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+

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

Powerwall+ Model Number 1850000-xx-y
Solar Assembly Model Number 1538000-xx-y
Nominal Battery Energy 13.5 kWh
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 full sun / 5.8 kVA no sun
Maximum Continuous Power Off-Grid 9.6 kW full sun / 7 kW no sun
Peak Off-Grid Power (10 s) 22 kW full sun / 10 kW no sun
Maximum Continuous Current On-Grid 32 A output
Maximum Continuous Current Off-Grid 40 A output
Load Start Capability 98 - 118 A LRA
PV Maximum Input Voltage 600 VDC
PV DC Input Voltage Range 60 - 550 VDC
PV DC MPPT Voltage Range 60 - 480 VDC
MPPTs 4 (or 2 combined strings)
Input Connectors per MPPT 1-2-1-2
Maximum Current per MPPT (I_{mp}) 13 A (26 A for combined strings)
Maximum Short Circuit Current per MPPT (I_{sc}) 15 A
Allowable DC/AC Ratio 1.7
Overcurrent Protection Device 50 A breaker
Maximum Supply Fault Current 10 kA
Output Power Factor Rating +/- 0.9 to 1
Round Trip Efficiency 90% 4
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
PV AC Metering Revenue grade (+/-0.5%)
Protections Integrated arc fault circuit interrupter (AFCI), PV Rapid Shutdown
Warranty 10 years

MECHANICAL SPECIFICATIONS

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

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature -20°C to 50°C (-4°F to 122°F)
Recommended Temperature 0°C to 30°C (32°F to 86°F)
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

COMPLIANCE INFORMATION

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

1Values provided for 25°C (77°F).
2Load start capability may vary.
3Power factor rating at max real power.
4AC to battery to AC, at beginning of life.
5Cellular connectivity subject to network service coverage and signal strength.
6The total weight does not include the Powerwall+ bracket, which weighs an additional 9 kg (20 lb).
7Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).
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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Input DC Current Rating ($I_{MP}$)</td>
<td>12 A</td>
</tr>
<tr>
<td>Maximum Input Short Circuit Current ($I_{SC}$)</td>
<td>15 A</td>
</tr>
<tr>
<td>Maximum System Voltage</td>
<td>600 V DC</td>
</tr>
</tbody>
</table>

## RSD Module Performance

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Number of Devices per String</td>
<td>5</td>
</tr>
<tr>
<td>Control</td>
<td>Power Line Excitation</td>
</tr>
<tr>
<td>Passive State</td>
<td>Normally open</td>
</tr>
<tr>
<td>Maximum Power Consumption</td>
<td>7 W</td>
</tr>
<tr>
<td>Warranty</td>
<td>25 years</td>
</tr>
</tbody>
</table>

## Compliance Information

- **Certifications**: UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
- **RSD Initiation Method**: External System Shutdown Switch
- **Compatible Equipment**: See Compatibility Table below

## Environmental Specifications

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

## Mechanical Specifications

- **Electrical Connections**: MC4 Connector
- **Housing**: Plastic
- **Dimensions**: 125 mm x 150 mm x 22 mm (5 in x 6 in x 1 in)
- **Weight**: 350 g (0.77 lb)
- **Mounting Options**: 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.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Required Solar Shutdown Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tesla</td>
<td>Solar Roof V3</td>
<td>1 Solar Shutdown Device per 10 modules</td>
</tr>
<tr>
<td>Tesla</td>
<td>Tesla Txxxx (where xxxx = 405 to 450 W, increments of 5)</td>
<td>1 Solar Shutdown Device per 3 modules¹</td>
</tr>
<tr>
<td>Tesla</td>
<td>Tesla TxxxxH (where xxxx = 395 to 415 W, increments of 5)</td>
<td>1 Solar Shutdown Device per 3 modules</td>
</tr>
<tr>
<td>Hanwha</td>
<td>Q.PEAK DUO BLK-G5</td>
<td>1 Solar Shutdown Device per 3 modules</td>
</tr>
<tr>
<td>Hanwha</td>
<td>Q.PEAK DUO BLK-G6+</td>
<td>1 Solar Shutdown Device per 3 modules</td>
</tr>
</tbody>
</table>

**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

Solar

Load center

Backup Switch

Meter

Grid

Powerwall+

Backup loads

Powerwall+ with Backup Gateway 2 for Whole Home Backup

Solar

Load center

Backup Gateway 2

Meter

Grid

Powerwall+

Backup loads

Powerwall+ with Backup Gateway 2 for Partial Home Backup

Solar

Backup panel

Backup Gateway 2

Meter

Grid

Powerwall+

Backup loads

Non-backup panel

Non-essential loads