PV SYSTEM INFO

THIS SYSTEM IS A GRID-TIED PV SYSTEM. PV MODULES WITH A COMBINED STC RATED DC OUTPUT POWER OF **44** kW. TOTAL ANNUAL ENERGY PRODUCTION OF THE PV SYSTEM, ACCORDING TO HELIOSCOPE SOFTWARE SIMULATION IS: **72,920** kWh.

THE PV SYSTEM AND THE ENERGY GENERATED BY THE PV SYSTEM SHALL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ON-SITE ELECTRICAL EQUIPMENT VIA **LINE SIDE INTERCONNECTION**. THIS PROJECT DOES NOT INCLUDE STORAGE BATTERIES.

SCOPE OF WORK

Equipment summary:

110 x Q CELLS Q.PEAK DUO ML-G10+ 400W MODULES
55 x SOLAREDGE P960 POWER OPTIMIZERS
1 x SOLAREDGE 43.2KUS, 208V, 3Ø, INVERTER
1 x AC DISCONNECT, 150A RATED,
FUSED WITH 150A FUSES, 3Ø, 208VAC, NEMA 3R
187 x U-ANCHOR 2400 TPO ROOF ATTACHMENTS
IRONRIDGE RACKING

GOVERNING CODES

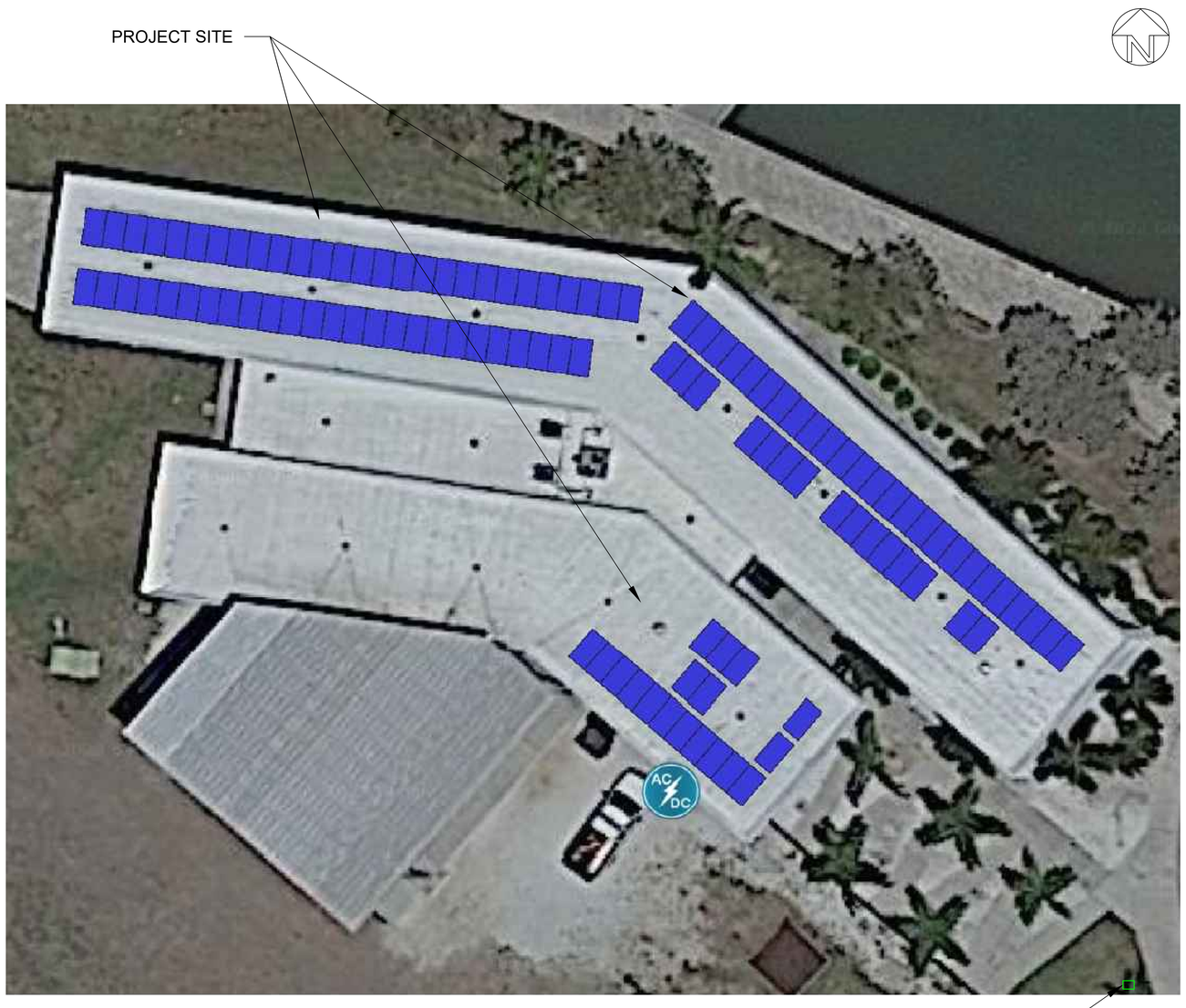
2017 NATIONAL ELECTRIC CODE (NEC)
2020 FLORIDA BUILDING CODE 7th EDITION (FBC)
UNDERWRITERS LABORATORIES (UL) STANDARDS
OSHA 29 CFR 1910.269
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
FLORIDA FIRE PREVENTION CODE, 7th EDITION (FFPC)

SITE SPECIFICATIONS

OCCUPANCY CATEGORY: III
DESIGN WIND SPEED: 150 MPH
EXPOSURE CATEGORY: C
GROUND SNOW LOAD: 0 PSF
STANDARD: ASCE 7-16

SHEET INDEX

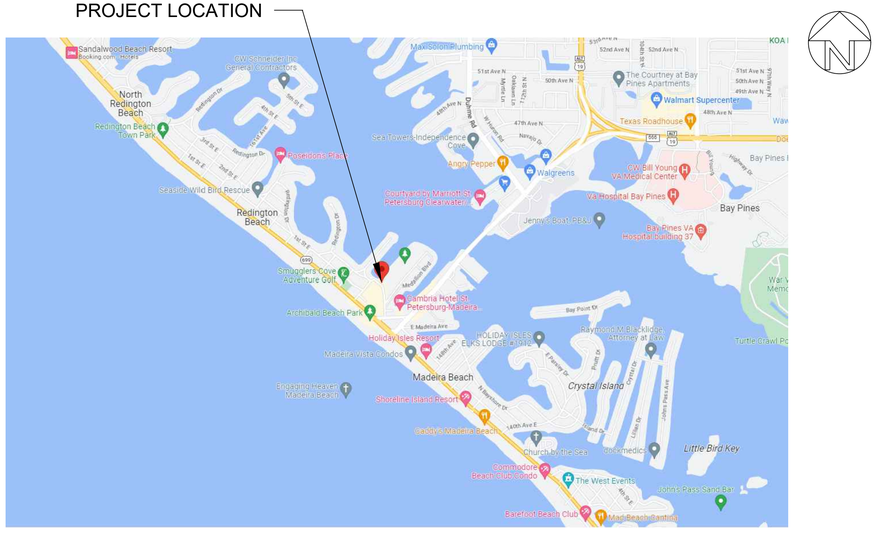
AERIAL SITE VIEW



CONSTRUCTION NOTES

1.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
2.) CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
3.) ALL EQUIPMENT SHALL BE LISTED BY U.L. (OR EQUAL) AND LISTED FOR ITS SPECIFIC APPLICATION.
4.) ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.
5.) ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6.) ACCESS TO ELECTRICAL COMPONENTS OVER 150 VOLTS TO GROUND SHALL BE RESTRICTED TO QUALIFIED PERSONNEL.
7.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
8.) PV MODULE FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER G.E.C. PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
9.) PV MODULE RACKING RAIL SHALL BE BONDED TO BARE COPPER G.E.C. VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVALENT LISTED LUG.
10.) GROUNDING ELECTRODE CONDUCTOR (G.E.C.) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED/WELDED.
11.) ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
12.) WORKING SPACE AROUND ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26

VICINITY MAP



Contractor:

Wilson & Girgenti Engineering

Project:

MADEIRA BEACH REC CENTER

300 Municipal Drive,
Madeira Beach, FL 33708

Engineer:

ARC DESIGN Solar Specialists

JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

Engineering Approval:

James A. Clancy — STATE OF FLORIDA — PROFESSIONAL ENGINEER — No. 64848

REVISIONS

DESCRIPTION	DATE	REV

Designed by:

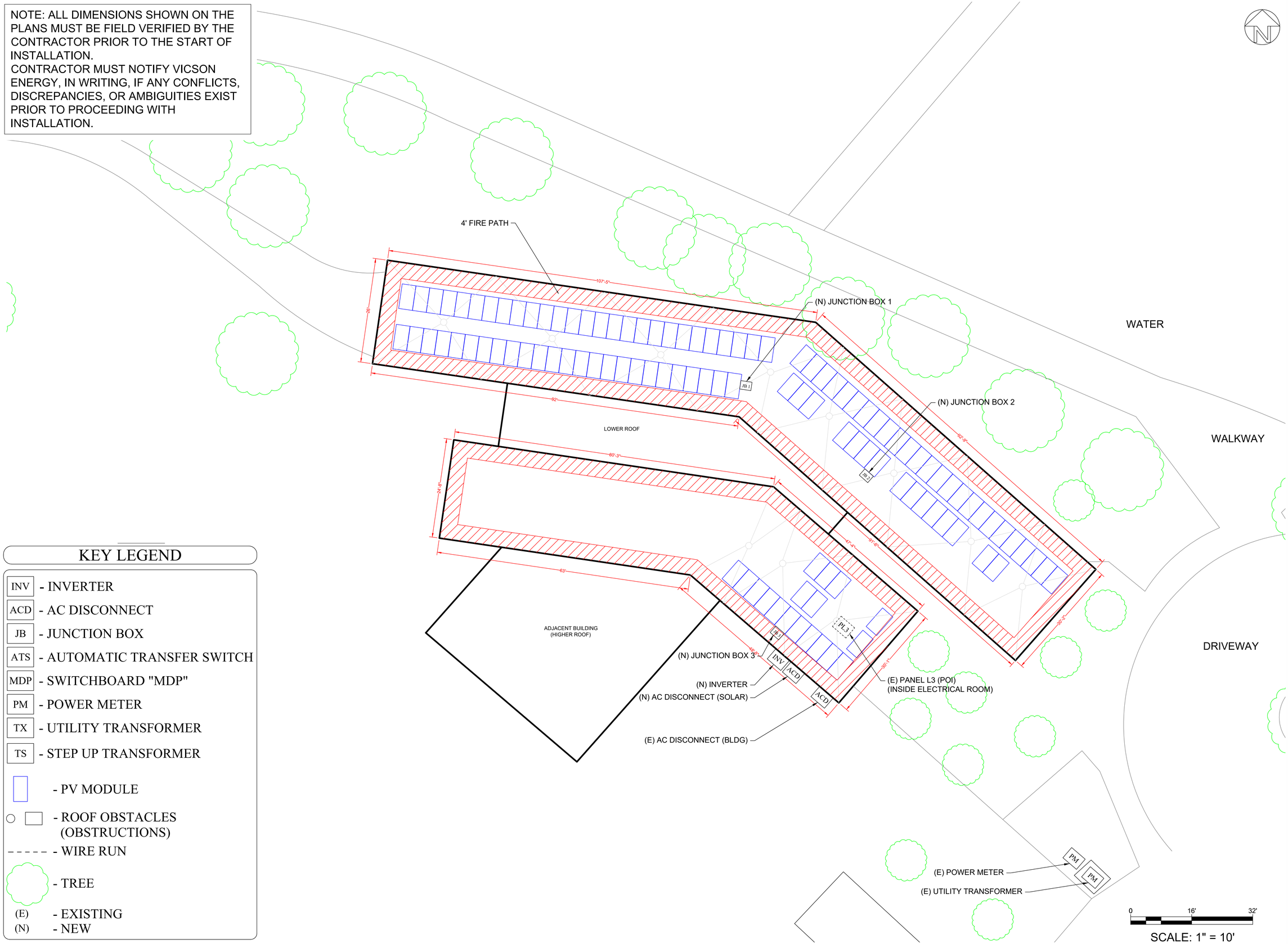
VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"

Sheet title: COVER

Sheet number: X.0

NOTE: ALL DIMENSIONS SHOWN ON THE PLANS MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF INSTALLATION.
CONTRACTOR MUST NOTIFY VICSON ENERGY, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH INSTALLATION.



KEY LEGEND

- INV - INVERTER
- ACD - AC DISCONNECT
- JB - JUNCTION BOX
- ATS - AUTOMATIC TRANSFER SWITCH
- MDP - SWITCHBOARD "MDP"
- PM - POWER METER
- TX - UTILITY TRANSFORMER
- TS - STEP UP TRANSFORMER
- PV MODULE
- ROOF OBSTACLES (OBSTRUCTIONS)
- WIRE RUN
- TREE
- (E) - EXISTING
- (N) - NEW

Contractor:
Wilson & Girgenti Engineering

Project:
MADEIRA BEACH REC CENTER
300 Municipal Drive,
Madeira Beach, FL 33708

Engineer:
JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

Engineering Approval:

JAMES A. CLANCY LICENSE No. 64848 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVISIONS

DESCRIPTION	DATE	REV

Designed by:
VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"
Sheet title: SITE PLAN
Sheet number: A.0

ROOF AREAS

ARRAY A

EXISTING ROOF TYPE: TPO
MEAN ROOF HEIGHT: 27ft
ROOF SLOPE: 1°
AZIMUTH: 188°
TOTAL MODULES: 52
MODULE WEIGHT: 48.5 LBS
MODULE DIMENSIONS: 74" x 41.1" = 21.12 SF
DEAD LOAD: 2.29 PSF
TOTAL ROOF AREA: 2589 SQ. FT
TOTAL PV MODULE AREA: 1098.24 SQ. FT

ARRAY C

EXISTING ROOF TYPE: TPO
MEAN ROOF HEIGHT: 27ft
ROOF SLOPE: 1°
AZIMUTH: 221°
TOTAL MODULES: 18
MODULE WEIGHT: 48.5 LBS
MODULE DIMENSIONS: 74" x 41.1" = 21.12 SF
DEAD LOAD: 2.29 PSF
TOTAL ROOF AREA: 1443 SQ. FT
TOTAL PV MODULE AREA: 380.16 SQ. FT

ARRAY B

EXISTING ROOF TYPE: TPO
MEAN ROOF HEIGHT: 27ft
ROOF SLOPE: 1°
AZIMUTH: 221°
TOTAL MODULES: 40
MODULE WEIGHT: 48.5 LBS
MODULE DIMENSIONS: 74" x 41.1" = 21.12 SF
DEAD LOAD: 2.29 PSF
TOTAL ROOF AREA: 2780 SQ. FT
TOTAL PV MODULE AREA: 844.8 SQ. FT

INSTALLATION NOTES

GENERAL INSTALLATION PLAN NOTES:
1) DRAWINGS SHOWN MAY NOT REFLECT FIELD CONDITIONS. CONTRACTOR TO FIELD VERIFY CONDITIONS PRIOR TO INSTALLATION.
2) CONTRACTOR MAY LOCATE PV MODULES TO DIFFERENT LOCATION THAN SHOWN.
3) IRONRIDGE XR1000 RAILS SHALL BE INSTALLED AS SHOWN IN SHEET S.1 AND AS FOLLOWS FOR EACH WIND ZONE.
4) ROOF ATTACHMENT SHALL BE INSTALLED ON STEEL ROOF DECK AS SHOWN IN SHEETS S.1. AND A.1.
5) EXISTING BUILDING WITH TPO ROOFING SYSTEM WITH RIGID INSULATION BOARD, MECHANICALLY FASTENED TO 20GA STEEL ROOF DECK AS SHOWN IN S.1 AND A.1 SHEETS.
6) EXISTING BUILDING WITH STEEL ROOF DECK ATTACHED TO THE OPEN WEB STEEL JOISTS SPACED MAX @ 9' 3" O.C.
MEAN ROOF HEIGHT LESS THAN 30 FT.
CONTRACTOR TO FIELD VERIFY AND SHALL REPORT TO THE ENGINEER IF ANY DISCREPANCIES EXIST BETWEEN PLANS AND IN FIELD CONDITIONS.

KEY LEGEND

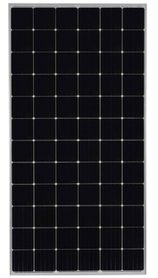
- INV - INVERTER
- ACD - AC DISCONNECT
- JB - JUNCTION BOX
- ATS - AUTOMATIC TRANSFER SWITCH
- MDP - SWITCHBOARD "MDP"
- PM - POWER METER
- T - UTILITY TRANSFORMER
- - PV MODULE
- - POWER OPTIMIZER
- - ROOF OBSTACLES (OBSTRUCTIONS)
- - ROOF ATTACHMENT
- - RAIL
- - - - - - WIRE RUN
- (E) - EXISTING
- (N) - NEW

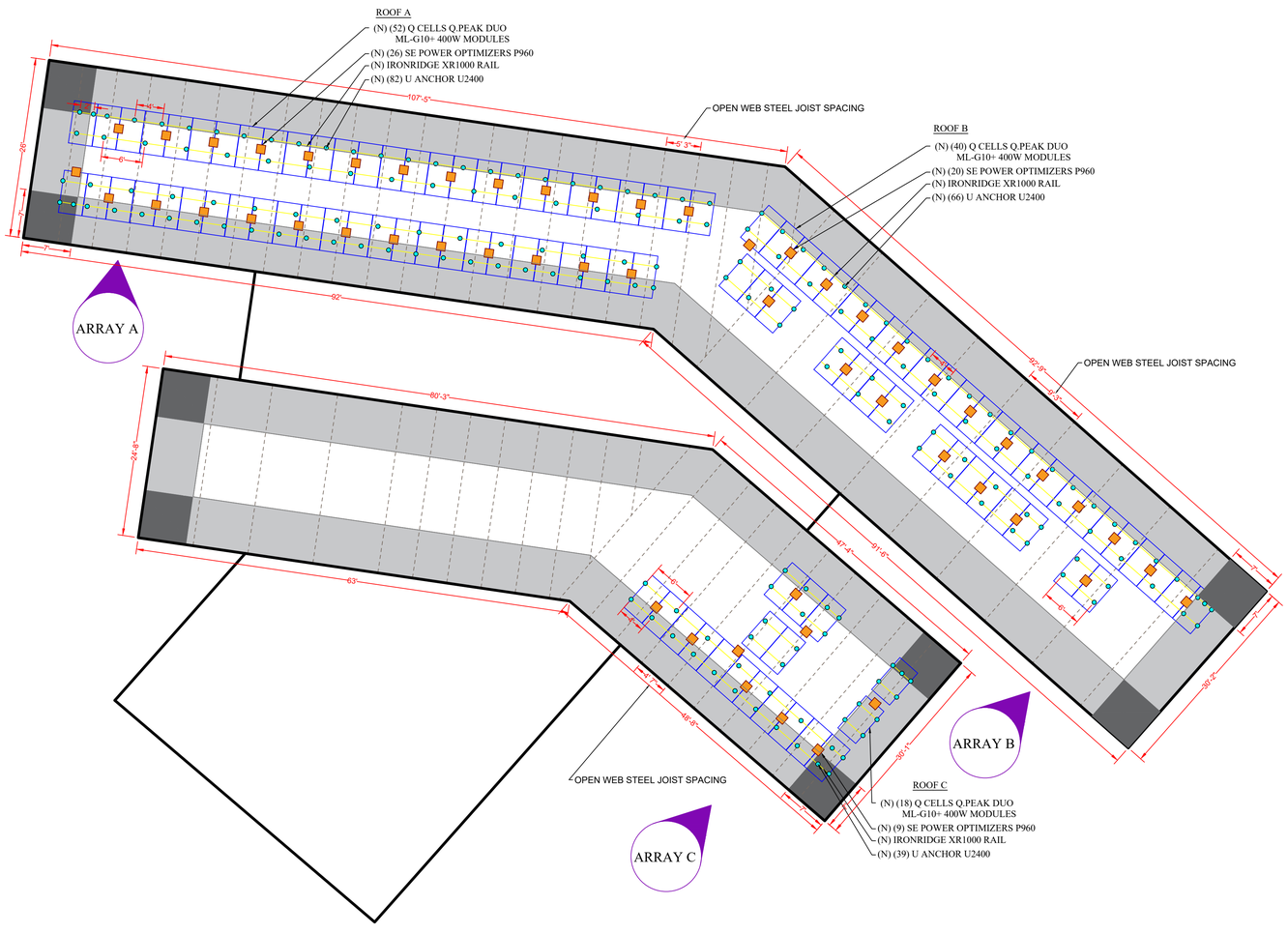
MODULE: Q.PEAK DUO ML-G10+ 400W

INVERTER: SOLAREDGE SE43.2KUS

DIMENSIONS(H/W/D):
Primary Unit: 37" x 12.5" x 10.5" ;
Secondary Unit: 23" x 12.5" x 10.5"

DIMENSIONS: 74" x 41.1" = 21.12 SF





ROOF ZONE 1
ROOF ZONE 2
ROOF ZONE 3

0 16' 32'

SCALE: 1" = 10'

Contractor:
Wilson & Girgenti Engineering

Project:
MADEIRA BEACH REC CENTER
300 Municipal Drive,
Madeira Beach, FL 33708

Engineer:
JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

Engineering Approval:

JAMES A. CLANCY LICENSE No. 64848 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVISIONS

DESCRIPTION	DATE	REV

Designed by:
VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"

Sheet title: ROOF PLAN & PV LAYOUT

Sheet number: A.1

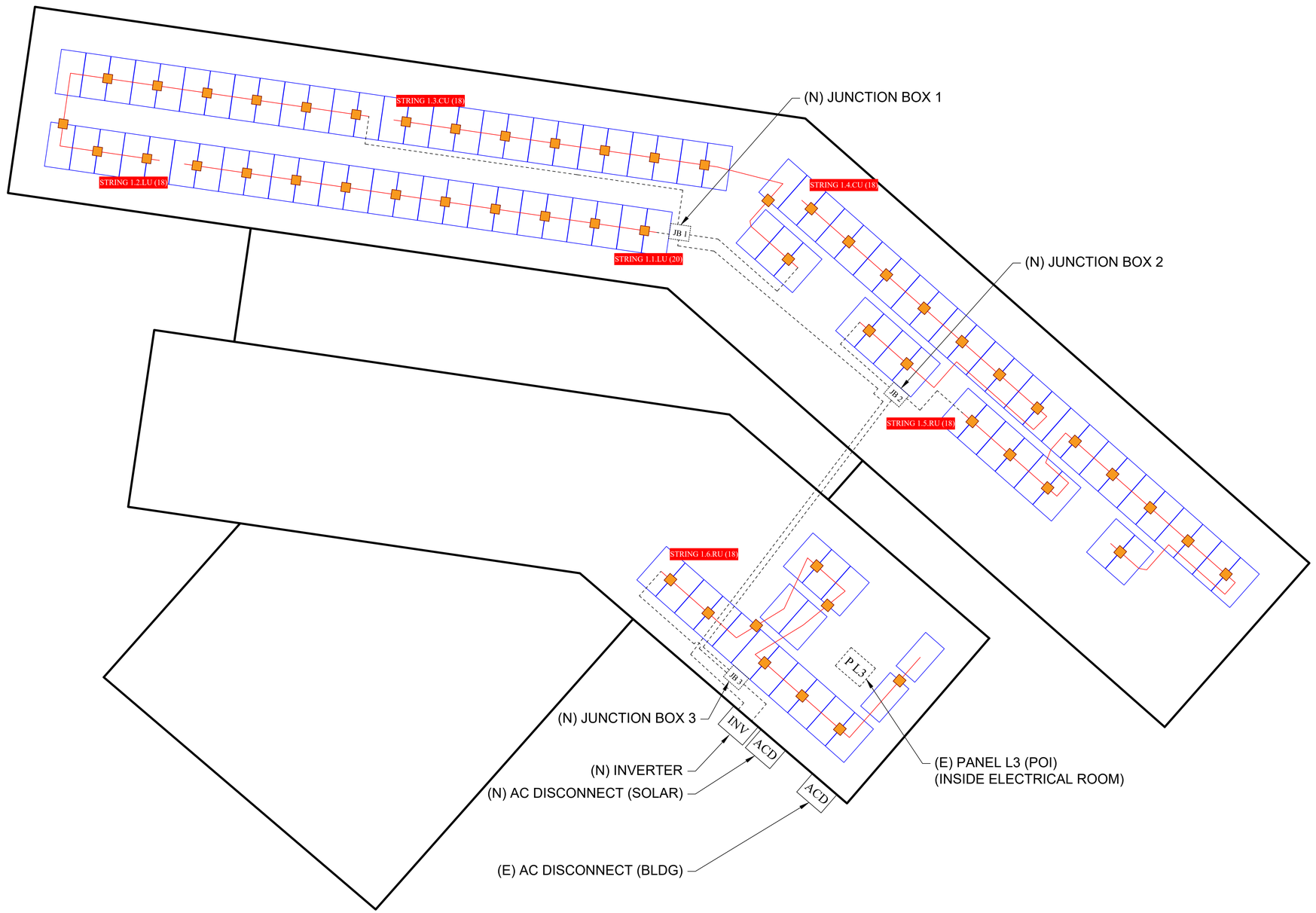
KEY LEGEND

- INV - INVERTER
- ACD - AC DISCONNECT
- JB - JUNCTION BOX
- ATS - AUTOMATIC TRANSFER SWITCH
- MDP - SWITCHBOARD "MDP"
- PM - POWER METER
- T - UTILITY TRANSFORMER
- PV MODULE
- POWER OPTIMIZER
- ROOF OBSTACLES (OBSTRUCTIONS)
- WIRE RUN

STRING LEGEND

STRING LEGEND: 1.1.LU (20)
- STRING LENGTH (MODULES)
- UNIT ID#
- STRING ID#
- INVERTER ID#

INVERTER 1 (SOLAREDGE SE43.2KUS)
(1 STRINGS OF 20 MODULES)
(5 STRINGS OF 18 MODULES)
(110 x Q CELLS Q.PEAK DUO ML-G10+ 400W MODULES)



SCALE: NTS

Contractor:
Wilson & Girgenti Engineering

Project:
MADEIRA BEACH REC CENTER
300 Municipal Drive,
Madeira Beach, FL 33708

Engineer:
JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

JAMES A. CLANCY LICENSE No. 64848 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVISIONS

DESCRIPTION	DATE	REV

Designed by:
VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"

Sheet title: PV MODULE LAYOUT & STRING SCHEDULE

Sheet number: A.2

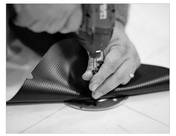
U-ANCHOR INSTALLATION

U2400-PVC, TPO, KEE, TPA Roof Membranes

The following instructions are meant to be utilized by an experienced and professional roofing contractor using the proper equipment, techniques, and safety protocols – not just the average handyman. Each installation should always follow the specified roofing manufacturer's written specification.

STEP 1

Align the U-Anchor plate according to the engineered design. Most designs are transferred to the roof surface with chalk lines.
**Avoid using Permanent chalk - such as red chalk.*



STEP 2

Install the U-Anchor Plate using the correct type and quantity of fasteners specified by your design professional.

STEP 3

Clean the roof surface with the manufacturer's recommended cleaner.

Using the manufacturer's written specifications, hot air weld the perimeter edge of the cover membrane using a 2-inch roller to achieve a minimum 2-inch weld around the perimeter.

Probe the seam to make sure the membrane is welded properly. If required, apply seam sealant in accordance with the roofing manufacturer's specifications.

ANCHOR PRODUCTS™

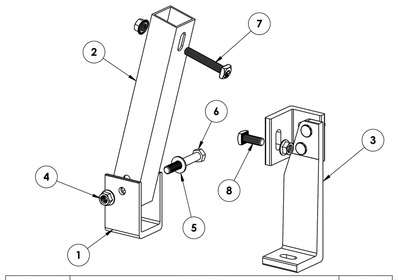
www.anchorp.com 888-575-2131

1 U-ANCHOR 2400 INSTALLATION INSTRUCTIONS

Cut Sheet

IRONRIDGE

Tilt Leg



ITEM NO.	DESCRIPTION	QTY.
1	U-FOOT	1
2	NORTH TILT LEG, 1.5" SQ, LENGTH VARIES	1
3	PRE-ASSEMBLED SOUTH TILT LEG	1
4	NUT, FLANGE HEX 3/8-16 SS	3
5	WASHER, FLAT 3/8 SS	1
6	BOLT, 3/8-16 X 2.5" CS SST	1
7	BOLT, BONDING 3/8-16 SQ HEAD, 2.25"	1
8	BOLT, BONDING 3/8-16 SQ HEAD, 1.0"	1

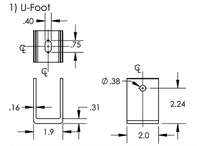
Part Number	Description	North Tilt Leg Length
TM-FTL-007	Kit, Fixed Tilt Leg, 7", Mill	7"
TM-FTL-010	Kit, Fixed Tilt Leg, 10", Mill	10"
TM-FTL-015	Kit, Fixed Tilt Leg, 15", Mill	15"
TM-FTL-020	Kit, Fixed Tilt Leg, 20", Mill	20"
TM-FTL-025	Kit, Fixed Tilt Leg, 25", Mill	25"
TM-FTL-030	Kit, Fixed Tilt Leg, 30", Mill	30"

v1.0

2 IRONRIDGE TILTED LEGS ASSEMBLE

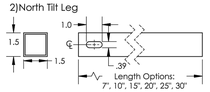
Cut Sheet

1) U-Foot



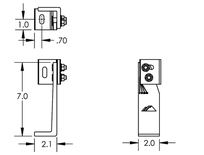
Property	Value
Material	Aluminum
Finish	Mill

2)North Tilt Leg



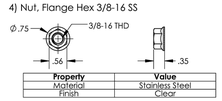
Property	Value
Material	Aluminum
Finish	Mill

3)Pre-assembled South Tilt Leg



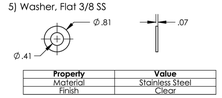
Property	Value
Material	Aluminum
Finish	Mill

4) Nut, Flange Hex 3/8-16 SS



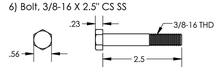
Property	Value
Material	Stainless Steel
Finish	Clear

5) Washer, Flat 3/8 SS



Property	Value
Material	Stainless Steel
Finish	Clear

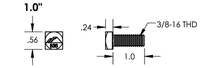
6) Bolt, 3/8-16 X 2.5" CS SS



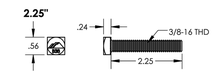
Property	Value
Material	Stainless Steel
Finish	Clear

7, 8) Bolt, Bonding 3/8-16 Sq Head

1.0"



2.25"

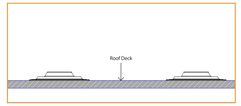


Property	Value
Material	Stainless Steel
Finish	Clear

v1.0

1. ATTACH BASES

Mark locations for Flat Roof Attachment. Type, size, and quantity of roof screws to be specified by Structural Engineer. Fastener size not to exceed #15. Screws should be installed symmetrically to each other. If using a membrane flashing, remove the silicone washer's protective liner prior to attaching the membrane. Ensure membrane flashing is compatible with existing roofing material.

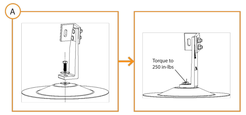


- Additional tested or evaluated third-party roof attachments:
  - Anchor Products - U-Anchor
  - S-5! Standing Seam Metal Roof Clamps - Certification of metal roof clamps includes bonding to both painted and galvalume metal roofs. Tighten S-5! and S-5! Mini set screws to 130-150 in-lbs (≥ 24 gauge) or 160-180 in-lbs (22 gauge) roofs. Tighten S-5! M10 bolt to 240 in-lbs or S-5! Mini M8 bolt to 160 in-lbs. Use the following fastening guidelines for other S-5! roof clamps: ProtoBracket™ - firmly seat roof screws and tighten hinge bolt to 225 in-lbs; RibBracket™ - firmly seat roof screws and tighten M8 bolt (M8-1.25 x 22mm sold separately) to 160 in-lbs; and SolarFoot™ - firmly seat roof screws and tighten M8 flange nut to 160 in-lbs.
  - QuickMount PV Tilt Standoffs - QBase Mount, formerly referenced as QMLSH, and QMNC; Tighten 5/16" bolt on top of standoff to a minimum of 174 in-lbs.

2. ADD TILT LEGS

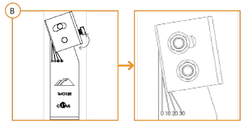
A. ASSEMBLE SOUTH LEGS

Mount South Tilt Leg Assembly to southern row of roof attachments. The IronRidge logo should face east to ensure proper South Leg orientation. Tighten Flat Roof Attachment hardware to 250 in-lbs. If using a third-party roof attachment refer to manufacturer's instructions for proper tightening torque.



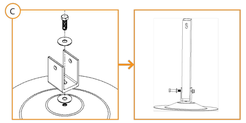
B. SET ANGLE

Set top pivot bracket of South Tilt Leg to the desired angle using the angle indicator on the face of the leg. Finger tighten bolts to allow for adjustment if necessary.



C. ASSEMBLE NORTH LEGS

Mount U-foot to northern row of roof attachments. Tighten Flat Roof Attachment hardware to 250 in-lbs. If using a third-party roof attachment refer to manufacturer's instructions for proper tightening torque.Mount North Tilt Leg to northern row of U-feet and loosely secure hardware.



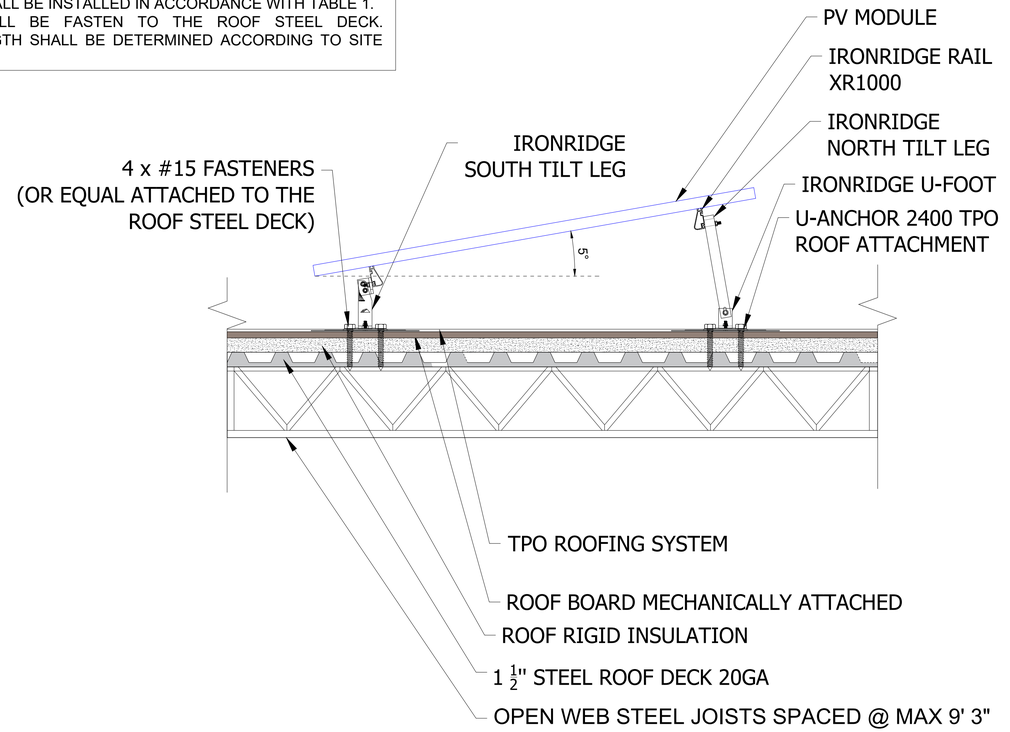
DESIGN WIND PRESSURE CALCULATIONS FOR SOLAR MODULES INSTALLED ON ROOF		Calculations are based on the C&C wind Loads for Enclosed buildings. Design wind pressures are calculated using ASCE 7-16. Mean roof height must be less than 60 feet.	
SITE INFORMATION			
ULTIMATE WIND SPEED	150	ROOF SLOPE(degrees)	1
NOMINAL WIND SPEED	116.2	ROOF TYPE	FLAT
RISK CATEGORY	III	Kd	0.85
EXPOSURE CATEGORY	C	Kzt	1
MEAN ROOF HEIGHT (ft)	27	Kz	0.85
MODULE AREA (Sq Ft)	21.2	GROUND SNOW LOAD	0
DESIGN CALCULATIONS			
VELOCITY PRESSURE (q) = 00256*Kz*Kzt*Kd*V²			
VELOCITY PRESSURE (ASD) 33.9			
WIDTH OF PRESSURE COEFFICIENT	WIDTH	7'	
EXTERNAL PRESSURE COEFFICIENT	ZONE 1	0.5	-0.9
	ZONE 2	0.5	-1.7
	ZONE 3	0.5	-1.7
INTERNAL PRESSURE COEFFICIENT (+/-)		0.18	

DESIGN PRESSURES	
ROOF ZONE	**UP (psf)**
1	-32
2	-52
3	-81

SOLAR ARRAY WIND LOAD CALCULATIONS (PER ROOF ZONES)		
Allowable Pull out Strength per U-ANCHOR (4) X #15 FASTENERS attached to the steel roof deck (lbs) * ANCHOR PRODUCTS - SHEAR AND TENSION TESTING		**1356**
ZONE 1	MAXIMUM UPLIFT FORCE PER U-ANCHOR (PSF)	1185
	ROOF ATTACHMENT SPACING (FT)	6
ZONE 2	MAXIMUM UPLIFT FORCE PER U-ANCHOR (PSF)	1283
	ROOF ATTACHMENT SPACING (FT)	4
ZONE 3	MAXIMUM UPLIFT FORCE PER U-ANCHOR (PSF)	1000
	ROOF ATTACHMENT SPACING (FT)	2
	SAFETY FACTOR	2

3 TABLE 1

NOTE: U-ANCHOR ROOF ATTACHMENTS WITH SPECIFIED FASTENERS SHALL BE INSTALLED IN ACCORDANCE WITH RACKING LAYOUT SHOWN ON SHEET A.1. NUMBER OF FASTENERS PER ATTACHMENT SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 1. FASTENERS SHALL BE FASTEN TO THE ROOF STEEL DECK. FASTENERS LENGTH SHALL BE DETERMINED ACCORDING TO SITE CONDITIONS.



4 FLAT ROOF DETAIL (SIDE VIEW)

SCALE: NTS

Contractor:

Wilson & Girgenti Engineering

Project:

MADEIRA BEACH REC CENTER

300 Municipal Drive, Madeira Beach, FL 33708

Engineer:

ARC DESIGN Solar Specialists

JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

Engineering Approval:

JAMES A. CLANCY LICENSE No. 64848 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVISIONS

DESCRIPTION	DATE	REV

Designed by:

VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"

Sheet title: MOUNTING & RACKING METHOD

Sheet number: S.1

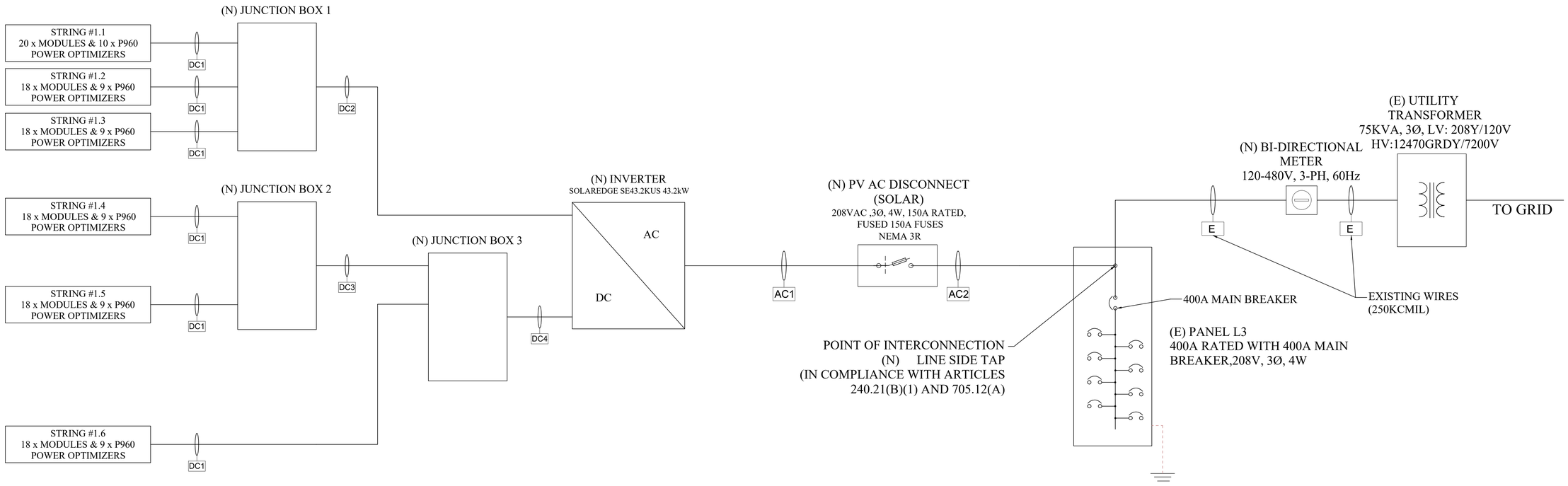
(E) - EXISTING
(N) - NEW

INSTALLATION NOTES:

1. Electrical contractor to verify interconnection requirements with Electrical Utility for connection location and standards.
2. Electrical Contractor to provide expansion joints and anchoring of all conduit runs as per NEC requirements.
3. Provide label/placard at existing utility connection with "WARNING - CUSTOMER OWNED ELECTRICAL GENERATION EQUIPMENT CONNECTED" with appropriate hazard and output ratings of PV System.
4. All exterior mounted combiners, junction boxes, troughs, disconnects, etc. shall be minimum NEMA 3R Rated.
5. Interconnection to Utility and System Gounding per NEC-2017 Article 690.
6. Provide signage as required by NEC-2017 Article 690.
7. All outdoor equipment shall be a minimum of NEMA-3R Rated.
8. All DC conductors within the Building Envelope must be in metallic conduit.
9. All DC conductors shall be copper, rated for 1000V and 90° wet environment, unless otherwise noted.
10. All AC conductors shall be copper, rated for 600V and 75° unless otherwise noted.
11. Confirm line side voltage at electric utility service entrance BEFORE connecting inverter and ensure proper operational range requied by system inverter.

PV ELECTRICAL DATA			
PV SYSTEM SIZE (DC)			44,000 W
NUMBER OF ARRAYS			3
PV SOURCE CIRCUIT (STRINGS)			6
PV MODULE POWER (DC)			400 W
INVERTER	STRING #1.1-LU	P960 PO (2:1 IN PARALLEL) & Mod.	20
	STRING #1.2-LU	P960 PO (2:1 IN PARALLEL) & Mod.	18
	STRING #1.3-CU	P960 PO (2:1 IN PARALLEL) & Mod.	18
	STRING #1.4-CU	P960 PO (2:1 IN PARALLEL) & Mod.	18
	STRING #1.5-RU	P960 PO (2:1 IN PARALLEL) & Mod.	18
	STRING #1.6-RU	P960 PO (2:1 IN PARALLEL) & Mod.	18
		TOTAL MODULES:	110

* SOLAREDGE P960 POWER OPTIMIZERS (2 MODULES PER POWER OPTIMIZER)



SOLAREDGE PV SYSTEM MONITORING provided via WIRE ETHERNET (LAN) CONNECTION. EACH INVERTER TO BE CONNECTED TO ETHERNET ROUTER VIA CAT5 OR CAT6 CABLE WITH RJ45 CONNECTORS.MAX DISTANCE 300ft (per device connection).
ETHERNET CABLES ARE USED TO CONNECT DEVICES TO THE SOLAREDGE MONITORING SERVER THROUGH AN ETHERNET ROUTER.

IF SOLAREDGE GATEWAY OR WIRELESS INVERTER COMMUNICATION IS USED, COORDINATE PLACE AND LOCATION WITH THE INSTALLER.

WIRE AND CONDUIT SCHEDULE

TAG	CIRCUIT	CONDUIT TYPE (SIZE)		Number of parallel	PHASE CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			NEUTRAL CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			GROUND CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT		
		EMT	PVC	sets									
DC1	PV STRING TO JUNCTION BOX #1, #2, #3	N/A	N/A	(1)	2	AWG #10	PV-WIRE	N/A	N/A	N/A	1	AWG #6	BARE COPPER
DC2	JBOX #1 TO INVERTER(per string)	1''	1-1/4''	(1)	6	AWG #8	PV-WIRE/XHHW-2	N/A	N/A	N/A	1	AWG #10	PV-WIRE/XHHW-2
DC3	JBOX #2 TO JBOX #3(per string)	3/4"	3/4"	(1)	4	AWG #10	PV-WIRE/XHHW-2	N/A	N/A	N/A	1	AWG #10	PV-WIRE/XHHW-2
DC4	JBOX #3 TO INVERTER(per string)	3/4"	3/4"	(1)	6	AWG #10	PV-WIRE/XHHW-2	N/A	N/A	N/A	1	AWG #10	PV-WIRE/XHHW-2
AC1	INVERTER to AC DISCONNECT(SOLAR)	2"	2''	(1)	3	AWG #3/0	XHHW-2	1	AWG #4	XHHW-2	1	AWG #4	XHHW-2
AC2	AC DISCONNECT(SOLAR) TO PANEL L3 (POI)	2''	2''	(1)	3	AWG #3/0	XHHW-2	1	AWG #4	XHHW-2	1	AWG #4	XHHW-2

Contractor:
Wilson & Girgenti Engineering

Project:
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REVISIONS

DESCRIPTION	DATE	REV

Designed by:
VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"
Sheet title: SINGLE LINE DIAGRAM
Sheet number: E.1

(E) - EXISTING
(N) - NEW

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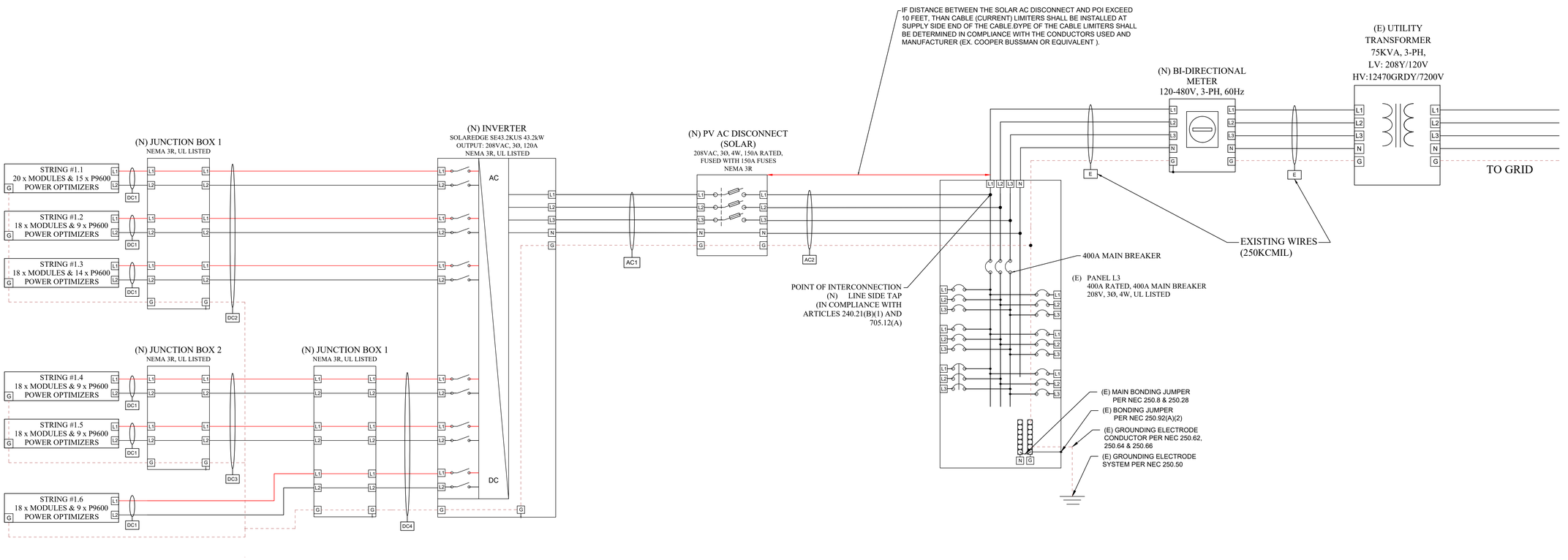
	STRING #1.6-RU	P960 PO (2:1 IN PARALLEL) & Mod.	18
		TOTAL MODULES:	110

* SOLAREDGE P960 POWER OPTIMIZERS (2 MODULES PER POWER OPTIMIZER)

ALL DC CONNNECTORS TO MODULES OR INVERTERS MUST BE OF MATCHING MANUFACTURE BRAND AND STYLE. DO NOT USE 'COMPATIBLE' CONNECTORS WHICH HAVE NOT BEEN UL TESTED FOR COMPATIBILITY. PERFORMANCE AND FIRE DAMAGE MAY RESULT FROM MIS-MATCHED CONNECTOR USEAGE.



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WIRE AND CONDUIT SCHEDULE

TAG	CIRCUIT	CONDUIT TYPE (SIZE) EMT	CONDUIT TYPE (SIZE) PVC	Number of parallel sets	PHASE CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			NEUTRAL CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			GROUND CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT		
DC1	PV STRING TO JUNCTION BOX #1, #2, #3	N/A	N/A	(1)	2	AWG #10	PV-WIRE	N/A	N/A	N/A	1	AWG #6	BARE COPPER
DC2	JBOX #1 TO INVERTER(per string)	1''	1-1/4''	(1)	6	AWG #8	PV-WIRE/XHHW-2	N/A	N/A	N/A	1	AWG #10	PV-WIRE/XHHW-2
DC3	JBOX #2 TO JBOX #3(per string)	3/4"	3/4"	(1)	4	AWG #10	PV-WIRE/XHHW-2	N/A	N/A	N/A	1	AWG #10	PV-WIRE/XHHW-2
DC4	JBOX #3 TO INVERTER(per string)	3/4"	3/4"	(1)	6	AWG #10	PV-WIRE/XHHW-2	N/A	N/A	N/A	1	AWG #10	PV-WIRE/XHHW-2
AC1	INVERTER to AC DISCONNECT(SOLAR)	2"	2''	(1)	3	AWG #3/0	XHHW-2	1	AWG #4	XHHW-2	1	AWG #4	XHHW-2
AC2	AC DISCONNECT(SOLAR) TO PANEL L3 (POI)	2''	2''	(1)	3	AWG #3/0	XHHW-2	1	AWG #4	XHHW-2	1	AWG #4	XHHW-2

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Sheet size: ARCH D 36" x 24"
Sheet title: THREE LINE DIAGRAM
Sheet number: E.2

SOLAR MODULES SPECIFICATIONS		
MANUFACTURER	QCELLS	
MODEL	Q.PEAK DUO ML-G10+	
SPECIFICATIONS AT STC	400	W
MAXIMUM POWER VOLTAGE (Vmp)	37.59	V
MAXIMUM POWER CURRENT (Imp)	10.64	A
OPEN CIRCUIT VOLTAGE (Voc)	45.06	V
SHORT CIRCUIT CURRENT (Isc)	11.16	A
MAXIMUM SERIES FUSE RATING (A)	20	A
MAX.PERMISSIBLE SYSTEM VOLTAGE (Vmax)	1000	VDC
Voc TEMPERATURE COEFFICIENT(%/°C)	-0.27	
MODULE DIMMENSION (60 cells)	74" x 41.1" x 1.26"	

INVERTER SPECIFICATION		
MANUFACTURER	SOLAREDGE	
MODEL	SE43.2KUS	
MAX PV POWER(DC):	58200	W
RATED AC POWER OUTPUT (AC)	43200	W
NOMINAL INPUT VOLTAGE (DC+ to DC-)	400	V
MAX INPUT VOLTAGE (DC+ to DC-)	600	V
MAX OPERATING INPUT CURRENT (DC)	114	A
MAX OUTPUT CURRENT(AC) (PER PHASE)	120	A
NOMINAL VOLTAGE (AC)	208	V
THREE PHASE INVERTER	YES	
NUMBER OF STRINGS	9	

POWER OPTIMIZER DATA		
SOLAREDGE P960		
RATED INPUT DC POWER	960	W
MINIMUM INPUT VOLTAGE	12.5	V DC
ABSOLUTE MAXIMUM INPUT VOLTAGE (Voc)	60	V DC
MAXIMUM SHORT CIRCUIT CURRENT (Isc)	23	A DC
MAXIMUM OUTPUT CURRENT	18	A DC
MAXIMUM OUTPUT VOLTAGE	80	V DC
MAXIMUM POWER PER STRING (for 208V Grid)	7700	W
MINIMUM STRING LENGTH (PO) (for 208V Grid)	10	
MAXIMUM STRING LENGTH (PO) (for 208V Grid)	20	

AMBIENT TEMPERATURE DATA		
ASHRAE WEATHER DATA		
RECORD LOW TEMPERATURE	1	°C
AMBIENT TEMPERATURE (HIGH TEMPERATURE 2% AVERAGE)	34	°C
CONDUIT HEIGHT	0.5	in
ROOF TOP TEMPERATURE	56	°C
AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT	22	°C
DC CONDUCTORS TEMPERATURE RATE	90	°C
AC CONDUCTORS TEMPERATURE RATE	75	°C
MODULE TEMPERATURE COEFFICIENT	-0.27	%/°C

PV ELECTRICAL DATA			
PV SYSTEM SIZE (DC)		44,000	W
NUMBER OF ARRAYS		3	
PV SOURCE CIRCUIT (STRINGS)		6	
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		TOTAL MODULES:	110

VOLTAGE DROP (DC)

Inverter	Wire run ORIGIN		Wire run DESTINATION	Estimated one way distance (ft)	Modules	Operating Voltage (V)	Operating Current (Imp)	Resistance (ohm/Kft)	AWG	Voltage Drop (%)
INVERTER	STRING #	1.1	JBOX 1	40	20	400	18	1.2	10	0.43
	STRING #	1.2		70	18	400	18	1.2	10	0.76
	STRING #	1.3		35	18	400	18	1.2	10	0.38
	STRING #	1.4	JBOX 2	25	18	400	18	1.2	10	0.27
	STRING #	1.5		25	18	400	18	1.2	10	0.27
	STRING #	1.6	JBOX 3	30	18	400	18	1.2	10	0.32
		JBOX2	JBOX3	40	36	400	18	1.2	10	0.43
	JBOX 1 (per string)		INVERTER	125	56	400	18	0.78	8	0.88
	JBOX 3 (per string)			25	54	400	18	1.2	10	0.27

VOLTAGE DROP (AC)

WIRE RUN ORIGIN	WIRE RUN DESTINATION	Length (ft)	Operating Voltage (V)	MAX Operating Current (A)	Resistance (ohm/Kft)	AWG/ kcmil	Voltage Drop (V)	Voltage Drop (%)
INVERTER	AC DISCONNECT(SOLAR)	10	208	120	0.082	3/0	0.47	0.09
AC DISCONNECT(SOLAR)	PANEL L3 (POI)	25	208	120	0.082	3/0	1.18	0.24

TAG	CIRCUIT	CONDUCTOR SPECIFICATIONS MATERIAL	TEMP. RATING	SIZE	AMPACITY (per 310.15(B)(16) & 310.15(B)(17)	REQUIRED CIRCUIT CONDUCTOR AMPACITY: OPTIMIZER OUTPUT CURRENT (A)	x	# OF PARALLEL STRINGS	=	MAX CURRENT per 690.8(A)(1)	x	MAX CURRENT (125%) per 690.8(A)(1)	x	(125%) per 690.8(B)(1)	=	MAX CURRENT per 690.8(B)(1)	AMPACITY CHECK 1: <	CONDUCTOR AMPACITY	OK
DC1	PV STRING TO JUNCTION BOX #1, #2, #3	COPPER	90°C	AWG # 10	40 A	18	x	1	=	18 A	x	1.25	x	1.25	=	28.13 A	<	40 A	OK
DC2	JBOX #1 TO INVERTER(per string)	COPPER	90°C	AWG # 8	55 A	18	x	1	=	18 A	x	1.25	x	1.25	=	28.13 A	<	55 A	OK
DC3	JBOX #2 TO JBOX #3(per string)	COPPER	90°C	AWG # 10	40 A	18	x	1	=	18 A	x	1.25	x	1.25	=	28.13 A	<	40 A	OK
DC4	JBOX #3 TO INVERTER(per string)	COPPER	90°C	AWG # 10	40 A	18	x	1	=	18 A	x	1.25	x	1.25	=	28.13 A	<	40 A	OK

CONDUCTOR TEMPERATURE DERATING: CIRCUIT ENVIRONMENT	LOCAL 2% HIGH TEMP.AVG.	Temp. adder per 310.15(B)(3)(C)	Operating temp. (°C)	AMPACITY CORRECTION 310.15(B)(2)(A)	CONDUIT FILL DERATING: # OF CURRENT CARRING CONDUCTORS	AMPACITY CORRECTION 310.15(B)(3)(A)
OUTSIDE (ROOF)	34	22	56	0.71	2	1.00
OUTSIDE (ROOF)	34	22	56	0.71	6	0.80
OUTSIDE (ROOF)	34	22	56	0.71	6	0.80
OUTSIDE (ROOF)	34	22	56	0.71	6	0.80

CORRECTED AMPACITY CALCULATION: TAG	CONDUCTOR AMPACITY	x	TEMP. DERATE	x	CONDUIT FILL DERATE	=	DERATED CONDUCTOR AMPACITY	AMPACITY CHECK 2: REQUIRED AMPACITY 690.8(B)(2)	OK
DC1	40	x	0.71	x	1.00	=	28.4 A	> 18 A	OK
DC2	55	x	0.71	x	0.80	=	31.24 A	> 18 A	OK
DC3	40	x	0.71	x	0.80	=	22.72 A	> 18 A	OK
DC4	40	x	0.71	x	0.80	=	22.72 A	> 18 A	OK

TAG	CIRCUIT	CONDUCTOR SPECIFICATIONS MATERIAL	TEMP. RATING	SIZE	AMPACITY (per 310.15(B)(16) & 310.15(B)(17)	REQUIRED CIRCUIT CONDUCTOR AMPACITY: Inverter output current (A)	x	# inverters (parallel)	=	MAX CURRENT per 690.8(A)(1)	x	125% per 690.8(B)(1)	=	MAX CURRENT per 690.8(B)(1)	AMPACITY CHECK 1: <	CONDUCTOR AMPACITY	OK
AC1	INVERTER to AC DISCONNECT(SOLAR)	ALUMINUM	90°C	AWG # 3/0	175 A	120	x	1	=	120 A	x	1.25	=	150 A	<	175 A	OK
AC2	AC DISCONNECT(SOLAR) TO PANEL L3 (POI)	ALUMINUM	90°C	AWG # 3/0	175 A	120	x	1	=	120 A	x	1.25	=	150 A	<	175 A	OK

CONDUCTOR TEMPERATURE DERATING: CIRCUIT ENVIRONMENT	LOCAL 2% HIGH TEMP.AVG.	Temp. adder per 310.15(B)(3)(C)	Operating temp. (°C)	AMPACITY CORRECTION 310.15(B)(2)(A)	CONDUIT FILL DERATING: # OF CURRENT CARRING CONDUCTORS	AMPACITY CORRECTION 310.15(B)(3)(A)
OUTSIDE WALL	34	0	34	0.96	3	1.0
OUTSIDE WALL	34	0	34	0.96	3	1.0

CORRECTED AMPACITY CALCULATION: TAG	CONDUCTOR AMPACITY	x	TEMP. DERATE	x	CONDUIT FILL DERATE	=	DERATED CONDUCTOR AMPACITY	AMPACITY CHECK 2: REQUIRED AMPACITY 690.8(B)(2)	OK	OVERCURRENT PROTECTION DEVICE (OCPD)
AC1	175	x	0.96	x	1.00	=	168 A	> 120 A	OK	N/A
AC2	175	x	0.96	x	1.00	=	168 A	> 120 A	OK	150 A

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REVISIONS

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Designed by:

VicsON Energy
contact@vicsonenergy.com

Sheet size: ARCH D 36" x 24"

Sheet title: WIRING CALCULATIONS

Sheet number: E.3

WARNING

ELECTRIC SHOCK HAZARD

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

1 LABEL LOCATION:
AC/DC DISCONNECTS, PV LOAD CENTERS, COMBINER BOXES
(PER CODE: NEC 690.13(B))

WARNING
PHOTOVOLTAIC POWER SOURCE

2 LABEL LOCATION:
JUNCTION BOXES, RACEWAYS, CABLE TRAYS, CONDUIT BODIES WITH AVAILABLE OPENINGS EVERY 10 FEET, WITHIN 1' OF TURNS/PENETRATIONS
(PER CODE: NEC 690.31(G)(3))

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

3 LABEL LOCATION:
BI-DIRECTIONAL METER
(PER CODE: NEC 705.12(D)(3))

CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

4 LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 690.13(F))

WARNING
INVERTER OUTPUT CONNECTION - DO NOT RELOCATE THIS OVERCURRENT DEVICE

5 LABEL LOCATION:
PV SYSTEM BREAKER
(PER CODE: NEC 705.12(B)(2)(3)(b))
[Not required if panelboard is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

PHOTOVOLTAIC SYSTEM DISCONNECT

6 LABEL LOCATION:
PV SYSTEM DISCONNECTS
(PER CODE: NEC 690.13(B))

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

7 LABEL LOCATION:
AC DISCONNECT
(PER CODE: NEC 690.56(C))

INVERTER

8 LABEL LOCATION (3" x 1" PLACARD):
INVERTER 1

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT **120** AMPS
AC NOMINAL OPERATING VOLTAGE **208** VOLTS

9 LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.54)

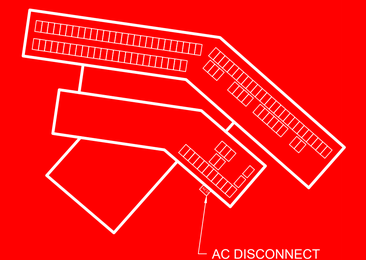
DC INPUT WARNING LABEL #1

RATED DC CURRENT (Imp)	**110** A
RATED DC VOLTAGE (Vmp)	**400** V
SHORT CIRCUIT CURRENT (Isc)	**135** A
MAXIMUM SYSTEM VOLTAGE (Voc)	**600** V

10 LABEL LOCATION (4" x 3" PLACARD):
PV INVERTER 1
(PER CODE: NEC 690.53)

CAUTION:

POWER TO THIS BUILDING IS ALSO SUPPLIED BY A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM WITH DISCONNECT LOCATED AS SHOWN BELOW:



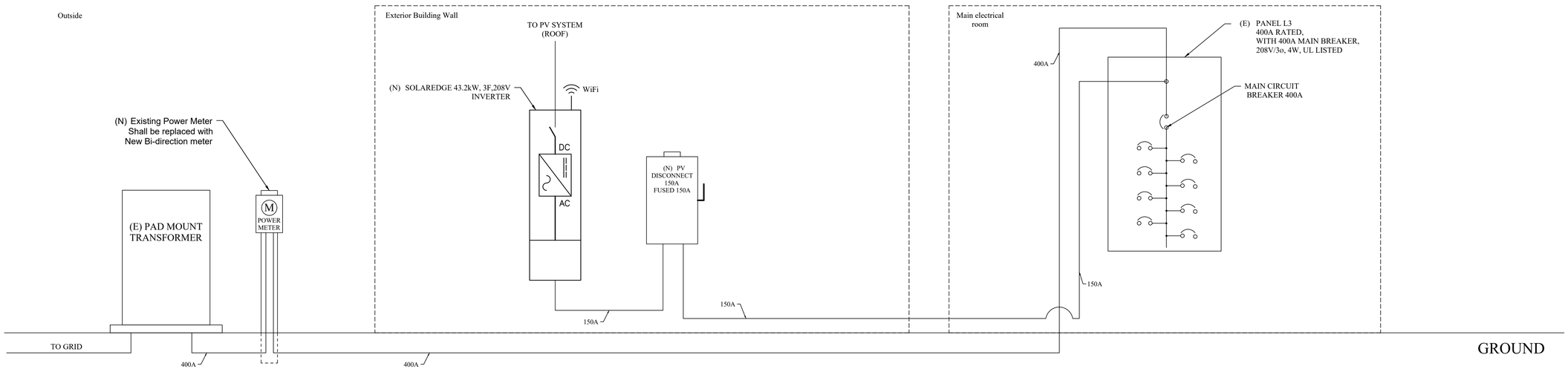
11 LABEL LOCATION:
MAIN SERVICE PANEL, PV AC DISCONNECT AND BUILDING ENTRANCE
(PER CODE: NEC 690.56)

EMERGENCY CONTACT
INSTALLER: SEM POWER
TEL. NUMBER: 888-496-119

12 LABEL LOCATION:
AC MAIN DISCONNECT
(PER CODE: FFPC 1:11.12.2.1.5)

SIGNAGE REQUIREMENTS

1.RED BACKGROUND
2.WHITE LETTERING
3.MINIMUM 3/8" LETTER HEIGHT
4.ALL CAPITAL LETTERS
5.ARIAL OR SIMILAR FONT
6.WEATHER RESISTANT MATERIAL, PER UL 969



1 | GROUND LEVEL ELECTRICAL EQUIPMENT ELEVATION (FRONT VIEW)

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Designed by:
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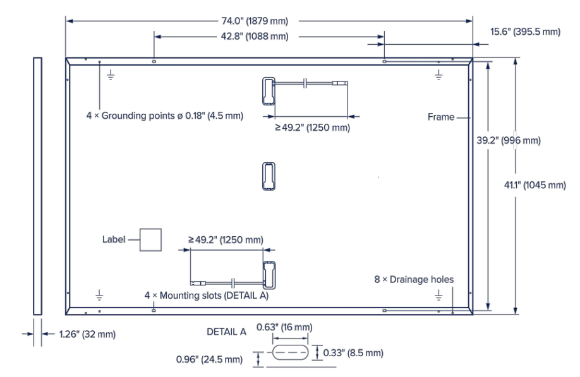
Sheet size: ARCH D 36" x 24"
Sheet title: SYSTEM LABELING &
Sheet number: L.1

Q.PEAK DUO BLK ML-G10+ SERIES

■ 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 anodised aluminium
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	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (−) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

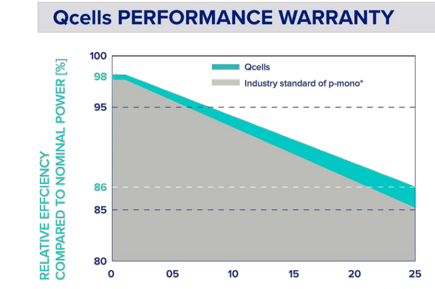


■ Electrical Characteristics

POWER CLASS			385	390	395	400	405	410
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)								
Minimum Power at MPP[1]	P_{MPP}	[W]	385	390	395	400	405	410
Minimum Short Circuit Current[1]	I_{SC}	[A]	11.04	11.07	11.10	11.14	11.17	11.20
Minimum Open Circuit Voltage[1]	V_{OC}	[V]	45.19	45.23	45.27	45.30	45.34	45.37
Minimum Current at MPP	I_{MPP}	[A]	10.59	10.65	10.71	10.77	10.83	10.89
Minimum Voltage at MPP	V_{MPP}	[V]	36.36	36.62	36.88	37.13	37.39	37.64
Minimum Efficiency[1]	η	[%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6	≥20.9
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	307.6
Minimum Short Circuit Current	I_{SC}	[A]	8.90	8.92	8.95	8.97	9.00	9.03
Minimum Open Circuit Voltage	V_{OC}	[V]	42.62	42.65	42.69	42.72	42.76	42.79
Minimum Current at MPP	I_{MPP}	[A]	8.35	8.41	8.46	8.51	8.57	8.62
Minimum Voltage at MPP	V_{MPP}	[V]	34.59	34.81	35.03	35.25	35.46	35.68

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

Qcells PERFORMANCE WARRANTY

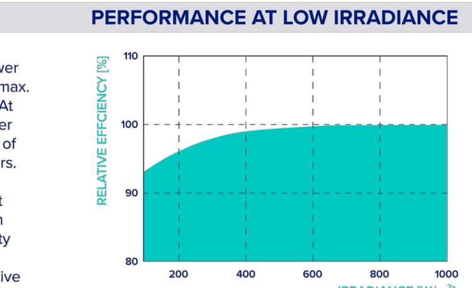


At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Qcells sales organisation of your respective country.

*Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

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/ft²]	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/ft²]	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),

C Certified US UL 61730 · CE · TÜV Rheinland CERTIFIED www.tuv.com ID 1111220277

Specifications subject to technical changes © Qcells Q.PEAK_DUO_BLK_ML-G10+_series_385-410_2023-01_Rev03_NA

Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation 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 hqc-inquiry@qcells.com | WEB www.qcells.com

Qcells

/ Power Optimizer
For North America
P860 / P960

Power Optimizer Model (Typical Module Compatibility)	P860 (for 2 x 72 cell modules)	P960 (for 2 x 72 cell modules)	
INPUT			
Rated Input DC Power(1)	860	960	W
Connection Method	Dual input for independently connected modules(2)		
Absolute Maximum Input Voltage (Voc at lowest temperature)	60		Vdc
MPPT Operating Range	12.5 - 60		Vdc
Maximum Short Circuit Current (Isc)	22	23	Adc
Maximum Short Circuit Current per Input (Isc)	11	11.5	Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.6		%
Overvoltage Category	II		
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current	18		Adc
Maximum Output Voltage	80		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer	1 ± 0.1		Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System	Compliant with NEC 2014, 2017(3), 2020		
EMC	FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3		
Safety	IEC62109-1 (class II safety), UL1741		
Material	UL94 V-0, UV resistant		
RoHS	Yes		
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters	Three phase inverters		
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 168 x 59 / 5.1 x 6.61 x 2.32		mm / in
Weight	1064 / 2.34		gr / lb
Input Connector	MC4(4)		
Input Wire Length	Wire length options: (1) Input #1: (-) 0.16 / 0.52, (+) 0.16 / 0.52; Input #2: (-) 0.16 / 0.52, (+) 0.16 / 0.52	Wire length options: (2) Input #1: (-) 1.6 / 5.24, (+) 0.16 / 0.52; Input #2: (-) 0.16 / 0.52, (+) 1.6 / 5.24	m / ft
Output Wire Type / Connector	Double insulated; MC4		
Output Wire Length	2.3 / 7.5		m / ft
Operating Temperature Range(5)	-40 to +85 / -40 to +185		˚C / ˚F
Protection Rating	IP68 / NEMA6P		
Relative Humidity	0 - 100		%

(1) Rated power of the module at STC will not exceed the power optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) In the event of an odd number of PV modules in one string, installation of one P860 /P960 power optimizer connected to one PV module is allowed. When connecting a single module to the P860/P960, seal the unused input connectors with the supplied pair of seals
(3) NEC 2017 requires that the maximum combined input voltage does not exceed 80V
(4) For other connector types please refer to: https://www.solaredge.com/sites/default/files/optimizer-input-connector-compatibility.pdf
(5) For ambient temperature above +70˚C / +158˚F, power de-rating is applied. Refer to the Power Optimizers Temperature De-Rating Application Note for more details

PV System Design Using a SolarEdge Inverter(6)		Three Phase for 208V Grid(7) P860	Three Phase for 208V Grid(7) P960	Three Phase for 277/480V Grid P860	Three Phase for 277/480V Grid P960	
Minimum String Length	Power Optimizers	8		14		
	PV Modules	15		27		
Maximum String Length	Power Optimizers	30				
	PV Modules	60				
Maximum Power per String		7200(8)		15300(9)		W
Parallel Strings of Different Lengths or Orientations		Yes				

(6) It is not allowed to mix P860/P960 with P801/P800p/P850/P950/P1100 in one string or to mix with P370-P505 in one string
(7) P860 design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification
(8) For the 208V grid: It is allowed to install up to 7700W per string when the maximum power difference between each string is 1,000W
(9) For the 277/480V grid: it is allowed to install up to 17,550W per string when the maximum power difference between each string is 2,000W

RoHS · C ETL US Intertek

/ Three Phase Inverter with Synergy Technology for the 208V Grid for North America
SE43.2KUS

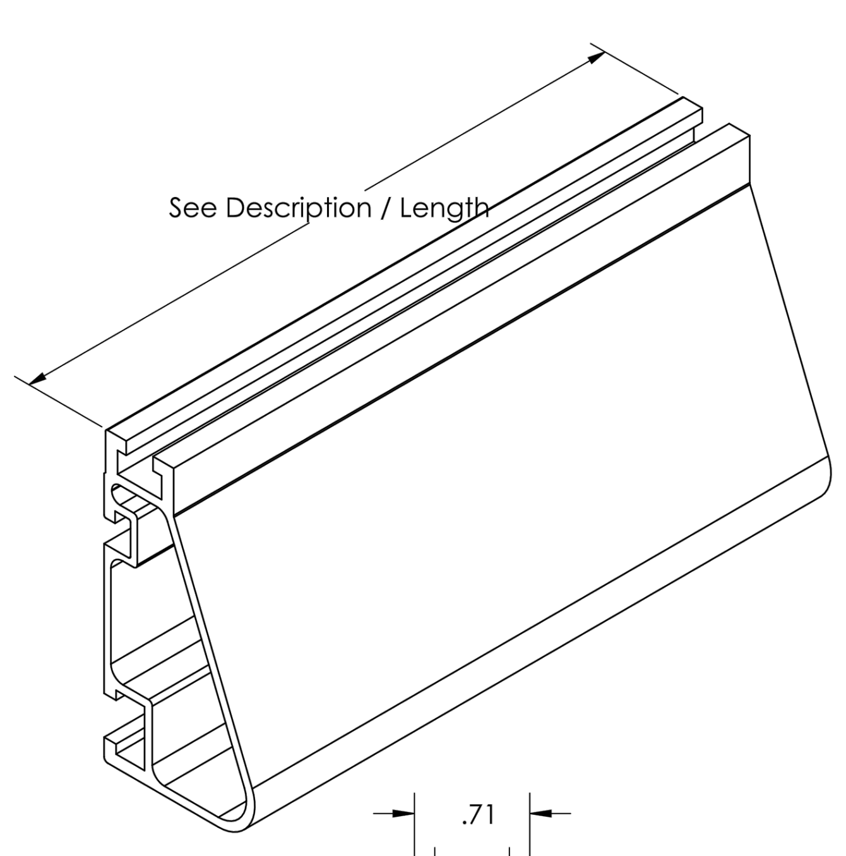
	SE43.2KUS	
OUTPUT		
Rated AC Power Output	43200	VA
Maximum AC Power Output	43200	VA
AC Output Line Connections	4-wire WYE (L1-L2-L3-N) plus PE or 3 wire Delta	
AC Output Voltage Minimum-Nominal-Maximum(1) (L-N)	105-120-132.5	Vac
AC Output Voltage Minimum-Nominal-Maximum(1) (L-L)	183-208-229	Vac
AC Frequency Min-Nom-Max(1)	59.3 - 60 - 60.5	Hz
Maximum Continuous Output Current (per Phase) @208V	120	A
GFDI Threshold	1	A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes	
INPUT		
Maximum DC Power (Module STC), Inverter / Unit	58200 / 19400	W
Transformer-less, Ungrounded	Yes	
Maximum Input Voltage DC to Gnd	300	Vdc
Maximum Input Voltage DC+ to DC-	600	Vdc
Nominal Input Voltage DC to Gnd	200	Vdc
Nominal Input Voltage DC+ to DC-	400	Vdc
Maximum Input Current	38 x 3	Adc
Maximum Input Short Circuit Current	135	Adc
Reverse-Polarity Protection	Yes	
Ground-Fault Isolation Detection	350kΩ Sensitivity per Unit	
CEC Weighted Efficiency	97	%
Nighttime Power Consumption	< 12	W
ADDITIONAL FEATURES		
Supported Communication Interfaces	RS485, Ethernet, Cellular GSM (optional)	
Rapid Shutdown	NEC2014 and NEC2017 compliant/certified, upon AC Grid Disconnect	
RS485 Surge Protection	Built-in	
Cable Covers	Ordered separately with part number: DCD-SGY-COVER-HP; Dimensions (H x W x D) – 314.3 x 343.7 x 134.5 mm	
DC SAFETY SWITCH		
DC Disconnect	1000V / 3 x 40A	
STANDARD COMPLIANCE		
Safety	UL1741, UL1741 SA, UL1699B, UL1998, CSA 2.22	
Grid Connection Standards	IEEE 1547, Rule 21, Rule 14 (HI)	
Emissions	FCC part15 class A	
INSTALLATION SPECIFICATIONS		
Number of units	3	
AC Output Conduit Size / Max AWG / Max PE AWG	2" / 4/0 / 4	
DC Output Conduit Size / Terminal Block AWG Range / Number of Strings(2)	2 x 1.25" / 6-14 / 9 strings	
Dimensions (H x W x D)	Primary Unit: 37 x 12.5 x 10.5 / 940 x 315 x 260; Secondary Unit: 21 x 12.5 x 10.5 / 540 x 315 x 260	in / mm
Weight	Primary Unit: 105.8 / 48; Secondary Unit 99.2 / 45	lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60(3)	˚F / ˚C
Cooling	Fan (user replaceable)	
Noise	< 60	dBA
Protection Rating	NEMA 3R	
Mounting	Bracket provided	

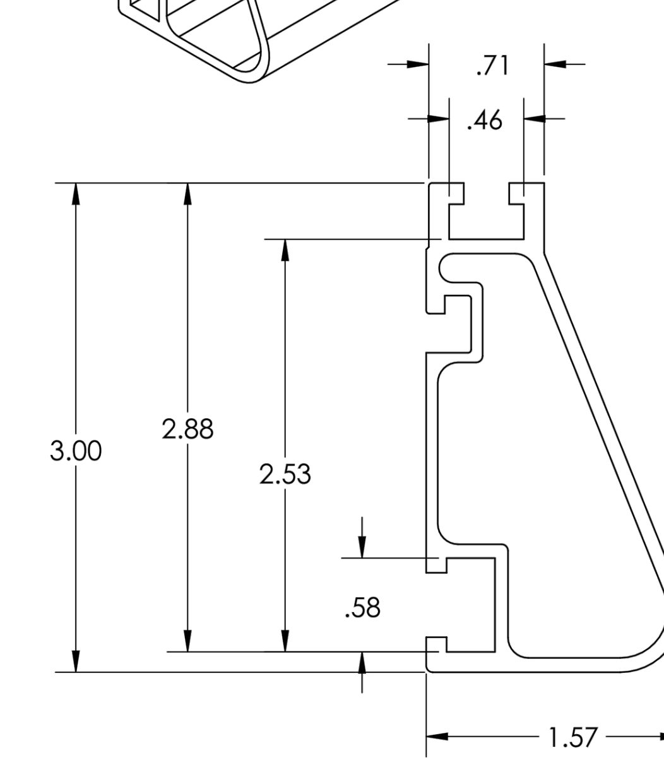
(1) For other regional settings please contact SolarEdge support
(2) Single input option per unit (up to 3AWG) available
(3) For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

CE RoHS

Cut Sheet

IRONRIDGE XR1000 Rail





Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.807 in²
Section Modulus (X-axis)	0.530 in³
Moment of Inertia (X-axis)	0.843 in⁴
Moment of Inertia (Y-axis)	0.182 in⁴
Torsional Constant	0.436 in³
Polar Moment of Inertia	0.330 in⁴

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-1000-132A	XR-1000-132B	XR1000, Rail 132" (11 Feet)	6000-Series Aluminum	10.97 lbs.
XR-1000-168A	XR-1000-168B	XR1000, Rail 168" (14 Feet)		13.96 lbs.
XR-1000-204A	XR-1000-204B	XR1000, Rail 204" (17 Feet)		16.95 lbs.

v1.0

Rail: XR1000 — Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 80", Max Module SF: 24 SF
Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf G1	0 psf G2	0 psf G3	10 psf G1	10 psf G2	10 psf G3	20 psf G1	20 psf G2	20 psf G3	30 psf G1	30 psf G2	30 psf G3	40 psf G1	40 psf G2	40 psf G3	50 psf G1	50 psf G2	50 psf G3	60 psf G1	60 psf G2	60 psf G3
90 mph	8-20	157	157	156	130	130	130	109	109	109	107	107	107	96	96	96	86	86	86	79	79	79
	21-27	154	154	154	128	128	128	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	149	149	126	126	126	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
95 mph	8-20	157	157	146	130	130	130	109	109	109	107	107	107	96	96	96	86	86	86	79	79	79
	21-27	154	154	154	128	128	128	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	149	149	126	126	126	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
100 mph	8-20	157	151	135	130	130	130	109	109	109	107	107	107	96	96	96	86	86	86	79	79	79
	21-27	154	154	152	128	128	128	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	149	144	126	126	126	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
105 mph	8-20	157	142	127	130	130	127	109	109	109	107	107	107	96	96	96	86	86	86	79	79	79
	21-27	154	150	146	128	128	128	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	149	137	126	126	126	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
110 mph	8-20	157	133	119	130	129	119	109	109	109	107	107	107	96	96	96	86	86	86	79	79	79
	21-27	154	140	133	128	128	128	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	145	130	126	126	126	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
115 mph	8-20	157	122	112	130	122	112	109	109	109	107	107	107	96	96	96	86	86	86	79	79	79
	21-27	154	132	128	128	128	127	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	138	124	126	126	124	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
120 mph	8-20	154	118	104	130	118	104	109	109	104	107	107	104	96	96	96	86	86	86	79	79	79
	21-27	154	128	121	128	128	121	108	108	108	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	149	132	118	126	126	118	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
130 mph	8-20	141	106	93	130	106	93	109	106	93	107	105	93	96	96	93	86	86	86	79	79	79
	21-27	140	114	109	128	114	109	108	108	107	106	106	106	96	96	96	87	87	87	80	80	80
	28-45	137	121	108	126	121	108	107	107	107	106	106	106	98	98	98	91	91	91	84	84	84
140 mph	8-20	123	96	69	123	96	69	109	96	69	107	96	69	96	96	69	86	86	69	79	79	69
	21-27	128	103	96	128	103	96	108	103	96	106	103	96	96	96	96	87	87	87	80	80	80
	28-45	128	111	99	126	111	99	107	107	99	106	106	99	98	98	98	91	91	91	84	84	84
150 mph	8-20	110	74	51	110	74	51	108	74	51	106	74	51	96	74	51	86	74	51	79	74	51
	21-27	118	97	84	118	97	84	108	97	84	106	97	84	96	96	84	87	87	84	80	80	80
	28-45	116	103	91	116	103	91	107	103	91	106	103	91	97	97	91	90	90	90	84	84	84
160 mph	8-20	99	56	40	99	56	40	99	56	40	99	56	40	96	56	40	86	56	40	79	56	40
	21-27	109	81	64	109	81	64	108	81	64	106	81	64	96	81	64	87	81	64	80	80	64
	28-45	109	96	77	109	96	77	105	96	77	103	96	77	96	96	77	89	89	77	83	83	77
170 mph	8-20	76	45	34	76	45	34	76	45	34	76	45	34	76	45	34	76	45	34	76	45	34
	21-27	101	64	48	101	64	48	101	64	48	101	64	48	96	64	48	87	64	48	80	64	48
	28-45	100	89	64	100	89	64	100	89	64	100	89	64	93	89	64	87	87	64	82	82	64
175 mph	8-20	68	40	32	68	40	32	68	40	32	68	40	32	68	40	32	68	40	32	68	40	32
	21-27	97	56	41	97	56	41	97	56	41	97	56	41	96	56	41	87	56	41	80	56	41
	28-45	96	83	55	96	83	55	96	83	55	96	83	55	92	83	55	86	83	55	81	81	55
180 mph	8-20	64	36	30	64	36	30	64	36	30	64	36	30	64	36	30	64	36	30	64	36	30
	21-27	96	51	37	96	51	37	96	51	37	96	51	37	96	51	37	87	51	37	80	51	37
	28-45	93	74	49	93	74	49	93	74	49	93	74	49	91	74	49	85	74	49	81	74	49

Wind Speed (mph)	Roof Slope (deg.)	70 psf* G1	70 psf* G2	70 psf* G3	80 psf* G1	80 psf* G2	80 psf* G3	90 psf* G1	90 psf* G2	90 psf* G3	100 psf* G1	100 psf* G2	100 psf* G3	110 psf* G1	110 psf* G2	110 psf* G3	120 psf* G1	120 psf* G2	120 psf* G3	Exposed Mod. G1	Exposed Mod. G2	Exposed Mod. G3	Edge Mod. G1	Edge Mod. G2	Edge Mod. G3
90 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	157	134	120	119	96	76
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	154	144	138	124	103	98
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	149	148	133	123	110	99
95 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	157	124	111	110	83	65
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	154	135	128	117	98	90
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	149	140	125	116	105	96
100 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	157	116	103	103	72	56
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	154	126	120	112	91	77
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	149	132	118	110	99	88
105 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	150	109	97	96	64	49
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	146	119	112	106	80	66
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	144	126	112	105	96	77
110 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	138	102	83	83	55	44
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	138	112	105	101	72	58
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	136	119	106	100	90	69
115 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	127	96	67	72	49	38
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	131	105	99	96	64	51
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	129	113	101	96	80	61
120 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	117	81	56	64	44	35
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	124	100	92	90	55	45
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	123	108	96	91	72	55
130 mph	8-20	74	74	74	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	102	58	41	54	36	30
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	112	83	64	73	45	36
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	111	98	80	73	59	45
140 mph	8-20	74	74	69	69	69	69	66	66	66	64	64	64	60	60	60	57	57	57	72	44	33	48	32	25
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	102	60	45	64	37	30
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	101	90	59	59	49	37
150 mph	8-20	74	74	51	69	69	51	66	66	51	64	64	51	60	60	51	57	57	51	60	35	29	40	27	22
	21-27	75	75	75	72	72	72	67	67	67	64	64	64	61	61	61	58	58	58	96	48	34	54	32	24
	28-45	78	78	78	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	93	69	48	48	41	32
160 mph	8-20	74	56	40	69	56	40	66	56	40	64	56	40	60	56	40	57	56	40	50	30	25	35	24	19
	21-27	75	75	64	72	72	64	67	67	64	64	64	64	61	61	60	58	58	58	74	37	29	48	28	20
	28-45	78	78	77	74	74	74	72	72	72	66	66	66	64	64	64	61	61	61	74	54	37	40	35	26
170 mph	8-20	74	45	34	69	45	34	66	45	34	64	45	34	60	45	34	57	45	34	42	27	22	32	21	17
	21-27	75	64	48	72	64	48	67	64	48	64	64	48	61	61	48	58	58	48	64	32	24	42	25	18
	28-45	78	78	64	74	74	64	72	72	64	66	66	64	64	64	64	61	61	61	56	44	32	35	32	24
175 mph	8-20	68	40	32	68	40	32	66	40	32	64	40	32	60	40	32	57	40	32	39	25	21	29	19	16
	21-27	75	56	41	72	56	41	67	56	41	64	56	41	61	56	41	58	56	41	58	30	24	40	24	16
	28-45	77	77	55	73	73	55	72	72	55	66	66	55	64	64	55	61	61	55	49	40	29	33	29	21
180 mph	8-20	64	36	30	64	36	30	64	36	30	64	36	30	60	36	30	57	36	30	36	24	20	28	18	15
	21-27	75	51	37	72	51	37	67	51	37	64	51	37	61	51	37	58	51	37	53	29	21	37	22	15
	28-45	76	74	49	73	73	49	72	72	49	66	66	49	64	64	49	61	61	49	44	36	27	32	28	20

= min 72" span   = min 64" span   = min 48" span
= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. See Note 9 on page 2 for details.

* = Note: additional installation requirement for CAMO module clamp. See Note 10 on Page 3 for details.

REV 02/09/2021

Grouping of ASCE 7-16 Roof Zones (Gable)						
Roof Slope	8° - 27°			28° - 45°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1, 2e	2n, 2r, 3e	3r	1, 2e, 2r	2n, 3r	3e

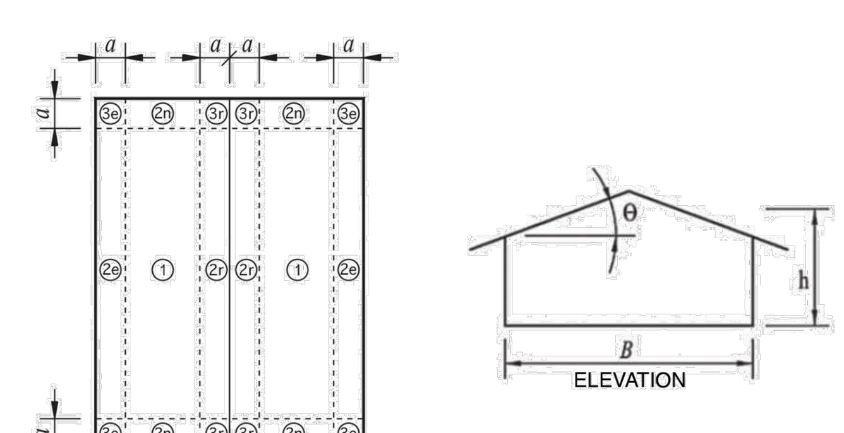


Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation (Per ASCE 7-16)

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m).

θ = Angle of plane of roof from horizontal, in degrees.

Contractor:
Wilson & Girgenti Engineering

Project:
MADEIRA BEACH REC CENTER
300 Municipal Drive,
Madeira Beach, FL 33708

Engineer:
ARC DESIGN Solar Specialists
JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

Engineering Approval:

REVISIONS

DESCRIPTION	DATE	REV

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VicsON Energy
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Sheet size: ARCH D 36" x 24"
Sheet title: DATA SHEETS
Sheet number: DS.1

Datasheet

IRONRIDGE

Tilt Mount System

Trust your system at every angle.

The IronRidge Tilt Mount System supports a wide range of solar module tilting angles, while also resisting the extreme wind and snow forces experienced over a building's lifetime.

Every component has been carefully engineered and rigorously tested, and the entire system uses only aluminum and stainless steel materials to resist corrosion.

Roof Friendly
Lightweight and compatible with industry-standard attachments.

PE Certified
Pre-stamped engineering letters available in most states.

Strength Tested
All components evaluated for superior structural performance.

Design Assistant
Online software makes it simple to create, share, and price projects.

UL 2703 Listed System
Meets newest effective UL 2703 standard.

25-Year Warranty
Products guaranteed to be free of impairing defects.

Datasheet

XR Rails & Tilt Legs

XR Rails

Attach directly to Tilt Legs. Available in three targeted sizes to support specific wind and snow loads.
- Unique curved profile
- Spanning capabilities up to 12'
- Clear and black finish

Tilt Legs

Tilt assembly to desired angle, up to 30 degrees. Kits include South and North Tilt Leg and all hardware.
- Available in multiple lengths for a wide angle range
- Assembled South Tilt Legs include angle indicators
- Legs are electrically bonded to rails

Grounding Clamps

UFOs

Universal Fastening Objects secure and bond modules to rails.
- Fully assembled and lubricated
- Single, universal size
- Clear and black finish

Stopper Sleeves

Snap onto the UFO to transform into a bonded end clamp.
- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO

Bond modules to rails while staying completely hidden.
- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Accessories

Bonded Splices

XR Rails use internal splices for seamless connections.
- Self-drilling screws
- Varying versions to match rails
- Forms secure bonding connection

Grounding Lugs

Connects Tilt Mount system to equipment ground.
- Low profile
- Single tool installation
- Mounts in any direction

Ends Caps & Wire Clips

Provide a finished look and organize electrical wires.
- Simple snap-in installations
- Clips hold up to ten 5mm wires
- UV-stabilized polymer

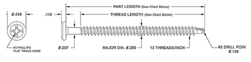
Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/design

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to IronRidge.com/training

EHD #15 DRILL POINT FASTENERS

ANCHOR PRODUCTS™



Description
Extra Heavy Duty Roofing Fastener with #3 Philips Truss Head, Cathodic epoxy e-coat-13 threads per inch. Ideal multi-purpose fastener for use with 18-26ga. steel, structural concrete, and wood.

Application
- Insulation and membrane attachment to steel, wood and structural concrete roof decks.

Features and Benefits
- Extra stable #3 Phillips drive
- Drill point design prevents fastener walking
- 13 threads per inch provides higher pull-out values
- Drill point cuts through gravel and BUR
- Cathodic epoxy e-coat

Installation and Application Considerations
Tools: 2000 – 2500 rpm screw guns and hardened #3 Phillips bit. For structural concrete, 7/32" carbide bit and 1500 rpm screw gun or hammer drill in hammer mode. Structural concrete to be predrilled with standard 7/32" carbide bit to minimum 1/2" deeper than fastener penetration. The standard carton package includes one #3 Phillips bit.

Material:
- Steel thickness from 26 ga (.019 in.) through 18 ga (.048 in.): Min penetration: 3/4"
- Wood 2x (1-1/2" thick): Min penetration: 1"
- Plywood and OSB: Min through penetration: 3/4"
- Structural Concrete: Min penetration: 1"

Coating and Corrosion
- 15/15 Kesternich per FM 4470
- 800 hour salt spray per ASTM B117
- Cathodic epoxy e-coat

Performance Data
Material Strength
- Tensile: 4350 lbf / 19350 N
- Shear: 3700 lbf / 16458

Torsional: 130 lbf / 14.69 N.m

Options and Packaging
- *2"-4" Lengths: 100/pk or 1000/ bucket.*
- *5"-8" Lengths: 100/pk or 500/bucket.*
- *9"-24" Lengths: Call for details.*
- *Weights and Dimension: Vary by product.*

Options and Packaging
- *2"-4" Lengths: 100/bag or 1000/ bucket.*
- *5"-8" Lengths: 100/bag or 500/bucket.*
- *9"-24" Lengths: Call for details.*
- *Weights and Dimension: Vary by product.*

Pull Out Strength
Steel
- 18 Ga (1.2mm): 1140 lbf / 50171 N
- 20 Ga (0.9mm): 898 lbf / 3995 N
- 22 Ga (0.8mm): 685 lbf / 3038 N
- 24 Ga[3] (0.6mm): 453 lbf / 2015 N
- 26 Ga[3] (0.5 mm): 301 lbf / 1339 N

Wood
- 2 x dimensional lumber (1" penetration) (25.4mm): 692 / 3078 N
- 3/4" (19.1mm) FR Plywood (through penetration): 703 lbf / 3127 N
- 1/2" Plywood OSB

Concrete
- 4000 psi (1" penetration) (25.4mm): 728 lbf / 3238 N

Custom options may be available for additional charge. Lead times may apply depending on roofing manufacturer and product availability.
Revised Version: 08.06.20

Information source:

Anchor Products LLC.
PO Box 1551
Colleyville, TX 76034

Secured Mounting Solutions™

888-575-2131
www.anchorp.com
info@anchorp.com

U-ANCHOR™ | U2400-TPO

Mechanically Attached Solution For Single-Ply Roofing System

ANCHOR PRODUCTS™

Description
The U2400-TPO is a lightweight rooftop attachment system consisting of an U-Anchor 2000 Series plate and cover membrane. The cover membrane and separator disk are factory sealed to the top of the plate. The U2400-TPO provides a fastened, watertight, warranted attachment for TPO single-ply membranes.

Advantages
- Extremely strong and lightweight.
- Fast installation, approximate rate of 12 per man hour.
- Installs on any surface from flat to vertical.

U-Anchor Attachment
The U2400-TPO is attached by lifting the flashing to expose the fastening hole on the plate. Then, fastening through the roofing assembly and into the structural decking with 2-8 approved fasteners, as directed by project specific engineering. The membrane cover is then hot air welded around the perimeter to the roof membrane. After verifying the seam integrity with a probe, seam sealer maybe required per roofing manufacturer's specifications.

Project-specific data is required to determine the correct type of fastener and number needed to secure each U-Anchor. An ANSI/SPRI FX-1 Pull Test is recommended to measure the pull-out resistance of fasteners included in the load path, (for example, substrate -> fasteners -> the U-Anchor -> other components.)

Equipment Attachment
To securely mount your rooftop equipment to the U-Anchor, after its installed, the connection nut must be tightened to approximately 20-25 ft.-lbs.

Use a calibrated torque wrench during install to ensure appropriate results are achieved.

Refer to product documentation for detailed installation and component requirements.

Testing
Results are based on plate performance only.

- Ultimate Load - Shear: 4,339 lbs
- Ultimate Load - Tension: 2,713 lbs

Tested in accordance with ICC AC467
Individual roof deck assembly tests available upon request as application specific results may vary.

Listings
- ICC-ES Evaluation Report ESR-4152

Warranty
- 20 Year Limited Material Only Warranty.
  Subject to terms and conditions.

Product Specifications
Bolts
- 3/8"-16 x 1.5" Bolt*
- Material Type: 304 Stainless Steel

Plate
- Outer Diameter: 5.5"
- Fastener Hole Diameter: 0.265" (8 holes)
- Fastener Hole Pattern: 4.125" Diameter
- Steel Thickness: 0.047" (1.194mm)
- Material Type: Galvanized Steel G90

Cover Membrane
- Manufacturer: Brand or Non-Brand Specific*
- Color: Default White*
- Length: 11.75"
- Width: 11.75"
- Thickness: Default 60 mil*

Patents
- Visit www.anchorp.com/patents

Packaging Specifications
- Sold Individually OR Full Box Quantity
- Individual Weight: Approx. 0.75 lbs
- Full Box Quantity: 10 units
- Box Weight: Approx. 10 lbs
- Box Dimensions: 13" x 11" x 13"
- Full Pallet Quantity: 50 boxes
- Pallet Dimensions: 48" x 40" x 66"

* Specified option is standard. Custom options may be available for additional charge. Lead times may apply depending on roofing manufacturer and product availability.

All representations herein are premised on proper installation and use of approved components. Failure to properly install or use of unapproved components voids all Anchor Products representations.

Anchor Products systems are included in many roofing manufacturers' guarantees! Please contact us for more information.

ROOFING MANUFACTURER ACCEPTED — MADE IN U.S.A.

Anchor Products LLC.
PO Box 1551
Colleyville, TX 76034

Secured Mounting Solutions™

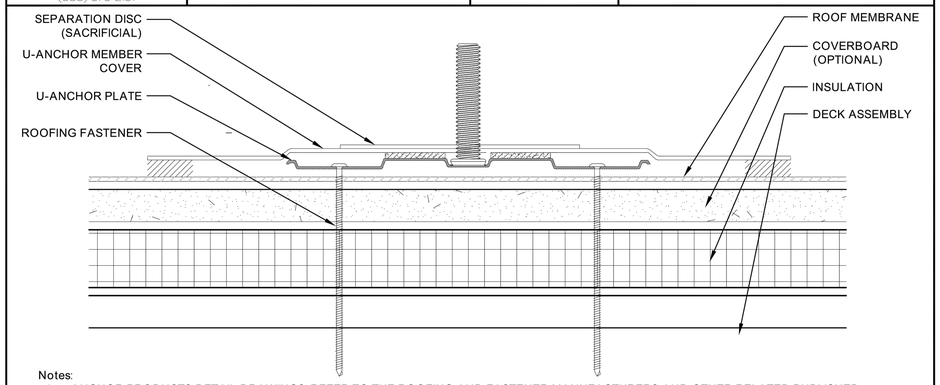
888-575-2131
www.anchorp.com
info@anchorp.com

ANCHOR PRODUCTS™
PO Box 1551
Colleyville, TX 76034
www.anchorp.com
(888) 575-2131

Title:
U-Anchor U2400, Mechanically Attached, Single-Ply Flashing (PVC/TPO/KEE/TPA)

DRAWN BY: ANCHOR PRODUCTS TECHNICAL SUPPORT

REQUEST DATE:	CATEGORY: **Single-Ply MA**
REVISION DATE: 03/01/19	DRAWING NO.: **AP.2400.SP.MA.01a**
SCALE: NTS	



Notes:
1. ANCHOR PRODUCTS DETAIL DRAWINGS: REFER TO THE ROOFING AND FASTENER MANUFACTURERS AND OTHER RELATED PUBLISHED DOCUMENTATION, PRODUCT DATA SHEETS (PDS) AND SAFETY DATA SHEETS (SDS) FOR ADDITIONAL INFORMATION. ALL DETAIL DRAWINGS AND RELATED INSTALLATION GUIDELINES ARE PROVIDED BY ANCHOR PRODUCTS FOR THE SOLE PURPOSE OF CONVEYING ASSEMBLY STRUCTURE. ACCORDINGLY, THE DETAIL DRAWINGS ARE NOT OFFERED, AND SHOULD NOT BE CONSIDERED, AS A SUBSTITUTE FOR PROFESSIONAL DESIGN SERVICES.
2. TO ENSURE WARRANTIES CAN BE MAINTAINED, MOST ROOFING MANUFACTURERS REQUIRE THE FLASHING BE MADE OF THE SAME TYPE AND BRAND. MOST ROOFING MANUFACTURERS REQUIRE THAT THE INSTALLATION OF THE U-ANCHOR BE PERFORMED BY AN AUTHORIZED CONTRACTOR.
3. FASTENERS MUST BE INSTALLED PER THE FASTENER MANUFACTURER'S REQUIREMENTS FOR EACH SPECIFIC DECK TYPE FOR POSITIONING, DECK PENETRATION DEPTH, AND OTHER NECESSARY STANDARDS.
4. SEAM WELDS MUST COMPLY WITH THE ROOFING MANUFACTURER'S REQUIREMENTS. THE AREA SHOULD BE CLEANED AND FREE OF DEBRIS AS PER THE ROOFING MANUFACTURERS SPECIFICATION. TYPICAL SEAM WELDS ARE A MINIMUM 1.5". SEAMS MUST BE PROBED TO ENSURE A SUFFICIENT WELD HAS BEEN ACHIEVED. USE CUT EDGE SEALANT AS MANDATED BY THE ROOFING MANUFACTURER.
5.

Contractor:
WILSON IRGENTI ENGINEERING
Wilson & Girgenti Engineering

Project:
MADEIRA BEACH REC CENTER
300 Municipal Drive,
Madeira Beach, FL 33708

Engineer:
ARC DESIGN Solar Specialists
JAMES A. CLANCY, PE
409 N. MAIN STREET, ELMER, NJ 08318
ENGINEERS LICENSE #64848

Engineering Approval:

REVISIONS

DESCRIPTION	DATE	REV

Designed by:
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Sheet size: ARCH D 36" x 24"

Sheet title: DATA SHEETS

Sheet number: DS.2