



HISTORIC PRESERVATION COMMISSION

Marc Elrich
County Executive

Sandra I. Heiler
Chairman

Date: October 17, 2019

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 #889906 – Solar Panel Installation

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 October 9, 2019 HPC meeting.

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

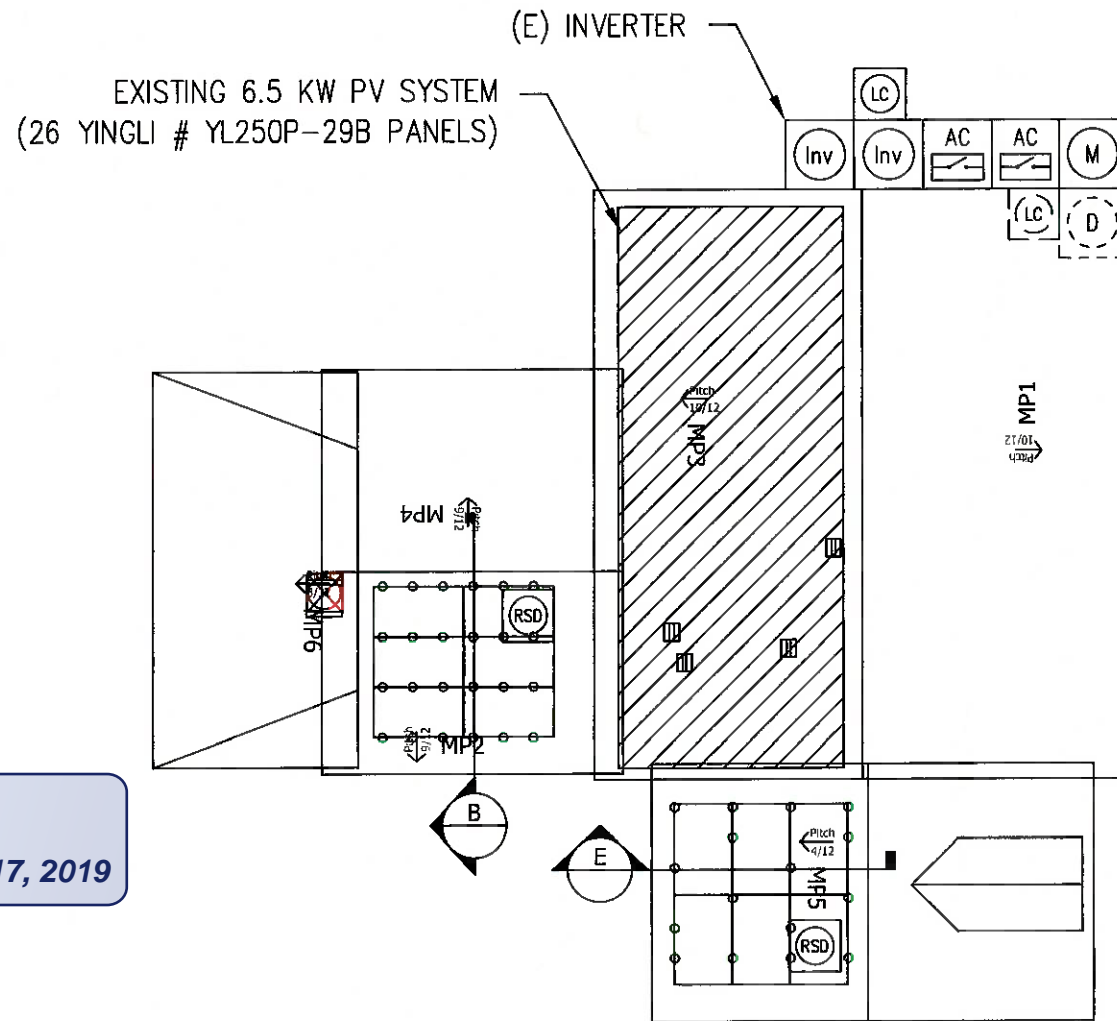
THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE ABOVE APPROVED HAWP CONDITIONS AND MAY REQUIRE APPROVAL BY DPS OR ANOTHER LOCAL OFFICE BEFORE WORK CAN BEGIN.

Applicant: Jeffery Johnson
Address: 106 Water St., Brookeville

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 to schedule a follow-up site visit.



ABBREVIATIONS	ELECTRICAL NOTES	JURISDICTION NOTES																									
<p>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</p>	<p>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. 9. MODULE FRAMES SHALL BE GROUNDED AT THE UL-LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE. 10. MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS.</p>	<p>STRUCTURAL DESIGN FOR THE SUPPORTING STRUCTURE OF THE HOUSE WAS PERFORMED IN ACCORDANCE WITH IRC/IBC 2015 - STRUCTURAL DESIGN FOR THE RACK SYSTEM AND MOUNTING HARDWARE WAS PERFORMED IN ACCORDANCE WITH IRC/IBC 2015.</p> <p>STRUCTURAL DESIGN FOR THE SUPPORTING STRUCTURE OF THE HOUSE WAS PERFORMED IN ACCORDANCE WITH IRC/IBC 2015 - STRUCTURAL DESIGN FOR THE RACK SYSTEM AND MOUNTING HARDWARE WAS PERFORMED IN ACCORDANCE WITH IRC/IBC 2015.</p>	<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p>APPROVED</p> <p>Montgomery County</p> <p>Historic Preservation Commission</p> <p><i>Sandra J. Heiler</i></p> </div> <div style="border: 1px solid blue; padding: 5px; background-color: #e0e0ff;"> <p>REVIEWED</p> <p>By Dan.Bruechert at 3:18 pm, Oct 17, 2019</p> </div>																								
LICENSE	GENERAL NOTES	VICINITY MAP	INDEX																								
<p>#11805 MASTER ELECTRICIAN Nicholaus Meyers</p> <p>MODULE GROUNDING METHOD: ZEP SOLAR</p> <p>AHJ: Montgomery County</p> <p>UTILITY: PEPCO (MD)</p>	<p>1. ALL WORK SHALL COMPLY WITH THE 2015 IBC AND 2015 IRC. 2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2008 NATIONAL ELECTRIC CODE.</p>		<p>Sheet 1 COVER SHEET Sheet 2 SITE PLAN Sheet 3 STRUCTURAL VIEWS Sheet 4 UPLIFT CALCULATIONS Sheet 5 THREE LINE DIAGRAM Cut sheets Attached</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>BY</th> <th>DATE</th> <th>COMMENTS</th> </tr> </thead> <tbody> <tr> <td>REV A</td> <td>NAME</td> <td>DATE</td> <td>COMMENTS</td> </tr> <tr> <td>REV D</td> <td>ATAK</td> <td>9/12/19</td> <td>CUSTOMER REQUESTED DOWNSIZE TO SMALL SYSTEM</td> </tr> <tr> <td>*</td> <td>*</td> <td>*</td> <td>*</td> </tr> <tr> <td>*</td> <td>*</td> <td>*</td> <td>*</td> </tr> <tr> <td>*</td> <td>*</td> <td>*</td> <td>*</td> </tr> </tbody> </table>	REV	BY	DATE	COMMENTS	REV A	NAME	DATE	COMMENTS	REV D	ATAK	9/12/19	CUSTOMER REQUESTED DOWNSIZE TO SMALL SYSTEM	*	*	*	*	*	*	*	*	*	*	*	*
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<p>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.</p>	<p>JOB NUMBER: JB-2089978 00</p> <p>MOUNTING SYSTEM: ZEP Standing Seam</p> <p>MODULES: (12) SC Std SC315B2</p> <p>INVERTER: Delta # Solivia 3.8 TL</p>	<p>CUSTOMER: Jeffrey Johnson 106 Water St Brookeville, MD 20833</p> <p>2404473592</p>	<p>DESCRIPTION: 3.78 KW PV ARRAY</p> <p>PAGE NAME: COVER SHEET</p> <p>DESIGN: Matt Johnson</p> <p>SHEET: 1 REV: d DATE: 9/13/2019</p> <div style="text-align: center; font-weight: bold; font-size: 2em;">TESLA</div>																								



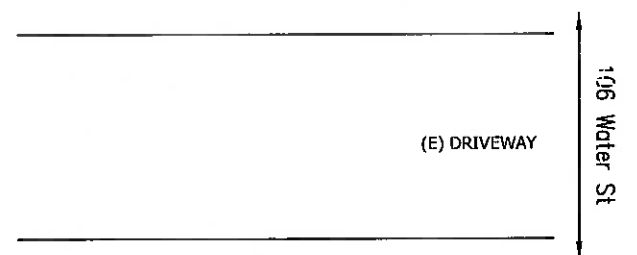
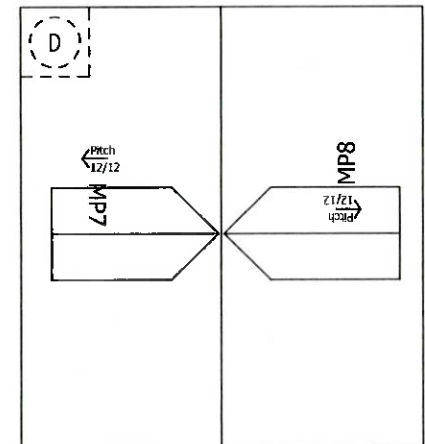
STRUCTURAL ONLY
 PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 48728. EXPIRATION DATE: 2-16-2020

Digitally signed by Jason Toman
 Date: 2019.09.16 18:40:45 -07'00'

Front Of House

APPROVED
 Montgomery County
 Historic Preservation Commission
Sandra Heiler

REVIEWED
 By Dan.Bruechert at 3:18 pm, Oct 17, 2019



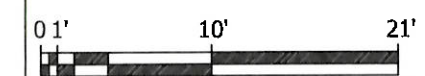
MP1	PITCH: 40 AZIMUTH: 47 MATERIAL: Metal Standing Seam	ARRAY PITCH: 40 ARRAY AZIMUTH: 47 STORY: 2 Stories
MP2	PITCH: 34 AZIMUTH: 137 MATERIAL: Metal Standing Seam	ARRAY PITCH: 34 ARRAY AZIMUTH: 137 STORY: 2 Stories
MP4	PITCH: 34 AZIMUTH: 317 MATERIAL: Metal Standing Seam	ARRAY PITCH: 34 ARRAY AZIMUTH: 317 STORY: 1 Story
MP5	PITCH: 18 AZIMUTH: 227 MATERIAL: Metal Standing Seam	ARRAY PITCH: 18 ARRAY AZIMUTH: 227 STORY: 1 Story
MP6	PITCH: 14 AZIMUTH: 227 MATERIAL: Metal Standing Seam	ARRAY PITCH: 14 ARRAY AZIMUTH: 227 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

Scale: 3/32" = 1'



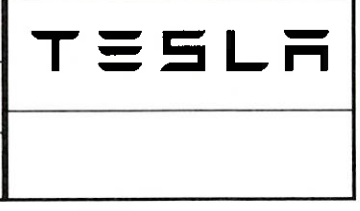
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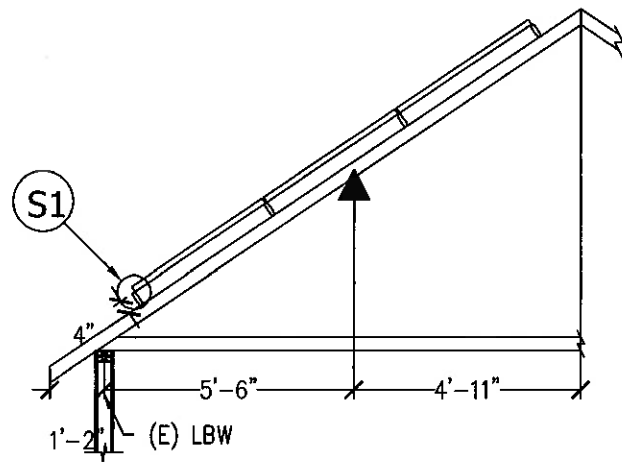
JOB NUMBER: JB-2089978 00
 MOUNTING SYSTEM: ZEP Standing Seam
 MODULES: (12) SC Std SC315B2
 INVERTER: Delta # Solivia 3.8 TL

CUSTOMER: Jeffrey Johnson
 106 Water St
 Brookeville, MD 20833
 2404473592

DESCRIPTION: 3.78 KW PV ARRAY
 PAGE NAME: SITE PLAN

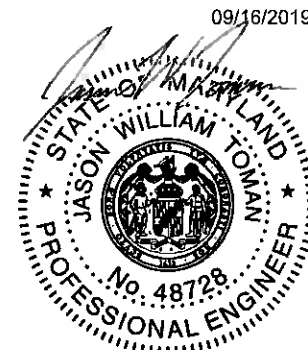
DESIGN: Matt Johnson
 SHEET: 2 REV: DATE: d 9/13/2019





SIDE VIEW OF MP2 NTS

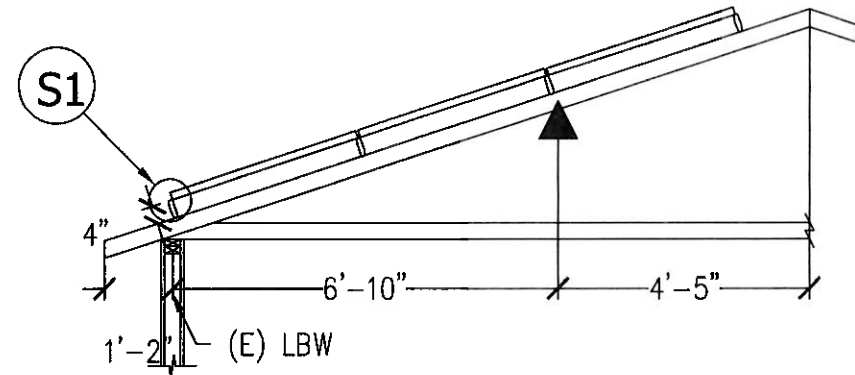
MP2	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	21"	11"	41"	0"	STAGGERED
PORTRAIT	21"	7"	62"	0"	
TOP CHORD 2x4 @ 24" OC			ROOF AZI 137 PITCH 34 STORIES: 2		
BOT CHORD 2x4 @24" OC			ARRAY AZI 137 PITCH 34 Metal Standing Seam		
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV. X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.					



STRUCTURAL ONLY

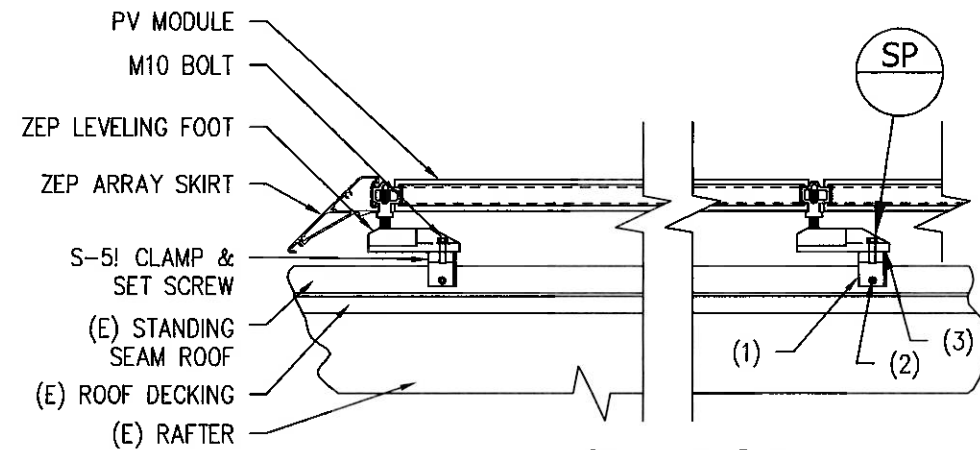
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Digitally signed by Jason Toman
Date: 2019.09.16 18:41:40 -07'00'



SIDE VIEW OF MP5 NTS

MP5	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	42"	14"	41"	0"	STAGGERED
PORTRAIT	21"	9"	62"	0"	
TOP CHORD 2x4 @ 24" OC			ROOF AZI 227 PITCH 18 STORIES: 1		
BOT CHORD 2x4 @24" OC			ARRAY AZI 227 PITCH 18 Metal Standing Seam		
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV. X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.					



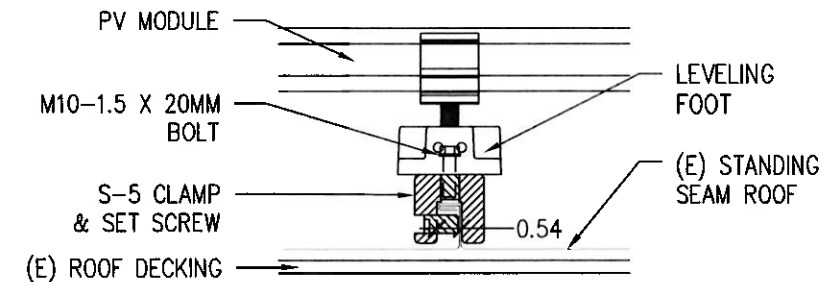
S1 STANDOFF
Scale: 1 1/2" = 1'

- INSTALLATION ORDER**
- (1) LOCATE SEAM, MARK LOCATION, AND PLACE S-5! ON SEAM.
 - (2) TIGHTEN SET SCREW(S) ON S-5! CLAMP.
 - (3) INSTALL LEVELING FOOT ONTO S-5! CLAMP WITH BOLT & WASHERS.

APPROVED
Montgomery County
Historic Preservation Commission

Sandra L. Heiler

REVIEWED
By Dan.Bruechert at 3:18 pm, Oct 17, 2019



SP S-5 DETAIL SHOWING SEAM PROFILE
Scale: 3"=1'-0"

INSTALL INSTRUCTIONS:
CLAMPS ARE MADE FOR TYP. STANDING SEAM PROFILES. WHEN ATTACHING THE MACHINE FOLDED SEAMS CLAMPS ARE DESIGNED TO ENGAGE THE SEAM. FOR HORIZONTAL SEAM APPLICATIONS THE SETSCREW MUST BE ACCESSIBLE FROM THE TOP FOR TIGHTENING.

ON MANY SNAP-TOGETHER TYPE SEAMS, THE SETSCREWS ARE OPPOSITE THE OPEN OR OVERLAP SIDE OF THE SEAM. ON SOME SEAMS THIS ASPECT OF THE CLAMP ORIENTATION IS NOT CRITICAL.

INSTALL WITH A SCREW GUN AND INCLUDED SCREW GUN BIT TIP. FOR OPTIMAL HOLDING STRENGTH. SETSCREWS SHOULD BE TENSIONED AND RE-TENSIONED AS THE SEAM MATERIAL COMPRESSES. SCREWS SHOULD BE TENSIONED TO 130 INCH POUNDS USING A CALIBRATED TORQUE WRENCH. THE S-5 HAS FOUR SETSCREWS LOCATIONS TO MAKE THE CLAMP MORE VERSATILE, HOWEVER ONLY TWO SETSCREWS ARE USED PER CLAMP. THE SETSCREWS SHOULD ALWAYS BE PLACED ON THE SAME SIDE OF THE CLAMP.

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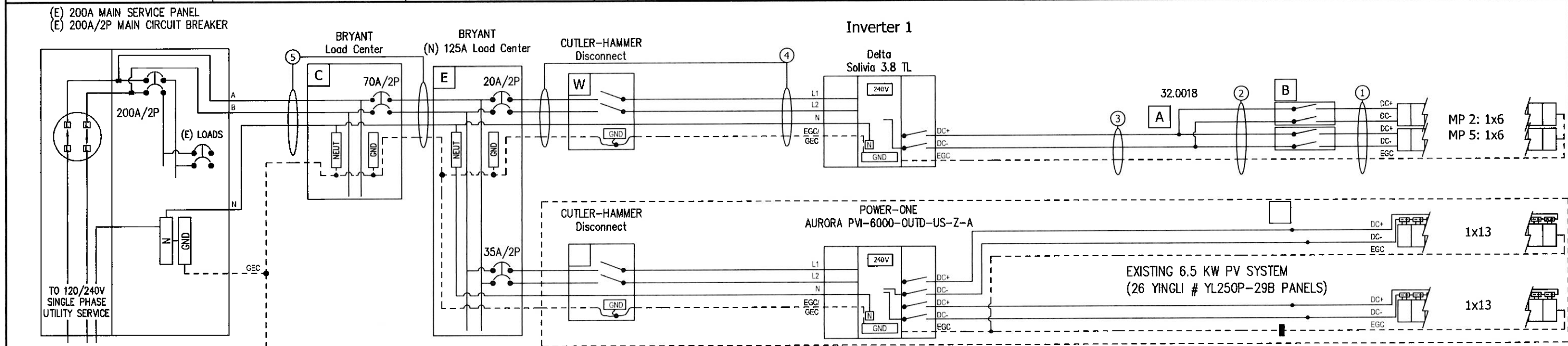
CUSTOMER: Jeffrey Johnson
106 Water St
Brookeville, MD 20833
2404473592

DESCRIPTION: 3.78 KW PV ARRAY
PAGE NAME: STRUCTURAL VIEWS

DESIGN: Matt Johnson
SHEET: 3 REV: DATE: d 9/13/2019



GROUND SPECS	MAIN PANEL SPECS	GENERAL NOTES	INVERTER SPECS	MODULE SPECS	LICENSE
BOND (N) #8 GEC TO (E) GROUND ROD AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: NoLabel Meter Number: 116 075 667 Underground Service Entrance	Inv 1: DC Ungrounded Tie-In: Supply Side Connection	INV 1 - (1) Delta # Solivia 3.8 TL Inverter; 3800W, 240V/208V, 97.5%/97.5%, Zigbee, PLC INV 2 INV 3	(12) SC Std SC315B2 PV Module; 315W, 294.4 PTC, 40MM, Blk Backsheet w/ Blk Interconnects, MC4, 600v, ZE Voc: 70.2 Vpmax: 58.4 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	#11805 MASTER ELECTRICIAN Nicholaus Meyers



CONDUIT RUNS MAY BE CONDENSED DUE TO SITE CONDITIONS AND/OR INSTALLATION EASE. ALL CONDUIT FILL DERATES AND PROPER CALCULATIONS HAVE BEEN COMPLETED PER NEC CHAPTER 9, TABLE 4

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Voc* = MAX VOC AT MIN TEMP

APPROVED
Montgomery County
Historic Preservation Commission
Sandra L. Skiles

REVIEWED
By Dan.Bruechert at 3:18 pm, Oct 17, 2019

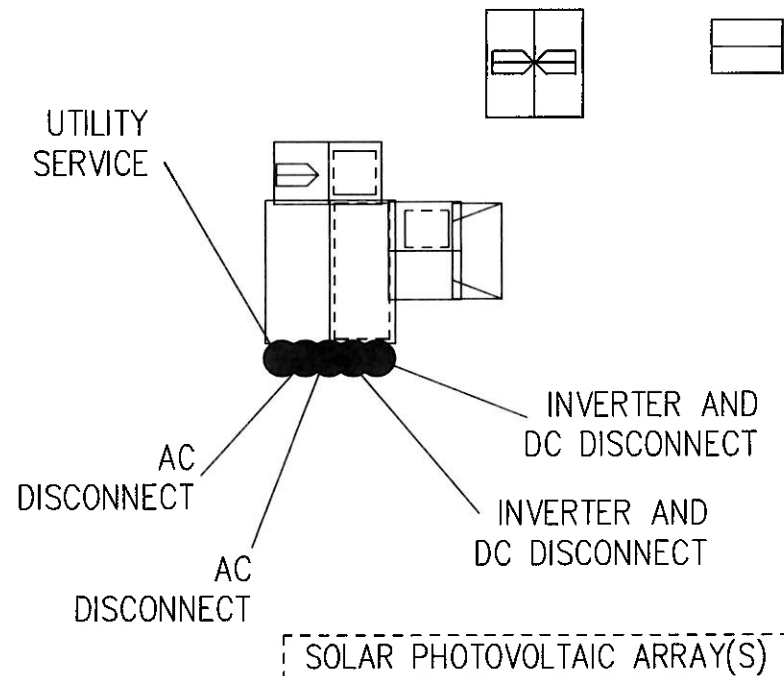
POI (2) ILSCO # IPC 4/0-#6 Insulation Piercing Connector; Main 4/0-4, Tap 6-14 SSC SUPPLY SIDE CONNECTION. DISCONNECTING MEANS SHALL BE SUITABLE AS SERVICE EQUIPMENT AND SHALL BE RATED PER NEC. W (1) CUTLER-HAMMER # DG221URB Disconnect; 30A, 240Vac, Non-Fusible, NEMA 3R (1) CUTLER-HAMMER # DG030NB Ground/Neutral Kit; 30A, General Duty (DG)	C (1) EATON # BR24L125FP Load Center; 125A, 120/240V, NEMA 1, Main Lug, 1 ø, 2 Spaces, 4 Circuits, Flush (1) CUTLER-HAMMER # BR270 Breaker; 70A/2P, 2 Spaces E (1) BRYANT # BR48L125RP Load Center; 125A, 120/240V, NEMA 3R (1) CUTLER-HAMMER # BR220 Breaker; 20A/2P, 2 Spaces (1) CUTLER-HAMMER # BR235 Breaker; 35A/2P, 2 Spaces	AC (2) Delta Solivia GPI00012105 Smart RSS Rapid Shutdown, 600V, 20A, NEMA 4X, MC4 B (1) AWG #10, THWN-2, Black Voc* = 473.85VDC Isc = 11.66 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 350.4 VDC Imp = 10.8 ADC (1) Conduit Kit; 3/4" EMT (2) AWG #10, PV Wire, 600V, Black Voc* = 473.85VDC Isc = 11.66 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 350.4 VDC Imp = 10.8 ADC (1) Conduit Kit; 3/4" EMT	A (1) MULTI-CONTACT PV-AZB4 32.0018; Branch Socket; MC4 U-Joint Connector, Female (1) MULTI-CONTACT PV-AZS4 32.0019; Branch Plug; MC4 U-Joint Connector, Male DC (4) AWG #10, PV Wire, 600V, Black Voc* = 473.85VDC Isc = 5.83 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 350.4 VDC Imp = 5.4 ADC (1) Conduit Kit; 3/4" EMT
5 (1) AWG #6, THWN-2, Red (1) AWG #6, THWN-2, Black (1) AWG #6, THWN-2, White NEUTRAL Vmp = 240 VAC Imp = 49.6 AAC (1) AWG #6, Solid Bare Copper GEC (1) CONDUIT KIT 1" x 10' EMT Conduit	4 (1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THWN-2, White NEUTRAL Vmp = 240 VAC Imp = 15.8 AAC (1) AWG #8, THWN-2, Green EGC/GEC (1) Conduit Kit; 3/4" EMT	2 (4) AWG #10, PV Wire, 600V, Black Voc* = 473.85VDC Isc = 11.66 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 350.4 VDC Imp = 10.8 ADC (1) Conduit Kit; 3/4" EMT 3 (2) AWG #10, PV Wire, 600V, Black Voc* = 473.85VDC Isc = 11.66 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 350.4 VDC Imp = 10.8 ADC (1) Conduit Kit; 3/4" EMT	1 (4) AWG #10, PV Wire, 600V, Black Voc* = 473.85VDC Isc = 5.83 ADC (1) AWG #10, THWN-2, Green EGC Vmp = 350.4 VDC Imp = 5.4 ADC (1) Conduit Kit; 3/4" EMT

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	MOUNTING SYSTEM: ZEP Standing Seam	INVERTER: Delta # Solivia 3.8 TL	PAGE NAME: THREE LINE DIAGRAM	SHEET: 5 REV: d DATE: 9/13/2019	
	MODULES: (12) SC Std SC315B2	2404473592			

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:

- Address: 106 Water St



PHOTOVOLTAIC BACK-FED CIRCUIT BREAKER IN MAIN ELECTRICAL PANEL IS AN A/C DISCONNECT PER NEC 690.17

OPERATING VOLTAGE = 240V

JB-2089978-00

APPROVED
 Montgomery County
 Historic Preservation Commission
Sandra J. Heiler

REVIEWED
 By Dan.Bruechert at 3:17 pm, Oct 17, 2019

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 2404473592

DESCRIPTION: 3.78 KW PV ARRAY
 PAGE NAME: SITE PLAN PLACARD

DESIGN: Matt Johnson
 SHEET: 6 REV: DATE: d 9/13/2019

TESLA

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:
NEC 690.17.E

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

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

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)

WARNING
INVERTER OUTPUT
CONNECTION
DO NOT RELOCATE
THIS OVERCURRENT
DEVICE

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

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
PHOTOVOLTAIC SYSTEM
CIRCUIT IS BACKFED

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

PHOTOVOLTAIC AC
DISCONNECT

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

CAUTION
DUAL POWER SOURCE
SECOND SOURCE IS
PHOTOVOLTAIC SYSTEM

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

MAXIMUM AC
OPERATING CURRENT A
MAXIMUM AC
OPERATING VOLTAGE V

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

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
MAXIMUM AC A
OPERATING CURRENT
MAXIMUM AC V
OPERATING VOLTAGE

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

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Montgomery County
Historic Preservation Commission

Sandra J. Heiler

REVIEWED
By Dan.Bruechert at 3:17 pm, Oct 17, 2019

(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

S-5! Attachment Hardware

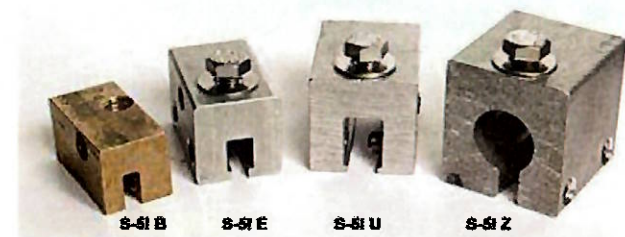
Modern standing seam roofing systems boast that by design, fastening through the weathering membrane is greatly reduced or eliminated. Unfortunately, when it becomes necessary to attach something to the roof, there has never been a way to do it without compromising roof integrity and voiding system warranties. Such attachments have in the past been the source of leaks, panel corrosion and repeated maintenance problems.

Look at all the things you don't get with S-5!

- no holes
- no leaks
- no corrosion
- no caulking
- no panel damage
- no wood blocking
- no violation of thermal movement
- no warranty violation
- no maintenance
- no hassles
- no callbacks
- NO PROBLEMS

The S-5! clamp systems now offer a complete solution to the attachment of a wide variety of ancillary rooftop accessories, including [HVAC equipment](#), [signage](#), solar panels, [snow retention hardware](#), [gas piping and conduit](#), rooftop lighting, fascias, [equipment screens](#), [parapet bracing](#), condensate lines, [stack and flue bracing](#), antennae, roof walkways and more.

A variety of S-5! clamp styles are available:



- The [S-5-U](#) will fit most "structural" and "architectural" panel seam styles.
- The [S-5-Z](#) is specially designed to fit ZipRib, Kal-Zip and similar profiles.
- The [S-5-B](#) is a brass clamp, designed for use on double-folded standing seam or traditional batten seam copper.
- The [S-5-E](#) is an aluminum clamp designed to fit traditional double-folded standing seam profiles.

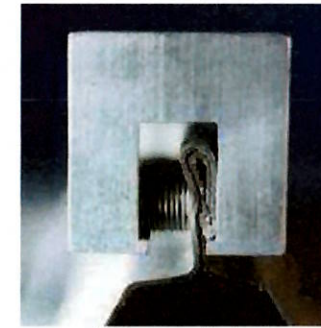
Metal Roof Innovations, Ltd., also develops custom clamps. We invite you to [Contact Us](#) with inquiries about special requirements.

Aluminum clamps are metallurgically compatible with bare or painted galvanized, Galvalume, Aluminized and Galfan coated steel, as well as bare or painted aluminum, stainless and zinc sheet products. In most applications, the clamp should be installed at a location on the seam that avoids the panel's attachment clip location. S-5! clamps may also be used at a clip location, provided the clip is an expansion (dual-component) clip. All aluminum clamps are furnished with a stainless steel bolt and washer (3/8" diameter x 5/8" length; bolt head size is 9/16").

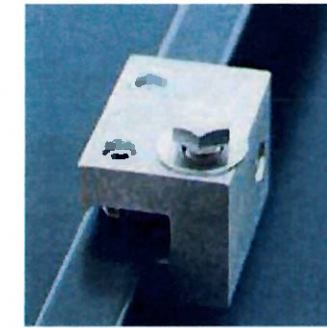
For more detailed installation instructions, see the [Installation](#) section.

S-5! clamps attach to the panel seam by the tightening of two "bullet-nosed" stainless steel set screws

against the seam material (this is usually done with an industrial grade screwgun). The set screws compress the seam material against the opposite wall of the clamp. They will "dimple" the seam material, but will not penetrate it. Threaded holes in the clamp (and stainless hardware provided) enable the easy attachment of various ancillary items to the clamps.



S-5-U on a vertical seam



S-5-U on a horizontal seam



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REVIEWED

By Dan.Bruechert at 3:17 pm, Oct 17, 2019



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

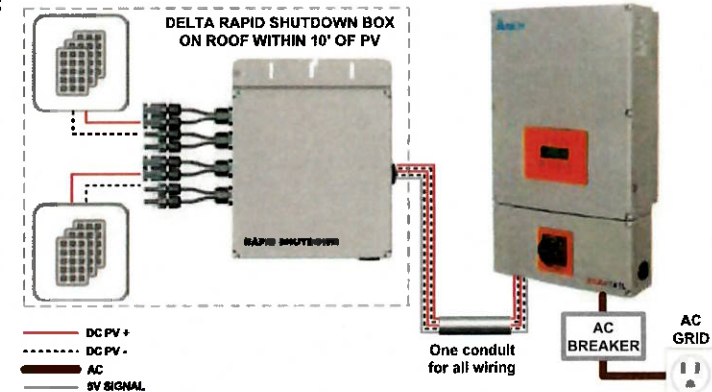
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Sandra L. Heiler

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By Dan.Bruechert at 3:17 pm, Oct 17, 2019

Model RSS-600 4-2 Connection Diagram:



Technical Specifications

	RSS-600 1-1	RSS-600 4-2
Input Ratings		
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
Output Ratings		
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
General Data		
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
Standard Compliance		
Enclosure Protection Rating	NEMA 4X	NEMA 4X
Safety	UL 1741, CSA 22.2 107-1	UL 1741, CSA 22.2 107-1
Code	NEC 2014 Article 690.12	NEC 2014 Article 690.12

Delta Products Corporation, Inc.
5101 Fremont Blvd.
Fremont, CA 94538
Sales Email: Inverter.Sales@delta-corp.com
Support Email: 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



Delta Solar Inverters Datasheet for SolarCity



Solar Inverters

Transformerless (TL): 3.8 kW, 5.2 kW, 6.6 kW, 7.6 kW

- Wide Operating Voltage Range: 85 ~ 550V
- Wide Operating Temperature Range: -13 ~ 158°F (-25 ~ 70°C)
- High CEC Efficiency: 97.5%
- Integrated AFCI (Arc Fault Circuit Interruption)
- NEMA 4X plus Salt Mist Corrosion Protection
- Natural Convection Cooling
- Dual MPPT (5.2kW / 6.6kW / 7.6kW)
- Compact and Lightweight
- UL 1741 / IEEE 1547 / IEEE 1547.1 / CEC Listed /UL 1699B(Type 1) / NEC 690.11



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 By Dan.Bruechert at 3:17 pm, Oct 17, 2019

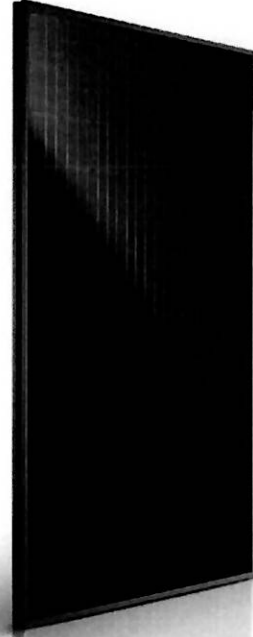


	SOLIVIA 3.0 TL	SOLIVIA 3.8 TL	SOLIVIA 5.2 TL	SOLIVIA 6.6 TL	SOLIVIA 7.6 TL
INPUT (DC)					
Max. System Voltage	600 V				
Nominal Voltage	380 V				
Operating Voltage Range	85 ~ 550 V				
Full Power MPPT Range	200 - 500 V				
Max. Usable Current	18.0 A	20.0 A	20.0 A per MPP tracker		
Max. Short Circuit Current @ STC	25.0 A per MPP tracker				
Max. Allowable Imbalance Power	-	-	4200 W	5000 W	5600 W
Allowed DC Loading Ratio	1.5				
DC Disconnect	Internal				
MPP Tracker	1	-	-	2	-
Total Input Strings Available	2	-	-	4	-
OUTPUT (AC)					
Nominal Power	3000 W	3800 W	5200 W	6600 W	7600 W
Max. Continuous Power	3000 W @ 208 V / 3000 W @ 240 V	3300 W @ 208 V / 3800 W @ 240 V	5200 W @ 208 V / 5200 W @ 240 V	6600 W @ 208 V / 6600 W @ 240 V	8600 W @ 208 V / 7600 W @ 240 V
Voltage Range	183 ~ 228 V @ 208 V / 211 ~ 264 V @ 240 V				
Nominal Current	14.4 A @ 208 V / 12.5 A @ 240 V	15.8 A @ 208 V / 15.8 A @ 240 V	24.0 A @ 208 V / 21.6 A @ 240 V	31.7 A @ 208 V / 27.5 A @ 240 V	31.7 A @ 208 V / 31.7 A @ 240 V
Nominal Frequency	60 Hz				
Frequency Range	59.3 ~ 60.5 Hz				
Adjustable Frequency Range	57.0 ~ 63.0 Hz				
Night Consumption	< 1.5 W				
Total Harmonic Distortion @ Nominal Power	< 3%				
Power Factor @ Nominal Power	> 0.99				
Adjustable Power Factor Range	0.85i - 0.85c				
Acoustic Noise Emission	<50 db(A) @ 1m				
GENERAL SPECIFICATION					
Max. Efficiency	98%				
CEC Efficiency	97.5% @ 208V / 97.5% @ 240V				
Operating Temperature Range	-13 ~ 158°F (-25~70°C) derating above 122°F (50°C)				
Storage Temperature Range	-40 ~ 185°F (-40 ~ 85°C)				
Humidity	0 ~ 100%				
Max. Operating Altitude	2000m above sea level				
MECHANICAL DESIGN					
Size L x W x D inches (L x W x D mm)	19.5 x 15.8 x 8.5 in (495 x 401 x 216 mm)		26.8 x 15.8 x 8.5 in (680 x 401 x 216 mm)		
Weight	43.0 lbs (19.5 kg)		65.0 lbs (29.5 kg)		
Cooling	Natural Convection				
AC Connectors	Spring terminals in connection box				
Compatible Wiring Gauge in AC	AWG 12 ~ AWG 6 Copper (According to NEC 310.15)				
DC Connectors	2 pairs of spring terminals in connection box		4 pairs of spring terminals in connection box		
Compatible Wiring Gauge in DC	AWG 12 ~ AWG 6 Copper (According to NEC 690.8)				
Communication Interface	ZigBee				
Display	3 LEDs, 4-Line LCD				
Enclosure Material	Diecast Aluminum				
STANDARDS / DIRECTIVES					
Enclosure Protection Rating	NEMA 4X, IEC 60068-2-11 Salt mist				
Safety	UL 1741 Second Edition, CSA C22.2 No.107.1-01				
SW Approval	UL 1998				
Ground-Fault Protection	NEC 690.35, UL 1741 CRD				
Anti-Islanding Protection	IEEE 1547, IEEE 1547.1				
EMC	FCC part 15 Class B				
AFCI	UL 1699B (Type 1), NEC 690.11				
PV Rapid Shutdown	UL 1741 CRD PVRSS, NEC 690.12 (with SMART RSS)				
Integrated Meter	ANSI C12.1 (meet 1% Accuracy)				
Regulation of Grid Support	California Rule 21, HECO Compliant, IEEE1547				
WARRANTY					
Standard Warranty	10 years				

Delta Products Corporation, Inc.
 46101 Fremont Blvd.
 Fremont, CA 94536
 Sales Email: inverter_sales@deltaww.com
 Support Email: 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 7 am to 5 pm PST (apart from Holidays)



SC-B2 SERIES MODULE



MORE POWER, FEWER MODULES

With a sunlight to electricity conversion efficiency of over 18.8%, the module ranks amongst the highest in the industry. That means our modules can harvest more energy from the sun, which means it takes fewer of our modules to power your home. Plus, they generate more power output during the hottest times of the day, even in warmer climates.

LIMITED WARRANTY

Power Output
10 years (90% of P_{MIN})
25 years (80% of P_{MIN})

Workmanship
15 years

MATERIALS

Cell Material
5 inch photovoltaic cells

Glass Material
AR coated tempered glass

Frame Materials
Black anodized aluminum

CAUTION

Please read the installation manual carefully before using the product.

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SC315B2 AND SC310B2 BLACK MODULE

Zep Compatible 96-Cell Black-on-Black PV Module
For use in residential and commercial PV installations

MORE POWER PER MODULE

Our 315W module generates 16% more power than a standard 270 W module.

MORE ENERGY EVERY YEAR

More yearly energy (kWh) compared to other modules as they perform better in the heat.

MORE LAYERS, MORE POWER

Manufactured by Panasonic for SolarCity, the module uses Heterojunction cell technology, which adds a layer of thin film silicon on top of high efficiency crystalline silicon.

OUTSTANDING DURABILITY

With more than 20 additional tests performed beyond what is currently mandated, these modules far exceed industry standards.

LEADING WARRANTY

Our modules rank among the best in warranty coverage, with workmanship that extends to 15 years.



MODULE SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

Model	SC315B2	SC310B2
Max Power (W)	315	310
Max Power Voltage, V_{MP} (V)	58.4	58.1
Max Power Current, I_{MP} (A)	5.40	5.34
Open Circuit Voltage, V_{OC} (V)	70.2	69.9
Short Circuit Current, I_{SC} (A)	5.83	5.78
System Voltage (V)	600	600
Max Series Fuse Rating (A)	15	15
Solar Module Efficiency (%)	18.8	18.5
Power Tolerance (%)	+5 / -0	+5 / -0

TEMPERATURE CORRECTION

NOCT ($^{\circ}$ C)	49
P_{MAX} (%/ $^{\circ}$ C)	-0.29
V_{OC} (%/ $^{\circ}$ C)	-0.25
I_{SC} (%/ $^{\circ}$ C)	0.03

Electrical characteristics are within -5/+10% of the indicated values of I_{SC} , V_{OC} , and P_{MAX} under standard test conditions (irradiance of 100 mW/cm, AM 1.5 spectrum, and a cell temperature of 25 degrees Celsius or 77 degrees Fahrenheit).

AT NOCT (NORMAL OPERATING CONDITIONS)

Model	SC315B2	SC310B2
Max Power (W)	234.6	230.7
Max Power Voltage, V_{MP} (V)	53.6	53.3
Max Power Current, I_{MP} (A)	4.37	4.33
Open Circuit Voltage, V_{OC} (V)	65.7	65.4
Short Circuit Current, I_{SC} (A)	4.70	4.66

AT LOW IRRADIANCE (20%)

Model	SC315B2	SC310B2
Max Power (W)	59.7	58.6
Max Power Voltage, V_{MP} (V)	55.7	55.2
Max Power Current, I_{MP} (A)	1.07	1.06
Open Circuit Voltage, V_{OC} (V)	65.4	65.0
Short Circuit Current, I_{SC} (A)	1.17	1.16

MECHANICAL DATA

Weight
19.5kg (42.99 lbs)

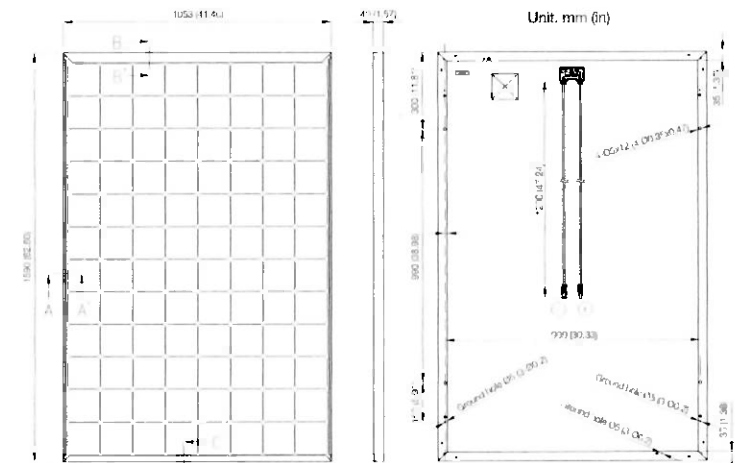
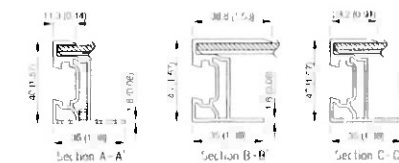
Dimensions
1590 mm (62.60") /
1053 mm (41.46") /
40 mm (1.57")

Connector
MC4

Frame Color
Black

Wind and Snow Load
2400 Pa (50 lbs/ft²)

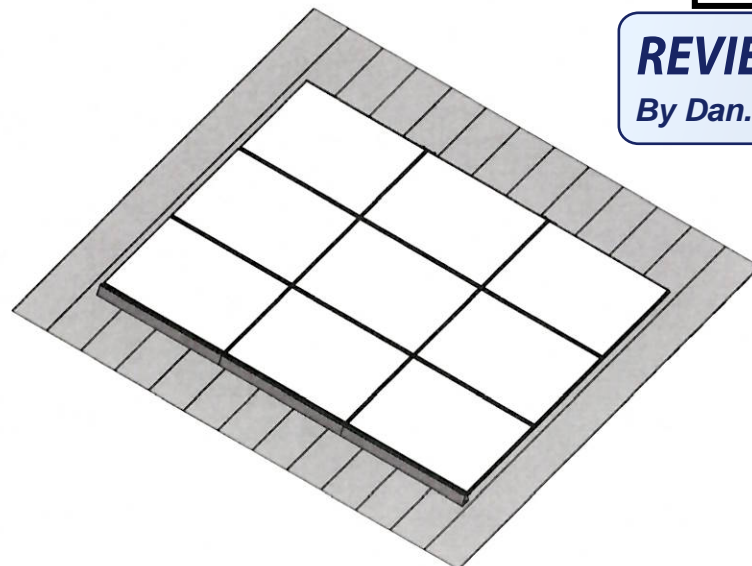
Fire Type
UL 1703 Type 2



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 Montgomery County
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Sandra L. Heiler

ZS Seam
 for standing seam metal roofs



REVIEWED
 By Dan.Bruechert at 3:17 pm, Oct 17, 2019



Description

- PV mounting solution for standing seam metal roofs
- Works with all Zep Compatible Modules
- Auto bonding UL-listed hardware creates structural and electrical bond

Specifications

- Designed for pitched roofs
- Installs in portrait and landscape orientations
- ZS Seam grounding products are UL listed to UL 2703 and UL 467
- ZS Seam bonding products are UL listed to UL 2703
- Engineered for spans up to 72" and cantilevers up to 24"
- Zep wire management products listed to UL 1565 for wire positioning devices

zepsolar.com

This document does not create any express warranty by Zep Solar or about its products or services. Zep Solar's sole warranty is contained in the written product warranty for each product. The end-user documentation shipped with Zep Solar's products constitutes the sole specifications referred to in the product warranty. The customer is solely responsible for verifying the suitability of ZepSolar's products for each use. Specifications are subject to change without notice. Patents and Apps: zspats.com.



Seam Mount S-5-U, S or N

OR



Seam Mount Ace Clamp A-2

zepsolar.com

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Leveling Foot

Part No. 850-1397
 Listed to UL 2703



Array Skirt

Part No. 850-1608 or 500-0113
 Listed to UL 2703



Grip

Part No. 850-1606 or 850-1421
 Listed to UL 2703



End Cap

Part No.
 (L) 850-1586 or 850-1460
 (R) 850-1588 or 850-1467
 Listed to UL 2703



Interlock

Part No. 850-1388 or 850-1613
 Listed to UL 2703



Ground Zep V2

Part No. 850-1511
 Listed to UL 467 and UL 2703



DC Wire Clip

Part No. 850-1509
 Listed to UL 1565