



HISTORIC PRESERVATION COMMISSION

Isiah Leggett
County Executive

William Kirwan
Chairman

Date: September 20, 2018

MEMORANDUM

TO: Diane Schwartz Jones
Department of Permitting Services

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

SUBJECT: Historic Area Work Permit #850172 – 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 September 19, 2018 Historic Preservation Commission 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: David Cunningham
Address: 9805 Hollow Glen Place, Silver Spring

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 301.563.3408 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.



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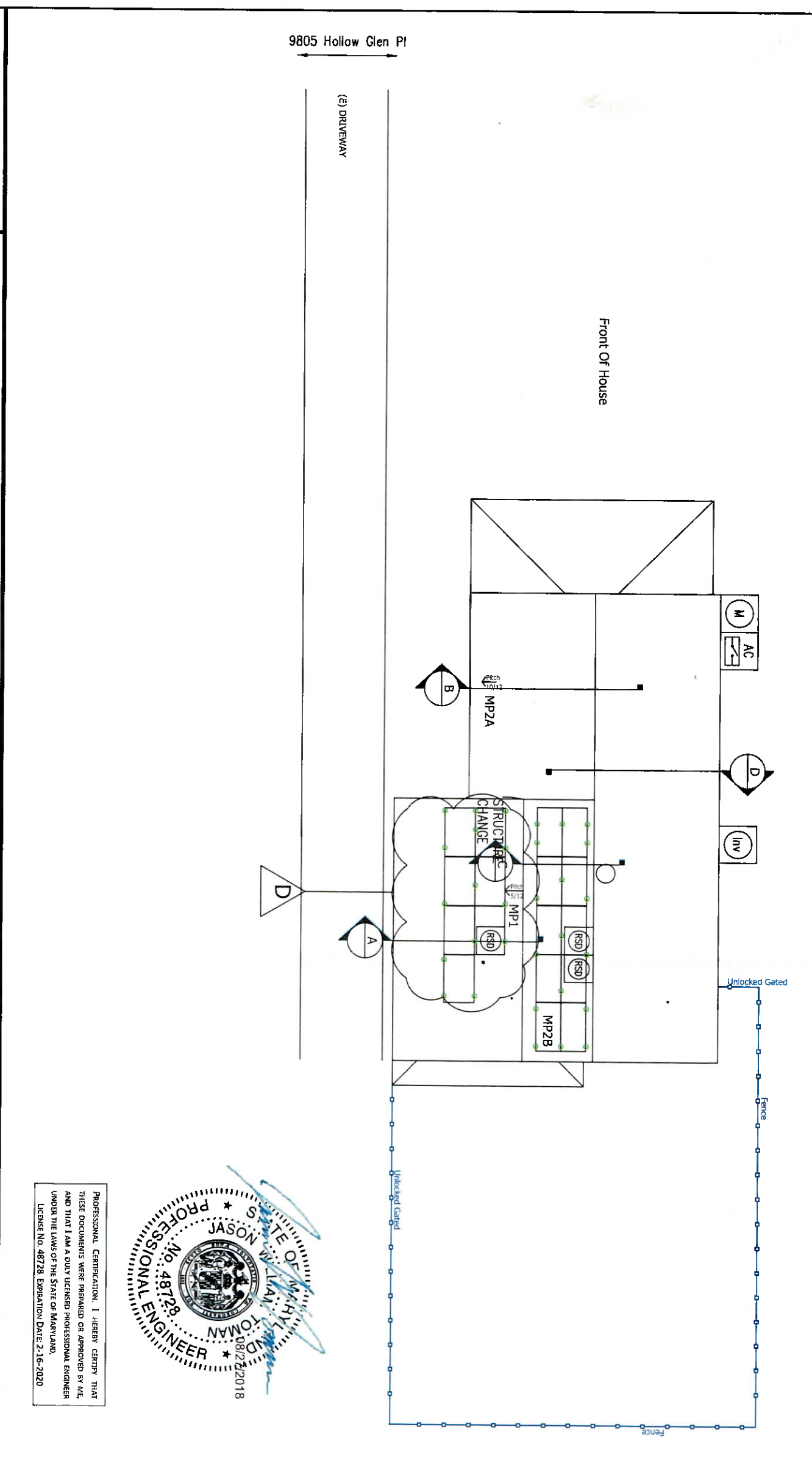
JOB NUMBER: JB-2094282 00
 MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert
 MODULES: (17) SC Std SC315B2
 INVERTER: Delta # Solvia 5.2 TL

CUSTOMER: DAVID CUNNINGHAM
 9805 HOLLOW GLEN PL
 SILVER SPRING, MD 20910

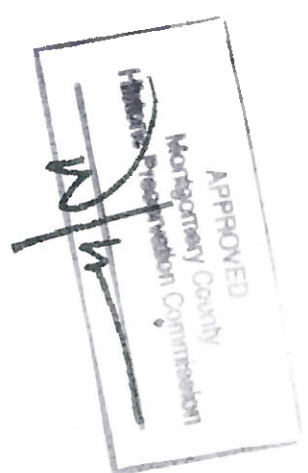
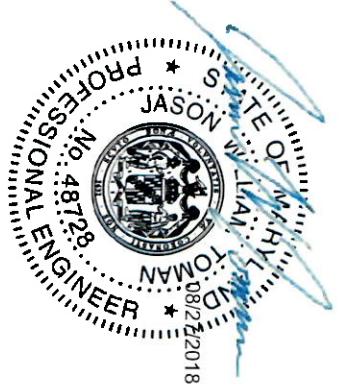
DESCRIPTION: 5.355 KW PV ARRAY
 PAGE NAME: SITE PLAN

DESIGN: Collin Jacobs
 SHEET: 2
 REV. DATE: d 8/26/2018

TESLA



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

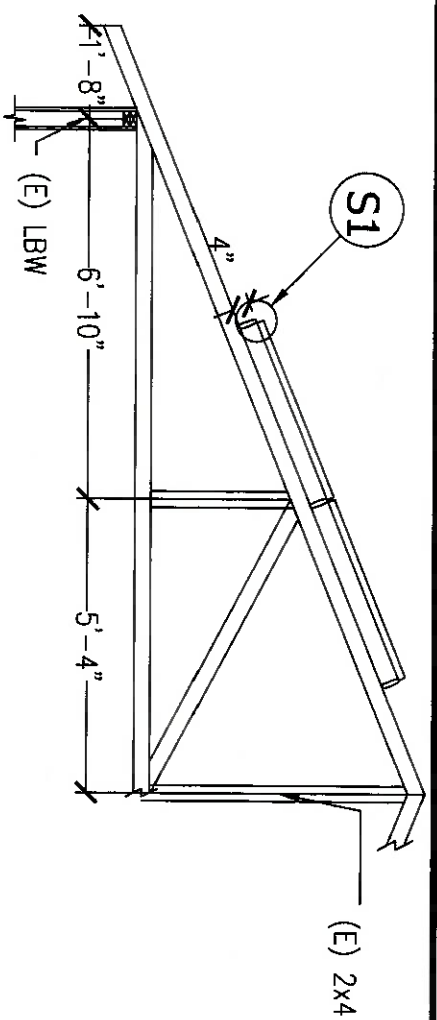


MP1	PITCH: 22	ARRAY PITCH: 22
	AZIMUTH: 149	ARRAY AZIMUTH: 149
	MATERIAL: Comp Shingle	STORY: 2 Stories
MP2	PITCH: 40	ARRAY PITCH: 40
	AZIMUTH: 149	ARRAY AZIMUTH: 149
	MATERIAL: Comp Shingle	STORY: 2 Stories

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

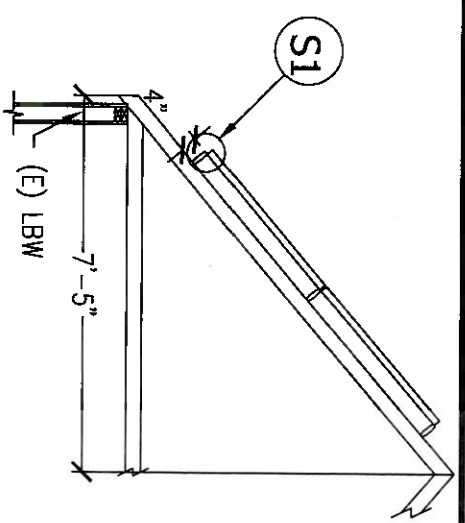
SITE PLAN
 Scale: 1/16" = 1'



A SIDE VIEW OF MP1 NTS

MP1	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	41"	0"	STAGGERED
PORTRAIT	48"	19"	62"	0"	
TOP CHORD 2x4 @ 24" OC			ROOF AZI 149	PITCH 22	STORIES: 2
BOT CHORD 2x4 @ 24" OC			ARRAY AZI 149	PITCH 22	Comp Shingle

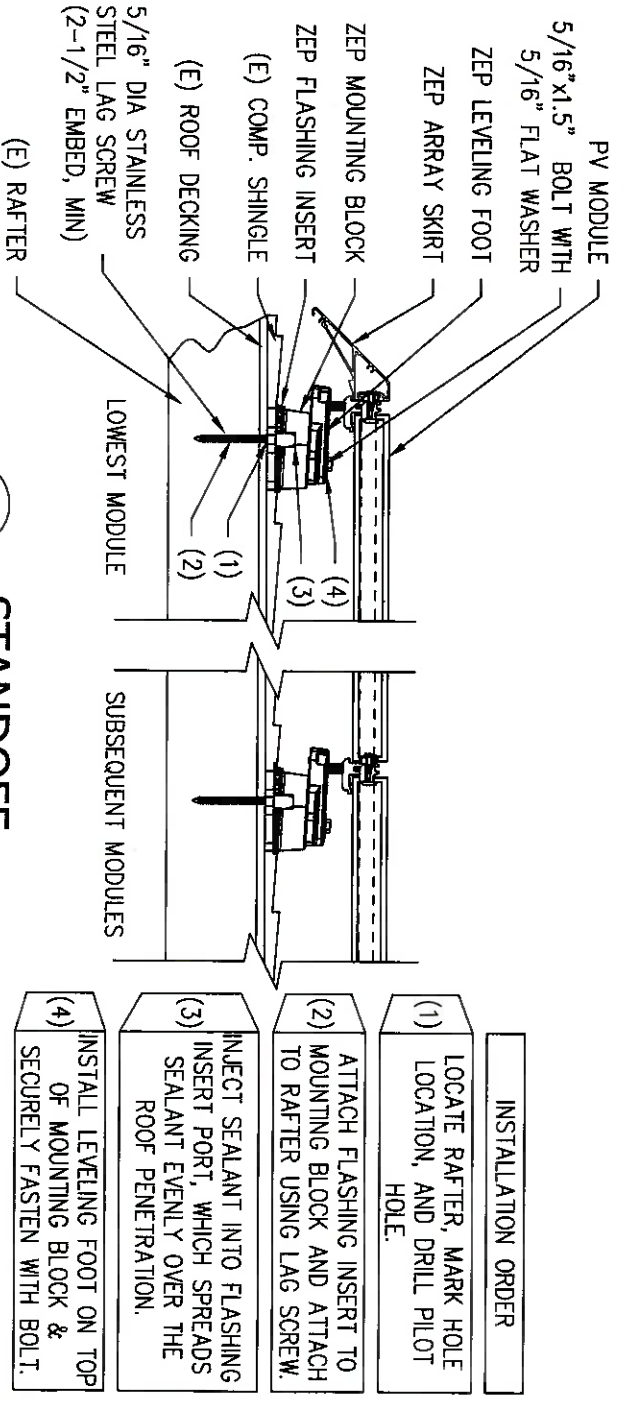
X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV.
X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.



C SIDE VIEW OF MP2B NTS

MP2B	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	41"	0"	STAGGERED
PORTRAIT	48"	20"	62"	0"	
TOP CHORD 2x4 @ 24" OC			ROOF AZI 149	PITCH 40	STORIES: 2
BOT CHORD 2x4 @ 24" OC			ARRAY AZI 149	PITCH 40	Comp Shingle

X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV.
X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.



- INSTALLATION ORDER**
- (1) LOCATE RAFTER, MARK HOLE LOCATION, AND DRILL PILOT HOLE.
 - (2) ATTACH FLASHING INSERT TO MOUNTING BLOCK AND ATTACH TO RAFTER USING LAG SCREW.
 - (3) INJECT SEALANT INTO FLASHING INSERT PORT, WHICH SPREADS SEALANT EVENLY OVER THE ROOF PENETRATION.
 - (4) INSTALL LEVELING FOOT ON TOP OF MOUNTING BLOCK & SECURELY FASTEN WITH BOL.T.

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JOB NUMBER:	JB-2094282 00
MOUNTING SYSTEM:	ZS Comp V4 w Flashing-Insert
MODULES:	(17) SC Sid SC315B2
RAFTER:	Delta # Solvia 5.2 TL

CUSTOMER:
DAVID CUNNINGHAM
9805 HOLLOW GLEN PL
SILVER SPRING, MD 20910

DESCRIPTION:
5.355 KW PV ARRAY

PAGE NAME:
STRUCTURAL VIEWS

DESIGNER:
Collin Jacobs

SHEET: 3 REV. DATE: d 8/26/2018

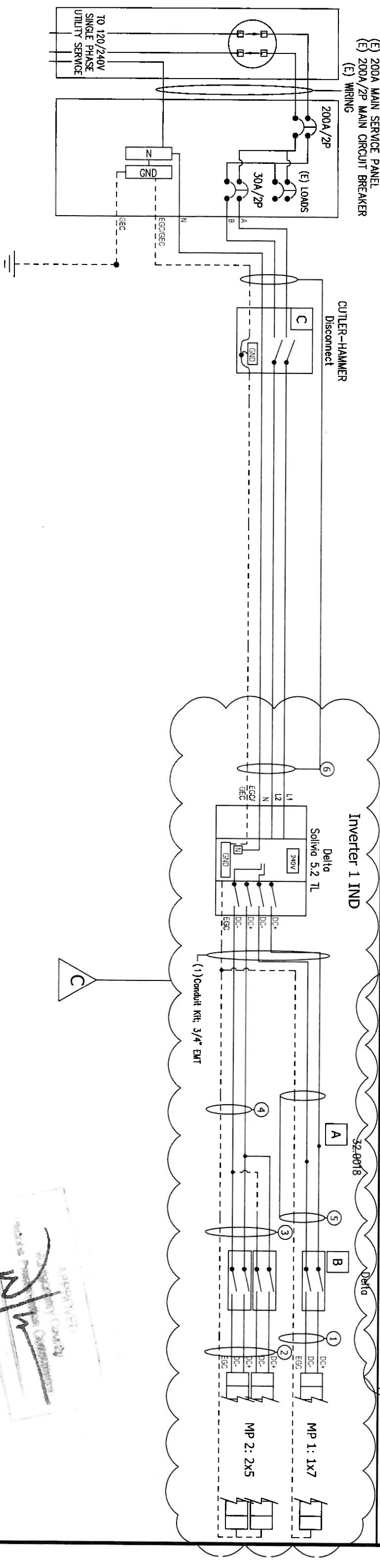
APPROVED
Harris County
Professional Engineer
[Signature]



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

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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: NoLabel Meter Number: NXA112093085 Underground Service Entrance	Inv 1: DC Ungrounded	INV 1 - (1) Delta # Solivia 5.2 TL LABEL: A Inverter: 5200W, 240V, 97.5% Zigbee, PLC INV 2 INV 3	(17) SC Std SC315B2 PV Module: 315W, 294.4 PTC, 40MM, Blk Backsheet w/ Blk Interconnects, MC4, 6800hrs Meyers Voc: 70.2 Vpmax: 58.4 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	#11805 MASTER ELECTRICIAN 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

Voc* = MAX VOC AT MIN TEMP

POI	(1) CUTLER-HAMMER # BR230 PV BACKFEED BREAKER Breaker: 30A/2P, 2 Spaces (1) Ground Rod 5/8" x 8', Copper	C	(1) CUTLER-HAMMER # DG221UB8 Disconnect, 30A, 240Vac, Non-Fusible, NEMA 3R (1) CUTLER-HAMMER # DG030NB Ground/Neutral Kit, 30A, General Duty (06)	AC		A	(1) MULTI-CONTACT PV-AZ94 32.0018; Branch Socket: MC4 U-Joint Connector, Female (1) MULTI-CONTACT PV-AZ54 32.0018; Branch Plug: MC4 U-Joint Connector, Male	DC
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6	(1) AWG #10, THHN-2, Black (1) AWG #10, THHN-2, Red (1) AWG #10, THHN-2, White (1) AWG #8, THHN-2, Green	NEUTRAL Vmp = 240 VAC Imp = 21.6 AAC EGC/GEC - (1) Conduit Kit: 3/4" EMT	3	(4) AWG #10, PV Wire, 600V, Black (1) AWG #10, THHN-2, Green EGC (1) Conduit Kit: 3/4" EMT	Voc* = 394.88 VDC Isc = 11.66 ADC Vmp = 292 VDC Imp = 10.8 ADC	1	(2) AWG #10, PV Wire, 600V, Black (1) AWG #10, THHN-2, Green EGC (1) Conduit Kit: 3/4" EMT	Voc* = 552.82 VDC Isc = 5.83 ADC Vmp = 408.8 VDC Imp = 5.4 ADC
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4	(1) AWG #10, THHN-2, Green EGC (1) Conduit Kit: 3/4" EMT	Vmp = 394.88 VDC Isc = 11.66 ADC Voc* = 292 VDC Imp = 10.8 ADC	5	(2) AWG #10, PV Wire, 600V, Black (1) AWG #10, THHN-2, Green EGC (1) Conduit Kit: 3/4" EMT	Voc* = 552.82 VDC Isc = 5.83 ADC Vmp = 408.8 VDC Imp = 5.4 ADC	2	(1) AWG #10, PV Wire, 600V, Black (1) AWG #10, THHN-2, Green EGC (1) Conduit Kit: 3/4" EMT	Voc* = 394.88 VDC Isc = 5.83 ADC Vmp = 292 VDC Imp = 5.4 ADC
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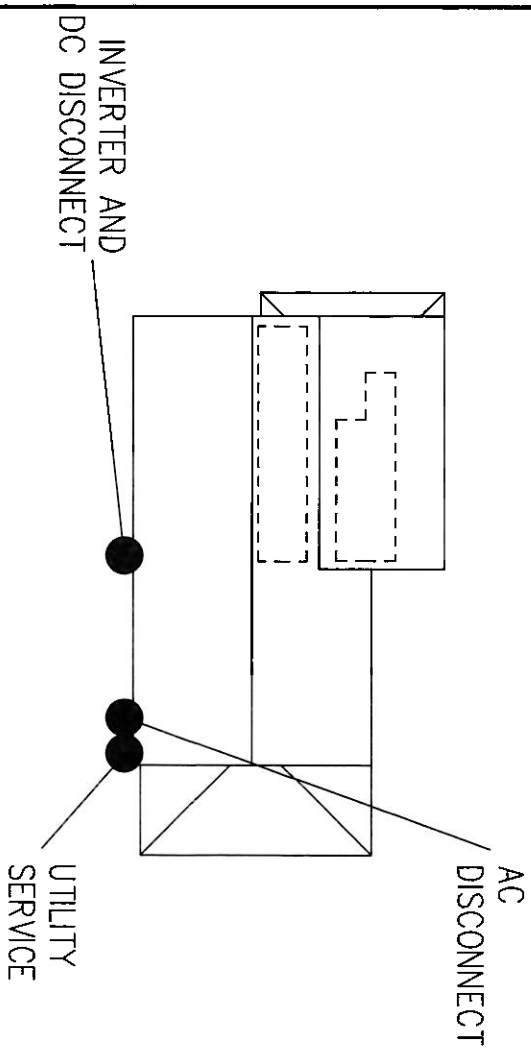
JOB NUMBER: JB-2094282 00	CUSTOMER: GEORGINA CUNNINGHAM 9805 HOLLOW GLEN PL SILVER SPRING, MD 20910	DESCRIPTION: 5.355 KW PV ARRAY	DESIGNER: Collin Jacobs	DATE: 8/26/2018
MODULES: (17) SC Std SC315B2	INVERTER: Delta # Solivia 5.2 TL	PAGE NAME: THREE LINE DIAGRAM	SHEET: 5	REV: d
TESLA				

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CAUTION

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

- Address: 9805 Hollow Glen Pl



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

OPERATING VOLTAGE = 240V

JB-2094282-00

Approved by:
Collin Jacobs
Date: 8/26/2018

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JOB NUMBER: JB-2094282 00
MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert
MODULES: (17) SC Std SC315B2
INVERTER: Delta # Solivix 5.2 TL

CUSTOMER:
DAVID CUNNINGHAM
9805 HOLLOW GLEN PL
SILVER SPRING, MD 20910

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

DESIGN:
Collin Jacobs

SHEET: 6
REV: d
DATE: 8/26/2018

TESLA

WARNING: PHOTOVOLTAIC POWER SOURCE

Label Location:
(C)(CB)(JB)
Per Code:
NEC 690.31.G.3
Label Location:
(DC) (INV)
Per Code:
NEC 690.14.C.2

PHOTOVOLTAIC DC DISCONNECT

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

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

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)

PHOTOVOLTAIC AC DISCONNECT

MAXIMUM AC OPERATING CURRENT [] A
MAXIMUM AC OPERATING VOLTAGE [] V

Label Location:
(AC) (POI)
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

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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

WARNING

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

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

CAUTION

PHOTOVOLTAIC SYSTEM CIRCUITS BACKFED

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

CAUTION

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

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

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 OPERATING CURRENT [] A
MAXIMUM AC OPERATING VOLTAGE [] V

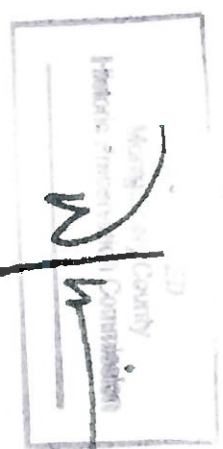
Label Location:
(POI)
Per Code:
NEC 690.17.4; NEC 690.54

WARNING

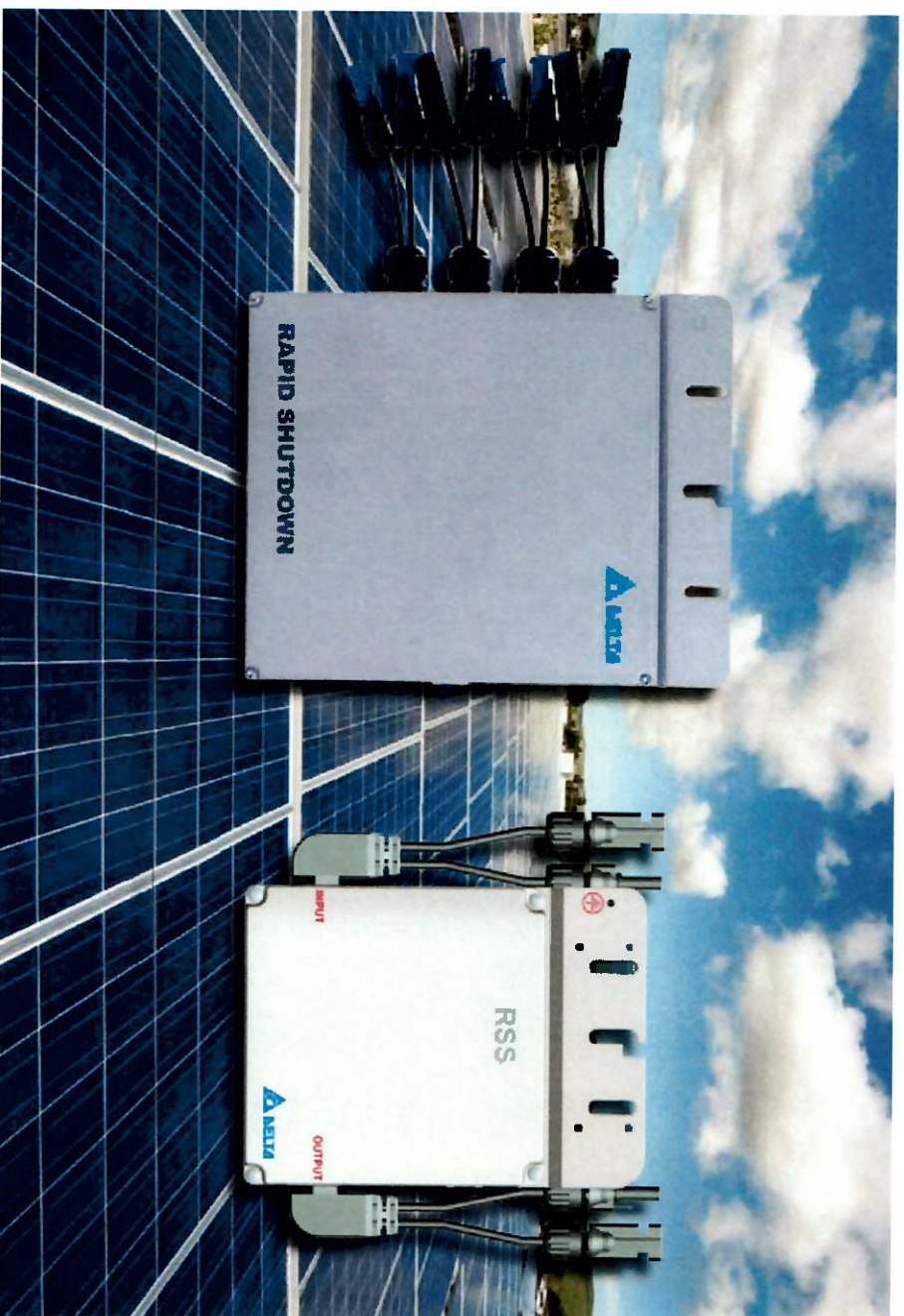
ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

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

- (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



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

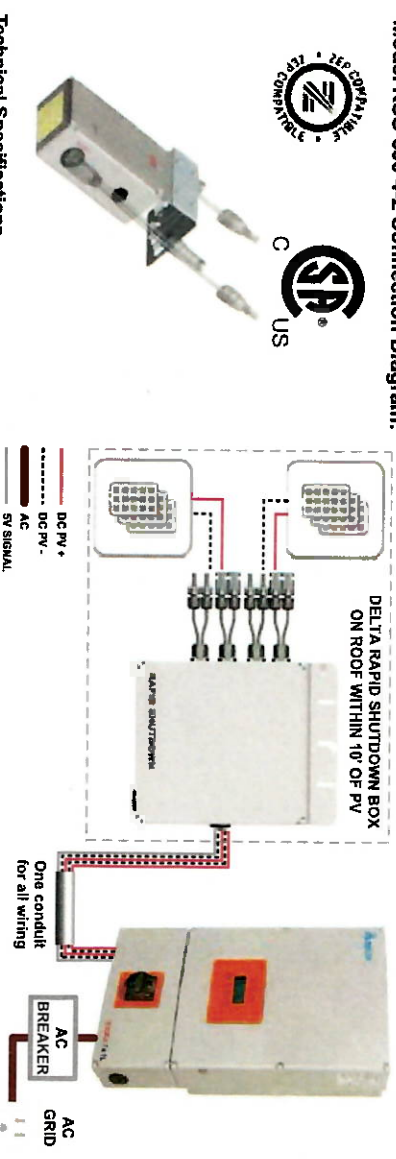
- NEMA 4X Protection
- Compact and Lightweight
- Rack Mount Installation
- Fast Connect with PV Connectors
- Compliant with NEC 2014 article 690.12
- PLC Communication (Model RSS-600 1-1 only)



www.delta-americas.com



Model RSS-600 4-2 Connection Diagram:

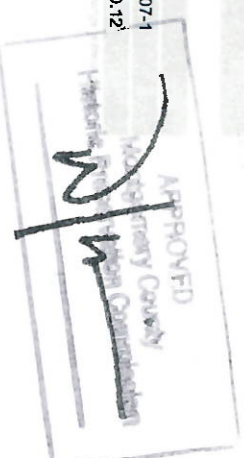


Technical Specifications

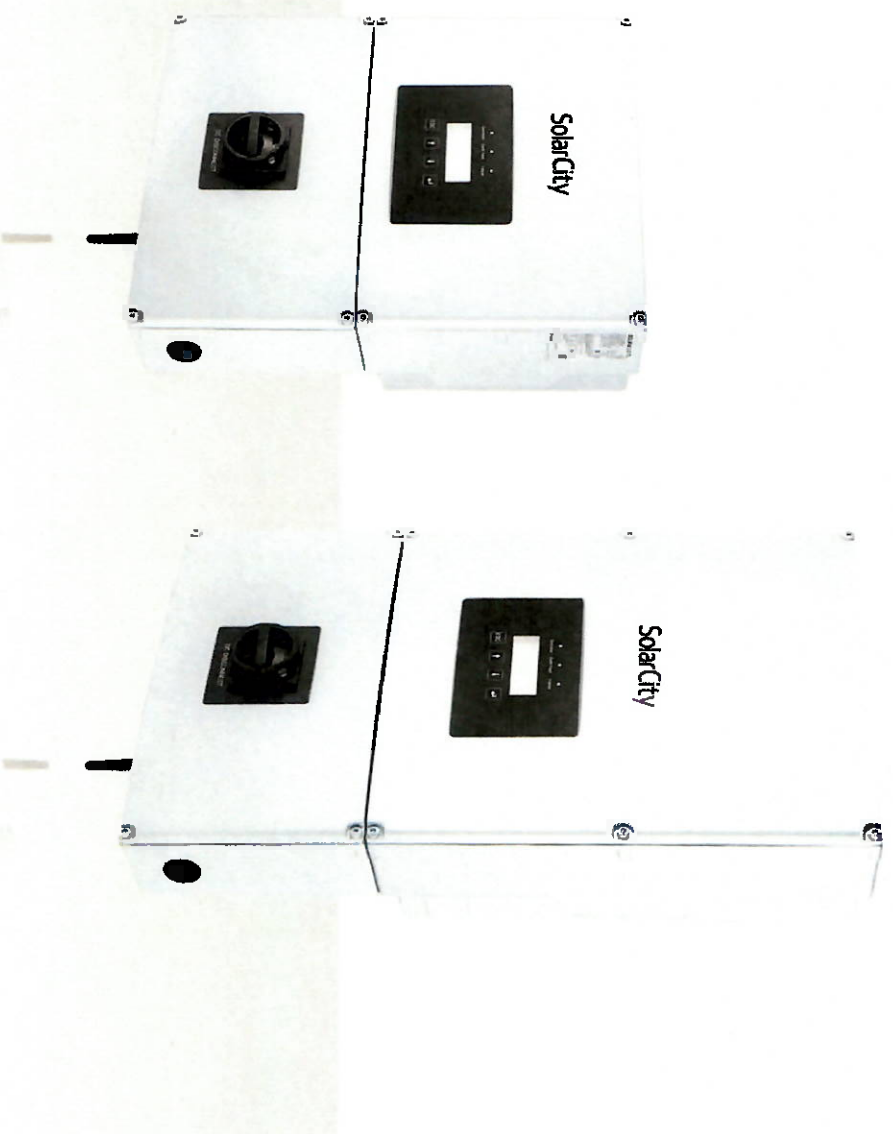
Input Ratings	RSS 400 1-1	RSS 400 4-2
Max. System Voltage	600V DC	600V DC
Max. Number of Input Circuit	1	4
Rated Input Current Per String	20A	10A 15A
Fuse Rating	N/A	15A
Output Ratings		
Max. Number of Output Circuit	1	2
Rated Output Current Per Circuit	20A	20A
Maximum Current Controlled Conductor	25A	25A
Output Terminal Wire Size	10 AWG	12-6 AWG
Output Conduit Size	N/A	3/4" (two holes)
Control Signal Method	PLC Signal	SV 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 2.08 (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 NEC 2014 Article 690.12	UL 1741, CSA 22.2 107-1 NEC 2014 Article 690.12
NEC Code		

Delta Products Corporation, Inc.

46101 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



		SOLIVIA 3.0 TL	SOLIVIA 3.8 TL	SOLIVIA 5.2 TL	SOLIVIA 6.8 TL	SOLIVIA 7.8 TL
INPUT (DC)						
Max. System Voltage		600 V	380 V	5200 W	6600 W	7600 W
Nominal Voltage		380 V	380 V	5200 W @ 208 V / 5200 W @ 240 V	6600 W @ 208 V / 6600 W @ 240 V	6600 W @ 208 V / 7600 W @ 240 V
Operating Voltage Range		85 ~ 550 V	85 ~ 550 V	183 ~ 298 V @ 208 V / 211 ~ 264 V @ 240 V	183 ~ 298 V @ 208 V / 211 ~ 264 V @ 240 V	183 ~ 298 V @ 208 V / 211 ~ 264 V @ 240 V
Full Power MPPT Range		200 ~ 500 V	200 ~ 500 V	24.0 A @ 208 V / 21.5 A @ 240 V	24.0 A @ 208 V / 21.5 A @ 240 V	31.7 A @ 208 V / 27.5 A @ 240 V
Max. Usable Current	18.0 A	20.0 A	25.0 A per MPPT tracker	20.0 A per MPPT tracker	20.0 A per MPPT tracker	20.0 A per MPPT tracker
Max. Short Circuit Current @ STC			4200 W	5000 W	5000 W	5600 W
Max. Allowable Imbalance Power			1.5	1.5	1.5	1.5
Allowed DC Loading Ratio			Internal	Internal	Internal	Internal
DC Disconnect						
MPPT Tracker	1	1				
Total Input Strings Available	2	2				
OUTPUT (AC)						
Nominal Power	3000 W	3800 W	5200 W	6600 W	6600 W	7600 W
Max. Continuous Power	3000 W @ 208 V / 3000 W @ 240 V	3800 W @ 240 V	5200 W @ 208 V / 5200 W @ 240 V	6600 W @ 208 V / 6600 W @ 240 V	6600 W @ 208 V / 6600 W @ 240 V	6600 W @ 208 V / 7600 W @ 240 V
Voltage Range			183 ~ 298 V @ 208 V / 211 ~ 264 V @ 240 V	183 ~ 298 V @ 208 V / 211 ~ 264 V @ 240 V	183 ~ 298 V @ 208 V / 211 ~ 264 V @ 240 V	183 ~ 298 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 / 21.5 A @ 240 V	31.7 A @ 208 V / 27.5 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	60 Hz	60 Hz	60 Hz
Adjustable Frequency Range			59.3 ~ 60.5 Hz	57.0 ~ 63.0 Hz	57.0 ~ 63.0 Hz	57.0 ~ 63.0 Hz
Light Consumption			< 1.5 W	< 1.5 W	< 1.5 W	< 1.5 W
Total Harmonic Distortion @ Nominal Power			< 3%	< 3%	< 3%	< 3%
Power Factor @ Nominal Power			> 0.99	> 0.99	> 0.99	> 0.99
Adjustable Power Factor Range			0.851 ~ 0.85c	0.851 ~ 0.85c	0.851 ~ 0.85c	0.851 ~ 0.85c
Acoustic Noise Emission			<50 db(A) @ 1m	<50 db(A) @ 1m	<50 db(A) @ 1m	<50 db(A) @ 1m
GENERAL SPECIFICATION						
Max. Efficiency		98%	97.5% @ 200V / 97.5% @ 240V	97.5% @ 200V / 97.5% @ 240V	97.5% @ 200V / 97.5% @ 240V	97.5% @ 200V / 97.5% @ 240V
CEC Efficiency						
Operating Temperature Range			-13 ~ 158°F (-25 ~ 70°C) derating above 122°F (50°C)	-13 ~ 158°F (-25 ~ 70°C) derating above 122°F (50°C)	-13 ~ 158°F (-25 ~ 70°C) derating above 122°F (50°C)	-13 ~ 158°F (-25 ~ 70°C) derating above 122°F (50°C)
Storage Temperature Range			-40 ~ 185°F (-40 ~ 85°C)	-40 ~ 185°F (-40 ~ 85°C)	-40 ~ 185°F (-40 ~ 85°C)	-40 ~ 185°F (-40 ~ 85°C)
Humidity			0 ~ 100%	0 ~ 100%	0 ~ 100%	0 ~ 100%
Max. Operating Altitude			2000m above sea level	2000m above sea level	2000m above sea level	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)	28.8 x 15.8 x 8.5 in (680 x 401 x 216 mm)	28.8 x 15.8 x 8.5 in (680 x 401 x 216 mm)	28.8 x 15.8 x 8.5 in (680 x 401 x 216 mm)	28.8 x 15.8 x 8.5 in (680 x 401 x 216 mm)	28.8 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)	65.0 lbs (29.5 kg)	65.0 lbs (29.5 kg)	65.0 lbs (29.5 kg)	65.0 lbs (29.5 kg)
AC Connectors			Natural Connection	Natural Connection	Natural Connection	Natural Connection
Compatible Wiring Gauge in AC			Spring terminals in connection box	Spring terminals in connection box	Spring terminals in connection box	Spring terminals in connection box
DC Connectors			AWG 12 ~ AWG 6 Copper (According to NEC 310.15)	AWG 12 ~ AWG 6 Copper (According to NEC 310.15)	AWG 12 ~ AWG 6 Copper (According to NEC 310.15)	AWG 12 ~ AWG 6 Copper (According to NEC 310.15)
Compatible Wiring Gauge in DC			2 pairs of spring terminals in connection box	2 pairs of spring terminals in connection box	2 pairs of spring terminals in connection box	2 pairs of spring terminals in connection box
Communication Interface			AWG 12 ~ AWG 6 Copper (According to NEC 690.8)	AWG 12 ~ AWG 6 Copper (According to NEC 690.8)	AWG 12 ~ AWG 6 Copper (According to NEC 690.8)	AWG 12 ~ AWG 6 Copper (According to NEC 690.8)
Display			ZigBee	ZigBee	ZigBee	ZigBee
Enclosure Material			3 LEDs, 4-Line LCD	3 LEDs, 4-Line LCD	3 LEDs, 4-Line LCD	3 LEDs, 4-Line LCD
Enclosure Protection Rating			Diecast Aluminum	Diecast Aluminum	Diecast Aluminum	Diecast Aluminum
STANDARDS / DIRECTIVES						
Enclosure Protection Rating			NEMA 4X, IEC 60068-2-11 Salt mist	NEMA 4X, IEC 60068-2-11 Salt mist	NEMA 4X, IEC 60068-2-11 Salt mist	NEMA 4X, IEC 60068-2-11 Salt mist
Safety			UL 1741 Second Edition, CSA C22.2 No.107.1-01	UL 1741 Second Edition, CSA C22.2 No.107.1-01	UL 1741 Second Edition, CSA C22.2 No.107.1-01	UL 1741 Second Edition, CSA C22.2 No.107.1-01
SW Approval			UL 1898	UL 1898	UL 1898	UL 1898
Ground-Fault Protection			NEC 690.35, UL 1741 CRD	NEC 690.35, UL 1741 CRD	NEC 690.35, UL 1741 CRD	NEC 690.35, UL 1741 CRD
Anti-Islanding Protection			IEEE 1547, IEEE 1547.1	IEEE 1547, IEEE 1547.1	IEEE 1547, IEEE 1547.1	IEEE 1547, IEEE 1547.1
EMC			FCC part 15 Class B	FCC part 15 Class B	FCC part 15 Class B	FCC part 15 Class B
AFCI			UL 1699B (Type 1), NEC 690.11	UL 1699B (Type 1), NEC 690.11	UL 1699B (Type 1), NEC 690.11	UL 1699B (Type 1), NEC 690.11
PV Rapid Shutdown			UL 1741 GRD PVRSS, NEC 690.12 (with SMART RSS)	UL 1741 GRD PVRSS, NEC 690.12 (with SMART RSS)	UL 1741 GRD PVRSS, NEC 690.12 (with SMART RSS)	UL 1741 GRD PVRSS, NEC 690.12 (with SMART RSS)
Integrated Meter			ANSI C12.1 (metr. 1% Accuracy)	ANSI C12.1 (metr. 1% Accuracy)	ANSI C12.1 (metr. 1% Accuracy)	ANSI C12.1 (metr. 1% Accuracy)
Regulator of Grid Support			California Rule 21, HECO Compliant, IEEE1547	California Rule 21, HECO Compliant, IEEE1547	California Rule 21, HECO Compliant, IEEE1547	California Rule 21, HECO Compliant, IEEE1547
WARRANTY						
Standard Warranty			10 years	10 years	10 years	10 years

Delta Products Corporation, Inc.
46101 Fremont Blvd.
Fremont, CA 94538
Sales Email: inverter_sales@delta.com
Support Email: inverter_support@delta.com
Sales Hotline: +1 877-442-5951 or +1 606-389-8021
Support Hotline: +1 877-442-4802
Support (intl): +1 626-389-8019
Monday to Friday from 7 am to 5 pm PST (gmt from Holidays)

Solar Inverters

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

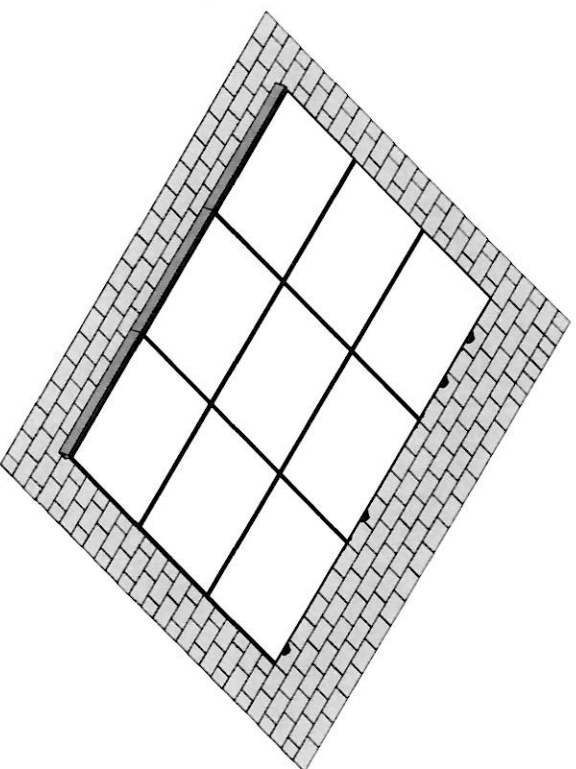
- Wide Operating Voltage Range: 85 ~ 550V
- Wide Operating Temperature Range: -13 ~ 158°F (-25 ~ 70°C)
- High CEC Efficiency: 97.5%
- Integrated AFCI (Arc Fault Circuit Interruption)
- NEMA 4X plus Salt Mist Corrosion Protection
- Natural Convection Cooling
- Dual MPPT (5.2kW / 6.6kW / 7.6kW)
- Compact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



US



ZS Comp
for composition shingle roofs



Components

<p>zepsolar.com</p> <div data-bbox="695 404 897 512" data-label="Image"> </div> <div data-bbox="846 621 876 761" data-label="Section-Header"> <p>Description</p> </div> <div data-bbox="735 652 846 1383" data-label="List-Group"> <ul style="list-style-type: none"> • PV mounting solution for composition shingle roofs • Works with all Zep Compatible Modules • Auto bonding UL-listed hardware creates structural and electrical bond • ZS Comp has a UL 1703 Class "A" Fire Rating when installed using modules from any manufacturer certified as "Type 1" or "Type 2" </div> <div data-bbox="675 621 705 792" data-label="Section-Header"> <p>Specifications</p> </div> <div data-bbox="483 652 665 1414" data-label="List-Group"> <ul style="list-style-type: none"> • Designed for pitched roofs • Installs in portrait and landscape orientations • ZS Comp supports module wind uplift and snow load pressures to 50 psf per UL 2703 • Wind tunnel report to ASCE 7-05 and 7-10 standards • ZS Comp grounding products are UL listed to UL 2703 and UL 467 • ZS Comp 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 </div>	<p>zepsolar.com</p> <div data-bbox="1421 1880 1582 2097" data-label="Image"> </div> <div data-bbox="1280 1849 1370 2035" data-label="Caption"> <p>Mounting Block Part No. 850-1633 Listed to UL 2703</p> </div> <div data-bbox="1098 1880 1239 2097" data-label="Image"> </div> <div data-bbox="967 1849 1058 2035" data-label="Caption"> <p>Flashing Insert Part No. 850-1628 Listed to UL 2703</p> </div> <div data-bbox="786 1958 947 2004" data-label="Image"> </div> <div data-bbox="624 1849 756 2097" data-label="Caption"> <p>Captured Washer Lag Part No. 850-1631-001 850-1631-002 850-1631-003 850-1631-004</p> </div> <div data-bbox="453 1880 594 2097" data-label="Image"> </div> <div data-bbox="342 1849 433 2035" data-label="Caption"> <p>Leveling Foot Part No. 850-1397 Listed to UL 2703</p> </div>	<p>zepsolar.com</p> <div data-bbox="1391 2160 1592 2424" data-label="Image"> </div> <div data-bbox="1280 2160 1370 2408" data-label="Caption"> <p>Array Skirt Part No. 850-1608 or 500-0113 Listed to UL 2703</p> </div> <div data-bbox="1098 2160 1239 2408" data-label="Image"> </div> <div data-bbox="967 2160 1058 2408" data-label="Caption"> <p>Grip Part No. 850-1606 or 850-1421 Listed to UL 2703</p> </div> <div data-bbox="776 2206 947 2362" data-label="Image"> </div> <div data-bbox="645 2160 756 2377" data-label="Caption"> <p>End Cap Part No. (L) 850-1586 or 850-1460 (R) 850-1588 or 850-1467</p> </div>	<p>zepsolar.com</p> <div data-bbox="1421 2501 1562 2688" data-label="Image"> </div> <div data-bbox="1280 2470 1370 2719" data-label="Caption"> <p>Interlock Part No. 850-1388 or 850-1613 Listed to UL 2703</p> </div> <div data-bbox="1098 2501 1239 2657" data-label="Image"> </div> <div data-bbox="967 2470 1058 2719" data-label="Caption"> <p>Ground Zep V2 Part No. 850-1511 Listed to UL 467 and UL 2703</p> </div> <div data-bbox="806 2501 917 2657" data-label="Image"> </div> <div data-bbox="665 2470 756 2626" data-label="Caption"> <p>DC Wire Clip Part No. 850-1509 Listed to UL 1565</p> </div>
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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: zepsolar.com.

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SC-B2 SERIES MODULE



SC315B2 AND SC310B2 BLACK MODULE

Zero 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.



LIMITED WARRANTY

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

MATERIALS

Workmanship
15 years
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.
Modules are manufactured by Panasonic for SolarCity. Modules are only warranted by Panasonic if the modules are included in a PV system sold by SolarCity or Tesla SolarCity and Tesla make no warranties related to the modules, which are sold as-is. SolarCity will handle any warranty claims on behalf of any purchaser.

SOLARCITY

1146057-00-A

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

Model	SC315B2	SC310B2
NOCT (°C)	48	
P_{max} (%/°C)	-0.29	
V_{oc} (%/°C)	-0.25	
I_{sc} (%/°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 1000 mW/m², 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)	294.6	290.7
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)

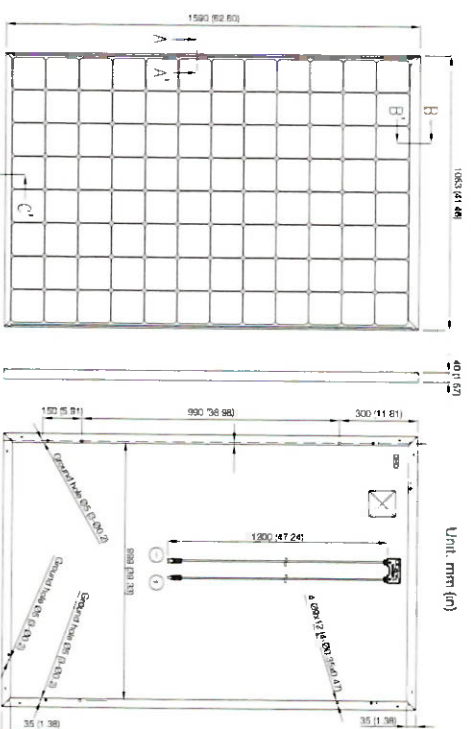
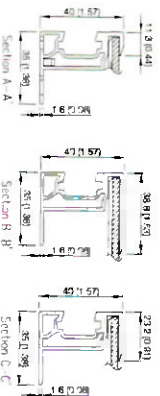
Dimensions
1590 mm (62.60") /
1053 mm (41.46") /
40 mm (1.57")

Connector
MC4

Frame Color
Black

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

Fire Type
UL 1709 Type 2



SOLARCITY

1146057-00-A

