



## HISTORIC PRESERVATION COMMISSION

Marc Elrich  
*County Executive*

Sandra I. Heiler  
*Chairman*

Date: April 27, 2020

### MEMORANDUM

TO: Hadi Mansouri  
Department of Permitting Services

FROM: Dan Bruechert  
Historic Preservation Section  
Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit #909007 – Roof Replacement (Solar)

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The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was **approved** at the April 22, 2020 HPC meeting.

The HPC staff has reviewed and stamped the attached construction drawings.

THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE ABOVE APPROVED HAWP CONDITIONS AND MAY REQUIRE APPROVAL BY DPS OR ANOTHER LOCAL OFFICE BEFORE WORK CAN BEGIN.

Applicant: Steven Shira  
Address: 54 Walnut Avenue, Takoma Park

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits, the applicant must contact this Historic Preservation Office if any changes to the approved plan are made. Once work is complete the applicant will contact Dan Bruechert at 301.563.3400 or [dan.bruechert@montgomeryplanning.org](mailto:dan.bruechert@montgomeryplanning.org) to schedule a follow-up site visit.



ABBREVIATIONS	ELECTRICAL NOTES	JURISDICTION NOTES
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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, RAIN TIGHT

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.

APPROVED

Montgomery County  
Historic Preservation Commission



**REVIEWED**

By Dan.Bruechert at 12:23 pm, Apr 27, 2020

LICENSE	GENERAL NOTES
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#11805 MASTER ELECTRICIAN  
Nicholaus Meyers

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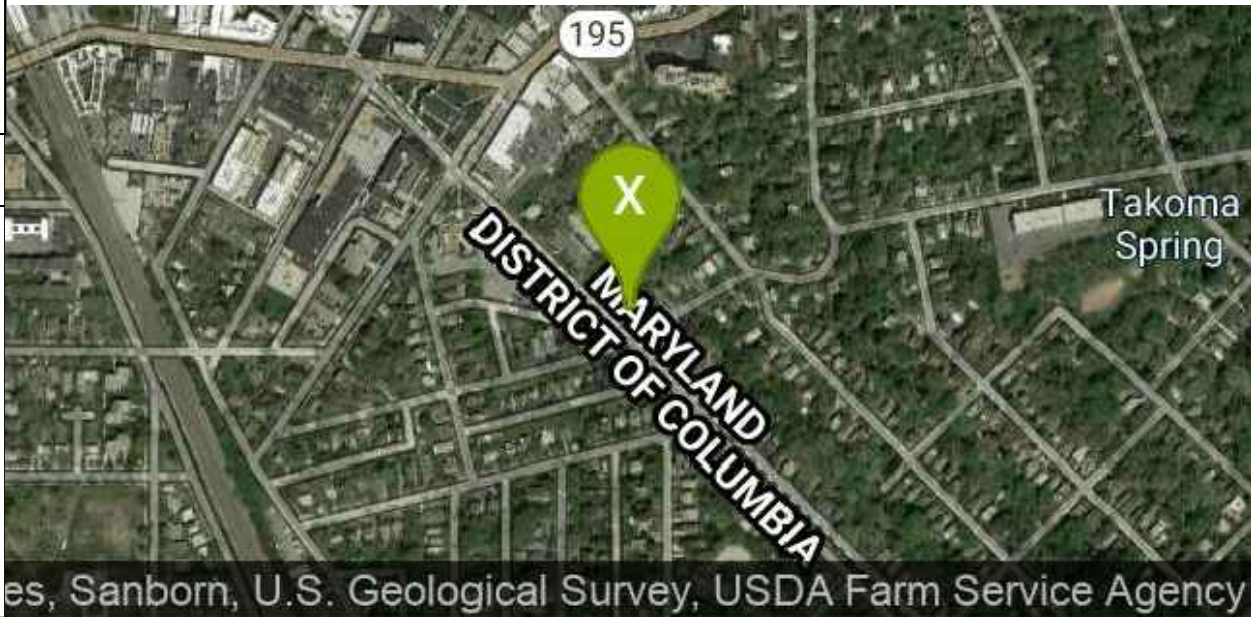
AHJ: Takoma Park

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UTILITY: PEPCO (MD)

1. ALL WORK SHALL COMPLY WITH THE 2015 IBC AND 2015 IRC. 2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2014 NATIONAL ELECTRIC CODE.

VICINITY MAP	INDEX
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Sheet 1	COVER SHEET
Sheet 2	SITE PLAN
Sheet 3	THREE LINE DIAGRAM
Cutsheets Attached	

REV	BY	DATE	COMMENTS
REV A	NAME	DATE	COMMENTS
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*

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-2094576 00

MOUNTING SYSTEM:  
TESLA SOLAR ROOF

MODULES:  
(118) TESLA # SR60T1

INVERTER:  
(1) Delta Electronics # M8-TL-US [240V]

CUSTOMER:  
Steve Shira  
54 Walnut Ave  
Takoma Park, MD 20912

5042201246

DESCRIPTION:  
6.89946 KW PV ARRAY

PAGE NAME:  
COVER SHEET

DESIGN:  
Lilly-Jeanne Gurney

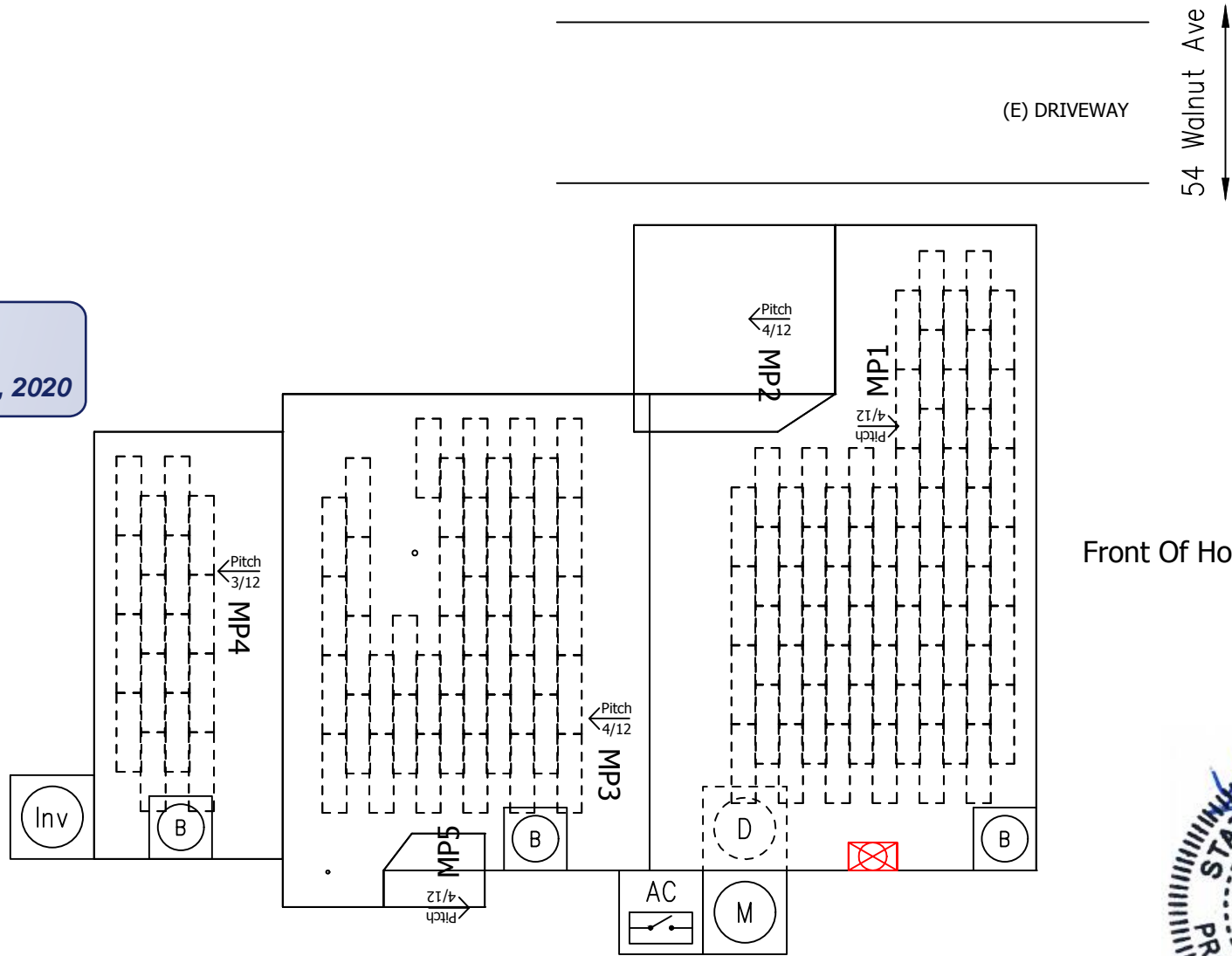
SHEET: 1 REV: a DATE: 2/22/2020



INSTALLER SHALL VERIFY SHEATHING TO BE MINIMUM 3/8" AND RAFTER SPACING TO BE A MAXIMUM OF 24" OC IN FIELD.

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 Montgomery County  
 Historic Preservation Commission  


**REVIEWED**  
 By Dan.Bruechert at 12:23 pm, Apr 27, 2020



Front Of House



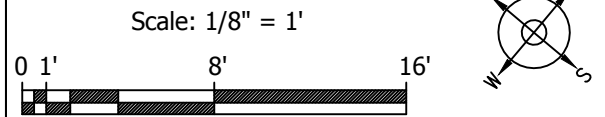
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAW OF THE STATE OF MARYLAND, LICENSE NO. 49464, EXPIRATION DATE: 05/26/2020

MP1	PITCH: 16 AZIMUTH: 140 MATERIAL: Solar Roof	ARRAY PITCH: 16 ARRAY AZIMUTH: 140 STORY: 2 Stories
MP3	PITCH: 16 AZIMUTH: 320 MATERIAL: Solar Roof	ARRAY PITCH: 16 ARRAY AZIMUTH: 320 STORY: 2 Stories
MP4	PITCH: 10 AZIMUTH: 320 MATERIAL: Solar Roof	ARRAY PITCH: 10 ARRAY AZIMUTH: 320 STORY: 2 Stories

**LEGEND**

- (E) UTILITY METER & WARNING LABEL
- INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS
- DC DISCONNECT & WARNING LABELS
- AC DISCONNECT & WARNING LABELS
- 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

**SITE PLAN**



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JOB NUMBER: JB-2094576 00  
 MOUNTING SYSTEM: TESLA SOLAR ROOF  
 MODULES: (118) TESLA # SR60T1  
 INVERTER: (1) Delta Electronics # M8-TL-US [240V]

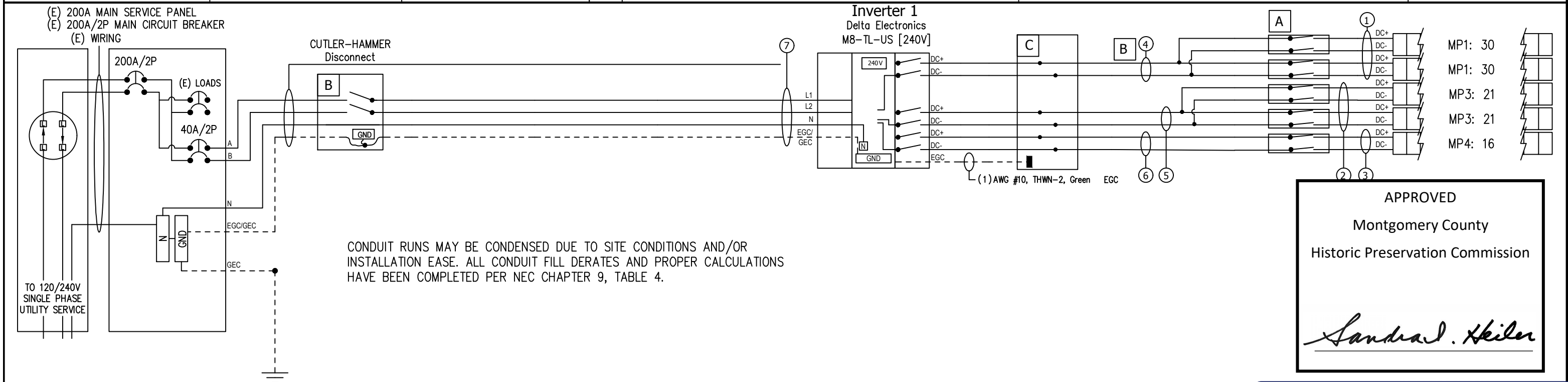
CUSTOMER: Steve Shira  
 54 Walnut Ave  
 Takoma Park, MD 20912  
 5042201246

DESCRIPTION: 6.89946 KW PV ARRAY  
 PAGE NAME: SITE PLAN

DESIGN: Lilly-Jeanne Gurney  
 SHEET: 2 REV: a DATE: 2/22/2020



GROUND SPECS	MAIN PANEL SPECS	GENERAL NOTES	INVERTER SPECS	MODULE SPECS	LICENSE
BOND (N) #8 GEC TO (N) GROUND ROD AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: HOMC30UC(200A) Meter Number: NXA112136564 Underground Service Entrance	Inv 1: DC Ungrounded	INV 1 - (1) Delta Electronics # M8-TL-US [240V] Inverter; 7680W, 240V, 97.5% Inverter; 7680W, 240V/208V, 97.5%, Zigbee INV 2 INV 3	(1) 5014123-00-B TESLA SRV3 Voc: 13.34 Vpmax: 10.99 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	#11805 MASTER ELECTRICIAN Nicholaus Meyers



DC Conduit Reference Chart		
Qty Conductors	Raceway if THWN-2	Raceway if PV Wire
<=(5) AWG #10		3/4" EMT or LFMC
<=(7) AWG #10	3/4" EMT or LFMC	1" EMT or LFMC
<=(9) AWG #10		1-1/4" EMT or LFMC

<b>POI</b> (1) SQUARE D # HOM240 Breaker; 40A/2P, 2 Spaces (1) Ground Rod 5/8" x 8", Copper	<b>B</b> (1) CUTLER-HAMMER # DG222URB Disconnect; 60A, 240Vac, Non-Fusible, NEMA 3R (1) CUTLER-HAMMER # DG100NB Ground/Neutral Kit; 60-100A, General Duty (DG)	<b>AC</b>	<b>C</b> (3) Junction Box Metal; 6" x 6" x 4" , Box w/ cover; Nema 1	<b>A</b> (12) Delta # GPI00010114 EGC/GEC MCI Rapid Shutdown, 600V, 12A, NEMA 4X, MC4, for Solar Roof	<b>DC</b>
				<b>B</b> (2) MULTI-CONTACT PV-AZB4 32.0018; Branch Socket; MC4 U-Joint Connector, Female (2) MULTI-CONTACT PV-AZS4 32.0019; Branch Plug; MC4 U-Joint Connector, Male	
				<b>PTB</b> (3) 1145820-00-R PASS THROUGH BOX, TWO STRING, REWORKED	
	<b>7</b> (1) AWG #8, THWN-2, Black (1) AWG #8, THWN-2, Red (1) AWG #10, THWN-2, White (1) AWG #8, THWN-2, Green Vmp = 240 VAC Imp = 32 AAC (1) Conduit Kit; 3/4" EMT		<b>4</b> (1) AWG #10, Black (1) AWG #10, Red Voc* = 466.53VDC Isc = 11.3 ADC Vmp = 329.70VDC Imp = 10.64 ADC	<b>1</b> (4) AWG #10, PV Wire, 600V, Black Voc* = 466.53VDC Isc = 5.65 ADC Vmp = 329.70VDC Imp = 5.32 ADC	
			<b>5</b> (1) AWG #10, Black (1) AWG #10, Red Voc* = 326.57VDC Isc = 11.3 ADC Vmp = 230.79VDC Imp = 10.64 ADC	<b>2</b> (4) AWG #10, PV Wire, 600V, Black Voc* = 326.57VDC Isc = 5.65 ADC Vmp = 230.79VDC Imp = 5.32 ADC	
			<b>6</b> (1) AWG #10, Black (1) AWG #10, Red Voc* = 248.82VDC Isc = 5.65 ADC Vmp = 175.84 VDC Imp = 5.32 ADC	<b>3</b> (2) AWG #10, PV Wire, 600V, Black Voc* = 248.82VDC Isc = 5.65 ADC Vmp = 175.84 VDC Imp = 5.32 ADC	

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	MOUNTING SYSTEM: TESLA SOLAR ROOF				
	MODULES: (118) TESLA # SR60T1				
	INVERTER: (1) Delta Electronics # M8-TL-US [240V]	5042201246	PAGE NAME: THREE LINE DIAGRAM	SHEET: 3 REV: DATE: a 2/22/2020	17

WARNING: PHOTOVOLTAIC POWER SOURCE

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

PHOTOVOLTAIC DC  
DISCONNECT

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.14.C.2

WARNING

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

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

WARNING

ELECTRIC SHOCK HAZARD  
THE DC CONDUCTORS OF THIS  
PHOTOVOLTAIC SYSTEM ARE  
UNGROUND AND  
MAY BE ENERGIZED

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.35(F)  
TO BE USED WHEN  
INVERTER IS  
UNGROUND

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Montgomery County  
Historic Preservation Commission

*Sandra L. Heiler*

REVIEWED

By Dan.Bruechert at 12:23 pm, Apr 27, 2020

MAXIMUM POWER-  
POINT CURRENT (Imp)  A  
MAXIMUM POWER-  
POINT VOLTAGE (Vmp)  V  
MAXIMUM SYSTEM  
VOLTAGE (Voc)  V  
SHORT-CIRCUIT  
CURRENT (Isc)  A

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

WARNING

INVERTER OUTPUT  
CONNECTION  
DO NOT RELOCATE  
THIS OVERCURRENT  
DEVICE

Label Location:  
(POI)  
Per Code:  
NEC 690.64.B.7

PHOTOVOLTAIC SYSTEM  
EQUIPPED WITH RAPID  
SHUTDOWN

Label Location:  
(INV)  
Per Code:  
CEC 690.56(C)

WARNING

ELECTRIC SHOCK HAZARD  
IF A GROUND FAULT IS INDICATED  
NORMALLY GROUNDED  
CONDUCTORS MAY BE  
UNGROUND AND ENERGIZED

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.5(C)

CAUTION

PHOTOVOLTAIC SYSTEM  
CIRCUIT IS BACKFED

Label Location:  
(D) (POI)  
Per Code:  
NEC 690.64.B.4

WARNING

ELECTRICAL SHOCK HAZARD  
DO NOT TOUCH TERMINALS  
TERMINALS ON BOTH LINE AND  
LOAD SIDES MAY BE ENERGIZED  
IN THE OPEN POSITION  
DC VOLTAGE IS  
ALWAYS PRESENT WHEN  
SOLAR MODULES ARE  
EXPOSED TO SUNLIGHT

Label Location:  
(DC) (CB)  
Per Code:  
NEC 690.17(4)

CAUTION

DUAL POWER SOURCE  
SECOND SOURCE IS  
PHOTOVOLTAIC SYSTEM

Label Location:  
(POI)  
Per Code:  
NEC 690.64.B.4

PHOTOVOLTAIC AC  
DISCONNECT

Label Location:  
(AC) (POI)  
Per Code:  
NEC 690.14.C.2

PHOTOVOLTAIC POINT OF  
INTERCONNECTION

WARNING: ELECTRIC SHOCK  
HAZARD. DO NOT TOUCH  
TERMINALS. TERMINALS ON  
BOTH THE LINE AND LOAD SIDE  
MAY BE ENERGIZED IN THE OPEN  
POSITION. FOR SERVICE  
DE-ENERGIZE BOTH SOURCE  
AND MAIN BREAKER.  
PV POWER SOURCE

Label Location:  
(POI)  
Per Code:  
NEC 690.17.4; NEC 690.54

MAXIMUM AC  
OPERATING CURRENT  A  
MAXIMUM AC  
OPERATING VOLTAGE  V

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

MAXIMUM AC  
OPERATING CURRENT  A  
MAXIMUM AC  
OPERATING VOLTAGE  V

(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

# SOLARGLASS

## DATASHEET

**REVIEWED**

By Dan.Bruechert at 12:23 pm, Apr 27, 2020

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 Montgomery County  
 Historic Preservation Commission

*Sandra L. Heiler*



## ROOFING SYSTEM SPECIFICATIONS

### CERTIFICATIONS

UL Listed	ETL Listed
UL/IEC 61730	UL 790 Class A
UL 9703	TAS100
UL 1741	ASTM D3161 Class F

### ELECTRICAL CHARACTERISTICS

Maximum open circuit voltage rating of connected branch circuits per diode (at STC): 13.34 V  
 Maximum series fuse rating: 15 A  
 Maximum system voltage: 600 V

### ROOF PITCH RANGE

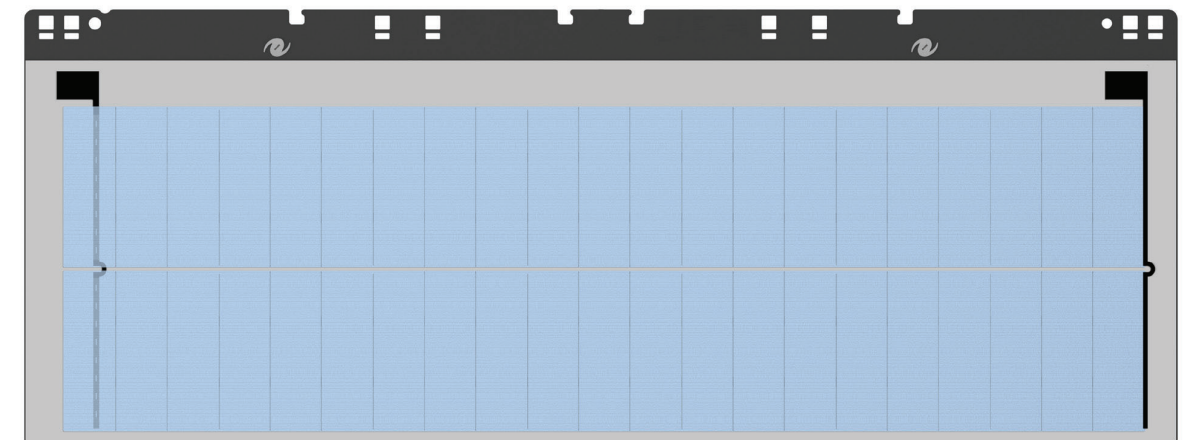
2:12 - 12:12

## MODULE SPECIFICATIONS

### MODEL #SR60T1 14-CELL MODULE

Irradiance (W/m <sup>2</sup> )	Temp. (Celsius)	Voc (V)	Vmp (V)	Isc (A)	Imp (A)	Pmax (W)
1000	25	13.34	10.99	5.65	5.32	58.47

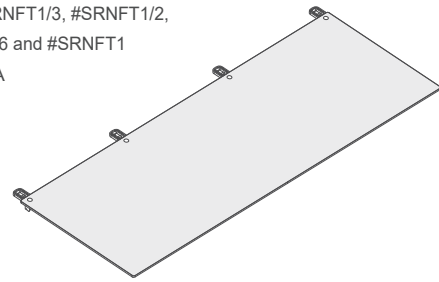
These electrical characteristics are within ± 5% of the indicated values of Isc, Voc, and Pmax under standard test conditions (irradiance of 1000 W/m<sup>2</sup>, AM 1.5 spectrum, and a cell temperature of 25 °C or 77 °F).



Dimensions	430 mm x 1140 mm x 34.5 mm
Principal Materials	Glass, Polymers, Fiberglass and Silicon
Installed System Weight	Textured Glass: 16.4 kg/m <sup>2</sup> or 3.4 psf Installed weights include all components of system above roof sheathing

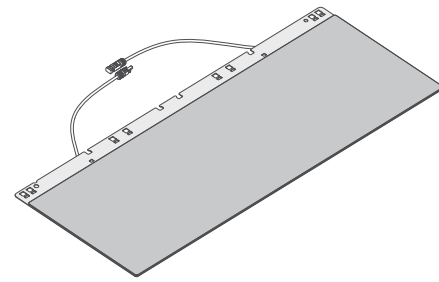
**ROOFING MODULES, FULL AND PARTIAL**

Model #SRNFT1/6, #SRNFT1/3, #SRNFT1/2,  
#SRNFT2/3, #SRNFT5/6 and #SRNFT1  
Listed to UL 790 Class A  
ASTM D3161 Class F  
TAS100



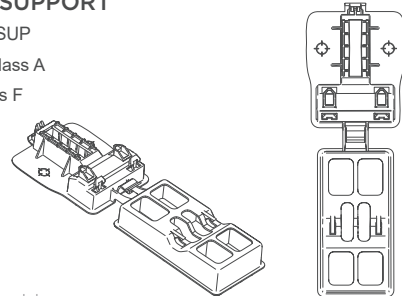
**PV MODULE**

Model #SR60T1  
Listed to UL/IEC 61730  
UL 790 Class A  
ASTM D3161 Class F  
TAS100



**FOOT WITH SUPPORT**

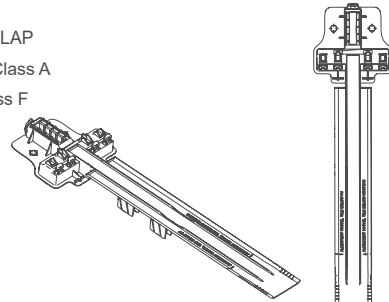
Model #SR-FOOTSUP  
Listed to UL 790 Class A  
ASTM D3161 Class F  
TAS100



Center foot for PV module

**FOOTLAP**

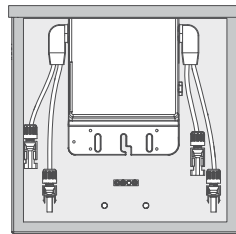
Model #SR-FOOTLAP  
Listed to UL 790 Class A  
ASTM D3161 Class F  
TAS100



Edge foot for PV module

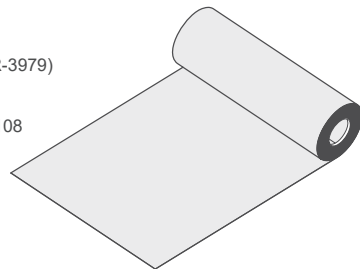
**RAPID SHUTDOWN DEVICE**

Delta RSS-600 1-1  
Listed to UL 1741  
NEC Article 690.12  
NEMA 3R Enclosure



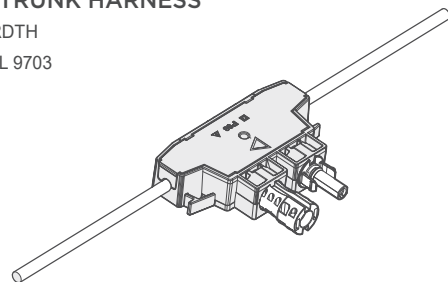
**FIRESTONE UNDERLAYMENT**

Clad-Gard SA FR  
ASTM D226 Type I & II  
Certified to ICC-ES AC188 (ESR-3979)  
and ASTM D1970  
Class A Fire Rated per ASTM E108



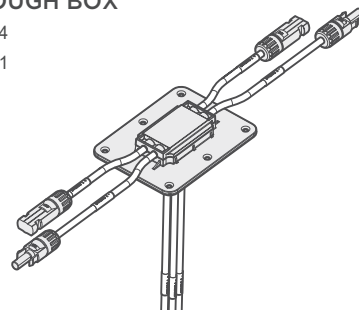
**DIODE TRUNK HARNESS**

Model #SRDTH  
Listed to UL 9703



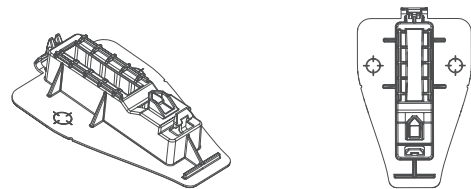
**PASS THROUGH BOX**

Model #SRPTB-4  
Listed to UL 1741



**ROOFING FOOT**

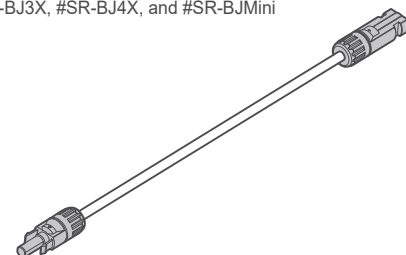
Model #SR-FOOT



Center foot for Roofing module

**BRANCH JUMPER**

Model #SR-BJ2X, #SR-BJ3X, #SR-BJ4X, and #SR-BJMini  
Listed to UL 9703



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Montgomery County  
Historic Preservation Commission  
*Sandra Heiler*

**REVIEWED**  
By Dan.Bruechert at 12:24 pm, Apr 27, 2020



## Rapid Shutdown Device for Delta 3.0~7.6 TL Inverters

Delta's Rapid Shutdown Devices provide an automatic disconnect of 600VDC residential or small commercial PV array system, fully compliant with the Rapid Shutdown requirements of NEC 2014 article 690.12. It is compatible with Delta's single-phase residential inverters.

### KEY FEATURES

- NEMA 4X Protection
- Compact and Lightweight
- Rack Mount Installation
- Fast Connect with PV Connectors
- Compliant with NEC 2014 article 690.12
- PLC Communication (Model RSS-600 1-1 only)



[www.delta-americas.com](http://www.delta-americas.com)

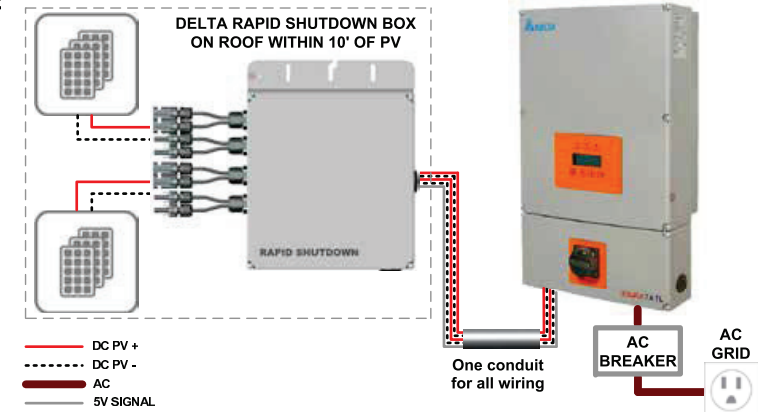
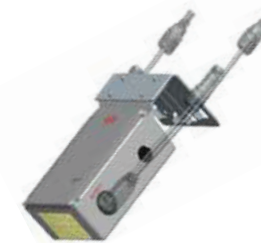
APPROVED  
Montgomery County  
Historic Preservation Commission

*Sandra L. Heiler*

**REVIEWED**

By Dan.Bruechert at 12:24 pm, Apr 27, 2020

### Model RSS-600 4-2 Connection Diagram:



### Technical Specifications

	RSS-600 1-1	RSS-600 4-2
<b>Input Ratings</b>		
Max. System Voltage	600V DC	600V DC
Max. Number of Input Circuit	1	4
Rated Input Current Per String	20A	10A
Fuse Rating	N/A	15A
<b>Output Ratings</b>		
Max. Number of Output Circuit	1	2
Rated Output Current Per Circuit	20A	20A
Maximum Current Controlled Conductor	25A	25A
Output Terminal Wire Size	10 AWG	12-6 AWG
Output Conduit Size	N/A	3/4" (two holes)
Control Signal Method	PLC Signal	5V Signal Wire
5V Signal Wire Voltage Rating	N/A	600V
5V Signal Wire Size Range	N/A	24-14 AWG
<b>General Data</b>		
Enclosure Size in Inches L x W x D (mm)	7.87 x 5.91 x 2.09 (200 x 150 x 53)	12.44 x 10.04 x 2.16 (316 x 255 x 55)
Weight	2.86lbs (1.3kg)	6.6lbs (3.0kg)
Input Connectors	MC-4 PV Connector or Amphenol H4 PV Connector	MC-4 PV Connector or Amphenol H4 PV Connector
Output Connectors	MC-4 PV Connector or Amphenol H4 PV Connector	Screw Terminal Blocks
Operating Temperature	-40 ~ 158°F (-40 ~ 70°C)	-40 ~ 158°F (-40 ~ 70°C)
Storage Temperature	-40 ~ 185°F (-40 ~ 85°C)	-40 ~ 185°F (-40 ~ 85°C)
Humidity	0 ~ 100%	0 ~ 100%
Max. Operating Altitude	2000m above sea level	2000m above sea level
Warranty	10 Years	10 Years
<b>Standard Compliance</b>		
Enclosure Protection Rating	NEMA 4X	NEMA 4X
Safety	UL 1741, CSA 22.2 107-1	UL 1741, CSA 22.2 107-1
NEC Code	NEC 2014 Article 690.12	NEC 2014 Article 690.12

Product specifications subject to change without notice.

### Delta Products Corporation, Inc.

46101 Fremont Blvd.  
Fremont, CA 94538  
Sales Email: [Inverter.Sales@delta-corp.com](mailto:Inverter.Sales@delta-corp.com)  
Support Email: [Inverter.Support@delta-corp.com](mailto:Inverter.Support@delta-corp.com)  
Sales Hotline: +1-877-440-5851 or  
+1-626-369-8021  
Support Hotline: +1-877-442-4832  
Support (Intl.): +1-626-369-8019  
Monday to Friday from 7am to 5pm PST (apart from Holidays)

[www.delta-americas.com/solarinverters](http://www.delta-americas.com/solarinverters)

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## Single Phase Solar Inverter for North America

M4-TL-US | M5-TL-US | M6-TL-US | M8-TL-US | M10-TL-US

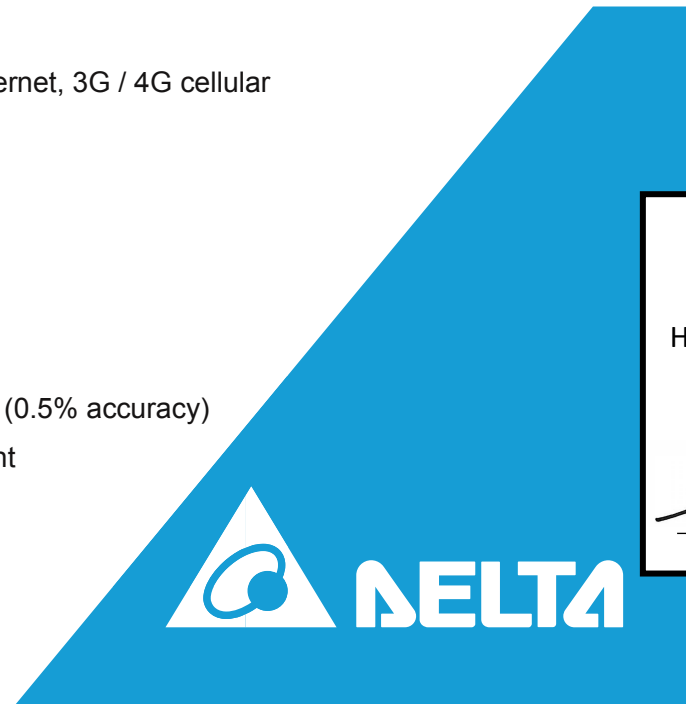


### Key Features:

- Smart inverter with BLE, optional WiFi, Ethernet, 3G / 4G cellular communication
- Support bi-directional cloud communication
- Support remote diagnosis and OTA
- Type 4 protection
- Built-in AFCI & Rapid shutdown controller
- CEC efficiency 97.5%
- Option: Revenue Grade Meter: ANSI 12.20 (0.5% accuracy)
- UL 1741 SA, HECO & CA Rule 21 compliant

### SPECIFICATIONS

Model	M4-TL-US	M5-TL-US	M6-TL-US	M8-TL-US	M10-TL-US
<b>INPUT (DC)</b>					
Maximum system voltage	600 V				
Nominal voltage	380 V				
Maximum operating voltage Voc	540 V				
Operating MPPT range	50 V to 480 V				
Maximum input current (per MPPT)	12 A	12 A	12 A	12 A	20 A
Maximum short circuit current @ STC	15 A / 15 A	15 A / 15 A	15 A / 15 A / 15 A	15 A / 15 A / 15 A	25 A / 25 A
Maximum DC/AC ratio	1.3				
DC disconnect	Integrated				
MPP tracker	2	2	3	3	2
Input strings available	2 - 2	2 - 2	2 - 2 - 2	2 - 2 - 2	2 - 2
<b>OUTPUT (AC)</b>					
Nominal power @ 240V	3840 W	4800 W	5760 W	7680 W	9600 W
Maximum output power	4000 W	5000 W	6000 W	8000 W	10000 W
Voltage range	183 Vac to 228 Vac @ 208 Vac 211 Vac to 264 Vac @ 240 Vac				
Maximum continuous current	16 A	20 A	24 A	32 A	40 A
Nominal frequency	60 Hz				
Frequency range	59.3 Hz to 60.5 Hz				
Adjustable frequency range	50 Hz to 66 Hz				
Night consumption	< 1.5 W *				
THD @ nominal power	< 3 %				
Power factor @ nominal power	> 0.99				
Adjustable power factor range	0.85i to 0.85c				
<b>GENERAL SPECIFICATION</b>					
Maximum efficiency	98%				
CEC efficiency	97.0 % @ 208 V 97.5 % @ 240 V	97.5 % @ 208 V 97.5 % @ 240 V	97.0 % @ 208 V 97.5 % @ 240 V	97.5 % @ 208 V 97.5 % @ 240 V	97.5 % @ 208 V 97.5 % @ 240 V
Operating temperature range	-22 °F to 149 °F (-30 °C to 65 °C) de-rating above 113 °F (45 °C)				
Storage temperature range	-40 °F to 185 °F (-40 °C to 85 °C)				
Humidity	0% to 95%				
Maximum operating altitude	9,843 ft (3,000 m)				
Acoustic noise	< 45 dB(A) @ 3 ft (1m)				



APPROVED  
Montgomery County  
Historic Preservation Commission

*Sandra L. Heiler*

**REVIEWED**  
By Dan.Bruechert at 12:24 pm, Apr 27, 2020

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Specifications subject to change without prior notice.



## Solar Inverter for North America

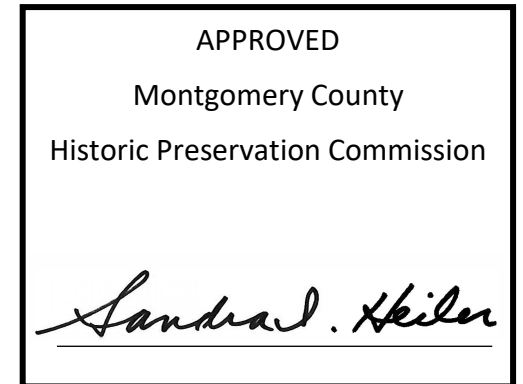
### SPECIFICATIONS

Model	M4-TL-US	M5-TL-US	M6-TL-US	M8-TL-US	M10-TL-US
<b>MECHANICAL DESIGN</b>					
Dimensions (W x H x D)	16.7 x 23.2 x 5.9 in (425 x 590 x 150 mm)				
Weight <sup>1)</sup>	41.9 lbs (19.0 kg)	41.9 lbs (19.0 kg)	44.3 lbs (20.1 kg)	45.2 lbs (20.5 kg)	47.6 lbs (21.6 kg)
Cooling	Natural convection			Natural convection with internal fan	
DC connection	Spring contact type				
Admissible conductor size DC	AWG 12 to AWG 8			AWG 10 to AWG 8	
AC connection	Spring contact type				
Admissible conductor size AC	AWG 10 to AWG 6			AWG 8 to AWG 6	
Communication interface	BLE, optional WiFi, Ethernet, 3G / 4G cellular communication				
Enclosure material	Die-casting aluminum				
<b>STANDARDS / DIRECTIVES</b>					
Enclosure protection rating	Type 4				
Safety	UL 1741, CSA-C22.2 No. 107.1-01				
Software approval	UL 1998				
Ground fault protection	UL 1741 CRD				
Anti-islanding protection	IEEE 1547, IEEE 1547.1				
EMC	FCC part 15 Class B				
AFCI	UL 1699B (Type 1), NEC 2017 Article 690.11				
Integrated meter	ANSI C12.20 (meets 0.5% accuracy)				
Grid support regulation	UL 1741 SA, California Rule 21 phase 1, 2 (pending), HECO Compliant				
<b>WARRANTY</b>					
Standard warranty	10 years				



1) Without communication meter

**Delta Electronics (Americas), Ltd.**  
 46101 Fremont Blvd, Fremont, CA 94538  
 Sales Email: [Inverter.Sales@deltaww.com](mailto:Inverter.Sales@deltaww.com)  
 Support Email: [Inverter.Support@deltaww.com](mailto:Inverter.Support@deltaww.com)  
 Sales Hotline: +1-877-440-5851 or +1-626-369-8021  
 Support Hotline: +1-877-442-4832  
 Support (Intl.): +1-626-369-8019  
 Monday to Friday from 6am to 6pm PST (apart from Holidays)  
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**REVIEWED**  
 By Dan.Bruechert at 12:24 pm, Apr 27, 2020



**Accessory: MCI (Middle Circuit Interrupter)**

**Features:**

- Automatic function test upon startup, ensure safety
- Enclosure protection Type 4
- Meet 2017 NEC Article 690.12 Rapid Shutdown
- No installation needed for every PV Module, make better cost performance for PV system
- With PLC, no additional cable needed

INPUT RATINGS	
Delta part number	GPI00010110
Maximum system voltage	600 Vdc
Rated input operating voltage	6 Vdc to 80 Vdc
Number of input circuit	1
Rated input current	12 A
OUTPUT RATINGS	
Rated output current	12 A
Control signal method	PLC signal
GENERAL DATA	
Dimensions (W x H x D)	3.8 x 6.5 x 1.1 in (97.3 x 165 x 27.3 mm)
Weight	1.4 lbs (0.64 kg)
Cooling	Natural convection
DC input/ output connectors	MC4 PV connector
Enclosure material	Plastic
Operating temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Storage temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Humidity	0% to 95%
Maximum operating altitude	9,843 ft (3,000m) above sea level
Self power consumption	<3.0 W
Warranty	10 years
STANDARD COMPLIANCE	
Enclosure protection rating	Type 4
Safety	UL 1741, CSA-C22.2 No. 107.1-01
Rapid shutdown	NEC 2017 Article 690.12
EMC	FCC Part 15 Class B

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