand	Model	Required Solar Shutdown Devices
Tesla	Solar Roof V3	1 Solar Shutdown Device per 10 modules
Tesla	Tesla TxxxS (where xxx = 405 to 450 W, increments of 5)	1 Solar Shutdown Device per 3 modules <sup>1</sup>
Tesla	Tesla TxxxH (where xxx = 395 to 415 W, increments of 5)	1 Solar Shutdown Device per 3 modules
Hanwha	Q.PEAK DUO BLK-G5	1 Solar Shutdown Device per 3 modules
Hanwha	Q.PEAK DUO BLK-G6+	1 Solar Shutdown Device per 3 modules

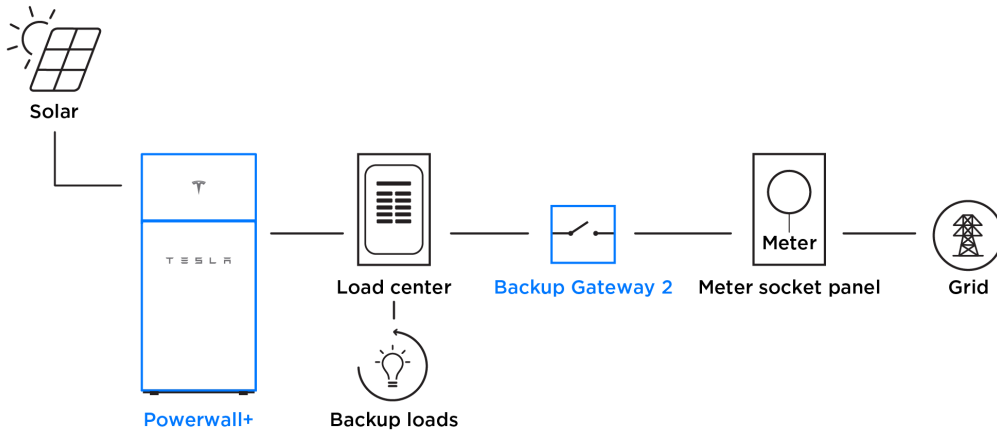
<sup>1</sup>**Exception:** Tesla solar modules installed in locations where the max Voc for three modules at low design temperatures exceeds 165 V shall be limited to two modules between MCIs.

# SYSTEM LAYOUTS

Powerwall+ with Backup Switch for Whole Home Backup



Powerwall+ with Backup Gateway 2 for Whole Home Backup



Powerwall+ with Backup Gateway 2 for Partial Home Backup

