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March 22, 2022
Revised May 31, 2022

Titan Solar Power
210 North Sunway Drive
Gilbert, AZ 85233

Scott E
Wyssling PE

Digitally signed by Scott E Wyssling PE
DN: C=US, S=Utah, L=Alpine,
O=Wyssling Consulting, CN=Scott E
Wyssling PE,
E=swyssling@wysslingconsulting.com
Reason: I am the author of this document
Location: your signing location here
Date: 2022.05.31 08:33:07-06'00'
Foxit PDF Editor Version: 11.1.0

Re: Engineering Services
Choksi Residence
436 Valley Oak Drive, Bunnlevel NC
9.600 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

B. Description of Structure:

Roof Framing: Prefabricated wood trusses at 24" on center. All truss members are constructed of 2x4 dimensional lumber.

Roof Material: Composite Asphalt Shingles

Roof Slope: 22 degrees

Attic Access: Accessible

Foundation: Permanent

C. Loading Criteria Used

- **Dead Load**
 - Existing Roofing and framing = 7 psf
 - New Solar Panels and Racking = 3 psf
 - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 10 psf
- **Wind Load** based on ASCE 7-16
 - Ultimate Wind Speed = 118 mph (based on Risk Category II)
 - Exposure Category C

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the 2018 NCRC, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

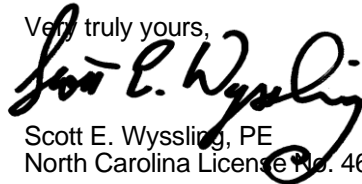
D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent K2 installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. The maximum allowable withdrawal force for a $\frac{5}{16}$ " lag screw is 235 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of $2\frac{1}{2}$ ", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one $\frac{5}{16}$ " diameter lag screw with a minimum of $2\frac{1}{2}$ " embedment will be adequate and will include a sufficient factor of safety.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 72" on centers.
4. Panel supports connections shall be staggered to distribute load to adjacent framing members.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the 2018 NCRC, current industry standards, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,



Scott E. Wyssling, PE
North Carolina License No. 46546

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76 N Meadowbrook Drive Alpine UT 84004
North Carolina COA # P-2308

Signed 05-31-22

Building Codes: 2017 NEC W/NC AMENDMENTS, 2018 NORTH CAROLINA RESIDENTIAL CODE, AND 2018 NORTH CAROLINA FIRE CODE and AHJ Amendments

CHOKSHI, JIGNA PV SYSTEM
436 VALLEY OAK DRIVE .
BUNNLEVEL, NC, 28323

APN:
JURISDICTION: HARNETT COUNTY (NC)

GENERAL INFORMATION

SYSTEM SIZE: 9.600 kW-DC-STC
 7.600 kW-AC
 ROOF PITCHED: 22 DEGREES
 INVERTER: (1) SOLAREEDGE SE7600H-US W/ P401 OPTIMIZERS
 MODULES: (24) Q PEAK DUO BLK ML G10+ 400W
 STRINGS: (1) x 14 (1) x 10 MODULE SERIES STRINGS
 ELECTRICAL SERVICE RATING: 200A
 PV SYSTEM OVERCURRENT RATING: 40A
 PV SYSTEM DISCONNECT SWITCH: EATON DG222URB (60A / 2P)
 ROOF TYPE: COMP SHINGLE
 ROOF FRAMING: MANUFACTURED/ENGINEERED TRUSS
 RACKING: K2 SYSTEMS
 ATTACHMENT METHOD: MIN. 5/16" x 3 1/2 LAG SCREWS EA. STANDOFF

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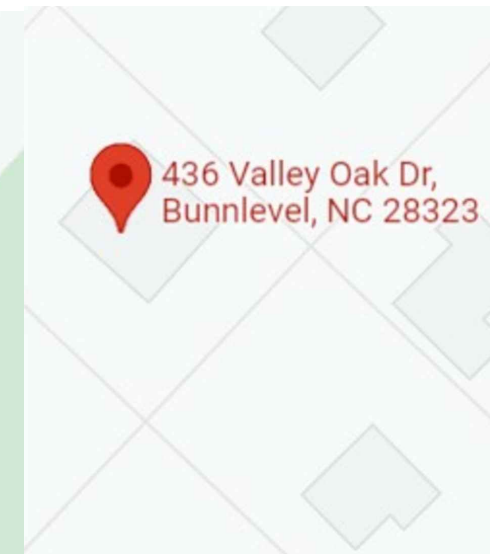
VICINITY MAP

SCALE: NTS



AERIAL MAP

SCALE: NTS



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NOTES

EQUIPMENT LOCATION

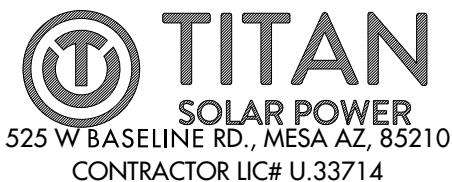
- ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.
- WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31(A),(C) AND NEC TABLES 310.15(B)(2)(A) AND 310.15(B)(3)(C).
- JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.
- ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
- ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

WIRING & CONDUIT NOTES

- ALL CONDUITS AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
- CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
- DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.
- AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK, PHASE B OR L-2 RED, OR OTHER CONVENTION IF THREE PHASE, PHASE C OR L3-BLUE, YELLOW, ORANGE, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH THE HIGHER VOLTAGE TO BE MARKED ORANGE NEC 110.15.

GENERAL NOTES

- MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
- INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
- DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
- WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
- ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/SERVICE COMPONENT.
- ALL CONDUCTORS SHALL BE 600V, 75° C STANDARD COPPER UNLESS OTHERWISE NOTED.
- WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
- ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
- PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING.



CHOKSHI, JIGNA RESIDENCE
 436 VALLEY OAK DRIVE , BUNNLEVEL, NC, 28323
 LAT:35.304516, LON:-78.964508
 TSP118235

(24) Q PEAK DUO BLK ML G10+ 400W
 (1) SOLAREEDGE SE7600H-US
 9.600 kW DC SYSTEM SIZE
 7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
 REV:A
 DRAWN BY: AW

SEAL:

COVER PAGE
PV 1



PROJECT NOTES

1. UTILITY SHALL HAVE 24HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC COMPONENTS LOCATED AT SES EQUIPMENT
2. NO LOCKED GATES, DOGS, ETC SHALL IMPEDE ACCESS TO SES EQUIPMENT
3. WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH SOUTH RIVER ELECTRIC MEMBERSHIP CORPORATION AND NEC REQUIREMENTS.

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436 VALLEY OAK DRIVE

DRIVEWAY

FRONT OF RESIDENCE

MAIN SERVICE PANEL
UTILITY METER
UTILITY AC DISCONNECT
INVERTER

PROPERTY BOUNDARY TYP.

FIRE DEPT. ACCESS TYP.



NOTE: NO GATES - NO FENCES

TITAN
SOLAR POWER
525 W BASELINE RD., MESA AZ, 85210
CONTRACTOR LIC# U.33714

CHOKSHI, JIGNA RESIDENCE
436 VALLEY OAK DRIVE , BUNNLEVEL, NC, 28323
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(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
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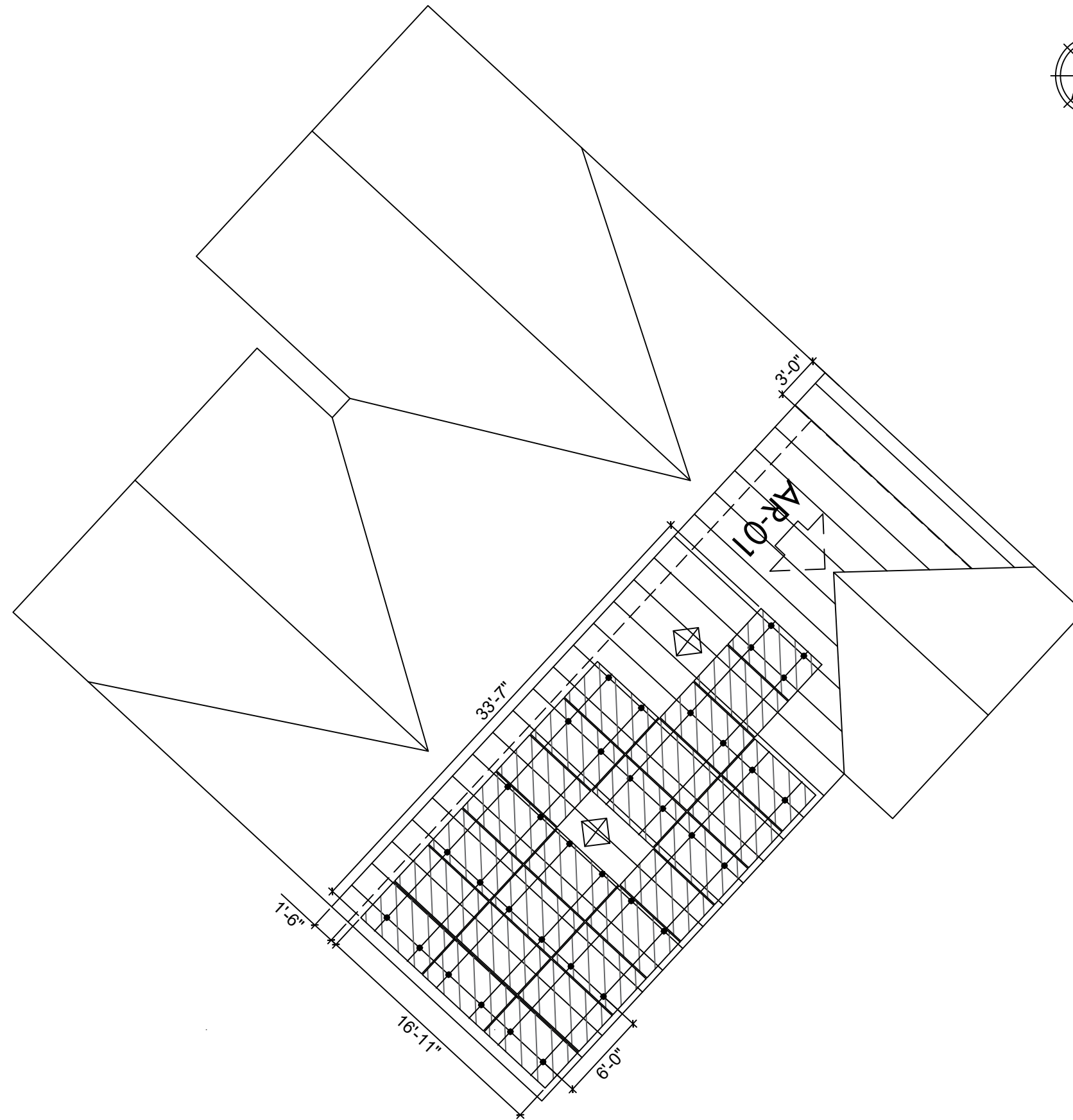
SCALE: 9/128" = 1'-0"
DATE: 5/26/2022
REV: A
DRAWN BY: AW

SEAL:

SITE PLAN
PV 2

ARRAY INFORMATION

AR-01
QUANTITY: 24
MOUNTING TYPE: FLUSH
ARRAY TILT: 22°
AZIMUTH: 133°
ATTACHMENT SPACING: 6'
ROOF TYPE: COMP SHINGLE



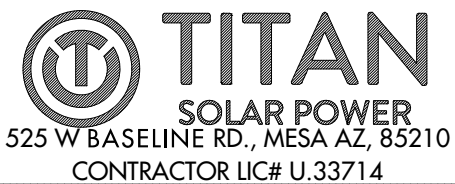
NOTES

- ROOF VENTS, SKYLIGHTS, WILL NOT BE COVERED UPON PV INSTALLATION
- TOTAL ROOF AREA = 2611.2927 SQ-FT
- TOTAL ARRAY AREA = 506.90 SQ-FT
- ARRAY COVERAGE = 19.41%

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(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
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SCALE: 31/256" = 1'-0"
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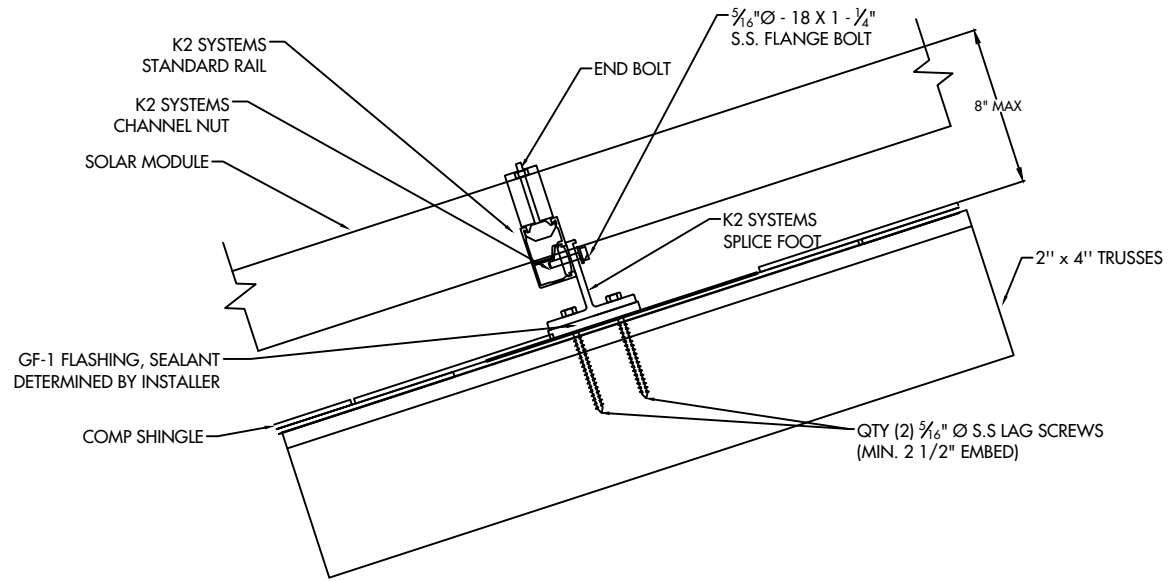
PV LAYOUT
PV 3

MODULE & RACKING INFORMATION

MODULE: Q PEAK DUO BLK ML G10+ 400W
MODULE WEIGHT: 48.50 LBS
MODULE DIMENSIONS: 74"x 41.1" x 1.5"
RACKING/RAIL: K2 SYSTEMS / K2 SYSTEMS

ROOF & FRAMING INFORMATION

MATERIAL: COMP SHINGLE
RAFTER/TRUSS SIZE: 2" x 4"
RAFTER/TRUSS SPACING: 2'



ARRAY 01: 24 MODULES

UPLIFT = 15207.00 LBS.

POINT LOAD = 36.71 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 17850.00 LBS.

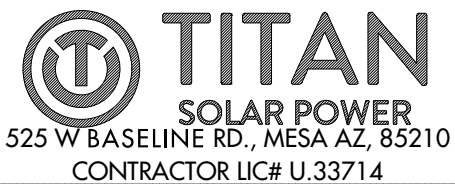
DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 1248.00 LBS

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(24) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
REV:A
DRAWN BY: AW

SEAL:

DETAILS
PV 4

PV MODULE

Q PEAK DUO BLK ML G10+ 400W
 W = 400 W
 ISC = 11.14 ADC
 VOC = 45.30 VDC
 IMP = 10.77 ADC
 VMP = 37.13 VDC
 TVOC = -0.270% / °C

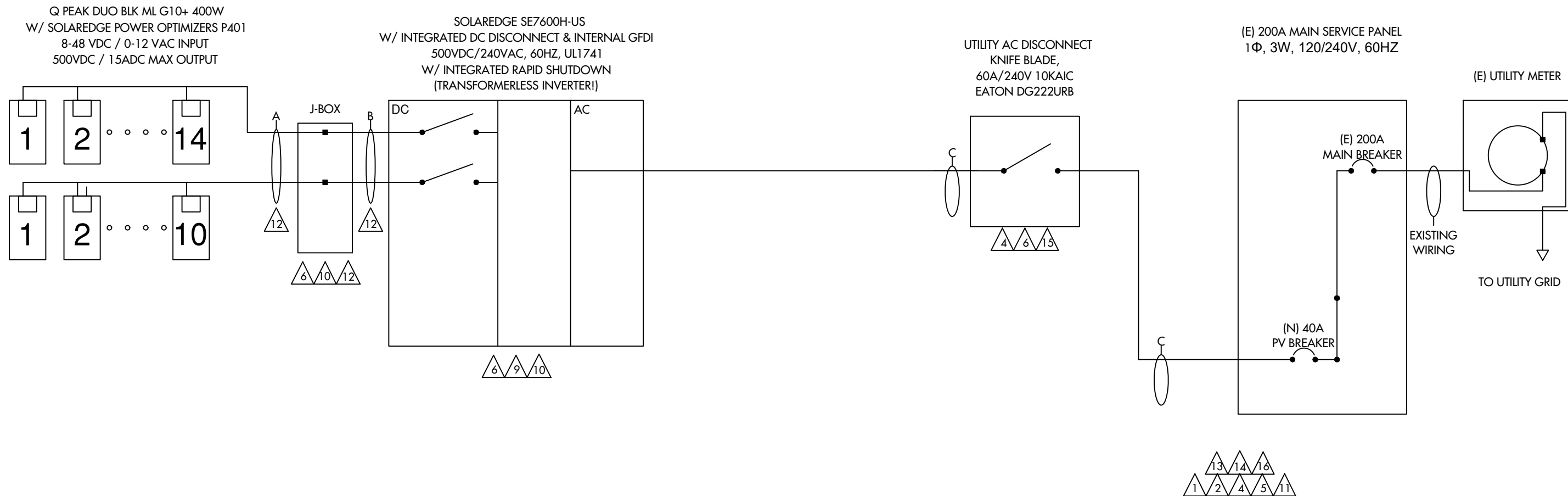
WIRE SCHEDULE

A - (4) #10 AWG-CU PV WIRE (HR)
 (1) #10 AWG-CU BARE COPPER WIRE (GND)
 IN FREE AIR
 B - (4) #10 AWG-CU THWN-2 WIRE (HR)
 (1) #10 AWG-CU THWN-2 WIRE (GND)
 3/4" EMT

C - (3) #8 AWG-CU THWN-2 WIRE (HR)
 (1) #8 AWG-CU THWN-2 WIRE (GND)
 3/4" EMT

MAIN SERVICE PANEL

BUS RATING = 200A
 MAX. CURRENT RATING = 240A (200A X 1.2)
 SOLAR BACKFEED = 40A
 MAIN BREAKER = 200A
 TOTAL = 240A



WIRE SIZE CALCULATIONS

TEMP CORRECTION FACTOR: 0.87 (43° AMBIENT)
 ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED)
 (2" ABOVE ROOFTOP / 0° TEMP ADDERS - AS OCCURS)
 (TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING
 CONDUIT FILL FACTOR = 0.80
 OPTIMIZER MAX. CURRENT = 18.75A DC (15.00A X 1 X 1.25)
 #10- AWG CU. AMPACITY = 47.85A (55A X 0.87)
 FREE AIR
 #10 - AWG CU. AMPACITY = 27.84A (40A X 0.87 X 0.80)
 ROOFTOP CONDUIT

AC WIRING
 CONDUIT FILL FACTOR = 1 (3) CONDUCTORS
 MAX. INVERTER CURRENT = 32A (PER INVERTER SPECS)
 MIN. INVERTER OCP = 40A (32A X 1.25)
 INVERTER OCP = 40A
 #8 - AWG CU AMPACITY = 47.85A (55A X 1 X 0.87)



CHOKSHI, JIGNA RESIDENCE
 436 VALLEY OAK DRIVE , BUNNLEVEL, NC, 28323
 LAT:35.304516, LON:-78.964508
 TSP118235

(24) Q PEAK DUO BLK ML G10+ 400W
 (1) SOLAREEDGE SE7600H-US
 9.600 kW DC SYSTEM SIZE
 7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
 REV:A
 DRAWN BY: AW

SEAL:

ONE LINE
PV 5

PV MODULE

Q PEAK DUO BLK ML G10+ 400W
 W = 400 W
 ISC = 11.14 ADC
 VOC = 45.30 VDC
 IMP = 10.77 ADC
 VMP = 37.13 VDC
 TVOC = -0.270% / °C

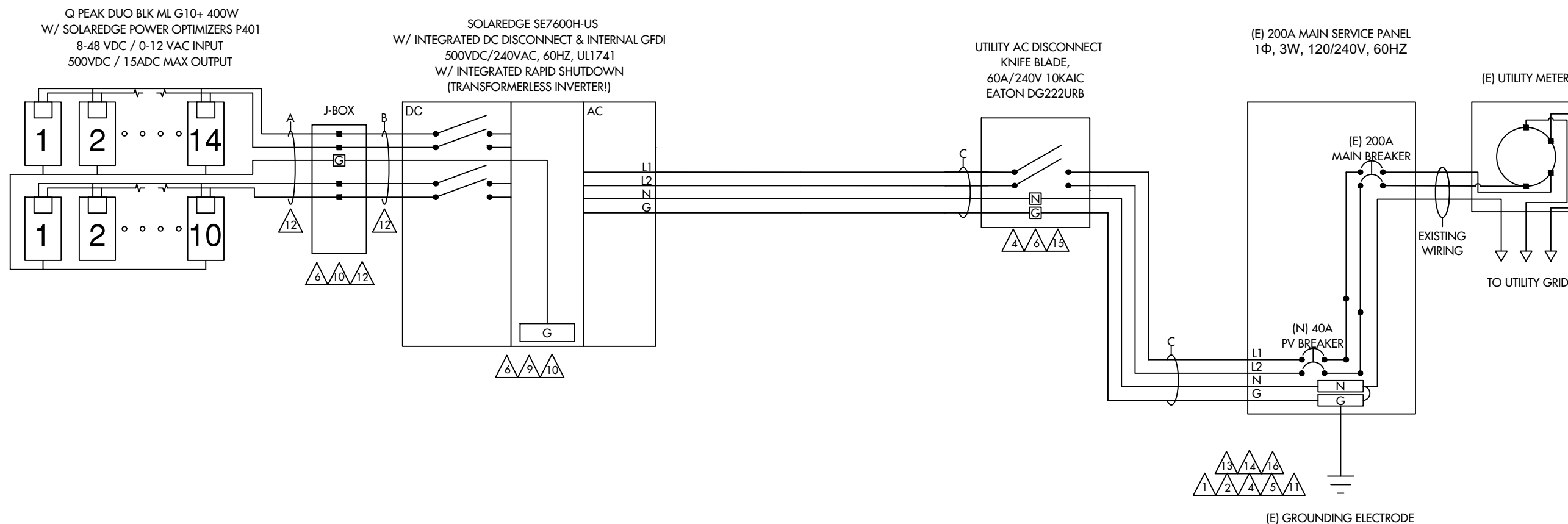
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 (1) #10 AWG-CU BARE COPPER WIRE (GND)
 IN FREE AIR
 B - (4) #10 AWG-CU THWN-2 WIRE (HR)
 (1) #10 AWG-CU THWN-2 WIRE (GND)
 3/4" EMT

C - (3) #8 AWG-CU THWN-2 WIRE (HR)
 (1) #8 AWG-CU THWN-2 WIRE (GND)
 3/4" EMT

MAIN SERVICE PANEL

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 MAIN BREAKER = 200A
 TOTAL = 240A



WIRE SIZE CALCULATIONS

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 ROOFTOP CONDUIT

AC WIRING
 CONDUIT FILL FACTOR = 1 (3) CONDUCTORS
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 9.600 kW DC SYSTEM SIZE
 7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
 REV:A
 DRAWN BY: AW

SEAL:

THREE LINE
PV 6

1 **CAUTION**
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED
LOCATION: BACKFED BREAKER
CODE REF: NEC 705.12(4)

2 **WARNING**
INVERTER OUTPUT CONNECTION:
DO NOT RELOCATE THIS
OVERCURRENT DEVICE
LOCATION: BACKFED BREAKER
CODE REF: 2017 NEC 705.12(2)(3)(b)

3 **WARNING**
A GENERATION SOURCE IS CONNECTED TO THE SUPPLY
(UTILITY) SIDE OF THE MAIN SERVICE DISCONNECT. FOLLOW
THE PROPER LOCK-OUT/TAG-OUT PROCEDURES TO ENSURE
THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH IS
OPENED PRIOR TO PERFORMING WORK ON THIS DEVICE
LOCATION: (IF APPLICABLE)
SUPPLY SIDE TAP
LOAD PANEL
CODE REF: UTILITY

4 **PHOTOVOLTAIC AC DISCONNECT**
RATED AC OPERATING CURRENT: 32A AC
NOMINAL OPERATING AC VOLTAGE: 240VAC
LOCATION: MAIN PANEL
AC DISCONNECT(S)
CODE REF: NEC 690.54

5 **RAPID SHUTDOWN
SWITCH FOR
SOLAR PV SYSTEM**
LOCATION: MAIN PANEL (EXTERIOR)
PV BREAKER (INTERIOR)
CODE REF: NEC 690.56(C)(3)

6 **WARNING**
ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION
LOCATION: COMBINER PANEL
AC DISCONNECT
JUNCTION BOX
INVERTER(S)
CODE REF: NEC 690.13(B)

7 **PHOTOVOLTAIC
SYSTEM METER**
LOCATION: DEDICATED KWH METER
CODE REF: NEC 690.4(B) UTILITY

8 **WARNING**
PHOTOVOLTAIC SYSTEM
COMBINER PANEL
DO NOT ADD LOADS
LOCATION: AC COMBINER PANEL
CODE REF: NEC 690.13(B)

9 **PHOTOVOLTAIC SYSTEM DC DISCONNECT**
MAXIMUM VOLTAGE: 480VDC
MAXIMUM CIRCUIT CURRENT: 15.0ADC
MAX. RATED OUTPUT CURRENT OF
THE CHARGE CONTROLLER OR DC-
TO-DC- CONVERTER (IF INSTALLED) 15.0ADC
LOCATION: DC DISCONNECT
INVERTER
CODE REF: UTILITY

10 **WARNING**
ELECTRICAL SHOCK HAZARD
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
LOCATION: DC DISCONNECT, COMBINE BOX
CODE REF: NEC 690.13(B)

11 **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.
LOCATION: MAIN SERVICE (OUTSIDE COVER)
CODE REF: NEC 690.12
NEC 690.56(C)(1)(a)
YELLOW STICKER

12 **WARNING PHOTOVOLTAIC POWER SOURCE**
LOCATION: DC CONDUIT
JUNCTION BOX
NO MORE THAN 10FT
CODE REF: NEC 690.31(G)(3)
NEC 690.31(G)(4)
REFLECTIVE AND WEATHER RESISTANT

LABEL REQUIRES CAPITALIZED LETTERS WITH A MINIMUM HEIGHT OF 3/8 INCH, WHITE LETTERS ON RED BACKGROUND
LABELS SHALL BE PLACED ON INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES
EVERY 10 FEET, WITHIN 1 FOOT OF TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND BELOW PENETRATIONS OF
ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.

13 **CAUTION**
DUAL POWER SOURCE
SECOND SOURCE IS
PHOTOVOLTAIC
LOCATION: SERVICE METER
MAIN PANEL

14 **WARNING**
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE
LOCATION: (IF APPLICABLE)
SERVICE PANEL
CODE REF: NEC 705.12(7)

15 **PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT SYSTEM**
LOCATION: AC DISCONNECT
CODE REF: UTILITY

16 **PV SOLAR BREAKER**
DO NOT RELOCATE THIS
OVERCURRENT DEVICE
LOCATION: MAIN PANEL (EXTERIOR)
PV BREAKER (INTERIOR)
CODE REF: NEC 705.12(B)(2)(3)(B)



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TSP118235

(24) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
7.600 kW AC SYSTEM SIZE

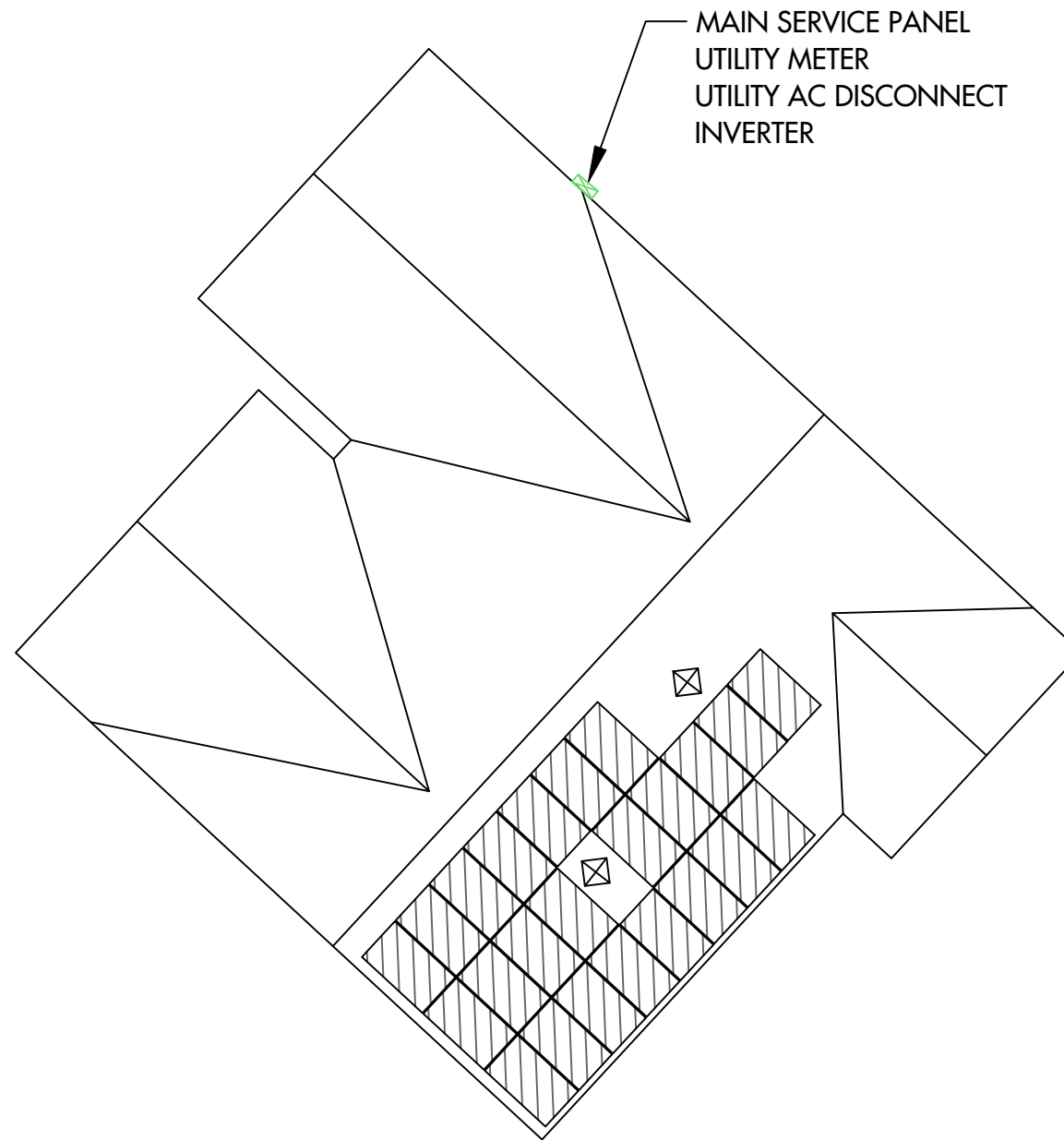
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LABELS
PV 7


CAUTION

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



MAIN SERVICE PANEL
UTILITY METER
UTILITY AC DISCONNECT
INVERTER

DIRECTORY PLAQUE IN
ACCORDANCE WITH
NEC690.56(A)(B), 705.10

 **TITAN**
SOLAR POWER
525 W BASELINE RD., MESA AZ, 85210
CONTRACTOR LIC# U.33714

CHOKSHI, JIGNA RESIDENCE
436 VALLEY OAK DRIVE , BUNNLEVEL, NC, 28323
LAT:35.304516, LON:-78.964508
TSP118235

(24) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
7.600 kW AC SYSTEM SIZE

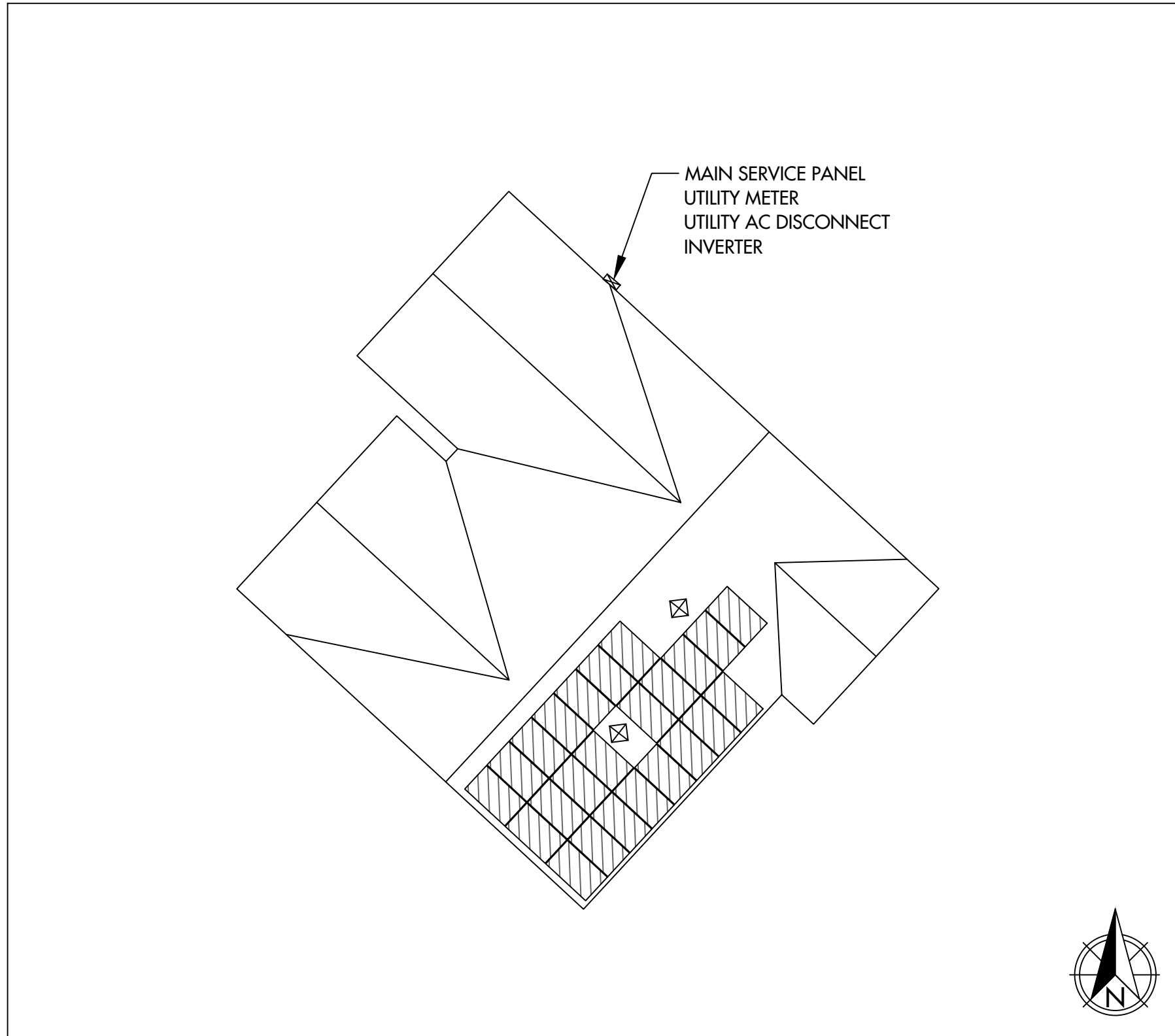


DATE: 5/26/2022
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PLACARD
PV 8

JOB SAFETY PLAN



LOCATION OF NEAREST URGENT CARE FACILITY

NAME:

ADDRESS:

PHONE NUMBER:

NOTES:

- INSTALLER SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME
- INSTALLER SHALL UPDATE NAME, ADDRESS, AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE JOB SITE BEFORE STARTING WORK.

PRINT NAME	INITIAL	YES	NO

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 99% weighted 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
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com



Single Phase Inverter with HD-Wave Technology for North America

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

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXH-XXXXBXX4							
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 - 60.5 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							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	600ka Sensitivity							
Maximum Inverter Efficiency	99	99.2					99 @ 240V 98.5 @ 208V	%
CEC Weighted Efficiency	99							%
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

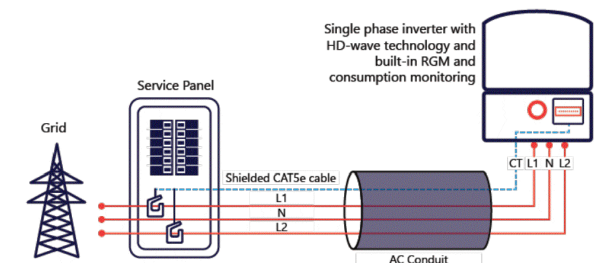
SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	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 Metering, ANSI C12.20	Optional ³⁾							
Consumption metering	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection							
Inverter Commissioning	Automatic Rapid Shutdown upon AC Grid Disconnect							
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 (H)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG				1" Maximum / 14-4 AWG			
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG				1" Maximum / 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			
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6				
Noise	< 25			< 50	dBA			
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -40 to +60 ⁶⁾							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

³⁾ Inverter with Revenue Grade Meter P/N: SExxxH-US000BNC4. Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxH-US000BN4. For consumption metering, current transformers should be ordered separately. SEACT0750-200NA-20 or SEACT0750-400NA-20. 20 units per box
⁶⁾ 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>

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



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TSP118235

(24) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
REV: A
DRAWN BY: AW

SEAL:

EQUIPMENT
SPECIFICATIONS
PV 10



Intertek
3933 US Route 11
Cortland, NY 13045
Telephone: 607-753-7311
www.intertek.com

Subject: ETL Evaluation of SolarEdge Products to Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

The testing done has verified that controlled conductors are limited to:

- Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or – if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

Applicable products:

- (1) Power optimizers:
PB followed by 001 to 350; followed by -AOB or -TFI.
OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
P followed by 001 to 1100.
SP followed by 001 to 350.
When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019, modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs. Also meeting NEC 2020 rapid shutdown requirement.
- (2) 1 -PH Inverters
SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:

Inverter part number may be followed by a suffix.

- (3) 3 -PH Inverters



Total Quality. Assured.

SE9KUS / SE10KUS / SE14.4KUS / SE16.7kUS / SE17.3KUS / SE20KUS / SE24KUS / SE30KUS / SE33.3KUS / SE40KUS / SE43.2KUS / SE50KUS / SE66.6KUS / SE80KUS / SE85KUS / SE100KUS / SE120KUS; when the following label is labeled on the side of the inverter:

Please note, this Letter Report does not represent authorization for the use of any Intertek certification marks.

Brand Name(s) SolarEdge
Relevant Standard(s) UL 1741, UL 1741 CRD for rapid shutdown
Verification Issuing Office National Electric Code, 2020, Section 690.12 requirement for rapid shutdown
3933 US Route 11, Cortland, NY 13045

NRTL Disclaimer, Different for each NRTL – Example: "This Verification is for the exclusive use of NRTL's Client and is provided pursuant to the agreement between NRTL and its Client. NRTL's responsibility and liability are limited to the terms and conditions of the agreement. NRTL assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to copy or distribute this Verification. Any use of the NRTL name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by NRTL. The observations and test results referenced from this Verification are relevant only to the sample tested. This Verification by itself does not imply that the material, product, or service is or has ever been under an NRTL certification program."

Signature:

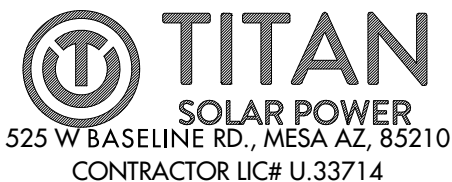
Name: Mukund Rana
Position: Staff Engineer
Date: 5/17/2021



Total Quality. Assured.

Intertek
3933 US Route 11
Cortland, NY 13045
Telephone: 607-753-7311
www.intertek.com

Date	Engineer / Reviewer	Description
5/17/2021 G104683664CRT	Dishant Patel	Added New 3-PH Inverter model SE50KUS, SE80KUS, SE85KUS and SE120KUS.
	Mukund Rana	Updated Power optimizers from "P followed by 001 to 960" to "P followed by 001 to 1100" Updated NEC standard from "National Electric Code, 2017, Section 690.12 requirement for rapid shutdown" To "National Electric Code, 2020, Section 690.12 requirement for rapid shutdown"



CHOKSHI, JIGNA RESIDENCE
436 VALLEY OAK DRIVE , BUNNLEVEL, NC, 28323
LAT:35.304516, LON:-78.964508
TSP1 18235

(24) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREGE SE7600H-US
9.600 kW DC SYSTEM SIZE
7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
REV: A
DRAWN BY: AW

SEAL:

EQUIPMENT SPECIFICATIONS
PV 11

Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- 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
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com



Power Optimizer For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

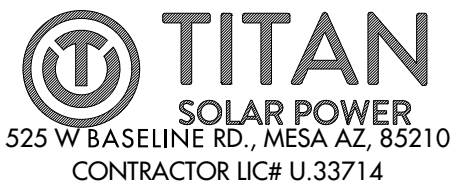
Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high-power 60 and 72 cell modules)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT									
Rated Input DC Power ⁽¹⁾	320	340	370	400	405	485	505		W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125 ⁽²⁾	83 ⁽³⁾		Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105	12.5 - 83		Vdc
Maximum Short-Circuit Current (IsC)		11		10.1	11.75	11	14		Adc
Maximum Efficiency					99.5				%
Weighted Efficiency					98.8			98.6	%
Overvoltage Category	I								
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)									
Maximum Output Current					15				Adc
Maximum Output Voltage					60	85			Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)									
Safety Output Voltage per Power Optimizer					1 ± 0.1				Vdc
STANDARD COMPLIANCE									
EMC	FCC Part15 Class 3, IEC61000-5-2, IEC61000-6-3								
Safety	IEC62109-1 (class I safety), U_1741								
Material	UL94 V-0, UV Resistant								
RoHS	Yes								
INSTALLATION SPECIFICATIONS									
Maximum Allowed System Voltage	1000								
Compatible Inverters	All SolarEdge Single Phase and Three Phase Inverters								
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3				
Weight (including cables)	630 / 1.4	750 / 1.7	655 / 1.5	845 / 1.9	1064 / 2.3				
Input Connector	MC4 ⁽⁵⁾				Single or dual MC4 ⁽⁶⁾⁽⁴⁾	MC4 ⁽⁵⁾			
Input Wire Length	0.16 / 0.52								
Output Wire Type / Connector	Double Insulated / MC4								
Output Wire Length	0.9 / 2.95				1.2 / 3.9				
Operating Temperature Range ⁽⁸⁾	-40 - +85 / -40 - +185								
Protection Rating	IP68 / NEMA6P								
Relative Humidity	C - 100								

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
 (2) NEC 2017 requires max input voltage be not more than 80V.
 (3) For other connector types please contact SolarEdge.
 (4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.
 (5) For ambient temperature above +85°C / +185°F power derating is applied. Refer to Power Optimizers Temperature Derating Technical Note for more details.

PV System Design Using a SolarEdge Inverter ⁽⁶⁾⁽⁷⁾	Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400, P401	8	10	18	
	P405, P485, P505	6	8	14	
Maximum String Length (Power Optimizers)		25	25	50 ⁽⁸⁾	
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 ⁽⁹⁾	12750 ⁽¹⁰⁾	W
Parallel Strings of Different Lengths or Orientations	Yes				

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
 (7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string.
 (8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement.
 (9) For 208V grid, it is allowed to install up to 7,200W per string when the maximum power difference between each string is 1,000W.
 (10) For 277/480V grid, it is allowed to install up to 14,000W per string when the maximum power difference between each string is 2,000W.

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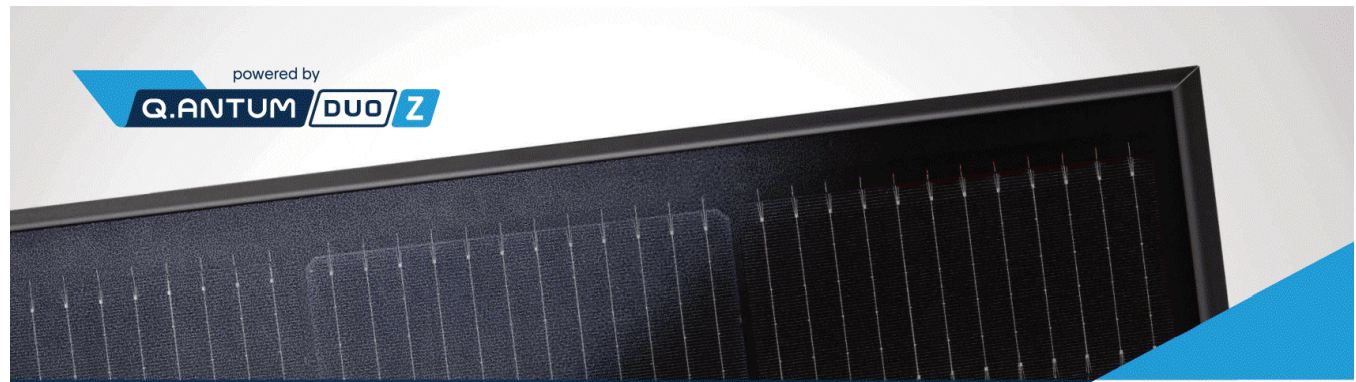
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EQUIPMENT SPECIFICATIONS
PV 12



powered by
Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE



- BREAKING THE 20% EFFICIENCY BARRIER**
Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.
- THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY**
Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.
- 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 Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.
- EXTREME WEATHER RATING**
High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (4000 Pa).
- A RELIABLE INVESTMENT**
Inclusive 25-year product warranty and 25-year linear performance warranty².

¹ APT test conditions according to IEC/TS 62804-1:2015, method A (-1500V, 96h)
² See data sheet on rear for further information.

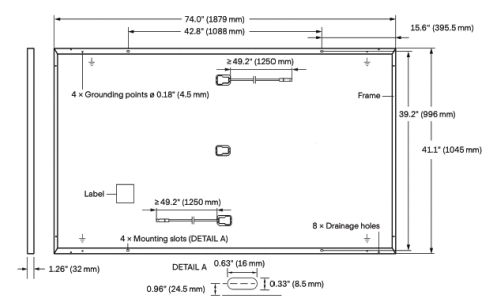
THE IDEAL SOLUTION FOR:
Rooftop arrays on residential buildings

Engineered in Germany



MECHANICAL SPECIFICATION

Format	74.0in x 41.1in x 1.26in (including frame) (1879mm x 1045mm x 32mm)
Weight	48.5lbs (22.0kg)
Front Cover	0.13in (3.2mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 x 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98in x 1.26-2.36in x 0.59-0.71in (53-101mm x 32-60mm x 15-18mm), IP67, with bypass diodes
Cable	4mm ² Solar cable; (+) ≥ 49.2in (1250mm), (-) ≥ 49.2in (1250mm)
Connector	Stäubli MC4; IP68

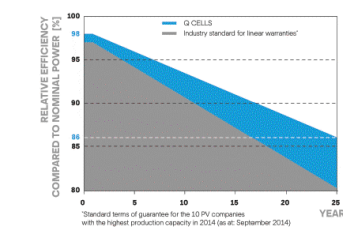


ELECTRICAL CHARACTERISTICS

POWER CLASS		385	390	395	400	405	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5W / -0W)							
Minimum	Power at MPP ¹	P _{MPP} [W]	385	390	395	400	405
	Short Circuit Current ¹	I _{SC} [A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage ¹	V _{OC} [V]	45.19	45.23	45.27	45.30	45.34
	Current at MPP	I _{MPP} [A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V _{MPP} [V]	36.36	36.62	36.88	37.13	37.39
	Efficiency ¹	η [%]	≥ 19.6	≥ 19.9	≥ 20.1	≥ 20.4	≥ 20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²							
Minimum	Power at MPP	P _{MPP} [W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I _{SC} [A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V _{OC} [V]	42.62	42.65	42.69	42.72	42.76
	Current at MPP	I _{MPP} [A]	8.35	8.41	8.46	8.51	8.57
	Voltage at MPP	V _{MPP} [V]	34.59	34.81	35.03	35.25	35.46

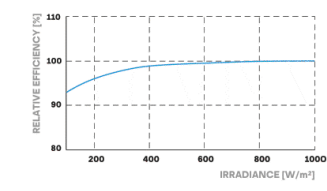
¹ Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000W/m², 25 ± 2°C, AM 1.5 according to IEC 60904-3 • 800W/m², NMOT, spectrum AM 1.5

Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% 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 organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000W/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]	-0.34	Nominal 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)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull ³	[lbs/ft ²]	75 (3600Pa) / 55 (2660Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull ³	[lbs/ft ²]	113 (5400Pa) / 84 (4000Pa)		

³ See Installation Manual

QUALIFICATIONS AND CERTIFICATES



PACKAGING INFORMATION

Horizontal packaging	76.4in 1940mm	43.3in 1100mm	48.0in 1220mm	1656lbs 751kg	24 pallets	24 pallets	32 modules
----------------------	------------------	------------------	------------------	------------------	---------------	---------------	---------------

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

Specifications subject to technical changes © Q CELLS Q.PEAK DUO BLK ML-G10+, 385-405, 2021-05, Rev01, NA

TITAN
SOLAR POWER
525 W BASELINE RD., MESA AZ, 85210
CONTRACTOR LIC# U.33714

CHOKSHI, JIGNA RESIDENCE
436 VALLEY OAK DRIVE, BUNNLEVEL, NC, 28323
LAT:35.304516, LON:-78.964508
TSP118235

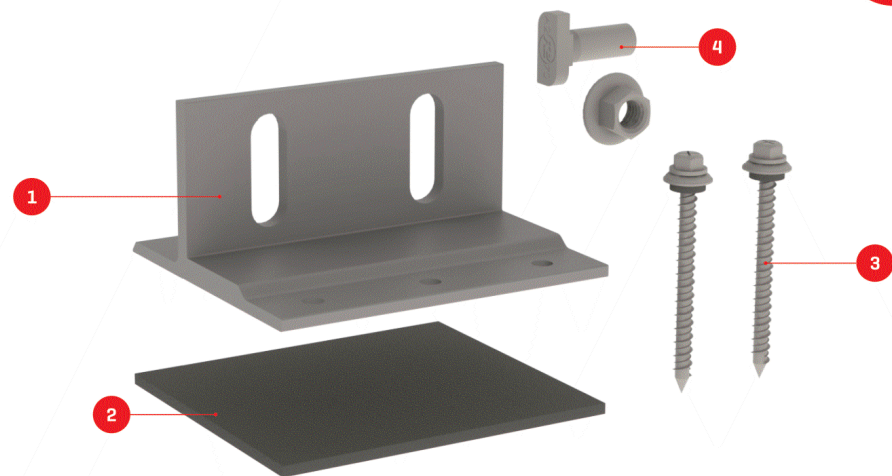
(24) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREEDGE SE7600H-US
9.600 kW DC SYSTEM SIZE
7.600 kW AC SYSTEM SIZE

DATE: 5/26/2022
REV: A
DRAWN BY: AW

SEAL:

EQUIPMENT SPECIFICATIONS
PV 13

We support PV systems
Formerly Everest Solar Systems



Splice Foot X

Patent Pending

TECHNICAL SHEET

Item Number	Description	Part Number
1	Splice Foot X	4000113 Splice Foot X Kit, Mill
2	K2 FlexFlash Butyl	
3	M5 x 60 lag screws	
4	T-Bolt & Hex Nut Set	

Technical Data

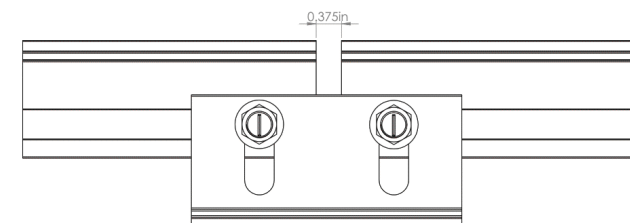
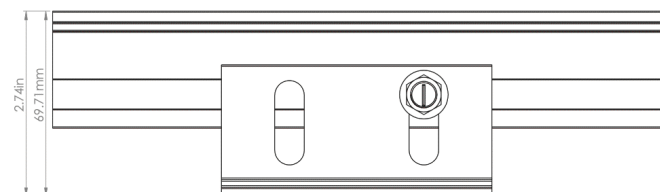
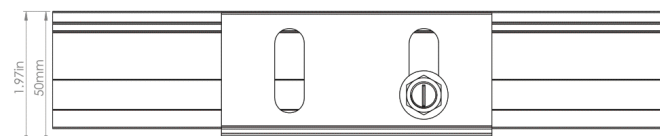
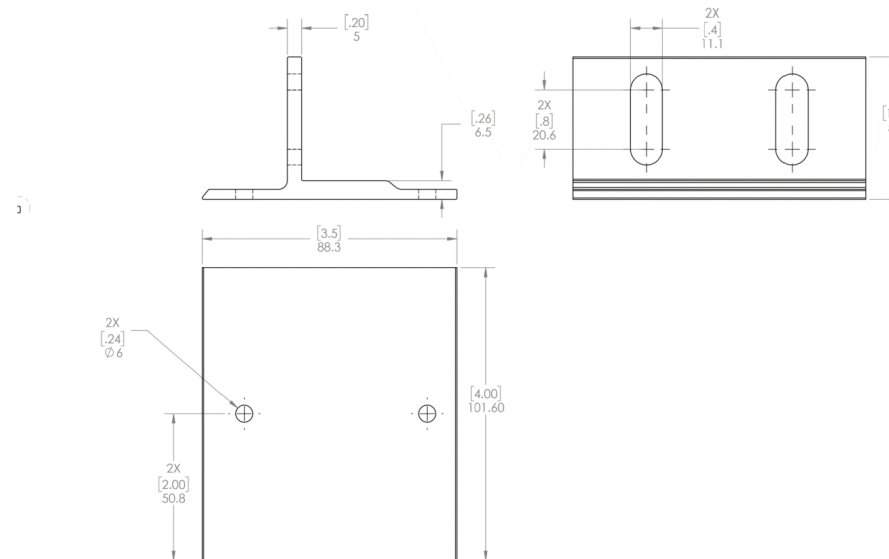
Splice Foot X	
Roof Type	Composition shingle
Material	Aluminum with stainless steel hardware
Finish	Mill
Roof Connection	M5 x 60 lag screws
Code Compliance	UL 2703
Compatibility	CrossRail 44-X, 48-X, 48-XL, 80

k2-systems.com

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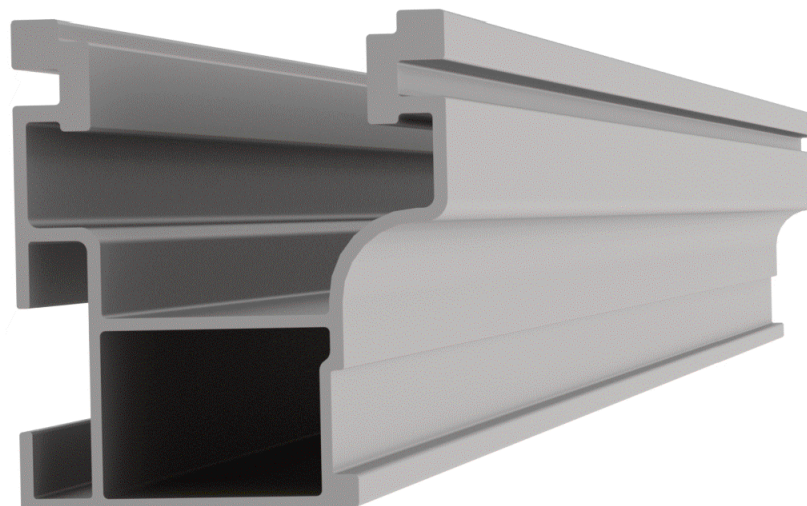
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k2-systems.com



NEW!

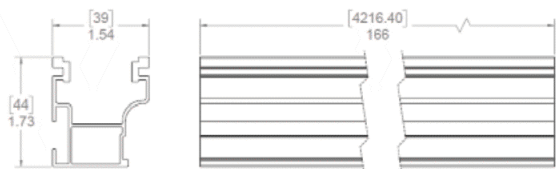


NEW PRODUCT

CrossRail 44-X

- ▶ Optimized rail profile
- ▶ One rail for all markets
- ▶ Built-in wire management
- ▶ Maintains same structural integrity as 48-X
- ▶ Tested up to 200 mph winds
- ▶ Tested up to 100 PSF snow loads

Part Number	Description
4000019	CrossRail 44-X 166", Mill
4000020	CrossRail 44-X 166", Dark
4000021	CrossRail 44-X 180", Mill
4000022	CrossRail 44-X 180", Dark
4000051	RailConn Set, CR 44-X, Mill
4000052	RailConn Set, CR 44-X, Dark
4000067	End Cap, Black, CR 44-X



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 CrossRail 44-X Product Sheet US01 | 0520 · Subject to change · Product illustrations are exemplary and may differ from the original.

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EQUIPMENT
 SPECIFICATIONS
PV 15