

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 ¹
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 ^{1,2}
Maximum Continuous Power Off-Grid	9.6 kW with sun / 7 kW no sun ¹
Peak Off-Grid Power (10 s)	22 kW full sun / 10 kW no sun ¹
Maximum Continuous Current On-Grid	32 A output
Maximum Continuous Current Off-Grid	40 A output
Maximum Output Fault Current (1 s)	102 A
Maximum Short-Circuit Current Rating	10 kA
Load Start Capability	98 – 118 A LRA ³
Overcurrent Protection Device	50 A breaker
Output Power Factor Rating	+/- 0.9 to 1 ⁴
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 ⁵
Maximum Short Circuit Current per MPPT (Isc)	19 A ⁵
Allowable DC/AC Ratio	1.7
Round Trip Efficiency	90% ^{1,6}
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) ⁷
PV AC Metering	Revenue grade (+/-0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), PV Rapid Shutdown
Warranty	10 years

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

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

³ Load start capability may vary.

⁴ Power factor rating at max real power.

⁵ 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 / 38 A Isc.

⁶ AC to battery to AC, at beginning of life.

⁷ Cellular connectivity subject to network service coverage and signal strength.

Powerwall+ Technical Specifications

Environmental Specifications

Operating Temperature	-20°C to 50°C (-4°F to 122°F) ⁸
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-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 Type	Type 3R
Solar Assembly Ingress Rating	IP55 (Wiring Compartment)
Battery Assembly Ingress Rating	IP56 (Wiring Compartment) IP67 (Battery & Power Electronics)
Noise Level @ 1 m	< 40 db(A) optimal, < 50 db(A) maximum

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

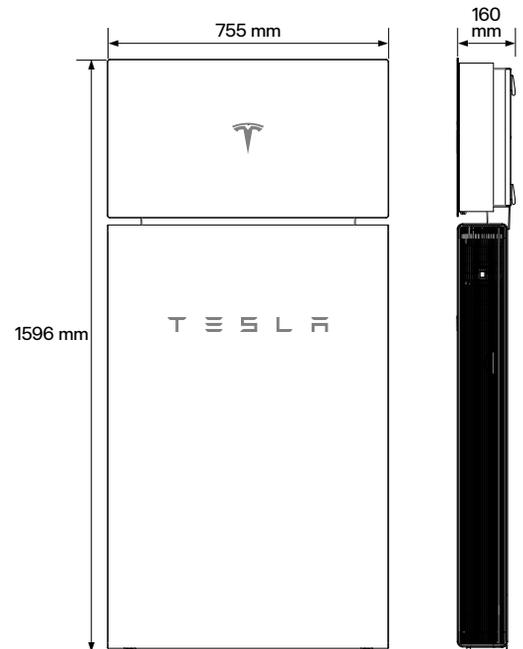
Compliance Information

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

Mechanical Specifications

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

⁹ 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	MCI-2 High Current
Nominal Input DC Current Rating (I_{MP})	13 A	13 A	15 A
Maximum Input Short Circuit Current (I_{SC})	19 A	17 A	19 A
Maximum System Voltage (PVHCS)	600 V DC	1000 V DC ¹⁰	1000 V DC ¹⁰
Maximum Disconnect Voltage ¹¹	600 V DC	165 V DC	165 V DC

¹⁰ Maximum System Voltage is limited by Powerwall+ to 600 V DC.

¹¹ Maximum Disconnect Voltage is the maximum voltage allowed across each MCI in the open position (Rapid Shutdown Initiated). An individual MCI-2 has a voltage rating of 165V but in combination (connected in the same string) their voltage ratings are additive.

RSD Module Performance

Maximum Number of Devices per String	5
Control	Power Line Excitation
Passive State	Normally Open
Maximum Power Consumption	7 W
Warranty	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

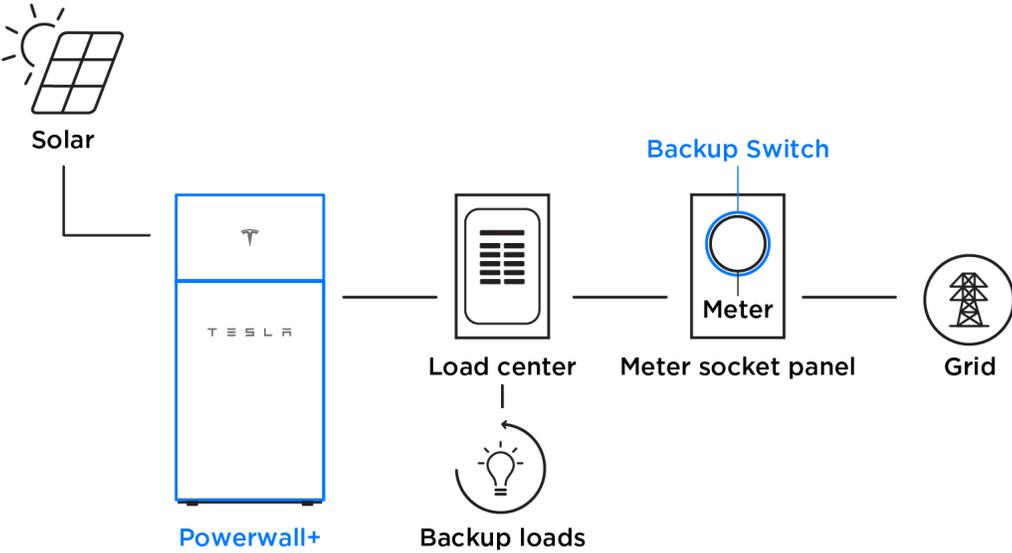
Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
RSD Initiation Method	External System Shutdown Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

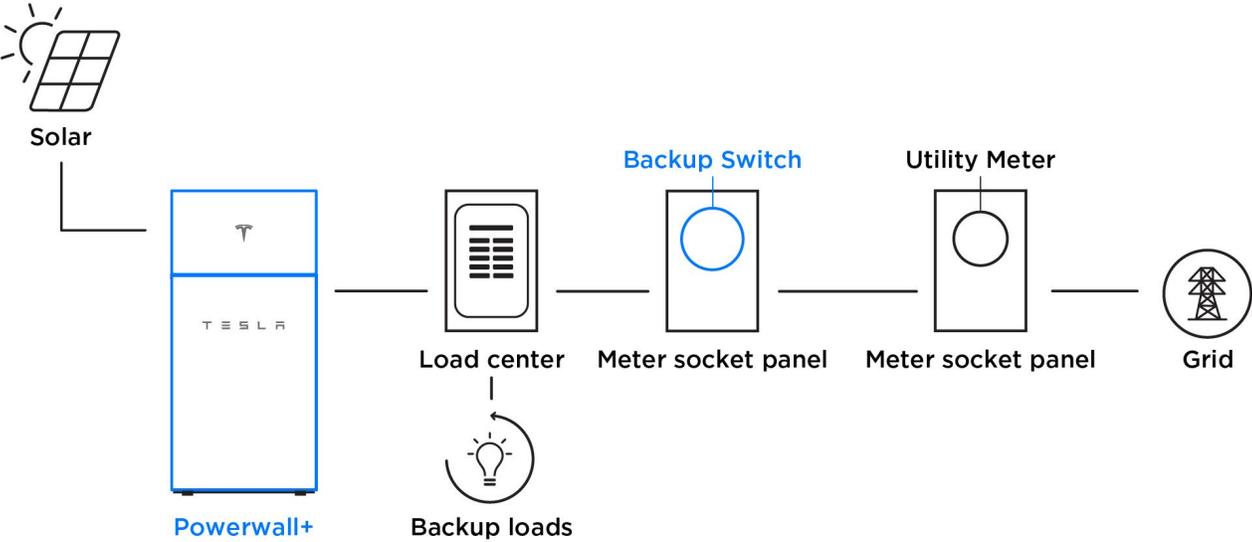
See [UL 3741 Application Addendum](#)

Powerwall+ Example System Configurations

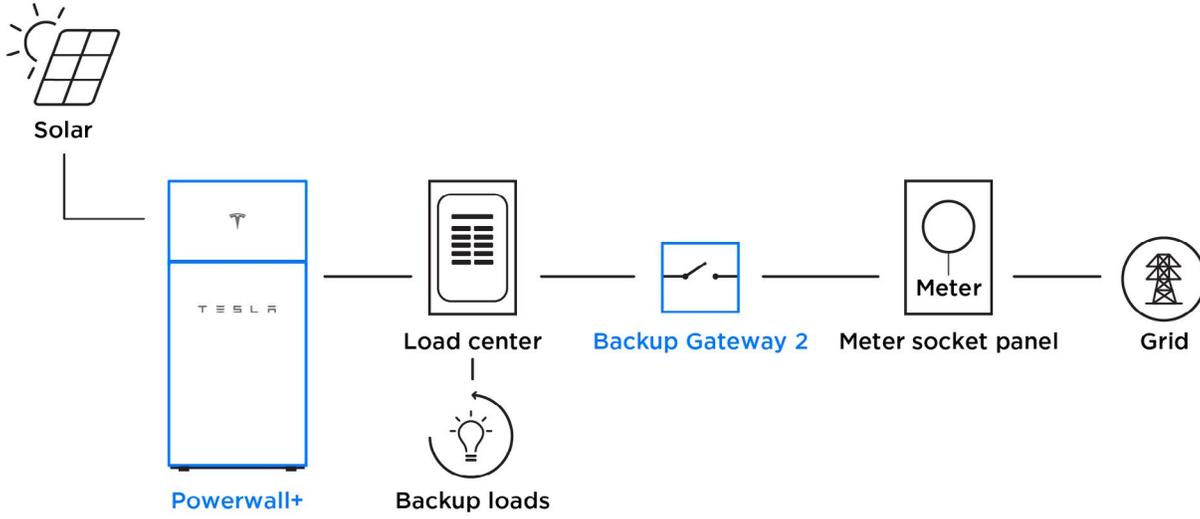
Powerwall+ with Backup Switch Installed Behind Utility Meter



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

