ABBREVIATIONS

A AMPERE AC ALTERNATING CURRENT BLDG BUILDING CONC CONCRETE DC DIRECT CURRENT EGC EQUIPMENT GROUNDING CONDUCTOR (E) EXISTING EMT ELECTRICAL METALLIC TUBING FSB FIRE SET-BACK GALV GALVANIZED GEC GROUNDING ELECTRODE CONDUCTOR GND GROUND HDG HOT DIPPED GALVANIZED I CURRENT Imp CURRENT AT MAX POWER Isc SHORT CIRCUIT CURRENT kVA KILOVOLT AMPERE KW KILOWATT LBW LOAD BEARING WALL MIN MINIMUM (N) NEW NEUT NEUTRAL NTS NOT TO SCALE OC ON CENTER PL PROPERTY LINE POI POINT OF INTERCONNECTION PV PHOTOVOLTAIC SCH SCHEDULE S STAINLESS STEEL STC STANDARD TESTING CONDITIONS TYP TYPICAL UPS UNINTERRUPTIBLE POWER SUPPLY V VOLT Vmp VOLTAGE AT MAX POWER Voc VOLTAGE AT OPEN CIRCUIT W WATT 3R NEMA 3R, RAINTIGHT

ELECTRICAL NOTES

- 1. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER.
- 2. THIS SYSTEM HAS NO BATTERIES, NO UPS. 3. A NATIONALLY-RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3.
- 4. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION. A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17.
- 5. EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRE BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5.
- 6. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B).
- 7. DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E). 8. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.

JURISDICTION NOTES

SOLAR ROOF WILL BE INSTALLED OVER BARE SOLID OR CLOSELY FITTED SHEATHING, AS FOLLOWS: •DOC PS-1 COMPLIANT / EXTERIOR GRADE PLYWOOD: MINIMUM 15/32"(11.9 MM) THICK OR •DOC POS-2 OSB SHEATHING: MINIMUM 7/16" THICK (11.1 MM) OR ·CLOSELY-FITTED SHEATHING BOARDS: MINIMUM OF 3/4"(19.1 MM) THICK

SOLAR ROOF CAN ALSO BE INSTALLED OVER COMPATIBLE EXISTING ROOFS. AS FOLLOWS: •THREE-TAB COMPOSITION SHINGLE, SINGLE LAYER • ARCHITECTURAL COMPOSITION SHINGLE, SINGLE LAYER

SOLAR ROOF WILL NOT BE INSTALLED OVER RAISED PRESIDENTIAL-STYLE COMPOSITION SHINGLE, ROOFS WITH MORE THAN ONE LAYER OF COMPOSITION SHINGLE, OR EXISTING NON-COMPOSITION SHINGLE ROOF TYPES LIKE TILED ROOFS.

LICENSE

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE 2018 NORTH CAROLINA STATE BUILDING CODE.

2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2017 NATIONAL ELECTRIC CODE.

AHJ: Harnett County

UTILITY: Central Electric Membership Corp. (NC)



BY DATE COMMENTS REV A NAME DATE COMMENTS

INDEX

ELECTRICAL LOAD CALCULATIONS

COVER SHEET

THREE LINE DIAGRAM

SITE PLAN PLACARD

SITE PLAN

CONFIDENTIAL — THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.

JOB NUMBER: JB-275816 00 MOUNTING SYSTEM: TESLA SOLAR ROOF MODIII ES: (163) Tesla # SR60T1 INVERTER: (1) 7.6 kW Tesla Inc 1538000-00-C (240V)

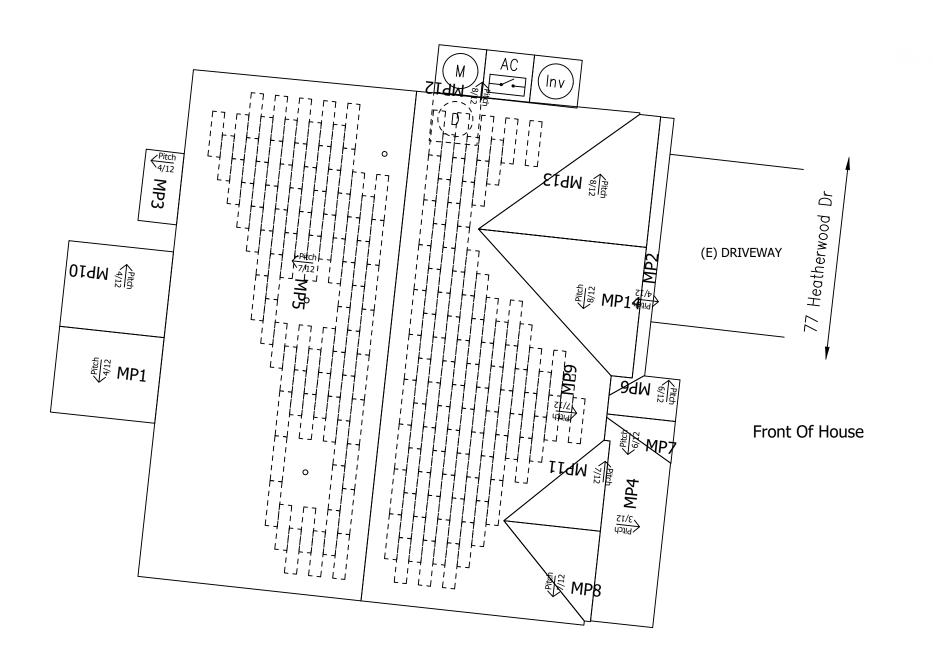
CUSTOMER: Kalim Hasan 77 Heatherwood Dr Lillington, NC 27546

9109850182

9.53061 KW PV ARRAY

PAGE NAME: COVER SHEET Mike Haugan

SHEET: DATE: 9/2/2021 TESLA



		PITCH: 30° (7:12)	ARRAY PITCH: 30° (7:12)
	MP9	AZIMUTH: 96 AF	RRAY AZIMUTH: 96
		MATERIAL: Solar Roof	STORY: Two
		PITCH: 30° (7:12)	ARRAY PITCH: 30° (7:12)
	MP5	AZIMUTH: 276 AF	RRAY AZIMUTH: 276
		MATERIAL: Solar Roof	STORY: Two

LEGEND

(E) UTILITY METER & WARNING LABEL

INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS

DC DISCONNECT & WARNING LABELS

AC DISCONNECT & WARNING LABELS

B DC JUNCTION/COMBINER BOX & LABELS

DISTRIBUTION PANEL & LABELS

LOAD CENTER & WARNING LABELS

DEDICATED PV SYSTEM METER

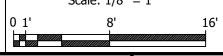
RAPID SHUTDOWN

STANDOFF LOCATIONS
CONDUIT RUN ON EXTERIOR
CONDUIT RUN ON INTERIOR
GATE/FENCE

HEAT PRODUCING VENTS ARE RED

INTERIOR EQUIPMENT IS DASHED







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JOB NUMBER: JB—275816 00	customer: Kalim
MOUNTING SYSTEM: TESLA SOLAR ROOF	77 He
MODULES: (163) Tesla # SR60T1	Lilling†
INVERTER: (1) 7.6 kW Tesla Inc 1538000-00-C (240V)	91098

CUSTOMER:
Kalim Hasan
77 Heatherwood Dr
Lillington, NC 27546
9109850182

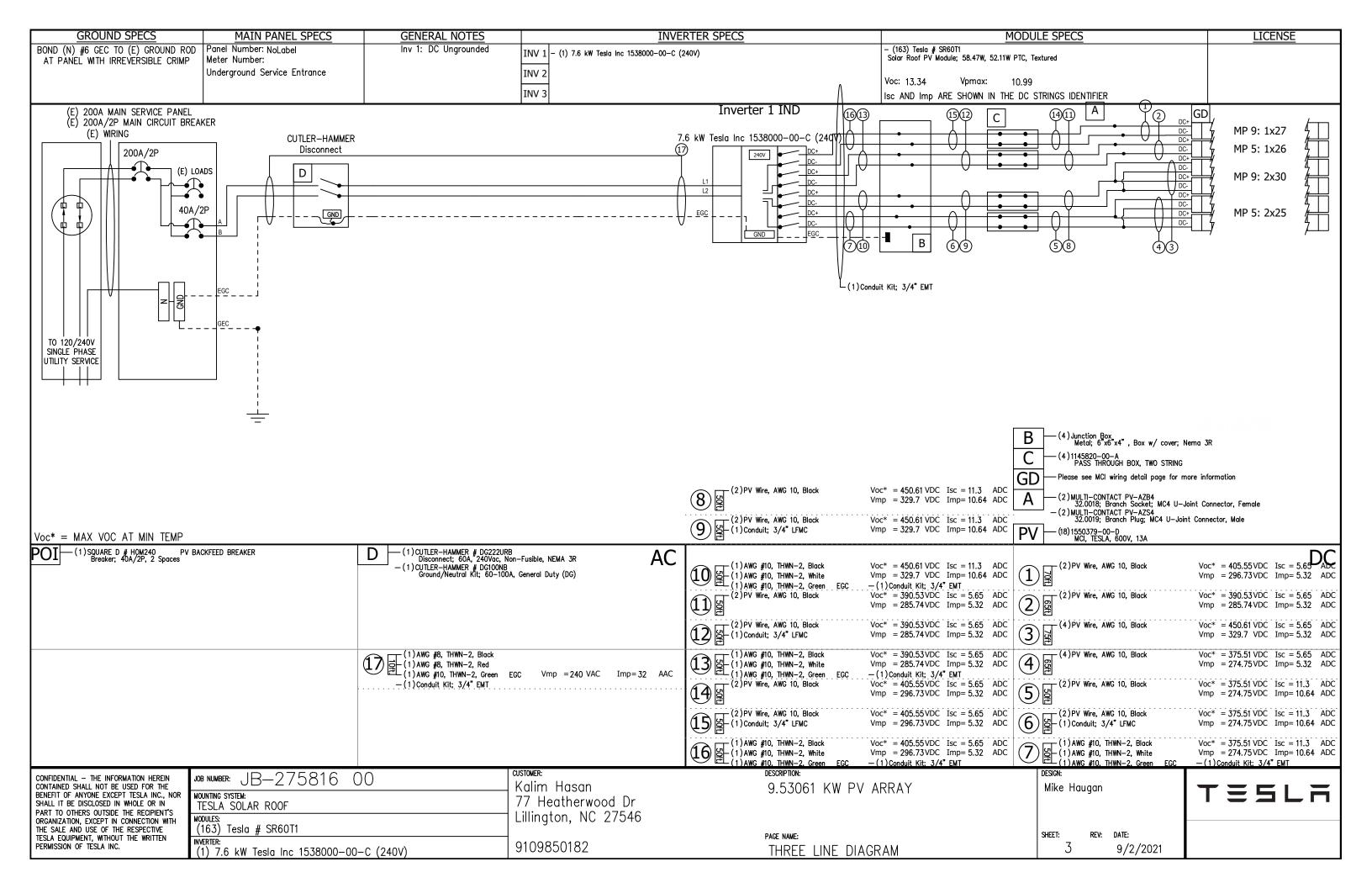
PAGE NAME:
SITE PLAN

Mike Haugan

SHEET: REV: DATE:
2 9/2/2021

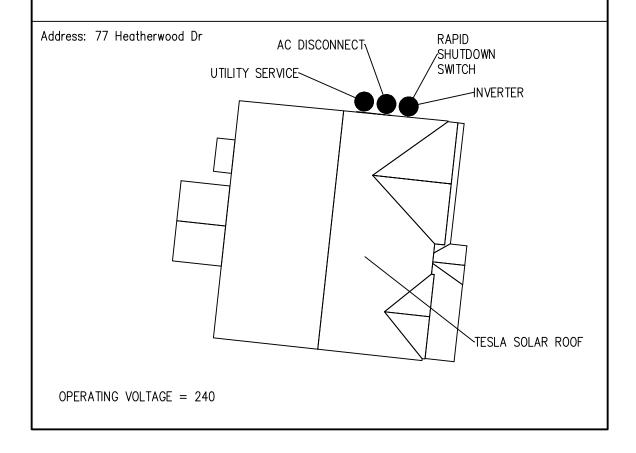
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TESLA



SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF"
POSITION TO SHUT DOWN PV SYSTEM AND REDUCE
SHOCK HAZARD IN THE ARRAY



JOB NUMBER: JB—275816 00	customer: Kalim Hasan
MOUNTING SYSTEM: TESLA SOLAR ROOF	77 Heatherwood Dr
MODULES: (163) Tesla # SR60T1	Lillington, NC 27546
inverter: (1) 7.6 kW Tesla Inc 1538000-00-C (240V)	9109850182
	_

DESCRIPTION:				
9.53061	ΚW	PV	ARRAY	
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PAGE NAME:				

DESIGN.			
Mike	Haugan		

TESLA

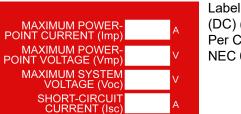
PAGE NAME: SITE PLAN PLACARD SHEET: REV: DATE: 5 9/2/2021

WARNING: PHOTOVOLTAIC POWER SOURCE

Label Location: (C)(CB)(JB) Per Code: NEC 690.31.G.3

DC PHOTOVOLTAIC DISCONNECT

Label Location: (DC)(INV) Per Code: NEC 690.13.B



Label Location: (DC) (INV) Per Code: NEC 690.53

AC PHOTOVOLTAIC DISCONNECT

Label Location: (AC)(POI) Per Code: NEC 690.13.B



Label Location: (AC) (POI) Per Code: NEC 690.54

▲ WARNING

ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE
AND LOAD SIDES MAY BE
ENERGIZED IN THE OFF POSITION

Label Location: (AC)(POI) Per Code: 690.13.B

▲ WARNING

INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE Label Location: (POI) Per Code: NEC 705.12.B.2.3.B

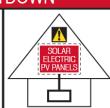
A WARNING

THIS EQUIPMENT FED BY
MULTIPLE SOURCES. TOTAL
RATING OF ALL OVER CURRENT
DEVICES, EXCLUDING MAIN
SUPPLY OVERCURRENT DEVICE,
SHALL NOT EXCEED AMPACITY
OF BUSBAR.

Label Location: (MP) Per Code: NEC 705.12.B.2.3.C

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

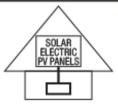
TURN RAPID
SHUTDOWN SWITCH
TO THE "OFF"
POSITION TO SHUT
DOWN CONDUCTORS
OUTSIDE THE ARRAY.
CONDUCTORS WITHIN
THE ARRAY REMAIN
ENERGIZED IN SUNLIGHT



Label Location: ABB/Delta Solivia Inverter Per Code: 690.56(C)(1)(b)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY.



Label Location: SolarEdge and,Delta M-Series and,Telsa Inverter Per Code: 690.56(C)(1)(a)

(AC): AC Disconnect

(C): Conduit

(CB): Combiner Box (D): Distribution Panel

(DC): DC Disconnect (IC): Interior Run Conduit

(INV): Inverter With Integrated DC Disconnect

(LC): Load Center (M): Utility Meter

(POI): Point of Interconnection

Label Set

TESLA

GENERAL NOTES

- DRAWING OF STANDARD MCI WIRING DETAIL FOR ANY GIVEN STRING LENGTH
- IF INITIATED, RAPID SHUTDOWN OCCURS WITHIN 30 SECONDS OF ACTIVATION AND LIMITS VOLTAGE ON THE ROOF TO NO GREATER THAN 165V (690.12.B.2.1)
- MID CIRCUIT INTERRUPTER (MCI) IS A UL 1741 PVRSE CERTIFIED RAPID SHUTDOWN DEVICE (RSD)

RETROFIT PV MODULES

- MCIS ARE LOCATED AT ROOF LEVEL, JUST UNDER THE PV MODULES IN ACCORDANCE WITH 690.12 REQUIREMENTS
- THE QUANTITY OF MCIS PER STRING IS DETERMINED BY STRING LENGTH
 - NUMBER OF MODULES BETWEEN MCI UNITS = 0-3
 - MAXIMUM NUMBER OF MODULES PER MCI UNIT = 3
 - MINIMUM NUMBER MCI UNITS = MODULE COUNT/3

DC+ MCI J-BOX J-BOX J-BOX MCI J-BOX

*Exception: Tesla (Longi) modules installed in locations where the max Voc for 3 modules at low design temperature exceeds 165V shall be limited to 2 modules between MCls.

PLEASE REFER TO MCI CUTSHEET AND PVRSA INSERT FOR MORE INFORMATION



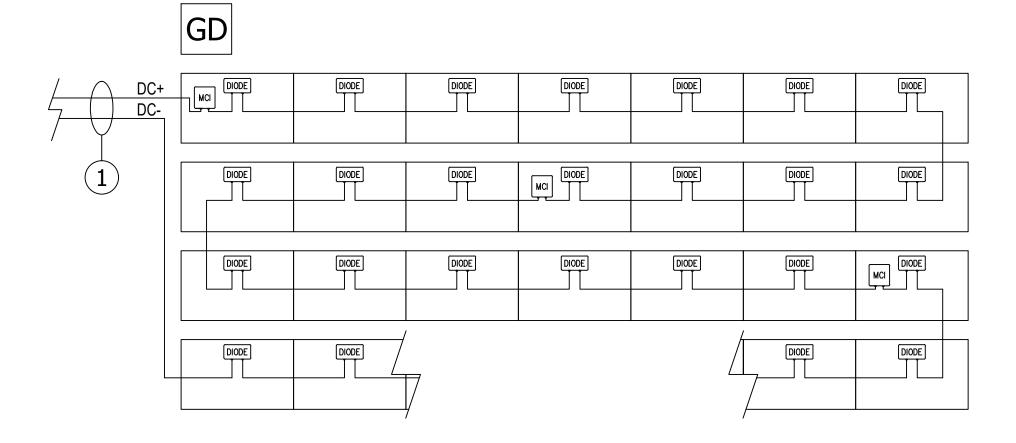
TESLA

GENERAL NOTES

- DRAWING OF STANDARD MCI WIRING DETAIL FOR ANY GIVEN STRING LENGTH
- IF INITIATED, RAPID SHUTDOWN OCCURS WITHIN 30 SECONDS OF ACTIVATION AND LIMITS VOLTAGE ON THE ROOF TO NO GREATER THAN 165V (690.12.B.2.1)
- MID CIRCUIT INTERRUPTER (MCI) IS A UL 1741 PVRSE CERTIFIED RAPID SHUTDOWN DEVICE (RSD)

SOLAR ROOF TILES

- MCIS ARE LOCATED AT DECK LEVEL, JUST UNDER THE TILES IN ACCORDANCE WITH 690.12 REQUIREMENTS
- THE QUANTITY OF MCIS PER STRING IS DETERMINED BY STRING LENGTH
 - NUMBER OF TILES BETWEEN MCI UNITS = 0-10
 - MAXIMUM NUMBER OF TILES PER MCI UNIT = 10
 - MINIMUM NUMBER MCI UNITS = TILE COUNT/10





SOLAR INVERTER

3.8 kW | 7.6 kW

Tesla Solar Inverter completes the Tesla home solar system, converting DC power from solar to AC power for home consumption. Tesla's renowned expertise in power electronics has been combined with robust safety features and a simple installation process to produce an outstanding solar inverter that is compatible with both Solar Roof and traditional solar panels. Once installed, homeowners use the Tesla mobile app to manage their solar system and monitor energy consumption, resulting in a truly unique ecosystem experience.

KEY FEATURES

- Built on Powerwall 2 technology for exceptional efficiency and reliability
- Wi-Fi, Ethernet, and cellular connectivity with easy over-the-air updates
- Designed to integrate with Tesla Powerwall and Tesla App
- 3.8 kW and 7.6 kW models available

SOLAR INVERTER

Tesla Solar Inverter provides DC to AC conversion and integrates with the Tesla ecosystem, including Solar Panels, Solar Roof, Powerwall, and vehicle charging, to provide a seamless sustainable energy experience.

KEY FEATURES

- Integrated rapid shutdown, arc fault, and ground fault protection
- No neutral wire simplifies installation
- 2x the standard number of MPPTs for high production on complex roofs



ELECTRICAL SPECIFICATIONS

MODEL NUMBER	1534000-xx-y	1538000-xx-y	
OUTPUT (AC)	3.8 kW	7.6 kW	
Nominal Power	3,800 W	7,600 W	
Maximum Apparent Power	3,328 VA at 208 V 3,840 VA at 240 V	.,	
Maximum Continuous Current	16 A	32 A	
Breaker (Overcurrent Protection)	20 A	40 A	
Nominal Power Factor	1 - 0.9 (leading / lagging)		
THD (at Nominal Power)	<5%		
INPUT (DC)			
MPPT	2	4	
Input Connectors per MPPT	1-2	1-2-1-2	
Maximum Input Voltage	600 VDC		
DC Input Voltage Range	60 - 55	60 - 550 VDC	
DC MPPT Voltage Range	60 - 480 VDC ¹		
Maximum Current per MPPT (I _{mp})	13 A		
Maximum Short Circuit Current per MPPT (I _{sc})	15 A		

PERFORMANCE SPECIFICATIONS

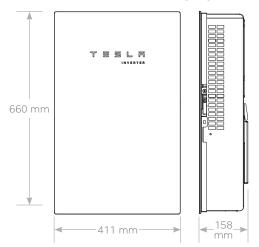
Peak Efficiency	98% at 208 V	98.4% at 208 V	
	98.1% at 240 V	98.6% at 240 V	
CEC Efficiency	97.5% at 208 V	97.5% at 208 V	
	97.5% at 240 V	98.0% at 240 V	
Allowable DC/AC Ratio	1.	7	
Customer Interface	Tesla Mobile App		
Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n),		
	Ethernet, Cellular (I	LTE/4G) ²	
AC Remote Metering Support	Wi-Fi (2.4 GHz, 802	2.11 b/g/n),	
	RS-485		
Protections	Integrated arc fault	circuit interrupter	
	(AFCI), Rapid Shut	down	
Supported Grid Types	60 Hz, 240 V Split F	Phase	
	60 Hz, 208 V Wye		

¹ Maximum current.

MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)
Weight	52 lb ³
Mounting options	Wall mount (bracket)

³ Door and bracket can be removed for a mounting weight of 37 lb.



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-30°C to 45°C (-22°F to 113°F) ⁴
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD2 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 db(A) nominal, < 50 db(A) maximum

 $^{^4}For$ the 7.6 kW Solar Inverter, performance may be de-rated to 6.2 kW at 240 V or 5.37 kW at 208 V when operating at temperatures greater than 459C

COMPLIANCE INFORMATION

Grid Certifications	UL 1741, UL 1741 SA, IEEE 1547, IEEE 1547.1
Safety Certifications	UL 1741 PVRSS, UL 1699B, UL 1998 (US), UL 3741
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

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 $^{^{2}\,\}mbox{Cellular}$ connectivity subject to network operator service coverage and signal strength.

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 the Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.



ELECTRICAL SPECIFICATIONS

Nominal Input DC Current Rating (I_{MP})	12 A
Maximum Input Short Circuit Current (I_{sc})	15 A
Maximum System Voltage	600 V DC

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

COMPLIANCE INFORMATION

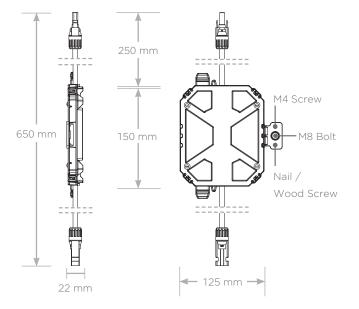
Certifications	UL 1741 PVRSE, UL 3741,		
	PVRSA (Photovoltaic Rapid		
	Shutdown Array)		
RSD Initiation Method	PV System AC Breaker or Switch		
Compatible Equipment	See Compatibility Table below		

ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature	-40°C to 50°C (-40°F to 122°F)
Storage Temperature	-30°C to 70°C (-22°F to 158°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 Tesla Solar Inverter and Solar Shutdown Devices. See the Tesla Solar Inverter Installation Manual for detailed instructions and for guidance on installing Tesla Solar Inverter 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 modules¹
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

'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.

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TESLA

SOLAR ROOF

DATASHEET

FOR FULL TEAR-OFF AND OVERLAY INSTALLATIONS



14-CELL PV MODULE

MODEL #: SR60T1



ELECTRICAL SPECIFICATIONS

Maximum open circuit voltage rating of connected branch circuits per diode (at STC): 13.34 V Maximum series fuse rating: 10 A Maximum system voltage: 600 V

Irra	adiance (W/m²)	Temp. (Celsius)	Voc (V)	Vmp (V)	Isc (A)	Imp (A)	Pmax (W)
10	000	25	13.34	10.99	5.65	5.32	58.47

These electrical characteristics are within \pm 5% of the indicated values of Isc, Voc, and Pmax under standard test conditions (irradiance of 1000 W/m², AM 1.5 spectrum, and a cell temperature of 25 °C or 77 °F).

MECHANICAL SPECIFICATIONS

Dimensions: 430 mm x 1140 mm

Thickness: Appx. 5 mm module thickness with 35.3 mm maximum height from deck

Principal Materials: Glass, Polymers, Fiberglass and Silicon Installed System Weight: Textured Glass: 15 kg/m² or 3.1 psf

(Installed weight includes all components of system above roof sheathing or existing roof covering)

ROOF PITCH RANGE

2:12 - 24:12

Certain features can be installed up to 62:12

CERTIFICATIONS

UL 61730 (UL Listed); UL 9703 (UL Listed); UL 1741 (UL Listed)

UL 790 Class A (ETL Listed); ASTM D3161 Class F (ETL Listed); TAS100 (ETL Listed)

T = 5 L 7

SHEATHING SPECIFICATIONS

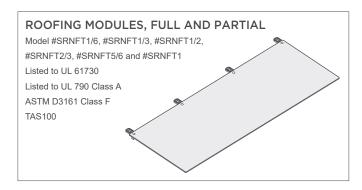
Solar Roof will be installed over bare solid or closely fitted sheathing, as follows:

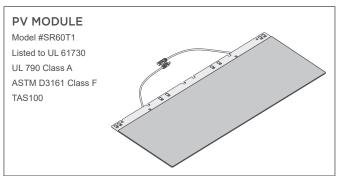
- DOC PS-1 compliant / exterior grade plywood: minimum 15/32" (11.9 mm) thick or
- DOC POS-2 OSB sheathing: minimum 7/16" thick (11.1 mm) or
- Closely-fitted sheathing boards: minimum of 3/4" (19.1 mm) thick

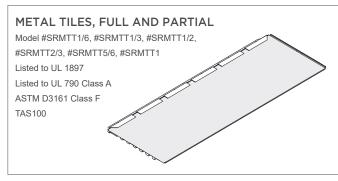
Solar Roof can also be installed over compatible existing roofs, as follows:

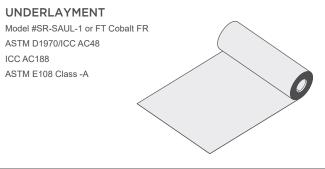
- Three-tab composition shingle, single layer
- Architectural composition shingle, single layer

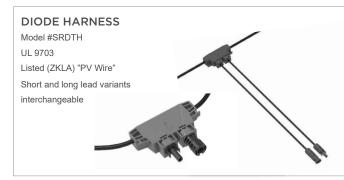
Solar Roof will not be installed over raised presidential-style composition shingle, roofs with more than one layer of composition shingle, or existing non-composition shingle roof types like tiled roofs.

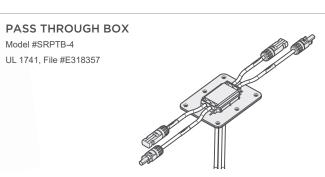












T = 5 L 7 SOLAR ROOF FLUSH MOUNT DATASHEET 3

