

SCOPE OF WORK:

TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 41 NUTMEG CIR SPRING LAKE NC 28390. THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ELECTRICAL SERVICE EQUIPMENT. THE PV SYSTEM DOES NOT INCLUDE STORAGE BATTERIES.

EQUIPMENT SUMMARY

22 Q CELLS Q.PEAK DUO BLK ML-G10+ 400 MODULES
1 SOLAREEDGE SE7600H-US [240V] INVERTER
22 SOLAREEDGE POWER OPTIMIZER P401

GENERAL NOTES:

- THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS.
- ARCHITECT HAS NOT BEEN RETAINED TO SUPERVISE ANY CONSTRUCTION OR INSTALLATION OF ANY EQUIPMENT AT SITE.
- CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAINS ALL PERMITS, LICENSES AND PAY ALL REQUIRED FEES AND COMPLETE INSTALLATION.
- CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.
- DAMAGE CAUSED TO THE EXISTING STRUCTURE, PIPES, DUCTS, WINDOWS, WALL, FLOORS, ETC. SHALL BE REPAIRED TO THE ORIGINAL CONDITION OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK WITH APPROVED MATERIALS.
- NO CHANGES ARE TO BE MADE WITHOUT THE CONSULTATION AND APPROVAL OF THE ARCHITECT.
- CONTRACTOR SHALL OBTAIN BUILDING PERMIT. NO WORK TO START UNLESS BUILDING PERMIT IS PROPERLY DISPLAYED.
- ALL WORKMANSHIP AND MATERIALS SHALL BE OF FIRST QUALITY AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE, THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL PERTINENT AGENCIES.
- IT IS ESSENTIAL THAT ALL WORK PROCEED WITH THE MAXIMUM COOPERATION OF ALL PARTIES AND WITH MINIMUM INTERFERENCE TO THE OCCUPANTS WITHIN THE BUILDING. THE OWNER'S DIRECTIONS IN THIS REGARD SHALL BE FULLY COMPLIED WITH.
- ALL EXPOSED PLUMBING, HVAC, ELECTRICAL DUCTWORK, PIPING AND CONDUITS ARE TO BE PAINTED BY GENERAL CONTRACTOR.
- THE CONTRACTOR SHALL PERFORM THE WORK IN STRICT CONFORMANCE WITH THE LOCAL LAWS, REGULATIONS AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL OBTAIN ALL PERMITS, APPROVALS, AFFIDAVITS, CERTIFICATIONS, ETC. AND PAY ALL FEES AS REQUIRED BY THE LOCAL AUTHORITIES.
- CONTRACTORS SHALL OBTAIN FIRE CERTIF. UPON COMPLETION OF WORK.

ELECTRICAL NOTES:

- THE EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE INSTALLED ONLY BY QUALIFIED PEOPLE. A QUALIFIED PERSON IS ONE WHO HAS SKILLS AND KNOWLEDGE RELATED TO THE CONSTRUCTION AND OPERATION OF THE ELECTRICAL EQUIPMENT AND INSTALLATIONS AND HAS RECEIVED SAFETY TRAINING TO RECOGNIZE AND AVOID THE HAZARDS INVOLVED. (NEC 690.4(E) AND 705.6)
- LOCAL UTILITY PROVIDER SHALL BE NOTIFIED PRIOR TO USE AND ACTIVATION OF ANY SOLAR PHOTOVOLTAIC INSTALLATION. FOR A LINE SIDE TAP CONNECTION, UTILITY NEEDS TO BE NOTIFIED WELL IN ADVANCE TO COORDINATE BUILDING ELECTRICAL SHUT OFF.
- NEW CONDUIT ROUTING SHOWN IS ESSENTIALLY SCHEMATIC. SUBCONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES.
- ARRAY WIRING SHOULD NOT BE READILY ACCESSIBLE EXCEPT TO QUALIFIED PERSONNEL.
- ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE WATERTIGHT AND APPROVED FOR USE IN WET LOCATIONS. (NEC 314.15A)
- WIRING METHODS FOR PV SYSTEM CONDUCTORS AREN'T PERMITTED WITHIN 10 IN. OF THE ROOF DECKING OR SHEATHING EXCEPT WHERE LOCATED DIRECTLY BELOW THE ROOF SURFACE THAT'S COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT WIRING
- BACK-FED BREAKER MUST BE AT THE OPPOSITE END OF BUS BAR FROM THE MAIN BREAKER OR MAIN LUG SUPPLYING CURRENT FROM THE UTILITIES.
- ALL CONDUCTORS AND WIRE TIES EXPOSED TO SUNLIGHT ARE LISTED AS UV RESISTANT.
- CONTRACTOR SHALL FOLLOW ALL ELECTRICAL EQUIPMENT LABELING REQUIREMENTS IN NEC 690 AND IFC 2018.
- MEASURE THE LINE-TO-LINE AND LINE-TO-NEUTRAL VOLTAGE OF ALL SERVICE ENTRANCE CONDUCTORS PRIOR TO INSTALLING ANY SOLAR EQUIPMENT. THE VOLTAGES FOR THE 240VAC RATED.

GOVERNING CODES

2018 NORTH CAROLINA FIRE CODE
 2018 NORTH CAROLINA BUILDING CODE
 2018 NORTH CAROLINA RESIDENTIAL CODE
 2018 NORTH CAROLINA ENERGY CONSERVATION CODE
 2018 NORTH CAROLINA EXISTING BUILDING CODE
 2018 NORTH CAROLINA SWIMMING POOL AND SPA CODE
 2018 UNIFORM MECHANICAL CODE
 2018 UNIFORM PLUMBING CODE
 2017 NATIONAL ELECTRICAL CODE

AUTHORITY HAVING JURISDICTION (AHJ) : HARNETT COUNTY

WIRING AND CONDUIT NOTES:

- ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS
- ALL PV CABLES AND HOMERUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED
- ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [NEC 690.8 (A)(1) & (B)(1)], [NEC 240] [NEC 690.7] FOR MULTIPLE CONDUCTORS
- ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [NEC TABLE 310.15 (B)(2)(C)] BLACK ONLY**
- EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES
- PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V AS PER APPLICABLE NEC CODE
- 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS
- ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION
- VOLTAGE DROP LIMITED TO 2% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS
- AC CONDUCTORS >4AWG COLOR CODED OR MARKED: PHASE A OR L1- BLACK, PHASE B OR L2- RED, PHASE C OR L3- BLUE, NEUTRAL- WHITE/GRAY

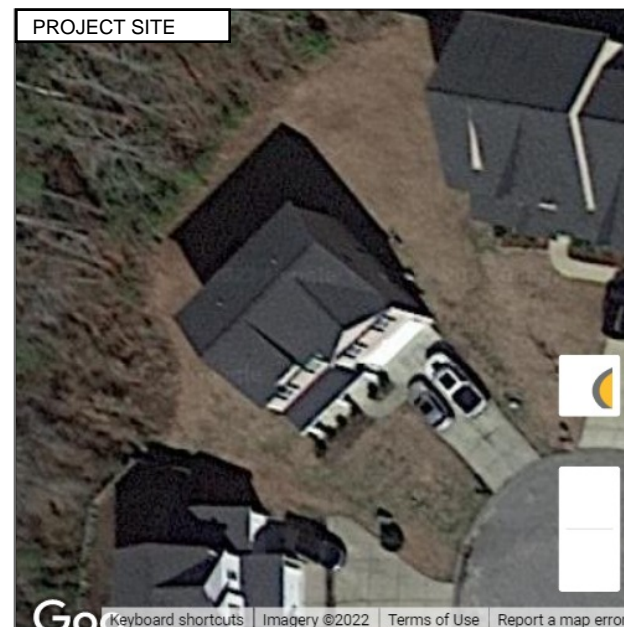
SYSTEM RATING

8.80 kWDC
 7.60 kWAC

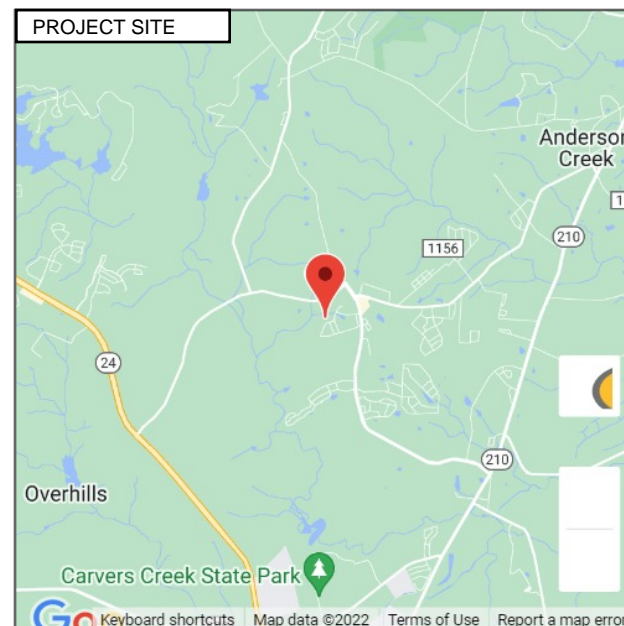
PHOTOVOLTAIC SYSTEM FIRE CLASSIFICATION LISTING IN ACCORDANCE WITH UL 1703 STANDARD.

SHEET INDEX

PV-0	COVER PAGE
PV-1	SITE PLAN
PV-2	ROOF PLAN & MODULES
PV-3	STRING LAYOUT & BOM
PV-4&6	ATTACHMENT DETAILS
PV-7	THREE LINE & CALCS.
PV-8	SINGLE LINE & CALCS.
PV-9	SPECIFICATIONS & NOTES
PV-10&11	SIGNAGE
PV-12	JOB SAFETY PLAN
PV-13+	EQUIPMENT SPECIFICATIONS



1 HOUSE PHOTO SCALE: NTS



2 VICINITY MAP SCALE: NTS



TITAN SOLAR POWER
 160 N MCQUEEN RD,
 GILBERT, AZ 85233, USA
 PHONE: (808) 371-5338
 Electrical LIC# : U.33714

SYSTEM INFO

(22) Q CELLS
 Q.PEAK DUO BLK ML-G10+ 400
 (1) SOLAREEDGE
 SE7600H-US [240V]
 DC SYSTEM SIZE: 8.80 kWDC
 AC SYSTEM SIZE: 7.60 kWAC

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

**JHAVAL CAIN
 RESIDENCE**
**41 NUTMEG CIR SPRING LAKE NC
 28390**
 PHONE NO. (910) 568-9906
 EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

SHEET NAME
COVER PAGE

SHEET SIZE

**ANSI B
 11" X 17"**

SHEET NUMBER

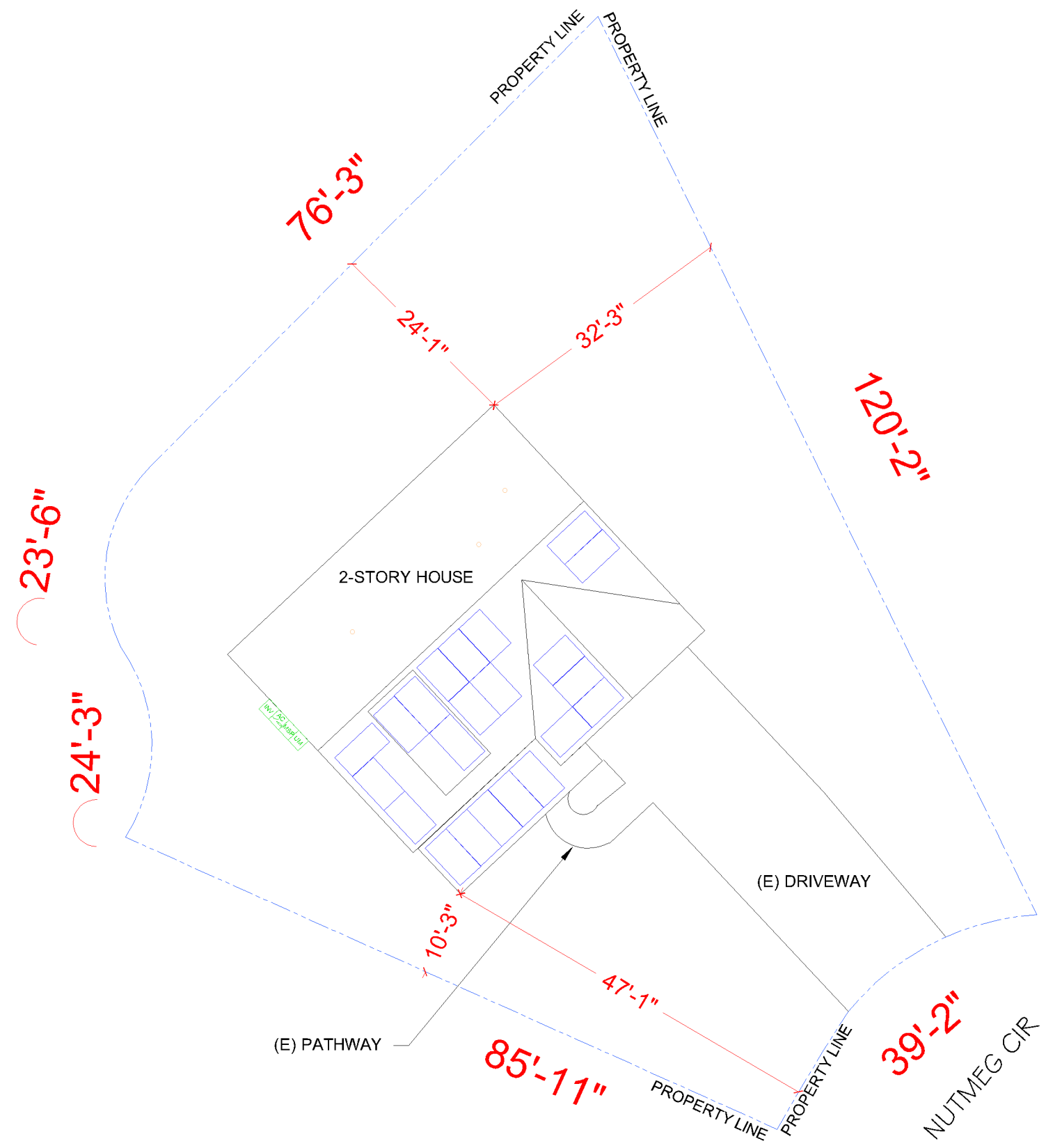
PV-0

SITE NOTES

- A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26]

LEGEND

- JB (N) JUNCTION BOX
- UM (E) UTILITY METER
- MSP (E) MAIN SERVICE PANEL
- AC (N) NON FUSED AC DISCONNECT
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- CONDUIT
- P401 OPTIMIZER
- INV SOLAREEDGE SE7600H-US [240V] INVERTER
- Q CELLS Q.PEAK DUO BLK ML-G10+ 400 MODULES
- K2 CROSSRAIL 48-X
- TRENCH



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SHEET NAME
SITE PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

METER NO#: 81 867 320



SCALE: 1/16" = 1'-0"

DESIGN SPECIFICATION	
RISK CATEGORY:	II
CONSTRUCTION:	SFD
ZONING:	RESIDENTIAL
SNOW LOAD (ASCE7-16):	10 PSF
EXPOSURE CATEGORY:	B
WIND SPEED (ASCE7-16):	119 MPH

MODULE TYPE, DIMENSIONS & WEIGHT	
NUMBER OF MODULES:	22 MODULES
MODULE TYPE:	Q CELLS Q.PEAK DUO BLK ML-G10+ 400
MODULE WEIGHT:	48.5 LBS
MODULE DIMENSIONS:	74" X 41.1" = 21.12 SF
UNIT WEIGHT OF AREA:	2.3 PSF

ROOF DESCRIPTION					
ROOF	ROOF TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING	ROOF MATERIAL
#1	26°	137°	2" x 4"	24" o.c.	COMP SHINGLE
#2	3°	137°	2" x 4"	24" o.c.	Comp Shingle Roofs (Low Slop)
#3	32°	227°	2" x 4"	24" o.c.	COMP SHINGLE
#4	3°	137°	2" x 4"	24" o.c.	Comp Shingle Roofs (Low Slop)

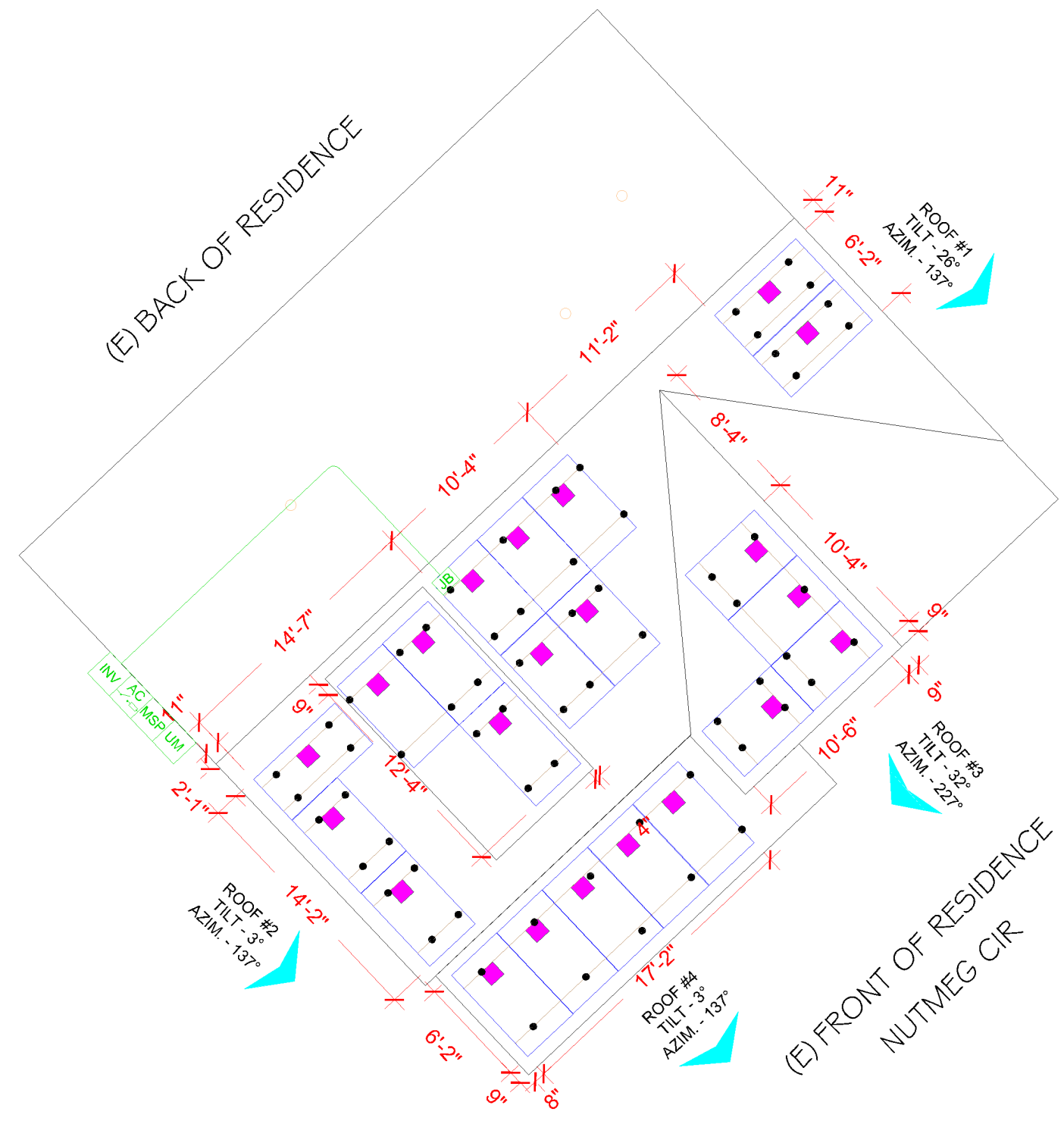
ARRAY AREA & ROOF AREA CALC's		
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)
#1	10	211.21
#2	3	63.37
#3	4	84.49
#4	5	105.61
(TOTAL ARRAY AREA/TOTAL ROOF AREA) X 100%		
= (464.66/1697.67) X 100% = 27.38%		

LEGEND

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- VENT, ATTIC FAN (ROOF OBSTRUCTION)
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- K2 CROSSRAIL 48-X
- TRENCH

PANEL HEIGHT OFF ROOF: 4"

DEAD LOAD CALCULATION			
EQUIPMENT'S DESCRIPTIONS	QTY	LBS/UNIT	TOTAL WEIGHT
MODULES	22	48.5	1067
MID CLAMP	20	0.3	6
END CLAMP	48	0.31	14.88
K2 CROSSRAIL 44-X	14	10	140.00
K2 CROSSRAIL 48-X	14	10	140.00
SPLICE BAR	2	0.65	1.3
SPLICE FOOT X	45	0.9	40.50
K2 SOLAR SEAL BUTYL PAD	45	0.42	18.90
M5 X 60 LAG SCREWS	90	0.08	7.20
T BOLT & HEX NUT SET	45	0.05	2.25
E-CURB	20	1.19	23.80
TOTAL WEIGHT OF THE SYSTEM (LBS)			1461.84
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			464.66
WEIGHT PER SQ. FT. (LBS)			3.15
WEIGHT PER PENETRATION (LBS)			5.97



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(1) SOLAREEDGE	SE7600H-US [240V]
DC SYSTEM SIZE:	8.80 kWDC
AC SYSTEM SIZE:	7.60 kWAC

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SHEET NAME
**ROOF PLAN &
 MODULES**

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-2



SCALE: 1/8" = 1'-0"

METER NO#: 81 867 320

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	22	Q CELLS Q.PEAK DUO BLK ML-G10+ 400
INVERTER	1	SOLAREEDGE SE7600H-US [240V]
OPTIMIZER	22	SOLAREEDGE POWER OPTIMIZER P401
JUNCTION BOX	1	JB-1.XL, JUNCTION BOX, NEMA 3R, UL LISTED
NON FUSED AC DISCONNECT	1	EATON DG222URB PV SYSTEM AC DISCONNECT SWITCH NON FUSED VISIBLE OPEN 60A, 120/240V 2P NEMA 3R
ATTACHMENT	45	SPLICE FOOT X
ATTACHMENT	45	K2 SOLAR SEAL BUTYL PAD
ATTACHMENT	90	M5 X 60 LAG SCREWS
ATTACHMENT	45	T BOLT & HEX NUT SET
ATTACHMENT	20	E-CURB
RAILS	14	K2 CROSSRAIL 44-X
BONDED SPLICE	2	SPLICE KIT
CLAMPS	68	MODULES CLAMPS (MID CLAMPS & END CLAMPS)
GROUNDING LUG	12	GROUNDING LUG



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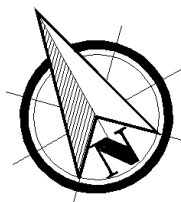
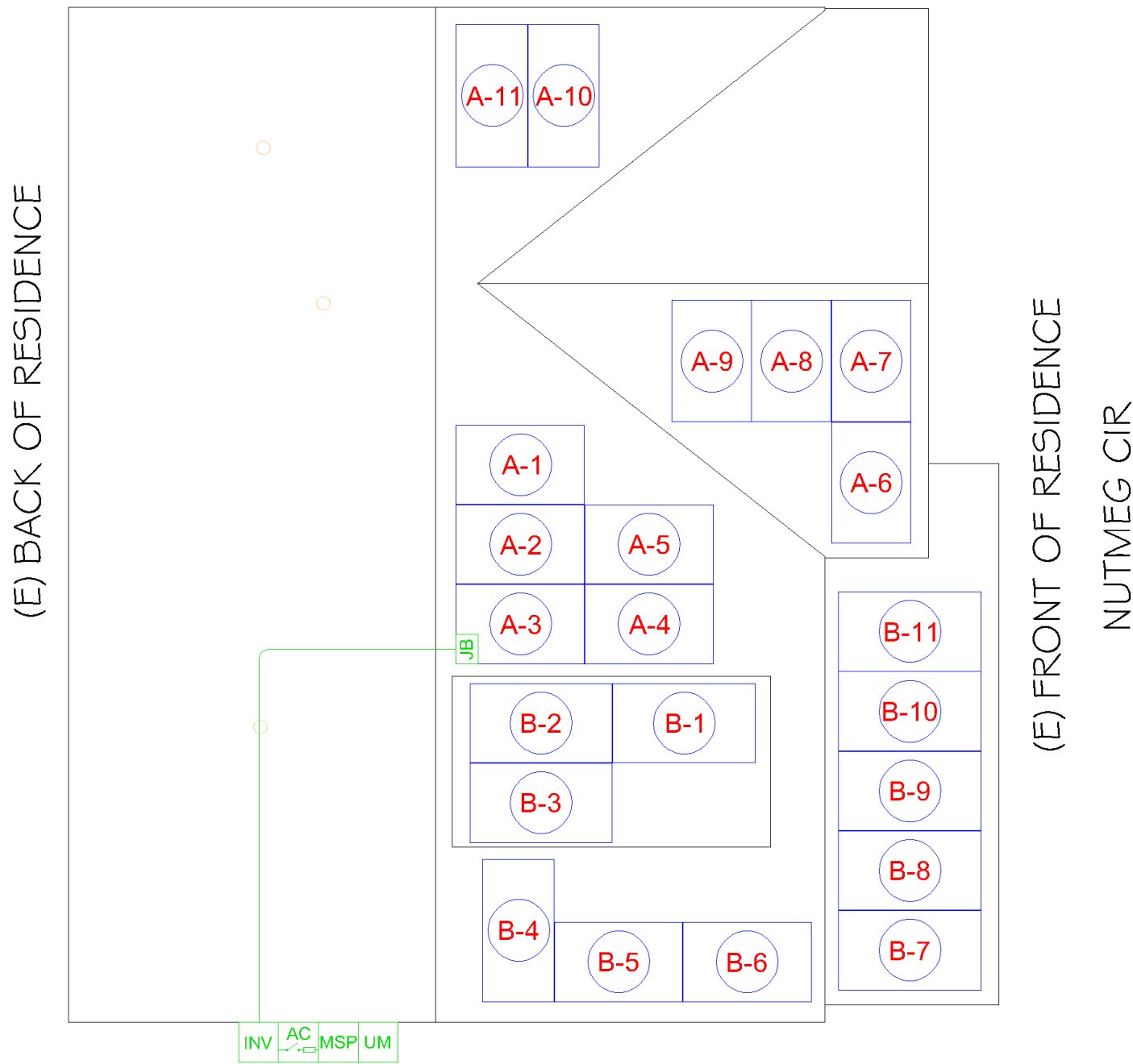
SHEET NAME
**STRING LAYOUT
 & BOM**

SHEET SIZE

**ANSI B
 11" X 17"**

SHEET NUMBER

PV-3



SCALE: 1/8" = 1'-0" **A** **B** - MODULE STRINGING



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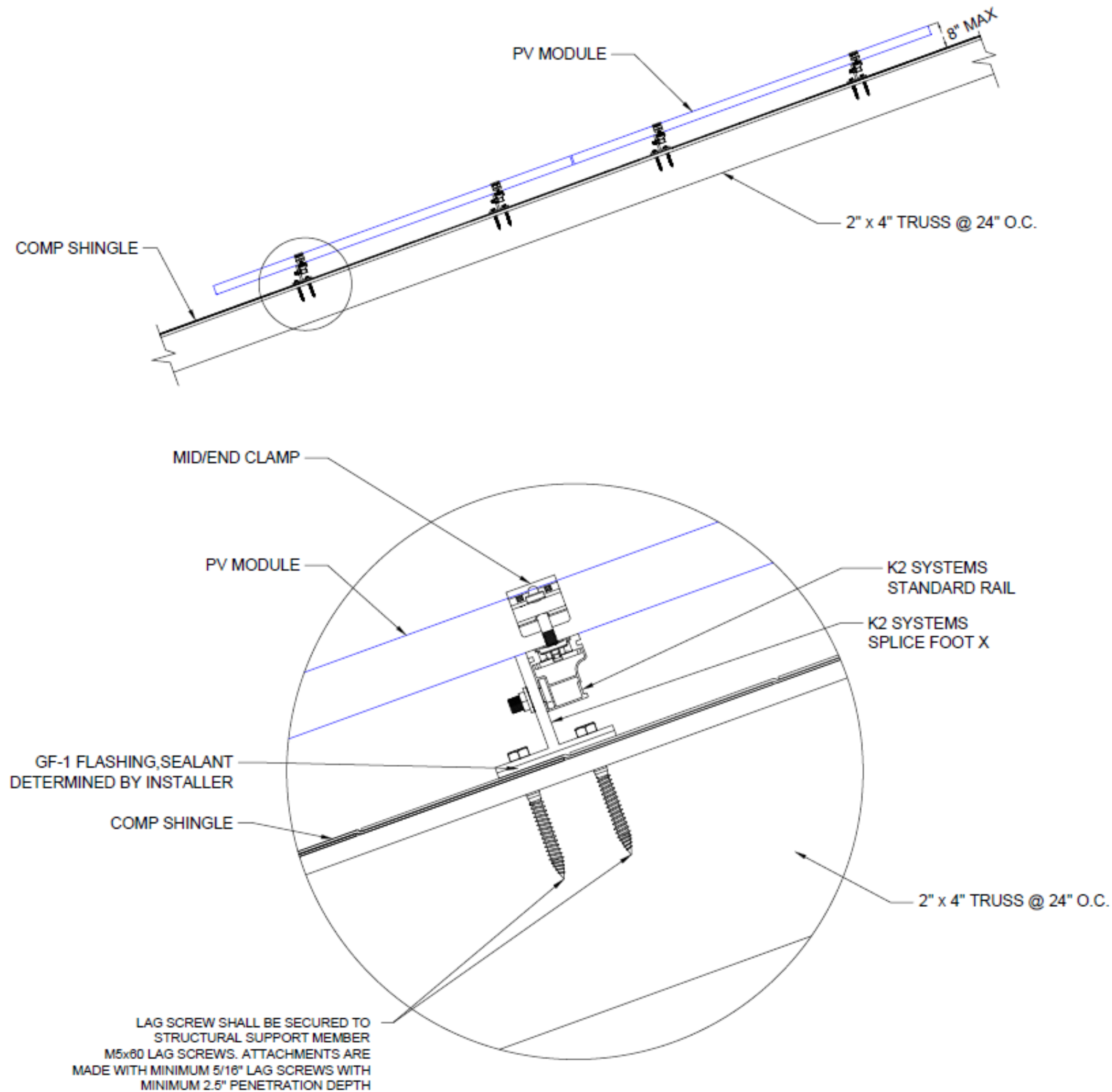
SHEET NAME
**ATTACHMENT
 DETAILS**

SHEET SIZE

ANSI B
 11" X 17"

SHEET NUMBER

PV-4





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AC SYSTEM SIZE: 7.60 kWAC	

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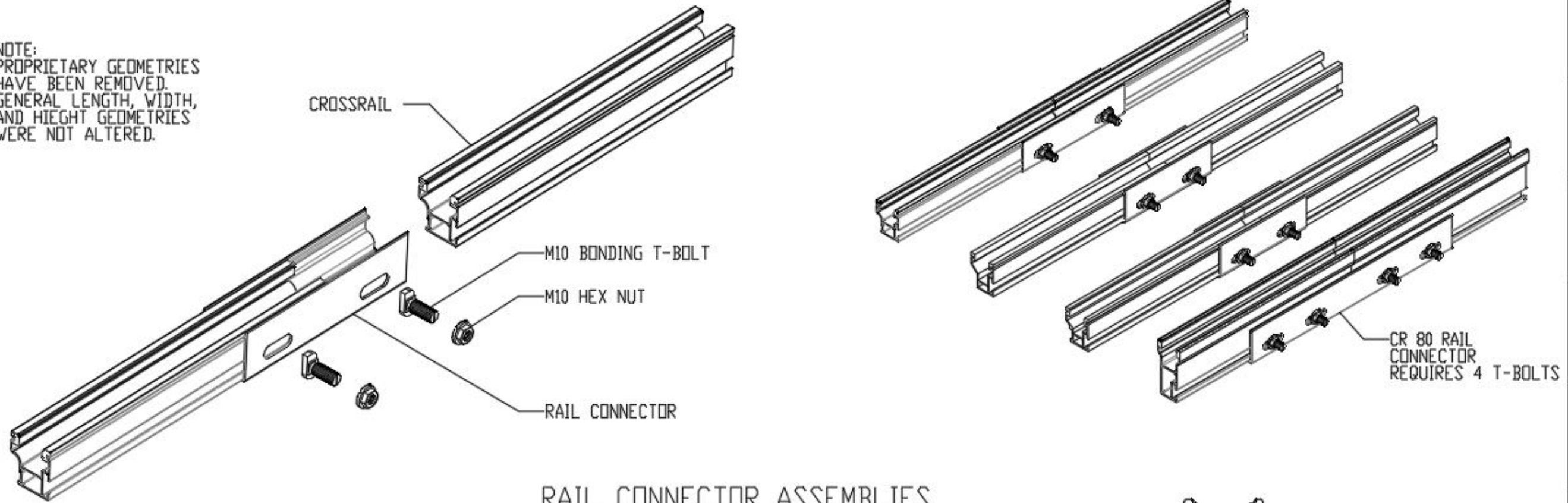
SHEET SIZE

**ANSI B
 11" X 17"**

SHEET NUMBER

PV-5

NOTE:
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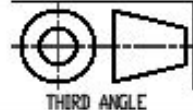
RAIL CONNECTOR ASSEMBLIES



REVISION HISTORY

Revision	Date	Description
01		
02		
03		
04		
05		

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 2835 La Mirada Dr Suite A
 Vista, CA 92081
 phone 760.301.5300



title

**CROSSRAIL RAIL
 CONNECTOR ASSEMBLIES**

size: B

Scale: 1:1 Revision: 00 All dimensions are in inches Sheet 2 of 2

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SHEET NAME
**ATTACHMENT
 DETAILS**

SHEET SIZE

**ANSI B
 11" X 17"**

SHEET NUMBER

PV-6

NOTE:
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CROSSRAIL

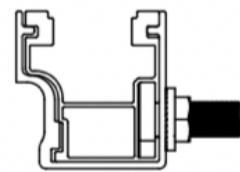
M10 BONDING T-BOLT

M10 HEX NUT

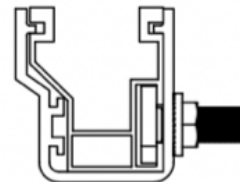
RAIL CONNECTOR

CR 80 RAIL
 CONNECTOR
 REQUIRES 4 T-BOLTS

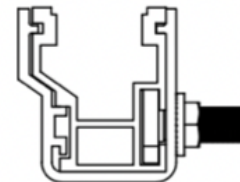
RAIL CONNECTOR ASSEMBLIES



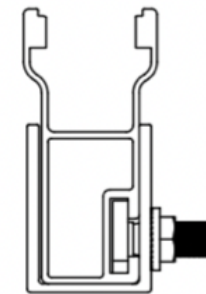
44-X



48-X



48-XL

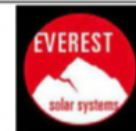
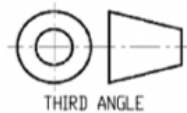


80

REVISION HISTORY

Revision	Date	Description
01		
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04		
05		

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 Vista, CA 92081
 phone 760.301.5300



Title
**CROSSRAIL RAIL
 CONNECTOR ASSEMBLIES**

Name	Date
Drawn T. WIGGINS	07/29/2020
Checked R. HAGEN	08/07/2020
Approved T. WIGGINS	08/18/2020
Last Revision	

Size: B	All Dimensions are mm
Scale: 1:25	Revision: 00
Sheet 2 of 2	

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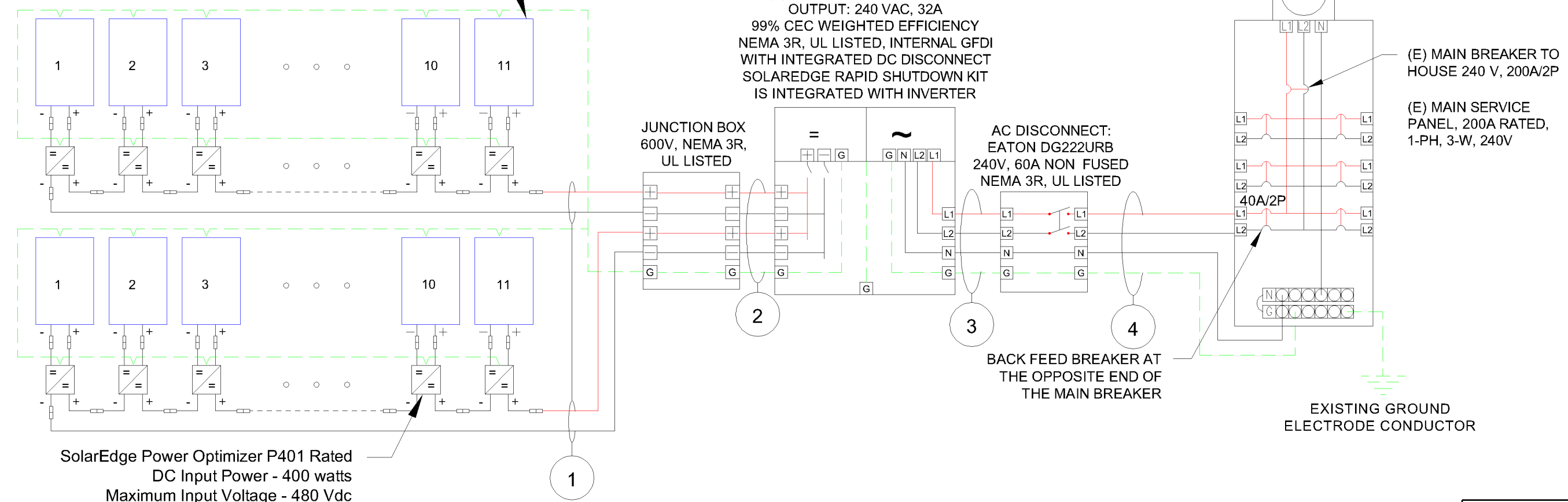
SHEET NAME
THREE LINE & CALCS.

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-7

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CIRCUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOTAGE DROP
				8 AWG	BARE COPPER	0.71						(58°C)											
1	2	ARRAY	JUNCTION BOX	10 AWG	PV WIRE	COPPER	OPEN AIR	1	2	N/A	N/A	8 AWG	BARE COPPER	0.71	(58°C)	N/A	15.00A	18.75A	40A	28.40A	90°C	60FT	0.47%
2	1	JUNCTION BOX	INVERTER	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT*	2	4	21.76%	N/A	8 AWG	THWN-2 COPPER	0.91	(36°C)	0.8	15.00A	18.75A	40A	29.12A	90°C	5FT	0.04%
3	1	INVERTER	NON FUSED AC DISCONNECT	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT*	1	3	27.02%	N/A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	32.00A	40A	55A	50.05A	90°C	5FT	0.10%
4	1	NON FUSED AC DISCONNECT	MSP	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT*	1	3	27.02%	40A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	32.00A	40A	55A	50.05A	90°C	5FT	0.10%

22 Q.PEAK DUO BLK ML-G10+ (400W) MODULES



SolarEdge Power Optimizer P401 Rated
 DC Input Power - 400 watts
 Maximum Input Voltage - 480 Vdc
 MPPT Range - 8 to 60 Vdc
 Maximum Input Current - 16.5 Adc
 Maximum Output Current - 15 Adc String
 Limitations - 8 to 25 Optimizers,
 6000 watts STC per string maximum

SYSTEM RATING	
8.80 kWDC	
7.60 kWAC	

INTERCONNECTION 120% RULE - NEC 705.12(B)(2)(3)(b)
UTILITY FEED + SOLAR BACKFEED 200A + 40A = 240A
BUSS RATING X 120% 200A x 120% = 240A

SERVICE INFO	
UTILITY PROVIDER:	SOUTH RIVER ELECTRIC MEMBERSHIP CORPORATION
AHJ NAME:	HARNETT COUNTY
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	200A
MAIN BREAKER RATING:	200A
MAIN SERVICE LOCATION:	WEST
SERVICE FEED SOURCE:	UNDERGROUND

SCALE: NTS



TITAN SOLAR POWER
 160 N MCQUEEN RD,
 GILBERT, AZ 85233, USA
 PHONE: (808) 371-5338
 Electrical LIC# : U.33714

SYSTEM INFO		
(22) Q CELLS		
Q.PEAK DUO BLK ML-G10+ 400		
(1) SOLAREEDGE		
SE7600H-US [240V]		
DC SYSTEM SIZE: 8.80 kWDC		
AC SYSTEM SIZE: 7.60 kWAC		

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

**JHAVAL CAIN
 RESIDENCE**
 41 NUTMEG CIR SPRING LAKE NC
 28390
 PHONE NO. (910) 568-9906
 EMAIL ID: jhavalcain@gmail.com

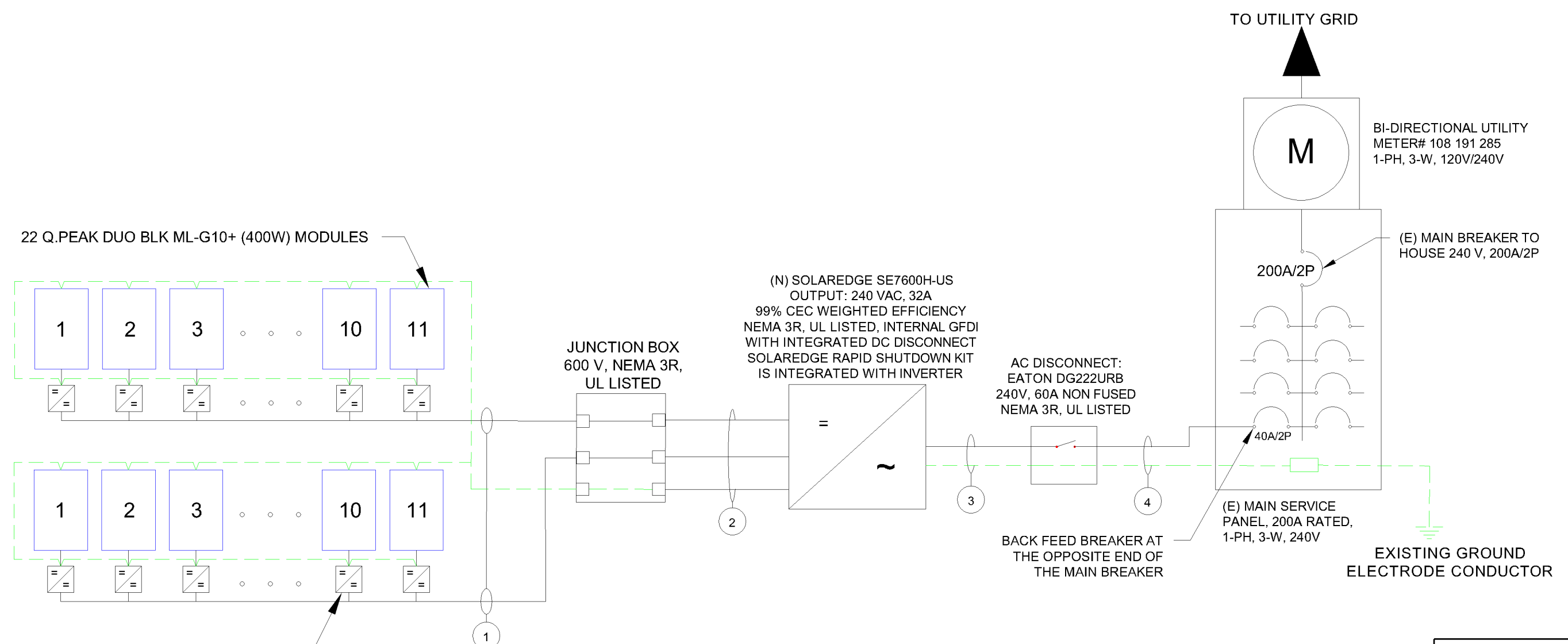
DATE: 6/16/2022

SHEET NAME
**SINGLE LINE &
 CALCS.**

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-8

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CIRCUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOTAGE DROP
				8 AWG	BARE COPPER	0.71						(58°C)											
1	2	ARRAY	JUNCTION BOX	10 AWG	PV WIRE	COPPER	OPEN AIR	1	2	N/A	N/A	8 AWG	BARE COPPER	0.71	(58°C)	N/A	15.00A	18.75A	40A	28.40A	90°C	60FT	0.47%
2	1	JUNCTION BOX	INVERTER	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT*	2	4	21.76%	N/A	8 AWG	THWN-2 COPPER	0.91	(36°C)	0.8	15.00A	18.75A	40A	29.12A	90°C	5FT	0.04%
3	1	INVERTER	NON FUSED AC DISCONNECT	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT*	1	3	27.02%	N/A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	32.00A	40A	55A	50.05A	90°C	5FT	0.10%
4	1	NON FUSED AC DISCONNECT	MSP	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT*	1	3	27.02%	40A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	32.00A	40A	55A	50.05A	90°C	5FT	0.10%



SolarEdge Power Optimizer P401 Rated
 DC Input Power - 400 watts
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 MPPT Range - 8 to 60 Vdc
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 6000 watts STC per string maximum

SYSTEM RATING
8.80 kWDC
7.60 kWAC

SERVICE INFO	
UTILITY PROVIDER:	SOUTH RIVER ELECTRIC MEMBERSHIP CORPORATION
AHJ NAME:	HARNETT COUNTY
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	200A
MAIN BREAKER RATING:	200A
MAIN SERVICE LOCATION:	WEST
SERVICE FEED SOURCE:	UNDERGROUND

INTERCONNECTION 120% RULE - NEC 705.12(B)(2)(3)(b)
UTILITY FEED + SOLAR BACKFEED 200A + 40A = 240A
BUSS RATING X 120% 200A x 120% = 240A

SCALE: NTS



TITAN SOLAR POWER
 160 N MCQUEEN RD,
 GILBERT, AZ 85233, USA
 PHONE: (808) 371-5338
 Electrical LIC# : U.33714

SYSTEM INFO

(22) Q CELLS
 Q.PEAK DUO BLK ML-G10+ 400
 (1) SOLAREEDGE
 SE7600H-US [240V]
 DC SYSTEM SIZE: 8.80 kWDC
 AC SYSTEM SIZE: 7.60 kWAC

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

JHAVAL CAIN
 RESIDENCE
 41 NUTMEG CIR SPRING LAKE NC
 28390
 PHONE NO. (910) 568-9906
 EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

SHEET NAME
**SPECIFICATIONS
 & NOTES**

SHEET SIZE

**ANSI B
 11" X 17"**

SHEET NUMBER

PV-9

SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL	Q CELLS Q.PEAK DUO BLK ML-G10+ 400
VMP	37.13 V
IMP	10.77 A
VOC	45.3 V
ISC	11.14 A
TEMP. COEFF. VOC	-0.27%/K
PTC RATING	376.55 W
MODULE DIMENSION	74"(L) x 41.1"(W)
PANEL WATTAGE	400 W

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL	SOLAREEDGE SE7600H-US [240V]
NOMINAL AC POWER	7600 W
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	32 A

POWER OPTIMIZER (SOLAREEDGE P401)

MAXIMUM INPUT POWER	400 W
MAXIMUM INPUT VOLTAGE	60 VDC
MAXIMUM INPUT ISC	11.75 ADC
MAXIMUM OUTPUT CURRENT	15 ADC
WEIGHTED EFFICIENCY	98.8%

AMBIENT TEMPERATURE SPECS

RECORD LOW TEMP	-10°C
AMBIENT TEMP (HIGH TEMP 2%)	36°C
CONDUIT HEIGHT	7/8"
ROOF TOP TEMP	90°C
CONDUCTOR TEMPERATURE RATE	58°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.27%/K

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
 MAIN SERVICE PANEL/AC DISCONNECT/INVERTER/AC COMBINER
 (PER CODE: NEC 2017 690.13(B))

2

WARNING PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
 DC CONDUIT
 EVERY 10' AND ON CONDUIT BODIES WHEN EXPOSED
 (PER CODE: NEC2017 690.31(G)(3)(4))

3

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT 32 A
 NOMINAL OPERATING AC VOLTAGE 240 VAC

LABEL LOCATION:
 MAIN SERVICE PANEL/AC DISCONNECT
 NEC2017, 690.53

4

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
 INVERTER
 AT OR WITHIN 3' OF THE DC COMBINER SWITCH
 PER CODE: NEC 690.58(C)(3)

5

⚠ CAUTION

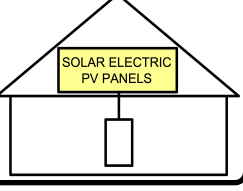
**DUAL POWER SOURCE
 SECOND SOURCE IS PHOTOVOLTAIC**

LABEL LOCATION:
 MAIN SERVICE PANEL/AC DISCONNECT/AC COMBINER/REVENUE METER
 2017 NEC 705.12(b)(3)

6

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



MAIN SERVICE PANEL
 IF MSD IS OUTSIDE PLACE IT THERE / IF MSD IS INSIDE PLACE ON THE AC DISCONNECT
 PER CODE: NEC 690.56(C)(1)

7

MAXIMUM VOLTAGE: 480 VDC
MAXIMUM CIRCUIT CURRENT: 20 ADC
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC-CONVERTER(IF INSTALLED): 30 ADC

LABEL LOCATION:
 INVERTER
 2017 NEC 690.53

8

PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH

LABEL LOCATION:
 AC DISCONNECT
 2017 NEC 690.56(C)(3)

9

PV SOLAR BREAKER

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
 MAIN SERVICE PANEL
 PER CODE: 2017 NEC 705.12(B)(2)(3)(B)

10

SERVICE DISCONNECT

SECTIONNEUR PRINCIPALE

SERVICIO DE DESCONEJION

LABEL LOCATION:
 AC DISCONNECT
 2017 NEC 230.66



TITAN SOLAR POWER
 160 N MCQUEEN RD,
 GILBERT, AZ 85233, USA
 PHONE: (808) 371-5338
 Electrical LIC# : U.33714

SYSTEM INFO	
(22) Q CELLS	
Q.PEAK DUO BLK ML-G10+ 400	
(1) SOLAREEDGE	
SE7600H-US [240V]	
DC SYSTEM SIZE: 8.80 kWDC	
AC SYSTEM SIZE: 7.60 kWAC	

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

**JHAVAL CAIN
 RESIDENCE**

**41 NUTMEG CIR SPRING LAKE NC
 28390**

PHONE NO. (910) 568-9906
 EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

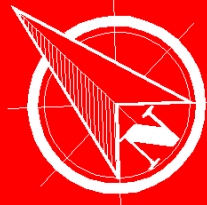
SHEET NAME
SIGNAGE

SHEET SIZE
**ANSI B
 11" X 17"**

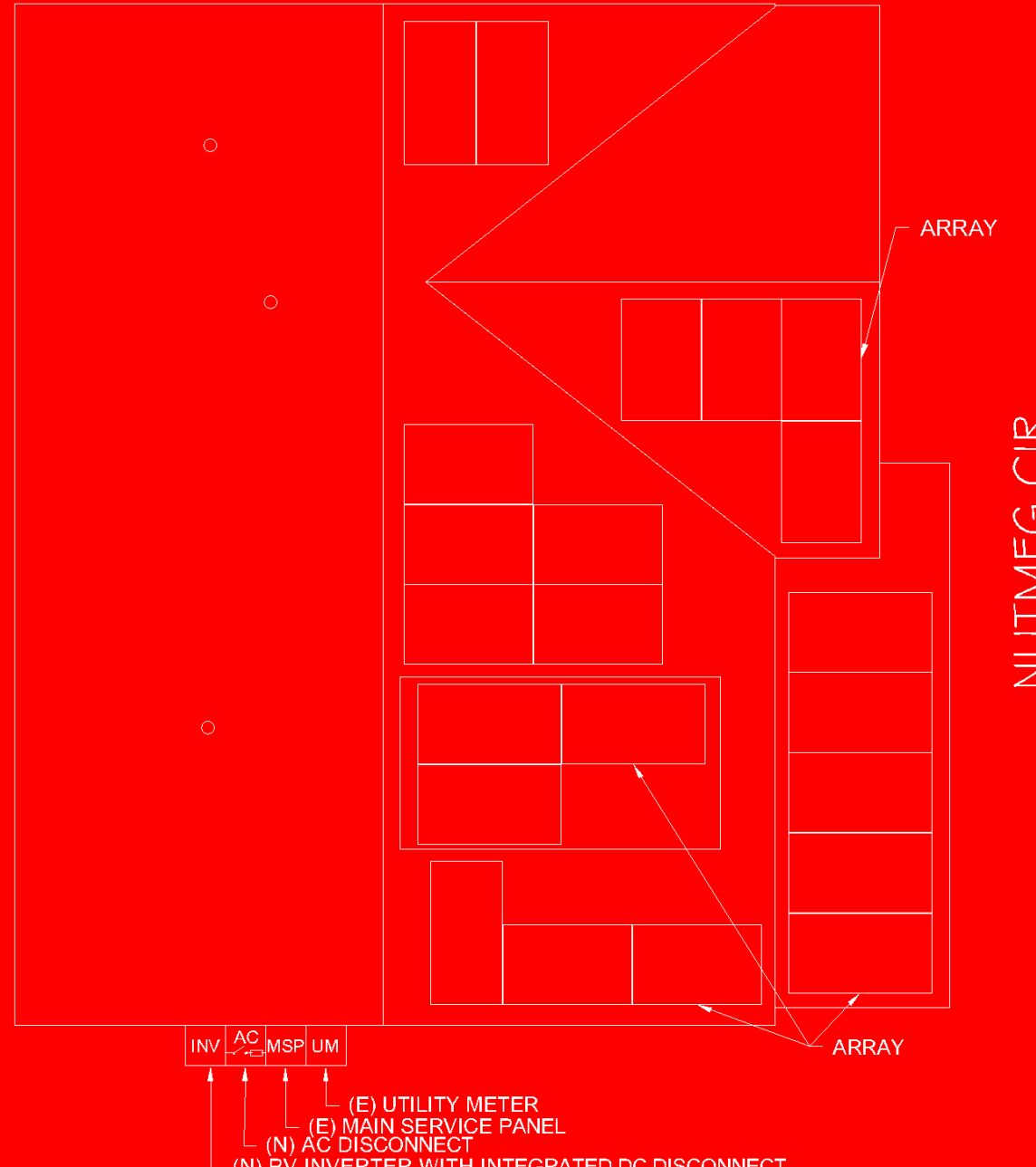
SHEET NUMBER
PV-10

ADHESIVE FASTENED SIGNS:

- ANSI Z535.4-2011 PRODUCT SAFETY SIGNS AND LABELS, PROVIDES GUIDELINES FOR SUITABLE FONT SIZES, WORDS, COLORS, SYMBOLS, AND LOCATION REQUIREMENTS FOR LABELS. NEC 110.21(B)(1)
- THE LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. NEC 110.21(B)(3).
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT.



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



INV (N) PV INVERTER WITH INTEGRATED DC DISCONNECT
 AC (N) AC DISCONNECT
 MSP (E) MAIN SERVICE PANEL
 UM (E) UTILITY METER

LABEL LOCATION:
 EACH SERVICE EQUIPMENT LOCATION AND AT THE LOCATION(S) OF THE SYSTEM DISCONNECT(S)
 FOR ALL ELECTRIC POWER PRODUCTION SOURCES CAPABLE OF BEING INTERCONNECTED
 (PER CODE: NEC 705.10)



TITAN SOLAR POWER
 160 N MCQUEEN RD,
 GILBERT, AZ 85233, USA
 PHONE: (808) 371-5338
 Electrical LIC# : U.33714

SYSTEM INFO	
(22) Q CELLS	
Q.PEAK DUO BLK ML-G10+ 400	
(1) SOLAREEDGE	
SE7600H-US [240V]	
DC SYSTEM SIZE: 8.80 kWDC	
AC SYSTEM SIZE: 7.60 kWAC	

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS
 JHAVAL CAIN
 RESIDENCE
 41 NUTMEG CIR SPRING LAKE NC
 28390
 PHONE NO. (910) 568-9906
 EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

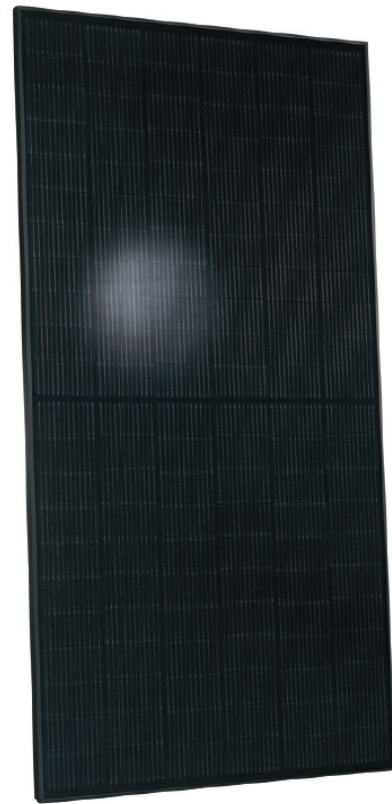
SHEET NAME
SIGNAGE

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11



TITAN SOLAR PANEL



BREAKING THE 20% EFFICIENCY BARRIER
Q. ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9 %.

INDUSTRY'S MOST THOROUGH TESTING
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.

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 (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty².

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



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

Q PEAK DUO BLK ML-G10+ 395-400 ENDURING HIGH PERFORMANCE

THE IDEAL SOLUTION FOR:
Roof-top arrays on residential buildings



400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA
TEL: +1949 748 5996
EMAIL: sales@q-cells.com

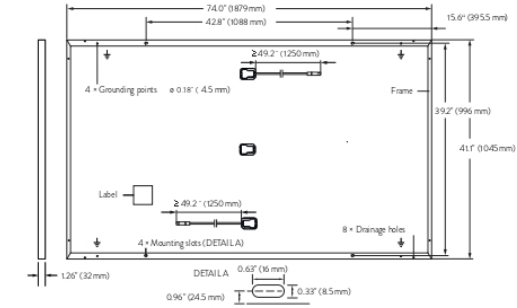


525 W Baseline Rd., Mesa, AZ, 85210
TEL: 855.SAY.SOLAR
EMAIL: info@titansolarpower.com



MECHANICAL SPECIFICATION

FORMAT	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
WEIGHT	48.5 lbs (22.0 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 × 22 monocrystalline Q. ANTUM solar half cells
JUNCTION BOX	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
CABLE	4mm ² Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
CONNECTOR	Stäubli MC4; IP68

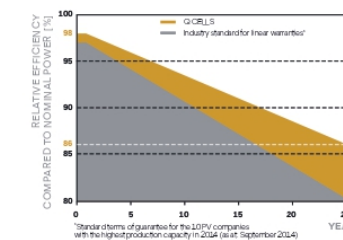


ELECTRICAL CHARACTERISTICS

POWER CLASS	385	390	395	400	405	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)						
POWER AT MPP	P _{MPP} [W]	385	390	395	400	405
SHORT CIRCUIT CURRENT	I _{SC} [A]	11.04	11.07	11.10	11.14	11.17
OPEN CIRCUIT VOLTAGE	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	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²						
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: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • ±800 W/m², NMOT, spectrum AM 1.5

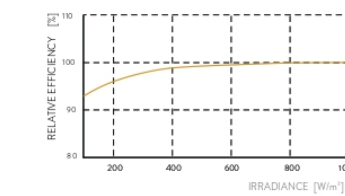
Q CELLS PERFORMANCE WARRANTY



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, 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]	-0.34	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 (3600 Pa) / 55 (2660 Pa)	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 (5400 Pa) / 84 (4000 Pa)		

³ See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells), QCPV Certification on going.



PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	165 lbs 75.1 kg	24 pallets	24 pallets	32 modules
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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.

Specifications subject to technical changes © Q CELLS Q. PEAK DUO BLK ML-G10+ 385-405_2021-05_Rev01_NA



TITAN SOLAR POWER
160 N MCQUEEN RD,
GILBERT, AZ 85233, USA
PHONE: (808) 371-5338
Electrical LIC# : U.33714

SYSTEM INFO

(22) Q CELLS
Q. PEAK DUO BLK ML-G10+ 400
(1) SOLAREGE
SE7600H-US [240V]
DC SYSTEM SIZE: 8.80 kWDC
AC SYSTEM SIZE: 7.60 kWAC

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

JHAVAL CAIN
RESIDENCE
41 NUTMEG CIR SPRING LAKE NC
28390
PHONE NO. (910) 568-9906
EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-13

/ 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	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⁾								
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								
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								
Nominal DC Input Voltage	380								
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								
Reverse-Polarity Protection	Yes								
Ground-Fault Isolation Detection	600k Ω Sensitivity								
Maximum Inverter Efficiency	99							99.2	%
CEC Weighted Efficiency	99								
Nighttime Power Consumption	< 2.5								

(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

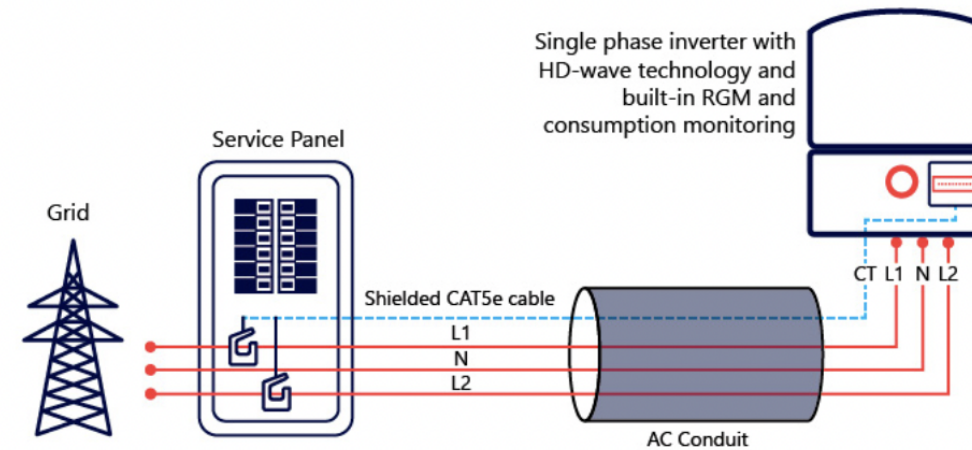
SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / **SE7600H-US** / SE10000H-US / SE11400H-US

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, NEC 2017 and NEC 2020, 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	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		lb / kg	
Noise	< 25			<50			
Cooling	Natural Convection						
Operating Temperature Range	-40 to +140 / -40 to +60 ⁽⁴⁾						
Protection Rating	NEMA 4X (Inverter with Safety Switch)						

(3) Inverter with Revenue Grade Meter P/N: SExxxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxxH-US000BN14. For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20. 20 units per box
 (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>

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



TITAN SOLAR POWER
 160 N MCQUEEN RD,
 GILBERT, AZ 85233, USA
 PHONE: (808) 371-5338
 Electrical LIC#: U.33714

SYSTEM INFO	
(22) Q CELLS	
Q.PEAK DUO BLK ML-G10+ 400	
(1) SOLAREEDGE	
SE7600H-US [240V]	
DC SYSTEM SIZE: 8.80 kWDC	
AC SYSTEM SIZE: 7.60 kWAC	

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

JHAVAL CAIN
 RESIDENCE
 41 NUTMEG CIR SPRING LAKE NC
 28390
 PHONE NO. (910) 568-9906
 EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

SHEET NAME
EQUIPMENT SPECIFICATION

SHEET SIZE

ANSI B
 11" X 17"

SHEET NUMBER

PV-14

Power Optimizer

For North America

P370 / P400 / P401 / 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

Power Optimizer

For North America

P370 / P400 / P401 / P485 / P505

Optimizer model (typical module compatibility)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96- cell modules)	P401 (for high power 60 and 72 cell modules)	P485 (for high-voltage modules)	P505 (for higher current modules)		
INPUT							
Rated Input DC Power ⁽¹⁾	370		400		485	505	
Absolute Maximum Input Voltage (Voc at lowest temperature)	60	80	60	125 ⁽²⁾	83 ⁽²⁾	Vdc	
MPPT Operating Range	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 DC Input Current	13.75	12.5	14.65	12.5	17.5		
Maximum Efficiency						99.5	%
Weighted Efficiency						98.8	%
Overtoltage Category						II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)							
Maximum Output Current						15	Adc
Maximum Output Voltage						60	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 Part 15 Class B, IEC61000-6-2, IEC61000-6-3	
Safety						IEC62109-1 (class II safety), UL1741, NEC/PVRSS	
Material						UL94 V-0, UV Resistant	
RoHS						Yes	
INSTALLATION SPECIFICATIONS							
Maximum Allowed System Voltage						1000	Vdc
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	mm / in	
Weight (including cables)	630 / 1.4	750 / 1.7	655 / 1.5	845 / 1.9	1064 / 2.3	gr / lb	
Input Connector						MC4 ⁽³⁾	
Input Wire Length						0.16 / 0.5	m / ft
Output Wire Type / Connector						Double Insulated / MC4	
Output Wire Length						1.2 / 3.9	m / ft
Operating Temperature Range ⁽⁴⁾						-40 to +85 / -40 to +185	°C / °F
Protection Rating						IP68 / Type6B	
Relative Humidity						0 - 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) Longer inputs wire lengths are available for use. For 0.9m input wire length order P401-x0xLxxx
 (5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

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)	P370, P400, P401 P485, P505	8 6	10 8	18 14	
Maximum String Length (Power Optimizers)	25		25	50	
Maximum Power per String	5700 ⁽⁸⁾ (6000 with SE7600-US - SE11400-US)	5250 ⁽⁸⁾	6000 ⁽⁸⁾	12750 ⁽⁸⁾	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 P485/P505 with 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 6,500W 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 15,000W per string when the maximum power difference between each string is 2,000W



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 (1) SOLAREEDGE
 SE7600H-US [240V]
 DC SYSTEM SIZE: 8.80 kWDC
 AC SYSTEM SIZE: 7.60 kWAC

REVISIONS

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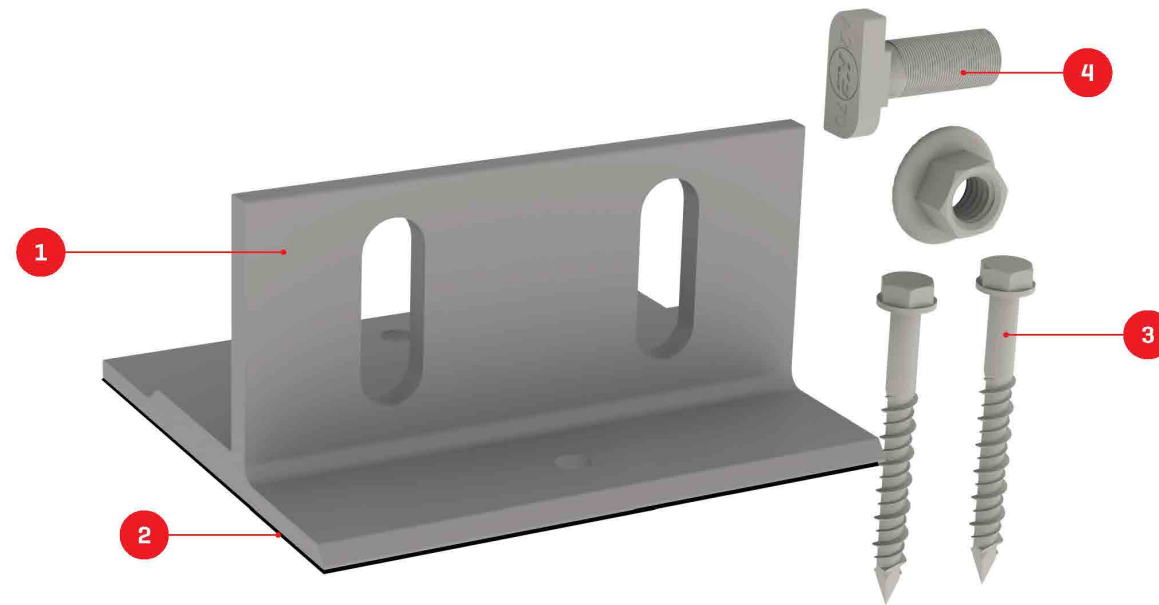
SHEET SIZE

ANSI B
 11" X 17"

SHEET NUMBER

PV-15

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Splice Foot X

TECHNICAL SHEET

Item Number	Description	Part Number
1	Splice Foot X	4000113 Splice Foot X Kit, Mill
2	K2 Solar Seal Butyl Pad	
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



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**EQUIPMENT
SPECIFICATION**

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

PV-16

E-CURB™ SYSTEM
PENETRATION SEALS

Technical Data Guide

Polyether Technology

CSI Section No. 07 12 13

CHEM LINK Products, LLC

Distributed by: **BEST MATERIALS**®
Ph: 800-474-7570, 602-272-8128
Fax: 602-272-8014
www.BestMaterials.com
Email: Sales@BestMaterials.com

Last Revision: 02/20/13
Document No. L1350

Product Description

E-Curb penetration seals replace old-style metal pitch pans with versatile, precast components and pourable sealants. CHEM LINK's **E-Curb** System can usually be installed in under 15 minutes and never requires flashing or mechanical attachment.

E-Curbs are designed for use on granulated modified bitumen, asphalt and coal tar B.U.R. (built up roofing).

E-Curbs are specified for PVC, EPDM, PIB, and TPO single ply roofing membranes. **E-Curbs** are highly versatile for sealing penetrations around solar panel mounts, HVAC, Electrical, and any type of structural supports. TPO Primer is required for use with TPO single-ply roof membrane.

When installed properly, this system forms a durable, waterproof rubber seal around penetrations. An extended manufacture warranty against leaks is activated with submittal of a completed warranty card.

Special Characteristics

- Rapid installation - "Slip-fit" light weight curb design reduces labor significantly.
- Excellent adhesion to most roofing materials.
- No flashing or mechanical attachment required.
- Service Temperature -40°F to 200°F (-40°C to 93°C)
- **1-Part**® accommodates movement and is suggested for use on all granulated membranes and details with excessive movement.
- For sloped roof applications, substitute **DuraLink**™ non-slump adhesive/sealant for **1-Part** and **M-1**®

Restrictions

- Do not apply below 30°F (-1°C)
- Do not install if rain is anticipated within 4 hours
- Do not use on Hypalon or smooth APP modified bitumen membrane. For smooth APP, torch down a target of granulated APP before installation.
- TPO Primer must be used for TPO applications.
- Do not prime bonding surfaces with asphalt primer!
- Do not use asphalt cement as a "night sealant." Use **M-1** for this purpose.
- **E-Curb** kits are designed to contain enough 1-Part to fill each curb with displacement in consideration. Refer to our penetration calculator under contractor resources at chemlink.com to verify volumes.



E-Curb System Components

- **E-Curb** exterior rings, straights, and corners.
- **M-1** Structural Adhesive/Sealant used for bonding the **E-Curb** components, sealing and priming the penetration.
- **1-Part** "moisture cure" pourable sealer, used to form a durable, water-tight seal around the roof penetration.

E-Curb precast form components are composed of light weight nylon resin. The E-Curb is 2-inches high and is available in a variety of shapes and sizes. Sizes available include: bi-sected circular pieces having inside diameters of 3, 4, 6, or 9 inches. Corner pieces having a 2-inch radius, and 8-inch straight pieces are also available to create larger sizes. The outer surface is impervious to ice, corrosion, UV (ultraviolet) light and ponding water.

M-1 Structural Adhesive/Sealant is a durable, self-fixturing moisture cure mastic. Cartridges of **M-1** are supplied in each E-Curb Kit. Components are also sold separately.

1-Part is a highly flexible, self-leveling moisture cure pourable sealer that eliminates mixing. It is also 100% solid rubber, has a very low VOC content, will not melt or shrink, and is resistant to deterioration. It is supplied in 10.1-oz and 28-oz cartridges or 1/2 gallon pouches. Unused sealant can be capped and reused.



Step 1

Remove all previously applied caulk, mastic, cement, asphalt, and other contaminants from penetrations with a wire brush. Clean all smooth substrates with isopropyl or denatured alcohol. Brush away all gravel or loose granules. Seal the base of each penetration with **M-1**. Coat penetrations with **M-1** to 3" above the roof line.



Step 2

Hold a section of **E-Curb**, flat side up, and apply a 1/4" bead of **M-1** to the entire bottom perimeter. Apply 1 additional 1/4" bead of **M-1** down the center of the section. Do not tool the beads flat. Place the **E-Curb** section on the roof surface to form a half circle around the penetration(s). Press down firmly until **M-1** extrudes from the outside edges.



Step 3

Apply **M-1** to the second section of **E-Curb** as described above. Place the second section of curb on the roof surface to form a circle with the first section. Press firmly in place until excess adhesive extrudes from the outside edges. Apply a bead of **M-1** around the outside base of the installed **E-Curb**, and tool to form a smooth fillet. For non **E-Curb** penetrations seals, add **M-1** to scarf joint surfaces and tool smooth.



Step 4

Cut tip off **1-Part** cartridge at widest point on plastic nozzle and pierce the foil seal. Insert into caulking gun and pump **E-Curb** full. When using a **1-Part** pouch, remove cap, pour, squeeze out excess air, and reseal. **Note:** To provide an adequate rubber seal, maintain a 1" distance between penetrations and inside edge of the E-Curb.



All properties described in this document are derived from testing conducted in laboratory conditions. Properties and performance will vary depending on environmental conditions and application technique. Test and evaluate to determine appropriate usage. Visit www.chemlink.com for the Material Safety Data Sheet, Technical Data Guides and full warranty for this product.

LIMITED WARRANTY: **CHEM LINK Products, LLC** warrants this product's performance, provided it is properly stored and applied within 1 year. If not satisfied, return remaining product and purchase receipt for refund or replacement of product exclusive of labor or cost of labor. This is the sole and exclusive remedy for defects or failure of this product. User must read and follow the direction of the current Technical Data Guide and MSDS prior to product use. User determines suitability of product for intended use and assumes all risks. Manufacturer shall not be liable for damages (including consequential or incidental damages) in excess of the purchase price, except where such exclusion or limitation is prohibited by state law. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WRITTEN OR ORAL, STATUTORY, EXPRESS OR IMPLIED INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE; except for the above express warranty given by manufacturer, the product is sold with all faults. **CHEM LINK PRODUCTS, LLC** SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS. This warranty gives you specific legal rights, and you may also have other rights in the U.S. which vary from state to state. For warranty claim information, call 800-826-1681.



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160 N MCQUEEN RD,
GILBERT, AZ 85233, USA
PHONE: (808) 371-5338
Electrical LIC# : U.33714

SYSTEM INFO	
(22) Q CELLS	
Q.PEAK DUO BLK ML-G10+ 400	
(1) SOLAREGE	
SE7600H-US [240V]	
DC SYSTEM SIZE: 8.80 kWDC	
AC SYSTEM SIZE: 7.60 kWAC	

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

JHAVAL CAIN
RESIDENCE
41 NUTMEG CIR SPRING LAKE NC
28390
PHONE NO. (910) 568-9906
EMAIL ID: jhavalcain@gmail.com

DATE: 6/16/2022

SHEET NAME
EQUIPMENT SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

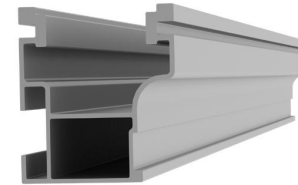
SHEET NUMBER

PV-17

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CROSSRAIL 44-X



Mechanical Properties

	CrossRail 44-X
Material	6000 Series Aluminum
Ultimate Tensile Strength	37.7 ksi [260 MPa]
Yield Strength	34.8 ksi [240 MPa]
Weight	0.47 lbs/ft [0.699 kg/m]
Finish	Mill or Dark Anodized

Sectional Properties

	CrossRail 44-X
S _x	0.1490 in ³ [0.3785 cm ³]
S _y	0.1450 in ³ [0.3683 cm ³]
A [X-Section]	0.4050 in ² [1.0287 cm ²]

Units: [mm] in



Notes:

- ▶ Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- ▶ UL2703 Listed System for Fire and Bonding



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(1) SOLAREEDGE SE7600H-US [240V]
DC SYSTEM SIZE: 8.80 kWDC
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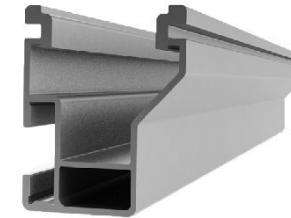
SHEET NUMBER

PV-18

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CROSSRAIL 48-X



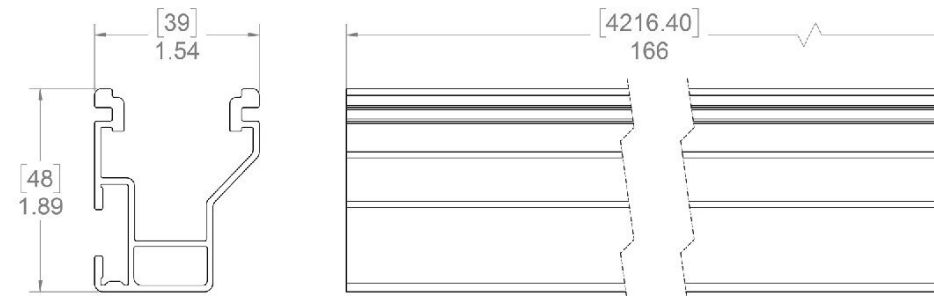
Mechanical Properties

CrossRail 48-X	
Material	6000 Series Aluminum
Ultimate Tensile Strength	37.7 ksi [260 MPa]
Yield Strength	34.8 ksi [240 MPa]
Weight	0.56 lbs/ft [0.833 kg/m]
Finish	Mill or Dark Anodized

Sectional Properties

CrossRail 48-X	
S _x	0.1980 in ³ [3.245 cm ³]
S _y	0.1510 in ³ [2.474 cm ³]
A [X-Section]	0.4650 in ² [2.999 cm ²]

Units: [mm] in



Notes:

- ▶ Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- ▶ UL2703 Listed System for Fire and Bonding



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(1) SOLAREEDGE SE7600H-US [240V]
DC SYSTEM SIZE: 8.80 kWDC
AC SYSTEM SIZE: 7.60 kWAC

REVISIONS		
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SHEET NAME
**EQUIPMENT
SPECIFICATION**

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

PV-19

A. System Specifications and Ratings

- Maximum Voltage: 1,000 Volts
- Maximum Current: 120 Amps
- Allowable Wire: 14 AWG – 6 AWG
- Spacing: Please maintain a spacing of at least ½” between uninsulated live parts and fittings for conduit, armored cable, and uninsulated live parts of opposite polarity.
- Enclosure Rating: Type 3R
- Roof Slope Range: 2.5 – 12:12
- Max Side Wall Fitting Size: 1”
- Max Floor Pass-Through Fitting Size: 1”
- Ambient Operating Conditions: (-35°C) - (+75°C)
- Compliance:
 - JB-1.XL: UL1741
 - Approved wire connectors: must conform to UL1741
- System Marking: **Interek Symbol and File #5019942**
- Periodic Re-inspections: If re-inspections yield loose components, loose fasteners, or any corrosion between components, components that are found to be affected are to be replaced immediately.

Table 1: Typical Wire Size, Torque Loads and Ratings

	1 Conductor	2 Conductor	Torque				
			Type	NM	Inch Lbs	Voltage	Current
ABB ZS6 terminal block	10-24 awg	16-24 awg	Sol/Str	0.5-0.7	6.2-8.85	600V	30 amp
ABB ZS10 terminal block	6-24 awg	12-20 awg	Sol/Str	1.0-1.6	8.85-14.16	600V	40 amp
ABB ZS16 terminal block	4-24 awg	10-20 awg	Sol/Str	1.6-2.4	14.6-21.24	600V	60 amp
ABB M6/8 terminal block	8-22 awg		Sol/Str	.08-1	8.85	600V	50 amp
Ideal 452 Red WING-NUT Wire Connector	8-18 awg		Sol/Str			600V	
Ideal 451 Yellow WING-NUT Wire Connector	10-18 awg		Sol/Str			600V	
Ideal, In-Sure Push-In Connector Part #39	10-14 awg		Sol/Str			600V	
WAGO, 221-612	10-14 awg		Sol/Str			600V	
International Hydraulics 2S2/0	10-14 awg		Sol/Str	4	35		
	8 awg		Sol/Str	4.5	40		
Brumall 4-5,3	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
Blackburn LL414	4-14 awg		Sol/Str				

Table 2: Minimum wire-bending space for conductors through a wall opposite terminals in mm (inches)

Wire size, AWG or		Wires per terminal (pole)			
		1	2	3	4 or More
kcmil	(mm ²)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
14-10	(2.1-5.3)	Not specified	-	-	-
8	(8.4)	38.1 (1-1/2)	-	-	-
6	(13.3)	50.8 (2)	-	-	-



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