# NEW PHOTOVOLTAIC SYSTEM 11.20 KW DC
# 7118 U.S. 401 S BUNNLEVEL, NC 28323, USA

## GENERAL NOTES

1.1.1 PROJECT NOTES:
1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
1.1.4 ARC FAULT PROTECTION (AFCI) AND PHOTOVOLTAIC RAPID SHUTDOWN SYSTEM (PVRSS) IS INTEGRATED WITH THE POWER OPTIMIZER IN ACCORDANCE WITH NEC 210.12 & 690.12 RESPECTIVELY.
1.1.5 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE INVERTER IN ACCORDANCE WITH NEC 690.41(B)
1.1.6 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY
1.1.7 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
1.1.8 ALL INVERTERS, PHOTOVOLTAIC MODULES,PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].
1.1.9 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

1.2.1 SCOPE OF WORK:
1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT
1.3.1 WORK INCLUDES:
1.3.2 PV RACKING SYSTEM INSTALLATION - QUICK MOUNT PV
1.3.3 PV MODULE AND INVERTER INSTALLATION - HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W / SOLAREDGE SE10000H-US / SOLAREDGE POWER OPTIMIZER P401
1.3.4 PV EQUIPMENT ROOF MOUNT
1.3.5 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX
1.3.6 PV LOAD CENTERS (IF INCLUDED)
1.3.7 PV METERING/MONITORING (IF INCLUDED)
1.3.8 PV DISCONNECTS
1.3.9 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
1.3.10 PV FINAL COMMISSIONING
1.3.11 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
1.3.12 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

PROJECT INFORMATION

OWNER
NAME: ALFREDO SERRANO RAMIREZ
PHONE: (919) 817-1862

CONTRACTOR INFORMATION:
CONTRACTOR NAME: PALMETTO
CONTRACTOR ADDRESS: 1505 KING ST,
CHARLESTON,SC 29405
CONTRACTOR PHONE: (855) 339-1831

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SCOPE OF WORK:
SYSTEM SIZE : STC : 28 X 400W= 11.20 kW DC
PTC : 28 x 376.55W = 10.54 kW DC
AC SIZE: 10 kW AC
(28) HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W
(1) SOLAREDGE SE10000H-US
(28) SOLAREDGE POWER OPTIMIZER P401

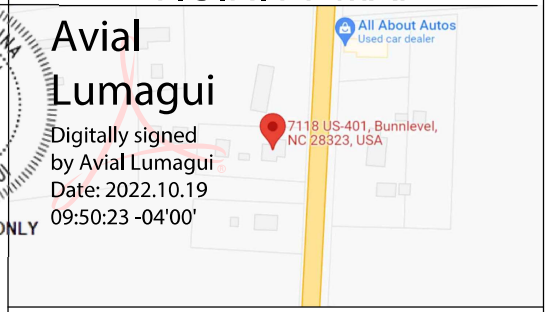
ATTACHMENT TYPE: ROOF MOUNT
MSP UPGRADE: NO


AUTHORITIES HAVING JURISDICTION:
BUILDING : HARNETT COUNTY
ZONING : HARNETT COUNTY
UTILITY : DUKE ENERGY (PROGRESS ENERGY CAROLINAS INC)

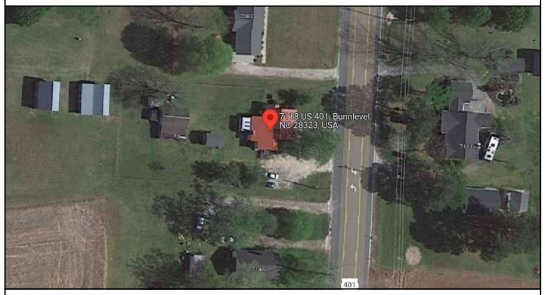
DESIGN SPECIFICATION:
OCCUPANCY : R3/SINGLE FAMILY RESIDENTIAL
CONSTRUCTION TYPE / FIRE RATING : 5-B
GROUND SNOW LOAD (STATE) : 10 PSF
WIND EXPOSURE : C
WIND SPEED (STATE) : 120 MPH

APPLICABLE CODES & STANDARDS
ELECTRICAL : NEC 2017
FIRE CODE : 2018 NC FIRE PREVENTION CODE
OTHER : 2018 NORTH CAROLINA STATE BUILDING CODE

## VICINITY MAP




## SATELLITE VIEW




## SHEET INDEX



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2.1.1 SITE NOTES:

2.1.2 A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
2.1.3 THE PV MODULESARECONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITHOUT STORAGE BATTERIES.
2.1.4 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
2.1.5 PROPERACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PERSECTION NEC 110.26.
2.1.6 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

2.2.1 EQUIPMENT LOCATIONS:

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

2.3.1 STRUCTURAL NOTES:

2.3.2 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUSTALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAI MANUFACTURER'S INSTRUCTIONS.
2.3.3 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
2.3.4 ROOFTOP PENETRATIONS FOR PV RACEWAY WILLBE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
2.3.5 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.
2.3.6 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

2.4.1 WIRING & CONDUIT NOTES:

2.4.2 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS AREBASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.4.3 CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
2.4.4 VOLTAGE DROP LIMITED TO 3.0%.
2.4.5 DC WIRING LIMITED TO INVERTER FOOTPRINT. OPTIMIZER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.
2.4.6 AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE**, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].

2.5.1 GROUNDING NOTES:

2.5.2 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.5.3 PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.
2.5.4 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).
2.5.5 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45 AND INVERTER MANUFACTURERS INSTRUCTIONS.
2.5.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURER INSTALLATION REQUIREMENTS.
2.5.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.5.8 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]
2.5.9 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.
2.5.10 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

2.6.1 DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:
2.6.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2.6.3 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
2.6.4 PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D).
2.6.5 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
2.6.6 OPTIMIZER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).
2.6.7 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

2.7.1 INTERCONNECTION NOTES:

2.7.2 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]
2.7.3 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(B)(2)(3)(b)].
2.7.4 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(B)(2)(3)].
2.7.5 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12 (B)(2)(3)(C).
2.7.6 FEEDER TAP INTERCONECTION (LOADSIDE) ACCORDING TO NEC 705.12 (B)(2)(1)
2.7.7 SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42 2.7.8BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

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G-001

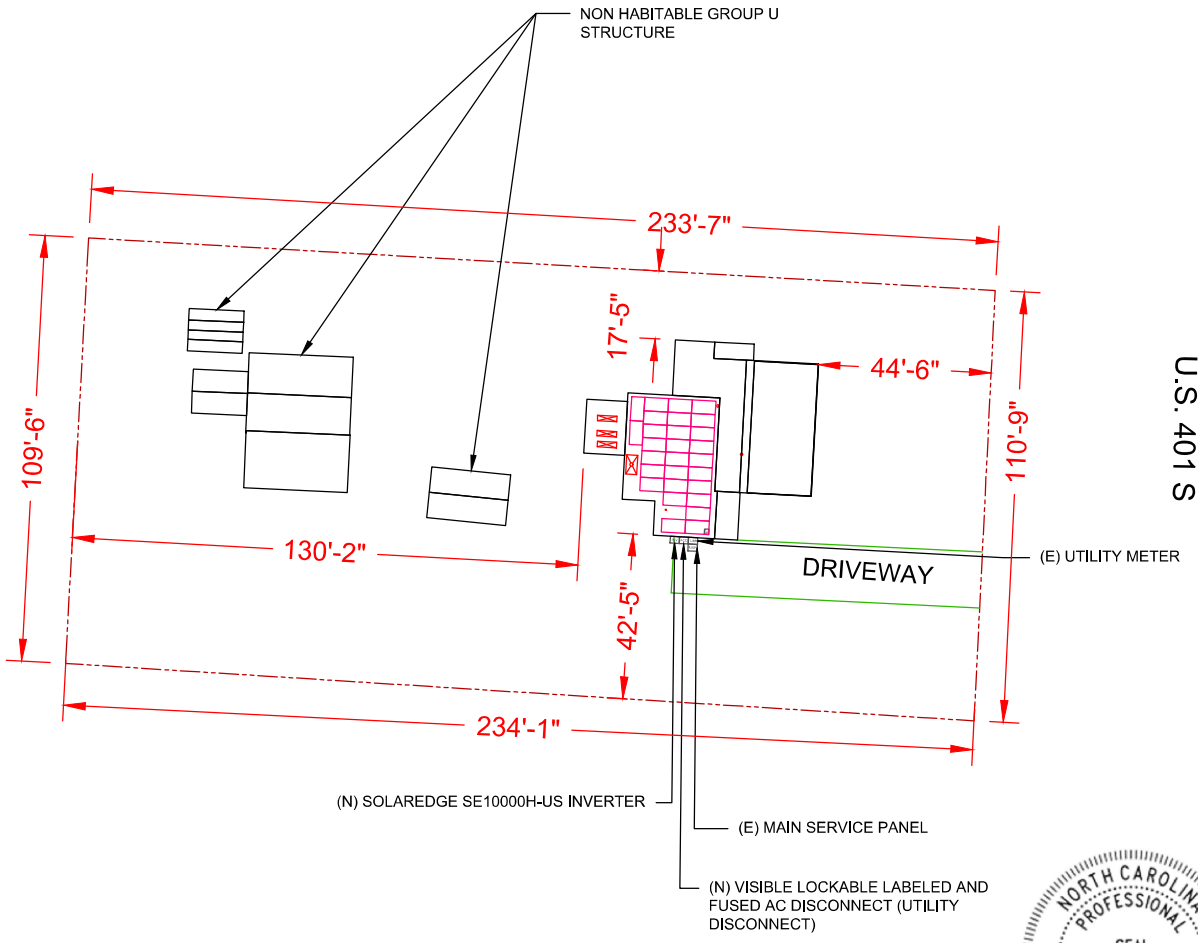
## LEGEND

- FIRE SETBACK
- PROPERTY LINE
- FENCE
- JB - JUNCTION BOX
- SKYLIGHT (ROOF OBSTRUCTION)
- CHIMNEY (ROOF OBSTRUCTION)
- VENT, ATTIC FAN (ROOF OBSTRUCTION)

| | | |
|---|---|---|
| 1 | MODULE | HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W |
| 2 | INVERTER | SOLAREDGE SE10000H-US |
| 3 | OPTIMIZER | SOLAREDGE POWER OPTIMIZER P401 |
| 4 | MOUNTS | S-5! PROTEA BRACKET |
| 5 | RAIL | IRON RIDGE XR-10-168M, XR10 RAIL |

### ARRAY AREA & ROOF AREA CALC'S

| ROOF | #OF MODULES | ARRAY AREA (SQ.FT) | ROOF AREA (SQ.FT) | ROOF AREA COVERED BY ARRAY(%) |
|---|---|---|---|---|
| #1 | 28 | 591.64 | 798.12 | 74.129 |

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## 1 | SITE PLAN

**SCALE:** 1/32" = 1'-0"

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A-101

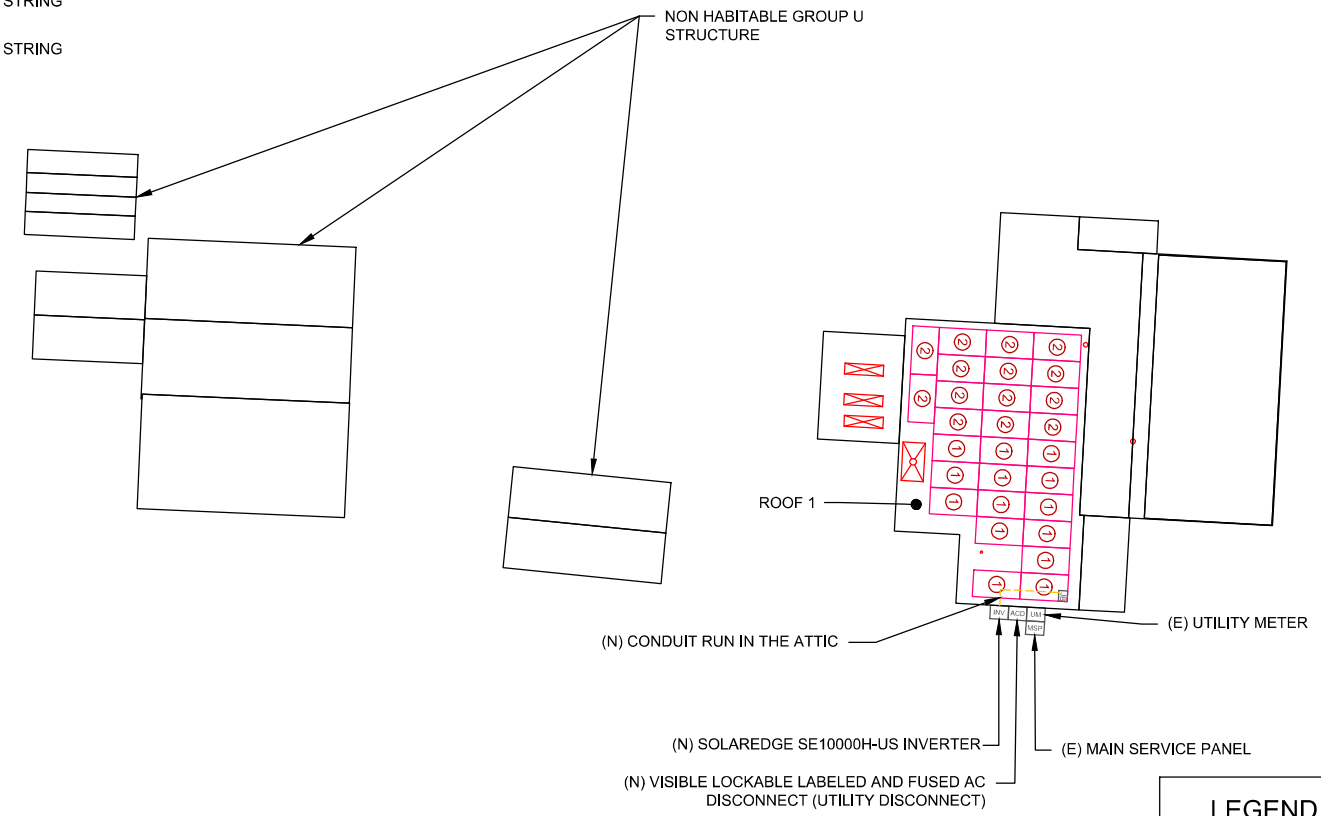
## ROOF SECTION(S)

| | |
|---|---|
| ROOF 1 | TILT - 8°<br>AZIMUTH - 273°<br>MODULE - 28 |

| | | |
|---|---|---|
| 1 | MODULE | HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W |
| 2 | INVERTER | SOLAREDGE SE10000H-US |
| 3 | OPTIMIZER | SOLAREDGE POWER OPTIMIZER P401 |
| 4 | MOUNTS | S-5! PROTEA BRACKET |
| 5 | RAIL | IRON RIDGE XR-10-168M, XR10 RAIL |

① - MODULE STRING

② - MODULE STRING




### LEGEND

- FIRE SETBACK
- PROPERTY LINE
- FENCE
- JB - JUNCTION BOX
- SKYLIGHT (ROOF OBSTRUCTION)
- CHIMNEY (ROOF OBSTRUCTION)
- VENT, ATTIC FAN (ROOF OBSTRUCTION)

N W E S

## 1 | ELECTRICAL PLAN

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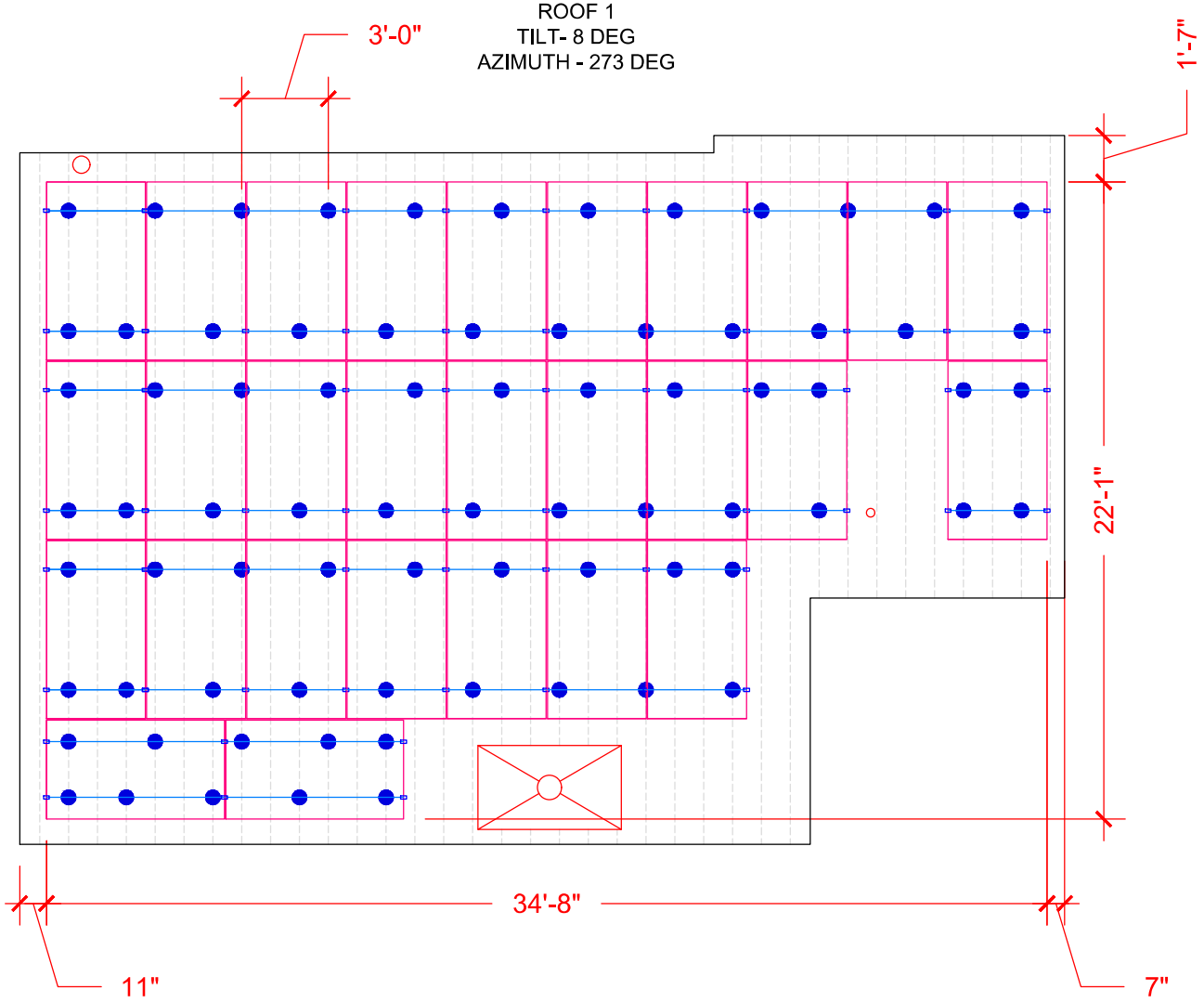
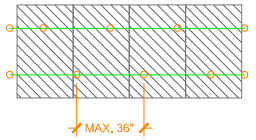



1 ATTACHMENT PLAN

**SCALE:** 1/4" = 1'-0"

MOUNTING PATTERN SAMPLE




MAXIMUM MOUNT SPACING: 36"
MOUNT PATTERN: STAGGERED

ALL HARDWARE, INCLUDING MOUNTING AND RACKING, TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.

- CLAMP
- PROTEA BRACKET
- RAIL
- RAFTER

| | |
|---|---|
| ROOF 1 | ROOF MATERIAL - CORRUGATED<br>METALSEAM SPACING - 12" |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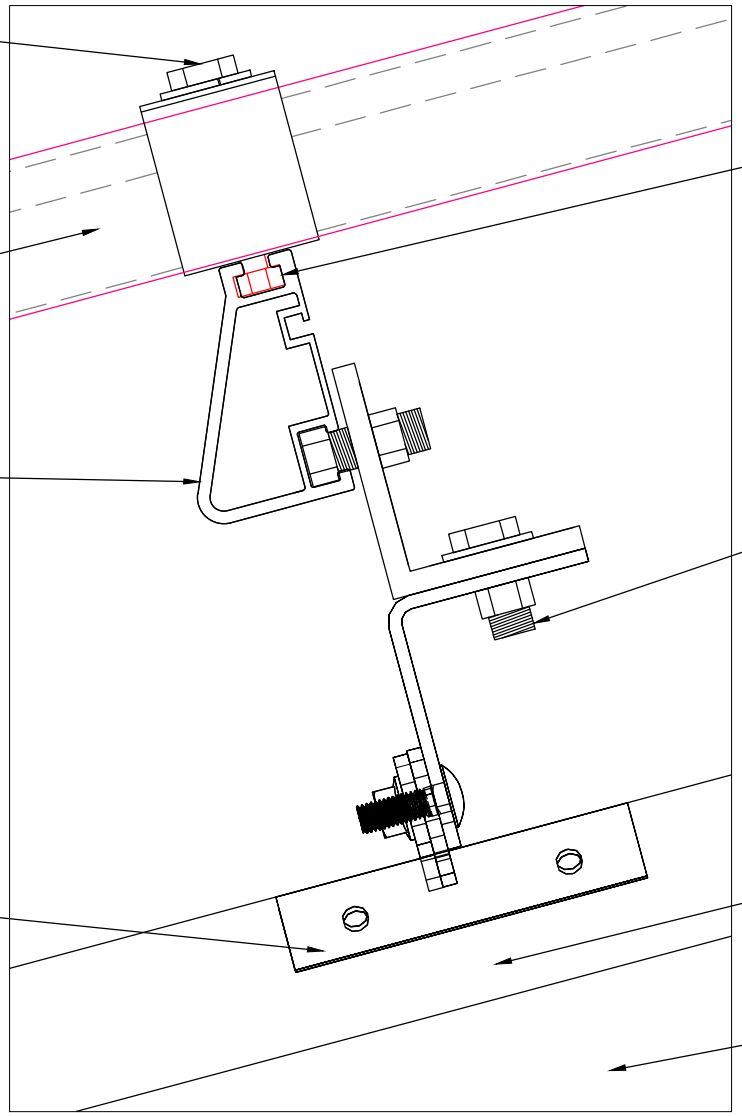


1 MOUNTING DETAILS

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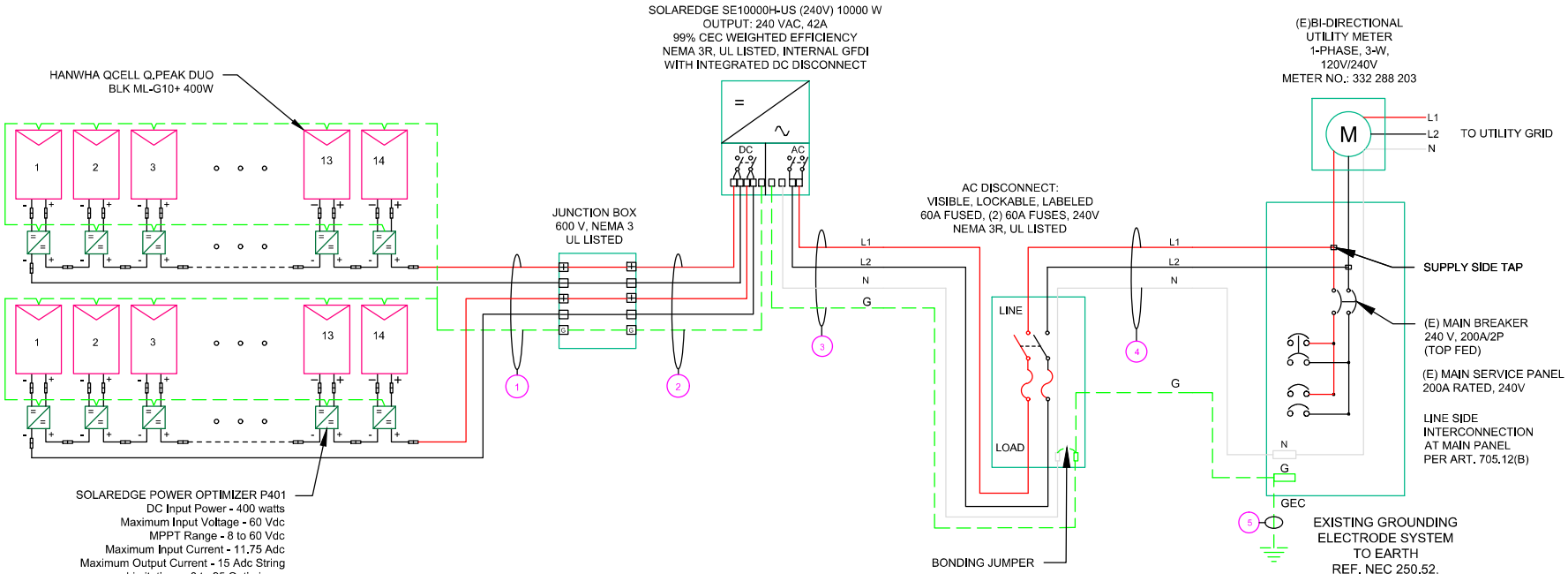
DC SYSTEM SIZE: 11.20 kW DC
AC SYSTEM SIZE: 10 kW AC

(28) HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W MODULES

(2) STRINGS OF 14 MODULES CONNECTED IN SERIES

| | PHASE CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT | | | NEUTRAL | | | GROUND CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT | | | CONDUIT SIZE | CONDUIT TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | AWG #10 | PV-WIRE/USE-2, COPPER | | N/A | | 1 | AWG #6 | BARE,COPPER EGC | N/A | FREE AIR |
| 2 | 4 | AWG #10 | THWN-2,COPPER | | N/A | | 1 | AWG #10 | THWN-2,COPPER EGC | 3/4" | EMT |
| 3 | 2 | AWG #6 | THWN-2,COPPER | 1 | AWG #6 | THWN-2,COPPER | 1 | AWG #10 | THWN-2,COPPER EGC | 3/4" | EMT |
| 4 | 2 | AWG #6 | THWN-2,COPPER | 1 | AWG #6 | THWN-2,COPPER | 1 | N/A | N/A | N/A | EMT |
| 5 | | | | | | | 1 | AWG #6 | BARE,COPPER | N/A | FREE AIR |




| | | |
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| 2 | INVERTER | SOLAREDGE SE10000H-US |
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| SOLAR MODULE SPECIFICATIONS | |
|---|---|
| MANUFACTURER / MODEL # | HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W |
| VMP | 37.13V |
| IMP | 10.77A |
| VOC | 45.30V |
| ISC | 11.14A |
| TEMP. COEFF. VOC | -0.27%/°C |
| PTC RATING | 376.55W |
| MODULE DIMENSION | 74"L x 41.14W x 1.26"D (In Inch) |

| INVERTER SPECIFICATIONS | |
|---|---|
| MANUFACTURER / MODEL # | SOLAREDGE SE10000H-US |
| NOMINAL AC POWER | 10000 W |
| NOMINAL OUTPUT VOLTAGE | 240 VAC |
| NOMINAL OUTPUT CURRENT | 42 |

| POWER OPTIMIZER (OPTIMIZER P401) | |
|---|---|
| MAXIMUM INPUT POWER | 400W |
| MINIMUM INPUT VOLTAGE | 8 VDC |
| MAXIMUM INPUT VOLTAGE | 60 VDC |
| MAXIMUM MODULE ISC | 11.75 ADC |
| MAXIMUM OUTPUT CURRENT | 15 ADC |

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

| AMBIENT TEMPERATURE SPECS | |
|---|---|
| RECORD LOW TEMP | -13° |
| AMBIENT TEMP (HIGH TEMP 2%) | 33° |
| CONDUIT HEIGHT | 0.5" |
| ROOF TOP TEMP | 55° |
| CONDUCTOR TEMPERATURE RATE | 90° |
| MODULE TEMPERATURE COEFFICIENT OF Voc | -0.27%/°C |

## DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX :

| | |
|---|---|
| EXPECTED WIRE TEMP (In Celsius) | 55° |
| TEMP. CORRECTION PER TABLE (310.16) | 0.76 |
| NO. OF CURRENT CARRYING CONDUCTORS | 4 |
| CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) | 1 |
| CIRCUIT CONDUCTOR SIZE | 10 AWG |
| CIRCUIT CONDUCTOR AMPACITY | 40A |

| | |
|---|---|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 18.75A |
| 1.25 X Isc | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16 | 30.40A |
| TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY | |
| RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY | |

## DC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX TO INVERTER:

| | |
|---|---|
| AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT PER NEC 310.15(B)(2)(c) | 22° |
| EXPECTED WIRE TEMP (In Celsius) | 33°+22° = 55° |
| TEMP. CORRECTION PER TABLE (310.16) | 0.76 |
| NO. OF CURRENT CARRYING CONDUCTORS | 4 |
| CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) | 0.8 |
| CIRCUIT CONDUCTOR SIZE | 10 AWG |
| CIRCUIT CONDUCTOR AMPACITY | 40A |

| | |
|---|---|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 18.75A |
| 1.25 X Isc | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16 | 24.32A |
| TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY | |
| RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY | |

## AC CONDUCTOR AMPACITY CALCULATIONS:

| | |
|---|---|
| NO. OF INVERTER | 1 |
| EXPECTED WIRE TEMP (In Celsius) | 33° |
| TEMP. CORRECTION PER TABLE (310.16) | 0.96 |
| NO. OF CURRENT CARRYING CONDUCTORS | 3 |
| CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) | 1 |
| CIRCUIT CONDUCTOR SIZE | 6 AWG |
| CIRCUIT CONDUCTOR AMPACITY | 65A |

| | |
|---|---|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 52.50A |
| 1.25 X MAX INVERTER OUTPUT CURRENT | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16 | 62.40A |
| TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY | |
| RESULT SHOULD BE GREATER THAN (52.50A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY | |

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CALL OR TEXT: 1-843-258-5389
INSTALLHOTLINE@PALMETTO.COM

PROJECT NAME & ADDRESS

ALFREDO SERRANO RAMIREZ
7118 U.S. 401 S
BUNNLEVEL, NC 28323, USA

SIGNATURE WITH SEAL

| REVISIONS | DESCRIPTION | DATE |
|---|---|---|
| REV | | |

SHEET TITLE
ELECTRICAL CALCULATIONS

| | |
|---|---|
| DRAWN DATE | 10/18/2022 |
| DRAWN BY | VR |
| REVIEWED BY | - |

SHEET NUMBER
E-602

**WARNING: PHOTOVOLTAIC POWER SOURCE**

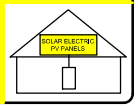
LABEL 1
ON ALL CONDUITS SPACED AT MAX 10FT

**! CAUTION !**
**SOLAR ELECTRIC SYSTEM CONNECTED AND ENERGIZED**

**LABEL 2**
AT INVERTER

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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




**LABEL 3**
AT INVERTER

**PHOTOVOLTAIC DC DISCONNECT**

**LABEL 4**
AT DC DISCONNECT

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

**LABEL 5**
AT EACH AC DISCONNECT

**PHOTOVOLTAIC AC DISCONNECT**

**LABEL 6**
AT EACH AC DISCONNECT

**! WARNING !**
**DUAL POWER SOURCES**
**SECOND SOURCE IS PV SYSTEM**

**LABEL 7**
AT MEP

**! WARNING !**
**SOLAR SYSTEM CONNECTED AND ENERGIZED**

**LABEL 8**
AT MEP

**! CAUTION !**
**SOLAR POINT OF INTERCONNECTION**

**LABEL 9**
AT UTILITY METER

**! WARNING !**
**THE SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM**

**LABEL 10**
AT UTILITY METER

**PHOTOVOLTAIC AC DISCONNECT SWITCH**

RATED OUTPUT CURRENT: 42 AMPS
NOMINAL OPERATING VOLTAGE: 240 VOLTS

**LABEL 11**
AT AC DISCONNECT

| | | |
|---|---|---|
| **MAXIMUM VOLTAGE** | 480 | V |
| **MAXIMUM CIRCUIT CURRENT** | 30 | A |
| **MAX RATED OUTPUT CURRECT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED)** | 15 | A |

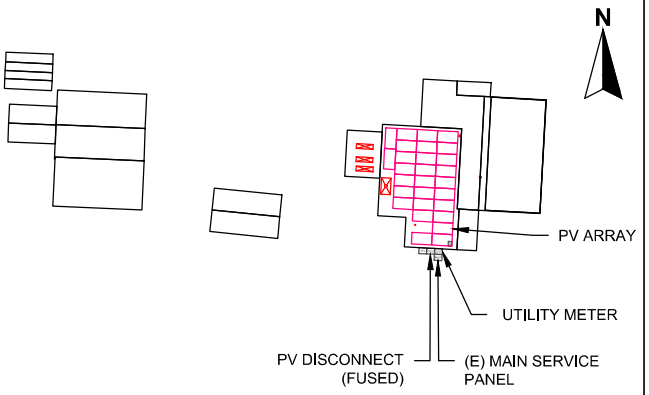
**LABEL 12**
AT INVERTER

**EMERGENCY CONTACT INFORMATION**

CONTRACTOR: PALMETTO
PHONE: (855) 339- 1831

# CAUTION

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

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SHEET TITLE
PLACARDS

| | |
|---|---|
| DRAWN DATE | 10/18/2022 |
| DRAWN BY | VR |
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SHEET NUMBER
E-603

powered by Q.ANTUM DUO Z

# Q.PEAK DUO BLK ML-G10+

## 385-405

ENDURING HIGH PERFORMANCE

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

### BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

### THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

### INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

### ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], 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 warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (−1500 V, 96 h)

[2] See data sheet or rear for further information.

### THE IDEAL SOLUTION FOR:

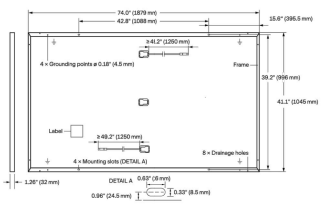
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

## 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-refection 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 | 4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (−) ≥ 49.2 in (1250 mm) |
| Connector | Stäubli MC4; IP68 |

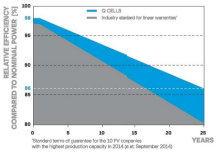



## ELECTRICAL CHARACTERISTICS

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

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

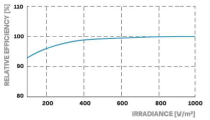
### Q CELLS PERFORMANCE WARRANTY




At least 98% of nominal power during first year. Thereafter max. 0.5% 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/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) QCPV Certification ongoing.

## PACKAGING INFORMATION

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Horizontal packaging | 76.4 in 1940 mm | 43.3 in 1100 mm | 48.0 in 1220 mm | 656 lbs 751 kg | 24 pallets | 24 pallets | 32 modules |

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


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

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SHEET TITLE
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SHEET NUMBER
R-001

# Single Phase Inverter with HD-Wave Technology

## for North America

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

INVERTERS

12-25 YEAR WARRANTY

### Optimized installation with HD-Wave technology

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

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# Single Phase Inverter with HD-Wave Technology for North America

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

| | SE3000H-US | SE3800H-US | SE5000H-US | SE6000H-US | SE7600H-US | SE10000H-US | SE11400H-US | |
|---|---|---|---|---|---|---|---|---|
| **OUTPUT** | | | | | | | | |
| Rated AC Power Output | 3000 | 3800 @ 240V 3300 @ 208V | 5000 | 6000 @ 240V 5000 @ 208V | 7600 | 10000 | 11400 @ 240V 10000 @ 208V | VA |
| Maximum AC Power Output | 3000 | 3800 @ 240V 3300 @ 208V | 5000 | 6000 @ 240V 5000 @ 208V | 7600 | 10000 | 11400 @ 240V 10000 @ 208V | VA |
| AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Vac |
| AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229) | - | ✓ | - | ✓ | - | - | ✓ | Vac |
| AC Frequency (Nominal) | 59.3 - 60 - 60.5[1] | | | | | | | Hz |
| Maximum Continuous Output Current @240V | 12.5 | 16 | 21 | 25 | 32 | 42 | 47.5 | A |
| Maximum Continuous Output Current @208V | - | 16 | - | 24 | - | - | 48.5 | A |
| GFDI Threshold | 1 | | | | | | | A |
| Utility Monitoring, Islanding Protection, Country Configurable Thresholds | Yes | | | | | | | |
| **INPUT** | | | | | | | | |
| Maximum DC Power @240V | 4650 | 5900 | 7750 | 9300 | 11800 | 15500 | 17650 | W |
| Maximum DC Power @208V | - | 5100 | - | 7750 | - | - | 15500 | W |
| Transformer-less, Ungrounded | Yes | | | | | | | |
| Maximum Input Voltage | 480 | | | | | | | Vdc |
| Nominal DC Input Voltage | 380 | | | | 400 | | | Vdc |
| Maximum Input Current @240V[2] | 8.5 | 10.5 | 13.5 | 16.5 | 20 | 27 | 30.5 | Adc |
| Maximum Input Current @208V[2] | - | 9 | - | 13.5 | - | - | 27 | Adc |
| Max. Input Short Circuit Current | 45 | | | | | | | Adc |
| Reverse-Polarity Protection | Yes | | | | | | | |
| Ground-Fault Isolation Detection | 600kΩ Sensitivity | | | | | | | |
| Maximum Inverter Efficiency | 99 | 99.2 | | | | | | % |
| CEC Weighted Efficiency | 99 | | | | | | 99 @ 240V 98.5 @ 208V | % |
| Nighttime Power Consumption | < 2.5 | | | | | | | W |
| **ADDITIONAL FEATURES** | | | | | | | | |
| Supported Communication Interfaces | RS485, Ethernet, ZigBee (optional), Cellular (optional) | | | | | | | |
| Revenue Grade Data, ANSI C12.20 | Optional[3] | | | | | | | |
| Rapid Shutdown - NEC 2014 and 2017 690.12 | Automatic Rapid Shutdown upon AC Grid Disconnect | | | | | | | |
| **STANDARD COMPLIANCE** | | | | | | | | |
| Safety | UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07 | | | | | | | |
| Grid Connection Standards | IEEE1547, Rule 21, Rule 14 (HI) | | | | | | | |
| Emissions | FCC Part 15 Class B | | | | | | | |
| **INSTALLATION SPECIFICATIONS** | | | | | | | | |
| AC Output Conduit Size / AWG Range | 3/4" minimum / 14-6 AWG | | | | | 3/4" minimum / 14-4 AWG | | |
| DC Input Conduit Size / # of Strings / AWG Range | 3/4" minimum / 1-2 strings / 14-6 AWG | | | | | 3/4" minimum / 1-3 strings / 14-6 AWG | | |
| Dimensions with Safety Switch (HxWxD) | 17.7 x 14.6 x 6.8 / 450 x 370 x 174 | | | | | 21.3 x 14.6 x 7.3 / 540 x 370 x 185 | | in / mm |
| Weight with Safety Switch | 22 / 10 | | 25.1 / 11.4 | 26.2 / 11.9 | | 38.8 / 17.6 | | lb / kg |
| Noise | < 25 | | | | <50 | | | dBA |
| Cooling | Natural Convection | | | | | | | |
| Operating Temperature Range | -40 to +140 / -25 to +60[4] (-40°F / -40°C option)[5] | | | | | | | °F / °C |
| Protection Rating | NEMA 4X (Inverter with Safety Switch) | | | | | | | |

[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
[3] Revenue grade inverter P/N: SExxxxH-US000NNC2
[4] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf
[5] -40 version P/N: SExxxxH-US000NNU4



RoHS

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|---|---|
| DRAWN DATE | 10/18/2022 |
| DRAWN BY | VR |
| REVIEWED BY | - |

SHEET NUMBER
R-002

# Power Optimizer

## For North America

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


POWER OPTIMIZER

### PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com

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# Power Optimizer

## For North America

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

| Optimizer model (typical module compatibility) | P320 (for 60-cell modules) | P340 (for high-power 60-cell modules) | P370 (for higher-power 60 and 72-cell modules) | P400 (for 72 & 96-cell modules) | P401 (for high power 60 and 72 cell modules) | P405 (for high-voltage modules) | P485 (for high-voltage modules) | P505 (for higher current modules) | |
|---|---|---|---|---|---|---|---|---|---|
| **INPUT** | | | | | | | | | |
| Rated Input DC Power(1) | 320 | 340 | 370 | 400 | | 405 | 485 | 505 | W |
| Absolute Maximum Input Voltage (Voc at lowest temperature) | 48 | | 60 | 80 | 60 | 125(2) | | 83(2) | Vdc |
| MPPT Operating Range | 8 - 48 | | 8 - 60 | 8 - 80 | 8-60 | 12.5 - 105 | | 12.5 - 83 | Vdc |
| Maximum Short Circuit Current (Isc) | 11 | | | 10.1 | 11.75 | 11 | | 14 | Adc |
| Maximum DC Input Current | 13.75 | | | 12.5 | 14.65 | 12.5 | | 17.5 | Adc |
| Maximum Efficiency | 99.5 | | | | | | | | % |
| Weighted Efficiency | 98.8 | | | | | | | 98.6 | % |
| Overvoltage Category | II | | | | | | | | |
| **OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)** | | | | | | | | | |
| Maximum Output Current | 15 | | | | | | | | Adc |
| Maximum Output Voltage | 60 | | | | | 85 | | | 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** | | | | | | | | | |
| EMC | FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3 | | | | | | | | |
| Safety | IEC62109-1 (class II safety), UL1741 | | | | | | | | |
| 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) | | | | | | Single or dual MC4(3)(4) | MC4(3) | |
| Input Wire Length | 0.16 / 0.52 | | | | | | | | m / ft |
| Output Wire Type / Connector | Double Insulated / MC4 | | | | | | | | |
| Output Wire Length | 0.9 / 2.95 | | 1.2 / 3.9 | | | | | | m / ft |
| Operating Temperature Range(5) | -40 - +85 / -40 - +185 | | | | | | | | °C / °F |
| Protection Rating | IP68 / NEMA6P | | | | | | | | |
| 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) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.
(5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

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

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
(7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string
(8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(9) For 208V grid: it is allowed to install up to 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



Intertek RoHS

PALMETTO INSTALLATION HOTLINE
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INSTALLHOTLINE@PALMETTO.COM

PROJECT NAME & ADDRESS
ALFREDO SERRANO RAMIREZ
7118 U.S. 401 S
BUNNLEVEL, NC 28323, USA

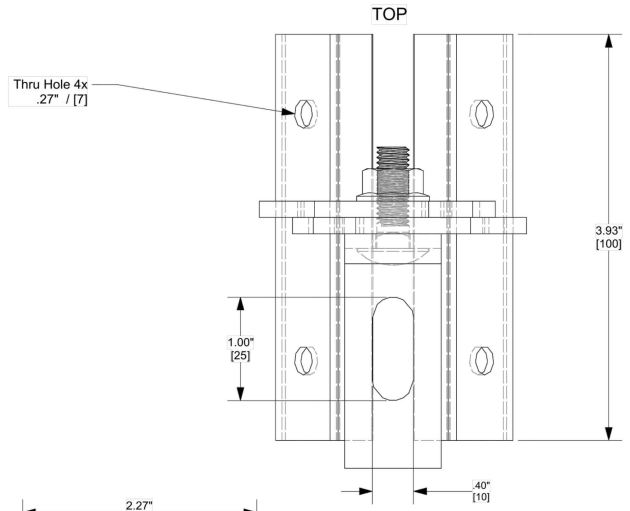
SIGNATURE WITH SEAL

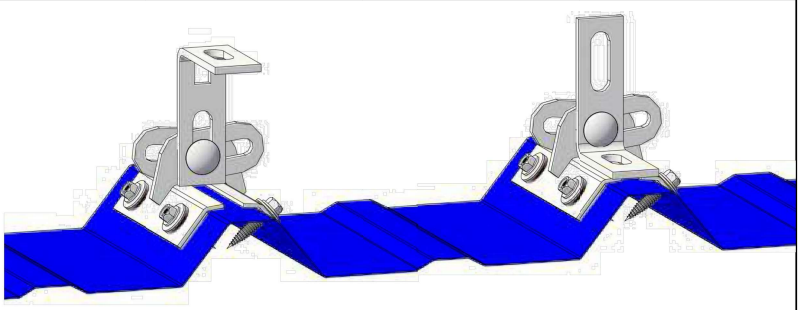
| REVISIONS | REV | DESCRIPTION | DATE |
|---|---|---|---|
| | | | |

SHEET TITLE
RESOURCE DOCUMENT

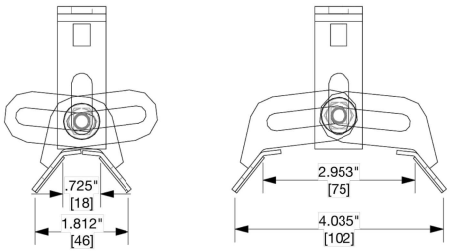
| | |
|---|---|
| DRAWN DATE | 10/18/2022 |
| DRAWN BY | VR |
| REVIEWED BY | - |

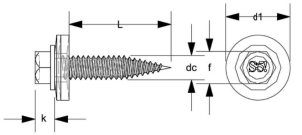
SHEET NUMBER
R-003



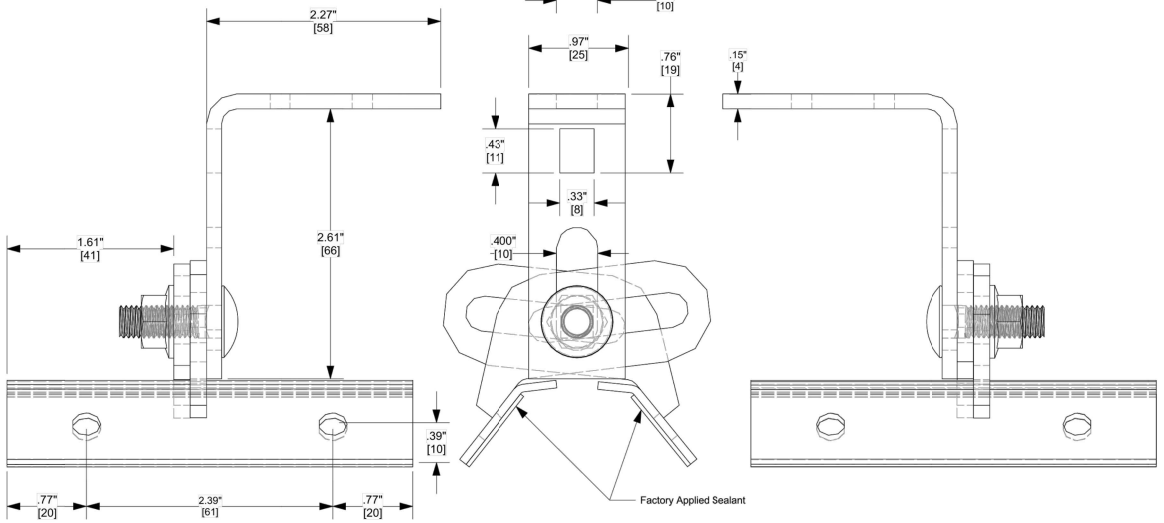
# ProteaBracket




| | k | dc | L | d1 | f |
|---|---|---|---|---|---|
| MM | 3.9 | 6.10-6.25 | 25.4 | 14.7 | 7.8 |
| INCH | .15 | .24-.246 | 1 | .58 | .31 |

**6mm X 25mm (8mm Hex W/16mm Washer)**




**FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST INFORMATION AND CLAMP INSTALLATION INFORMATION PLEASE VISIT: WWW.S-5.COM**

MATERIAL: **A2 Stainless**

EST ASSEMBLY WEIGHT : **.526 lbs**

SUPPLIED HARDWARE:
(4) 6mm X 25mm (8mm Hex W/Washer)
Bi-Metal Sheet Screw

SCALE: **1:1**

OTHER:

S-5! The Right Way!

METAL ROOF INNOVATIONS, LTD.
8655 TABLE BUTTE RD
COLORADO SPRINGS, CO 80908
719-495-0518
719-495-0045 (FAX)

TITLE: S-5! ProteaBracket

DRAWING NO. ProteaBracket_CCD_2015 | DRAWN BY DMMH | DATE 10/5/2015



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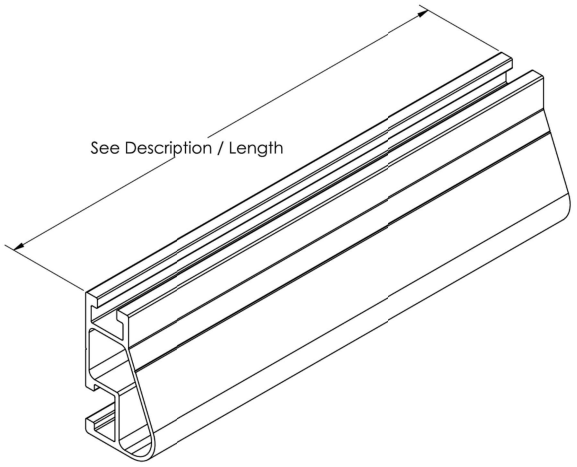
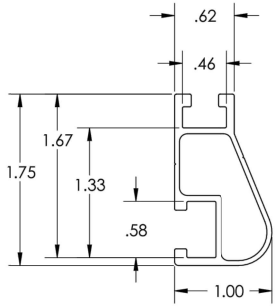
Cut Sheet

IRONRIDGE

# XR10 Rail




| Rail Section Properties | |
|---|---|
| Property | Value |
| Total Cross-Sectional Area | 0.363 $in^2$ |
| Section Modulus (X-axis) | 0.136 $in^3$ |
| Moment of Inertia (X-axis) | 0.124 $in^4$ |
| Moment of Inertia (Y-axis) | 0.032 $in^4$ |
| Torsiond Constant | 0.076 $in^3$ |
| Polar Moment of Inertia | 0.033 $in^4$ |

| Clear Part Number | Black Part Number | Description / Length | Material | Weight |
|---|---|---|---|---|
| XR-10-132A | XR-10-132B | XR10, Rail 132" (11 Feet) | 6000-Series Aluminum | 4.67 lbs. |
| XR-10-168A | XR-10-168B | XR10, Rail 168" (14 Feet) | | 5.95 lbs. |
| XR-10-204A | XR-10-204B | XR10, Rail 204" (17 Feet) | | 7.22 lbs. |

v1.0

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SHEET NUMBER
R-005