

PROJECT DESCRIPTION:

28 x APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
 DC SYSTEM SIZE: 10.220kW DC
 AC SYSTEM SIZE: 10.000kW AC

EQUIPMENT SUMMARY

28 - APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 01 - GINLONG: SOLIS-1P10K-4G-US (240V) INVERTER
 28 - AP SMART RSD-S-PLC RAPID SHUTDOWNS

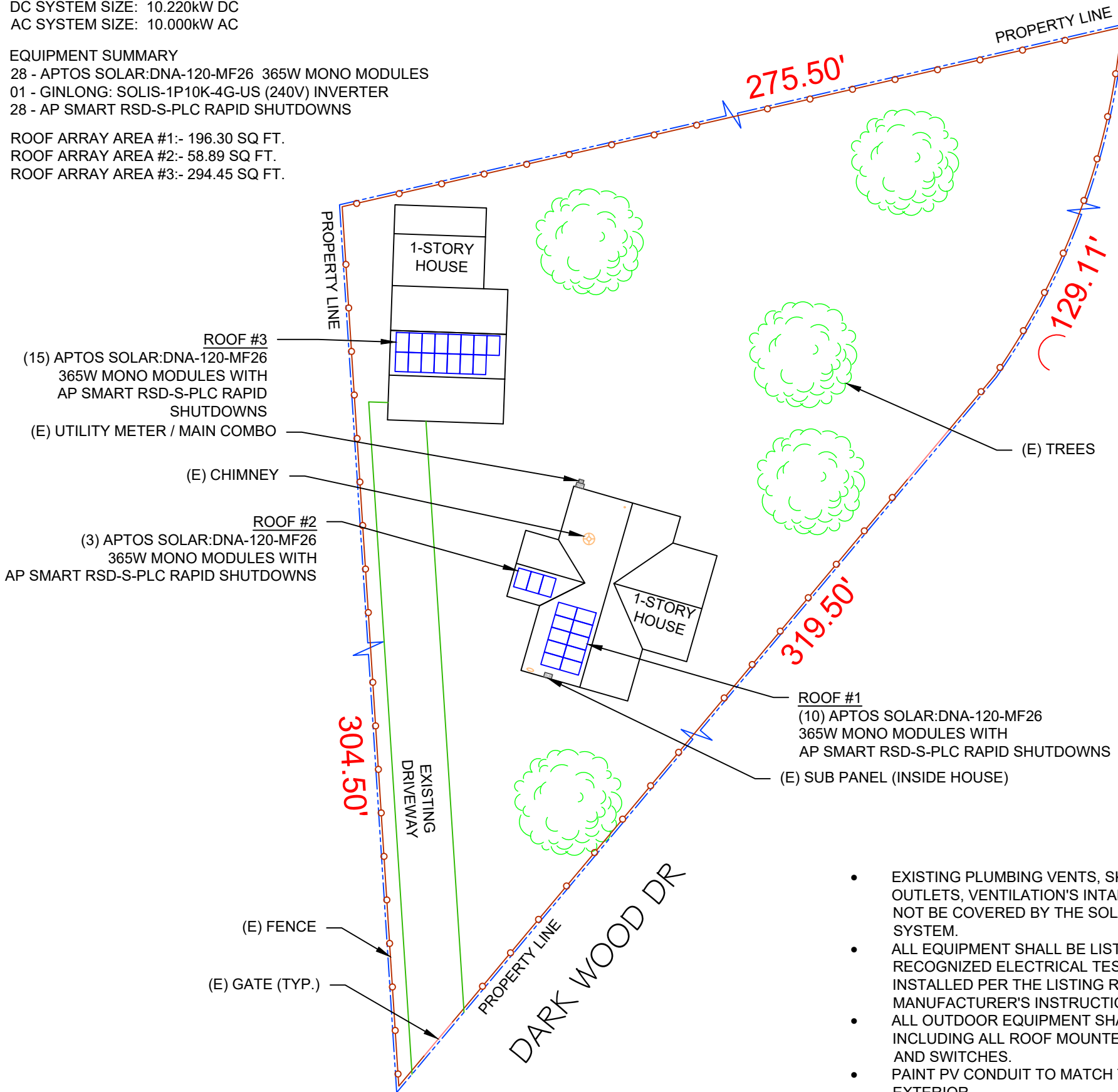
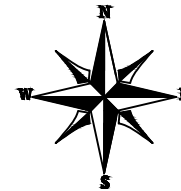
ROOF ARRAY AREA #1:- 196.30 SQ FT.
 ROOF ARRAY AREA #2:- 58.89 SQ FT.
 ROOF ARRAY AREA #3:- 294.45 SQ FT.

AUTHORITIES HAVING JURISDICTION

BUILDING: HARNETT COUNTY
 ZONING: HARNETT COUNTY
 UTILITY: SOUTH RIVER EMC

APPLICABLE CODES & STANDARDS

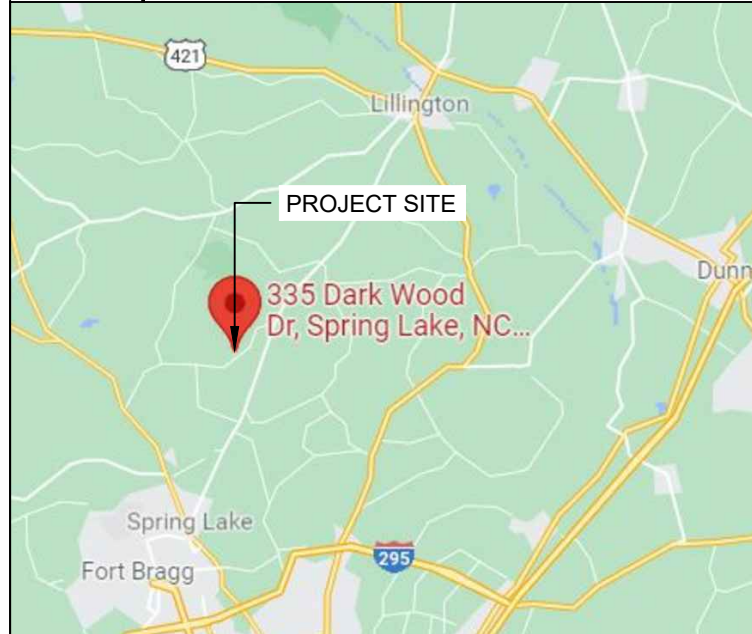
NCBC 2018
 NEC 2017



- EXISTING PLUMBING VENTS, SKYLIGHTS, EXHAUST OUTLETS, VENTILATION'S INTAKE AIR OPENINGS SHALL NOT BE COVERED BY THE SOLAR PHOTOVOLTAIC SYSTEM.
- ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND INSTALLED PER THE LISTING REQUIREMENTS AND THE MANUFACTURER'S INSTRUCTIONS. [NEC 690.4(D)]
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED, INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
- PAINT PV CONDUIT TO MATCH THE DWELLING EXTERIOR.
- CONTACT THE SERVICING UTILITY BEFORE POWERING ON THE PHOTOVOLTAIC SYSTEM
- IFC SETBACKS ARE REQUIRED TO BE DISCUSSED WITH THE AHJ PRIOR TO CONSTRUCTION.



2 HOUSE PHOTO
 PV-1 SCALE: NTS



3 VICINITY MAP
 PV-1 SCALE: NTS

SHEET INDEX

| | |
|-------|---------------------------------------|
| PV-1 | PLOT PLAN, HOUSE PHOTO & VICINITY MAP |
| PV-2 | ROOF PLAN & MODULES |
| PV-2A | STRING LAYOUT |
| PV-3 | ATTACHMENT DETAIL |
| PV-4 | ELECTRICAL LINE DIAGRAM |
| PV-5 | LABELS |
| PV-6 | RAPID SHUTDOWN CHART |
| PV-7+ | EQUIPMENT SPECIFICATIONS |



LuminaSun Smart Home LLC
 344 Rolling Hill Rd #104,
 Mooresville, NC 28117

REVISIONS

| DESCRIPTION | DATE | REV |
|--------------------------|------------|-----|
| INITIAL | 10/21/2021 | |
| SUBPANEL LOCATION CHANGE | 11/05/2021 | A |

SIGNATURE WITH SEAL

DATE:10/21/2021

PROJECT NAME & ADDRESS

THOMAS L SANDERS
335 DARK WOOD DR
SPRING LAKE, NC 28390

DC SIZE:10.220kW
 AC SIZE:10.000kW

DRAWN BY
ESR

SHEET NAME
PLOT PLAN & VICINITY MAP

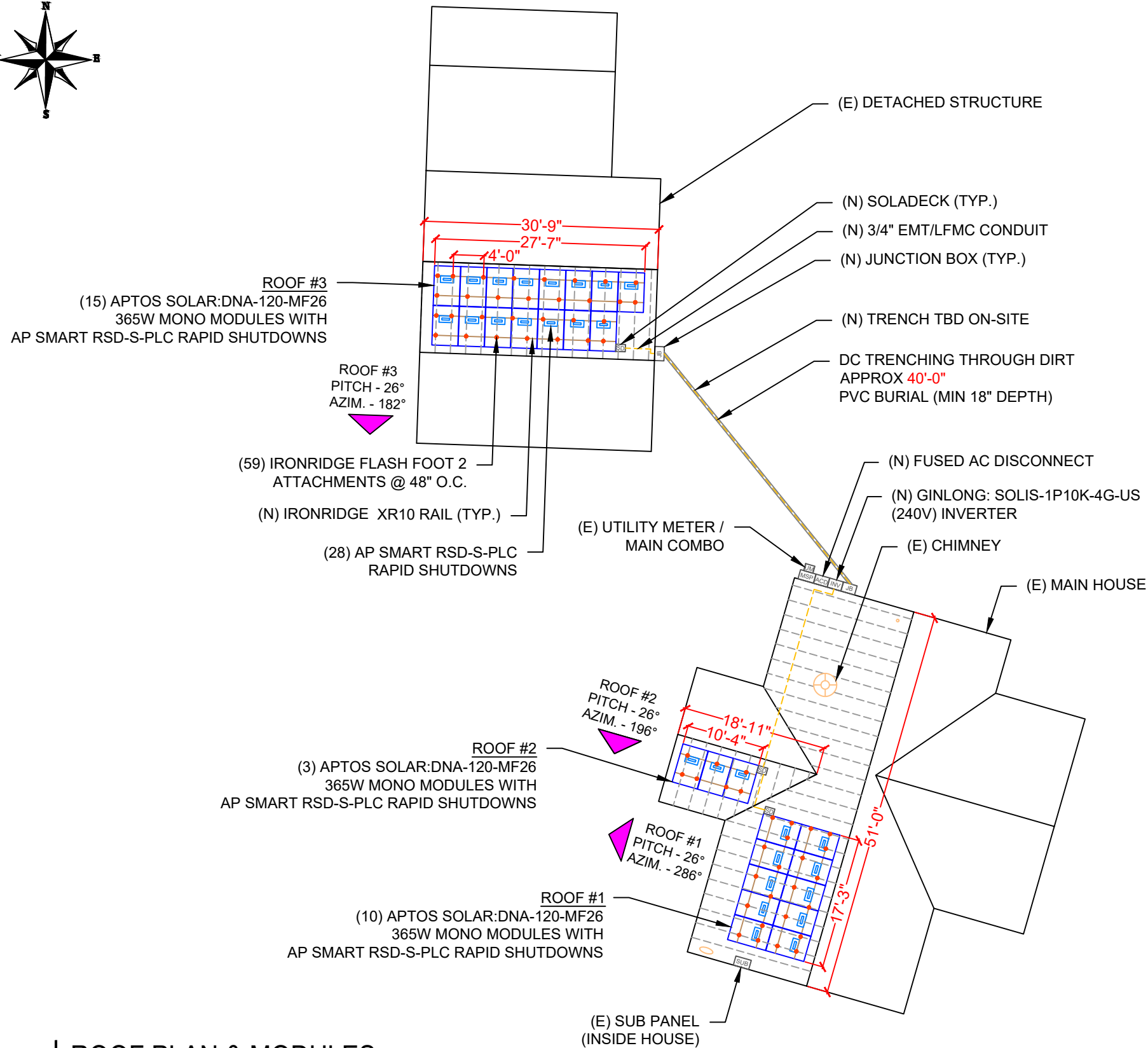
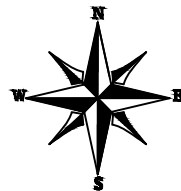
SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-1

1 PLOT PLAN WITH ROOF PLAN
 PV-1 SCALE: 1/32" = 1'-0"

MODULES TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULE = 28 MODULES
 MODULE TYPE = APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 MODULE WEIGHT = 45.19 LBS / 20.5 KG.
 COMPONENT WEIGHT: 1.5 LBS. PER MODULE
 MODULE DIMENSIONS = 69.13"x 40.91" = 19.63 SF
 UNIT WEIGHT OF ARRAY = 2.30 PSF



| ROOF DESCRIPTION | | | | |
|------------------|-----------|---------------------|------------|---------------|
| ROOF TYPE | | COMPOSITION SHINGLE | | |
| ROOF LAYER | | 1 LAYER | | |
| ROOF | ROOF TILT | AZIMUTH | TRUSS SIZE | TRUSS SPACING |
| #1 | 26° | 286° | 2X4 | 24" |
| #2 | 26° | 196° | 2X4 | 24" |
| #3 | 26° | 182° | 2X4 | 24" |

| ARRAY AREA & ROOF AREA CALC'S | | | | |
|-------------------------------|--------------|----------------------|---------------------|--------------------------------|
| ROOF | # OF MODULES | ARRAY AREA (Sq. Ft.) | ROOF AREA (Sq. Ft.) | ROOF AREA COVERED BY ARRAY (%) |
| #1 | 10 | 196.30 | 739.53 | 27 |
| #2 | 3 | 58.89 | 127.79 | 46 |
| #3 | 15 | 294.45 | 366.79 | 80 |

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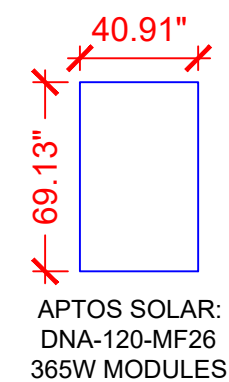
DC SIZE:10.220kW
 AC SIZE:10.000kW

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 ESR

SHEET NAME
 ROOF PLAN & MODULES

SHEET SIZE
 ANSI B
 11" X 17"

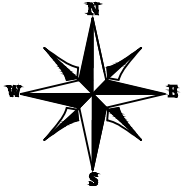
SHEET NUMBER
 PV-2



LEGEND

- [SD] - SOLADECK
- [INV] - INVERTER
- [CB] - COMBINER BOX
- [ACD] - AC DISCONNECT
- [SLD] - SOLAR LOAD CENTER
- [UM] - UTILITY METER
- [MSP] - MAIN SERVICE PANEL
- [] - VENT, ATTIC FAN (ROOF OBSTRUCTION)
- - ROOF ATTACHMENT
- - TRUSS
- - CONDUIT

| STRING LEGENDS | |
|----------------|-----------|
| | STRING #1 |
| | STRING #2 |
| | STRING #3 |
| | STRING #4 |



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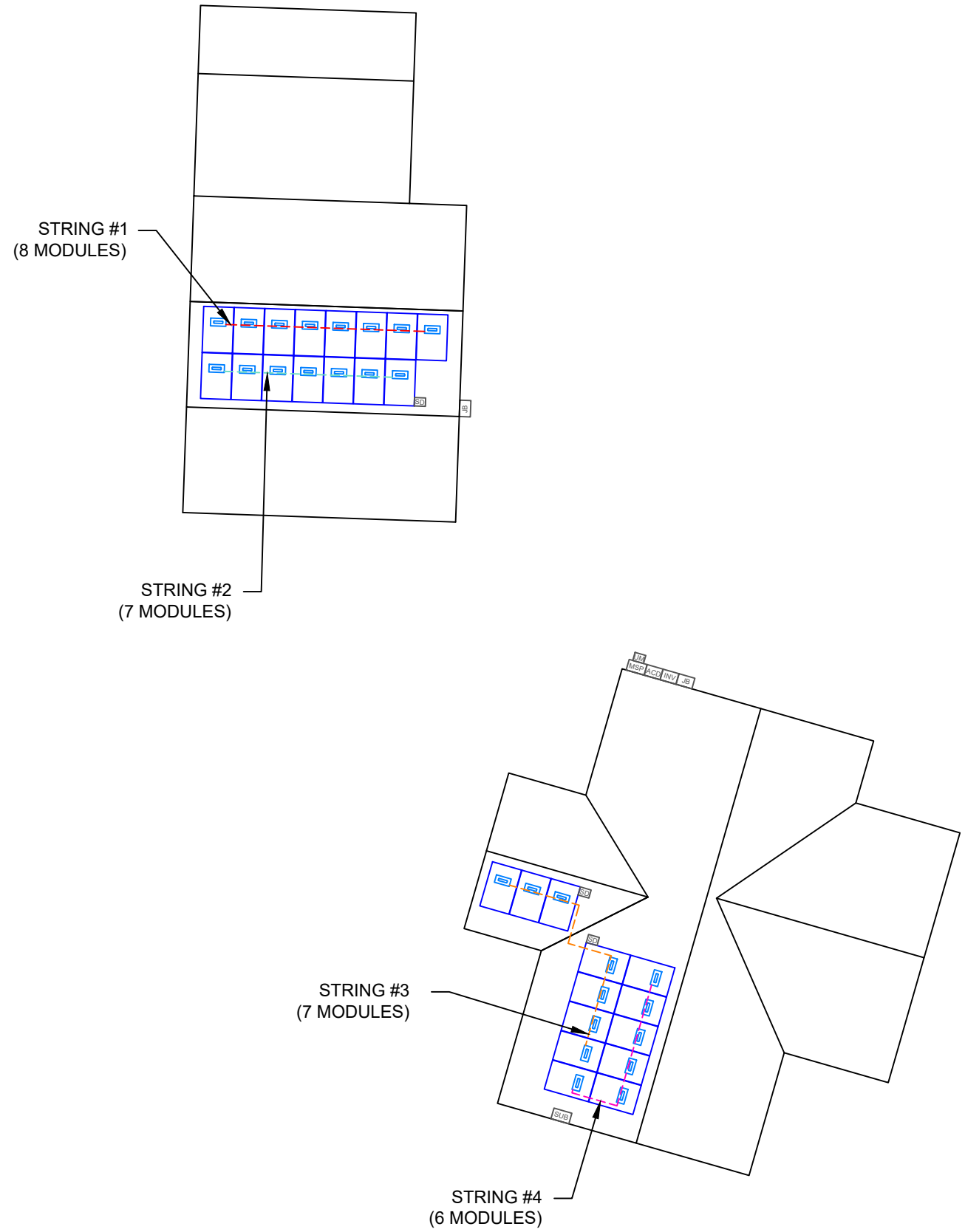
DC SIZE:10.220kW
 AC SIZE:10.000kW

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ESR

SHEET NAME
STRING LAYOUT

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

SHEET NUMBER
PV-2A



1 | **ARRAY PLAN WITH STRING LAYOUT**
 PV-2A | SCALE: 1/16" = 1'-0"



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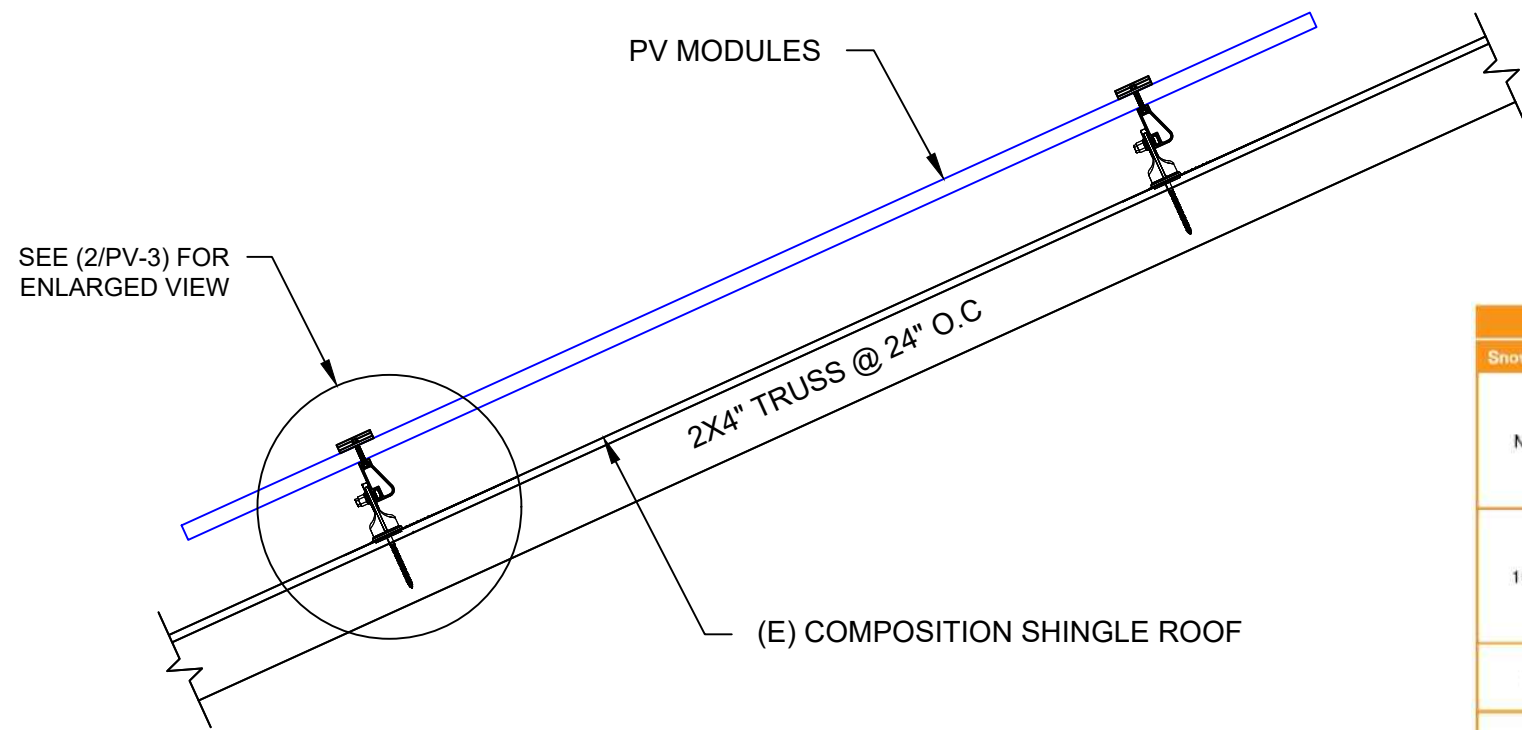
ATTACHMENT
DETAIL

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-3

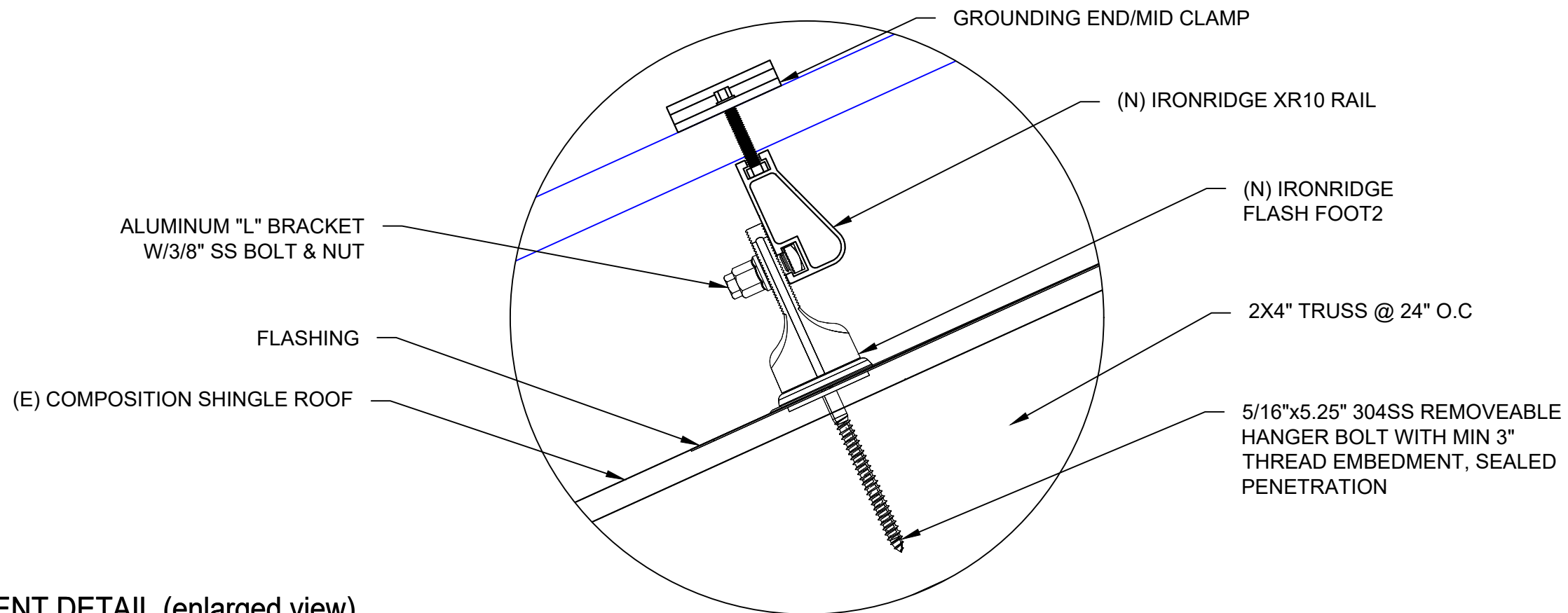


| Load | | Rail Span | | | | | |
|------------|------------|-----------|-------|-------|----|--------|-----|
| Snow (PSF) | Wind (MPH) | 4' | 5' 4" | 6' | 8' | 10' | 12' |
| None | 100 | | | | | | |
| | 120 | | | | | | |
| | 140 | XR10 | | | | XR1000 | |
| | 160 | | | XR100 | | | |
| 10-20 | 100 | | | | | | |
| | 120 | | | | | | |
| | 140 | | | | | | |
| | 160 | | | | | | |
| 30 | 100 | | | | | | |
| | 160 | | | | | | |
| 40 | 100 | | | | | | |
| | 160 | | | | | | |
| 50-70 | 160 | | | | | | |
| 80-90 | 160 | | | | | | |

1 ATTACHMENT DETAIL

PV-3

SCALE: NTS



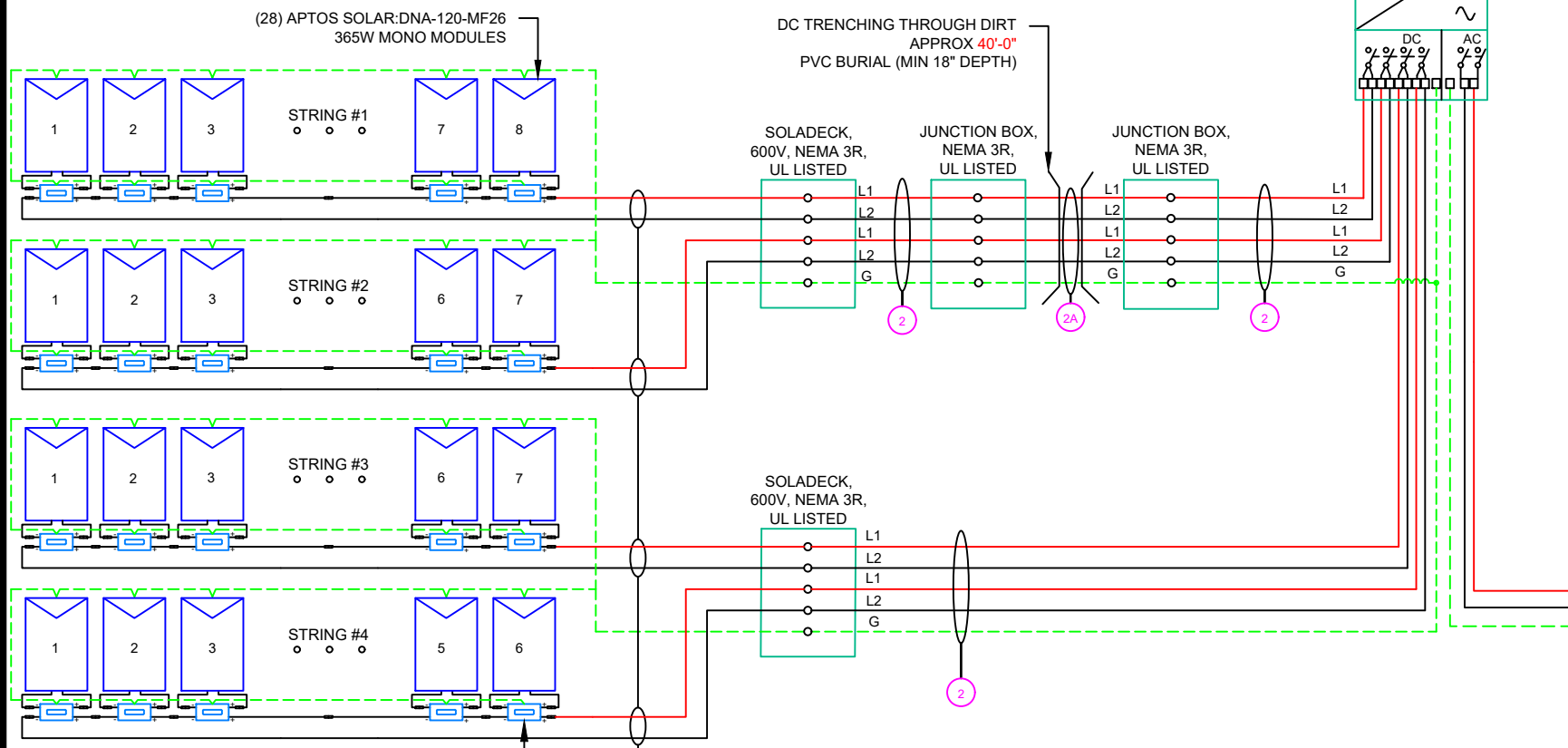
2 ATTACHMENT DETAIL (enlarged view)

PV-3

SCALE: NTS

DC SYSTEM SIZE: 10.220kW DC
 AC SYSTEM SIZE: 10.000kW AC

(28) APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 (1) STRING OF 8 MODULES,
 (2) STRINGS OF 7 MODULES AND
 (1) STRING OF 6 MODULES CONNECTED IN SERIES

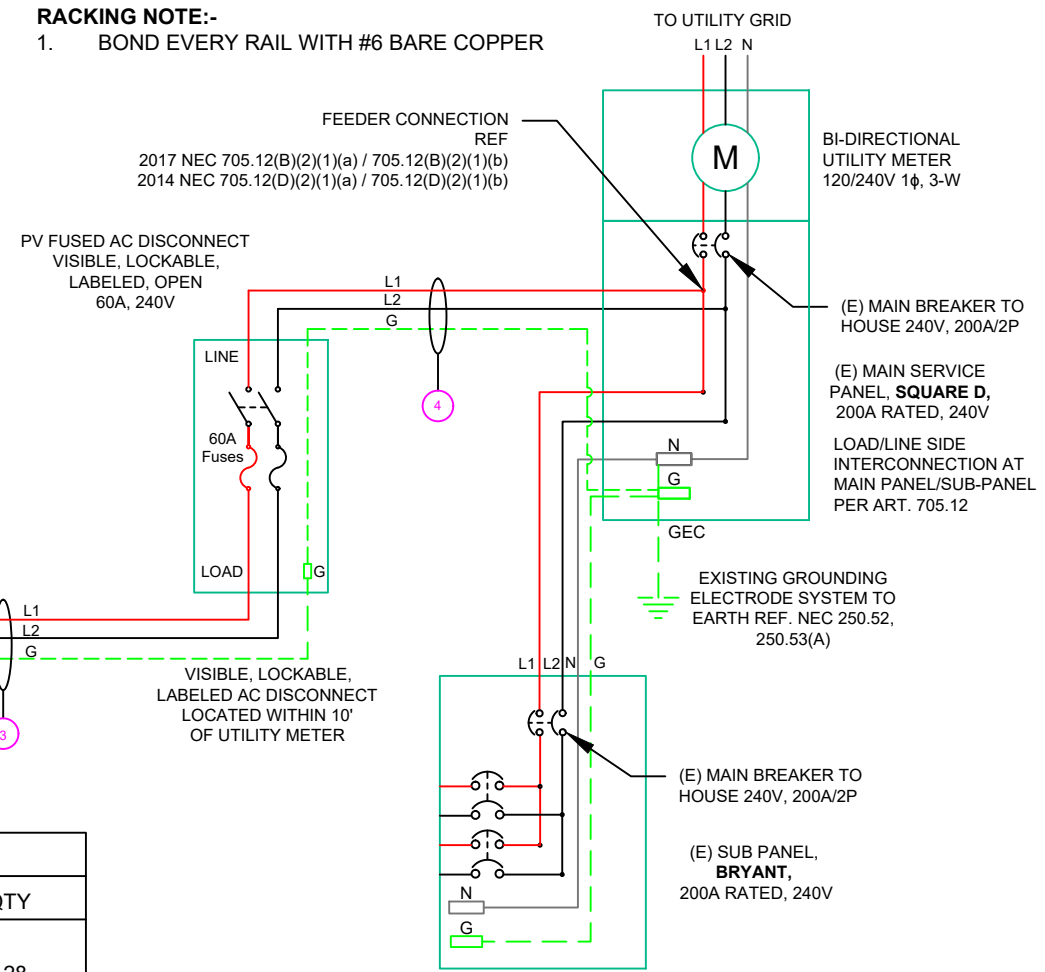


NOTE:-

1. RACEWAYS AND CABLES EXPOSED TO SUNLIGHT ON ROOFTOPS SHOULD BE INSTALLED MORE THAN 7/8" ABOVE THE ROOF USING CONDUIT SUPPORTS.
2. TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.
3. THE GINLONG SOLIS INVERTER MONITORS VOLTAGE BETWEEN THE L1 AND L2, THE NEUTRAL CONDUCTOR IS OPTIONAL WHEN TYING THE INVERTER TO A 240V GRID (240 3Y SYSTEM). GROUND MUST BE CONNECTED TO THE PE TERMINAL. (REF: SHEET PV-10 FOR INSTALLATION MANUAL)

RACKING NOTE:-

1. BOND EVERY RAIL WITH #6 BARE COPPER



AP SMART RSD-S-PLC RAPID SHUTDOWNS
 INPUT OPERATING VOLTAGE RANGE : 8-80V
 MAX CONT. INPUT CURRENT : 15A
 MAX INPUT POWER: 800W
 OUTPUT OPERATING VOLTAGE RANGE : 8-80V
 OUTPUT POWER RANGE : 0-800W
 MAXIMUM SYSTEM VOLTAGE : 1000V/1500V

| ELECTRICAL EQUIPMENT LIST | | | |
|---------------------------|--------------------|--|-----|
| # | ITEM | DESCRIPTION | QTY |
| 1 | PV MODULE | APTOS SOLAR:DNA-120-MF26 365W MONO MODULES VOC =40.7 V, VMP = 33.96 V ISC = 11.36A, IMP = 10.75A | 28 |
| 2 | INVERTER | GINLONG: SOLIS-1P10K-4G-US INVERTER OUTPUT: 240 VAC, 41.7A 97.5% CEC WEIGHTED EFFICIENCY NEMA 4X, UL LISTED, 10000W AC CONTINUOUS SUNSPEC RAPID SHUTDOWN CERTIFIED | 01 |
| 3 | SOLADECKS | SOLADECKS 600V, NEMA 3R UL LISTED | 03 |
| 4 | JUNCTION BOX | 6"x6"x4" UL LISTED, STEEL WATER TIGHT NEMA TYPE 3 | 02 |
| 5 | AC DISCONNECT | EATON AC DISCONNECT: 60A FUSED, (1) 60A FUSES, 240V NEMA 3R, UL LISTED | 01 |
| 6 | MAIN SERVICE PANEL | (E) MAIN SERVICE PANEL AND METER: 200A MAIN BUSBAR W/(E) 200A MAIN BREAKER | 01 |
| 7 | PV METER | PV UTILITY METER KWH METER FORM 2S 100A/240V MILBANK CAT#U5929-XL OR EQUIV | 0 |
| 8 | RAPID SHUTDOWN | AP SMART RSD-S-PLC RAPID SHUTDOWNS INPUT OPERATING VOLTAGE RANGE : 8-80V MAX CONT. INPUT CURRENT : 15A MAX INPUT POWER: 800W OUTPUT OPERATING VOLTAGE RANGE : 8-80V OUTPUT POWER RANGE : 0-800W MAXIMUM SYSTEM VOLTAGE : 1000V/1500V | 28 |

| QTY | CONDUCTOR INFORMATION | CONDUIT TYPE | CONDUIT SIZE |
|-----|-----------------------------------|----------------------------|--------------|
| (8) | CU#10AWG - PV WIRE/USE-2 | N/A | N/A |
| (1) | CU#6AWG - BARE COPPER IN FREE AIR | N/A | N/A |
| (4) | CU#10AWG - THWN-2 (L1,L2) | EMT OR LFMC IN ATTIC | 3/4" |
| (1) | CU#10AWG - THWN-2 GND | EMT OR LFMC IN ATTIC | 3/4" |
| (4) | CU#10AWG - THWN-2 (L1,L2) | PVC BURIAL (MIN 18" DEPTH) | 3/4" |
| (1) | CU#10AWG - THWN-2 GND | PVC BURIAL (MIN 18" DEPTH) | 3/4" |
| (2) | CU#6AWG - THWN-2 (L1,L2) | EMT, LFNC OR LFMC | 3/4" |
| (1) | CU#6AWG - THWN-2 GND | EMT, LFNC OR LFMC | 3/4" |
| (2) | CU#6AWG - THWN-2 (L1,L2) | EMT, LFNC OR LFMC | 3/4" |
| (1) | CU#6AWG - THWN-2 GND | EMT, LFNC OR LFMC | 3/4" |

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DC SIZE:10.220kW
 AC SIZE:10.000kW

DRAWN BY
 ESR

SHEET NAME
 ELECTRICAL LINE DIAGRAM

SHEET SIZE
 ANSI B
 11" X 17"

SHEET NUMBER
 PV-4

LABEL 1

On all conduits spaced at Max 10ft

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

LABEL 2

At AC Disconnect **AND** MEP

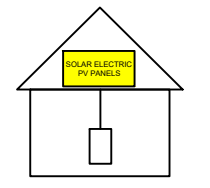
**CAUTION: SOLAR ELECTRIC
SYSTEM CONNECTED**

LABEL 3

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 4

At DC Disconnect

**PHOTOVOLTAIC
DC DISCONNECT**

LABEL 5

At each AC Disconnect

WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

LABEL 6

At each AC Disconnect

**PHOTOVOLTAIC SYSTEM
AC DISCONNECT**
OPERATING VOLTAGE **240.00** VOLTS
OPERATING CURRENT **41.70** AMPS

LABEL 7

At AC Disconnect **AND** MEP

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL 8

At Main Service Panel

WARNING
**TURN OFF PHOTOVOLTAIC
AC DISCONNECT PRIOR TO
WORKING INSIDE PANEL**

LABEL 9

At Utility Meter

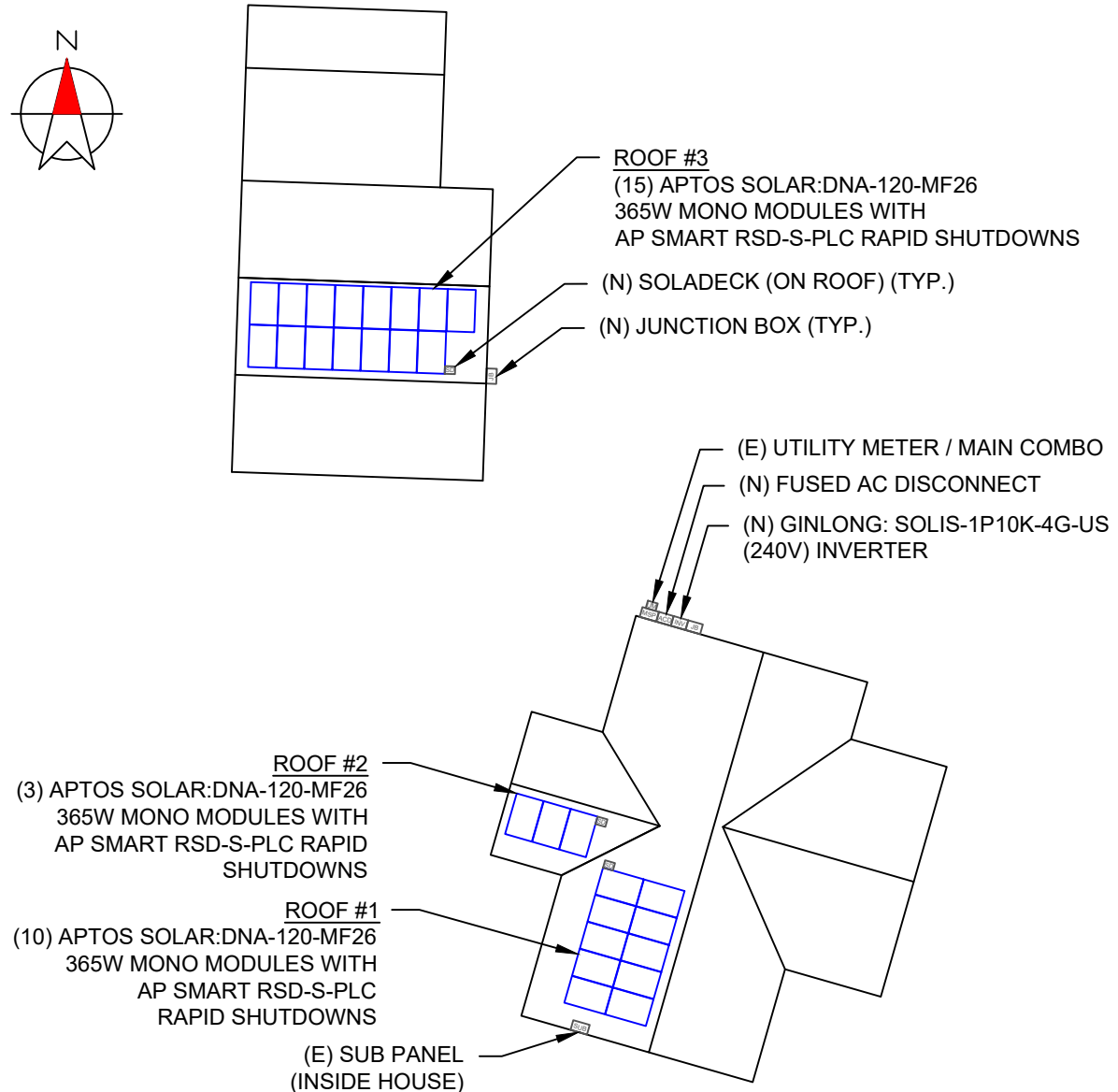
WARNING
**THIS SERVICE METER
IS ALSO SERVED BY A
PHOTOVOLTAIC SYSTEM**

NOTES

1. NEC ARTICLES 690 AND 705 AND CRC SECTION R324 MARKINGS SHOWN HEREON
2. ALL MARKINGS SHALL CONSIST OF THE FOLLOWING:
 - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING
 - B. RED BACKGROUND COLOUR WITH WHITE TEXT AND LINE WORK
 - C. ARIAL FONT
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATION SPECIFIED
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT USING POP-RIVETS OR SCREW
5. PLACARD ONLY REQUIRED WHEN PV UTILITY DISCONNECT & METER ARE NOT CO-RELATED WITH SES

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM MULTIPLE
SOURCES OF POWER WITH SAFETY DISCONNECTS AS SHOWN:



335 DARK WOOD DR, SPRING LAKE, NC 28390

"WARNING"
PHOTOVOLTAIC ARRAY
DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY
OR INVERTER



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SHEET NAME

LABELS

SHEET SIZE

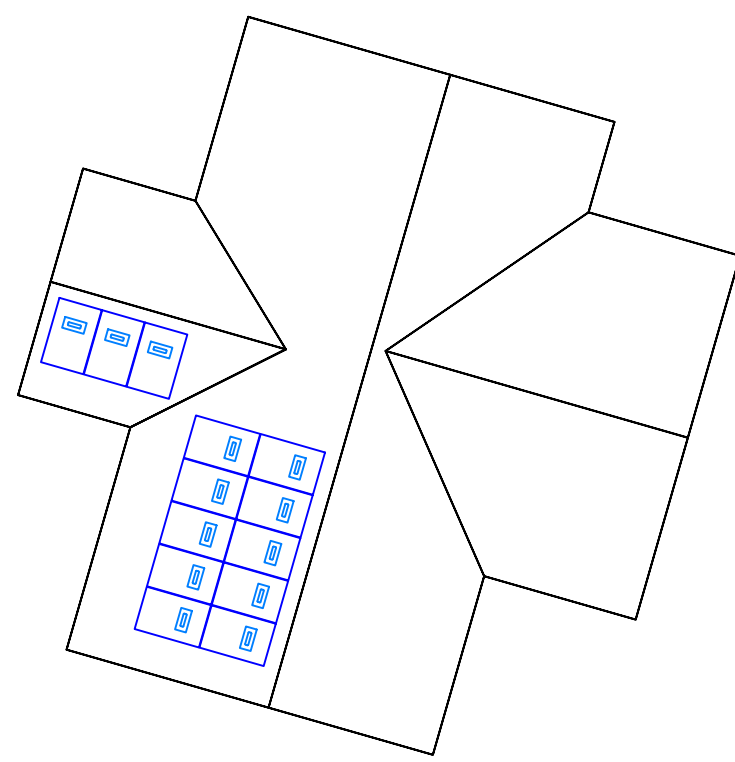
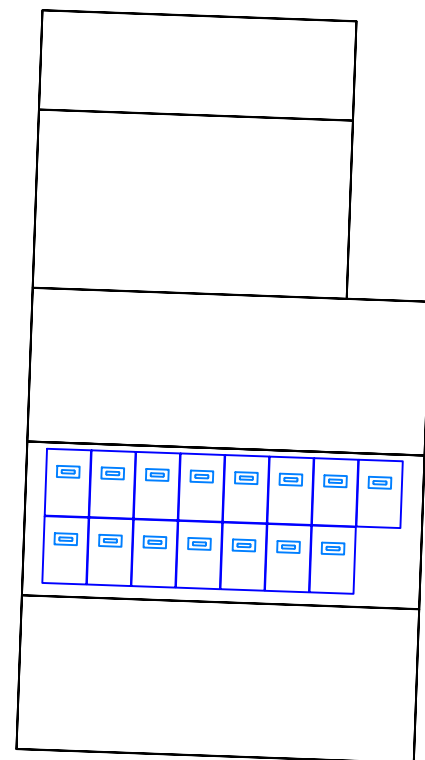
ANSI B
11" X 17"

SHEET NUMBER

PV-5

RAPID SHUTDOWN CHART

| | 1-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 |
|----|------|-------|-------|-------|-------|-------|-------|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |



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RAPID SHUTDOWN CHART

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

DNA™ 120

Solar for Innovators


DNA™ 120


Solar for Innovators


Residential | Commercial

Designed & Engineered in Silicon Valley 370W | 365W | 360W

Our DNA™ Split Cell Series impressively combines advanced solar technologies to maximize performance. Our patented Dual Nano Absorber (DNATM) Technology allows the panel to operate at high-efficiencies in extreme temperatures. Contact our sales team today to learn more about our line of high-efficiency solar panels.

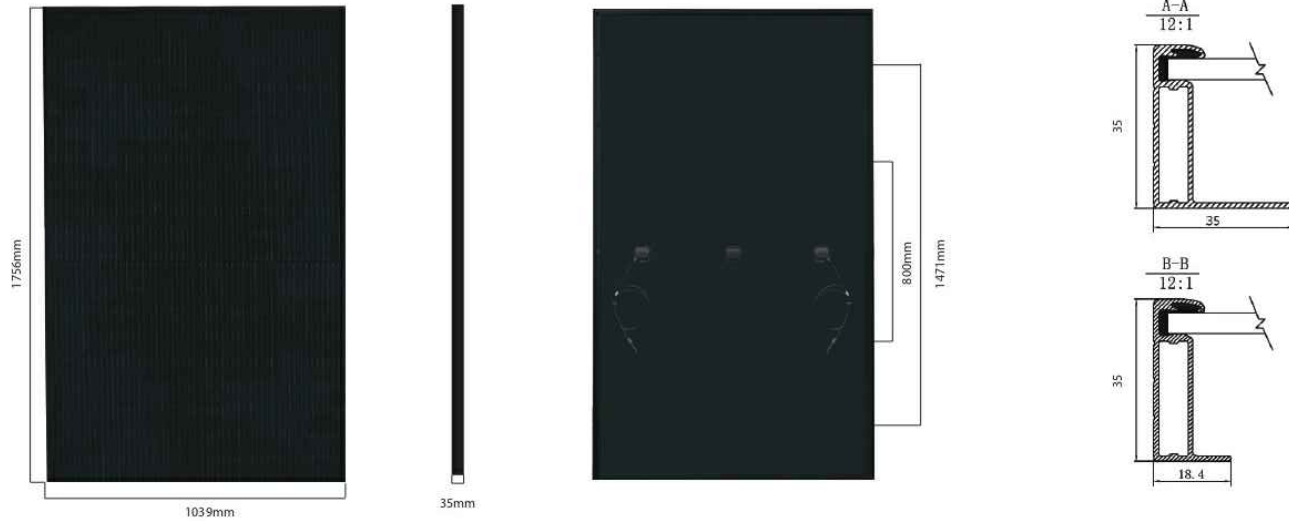
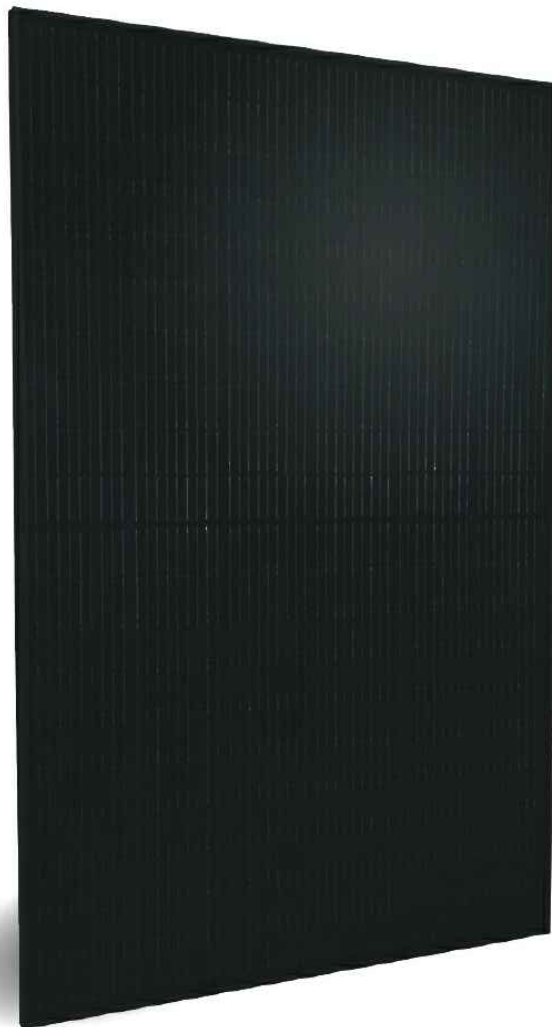
 Patented DNA™ technology boosts power performance & module efficiency

 Advanced split cell technology with 9 ultra-thin busbars allows for less resistance and more photon capture

 Ideal solution for applications affected by shading

 All-black design for pristine aesthetics
No excessive silver bussing or ribbons

 Robust product design is resilient in extreme weather. Up to 5400 Pa snow load and 210 mph wind speeds



| Electrical Specifications | DNA-120-MF26-360W | DNA-120-MF26-365W | DNA-120-MF26-370W |
|------------------------------------|-------------------|-------------------|-------------------|
| STCrated Output P_{mpo} (W) | 360W | 365W | 370W |
| Module Efficiency | 19.73% | 20.01% | 20.29% |
| Open Circuit Voltage V_{oc} (V) | 40.6 | 40.7 | 40.8 |
| Short Circuit Current I_{sc} (A) | 11.24 | 11.36 | 11.51 |
| Rated Voltage V_{mpo} (V) | 33.8 | 33.96 | 34.06 |
| Rated Voltage I_{mpo} (A) | 10.66 | 10.75 | 10.87 |

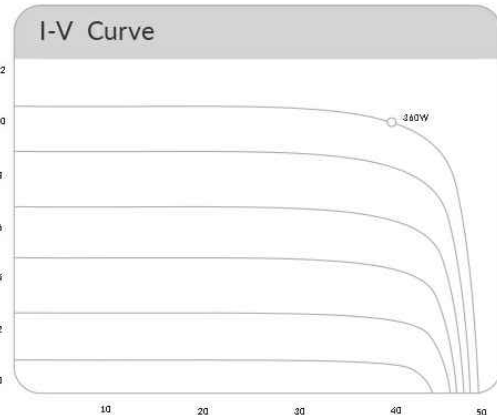
Standard Test Conditions for front-face of panel: 1000 W/m², 25°C, measurement uncertainty ±3%

| Temperature Coefficients | |
|--|-----------|
| Temperature Coefficients P_{mpo} | -0.36% |
| Temperature Coefficients I_{sc} | +0.05%/°C |
| Temperature Coefficients V_{oc} | -0.29%/°C |
| Normal Operating Cell Temperature (NOCT) | 44°C |

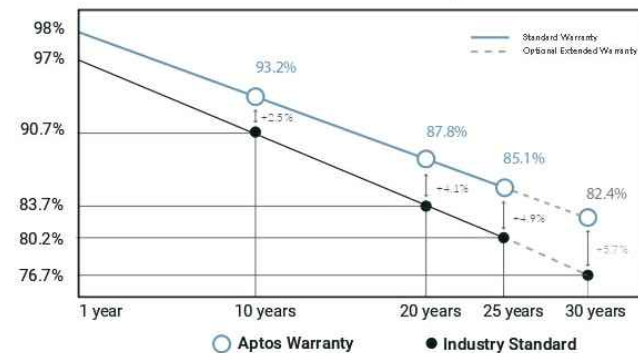
| Test Operating Conditions | |
|-------------------------------------|--|
| Maximum Series Fuse | 20A |
| Maximum System Voltage | 1,500 VDC (UL&IEC) |
| Maximum Load Capacity (Per UL 1703) | 5400 PA Snow Load / 210mph Wind Rating |
| Fire Performance Class | Class C/Type 1 |

| Packaging Configuration | |
|---------------------------------------|--------------------|
| Number of Modules per Pallet | 30 |
| Number of Pallets per 40ft. Container | 26 |
| Pallet Dimensions | 1740 X 1140 X 1165 |
| Pallet Weight (kg) | 640 |
| Container Weight (kg) | 16640 |

| Mechanical Properties | |
|-----------------------|---|
| Cell Type | Monocrystalline |
| Glass | 3.2mm, anti-reflection coating, high transmission, low iron, tempered glass |
| Frame | Anodized Aluminum Alloy |
| Junction Box | IP68 |
| Dimensions | 1756 X 1039 X 35mm |
| Output Cable | 4mm ² (EU)12AWG.39.37in.(1200mm) |
| Weight | 45.19lbs.(20.5kg) |
| Cable Length | 1200mm |
| Encapsulant | POE |



Linear Performance Warranty



30 Year
Warranty

3X IEC
Standards

RETC Top
Performer



3140 De La Cruz Blvd., Ste 200
Santa Clara, CA 95054
www.aptossolar.com
info@aptossolar.com

Aptos Solar Technology reserves the right to make specification changes without notice



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DATE:10/21/2021

PROJECT NAME & ADDRESS

THOMAS L SANDERS
335 DARK WOOD DR
SPRING LAKE, NC 28390

DC SIZE:10.220kW

AC SIZE:10.000kW

DRAWN BY

ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7



Raising the bar in innovative
DC MLPE solar power systems



RSD-S-PLC

- Meets NEC 2017 (690.12) requirements
- Executes rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements

RSD-S-PLC Technical Data

| Model | RSD-S-PLC |
|---------------------------------------|--|
| Input Data (DC) | |
| Input operating Voltage Range | 8-80V |
| Maximum Cont. Input Current (Imax) | 15A |
| Maximum Input Power | 800W |
| Output Data (DC) | |
| Output operating Voltage Range | 8-80V |
| Output Power Range | 0-800W |
| Maximum System Voltage | 1000V/1500V |
| Mechanical Data | |
| Operating Ambient Temperature Range | -40 °C to + 85 °C (-40 °F to +185 °F) |
| Dimensions (without cable&connectors) | 5" x 1.2" x 0.6"(129 mm x 30 mm x 16 mm) |
| Cable length | Input 250mm/Output 1200mm |
| Module Connector | MC4 |
| Enclosure Rating | Type 6P / IP68 |
| Overtemperature protection | Yes |
| Features & Compliance | |
| Communication | PLC |
| Safety Compliance | NEC 2017 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1; 2PFG2305 |
| EMC Compliance | FCC Part15; ICES-003; IEC/EN61000-6-1/-2/-3/-4 |

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2020-03-17



LuminaSun Smart Home LLC
344 Rolling Hill Rd #104,
Mooresville, NC 28117

REVISIONS

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PV-8



Solis-1P(6-10)K-4G-US

Solis 4G Single Phase US Inverters



Features:

- ▶ CA Rule 21 Phase I and II compliant (ready for Phase III) and UL 1741 (SA) certified
- ▶ Sunspec communication protocol with optional cellular and Wi-Fi interface
- ▶ Built-in Module Level Rapid Shutdown transmitter, NEC 2017:690.12 compliance
- ▶ Optional Built-in Revenue Grade Meter, ANSI C12.20-2010 compliance
- ▶ Industry-leading 3 and 4 MPPT designs
- ▶ Integrated Arc Fault Circuit Interrupt (AFCI)
- ▶ 97.8% peak efficiency (97.5% CEC efficiency)
- ▶ 10 years standard warranty with extension options

Model:

- Solis-1P6K-4G-US Solis-1P7K-4G-US
- Solis-1P7.6K-4G-US Solis-1P8K-4G-US
- Solis-1P8.6K-4G-US Solis-1P9K-4G-US
- Solis-1P10K-4G-US



Datasheet

| Model | Solis-1P6K-4G-US | Solis-1P7K-4G-US | Solis-1P7.6K-4G-US | Solis-1P8K-4G-US | Solis-1P8.6K-4G-US | Solis-1P9K-4G-US | Solis-1P10K-4G-US |
|---|--|------------------|--------------------|-------------------|--------------------|------------------|-------------------|
| DC Values | | | | | | | |
| Max. DC input power (watts) | 7200 | 8400 | 9100 | 9600 | 9900 | 10800 | 11500 |
| Max. voltage (volts) | | | | 600 | | | |
| Rated voltage (volts) | | | | 330 | | | |
| Startup voltage (volts) | | | | 120 | | | |
| Operating MPPT voltage range (volts) | | | | 100-500 | | | |
| Max. usable input current per MPPT (amps) | 3*10 | | | 4*10 | | | |
| Max. short circuit input current (amps) | 3*15.6 | | | 4*15.6 | | | |
| Number of MPPTs/Max. input strings number | 3/3 | | | 4/4 | | | |
| AC Values | | | | | | | |
| Nominal and max. output power 240V grid (watts) | 6000 | 7000 | 7600 | 8000 | 8600 | 9000 | 10000 |
| Nominal and max. output power 208V grid (watts) | 6000 | 7000 | 7600 | 8000 | 8600 | 9000 | 9000 |
| Nominal grid voltage (volts) | 240/208 | | | | | | |
| Nominal grid frequency (hertz) | 60 | | | | | | |
| Operating phase | Single Phase | | | | | | |
| Max. output current for 240V grid (amps) | 25 | 29.2 | 31.7 | 33.3 | 35.8 | 37.5 | 41.7 |
| Max. output current for 208V grid (amps) | 28.8 | 33.7 | 36.5 | 38.5 | 41.3 | 43.3 | 43.3 |
| Output power factor | >0.99 | | | | | | |
| Output power factor range | 0.8 leading ... 0.8 lagging | | | | | | |
| Grid current THD | <3% | | | | | | |
| Efficiency | | | | | | | |
| Peak efficiency | 97.8% | | | | | | |
| CEC weighted efficiency | 97.5% | | | | | | |
| MPPT efficiency | >99.5% | | | | | | |
| Protection | | | | | | | |
| DC reverse-polarity protection | Yes | | | | | | |
| AC short circuit protection | Yes | | | | | | |
| AC output overcurrent protection | Yes | | | | | | |
| Output overvoltage protection-Varistor | Yes | | | | | | |
| Ground fault monitoring | Yes | | | | | | |
| Grid monitoring | Yes | | | | | | |
| Islanding protection | Yes | | | | | | |
| Integrated AFCI (DC arc-fault circuit protection) | Yes | | | | | | |
| Integrated DC switch | Yes | | | | | | |
| Rapid shutdown | Yes | | | | | | |
| General Data | | | | | | | |
| Dimensions (width*height*depth) | 13.5*28.8*9.8in (342*732*249 mm) | | | | | | |
| Weight | 45.2lbs (20.5 kgs) | | | 45.6lbs (20.7kgs) | | | |
| Topology | Transformerless | | | | | | |
| Internal consumption | <1W (night) | | | | | | |
| Ambient operating temperature range | -13°F to 140°F (-25°C to 60°) | | | | | | |
| Enclosure type | NEMA 4X | | | | | | |
| Noise emission (typical) | <30dB(A) | | | | | | |
| Cooling concept | Natural convection | | | | | | |
| Max. operating altitude without derating | 13, 120ft (4000m) | | | | | | |
| Designed lifetime | >20years | | | | | | |
| Compliance | L 1741, UL 1741 SA, Rule 21 Phase I and II compliant (ready for Phase III), UL 1998, UL 1699B, IEEE 1547, FCC Part 15 (Class A & B), CAN/CSA C22.2 107.1-1 | | | | | | |
| Features | | | | | | | |
| RGM | Optional | | | | | | |
| Communication protocol | Modbus RTU (Sunspec compliant) | | | | | | |
| Communication | Optional cellular and Wi-Fi | | | | | | |
| Connections | 2 knockout for 1" conduit at bottom, 4 knockout for 3/4" conduit at side and back | | | | | | |
| Display | LCD-2*20 Z | | | | | | |
| Warranty | 10 Years standard (extend able to 20 years) | | | | | | |



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SPRING LAKE, NC 28390

DC SIZE:10.220kW

AC SIZE:10.000kW

DRAWN BY

ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

4. Installation

| Cable type | Cross section | |
|--|-----------------------|-------------------|
| | Range | Recommended value |
| Industry generic PV cable (model:PV1-F) | 4.0~6.0 (12~10AWG) | 4.0 (12AWG) |

▲ Table 4.1 DC cable size



Damage to the DC Disconnect due to enlarged knockouts.
Enlarged knockouts enable moisture to penetrate the DC Disconnect which could damage electronic components in the DC Disconnect.

Please refer to figure 4.9, The acceptable wire size range is from **12 AWG to 8 AWG**, copper conductors only; refer to local code for appropriate wire size.

4.3.3 Connect Grid Side of Inverter

The Ginlong Solis 6-10kW Single Phase inverters can be connected to a 208V or 240V grid.
The default setting is for a 240VAC single phase grid. Since the inverter monitors voltage between L1 and L2, the neutral conductor can be connected or not connected when tying the inverter to a 240V grid. Ground must be connect to the PE terminal.

| Cable type | Cross section | |
|-----------------------------|----------------------------------|----------------------------------|
| | Range | Recommended value |
| Industry generic grid cable | 4~25mm ² (12~4AWG) | 10-25mm ² (8-4AWG) |

▲ Table 4.2 Grid cable size

There are two cable connection point for each phase, one for grid, one for AC power of RSD.

| GRID STANDARD | 208V~ 3PH-Δ-3W | | | 240V~ SPLIT-PHASE | | |
|------------------------|-------------------|-----|----|----------------------|-----|----------|
| | L1 | L2 | N | L1 | L2 | N |
| TERMINAL | L1 | L2 | N | L1 | L2 | N |
| Connection requirement | Yes | Yes | No | Yes | Yes | Optional |

▲Table 4.3 Grid Terminal Connection

4. Installation

4.3.4 Ground Connection

Internal ground connection point

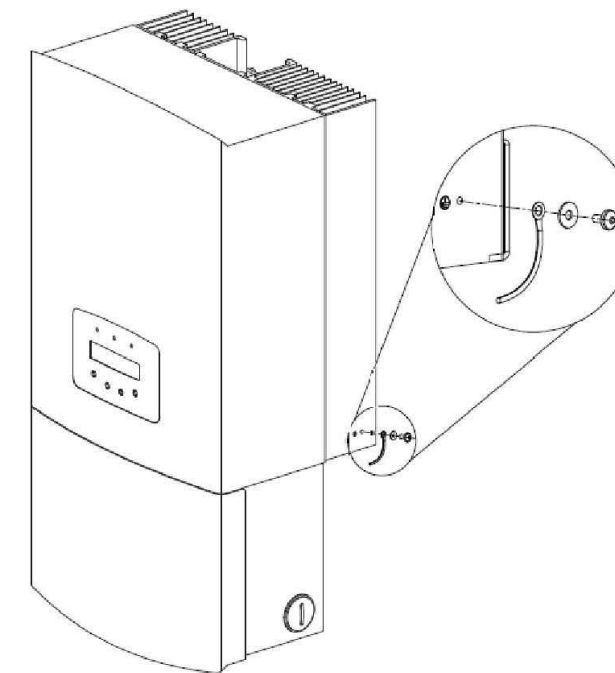
Please see figure 4.10. Both DC and AC ground cable can be connect to ground terminal Above DC switch. The acceptable wire size for ground is **12AWG to 4 AWG**. The torque is 26 in-lbs (3 Nm) .



▲ Figure 4.10 Grounding Terminal on Heat-Sink

External ground connection point

An external ground connection is provided at the right side of inverter.
Prepare OT terminals: M4. Use proper tooling to crimp the lug to the terminal.
Connect the OT terminal with ground cable to the right side of inverter. The torque is 20 in-lbs (2Nm).



▲ Figure4.11 Connect the External Grounding Conductor



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11" X 17"

SHEET NUMBER

PV-10



Flush Mount System

Datasheet



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Our components have been tested to the limit and proven in extreme environments, including Florida's high-velocity hurricane zones.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.

Strength Tested
 All components evaluated for superior structural performance.

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

Class A Fire Rating
 Certified to maintain the fire resistance rating of the existing roof.

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

UL 2703 Listed System
 Entire system and components meet newest effective UL 2703 standard.

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

XR Rails ☺

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear and black finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding ☺

UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to turn 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

Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Attachments ☺

FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Conduit Mount



Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures 3/4" or 1" conduit

Knockout Tile



Replace tiles and ensure superior waterproofing.

- Flat, S, & W tile profiles
- Form-fit compression seal
- Single-lag universal base

All Tile Hook



Mount on tile roofs with a simple, adjustable hook.

- Works on flat, S, & W tiles
- Single-socket installation
- Optional deck flashing

Resources



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



Endorsed by FL Building Commission
 Flush Mount is the first mounting system to receive Florida Product approval for 2017 Florida Building Code compliance.
 Learn More at bit.ly/floridacert



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 AC SIZE:10.000kW

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 ESR

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 EQUIPMENT SPECIFICATION

SHEET SIZE
 ANSI B
 11" X 17"

SHEET NUMBER
 PV-11

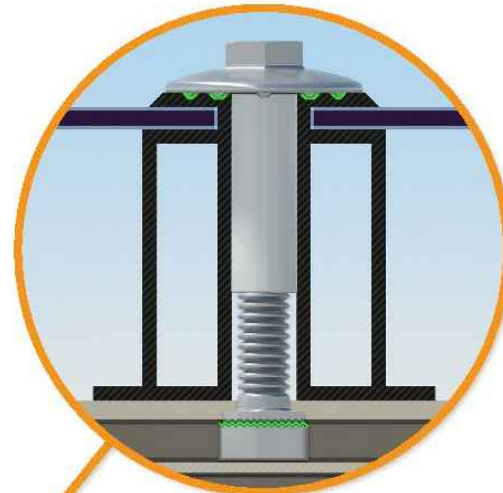


UFO Family of Components

Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

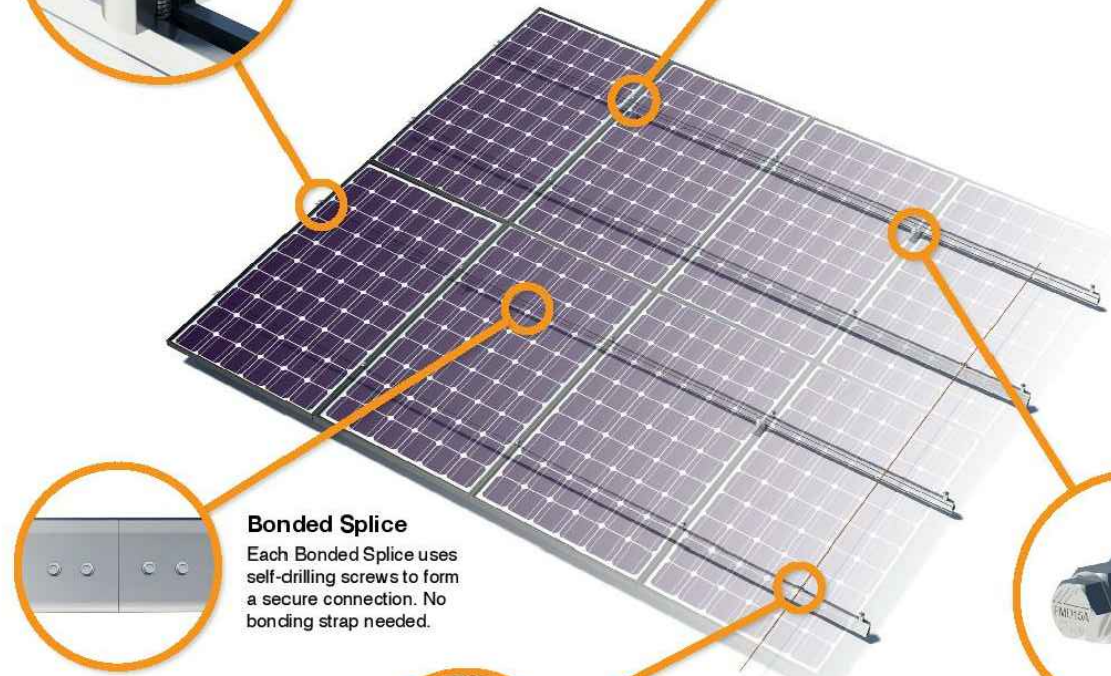
UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



Universal Fastening Object (UFO)
The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



Stopper Sleeve
The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



Bonded Splice
Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.

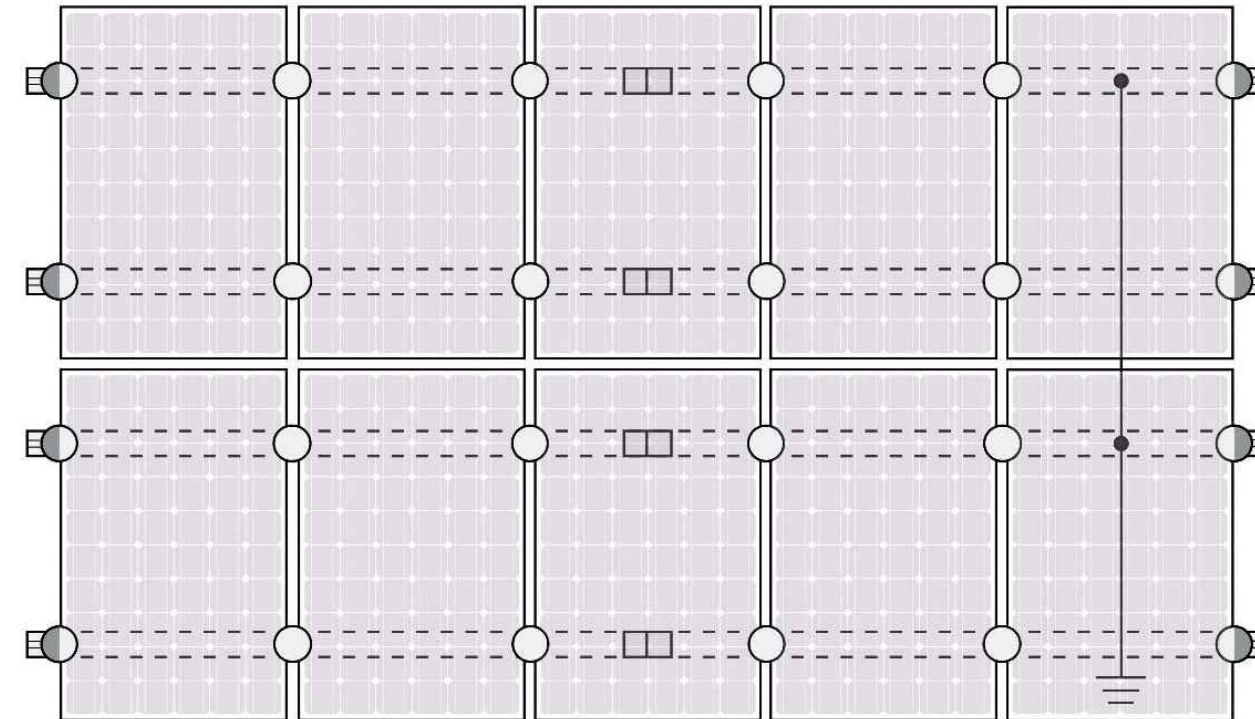


Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



Bonded Attachments
The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

System Diagram



○ UFO ◐ Stopper Sleeve ● Grounding Lug ◻ Bonded Splice ≡ Ground Wire

⚠ Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

Cross-System Compatibility

| Feature | Flush Mount | Tilt Mount | Ground Mount |
|-----------------------------------|---|------------|--------------|
| XR Rails | ✓ | ✓ | XR1000 Only |
| UFO/Stopper | ✓ | ✓ | ✓ |
| Bonded Splice | ✓ | ✓ | N/A |
| Grounding Lugs | 1 per Row | 1 per Row | 1 per Array |
| Microinverters & Power Optimizers | Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730 | | |
| Fire Rating | Class A | Class A | N/A |
| Modules | Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list. | | |



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PV-12

SolaDeck

FLASHED PV ROOF-MOUNT COMBINER/ENCLOSURE

Basic Features

- Stamped Seamless Construction
- 18 Gauge Galvanized Steel
- Powder Coated Surfaces
- Flashes into the roof deck
- 3 Roof deck knockouts .5", .75", 1"
- 5 Centering dimples for entry/exit fittings or conduit
- 2 Position Ground lug installed
- Mounting Hardware Included



SolaDeck Model SD 0783



SolaDeck UL50 Type 3R Enclosures

Available Models:

- Model SD 0783 - (3" fixed Din Rail)
- Model SD 0786 - (6" slotted Din Rail)



SolaDeck UL 1741 Combiner/Enclosures

Models SD 0783-41 and SD 0786-41 are labeled and ETL listed UL STD 1741 according to the UL STD 1741 for photovoltaic combiner enclosures.

Max Rated - 600VDC, 120AMPS

Model SD 0783-41 3" Fixed Din Rail fastened using Norlock System

**Typical System Configuration

- 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
- 1- Power Distribution Block 600VDC 175AMP
- 1- Bus Bar with UL lug

Model SD 0786-41 6" Slotted Din Rail fastened using steel studs

**Typical System Configuration

- 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
- 4- Din Rail Mounted Terminal Blocks
- Bus Bars with UL lug

**Fuse holders and terminal blocks added in the field must be UL listed or recognized and meet 600 VDC 30 AMP 110C for fuse holders, 600V 50 AMP 90C for rail mounted terminal blocks and 600 V 175 AMP 90C for Power Distribution Blocks. Use Copper Wire Conductors.



Cover is trimmed to allow conduit or fittings, base is center dimpled for fitting locations.



Model SD 0783-41, wired with Din Rail mounted fuse holders, bus bar and power distribution block.



Model SD 0786-41, wired with Din Rail mounted fuse holders, terminal blocks and bus bars.

RSTC Enterprises, Inc • 2219 Heimstead Road • Eau Claire, WI 54703
For product information call 1(866) 367-7782



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