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

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 full sun / 5.8 kVA no sun\(^1\)
Maximum Continuous Power Off-Grid: 9.6 kW full 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
Load Start Capability: 98 - 118 A LRA\(^2\)
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\(^3\)
Maximum Short Circuit Current per MPPT (Isc): 17 A\(^3\)
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\(^4\)
Round Trip Efficiency: 90%\(^5\)
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\(^6\)
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)\(^7\)
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)\(^8\)
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)

\(^1\)Values provided for 25°C (77°F), 3.3 kW charge/discharge power.
\(^2\)Load start capability may vary.
\(^3\)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.
\(^4\)Power factor rating at max real power.
\(^5\)AC to battery to AC, at beginning of life.
\(^6\)Cellular connectivity subject to network service coverage and signal strength.
\(^7\)The total weight does not include the Powerwall+ bracket, which weighs an additional 9 kg (20 lb).
\(^8\)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 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 pushing the System Shutdown Switch if one is present.

ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model Number</th>
<th>MCI-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Input DC Current Rating ($I_{in}$)</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

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

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 |

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 |

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 Powerwall+ Rapid Shutdown: Module Selection Based on PV Hazard Control System Listing for guidance on installing Powerwall+ and Solar Shutdown Devices with other modules.

<table>
<thead>
<tr>
<th>Brand Model Required Solar Shutdown Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tesla Solar Roof V3</td>
</tr>
<tr>
<td>Tesla TxxxS (where xxx = 405 to 450 W, increments of 5) or Tesla TxxxH (where xxx = 395 to 415 W, increments of 5)</td>
</tr>
<tr>
<td>Hanwha Q.PEAK DUO BLK-GS or Q.PEAK DUO BLK-G6+</td>
</tr>
</tbody>
</table>

¹Exception: 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 Solar Shutdown Devices.
SYSTEM LAYOUTS

Powerwall+ with Backup Switch Installed Behind Utility Meter

Powerwall+ with Backup Switch Installed Downstream of Utility Meter