

# 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

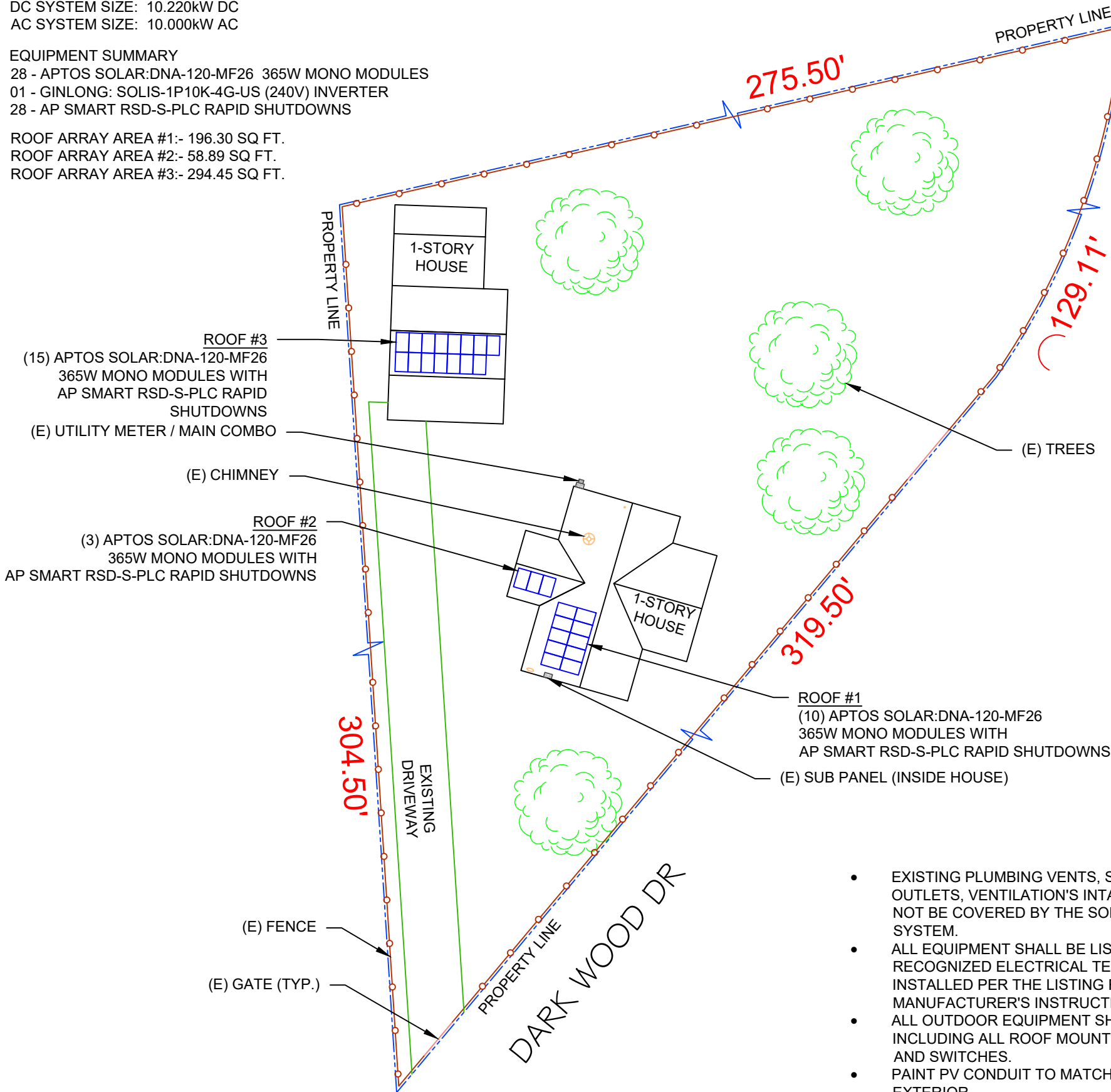
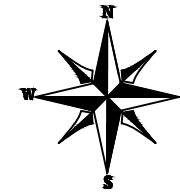
ROOF ARRAY AREA #1:- 196.30 SQ FT.  
 ROOF ARRAY AREA #2:- 58.89 SQ FT.  
 ROOF ARRAY AREA #3:- 294.45 SQ FT.

## AUTHORITIES HAVING JURISDICTION

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

## APPLICABLE CODES & STANDARDS

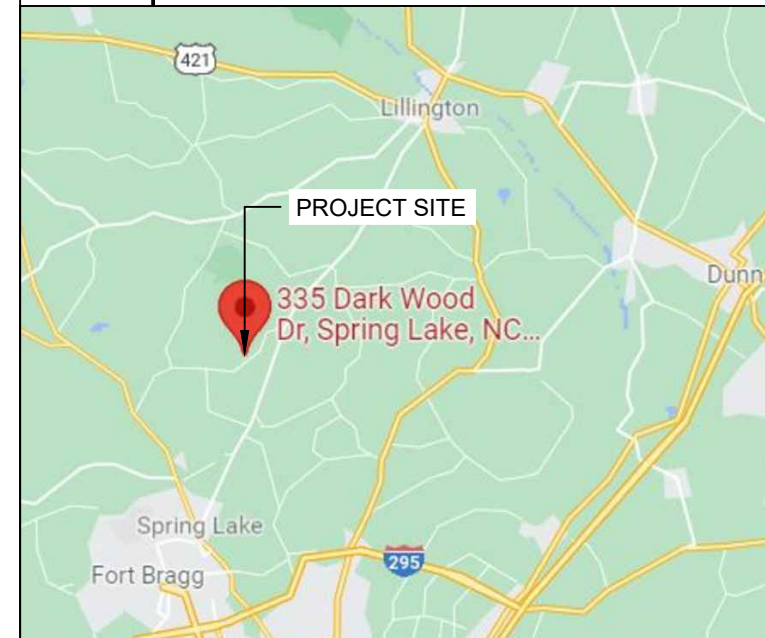
NCBC 2018  
 NEC 2017



**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



- 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.



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**

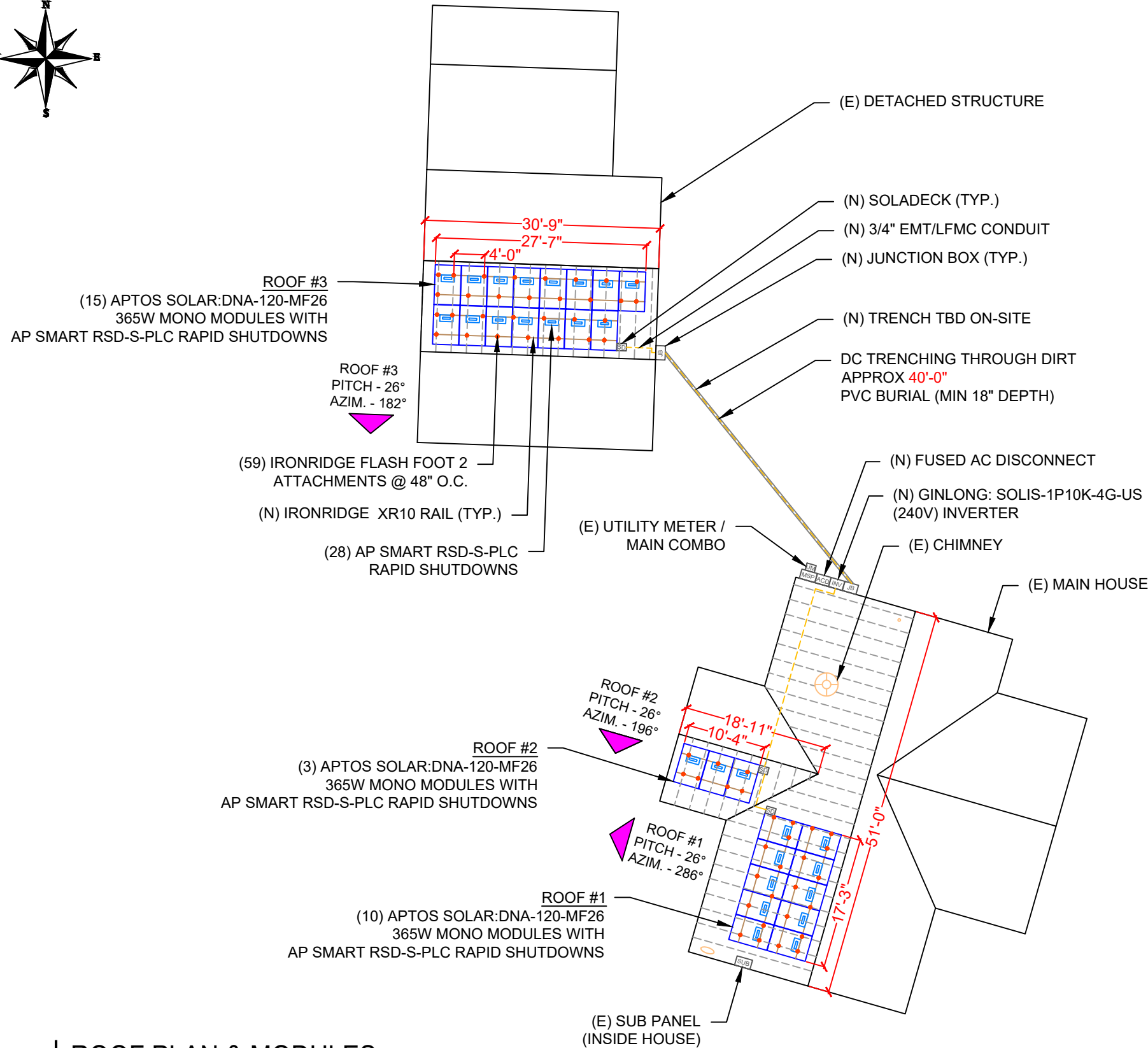
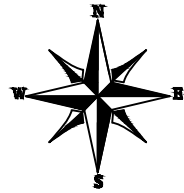
**1 PLOT PLAN WITH ROOF PLAN**

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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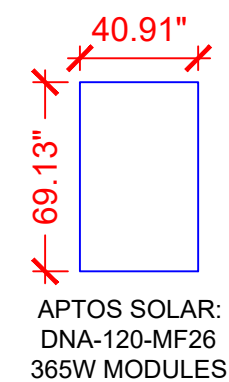
DC SIZE:10.220kW  
 AC SIZE:10.000kW

DRAWN BY  
 ESR

SHEET NAME  
 ROOF PLAN & MODULES

SHEET SIZE  
 ANSI B  
 11" X 17"

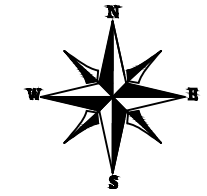
SHEET NUMBER  
 PV-2



**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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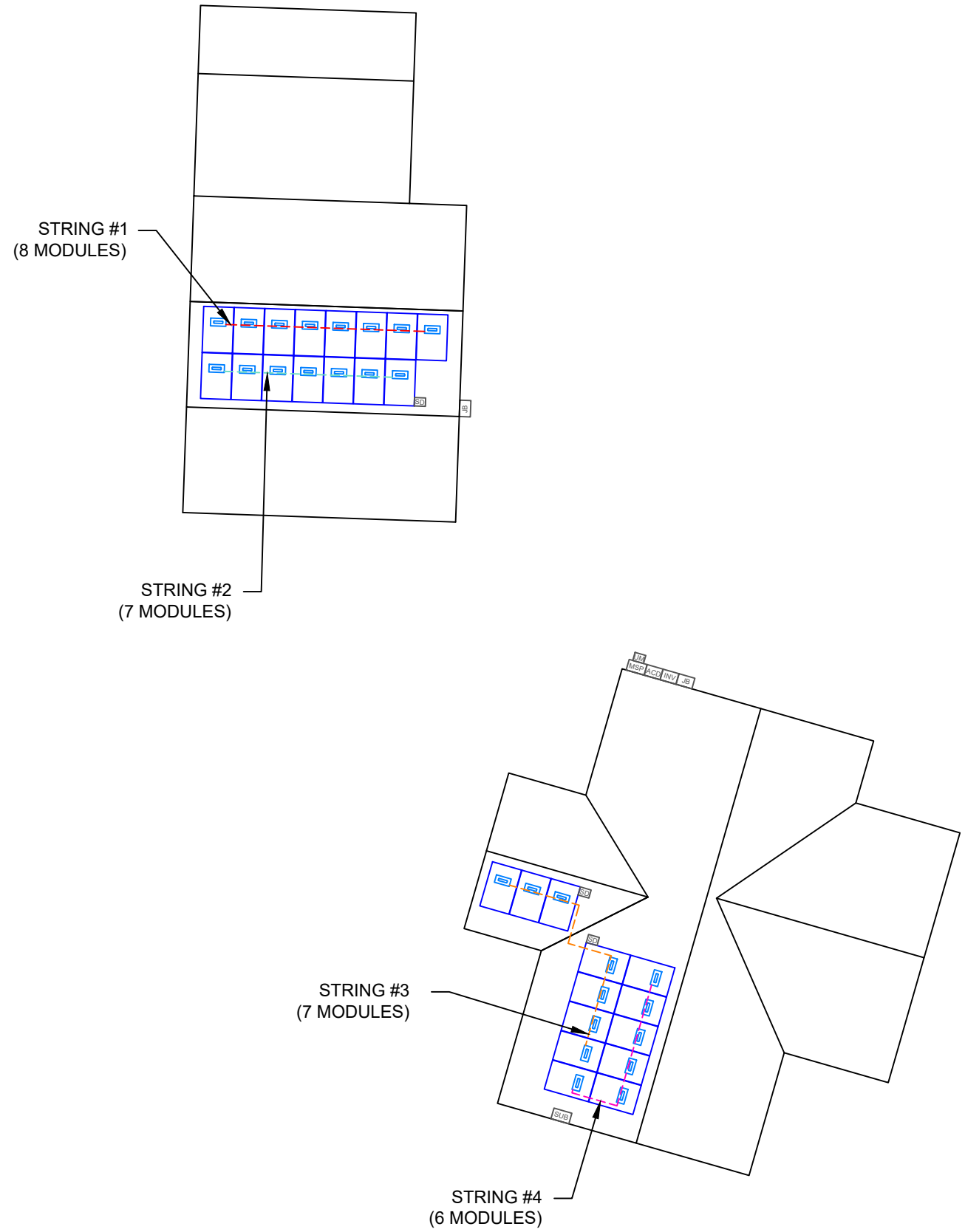
DC SIZE:10.220kW  
 AC SIZE:10.000kW

DRAWN BY  
**ESR**

SHEET NAME  
**STRING LAYOUT**

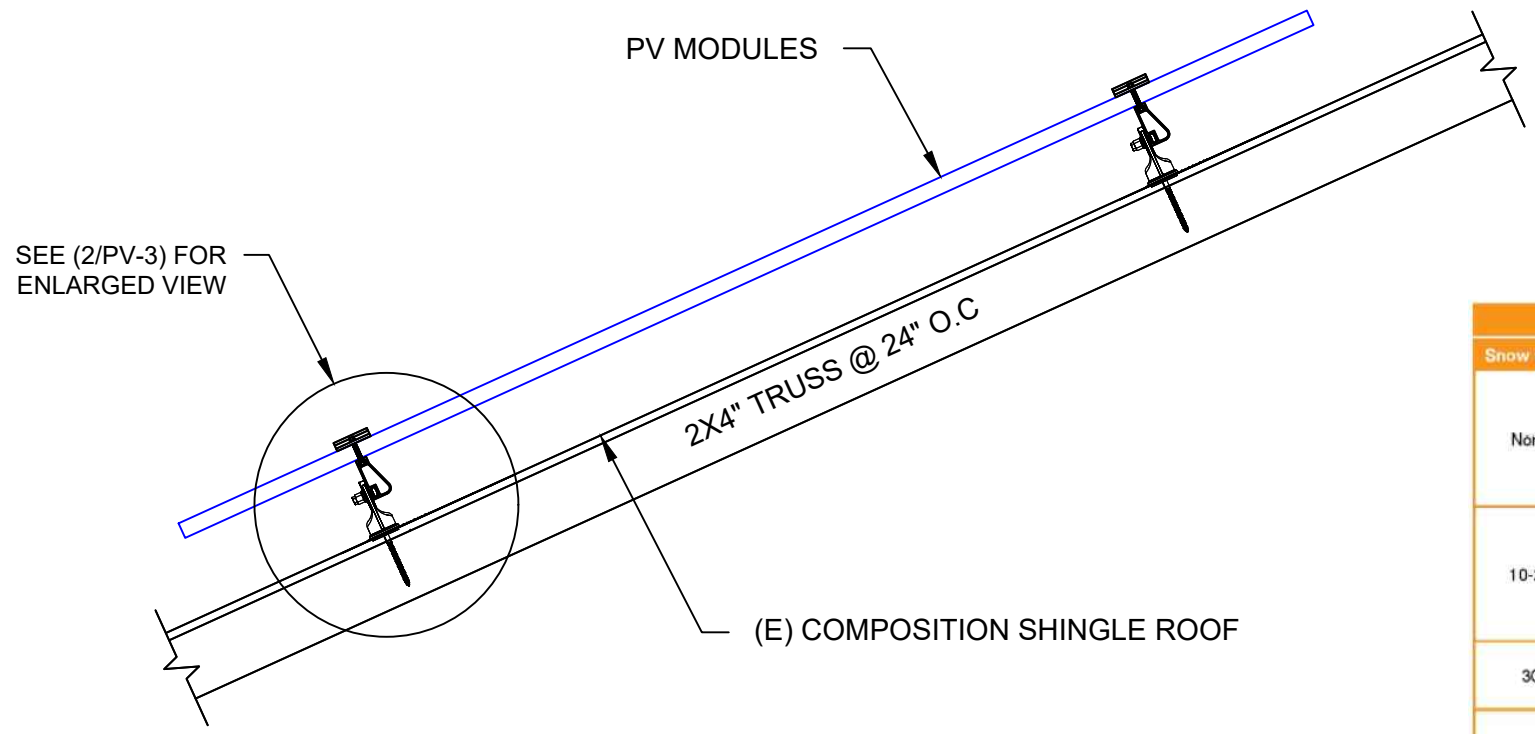
SHEET SIZE  
**ANSI B  
 11" X 17"**

SHEET NUMBER  
**PV-2A**



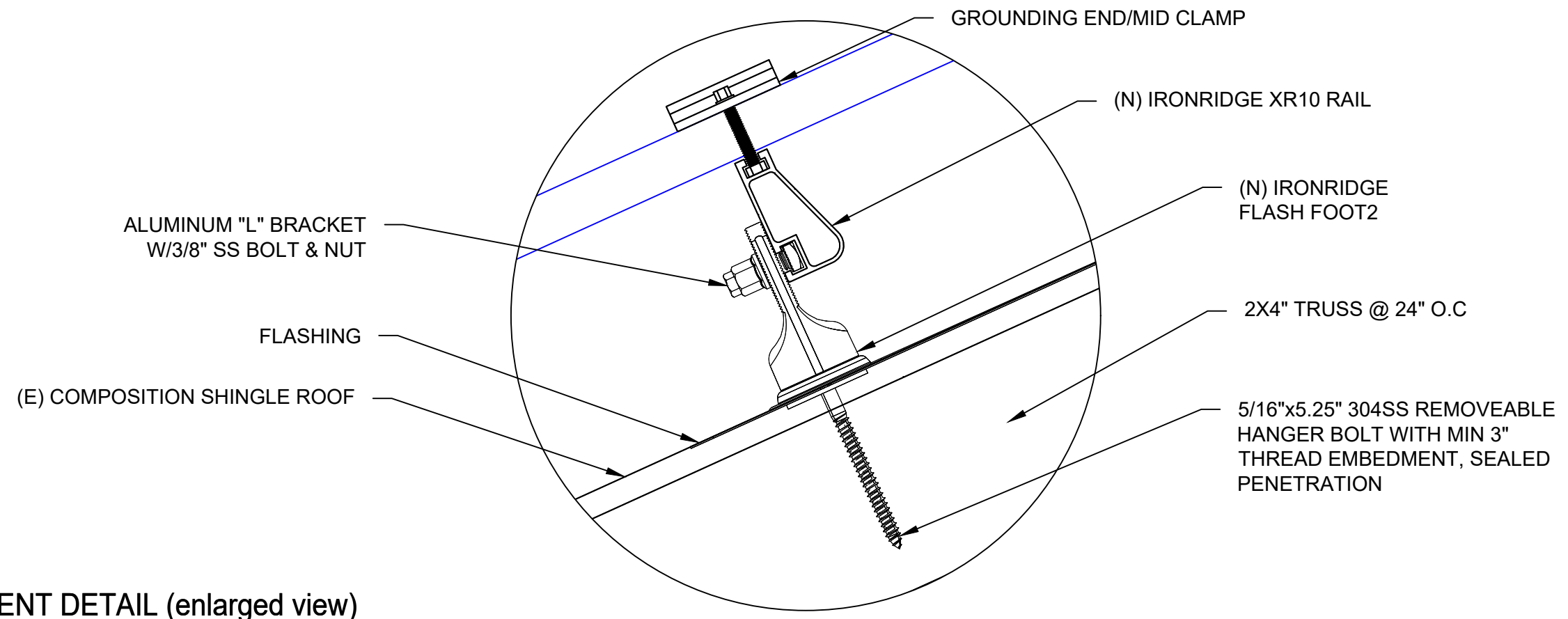
**1** | **ARRAY PLAN WITH STRING LAYOUT**





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



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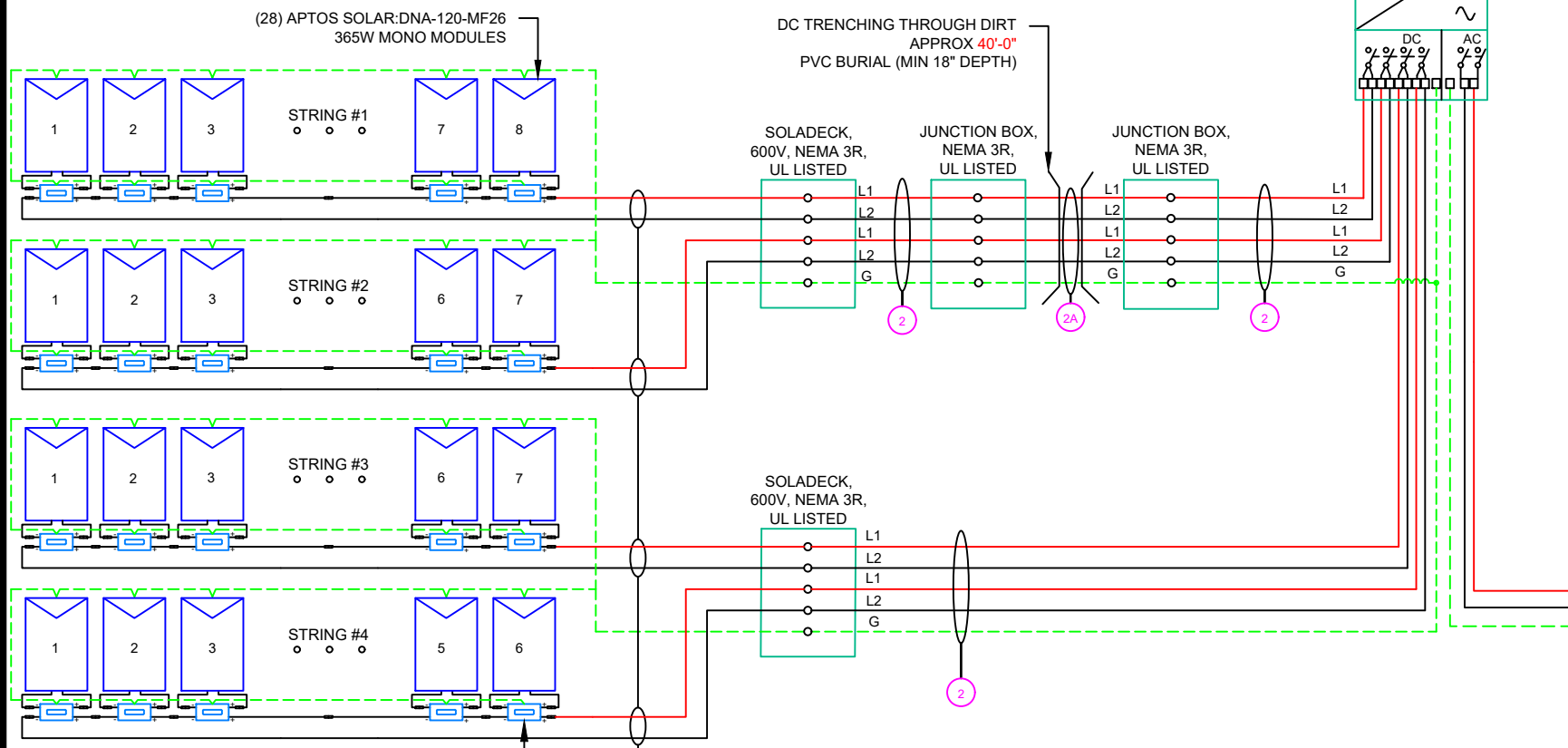
SHEET NAME  
**ATTACHMENT DETAIL**

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

SHEET NUMBER  
**PV-3**

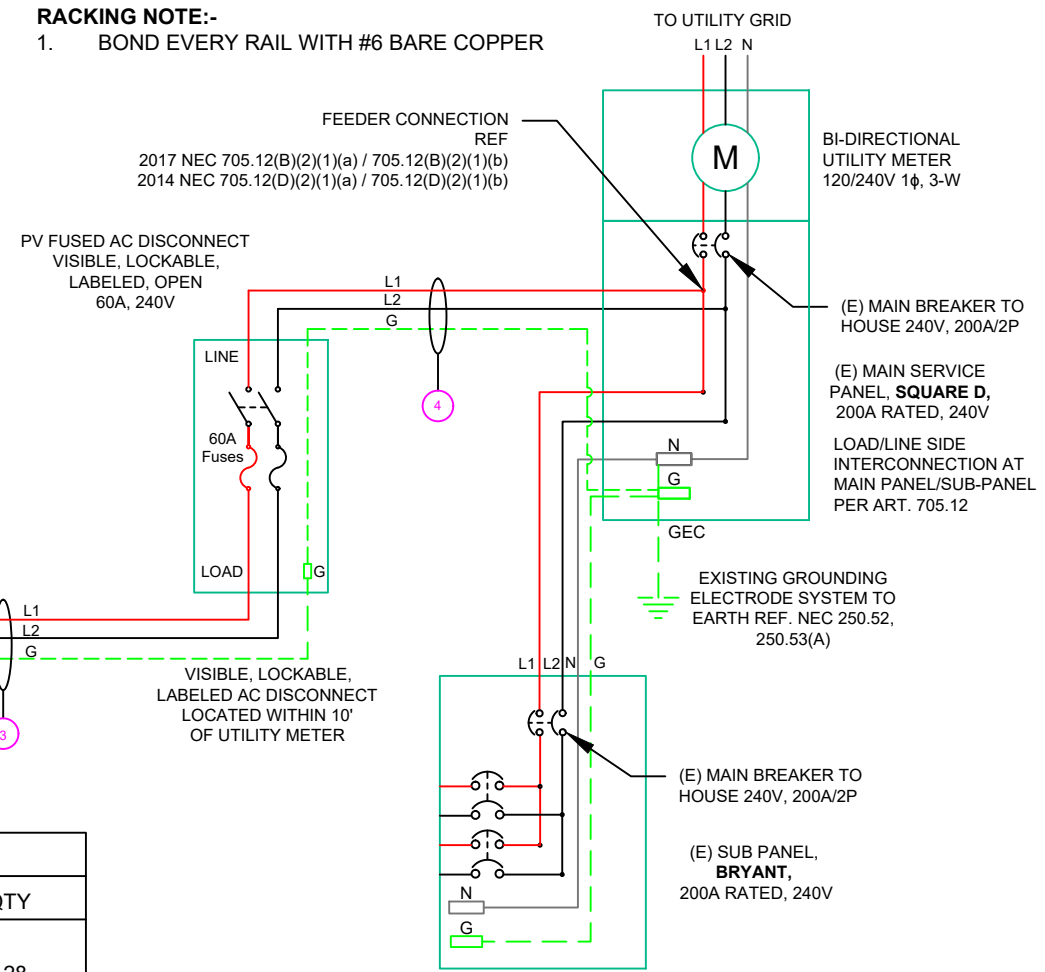
DC SYSTEM SIZE: 10.220kW DC  
 AC SYSTEM SIZE: 10.000kW AC

(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	PVC BURIAL (MIN 18" DEPTH)	3/4"
(4)	CU#10AWG - THWN-2 (L1,L2)	EMT, LFNC OR LFMC	3/4"
(1)	CU#10AWG - 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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 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

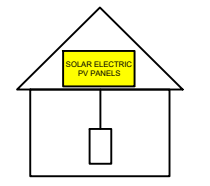
**CAUTION: SOLAR ELECTRIC  
SYSTEM CONNECTED**

**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**

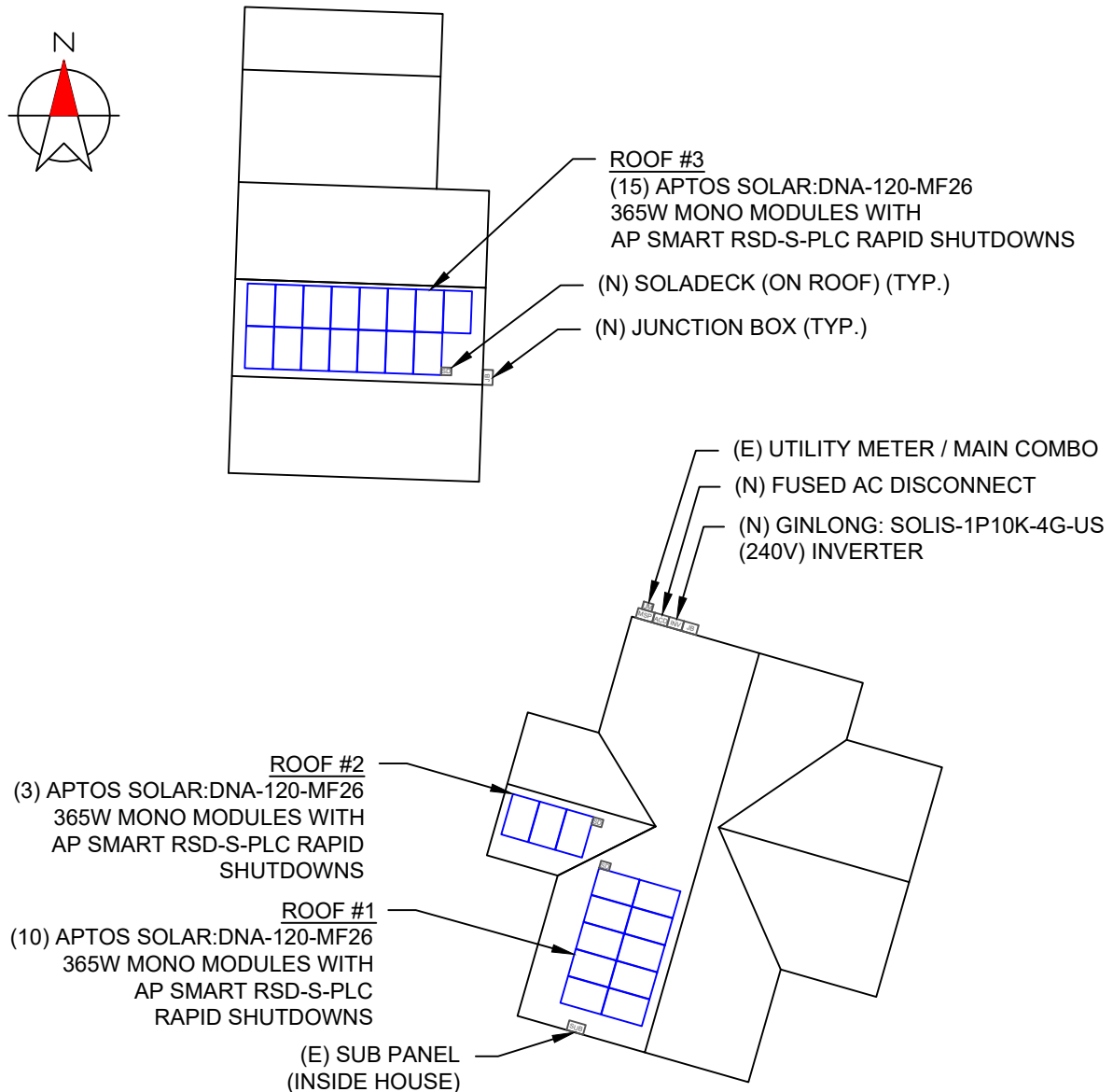
**THIS SERVICE METER  
IS ALSO SERVED BY A  
PHOTOVOLTAIC SYSTEM**

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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AC SIZE:10.000kW

DRAWN BY

**ESR**

SHEET NAME

**LABELS**

SHEET SIZE

**ANSI B  
11" X 17"**

SHEET NUMBER

**PV-5**

# RAPID SHUTDOWN CHART



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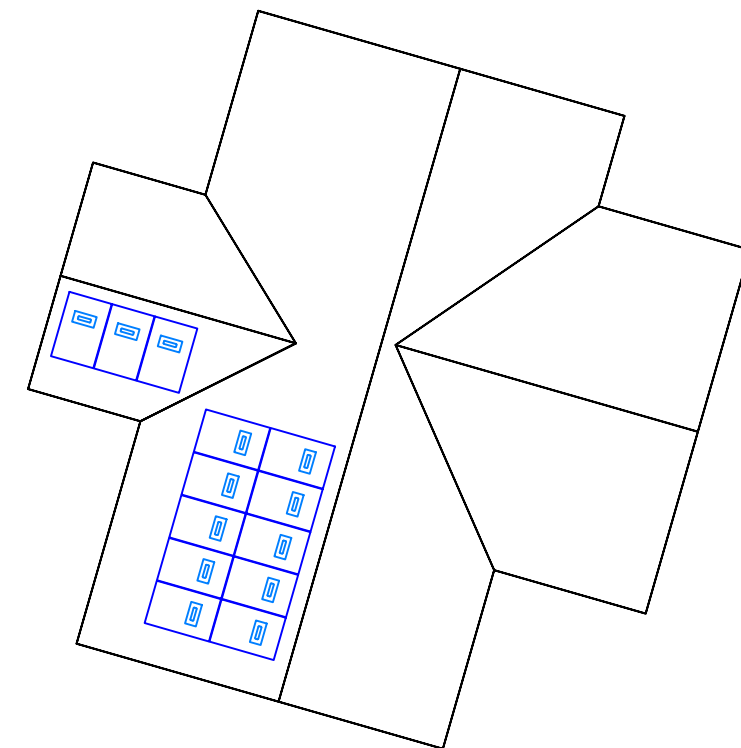
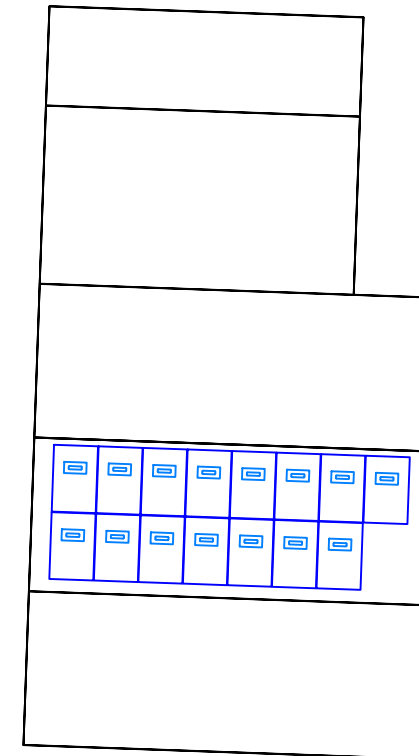
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AC SIZE:10.000kW

DRAWN BY  
**ESR**

SHEET NAME  
**RAPID SHUTDOWN CHART**

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

SHEET NUMBER  
**PV-6**



1-10    11-20    21-30    31-40    41-50    51-60    61-70

1						
2						
3						
4						
5						
6						
7						
8						
9						
10						



# 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.

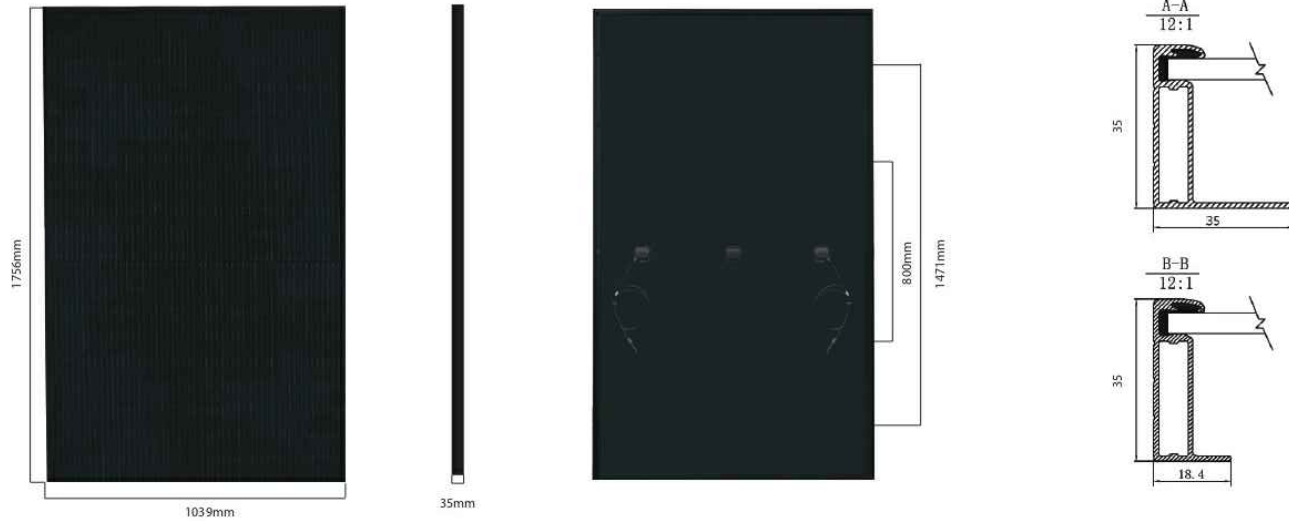
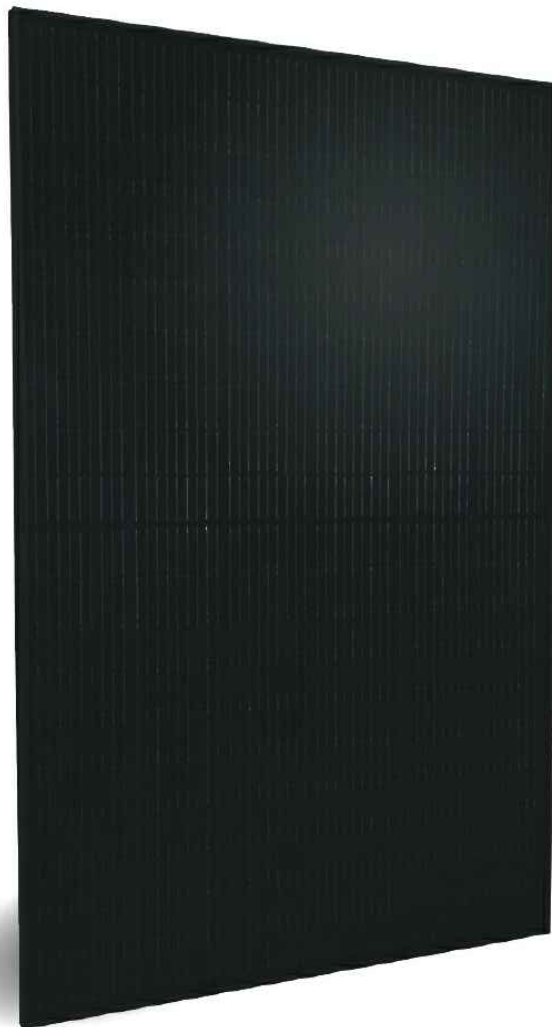
 Patented DNA™ technology boosts power performance & module efficiency

 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

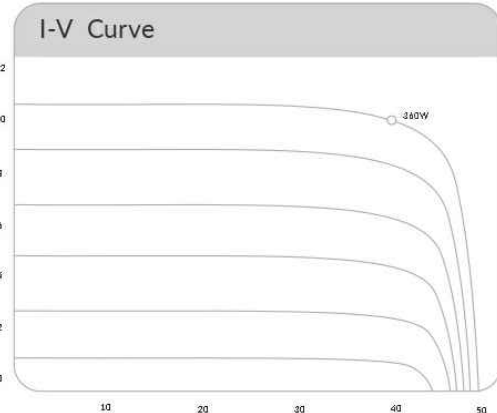
Standard Test Conditions for front-face of panel: 1000 W/m<sup>2</sup>, 25°C, measurement uncertainty ±3%

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

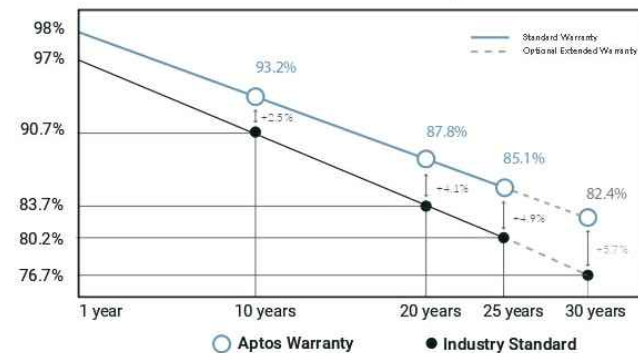
Test Operating Conditions	
Maximum Series Fuse	20A
Maximum System Voltage	1,500 VDC (UL&IEC)
Maximum Load Capacity (Per UL 1703)	5400 PA Snow Load / 210mph Wind Rating
Fire Performance Class	Class C/Type 1

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 <sup>2</sup> (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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EQUIPMENT  
SPECIFICATION

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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
<b>Input Data (DC)</b>	
Input operating Voltage Range	8-80V
Maximum Cont. Input Current (Imax)	15A
Maximum Input Power	800W
<b>Output Data (DC)</b>	
Output operating Voltage Range	8-80V
Output Power Range	0-800W
Maximum System Voltage	1000V/1500V
<b>Mechanical Data</b>	
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
<b>Features &amp; Compliance</b>	
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

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

EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

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
<b>DC Values</b>							
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			
<b>AC Values</b>							
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%						
<b>Efficiency</b>							
Peak efficiency	97.8%						
CEC weighted efficiency	97.5%						
MPPT efficiency	>99.5%						
<b>Protection</b>							
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						
<b>General Data</b>							
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						
<b>Features</b>							
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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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 <sup>2</sup> (12~4AWG)	10-25mm <sup>2</sup> (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

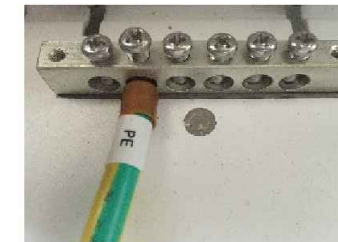
▲Table 4.3 Grid Terminal Connection

# 4. Installation

## 4.3.4 Ground Connection

### Internal ground connection point

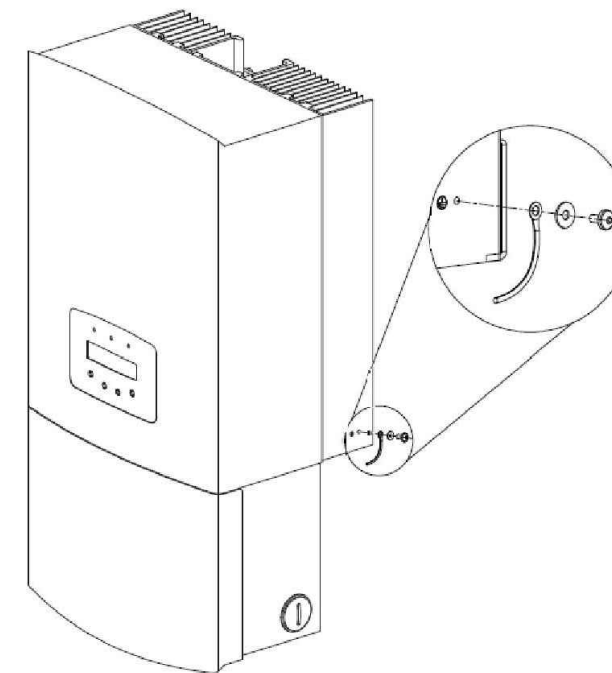
Please see figure 4.10. Both DC and AC ground cable can be connect to ground terminal Above DC switch. The acceptable wire size for ground is **12AWG to 4 AWG**. The torque is 26 in-lbs (3 Nm) .



▲ 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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SPECIFICATION

SHEET SIZE

ANSI B  
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](https://www.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](https://bit.ly/floridacert)



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EQUIPMENT  
SPECIFICATION

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-11



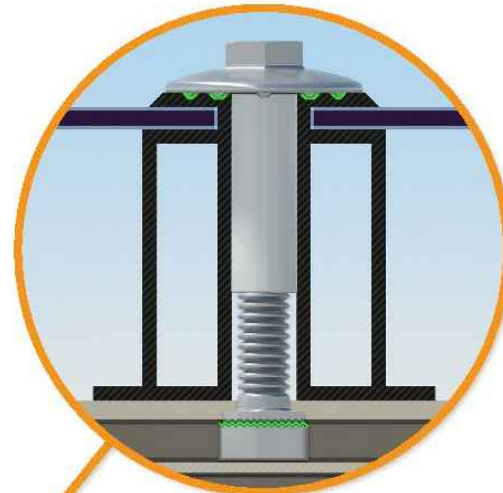


## UFO Family of Components

### 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.

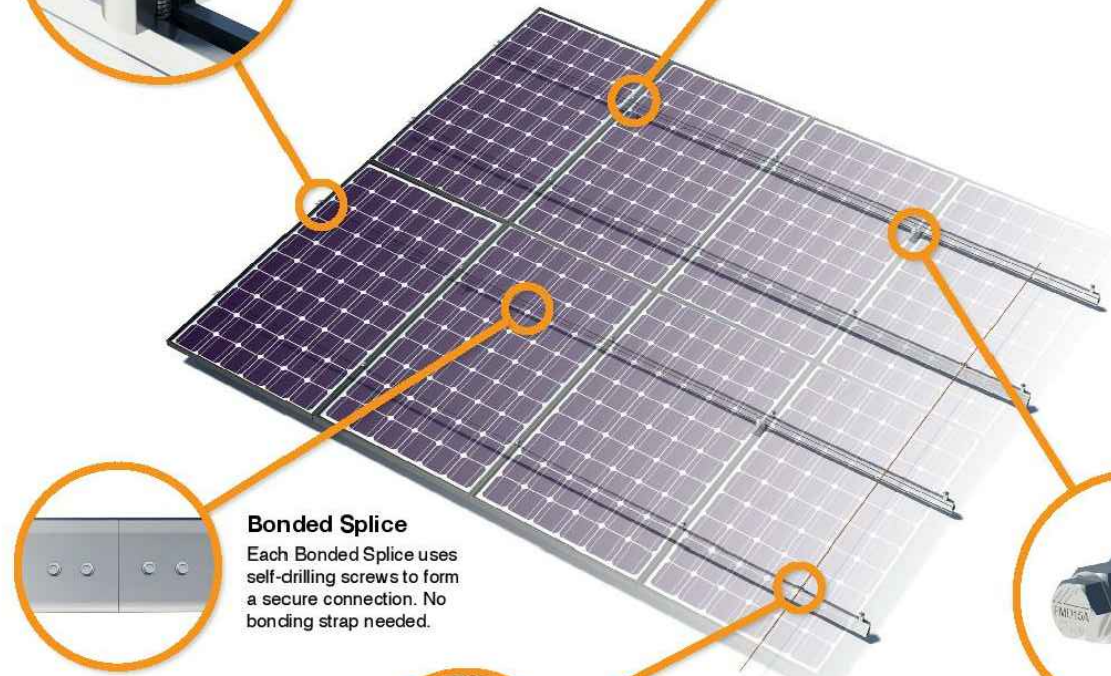
UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



**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.

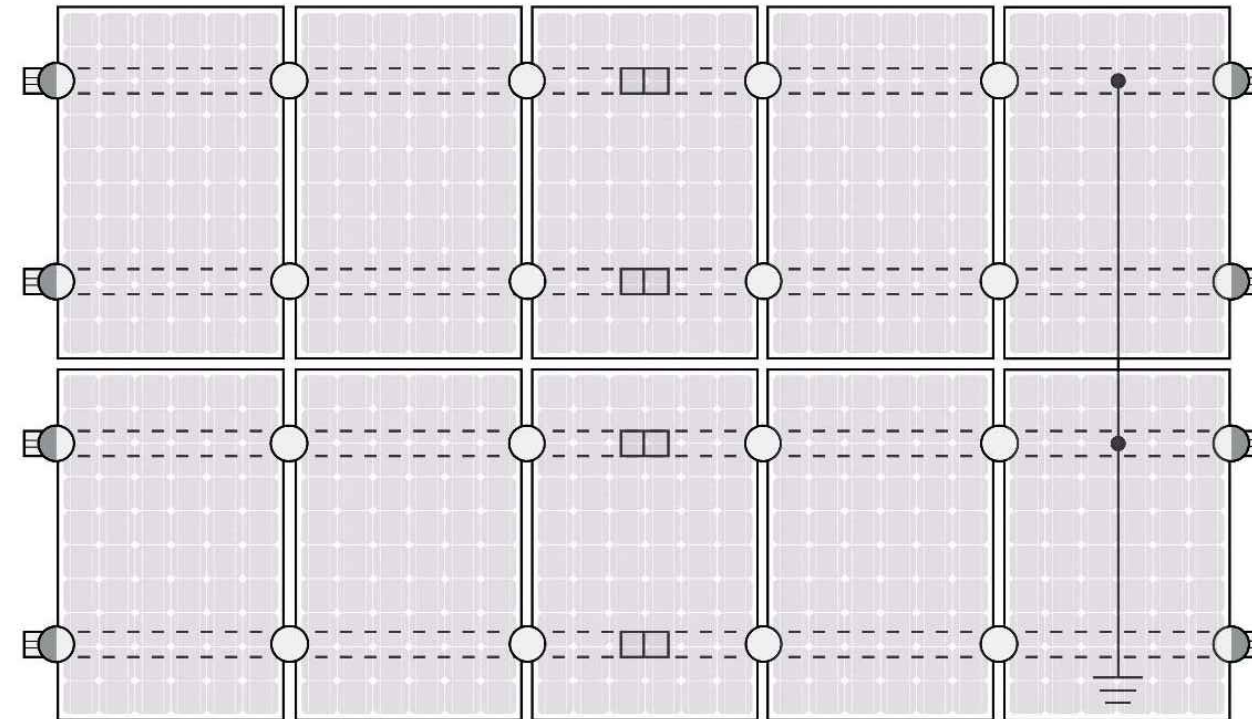


**Grounding Lug**  
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



**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](http://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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ANSI B  
11" X 17"

SHEET NUMBER

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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PV-13