Arlington Historic District Commissions

Application for Certificate

(Read attached instructions before completing form)

For Commission Use Only:
Date Rec: _____
Hearing Date:_____
Certificate #:_____
Monitor: _____

Certificate Requested:

Appropriateness – for work described herein
Minor project x Major Project Demolition
Non-Applicability – for the following reason(s):
Not subject to public view
Maintenance, repair, or replacement using same design and materials
Proposed change specifically excluded from review under Bylaw
Other: _____
Hardship – financial or otherwise and does not conflict substantially with the intent and purposes of the Bylaw

General Information:

Property Address 204 Pleasant St, Arlington, MA 02476, US District _____
Owner(s) Paul English Email pmeboston@gmail.com
Owner's Phone (h)_____ (w)_____ (fax)_____
Owner's Address 204 Pleasant St, Arlington, MA 02476, US
Applicant (if not Owner) Tesla Energy Operations: Lynelle Mastromarino
Applicant's Phone (h)_____ (w) 978-956-3146 (fax)_____
Applicant's Address 240 Ballardvale St Unit A Wilmington, MA 01887
Applicant's Relationship to Owner Authorized Agent

Contractor Tesla Energy Operations: Daniel Fonzi Phone 978-956-3146
Architect _____ Phone _____

Dates of Anticipated Work: Start_____ **Completion**_____

Description of Proposed Work: (attach additional pages as necessary) Please include a description of how the proposed work (if a change or addition) is historically and architecturally compatible with the building and the District as a whole.

Install 48 solar panel system to the roof of house rated @ 16.32 kW

Required Documentation Acknowledgement: (see attached instructions)

x I acknowledge that I am required to provide supporting documentation, including the attached "Supporting Documents Checklist", by the deadlines indicated in the instructions. I understand that if such documents are not provided in a timely manner, this application will be considered to be incomplete and Commission action may be delayed.

I have read the attached instructions and, to the best of my knowledge, the information contained in this application is accurate and complete. I also give permission for members of the AHDC to access the property for the purpose of reviewing this application and work done under any certificate issued to me.

Owners Signature(s): _____ **Date:** 11/5/2020

ARLINGTON HISTORIC DISTRICT APPLICATION
Supporting Documentation Checklist

Property Address 204 Pleasant St, Arlington, MA 02476, US **District** _____
Applicant's Name Paul English **Email** pmeboston@gmail.com
Applicant's Phone (Day) _____ **(Mobile)** _____

☐ **For Minor Projects or Certificate of Non-Applicability**

- ☐ **Drawings (11x17 max., with graphic scale, dimensioned, all materials identified) or marked up Photographs (8x10)**
  Existing conditions of historic façade(s) to be modified; Show location of proposed work; Show proposed feature(s); Elevations showing proposed work and context; Drawing showing location of proposed work; Drawing showing the proposed feature(s); Site plan for site located equipment and features
- ☐ **Manufacturer's literature and specifications sheets describing the proposed feature(s)**
- ☐ **Description of how the proposed work is either compatible with the District or Non-Applicable**

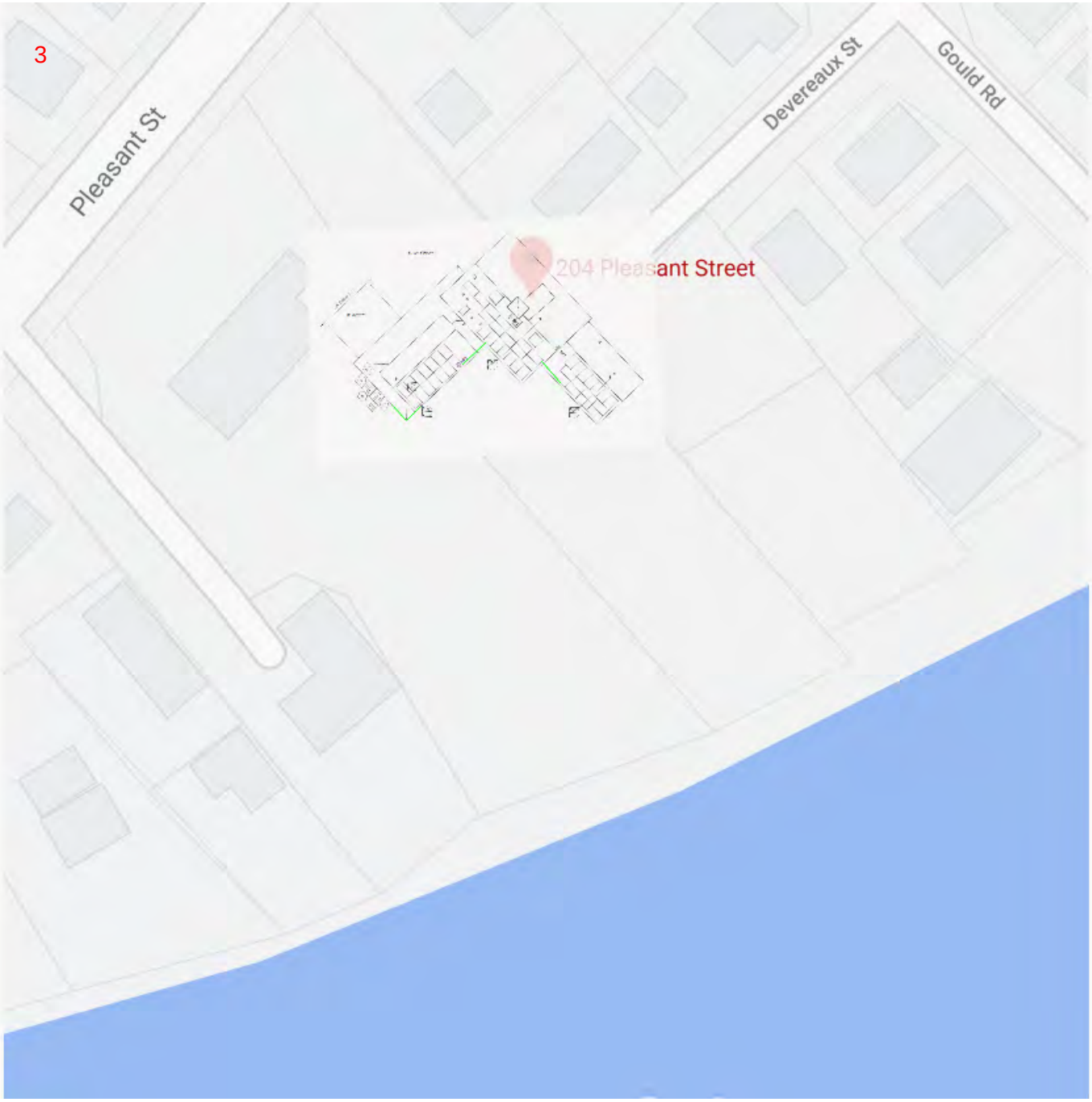
☐ **For Major Projects**

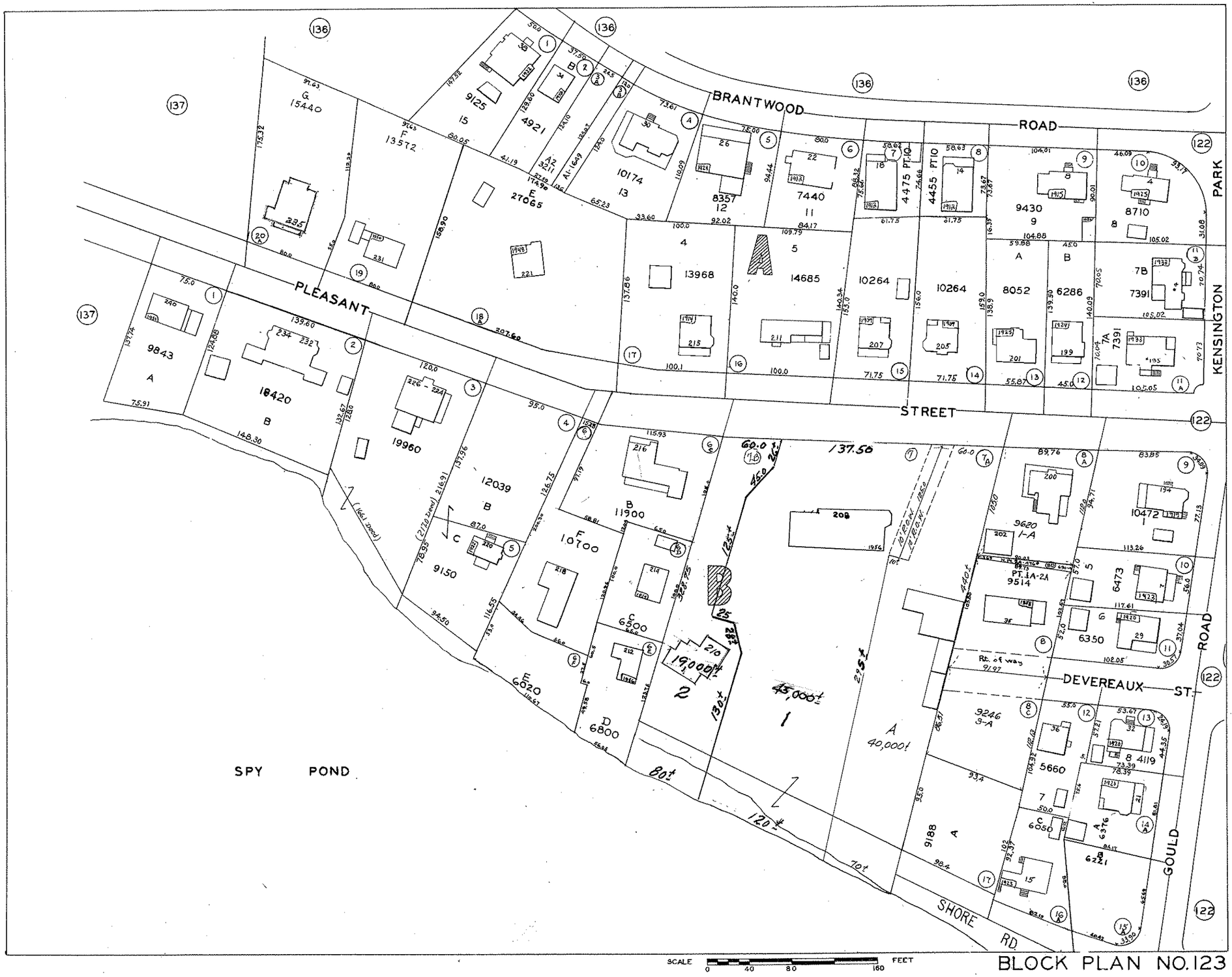
- ☐ **Photographs (8x10)**
  Existing conditions of historic structure to be modified (facades, roofs, neighboring buildings); Site; Neighborhood context; Historic precedents for proposed work
- ☒ **Drawings (11x17 max., with graphic scale, must show differentiated existing and proposed conditions, dimensions, and all materials identified)**
  - o ***Plans***
    Site (showing proposed structures, fences, walls, parking, HVAC equipment, electrical equipment, and relationship to adjacent roads, neighboring buildings); Each floor; Roof (showing valleys, hips, ridges, dormers, skylights, chimneys, vents, HVAC equipment, solar panels)
  - o ***Elevations of building facades- identify:***
    Foundation; Siding ; Trim; Gutters; Downspouts; Shutters; Railings; Stairs; Windows; Doors; Roof materials; Roof pitch; Chimneys and vents; Masonry; Light fixtures; Solar panels; HVAC equipment; Electrical equipment; Fences; Signage
  - o ***Wall sections (especially showing projecting features such as bays, balconies, porches, additions)***
  - o ***Relevant exterior detail drawings (architectural trim, eaves, doors, windows, caps, columns, vents, rail systems)***
  - o ***Profile drawings (window and door elements, railings, balusters, stairs, shutters, roof trim, corner boards, casings, water tables, skirts, frieze boards, and all other trim)***
  - o ***For projections, additions and new construction also include:***
    Neighborhood lot plan- include footprint to lot area ratio as well as that of neighboring lots; Plot plan- existing building(s), setbacks, proposed new structures; Site section (show relationship to site topography, adjacent structures, major landscape features, roads)
- ☒ **Manufacturers' literature and specification sheets describing the proposed components**
- ☐ **Suggested Supporting Submittals: Model; Physical Samples**
- ☒ **Description of how the proposed work is compatible with the District.**

☐ **For Demolition**

- ☐ **Statement of current state of existing structure and reason for demolition**
- ☐ **Statement of the historic significance of the structure**
- ☐ **Site Documentation (including Plot plan; Photographs of existing conditions; List existing materials; Year built; Original architect)**
- ☐ **Other provided documentation not described above (please list on a separate attached sheet).**

Applicants Signature(s): _____ **Date:** 11/6/20


Pleasant St
Devereaux St
Gould Rd
204 Pleasant Street


BRANTWOOD ROAD
PLEASANT STREET
PARK
KENSINGTON
DEVEREAUX ST
GOULD ROAD
SHORE RD
SPY POND
9125
15
4921
10174
13
8357
12
7440
11
4475 PT.10
4455 PT.10
9430
9
8710
8
9843
A
18420
B
19960
12039
B
11900
10700
F
9150
6500
C
6620
E
6800
D
27065
E
13968
4
14685
5
10264
10264
8052
A
6286
B
7391
7B
7391
7A
40,000±
1
2
9246
3-A
9188
A
5660
8
4119
6350
9620
1-A
9514
PT.1A-2A
6473
10472
SCALE
0
40
80
160
FEET
BLOCK PLAN NO.123

0 160 320 ft

Printed on 12/03/2020 at 02:48 PM

Town of Arlington, MA


36 Devereaux St
Arlington, Massachusetts
Google
Street View
Brentwood Rd


205 Pleasant St
Arlington, Massachusetts
Google
Street View
204

ABBREVIATIONS

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

ELECTRICAL NOTES

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

JURISDICTION NOTES

LICENSE

HIC #168572
ELEC 22812A

MODULE GROUNDING METHOD: ZEP SOLAR

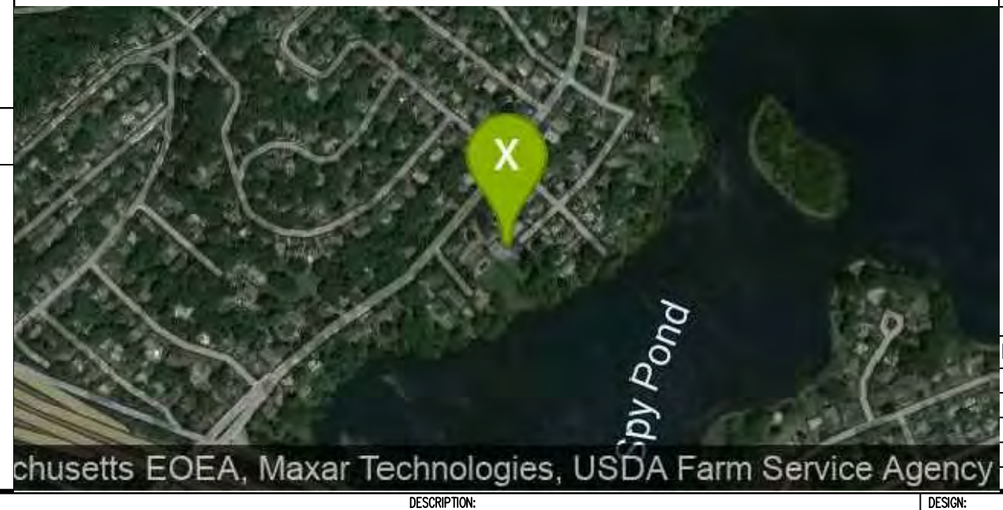
AHJ: Arlington

UTILITY: Eversource Energy – South Shore (NSTAR-Commonwealth Electric)

GENERAL NOTES

1. ALL WORK TO BE DONE TO THE 9TH EDITION OF THE MA STATE BUILDING CODE.
2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2020 NATIONAL ELECTRIC CODE INCLUDING MASSACHUSETTS AMENDMENTS.

VICINITY MAP



INDEX

REV BY DATE COMMENTS

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

JOB NUMBER: JB-0243694 00

MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert

MODULES: (48) Hanwha Q-CELLS # Q.Peak DUO BLK-G6+ 340

INVERTER: SolarEdge Technologies Ltd. # SE7600H-US [240V]

CUSTOMER:
Paul English
204 Pleasant St
Arlington, MA 02476

DESCRIPTION: 16.32 KW PV ARRAY

PAGE NAME: COVER SHEET

DESIGN: Jonathan Chavez

SHEET: 1 REV: DATE: 8/14/2020

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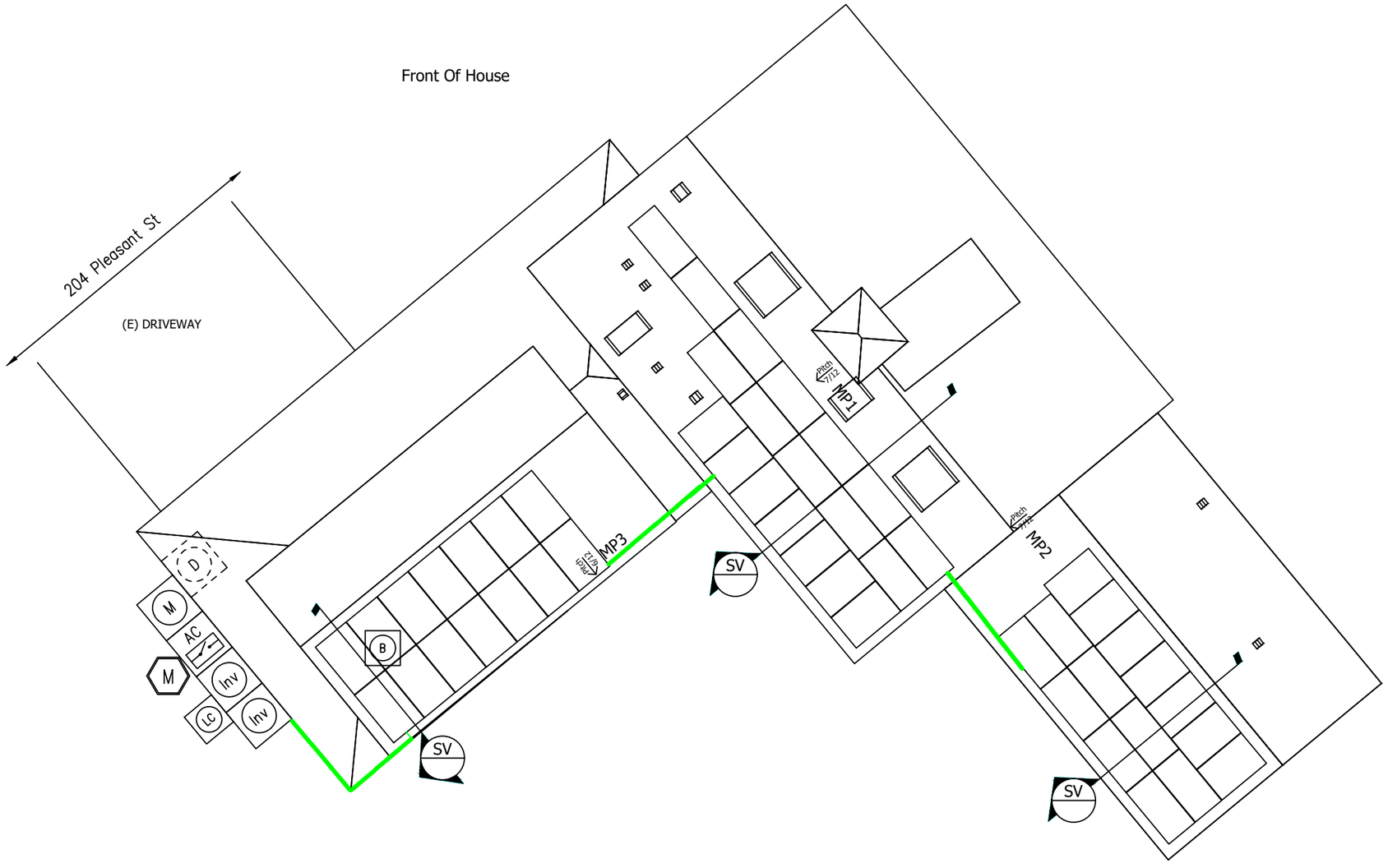
10



MP1	PITCH: 30 AZIMUTH: 230 MATERIAL: Comp Shingle	ARRAY PITCH: 30 ARRAY AZIMUTH: 230 STORY: 2 Stories
MP2	PITCH: 30 AZIMUTH: 230 MATERIAL: Comp Shingle	ARRAY PITCH: 30 ARRAY AZIMUTH: 230 STORY: 2 Stories
MP3	PITCH: 23 AZIMUTH: 140 MATERIAL: Comp Shingle	ARRAY PITCH: 23 ARRAY AZIMUTH: 140 STORY: 2 Stories

LEGEND

- (M) (E) UTILITY METER & WARNING LABEL
- (Inv) INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS
- DC DISCONNECT & WARNING LABELS
- AC DISCONNECT & WARNING LABELS
- (B) DC JUNCTION/COMBINER BOX & LABELS
- (D) DISTRIBUTION PANEL & LABELS
- (LC) LOAD CENTER & WARNING LABELS
- (M) DEDICATED PV SYSTEM METER
- (RSD) 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'

0 1' 10' 21'

N W E S

JOB NUMBER: JB–0243694 00

MOUNTING SYSTEM: ZS Comp V4 w Flashing–Insert

MODULES: (48) Hanwha Q–CELLS # Q.Peak DUO BLK–G6+ 340

INVERTER: SolarEdge Technologies Ltd. # SE7600H–US [240V]

CUSTOMER:
Paul English
204 Pleasant St
Arlington, MA 02476

DESCRIPTION: 16.32 KW PV ARRAY

PAGE NAME: SITE PLAN

DESIGN: Jonathan Chavez

SHEET: 2 REV: DATE: 8/14/2020

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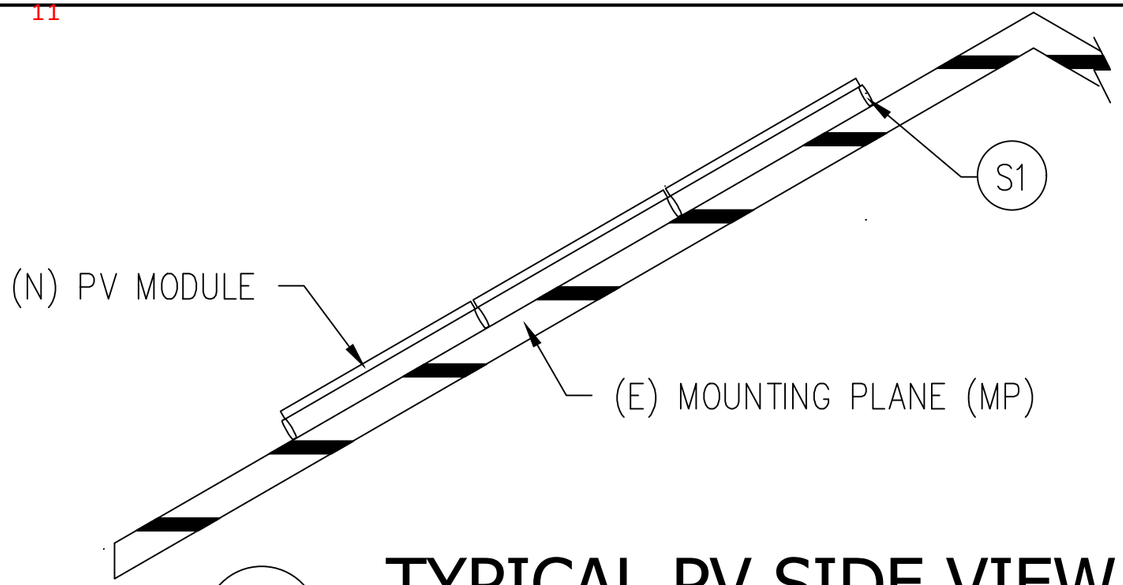
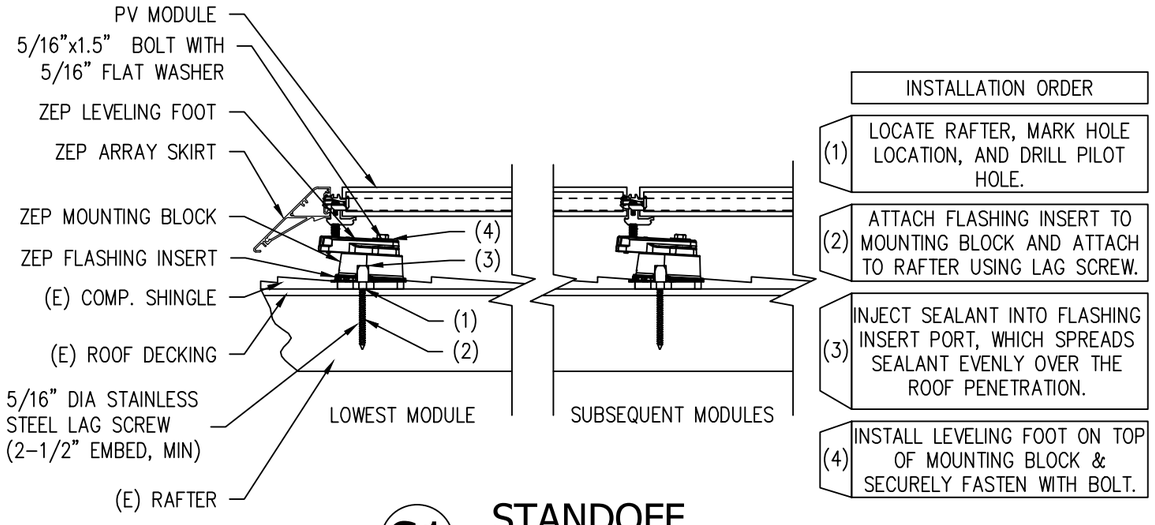
11



SV TYPICAL PV SIDE VIEW

NTS



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 BOLT.

S1 STANDOFF

Scale: 1 1/2" = 1'

JOB NUMBER: JB-0243694 00

MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert

MODULES: (48) Hanwha Q-CELLS # Q.Peak DUO BLK-G6+ 340

INVERTER: SolarEdge Technologies Ltd. # SE7600H-US [240V]

CUSTOMER:
Paul English
204 Pleasant St
Arlington, MA 02476

DESCRIPTION: 16.32 KW PV ARRAY

PAGE NAME: STRUCTURAL VIEWS

DESIGN: Jonathan Chavez

SHEET: 3 REV: DATE: 8/14/2020

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12

Jobsite Specific Design Criteria				
Design Code		ASCE_7_10		
Importance Factor	I	1		
Ultimate Wind Speed	V-Ult	130	Fig. 1609A	
Exposure Category		C	Section 26.7	
Ground Snow Load	pg	40	Table 7-1	

MP Specific Design Information								
MP Name	MP1	MP3	MP2					
Roofing	Comp Shingle	Comp Shingle	Comp Shingle					
Standoff	ZS Comp V4 w Flashing-Insert	ZS Comp V4 w Flashing-Insert	ZS Comp V4 w Flashing-Insert					
Pitch	30	23	30					
SL/RLL: PV	20.0 psf	23.5 psf	20.0 psf					
SL/RLL: Non-PV	30.0 psf	30.0 psf	30.0 psf					

Standoff Spacing and Layout								
MP Name	MP1	MP3	MP2					
Landscape X-Spacing	72"	72"	72"					
Landscape X-Cantilever	24"	24"	24"					
Landscape Y-Spacing	41"	41"	41"					
Landscape Y-Cantilever	-	-	-					
Portrait X-Spacing	48"	48"	48"					
Portrait X-Cantilever	18"	19"	18"					
Portrait Y-Spacing	69"	69"	69"					
Portrait Y-Cantilever	-	-	-					
Layout	Staggered	Staggered	Staggered					
X and Y are maximums that are always relative to the structure framing that supports the PV. X is across rafters and Y is along rafters.								

JOB NUMBER: JB-0243694 00

MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert

MODULES: (48) Hanwha Q-CELLS # Q.Peak DUO BLK-G6+ 340

INVERTER: SolarEdge Technologies Ltd. # SE7600H-US [240V]

CUSTOMER:
Paul English
204 Pleasant St
Arlington, MA 02476

DESCRIPTION: 16.32 KW PV ARRAY

PAGE NAME: UPLIFT CALCULATIONS

DESIGN: Jonathan Chavez

SHEET: 4 REV: DATE: 8/14/2020

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GROUND SPECS	MAIN PANEL SPECS	GENERAL NOTES	INVERTER SPECS	MODULE SPECS	LICENSE
BOND (N) #6 GEC TO TWO (N) GROUND RODS AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: NoMatch Meter Number: 39 917 585 Underground Service Entrance	Inv 1: DC Ungrounded Inv 2: DC Ungrounded Tie-In: Supply Side Connection	INV 1 – (1) SolarEdge Technologies Ltd. # SE7600H-US [240V] Inverter; 7600W, 240/208V, 99%; SetApp HD Wave w/ZB,AFCI INV 2 – (1) SolarEdge Technologies Ltd. # SE7600H-US [240V] Inverter; 7600W, 240/208V, 99%; SetApp HD Wave w/ZB,AFCI INV 3	– (48) Hanwha Q-CELLS # Q.Peak DUO BLK-G6+ 340 PV Module; 340W, 318 PTC, 40MM, Black Fr, MC4, ZEP, 1000V Voc: 40.66 Vpmax: 33.94 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	HIC #168572 ELEC 22812A

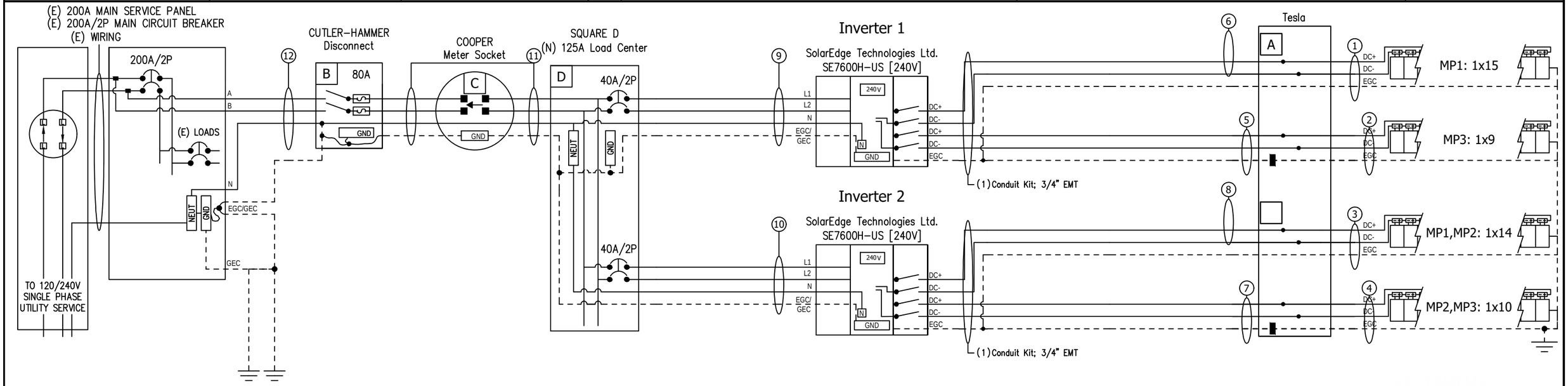


PHOTO VOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

PV METER IS FOR PARTICIPATION IN THE MA SMART SOLAR REBATE PROGRAM. BOTH METERS WILL BE IN CLOSE PROXIMITY OF EACH OTHER.

Voc* = MAX VOC AT MIN TEMP

AC

POI
- (2) Ground Rod 5/8" x 8', Copper
- (2) ILSCO # IPC 4/0-2/0 Insulation Piercing Connector; Main 4/0-2, Tap 2/0-6

D
- (1) SQUARE D #HOM1224L125PRB Load Center;125A,Convertible,NEMA3R,12sp/24Cir,120v/240v,10kAIC,Surface
- (2) SQUARE D # HOM240 Breaker; 40A/2P, 2 Spaces

SSC
- SUPPLY SIDE CONNECTION. DISCONNECTING MEANS SHALL BE SUITABLE AS SERVICE EQUIPMENT AND SHALL BE RATED PER NEC.

B
- (1) CUTLER-HAMMER # DG223NRB Disconnect; 100A, 240Vac, Fusible, NEMA 3R
- (1) CUTLER-HAMMER # DG100NB Ground/Neutral Kit; 60-100A, General Duty (DG)
- (1) CUTLER-HAMMER #DS16FK Class R Fuse Kit
- (2) FERRAZ SHAWMUT # TR80R Fuse; 80A, 250V, Class RK5 — PV BACKFEED OCP

C
- (1) COOPER # B-Line Meter Socket 011 Meter Socket; 125A, 4-14AWG, Ring Type
- (1) AW CAP; B-Line Meter Socket Accessory

DC

A
- (1) Tesla # 4J; 4 STRING JUNCTION BOX UNFUSED, GROUNDED, Black – Diag DIN Rail

PV
- (48) SOLAREDGE # P400-5NM4MZM PowerBox Optimizer; 400W, ZEP

Gnd
- (1) AWG #6, Solid Bare Copper
- (1)

(N) ARRAY GROUND PER 690.47(D). NOTE: PER EXCEPTION NO. 2, ADDITIONAL ELECTRODE MAY NOT BE REQUIRED DEPENDING ON LOCATION OF (E) ELECTRODE.

11	10Ft	(1) AWG #4, THWN-2, Black (1) AWG #4, THWN-2, Red (1) AWG #4, THWN-2, White NEUTRAL (1) AWG #8, THWN-2, Green EGC	Vmp = 240 VAC	Imp = 64	AAC	– (1) Conduit Kit; 1" EMT				
12	5Ft	(1) AWG #4, THWN-2, Black (1) AWG #4, THWN-2, Red (1) AWG #4, THWN-2, White NEUTRAL (1) AWG #6, Solid Bare Copper GEC	Vmp = 240 VAC	Imp = 64	AAC	– (1) Conduit Kit; 1" EMT				
9	10Ft	(1) AWG #8, THWN-2, Black (1) AWG #8, THWN-2, Red (1) AWG #10, THWN-2, White NEUTRAL (1) AWG #8, THWN-2, Green EGC	Vmp = 240 VAC	Imp = 32	AAC	– (1) Conduit Kit; 3/4" EMT				
10	10Ft	(1) AWG #8, THWN-2, Black (1) AWG #8, THWN-2, Red (1) AWG #10, THWN-2, White NEUTRAL (1) AWG #8, THWN-2, Green EGC	Vmp = 240 VAC	Imp = 32	AAC	– (1) Conduit Kit; 3/4" EMT				
5	50Ft	(1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THHN/THWN-2, Green EGC	Voc* = 480 Vmp = 400 Imp = 7.55	VDC VDC ADC	Isc = 15	ADC	– (1) Conduit Kit; 3/4" EMT			
6	50Ft	(1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THHN/THWN-2, Green EGC	Voc* = 480 Vmp = 400 Imp = 12.58	VDC VDC ADC	Isc = 15	ADC	– (1) Conduit Kit; 3/4" EMT			
7	50Ft	(1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THHN/THWN-2, Green EGC	Voc* = 480 Vmp = 400 Imp = 8.39	VDC VDC ADC	Isc = 15	ADC	– (1) Conduit Kit; 3/4" EMT			
8	50Ft	(1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THHN/THWN-2, Green EGC	Voc* = 480 Vmp = 400 Imp = 11.75	VDC VDC ADC	Isc = 15	ADC	– (1) Conduit Kit; 3/4" EMT			
1	40Ft	(2) AWG #10, PV Wire, 600V, Black (1) AWG #6, Solid Bare Copper EGC	Voc* = 480 Vmp = 400	VDC VDC	Isc = 15 Imp = 12.58	ADC ADC				
2	25Ft	(2) AWG #10, PV Wire, 600V, Black (1) AWG #6, Solid Bare Copper EGC	Voc* = 480 Vmp = 400	VDC VDC	Isc = 15 Imp = 7.55	ADC ADC				
3	35Ft	(2) AWG #10, PV Wire, 600V, Black (1) AWG #6, Solid Bare Copper EGC	Voc* = 480 Vmp = 400	VDC VDC	Isc = 15 Imp = 11.75	ADC ADC				
4	25Ft	(2) AWG #10, PV Wire, 600V, Black (1) AWG #6, Solid Bare Copper EGC	Voc* = 480 Vmp = 400	VDC VDC	Isc = 15 Imp = 8.39	ADC ADC				

JOB NUMBER: JB-0243694 00

MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert

MODULES: (48) Hanwha Q-CELLS # Q.Peak DUO BLK-G6+ 340

INVERTER: SolarEdge Technologies Ltd. # SE7600H-US [240V]

CUSTOMER:
Paul English
204 Pleasant St
Arlington, MA 02476

DESCRIPTION: 16.32 KW PV ARRAY

PAGE NAME: THREE LINE DIAGRAM

DESIGN: Jonathan Chavez

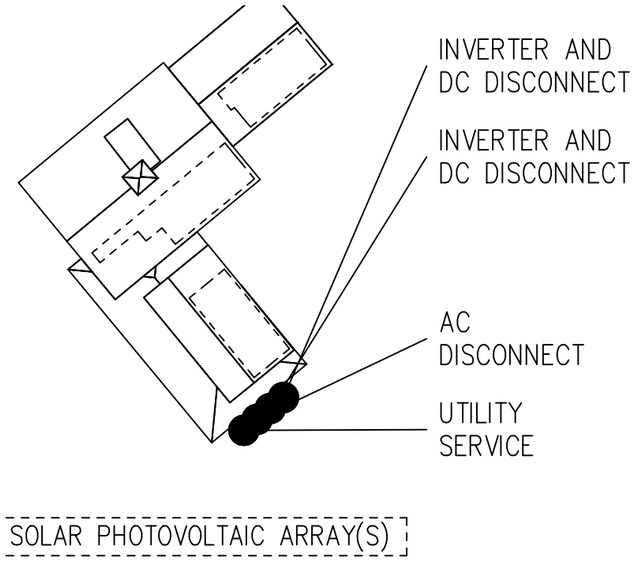
SHEET: 5 REV: DATE: 8/14/2020

TESLA

CAUTION

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

- Address: 204 Pleasant St



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

OPERATING VOLTAGE = 240V

JB-0243694-00

JOB NUMBER: JB-0243694 00

MOUNTING SYSTEM: ZS Comp V4 w Flashing-Insert

MODULES: (48) Hanwha Q-CELLS # Q.Peak DUO BLK-G6+ 340

INVERTER: SolarEdge Technologies Ltd. # SE7600H-US [240V]

CUSTOMER:
Paul English
204 Pleasant St
Arlington, MA 02476

DESCRIPTION: 16.32 KW PV ARRAY

PAGE NAME: SITE PLAN PLACARD

DESIGN: Jonathan Chavez

SHEET: 6 REV: DATE: 8/14/2020

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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 690.13.B

MAXIMUM VOLTAGE
MAXIMUM CIRCUIT CURRENT
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED)

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

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

Label Location:
(DC) (INV)
Per Code:
690.41.B

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:
CEC 690.13.B

PHOTOVOLTAIC AC DISCONNECT

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

MAXIMUM AC OPERATING CURRENT A
MAXIMUM AC OPERATING VOLTAGE V

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

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

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

WARNING
INVERTER OUTPUT
CONNECTION
DO NOT RELOCATE
THIS OVERCURRENT
DEVICE

Label Location:
(POI)
Per Code:
NEC 705.12.B.2.3.b

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH RAPID
SHUTDOWN

Label Location:
(INV)
Per Code:
NEC 690.56.C.3

CAUTION
PHOTOVOLTAIC SYSTEM
CIRCUIT IS 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 705.12.B.3

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

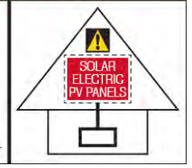
Label Location:
(POI)
Per Code:
CEC 690.13.B

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

Label Location:
(DC) (INV)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

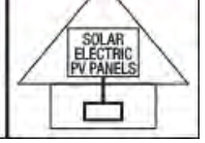
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN CONDUCTORS OUTSIDE THE ARRAY. CONDUCTORS WITHIN THE ARRAY REMAIN ENERGIZED IN SUNLIGHT



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

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



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

(AC): AC Disconnect
(C): Conduit
(CB): Combiner Box
(D): Distribution Panel
(DC): DC Disconnect
(IC): Interior Run Conduit
(INV): Inverter With Integrated DC Disconnect
(LC): Load Center
(M): Utility Meter
(POI): Point of Interconnection

	Label Set		

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SolarEdge Power Optimizer - Zep Compatible™ Module Add-On

For North America P300-ZEP, P400-ZEP

POWER OPTIMIZER

Compatible with Zep Groove framed modules

- Certified Zep Compatible™ bracket
- Attaches to module frame without screws - reduces on-roof labor and mounting costs
- Power optimizer equipment grounded through the bracket
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Next generation maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety

USA - CANADA - GERMANY - ITALY - FRANCE - JAPAN - CHINA - AUSTRALIA - THE NETHERLANDS - UK - ISRAEL - TURKEY - HUNGARY - BELGIUM - ROMANIA - BULGARIA

www.solaredge.us

solaredge

SolarEdge Power Optimizer - Zep Compatible™

Module Add-On For North America P400-ZEP

	P300-ZEP (for 60-cell PV modules)	P400-ZEP (for 72 & 96-cell modules)	
INPUT			
Rated Input DC power[1]	300	400	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48	80	Vdc
MPPT Operating Range	8 - 48	8-80	Vdc
Maximum Short Circuit Current (Isc)	10	10.1	Adc
Maximum DC Input Current	12.5	12.63	Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.8		%
Overvoltage Category	II		
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING INVERTER)			
Maximum Output Current	15		Adc
Maximum Output Voltage	60		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer	1		Vdc
STANDARD COMPLIANCE			
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3		
Safety	IEC62109-1 (class II safety), UL1741		
RoHS	Yes		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions including mounting bracket (WxLxH)	128 x 196 x 27.5 / 5 x 7.71 x 1.08	128 x 196 x 35 / 5 x 7.71 x 1.37	mm / in
Dimensions excluding mounting bracket (WxLxH)	128 x 152 x 27.5 / 5 x 5.97 x 1.08	128 x 152 x 35 / 5 x 5.97 x 1.37	mm / in
Weight (including cables and mounting bracket)	720 / 1.6	840 / 1.9	kg / lb
Input Connector	MC4 Compatible		
Output Connector	Double Insulated; MC4 Compatible		
Output Wire Length	0.95 / 3.0	1.2 / 3.9	m / ft
Operating Temperature Range	-40 - +85 / -40 - +185		˚C / ˚F
Protection Rating	IP68 / NEMA 6P		
Relative Humidity	0 - 100		%

[1] Rated STC power of the module. Module of up to +5% power tolerance allowed.

PV SYSTEM DESIGN USING A SOLAREDGE INVERTER[2]	SINGLE PHASE HD-WAVE	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V	
Minimum String Length (Power Optimizers)	8		10	18	
Maximum String Length (Power Optimizers)	25		25	50	
Maximum Power per String	5700 (6000 with SE7600H-US)	5250	6000	12750	W
Parallel Strings of Different Lengths or Orientations	Yes				

[2] For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf.

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

INVERTERS

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

solaredge.com

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Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, adjustable -0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

[1] For other regional settings please contact SolarEdge support
[2] A higher current source may be used; the inverter will limit its input current to the values stated

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional[3]							
Inverter Commissioning	with the SetApp mobile application using built-in Wi-Fi station for local connection							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG					3/4" minimum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4		26.2 / 11.9	38.8 / 17.6		lb / kg
Noise	< 25					<50		dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -40 to +60[4]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

[3] Revenue grade inverter P/N: SExxxxH-US000BNC4
[4] Full power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

RoHS

powered by Q.ANTUM DUO

Q.PEAK DUO BLK-G6+ / SC

330-345

ENDURING HIGH PERFORMANCE

ZEP COMPATIBLE

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2019

Q CELLS YIELD SECURITY
- ANTI PID TECHNOLOGY (APT)
- HOT-SPOT PROTECT (HSP)
- TRACEABLE QUALITY (TRA.Q™)
- ANTI LID TECHNOLOGY (ALT)

25 YEAR Product and Performance Warranty Q CELLS

Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.5%.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

ZEP COMPATIBLE™ FRAME DESIGN
High-tech black Zep Compatible™ frame, for improved aesthetics, easy installation and increased safety.

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty[2].

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

[1] APT test conditions according to IEC/TS 62804-1:2015, method B (–1500 V, 168 h)
[2] See data sheet on rear for further information

THE IDEAL SOLUTION FOR:

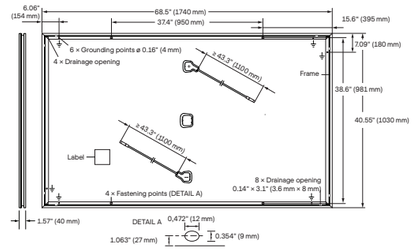
Rooftop arrays on commercial and industrial buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	68.5 × 40.6 × 1.57 in (including frame) (1740 × 1030 × 40 mm)
Weight	47.4 lbs (21.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 × 32-60 × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 43.3 in (1100 mm), (–) ≥ 43.3 in (1100 mm)
Connector	Stäubli MC4; IP68

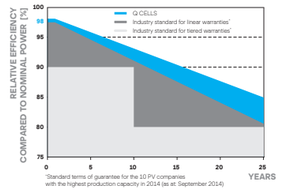


ELECTRICAL CHARACTERISTICS

POWER CLASS				330	335	340	345
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP}	[W]	330	335	340	345
	Short Circuit Current[1]	I_{SC}	[A]	10.41	10.47	10.52	10.58
	Open Circuit Voltage[1]	V_{OC}	[V]	40.15	40.41	40.66	40.92
	Current at MPP	I_{MPP}	[A]	9.91	9.97	10.02	10.07
	Voltage at MPP	V_{MPP}	[V]	33.29	33.62	33.94	34.25
	Efficiency[1]	η	[%]	≥18.4	≥18.7	≥19.0	≥19.3
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP}	[W]	247.0	250.7	254.5	258.2
	Short Circuit Current	I_{SC}	[A]	8.39	8.43	8.48	8.52
	Open Circuit Voltage	V_{OC}	[V]	37.86	38.10	38.34	38.59
	Current at MPP	I_{MPP}	[A]	7.80	7.84	7.89	7.93
	Voltage at MPP	V_{MPP}	[V]	31.66	31.97	32.27	32.57

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

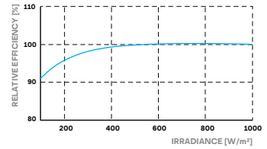
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.36	Normal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	Protection Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 1703	C (IEC) / TYPE 2 (UL)
Max. Design Load, Push / Pull (UL)[3]	[lbs / ft²]	50 (2400 Pa) / 50 (2400 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull (UL)[3]	[lbs / ft²]	75 (3600 Pa) / 75 (3600 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

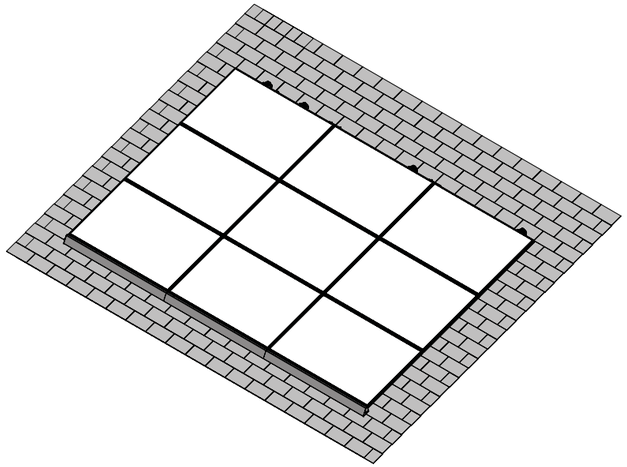
UL 1703, CE-compliant, IEC 61215:2016, IEC 61730:2016, Application Class II, U.S. Patent No. 9,893,215 (solar cells)

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

ZS Comp

for composition shingle roofs



ZEP COMPATIBLE

UL LISTED

Description

- 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”

Specifications

- 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

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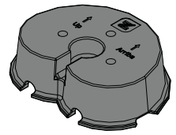
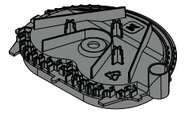
Next-Level PV Mounting Technology

Components



Mounting Block

Part No. 850-1633
Listed to UL 2703

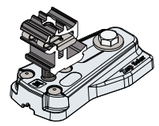


Flashing Insert

Part No. 850-1628
Listed to UL 2703

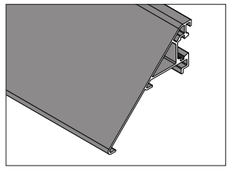
Captured Washer Lag

Part No. 850-1631-001
850-1631-002
850-1631-003
850-1631-004



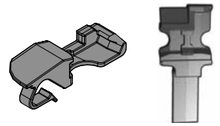
Leveling Foot

Part No. 850-1397
Listed to UL 2703



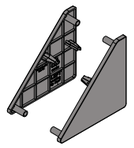
Array Skirt

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



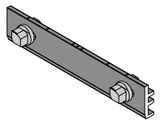
Grip

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



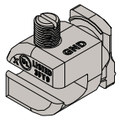
End Cap

Part No.
(L) 850-1586 or 850-1460
(R) 850-1588 or 850-1467



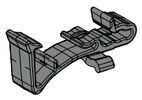
Interlock

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

zepsolar.com

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