

SCOPE OF WORK

TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 101 LOCKWOOD DR, CAMERON, NC 28326, USA. THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ELECTRICAL SERVICE EQUIPMENT. THE PV SYSTEM DOES NOT INCLUDE STORAGE BATTERIES.

EQUIPMENT SUMMARY

- 25 SILFAB SIL-420 QD MODULES
- 25 ENPHASE IQ8M-72-2-US MICROINVERTERS

GENERAL NOTES

- THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS
- CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAIN ALL PERMITS, LICENSES AND PAY ALL REQUIRED FEES AND COMPLETE INSTALLATION.
- CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.
- DAMAGE CAUSED TO THE EXISTING STRUCTURE, PIPES, DUCTS, WINDOWS, WALL, FLOORS, ETC. SHALL BE REPAIRED TO THE ORIGINAL CONDITION OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK WITH APPROVED MATERIALS.
- CONTRACTOR SHALL OBTAIN BUILDING PERMIT. NO WORK TO START UNLESS BUILDING PERMIT IS PROPERLY DISPLAYED.
- ALL WORKMANSHIP AND MATERIALS SHALL BE OF FIRST QUALITY AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL BUILDING CODE, THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL PERTINENT AGENCIES.
- IT IS ESSENTIAL THAT ALL WORK PROCEED WITH THE MAXIMUM COOPERATION OF ALL PARTIES AND WITH MINIMUM INTERFERENCE TO THE OCCUPANTS WITHIN THE BUILDING. THE OWNER'S DIRECTIONS IN THIS REGARD SHALL BE FULLY COMPLIED WITH.
- THE CONTRACTOR SHALL PERFORM THE WORK IN STRICT CONFORMANCE WITH THE LOCAL LAWS, REGULATIONS AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL OBTAIN ALL PERMITS, APPROVALS, AFFIDAVITS, CERTIFICATIONS, ETC. AND PAY ALL FEES AS REQUIRED BY THE LOCAL AUTHORITIES.
- CONTRACTORS SHALL OBTAIN FIRE CERTIF. UPON COMPLETION OF WORK.

ELECTRICAL NOTES

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURERS INSTRUCTION.
- MODULE SUPPORT RAIL SHALL BE BONDED TO THE MODULE

GOVERNING CODES

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

AHJ NAME : HARNETT COUNTY

WIRING AND CONDUIT NOTES

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



ENGINEERS SEAL FOR STRUCTURAL ITEMS ONLY



SYSTEM RATING
10.500 kWDC
8.125 kWAC

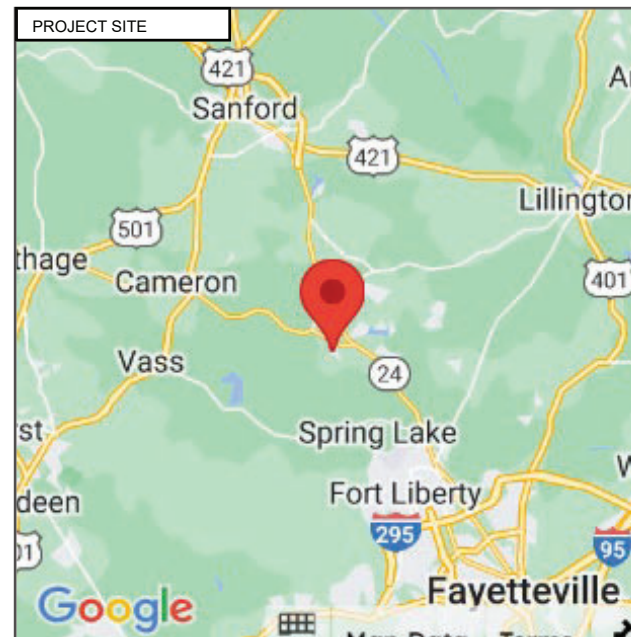
PHOTOVOLTAIC SYSTEM FIRE CLASSIFICATION LISTING IN ACCORDANCE WITH UL 1703 STANDARD.

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PV1	COVER PAGE
PV2	SITE PLAN
PV3	ROOF PLAN
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PV9	SPECIFICATIONS & NOTES
PV10-PV11	SIGNAGE
PV12	JOB SAFETY PLAN
PV13-PV21	EQUIPMENT SPECIFICATIONS



HOUSE PHOTO

SCALE: NTS



VICINITY MAP

SCALE: NTS



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
RESIDENCE
101 LOCKWOOD DR, CAMERON, NC 28326, USA
EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
COVER PAGE

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

SHEET NUMBER
PV-1

SITE NOTES

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

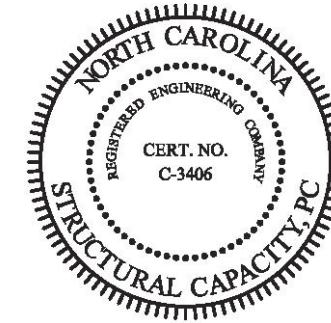
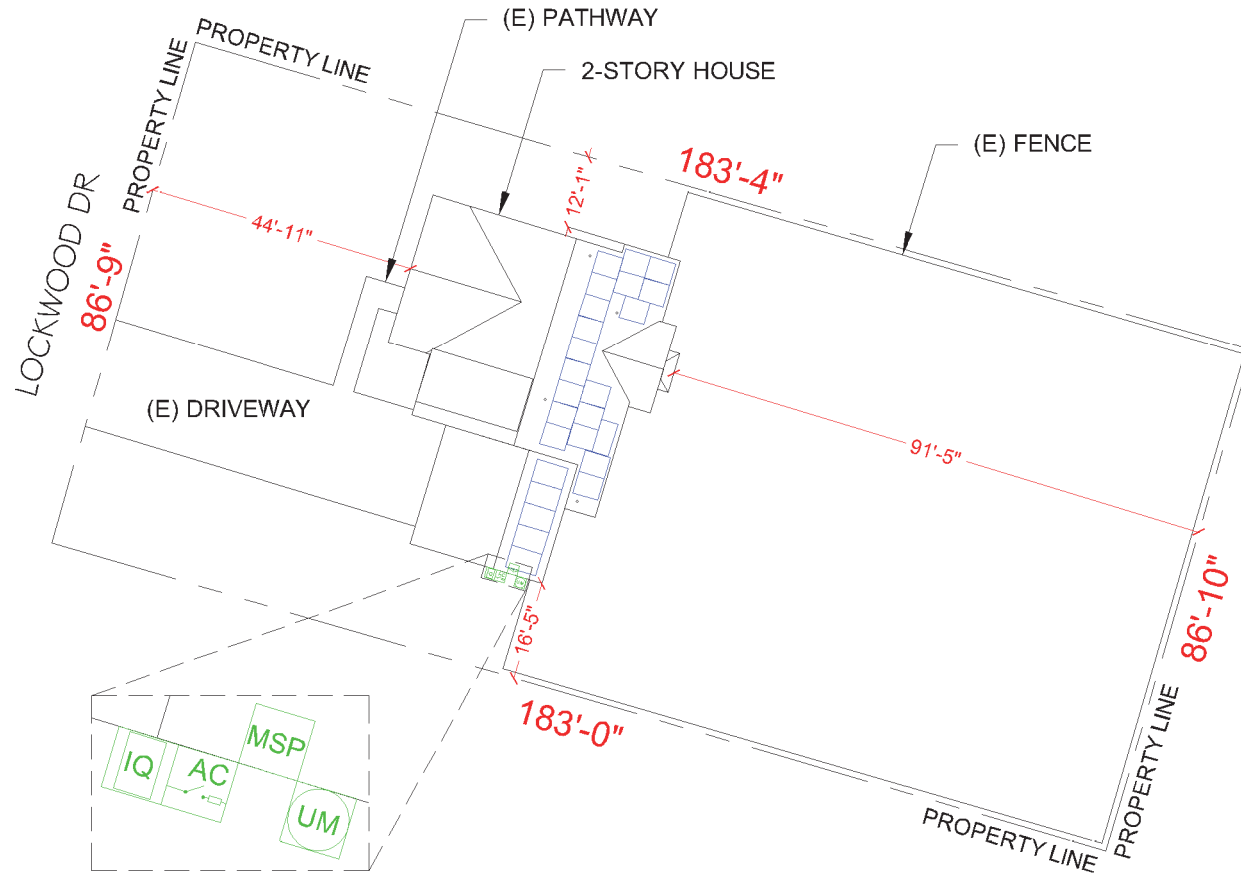
LEGEND

- JB (N) JUNCTION BOX
- UM (E) UTILITY METER
- MSP (E) MAIN SERVICE PANEL
- IQ (N) ENPHASE IQ COMBINER
- AC (N) FUSED AC DISCONNECT
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- CONDUIT
- ENPHASE IQ8M-72-2-US MICROINVERTER

SILFAB SIL-420 QD MODULES

NXT UMount RAIL - 168" MILL

TRENCH



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SHEET NAME
SITE PLAN

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

SHEET NUMBER
PV-2



SCALE: 1/32"= 1'-0

METER NO#: 166 418 470

DESIGN SPECIFICATION	
RISK CATEGORY:	II
CONSTRUCTION:	SFD
ZONING:	RESIDENTIAL
SNOW LOAD (ASCE7-10):	10 PSF
EXPOSURE CATEGORY:	B
WIND SPEED (ASCE7-10):	118 MPH

MODULE TYPE, DIMENSIONS & WEIGHT	
NUMBER OF MODULES:	25 MODULES
MODULE TYPE:	SILFAB SIL-420 QD
MODULE WEIGHT:	46.3 LBS
MODULE DIMENSIONS:	67.8" X 44.6" = 21.00 SF
UNIT WEIGHT OF AREA:	2.21 PSF

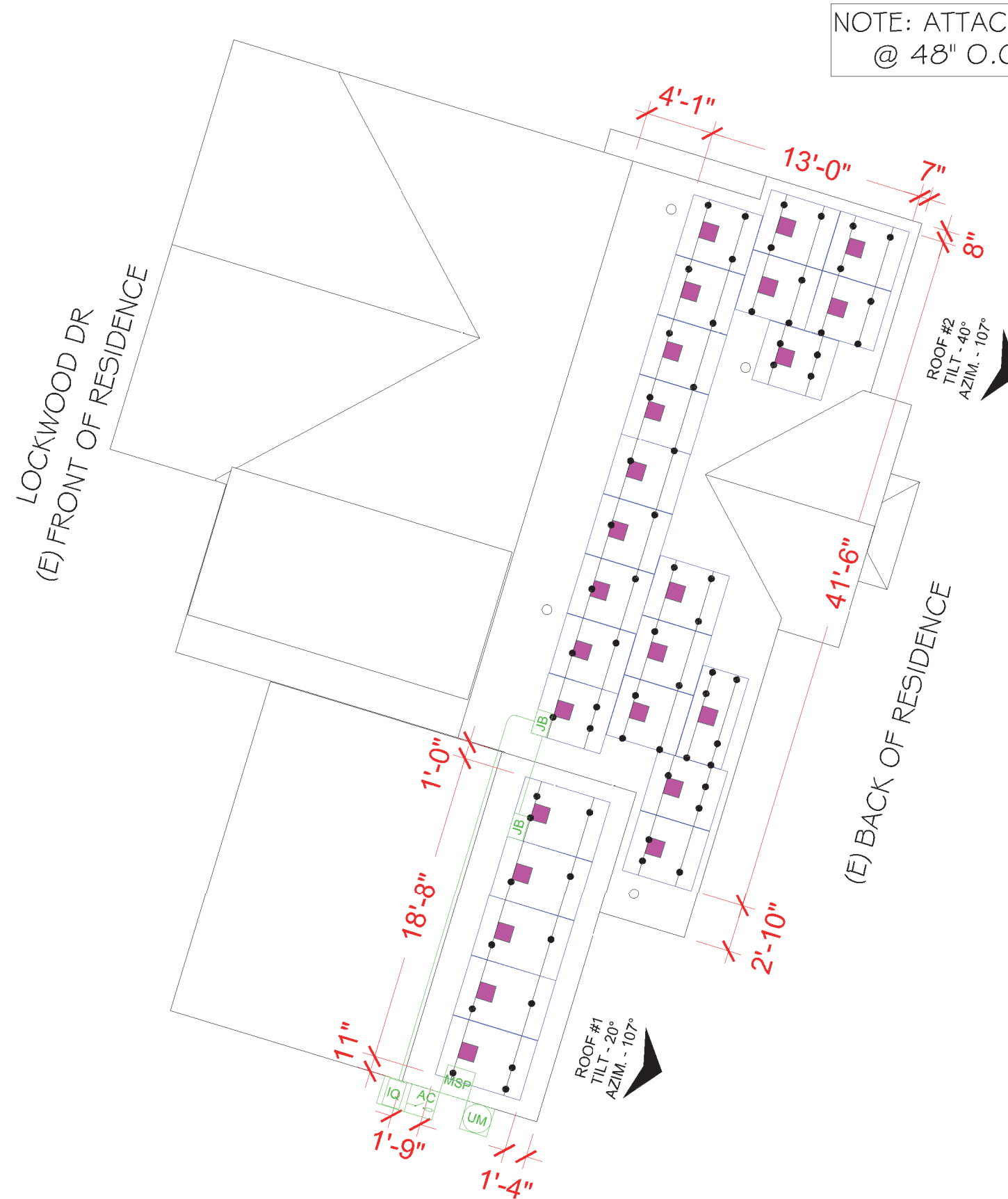
ROOF DESCRIPTION				
ROOF	ROOF TILT	TRUSS SIZE	TRUSS SPACING	ROOF MATERIAL
#1	20°	2" x 4"	16" o.c.	COMP SHINGLE
#2	40°	2" x 4"	16" o.c.	COMP SHINGLE

ARRAY AREA & ROOF AREA CALC'S		
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)
#1	5	105
#2	20	419.99
(TOTAL ARRAY AREA/TOTAL ROOF AREA) X 100%		
= (524.98/2577) X 100% = 20.38%		

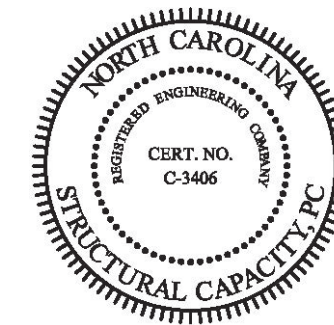
LEGEND

- JB (N) JUNCTION BOX
- UM (E) UTILITY METER
- MSP (E) MAIN SERVICE PANEL
- IQ (N) ENPHASE IQ COMBINER
- AC (N) FUSED AC DISCONNECT
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- CONDUIT
- ENPHASE IQ8M-72-2-US MICROINVERTER
- SILFAB SIL-420 QD MODULES
- NXT UMount RAIL - 168" MILL
- TRENCH

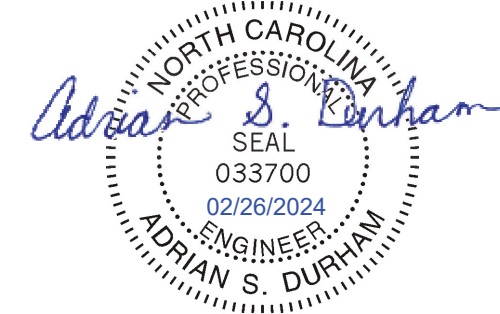
DEAD LOAD CALCULATION			
EQUIPMENT'S DESCRIPTIONS	QTY	LBS/UNIT	TOTAL WEIGHT
MODULES	25	46.3	1157.5
MID CLAMP	34	0.3	10.2
END CLAMP	32	0.31	9.92
NXT UMount RAIL - 168" MILL	18	6.25	112.50
SPLICE BAR	6	0.65	3.91
STRONGHOLD ATT W / BUTYL, MILL	67	0.8	53.60
#14-14 TYPE AB SCREW, HWH, SS W/ #14 EPDM WASHER	134	0.01	1.34
TOTAL WEIGHT OF THE SYSTEM (LBS)			1348.98
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			524.98
WEIGHT PER SQ. FT. (LBS)			2.57
WEIGHT PER PENETRATION (LBS)			6.72



NOTE: ATTACHMENT SPACING @ 48" O.C. STAGGERED



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

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DESCRIPTION	DATE	REV

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PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
ROOF PLAN

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

SHEET NUMBER

PV-3

METER NO#: 166 418 470

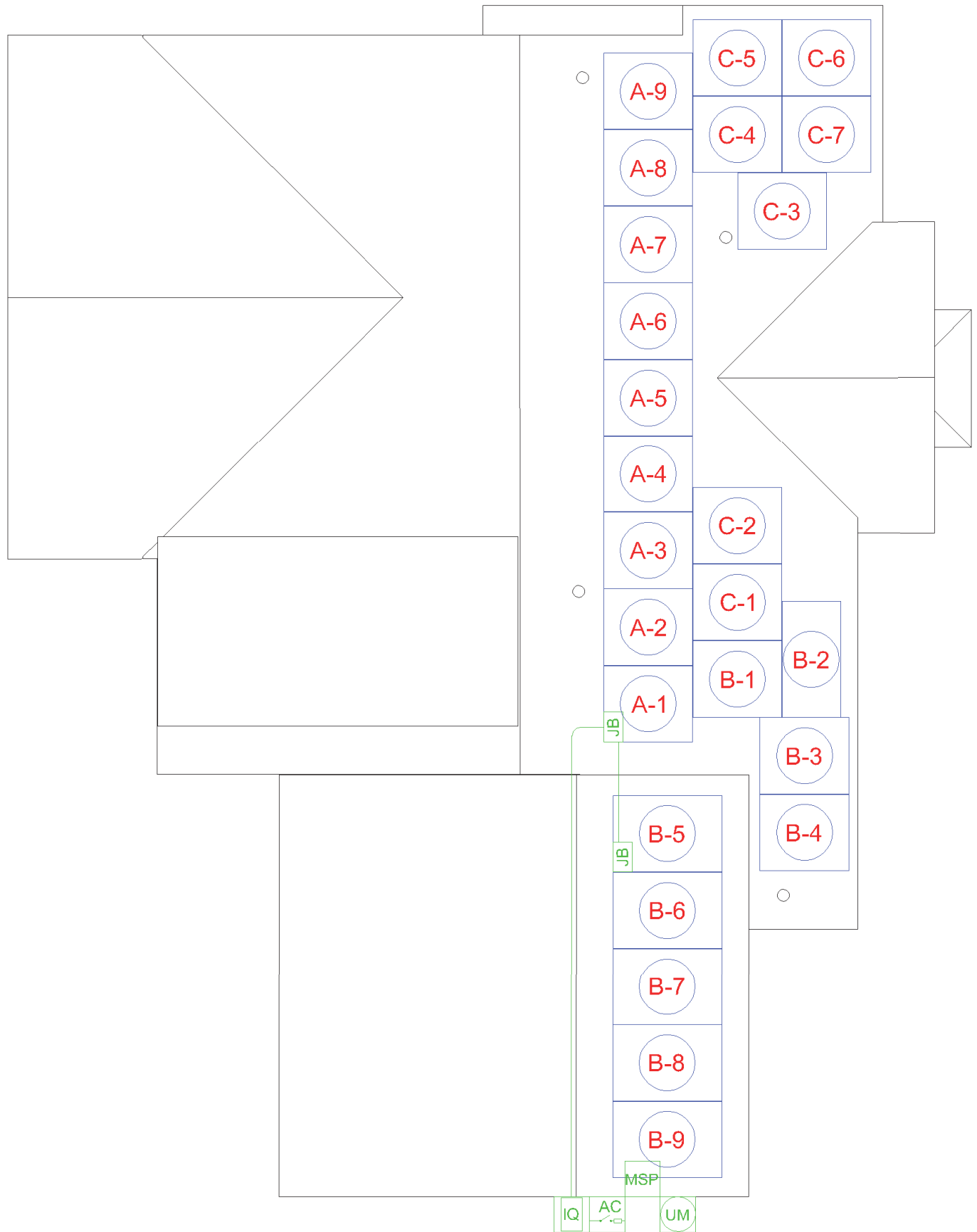


SCALE: 1/8" = 1'-0"

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	25	SILFAB SIL-420 QD
INVERTER	25	ENPHASE IQ8M-72-2-US
JUNCTION BOX	1	JB-1.XL, JUNCTION BOX, NEMA 3R, UL LISTED
IQ COMBINER BOX	1	ENPHASE IQ COMBINER 4C W/IQ GATEWAY (X-IQ-AM1-240-4C)
FUSED AC DISCONNECT	1	SIEMENS GNF222NR PV SYSTEM AC DISCONNECT SWITCH FUSED, 60A W/X FUSES, 120/240V 2P NEMA 3R
ATTACHMENT	67	STRONGHOLD ATT W / BUTYL, MILL
ATTACHMENT	134	#14-14 TYPE AB SCREW, HWH, SS W/ #14 EPDM WASHER
RAILS	18	NXT UMount RAIL - 168" MILL
BONDED SPLICE	6	SPLICE KIT
MID CLAMP	34	MODULES MID CLAMPS
END CLAMP	32	MODULES END CLAMPS
GROUNDING LUG	8	GROUNDING LUG
IQ WATER TIGHT CAP	7	IQ WATER TIGHT CAPS
BRANCH TERMINATOR	3	BRANCH TERMINATOR
ENPHASE Q CABLE	32	ENPHASE Q CABLE 240V (PER CONNECTOR)

LOCKWOOD DR
(E) FRONT OF RESIDENCE



(E) BACK OF RESIDENCE



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

SYSTEM INFO

(25) SILFAB
SIL-420 QD

(25) ENPHASE
IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

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PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME

**STRING LAYOUT
& BOM**

SHEET SIZE

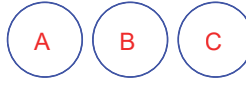
**ANSI B
11" X 17"**

SHEET NUMBER

PV-4



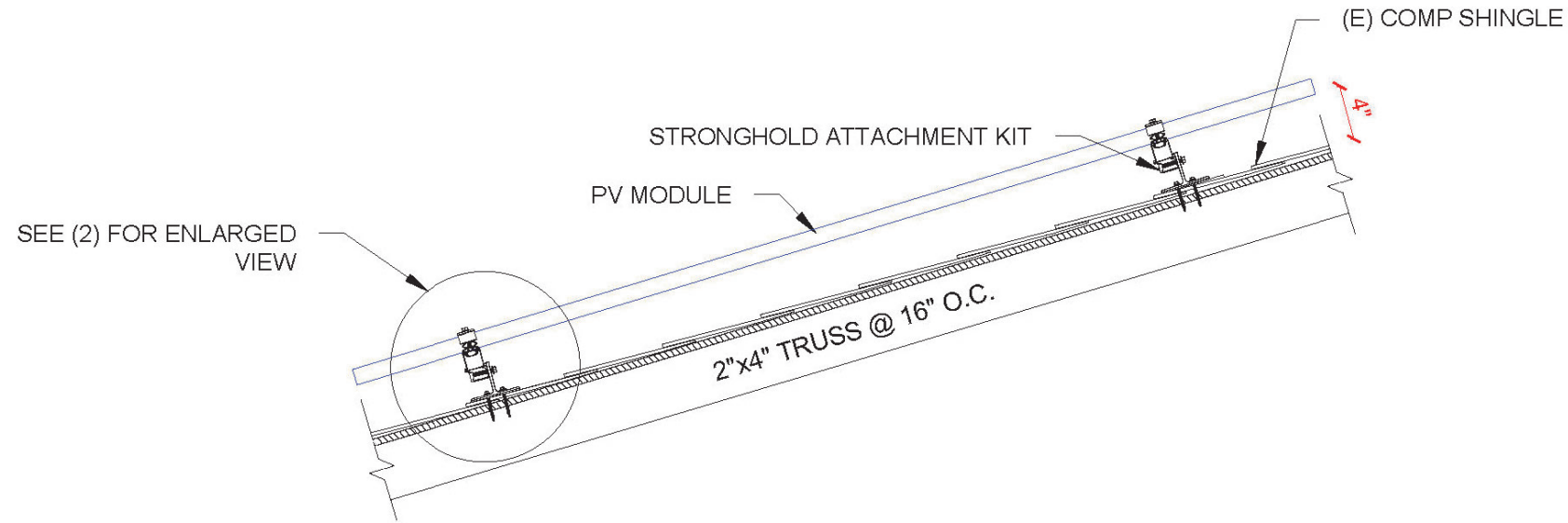
SCALE: 1/8"= 1'-0"



- MODULE STRINGING

SITE NOTES

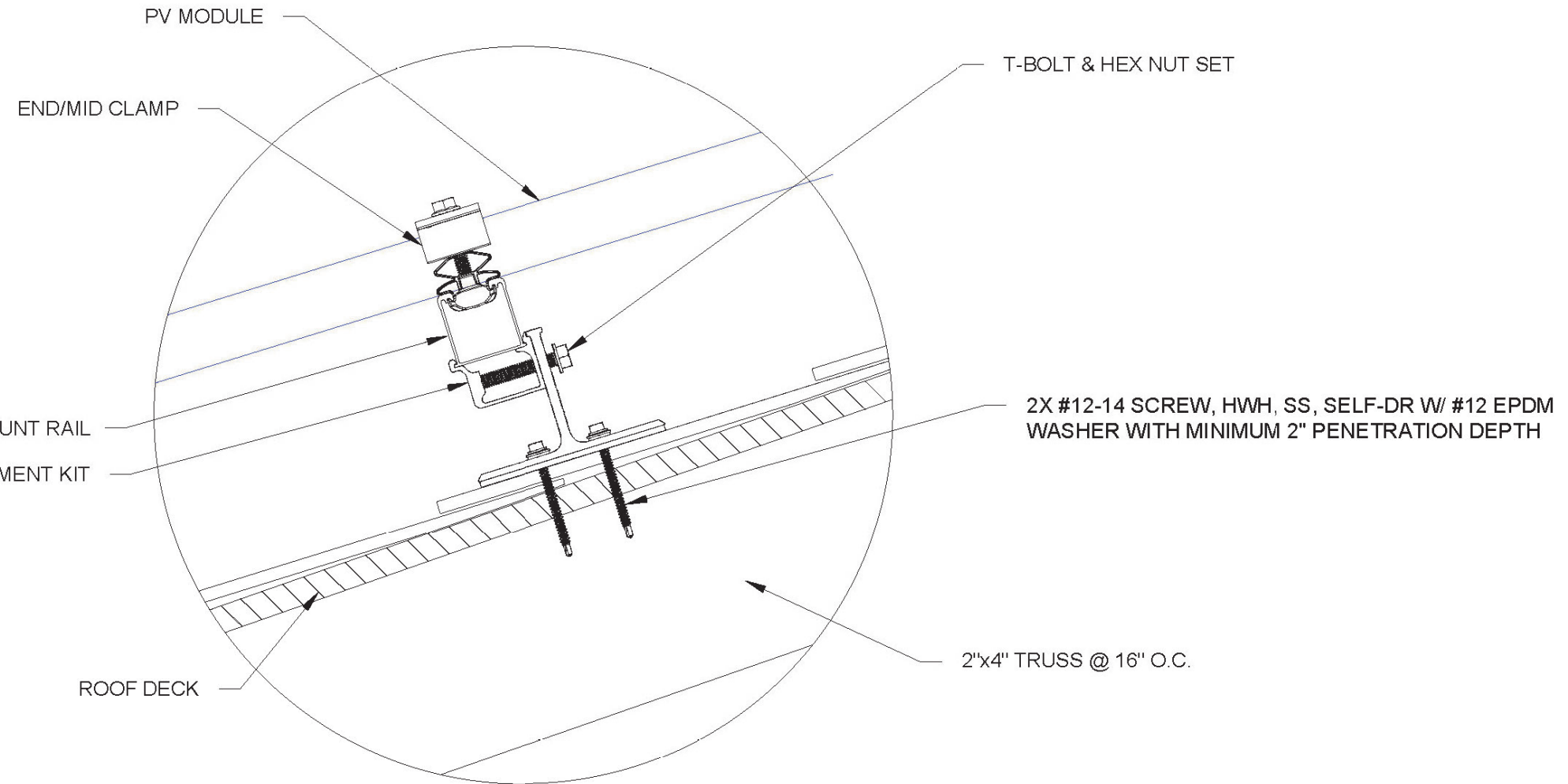
- A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE SOLAR PV INSTALLATION SHALL COMPLY WITH [IRC P3101.1.3]



1 ATTACHMENT DETAILS



ENGINEERS SEAL FOR STRUCTURAL ITEMS ONLY



2 ENLARGED VIEW OF ATTACHMENT

SCALE: NTS



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

SYSTEM INFO

(25) SILFAB
SIL-420 QD

(25) ENPHASE
IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC

AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

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SHEET NAME

ATTACHMENT
DETAILS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-5



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

SYSTEM INFO

(25) SILFAB
 SIL-420 QD

(25) ENPHASE
 IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC

AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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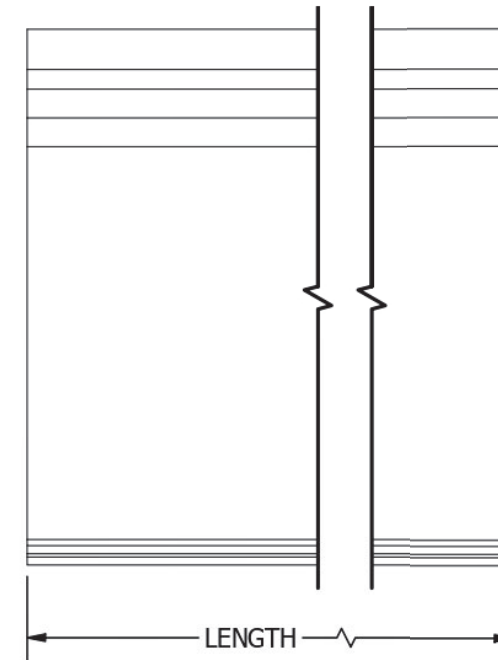
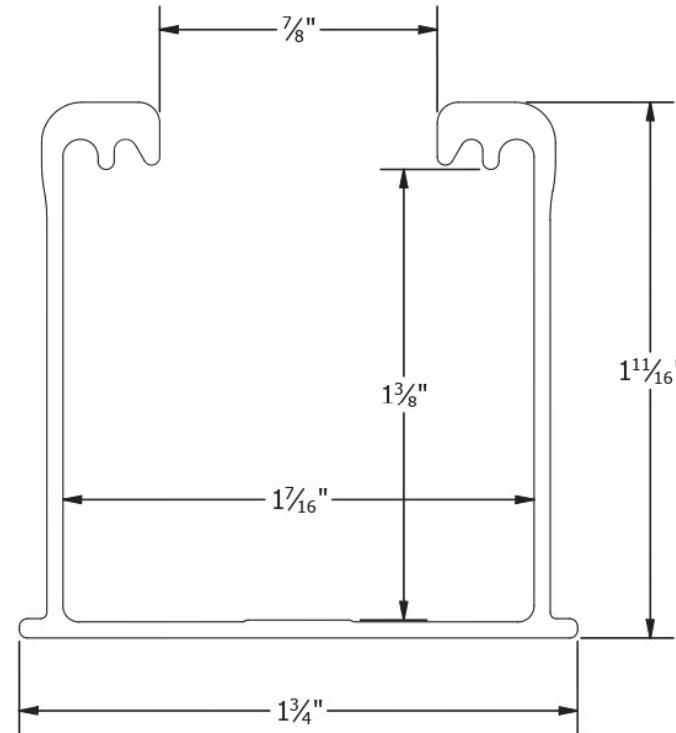
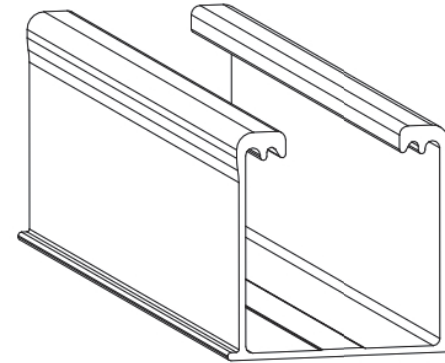
DATE: 2/19/2024

SHEET NAME
**ATTACHMENT
 DETAILS**

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

SHEET NUMBER
PV-6

PART # TABLE		
P/N	DESCRIPTION	LENGTH
084RLM1	NXT UMount RAIL 84" MILL	84"
084RLD1	NXT UMount RAIL 84" DARK	84"
168RLM1	NXT UMount RAIL 168" MILL	168"
168RLD1	NXT UMount RAIL 168" DARK	168"
208RLM1	NXT UMount RAIL 208" MILL	208"
208RLD1	NXT UMount RAIL 208" DARK	208"
246RLM1	NXT UMount RAIL 246" MILL	246"
246RLD1	NXT UMount RAIL 246" DARK	246"
171RLM1	NXT UMount RAIL 171" MILL	171.50"
171RLD1	NXT UMount RAIL 171" DARK	171.50"



1411 BROADWAY BLVD. NE
 ALBUQUERQUE, NM 87102 USA
 PHONE: 505.242.6411
 WWW.UNIRAC.COM

PRODUCT LINE:	NXT UMount
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	RAIL
REVISION DATE:	11/17/2022

DRAWING NOT TO SCALE
 ALL DIMENSIONS ARE
 NOMINAL

PRODUCT PROTECTED BY
 ONE OR MORE US PATENTS
 LEGAL NOTICE

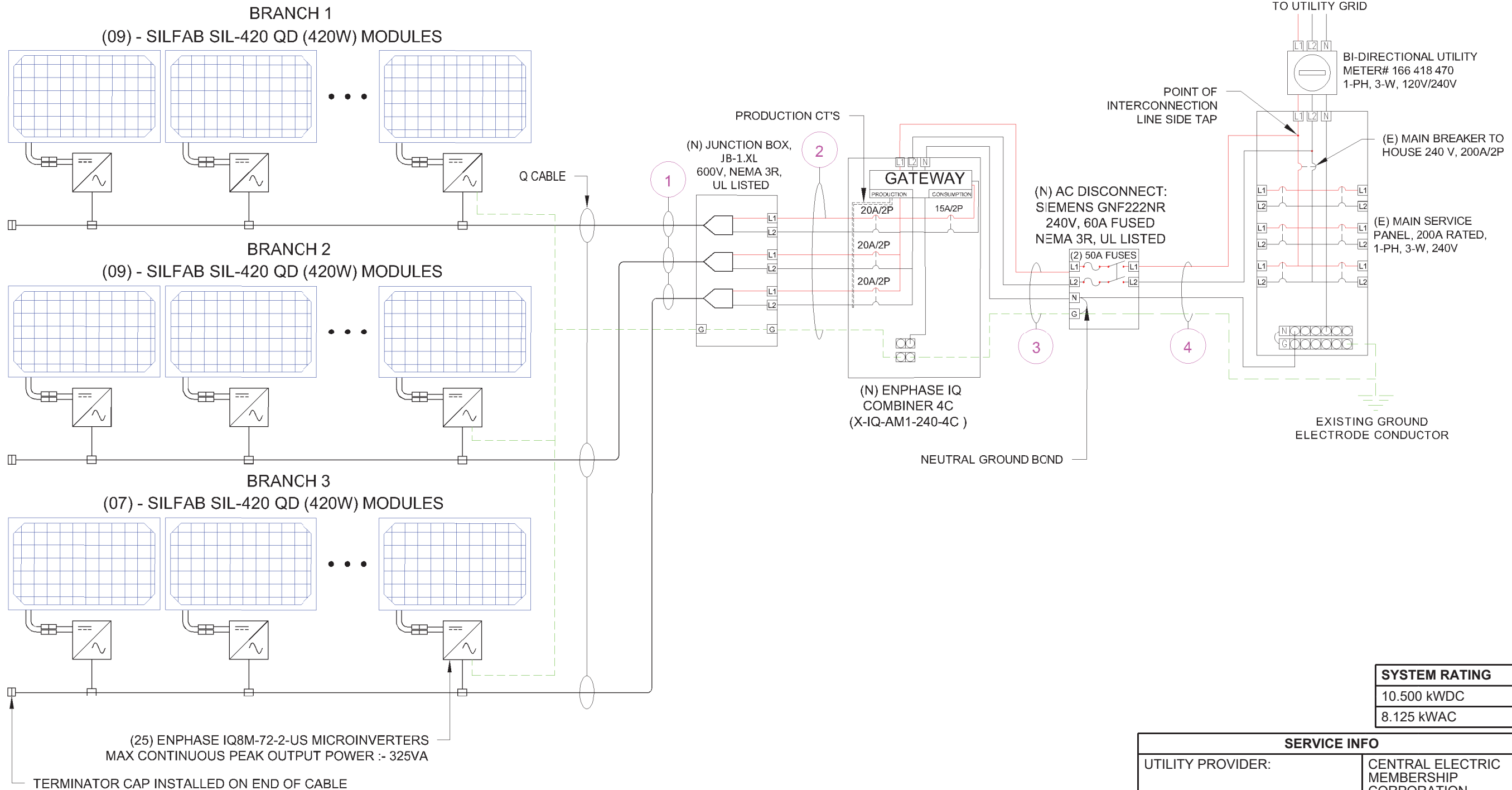
NU-P01

SHEET



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

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CIRCUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOTAGE DROP
				6 AWG	BARE COPPER																		
1	3	ARRAY	JUNCTION BOX	12 AWG	Q CABLE	-	-	1	2	N/A	N/A	6 AWG	BARE COPPER	0.71	(58°C)	N/A	12.15A	15.19A	N/A	N/A	75°C	44FT	0.42%
2	1	JUNCTION BOX	IQ COMBINER BOX 4C	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	3	6	29.27%	20A	8 AWG	THWN-2 COPPER	0.91	(36°C)	0.8	12.15A	15.19A	35A	25.48A	75°C	45FT	0.59%
3	1	IQ COMBINER BOX 4C	FUSED AC DISCONNECT	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	1	3	34.90%	50A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	33.75A	42.19A	65A	59.15A	75°C	5FT	0.07%
4	1	FUSED AC DISCONNECT	MSP	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	1	3	25.52%	N/A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	33.75A	42.19A	65A	59.15A	75°C	5FT	0.07%



SYSTEM RATING
10.500 kWDC
8.125 kWAC

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

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(25) ENPHASE IQ8M-72-2-US
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SHEET NAME
**ELECTRICAL
 LINE & CALCS.**

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

SHEET NUMBER
PV-7

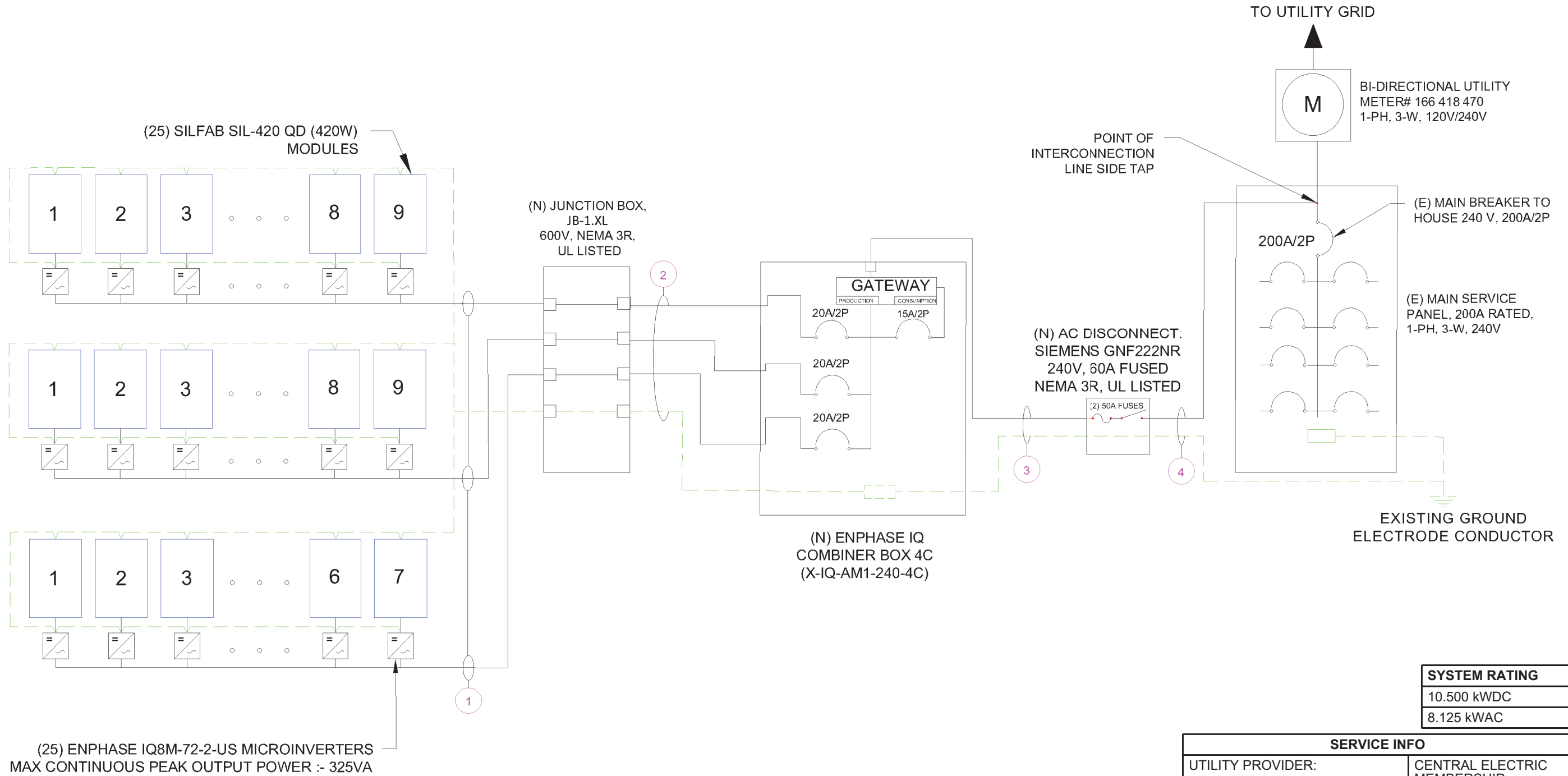
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1	3	ARRAY	JUNCTION BOX	12 AWG	Q CABLE	-	-	1	2	N/A	N/A	6 AWG	BARE COPPER	0.71	(58°C)	N/A	12.15A	15.19A	N/A	N/A	75°C	44FT	0.42%
2	1	JUNCTION BOX	IQ COMBINER BOX 4C	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	3	6	29.27%	20A	8 AWG	THWN-2 COPPER	0.91	(36°C)	0.8	12.15A	15.19A	35A	25.48A	75°C	45FT	0.59%
3	1	IQ COMBINER BOX 4C	FUSED AC DISCONNECT	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	1	3	34.90%	50A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	33.75A	42.19A	65A	59.15A	75°C	5FT	0.07%
4	1	FUSED AC DISCONNECT	MSP	6 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	1	3	25.52%	N/A	8 AWG	THWN-2 COPPER	0.91	(36°C)	1	33.75A	42.19A	65A	59.15A	75°C	5FT	0.07%



SYSTEM RATING
10.500 kWDC
8.125 kWAC

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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS
 STEPHEN POUNDERS
 RESIDENCE
 101 LOCKWOOD DR, CAMERON, NC 28326, USA
 EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
 PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
**ELECTRICAL
 LINE & CALCS.**

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

SHEET NUMBER
PV-8

SCALE: NTS

METER NO#: 166 418 470

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	SILFAB SIL-420 QD
VMP	33.08 V
IMP	12.7 A
VOC	38.84 V
ISC	13.5 A
TEMP. COEFF. VOC	-0.24%/K
PTC RATING	396.1 W
MODULE DIMENSION	67.8"(L) x 44.6"(W)
PANEL WATTAGE	420 W

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	ENPHASE IQ8M-72-2-US
MAX DC SHORT CIRCUIT CURRENT	15 A
CONTINUOUS OUTPUT CURRENT	1.35 A

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-10°C
AMBIENT TEMP (HIGH TEMP 2%)	36°C
CONDUIT HEIGHT	7/8"
ROOF TOP TEMP	90°C
CONDUCTOR TEMPERATURE RATE	58°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.24%/K

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

VOLTAGE RISE IN Q CABLE FROM THE MICROINVERTERS TO THE JUNCTION BOX

FOR BRANCH CIRCUIT #1 OF 9 IQ8M MICROS, THE VOLTAGE RISE ON THE 240 VAC Q CABLE IS 0.42%

FOR BRANCH CIRCUIT #2 OF 9 IQ8M MICROS, THE VOLTAGE RISE ON THE 240 VAC Q CABLE IS 0.42%

FOR BRANCH CIRCUIT #3 OF 7 IQ8M MICROS, THE VOLTAGE RISE ON THE 240 VAC Q CABLE IS 0.26%

VOLTAGE RISE FROM THE JUNCTION BOX TO THE IQ COMBINER BOX 4C

$VR_{ISE} = (\text{AMPS}/\text{INVERTER} \times \text{NUMBER OF INVERTERS}) \times (\text{RESISTANCE IN OHMS}/\text{FT.}) \times (\text{2-WAY WIRE LENGTH IN FT.})$

$= (1.35 \text{ AMP} \times 9) \times (0.00129 \text{ OHMS}/\text{FT}) \times (45 \text{ FT} \times 2)$

$= 12.15 \text{ AMPS} \times 0.00129 \text{ OHMS}/\text{FT}) \times 90 \text{ FT}$

$= 1.41 \text{ VOLTS}$

$\%VR_{ISE} = 1.41 \text{ VOLTS} \div 240 \text{ VOLTS} = 0.59\%$

THE VOLTAGE RISE FROM THE JUNCTION BOX TO THE IQ COMBINER BOX 4C IS 0.59%

VOLTAGE RISE FROM THE IQ COMBINER BOX 4C TO THE FUSED AC DISCONNECT

$VR_{ISE} = (\text{AMPS}/\text{INVERTER} \times \text{NUMBER OF INVERTERS}) \times (\text{RESISTANCE IN OHMS}/\text{FT.}) \times (\text{2-WAY WIRE LENGTH IN FT.})$

$= (1.35 \text{ AMP} \times 25) \times (0.00051 \text{ OHMS}/\text{FT}) \times (5 \text{ FT} \times 2)$

$= 33.75 \text{ AMPS} \times 0.00051 \text{ OHMS}/\text{FT}) \times 10 \text{ FT}$

$= 0.17 \text{ VOLTS}$

$\%VR_{ISE} = 0.17 \text{ VOLTS} \div 240 \text{ VOLTS} = 0.07\%$

THE VOLTAGE RISE FROM THE IQ COMBINER BOX 4C TO THE FUSED AC DISCONNECT IS 0.07%

VOLTAGE RISE FROM THE FUSED AC DISCONNECT TO THE MSP

$VR_{ISE} = (\text{AMPS}/\text{INVERTER} \times \text{NUMBER OF INVERTERS}) \times (\text{RESISTANCE IN OHMS}/\text{FT.}) \times (\text{2-WAY WIRE LENGTH IN FT.})$

$= (1.35 \text{ AMP} \times 25) \times (0.00051 \text{ OHMS}/\text{FT}) \times (5 \text{ FT} \times 2)$

$= 33.75 \text{ AMPS} \times 0.00051 \text{ OHMS}/\text{FT}) \times 10 \text{ FT}$

$= 0.17 \text{ VOLTS}$

$\%VR_{ISE} = 0.17 \text{ VOLTS} \div 240 \text{ VOLTS} = 0.07\%$

THE VOLTAGE RISE FROM THE FUSED AC DISCONNECT TO THE MSP IS 0.07%

TOTAL SYSTEM VOLTAGE RISE FOR ALL WIRE SECTIONS

$0.42\% + 0.59\% + 0.07\% + 0.07\% = 1.15\%$



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS
STEPHEN POUNDERS RESIDENCE 101 LOCKWOOD DR, CAMERON, NC 28326, USA EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM PHONE NO. (910) 574-1654

DATE: 2/19/2024
SHEET NAME SPECIFICATIONS & NOTES
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-9

1 **PHOTOVOLTAIC AC DISCONNECT**
 RATED AC OUTPUT CURRENT 33.75 AMPS
 NOMINAL OPERATING AC VOLTAGE 240 VOLTS

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

2 **RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

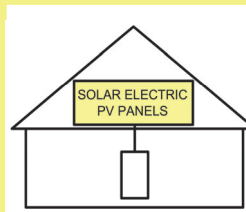
LABEL LOCATION:
 INVERTER AT OR WITHIN 3' OF THE DC COMBINER SWITCH OR AC DISCONNECT
 PER CODE: NEC 690.56(C)(3)

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

LABEL LOCATION:
 POINT OF INTERCONNECTION, MAIN SERVICE DISCONNECT, AC DISCONNECT, AC COMBINER, INVERTER
 PER CODE: NEC 690.13(B)

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

5 **CAUTION : SOLAR CIRCUIT**

LABEL LOCATION:
 MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUNCTION BOXES
 PER CODE: IFC 606.11.1.4

6 **PHOTOVOLTAIC**
AC DISCONNECT

LABEL LOCATION:
 AC DISCONNECT/BREAKER/POINTS OF CONNECTION
 PER CODE: NEC2017, 690.13(B)

7 **WARNING**
DUAL POWER SUPPLY
 SOURCES: UTILITY AND PV POWER SOURCE ELECTRIC SYSTEM

LABEL LOCATION:
 POINT OF INTERCONNECTION
 PER CODE: NEC 2017, 705.12(B)

8 **CAUTION : SOLAR ELECTRIC SYSTEM CONNECTED**

LABEL LOCATION:
 POINT OF INTERCONNECTION & INVERTER
 PER CODE: NEC 690.15 & 690.13(B)

9 **WARNING - Electric Shock Hazard**
 No user serviceable parts inside
 Contact authorized service provider for assistance

LABEL LOCATION:
 INVERTER & JUNCTION BOXES (ROOF)
 PER CODE: NEC 690.13 (G)(3) & 690.13 (G)(4)

10 **CAUTION**
DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC

LABEL LOCATION:
 MAIN SERVICE DISCONNECT/ AC DISCONNECT/ MAIN SERVICE PANEL/ REVENUE METER/ AC COMBINER
 PER CODE: NEC 705.12(B)(3)

11 **SERVICE EQUIPMENTS**
EQUIPMENT DE SERVICE
EQUIPO DE SERVICIO

LABEL LOCATION:
 AC DISCONNECT
 PER CODE: NEC 230.66



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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 RESIDENCE
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 EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
 PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
SIGNAGE

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

SHEET NUMBER
PV-10

ADHESIVE FASTENED SIGNS

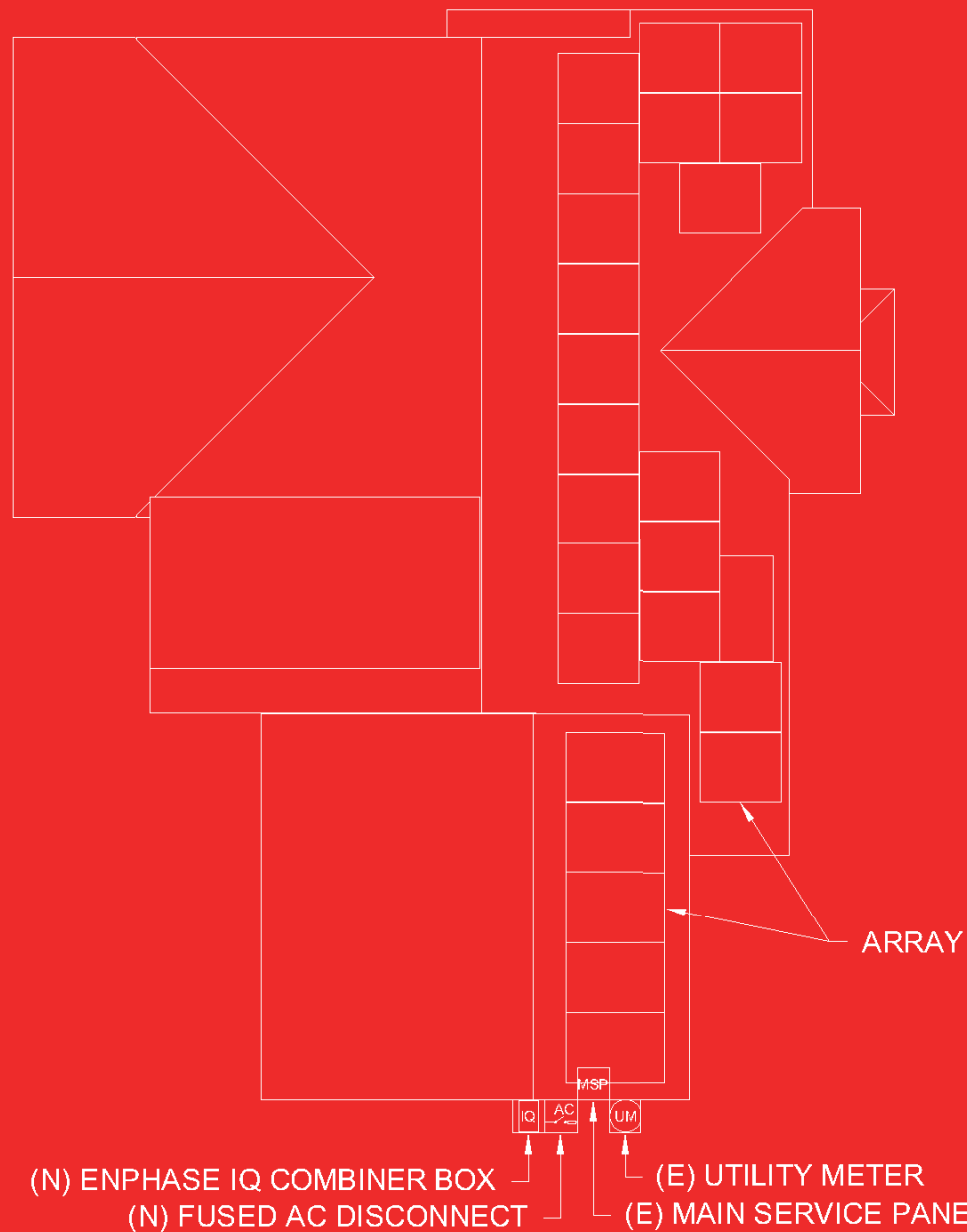
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNING AND MARKINGS SHOULD COMPLY WITH ANSI 2535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]



CAUTION!

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

LOCKWOOD DR



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



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

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EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024

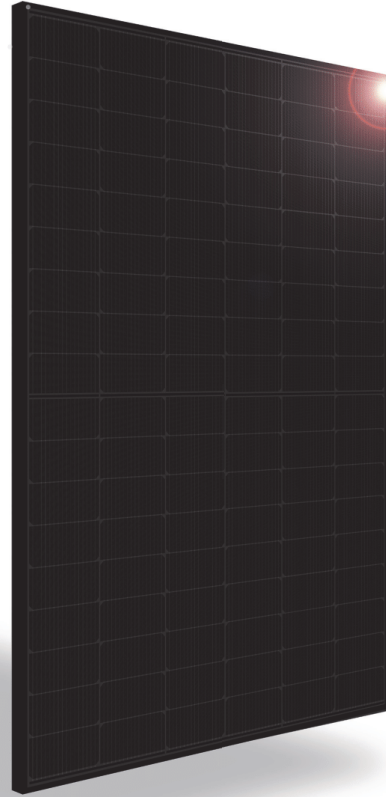
SHEET NAME
SIGNAGE

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

SHEET NUMBER
PV-11

SILFAB PRIME NTC

SIL-420 QD



INTRODUCING NEXT-GENERATION TOPCON CELL TECHNOLOGY

- Improved Shade Tolerance
- Improved Low-Light Performance
- Increased Performance in High Temperatures
- Enhanced Durability
- Reduced Degradation Rate
- Industry-Leading Warranty



SILFABSOLAR.COM



PROUD PARTNER OF



ELECTRICAL SPECIFICATIONS		420	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	420	313
Maximum power voltage (Vpmax)	V	33.08	10.15
Maximum power current (Ipmax)	A	12.70	30.86
Open circuit voltage (Voc)	V	38.84	10.85
Short circuit current (Isc)	A	13.50	36.52
Module efficiency	%	21.5%	20.1%
Maximum system voltage (VDC)	V	1000	
Series fuse rating	A	25	
Power Tolerance	Wp	0 to +10	

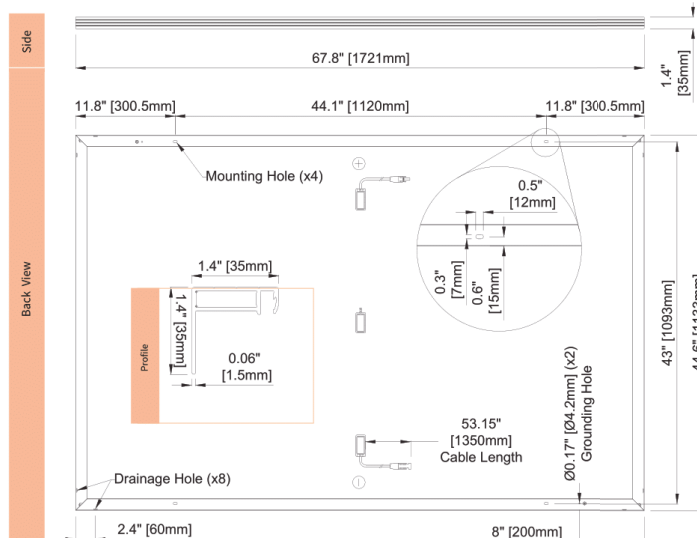
Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ± 3%
Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by 0 to +10 W.

MECHANICAL PROPERTIES / COMPONENTS	METRIC	IMPERIAL
Module weight	21 kg ± 0.2 kg	46.3 lbs ± 0.4 lbs
Dimensions (H x L x D)	1721 mm x 1133 mm x 35 mm	67.8 in x 44.6 in x 1.37 in
Maximum surface load (wind/snow)*	4000 Pa rear load / 5400 Pa front load	83.5 lb/ft ² rear load / 112.8 lb/ft ² front load
Hail impact resistance	ø 25 mm at 83 km/h	ø 1 in at 51.6 mph
Cells	108 Half cells - TOPCon (N-Type) Silicon solar cell 182 mm x 91 mm	108 Half cells - TOPCon (N-Type) Silicon solar cell 7.16 in x 3.58 in
Glass	3.2 mm high transmittance, tempered, antireflective coating	0.126 in high transmittance, tempered, antireflective coating
Cables and connectors (refer to installation manual)	1350 mm, ø 5.7 mm, MC4 from Staubli	53.1 in, ø 0.22 in (12 AWG), MC4 from Staubli
Backsheet	High durability, superior hydrolysis and UV resistance, multi-layer dielectric film, fluorine-free PV backsheet	
Frame	Anodized aluminum (Black)	
Junction Box	UL 3730 Certified, IEC 62790 Certified, IP68 rated, 3 diodes	

TEMPERATURE RATINGS	WARRANTIES
Temperature Coefficient Isc	Module product workmanship warranty
Temperature Coefficient Voc	Linear power performance guarantee
Temperature Coefficient Pmax	≥ 98% end 1st yr
NOCT (± 2 °C)	≥ 94.7% end 12th yr
Operating temperature	≥ 90.8% end 25th yr
	≥ 89.3% end 30th yr

CERTIFICATIONS	SHIPPING SPECS
Product	UL 61215, UL 61730, CSA C22.2#61730, IEC 61215, IEC 61730 IEC 61701 (Salt Mist Corrosion), IEC 62716 (Ammonia Corrosion), CEC Listed, UL Fire Rating: Type 2
Factory	ISO9001:2015
	Modules Per Pallet: 26 or 26 (California)
	Pallets Per Truck: 32 or 30 (California)
	Modules Per Truck: 832 or 780 (California)

* Warning: Read the Safety and Installation Manual for mounting specifications and before handling, installing and operating modules.
** 12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at silfab.com.
PAN files generated from 3rd party performance data are available for download at: silfab.com/downloads.



TITAN SOLAR POWER
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Silfab - SIL-420-QD-20240109

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

SYSTEM INFO

(25) SILFAB
SIL-420 QD

(25) ENPHASE
IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC

AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
RESIDENCE
101 LOCKWOOD DR, CAMERON, NC 28326, USA
EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
EQUIPMENT SPECIFICATIONS

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

SHEET NUMBER
PV-13



DATA SHEET



IQ8M and IQ8A Microinverters

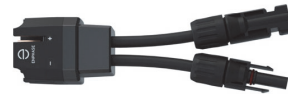
Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55-nm technology with high-speed digital logic and has superfast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-and-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to the manufacturer's instructions.

* Only when installed with IQ System Controller 2, meets UL 1741.
** IQ8M and IQ8A support split-phase, 240 V installations only.

Easy to install

- Lightweight and compact with plug-and-play connectors
- Power line communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Comply with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meet CA Rule 21 (UL 1741-SA) and IEEE® 1547:2018 (UL 1741-SB 3rd Ed.)

NOTE:

- IQ8 Microinverters cannot be mixed with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, and so on) in the same system.
- IQ Gateway is required to change the default grid profile at time of installation to meet local Authority Having Jurisdiction (AHJ) requirements.

IQ8M and IQ8A Microinverters

INPUT DATA [DC]	UNITS	IQ8M-72-2-US	IQ8A-72-2-US
Commonly used module pairings ¹	W	260–460	295–500
Module compatibility	–	To meet compatibility, PV modules must be within maximum input DC voltage and maximum module I _{sc} listed in this table. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator .	
MPPT voltage range	V	30–45	32–45
Operating range	V	16–58	
Minimum/Maximum start voltage	V	22/58	
Maximum input DC voltage	V	60	
Maximum continuous input DC current	A	12	
Maximum input DC short-circuit current	A	25	
Maximum module I _{sc}	A	20	
Overvoltage class DC port	–	II	
DC port backfeed current	mA	0	
PV array configuration	–	1 × 1 ungrounded array; no additional DC side protection required; AC side protection requires max 20 A per branch circuit.	

OUTPUT DATA [AC]	UNITS	IQ8M-72-2-US	IQ8A-72-2-US
Peak output power	VA	330	366
Maximum continuous output power	VA	325	349
Nominal (L-L) voltage	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage ²	V	211-264	
Maximum continuous output current	A	1.35	1.45
Nominal frequency	Hz	60	
Extended frequency range	Hz	47–68	
AC short-circuit fault current over three cycles	Arms	2	
Maximum units per 20 A (L-L) branch circuit ³	–	11	
Total harmonic distortion	–	<5%	
Overvoltage class AC port	–	III	
AC port backfeed current	mA	30	
Power factor setting	–	1.0	
Grid-tied power factor (adjustable)	–	0.85 leading ... 0.85 lagging	
Peak efficiency	%	97.8	97.7
CEC weighted efficiency	%	97.5	97
Nighttime power consumption	mW	21	22

MECHANICAL DATA			
Ambient temperature range	–40°C to 60°C (–40°F to 140°F)		
Relative humidity range	4% to 100% (condensing)		
DC connector type	MC4		
Dimensions (H × W × D)	212 mm (8.3 in) × 175 mm (6.9 in) × 30.2 mm (1.2 in)		

(1) No enforced DC/AC ratio.
(2) Nominal voltage range can be extended beyond nominal if required by the utility.
(3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.



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

SYSTEM INFO

(25) SILFAB
SIL-420 QD

(25) ENPHASE
IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC

AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
RESIDENCE
101 LOCKWOOD DR, CAMERON, NC 28326, USA
EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
EQUIPMENT
SPECIFICATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-14

IQ8M and IQ8A Microinverters

MECHANICAL DATA	
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection – no fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion-resistant polymeric enclosure
Environment category/UV exposure rating	NEMA Type 6/Outdoor
COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SB), UL 62109-1, UL1741/IEEE® 1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, NEC 2020 and NEC 2023 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to the manufacturer's instructions.



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(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

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 EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
 PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
**EQUIPMENT
 SPECIFICATIONS**

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

SHEET NUMBER
PV-15

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C



X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed



To learn more about Enphase offerings, visit enphase.com



Enphase IQ Combiner 4/4C

MODEL NUMBER

IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.

ACCESSORIES AND REPLACEMENT PARTS (not included, order separately)

Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.

ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers

MECHANICAL DATA

Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> • 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

INTERNET CONNECTION OPTIONS

Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)

COMPLIANCE

Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit enphase.com

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

SYSTEM INFO

(25) SILFAB
SIL-420 QD

(25) ENPHASE
IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC

AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
RESIDENCE
101 LOCKWOOD DR, CAMERON, NC 28326, USA
EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
**EQUIPMENT
SPECIFICATIONS**

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-16

STRONGHOLD™ | BUTYL



Unirac's **STRONGHOLD™ Butyl** is efficient, dependable, and optimized for **UNIRAC's NXT UMOUNT™** system.

The pre-applied butyl pad removes the need for additional flashing. Just peel the liner, place the attachment, and fasten it to the roof. In addition, the butyl, used throughout the roofing and solar industries for its reliability, conforms to the screws and roof for a robust, dependable seal with no extra work! Couple this with the **NXT UMOUNT™** system, and you have a highly reliable, easy-to-install system with integrated wire management.



KITTED WITH

- ONE (1) STRONGHOLD™ Butyl direct-to-deck attachment with pre-applied butyl patch (Extra patches for shimming available.)
- TWO (2) screws for rafter installation (Additional screws for direct-to-deck applications available.)
- ONE (1) NXT Rail Clamp

FOR QUESTIONS OR CUSTOMER SERVICE CONTACT: 505-242-6411 | SALES@UNIRAC.COM | WWW.UNIRAC.COM

STRONGHOLD™ | BUTYL



SIMPLIFIED FLASHLESS SOLUTION

- One-step Butyl application
- Reliable waterproofing without messy sealant
- Eliminate roof disturbance
- Minimize labor

OPTIMIZED FOR NXT UMOUNT, UNIRAC'S OPEN CHANNEL RAIL SYSTEM

- Open slot design for ease of rail connectivity with included STRONGHOLD™ NXT rail clamp
- STRONGHOLD™ Butyl combined with the NXT UMOUNT system make installation and wire management a breeze
- UL Certified with NXT UMOUNT

DUAL MOUNTING OPTIONS

- Pre-attached butyl pad: Simply peel, stick, and fasten with the two (2) included screws for rafter mount
- For direct-to-deck applications, additional decking screws are available

ADDITIONAL BENEFITS

- Mill and Dark Finishes
- Option for extra cross-course butyl patches
- Competitively priced with standard rafter attachments

UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT



UNMATCHED EXPERIENCE



CERTIFIED QUALITY



ENGINEERING EXCELLENCE



BANKABLE WARRANTY



DESIGN TOOLS



PERMIT DOCUMENTATION

TECHNICAL SUPPORT

UNIRAC's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

UNIRAC is the only PV mounting vendor with ISO certifications for 9001:2015, 14001:2015 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

Don't leave your project to chance, UNIRAC has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are receiving products of exceptional quality. STRONGHOLD™ products are covered by a twenty five (25) year limited product warranty.



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

SYSTEM INFO

(25) SILFAB
SIL-420 QD

(25) ENPHASE
IQ8M-72-2-US

DC SYSTEM SIZE: 10.500 kWDC

AC SYSTEM SIZE: 8.125 kWAC

METER: 166 418 470

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
RESIDENCE
101 LOCKWOOD DR, CAMERON, NC 28326, USA
EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024

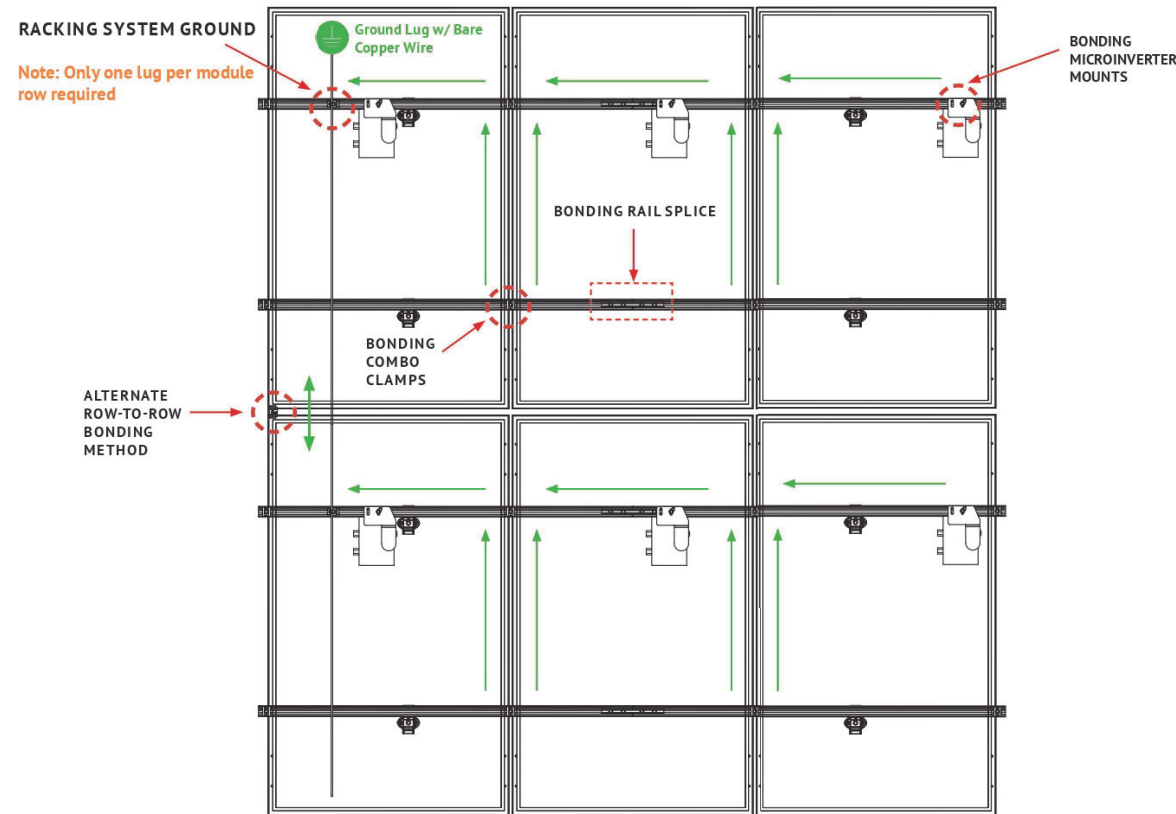
SHEET NAME
EQUIPMENT SPECIFICATIONS

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

SHEET NUMBER
PV-17

PROTECT YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

PUB2023JAN26-V2



The NXT UMOUNT system has been certified and listed to the UL 2703 standard (Rack Mounting Systems and Clamping Devices for Flat-Plate Photovoltaic Modules and Panels). This standard included electrical grounding, electrical bonding, mechanical load and fire resistance testing.

SYSTEM LEVEL FIRE CLASSIFICATION

The system fire class rating requires installation in the manner specified in the NXT UMOUNT Installation Guide. NXT UMOUNT has been classified to the system level fire portion of UL 2703. NXT UMOUNT has achieved system level performance for steep sloped roofs. System level fire performance is inherent in the NXT UMOUNT design, and no additional mitigation measures are required. The fire classification rating is only valid on roof pitches greater than 2:12 (slopes ≥ 2 inches per foot, or 9.5 degrees). The system is to be mounted over fire resistant roof covering rated for the application. There is no required minimum or maximum height limitation above the roof deck to maintain the system fire rating for NXT UMOUNT. Approved Module Types & System Level Fire Ratings are listed below:

Module Type	System Level Fire Rating	Rail Direction	Module Orientation
Type 1, 2, 3 with metal frame, 10 with metal frame, 19, 22, 25, 29, & 30	Class A	Parallel OR Perpendicular to Ridge	Landscape OR Portrait

MECHANICAL LOAD TEST MODULES

The modules selected for UL 2703 mechanical load testing were selected to represent the broadest range possible for modules on the market. The tests performed covers module frame thicknesses greater than or equal to 1.0 mm, single and double wall frame profiles (some complex frame profiles could require further analysis to determine applicability), and clear and dark anodized aluminum frames. PV modules may have a reduced load rating, independent of the NXT UMOUNT rating. Please consult the PV module manufacturer's installation guide for more information.

Tested Module	UL2703 Certification Load Ratings	Tested Loads	Tested Module Area
SunPower SPR-A440 -COM	Down: 50 psf, Up: 50 psf, Slope: 15 psf	Down: 75 psf, Up: 75 psf, Slope: 23 psf	21.86 sq ft
Jinko JKM-xxxM 72HL4-V	Down: 50.12 psf, Up: 22.28 psf, Slope: 8 psf	Down: 75.19 psf, Up: 33.42 psf, Slope: 12 psf	27.76 sq ft

NOTE: Jinko module mechanical load values do not apply to the following part numbers (shown on page 3); RLSPLCM2, SBUTYLM1, SBUTYLD1, SHCLMPM2, & SHCLMPD2

UL2703 CERTIFICATION MARKING:

Unirac NXT UMOUNT is listed to UL 2703. Certification marking is embossed on all Combo Clamps as shown. Labels with additional certification information are provided with clamps and must be applied to the NXT UMOUNT Rail at the edge of the array.

Note: This racking system may be used to ground and/or mount a PV module complying with UL1703/UL61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
 RESIDENCE
 101 LOCKWOOD DR, CAMERON, NC 28326, USA
 EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
 PHONE NO. (910) 574-1654

DATE: 2/19/2024

SHEET NAME
EQUIPMENT SPECIFICATIONS

SHEET SIZE
ANSI B 11" X 17"

SHEET NUMBER
PV-18

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the NXT UMOUNT system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series	
Alonrise	AION60G1, AION72G1	Canadian Solar	CS1(H/K/U/Y)-MS CS3K-(MB/MB-AG/MS/P/P HE/PB-AG) CS3L-(MS/P), CS3N-MS CS3U-(MB/MB-AG/MS/P/P HE/PB/PB-AG) CS3W-(MB-AG/MS/P/P-PB-AG) CS3Y-MB-AG, CS5A-M CS6K-(M/MS/MS AllBlack/P/P HE) CS6P-(M/P), CS6R-MS CS6U-(M/P/P HE), CS6W-(MB-AG/MS) CS6X-P, CSX-P, CS7L-MB-AG ELPS CS6(A/P)-MM	Helene	36M, 36P 60M, 60P, 72M & 72P Series 144HC M6 144HC M10 SL Bifacial	
Aleo	P-Series & S-Series		Centrosolar America	C-Series & E-Series	H-SAAE	HT60-156M-C HT60-156M(V)-C HT72-156(M/P) HT72-156P-C, HT72-156P(V)-C HT72-156M(PDV)-BF, HT72-156M(PD)-BF HT72-166M, HT72-18X
Aptos Solar	DNA-120-(MF/BF)10-xxxxW DNA-120-MF10 DNA-120-(MF/BF)23 DNA-144-(MF/BF)23 DNA-120-(MF/BF)26 DNA-144-(MF/BF)26 DNA-108-(MF/BF)10-xxxxW		Certainleed	CT2xxMxx-01, CT2xxPxx-01, CTxxMxx-01 CTxxPxx-01, CTxxMxx-02, CTxxMxx-03 CTxxMxx-04, CTxxHC11-04	Hyundai	KG, MG, RW, TG, RI, RG, TI, KI, HI Series HIA-SxxxxHG, HD-SxxxxRG(BK), HIS-5400PI HIS-SxxxxYH(BK), HIS-SxxxxG(BK)
Astronergy	CHSM6612 M, M/HV CHSM6612P Series CHSM6612P/HV Series CHSM72M-HC CHSM72M(DG)/F-BH		Eco Solargy	Orion 1000 & Apollo 1000	ITEK	IT-SE Series
Auxin	AXN6M610T AXN6P610T AXN6M612T AXN6P612T		ET Solar	ET AC Module, ET Module ET-M772BH520-550WW/WB	Japan Solar	JPS-60 & JPS-72 Series
Axitec	AC-xxxx(M/P)/60S, AC-xxxx(M/P)/72S AC-xxxxP/156-60S AC-xxxxMH/120(S/V/SB/VB) AC-xxxxMH/144(S/V/SB/VB)	First Solar	FS-6XXX(A) FS-6XXX(A)-P, FS-6XXX(A)-P-I	JA Solar	JAM72D30MB, JAM78D10MB JAM72S30 /MR JAP6 60-xxx JAM6(k)-60/xxx, JAP6(k)-72-xxx/4BB JAP72S#-xxx** JAP6(k)-60-xxx/4BB, JAP60S#-xxx** JAM6(k)-72-xxx**, JAM72S#-xxx** JAM6(k)-60-xxx**, JAM60S#-xxx** L #: 01, 02, 03, 09, 10 IL **: SC, PR, BR, HIT, IB, MW, MR ** = Backsheet, ## Cell technology	
Boviet	BVM6610, BVM6612	Flextronics	FXS-xxxxBB	Jinko	JKM & JKMS Series JKMxxxM-72HL-V JKMxxxM-72HL-M-TV JKMxxxM-72HL-4(TV) JKMxxxM-72HL-3-V JKMxxxM-72HL-4-TV	
BYD	P6K & MHK-36 Series	Freedom Forever	FF-MP-BBB-xxx, FF-MP1-BBB-xxx			
		FreeVolt	PVGraf			
		GCL	GCL-P6 & GCL-M6 Series			
		Hansol	TD-AN3, TD-AN4 UB-AN1, UD-AN1			
		Hanwha SolarOne	HSL 60			

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Listed models can be used to achieve a Class A fire system rating, for steep slope applications, only when modules are typed 1, 2, 3 with metal frame, 10 with metal frame, 19, 22, 25, 29, or 30. See Appendix A Page 24.

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the NXT UMOUNT system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series			
Kyocera	KD-F & KU Series	Mitsubishi	MJE & MLE Series	Q Cells (Cont.)	Q.PEAK DUO L-(G7/G7.1/G7.2/G7.3/G7.7) Q.PEAK DUO (BLK) G8(+) Q.PEAK DUO L-(G8/G8.1/G8.2/G8.3) Q.PEAK DUO L-G8.3 (BF/BF/BGT) Q.PEAK DUO (BLK) ML-G9(+) Q.PEAK DUO XL-G9.3/BFG Q.PEAK DUO-G10+ Q.PEAK DUO BLK G10(+) Q.PEAK DUO BLK G10+ /AC Q.PEAK DUO (BLK) ML-G10(+) Q.PEAK DUO XL-(G10/G10.2/G10.3/G10.4/G10.d) Q.PEAK DUO XL-G10.3/BFG Q.PEAK DUO XL-G10.d/BFG Q.PEAK DUO XL-G11.2/G11.3 Q.PEAK DUO XL-G11.3/BFG			
LA Solar	LSxxxHC(166) LSxxxBL LSxxxHC	Neo Solar Power Co.	D6M Series		REC	RECxxxAA (BLK/Pure) RECxxxNP (N-PEAK) RECxxxM4(H)-24/TH RECxxxNP2 (Black) RECxxxPE, RECxxxPE72 RECxxxTP2(M/BLK2) RECxxxTP2S(M)72 RECxxxTP3M (Black) RECxxxTP4 (Black)		
LG Electronics	LGxxx(E1C/E1K/N1C/N1K/N2T/N2W/S1C/S2W/Q1C/Q1K)-A5 LGxxx(A1C/M1C/M1K/N1K/N1C/Q1C/Q1K/QAC/QAK)-A6 LGxxxN2W-B5 LGxxxN2T-B5 LGxxxN1K-B6 LGxxx(N1C/N1K/N2T/N2W)-E6 LGxxx(N1C/N1K/N2W/S1C/S2W)-G4 LGxxxN2T-J5 LGxxxN1K/N1W/N2T/N2W)-L5 LGxxx(M1C/N1C/Q1C/Q1K)-N5 LGxxx(N1C/N1K/N2W/Q1C/Q1K)-V5 LGxxxN3K-V6	NE Solar	NESE xxx-72MHB-M10 NESE xxx-60MH-M6			Renesola	All 60-cell modules	
	Panasonic	VBHNxxxSA06/SA06B/SA11/SA11E VBHNxxxSA15/SA15B/SA16/SA16E, VBHNxxxKA, VBHNxxxKA03/04, VBHNxxxSA17/SA17G/SA17E/SA18/SA18E, VBHNxxxZA01/ZA02/ZA03/VBHNxxxZA04 EVPVxxx EVPVxxx(H/K/PK)	Pearmar			S6xxxM (FB/BF) SMxxxM	Risen	RSM Series, RSM110-8-xxxxBMDG
		LONGI	LR4-60(HPB/HPH) LR4-72(HPH) LR6-60 LR6-60(BK/HPB/HPH/HV/PB/PE/PH) LR6-72 LR6-72(BK/HV/PB/PE/PH) RealBlack LR4-60HPB RealBlack LR6-60HPB			Phono Solar	PSxxxM1-20/U PSxxxM1H-20/U PSxxxM1-20UH PSxxxM4(H)-24/TH PSxxxM1-20/UH PSxxxM1H-20/UH PSxxxM-24/T PSxxxMH-24/T PSxxxM-24/TH PSxxxMH-24/TH	SEG Solar
Maxeon	SPR-MAX3-xxx-COM	Prism Solar	P72 Series	S-Energy		SN72 & SN60 Series		
Meyer Burger	Meyer Burger Glass	Q.Cells	Plus, Pro, Peak, G3, G4, Peak G5(SC), G6(+)(SQ(AC), G7, G8(+), Plus, Pro, Peak L-G2, L-G4, L-G5 Peak L-G5, L-G6, L-G7, L-G8(BFF) Q.PEAK DUO (BLK)-G6+ Q.PEAK DUO BLK-G6+TS Q.PEAK DUO (BLK)-G7					
Mission Solar Energy	MSE Mono, MSE Perc MSExxx(SR87/SR8K/SR9S/SX5T) MSExxx(SX5K/SX6W)							
Mitrex	Mxxx-L3H, Mxxx-13H							

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Listed models can be used to achieve a Class A fire system rating, for steep slope applications, only when modules are typed 1, 2, 3 with metal frame, 10 with metal frame, 19, 22, 25, 29, or 30. See Appendix A Page 24.



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

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

STEPHEN POUNDERS
RESIDENCE
101 LOCKWOOD DR, CAMERON, NC 28326, USA
EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM
PHONE NO. (910) 574-1654

DATE: 2/19/2024
SHEET NAME EQUIPMENT SPECIFICATIONS
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-19



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

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the NXT UMount system.

Manufacture	Module Model / Series
Seraphim	SEG-(6PA/6PB/6MA/6MA-HV/6MB/E01/E11) SRP-(6QA/6QB) SRP-xxx-6MB-HV, SRP-320-375-BMB-HV, SRP-xxx-BMC-HV, SRP-390-450-BMA-HV, SRP-xxx-BMZ-HV, SRP-390-405-BMD-HV
Sharp	NU-SA & NU-SC Series
Silfab	SLA-M, SLA-P, SLG-M, SLG-P & BC Series SILxxx(BK/BL/HC/HL/HN/ML/NL/NT/NX/NU)
SolarEver USA	SE-166*83-xxxM-120N
Solaria	PowerXT-xxxR-(AC/PD/BD) PowerXT-xxxC-PD PowerXT-xxxR-PM (AC)
Solartech	STU HIT, STU PERC & Quantum PERC
SolarWorld	Sunmodule Protect, Sunmodule Plus/Pro
Sonali	SS-M-360 to 390 Series SS-M-390 to 400 Series SS-M-440 to 460 Series SS-M-430 to 460 BiFacial Series
Sun Edison	F-Series, R-Series
Suniva	MV Series & Optimus Series (35mm)
SunPower	AC, X-Series, E-Series & P-Series SPR E20 435 COM (G4 Frame) Axxx-BLK-G-AC, SPR-Mxxx-H-AC
SunTech	STP, STPXXXS - B60/Wnhb
Talesun	TP572, TP596, TP654, TP660 TP672, Hipor M, Smart TD6172M
Tesla	SC, SC B, SC B1, SC B2, TxxxS, TxxxH

Manufacture	Module Model / Series
Trina	PA05, PD05, DD05, DD06, DE06, DE09.05 PD14, PE14, DD14, DE14, DE15, DE15V(II) DEG15HC.20(II), DEG15MC.20(II) DEG15VC.20(II), DE18M(II), DEG18MC.20(II) DE19, DEG19C.20
TSMC	TS-150C2 CIGSw
Universal Solar	UNI4xx-144BMH-DG UNI5xx-144BMH-DG UNIxxx-108M-BB UNIxxx-120M-BB UNIxxx-120MH
Upsolar	UP-MxxxP, UP-MxxxM(-B)
URECO	D7Kxxx(H7A/H8A), D7Mxxx(H7A/H8A) FAKxxx(C8G/E8G), FAMxxxE7G-BB FAMxxxE8G(-BB), FBKxxxM8G F6MxxxE7G-BB FBMxxxMFG-BB
Vikram	Eldora, Somera, Ultima PREXOS VSMDHT.60.AAA.05 PREXOS VSMDHT.72.AAA.05
Vina	VNS-72M1-5-xxxW-1.5, VNS-72M3-5-xxxW-1.5, VNS-144M1-5-xxxW-1.5, VNS-144M3-5-xxxW-1.5, VNS-120M3-5-xxxW-1.0
VSUN	VSUNxxx-60M-BB, VSUNxxx-72MH VSUN4xx-144BMH VSUN4xx-144BMH-DG VSUN5xx-144BMH-DG VSUNxxx-108M-BB VSUNxxx-120M-BB

Manufacture	Module Model / Series
Winaico	WST & WSP Series
Yingli	YGE & YLM Series
ZNShine Solar	ZXM6-72 Series, ZXM6-NH144 ZXM6-NHLDD144, ZXM7-SH108 Series

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- **Listed models can be used to achieve a Class A fire system rating, for steep slope applications, only when modules fire typed 1, 2, 3 with metal frame, 10 with metal frame, 19, 22, 25, 29, or 30. See Appendix A Page 24.**

SYSTEM INFO
(25) SILFAB SIL-420 QD
(25) ENPHASE IQ8M-72-2-US
DC SYSTEM SIZE: 10.500 kWDC
AC SYSTEM SIZE: 8.125 kWAC
METER: 166 418 470

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS
STEPHEN POUNDERS RESIDENCE 101 LOCKWOOD DR, CAMERON, NC 28326, USA EMAIL ID: STEPHEN.POUNDERS@YAHOO.COM PHONE NO. (910) 574-1654

DATE: 2/19/2024
SHEET NAME EQUIPMENT SPECIFICATIONS
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-20

A. System Specifications and Ratings

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

Table 1: Typical Wire Size, Torque Loads and Ratings

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

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

Wire size, AWG or kcmil (mm2)	Wires per terminal (pole)			
	1 mm (inch)	2 mm (inch)	3 mm (inch)	4 or More mm (inch)
14-10 (2.1-5.3)	Not specified	-	-	-
8 (8.4)	38.1 (1-1/2)	-	-	-
6 (13.3)	50.8 (2)	-	-	-



TITAN SOLAR POWER
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PH# : (808) 371-5338
Electrical LIC# : U.33714

SYSTEM INFO

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SIL-420 QD

(25) ENPHASE
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SHEET NUMBER

PV-21