

SCOPE OF WORK:
TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 1502 NORTHEAST HARDAGE CIRCLE , LESS SUMMIT, MISSOURI 64086, 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
13 JINKO JKM425N-54HL4-B MODULES
13 ENPHASE IQ8PLUS-72-2-US (240V) 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 IN CONSTRUCTION DETAILS.
 - ARCHITECT HAS NOT BEEN RETAINED TO SUPERVISE ANY CONSTRUCTION OR INSTALLATION OF ANY EQUIPMENT AT SITE.
 - CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAINS 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.
 - NO CHANGES ARE TO BE MADE WITHOUT THE CONSULTATION AND APPROVAL OF THE ARCHITECT.
 - CONTRACTOR SHALL OBTAIN BULDING 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 MISSOURI 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.
 - ALL EXPOSED PLUMBING, HVAC, ELECTRICAL DUCTWORK, PIPING AND CONDUITS ARE TO BE PAINTED BY GENERAL CONTRACTOR.
 - 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:**
- THE EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE INSTALLED ONLY BY QUALIFIED PEOPLE. A QUALIFIED PERSON IS ONE WHO HAS SKILLS AND KNOWLEDGE RELATED TO THE CONSTRUCTION AND OPERATION OF THE ELECTRICAL EQUIPMENT AND INSTALLATIONS AND HAS RECIEVED SAFETY TRAINING TO RECOGNIZE AND AVOID THE HAZARDS INVOLVED. (NEC 690.4(E) AND 705.6)
 - LOCAL UTILITY PROVIDER SHALL BE NOTIFIED PRIOR TO USE AND ACTIVATION OF ANY SOLAR PHOTOVOLTAIC INSTALLATION. FOR A LINE SIDE TAP CONNECTION, UTILITY NEEDS TO BE NOTIFIED WELL IN ADVANCE TO COORDINATE BUILDING ELECTRICAL SHUT OFF.
 - NEW CONDUIT ROUTING SHOWN IS ESSENTIALLY SCHEMATIC. SUBCONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES.
 - ARRAY WIRING SHOULD NOT BE READILY ACCESSIBLE EXCEPT TO QUALIFIED PERSONNEL.
 - ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE WATERTIGHT AND APPROVED FOR USE IN WET LOCATIONS. (NEC 314.15A).
 - WIRING METHODS FOR PV SYSTEM CONDUCTORS AREN'T PERMITTED WITHIN 10 IN. OF THE ROOF DECKING OR SHEATHING EXCEPT WHERE LOCATED DIRECTLY BELOW THE ROOF SURFACE THAT'S COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT WIRING
 - BACK-FED BREAKER MUST BE AT THE OPPOSITE END OF BUS BAR FROM THE MAIN BREAKER OR MAIN LUG SUPPLYING CURRENT FROM THE UTILITIES.
 - ALL CONDUCTORS AND WIRE TIES EXPOSED TO SUNLIGHT ARE LISTED AS UV RESISTANT.
 - CONTRACTOR SHALL FOLLOW ALL ELECTRICAL EQUIPMENT LABELING REQUIREMENTS IN NEC 690 AND IFC 2018
 - MEASURE THE LINE-TO-LINE AND LINE-TO-NEUTRAL VOLTAGE OF ALL SERVICE ENTRANCE CONDUCTORS PROIR TO INSTALLING ANY SOLAR EQUIPMENT. THE VOLTAGES FOR THE 240VAC RATED.

GOVERNING CODES
2018 INTERNATIONAL RESIDENCIAL CODE
2018 INTERNATIONAL FIRE CODE
2017 NATIONAL ELECTRICAL CODE
2018 INTERNATIONAL BUILDING CODE

AUTHORITY HAVING JURISDICTION:CITY OF LEE'S SUMMIT
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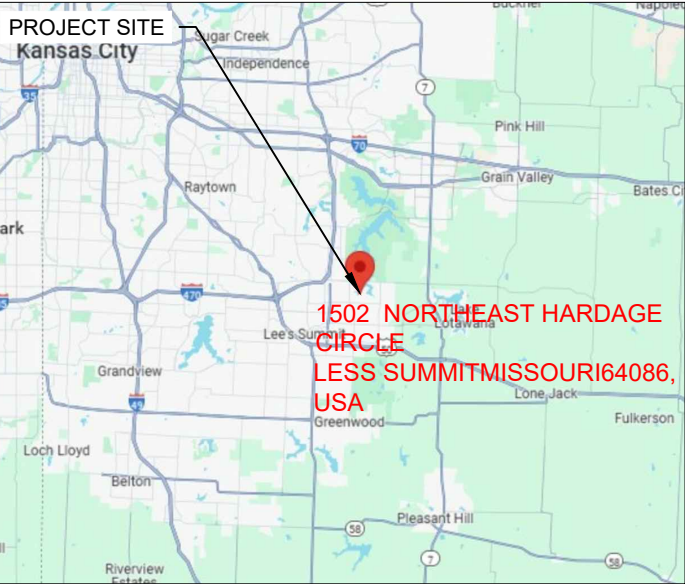
- WIRING AND CONDUIT NOTES:**
- ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS
 - ALL PV CABLES AND HOMERUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED
 - ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [NEC 690.8 (A)(1) & (B)(1)], [NEC 240] [NEC 690.7] FOR MULTIPLE CONDUCTORS
 - ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [NEC TABLE 310.15 (B)(2)(C)] BLACK ONLY**
 - 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 600V PER NEC 2008 OR 1000V PER NEC 2017
 - 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% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS
 - 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

SYSTEM RATING
5.53 KWDC
3.77 KWAC

SHEET INDEX	
PV-0	COVER PAGE
PV-1	SITE PLAN
PV-2	ROOF PLAN & MODULES
PV-2A	STRING LAYOUT & BOM
PV-3	ATTACHMENT DETAIL
PV-4	ELECTRICAL LINE & CALCS
PV-4A	SPECIFICATIONS & NOTES
PV-5	SIGNAGE
PV-6+	EQUIPMENT SPECIFICATIONS



1 PV-0 HOUSE PHOTO SCALE: NTS



2 PV-0 VICINITY MAP SCALE: NTS



5709 GARDENDALE DR.
HOUSTON TX 77092

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

PROJECT NAME & ADDRESS

SARAH BENNETT
RESIDENCE
1502 NORTHEAST HARDAGE
CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

DATE: 12/20/2024

DESIGNER DETAILS:

SHEET NAME
COVER PAGE

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER

PV-0

- 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

UM

(E) UTILITY METER

PM

(N) PRODUCTION METER

MSP

(E) MAIN SERVICE PANEL (MSP)

ACD

(N) NON FUSED AC DISCONNECT(EATON DG221URB)

CB

(N) ENPHASE IQ COMBINER 4C

○

- VENT, ATTIC FAN (ROOF OBSTRUCTION)

●

- (43) UNIRAC FLASH LOC ATTACHMENT @ 48"O.C

- CONDUIT

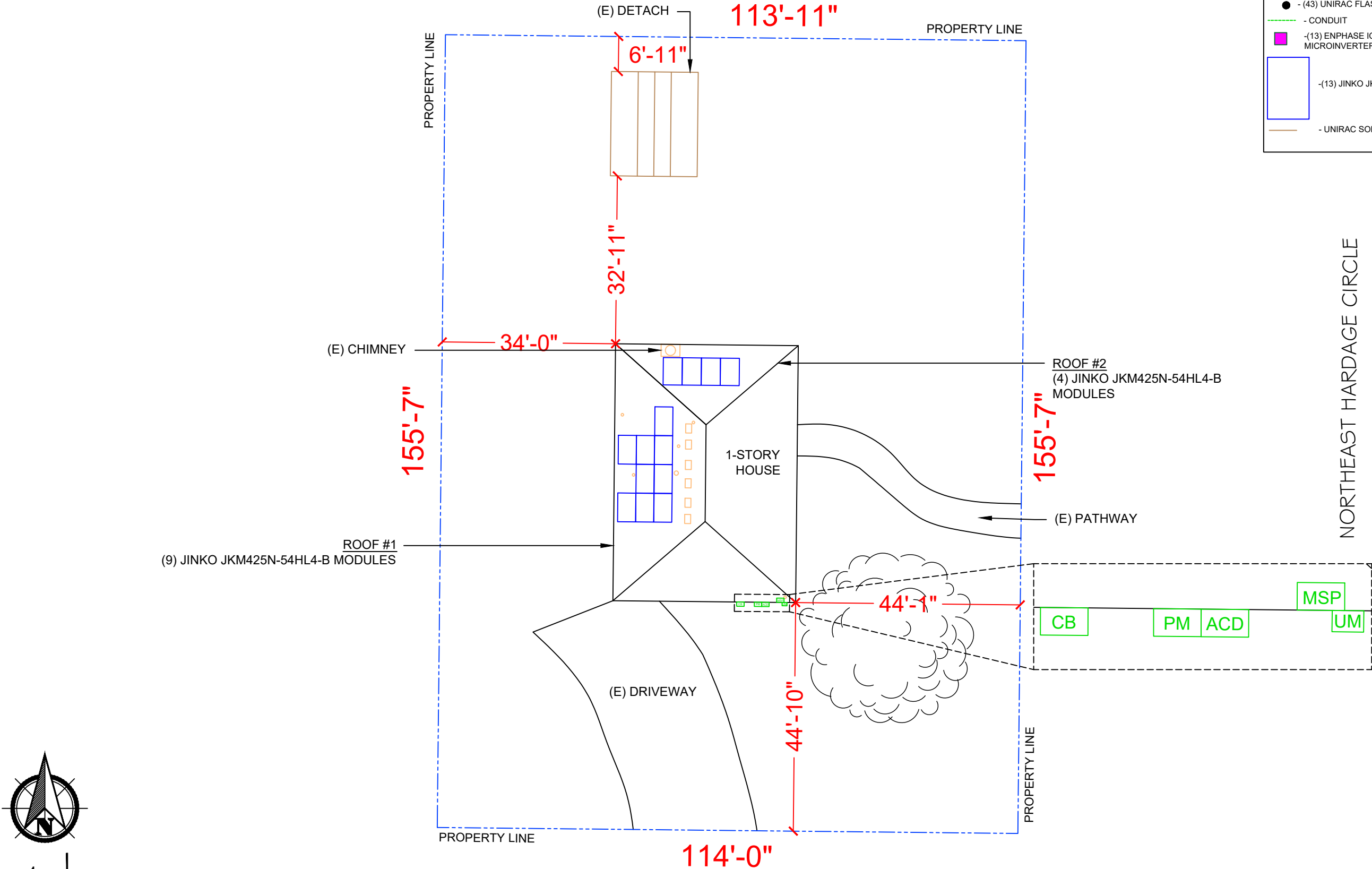
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-(13) ENPHASE IQ8PLUS-72-2-US (240V) MICROINVERTERS

□

-(13) JINKO JKM425N-54HL4-B MODULES

- UNIRAC SOLARMOUNT LIGHT RAIL



1

SITE PLAN

PV-1

SCALE: 1"=20'-0"

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SHEET NAME

SITE PLAN

SHEET SIZE

ANSI B

11" X 17"

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MODULE TYPE, DIMENSIONS & WEIGHT	
NUMBER OF MODULES:	13 MODULES
MODULE TYPE:	JINKO JKM425N-54HL4-B MODULES
MODULE WEIGHT:	48.50 LBS
MODULE DIMENSIONS:	67.79" X 44.65" = 21.02 SF
UNIT WEIGHT OF AREA:	2.30 PSF

PANEL HEIGHT OFF ROOF	4"
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DESIGN SPECIFICATION	
RISK CATEGORY:	II
CONSTRUCTION:	SFD
ZONING:	RESIDENTIAL
SNOW LOAD (ASCE 7-16):	20 PSF
EXPOSURE CATEGORY:	C
WIND SPEED (ASCE 7-16):	109 MPH

LEGEND	
	(N) JUNCTION BOX
	(E) UTILITY METER
	(E) MAIN SERVICE PANEL (MSP)
	(N) PRODUCTION METER
	(N) NON FUSED AC DISCONNECT (EATON DG221URB)
	(N) ENPHASE IQ COMBINER 4C
	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
	- (43) UNIRAC FLASH LOC ATTACHMENT @ 48" O.C.
	- CONDUIT
	-(13) ENPHASE IQ8PLUS-72-2-US (240V) MICROINVERTERS
	-(13) JINKO JKM425N-54HL4-B MODULES
	- (N) UNIRAC SOLARMOUNT LIGHT RAIL

ROOF DESCRIPTION					
ROOF	ROOF TILT	AZIMUTH	RAFTER SIZE	RAFTER SPACING	ROOF MATERIAL
#1	18°	271°	2"X6"	24" O.C.	COMP. SHINGLE
#2	18°	1°	2"X6"	24" O.C.	COMP. SHINGLE

NOTE : ATTACHMENT SPACING @ 48" O.C.

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	9	180.36	622.37	29
#2	4	80.00	281.69	28
TOTAL ROOF AREA COVERED BY ARRAY AREA		260.36	1808.11	14

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DATE: 12/20/2024

DESIGNER DETAILS:

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
SHEET NUMBER
PV-2
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI



1

PV-2

ROOF PLAN & MODULES

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

ROOFS #1 & #2
(13) JINKO JKM425N-54HL4-B MODULES

(E) BACK OF RESIDENCE

ARRAY #1
TILT - 18°
AZIM. - 271°

(N) JUNCTION BOX(TYP.)

(N) 3/4" EMT CONDUIT

ARRAY #2
TILT - 18°
AZIM. - 1°

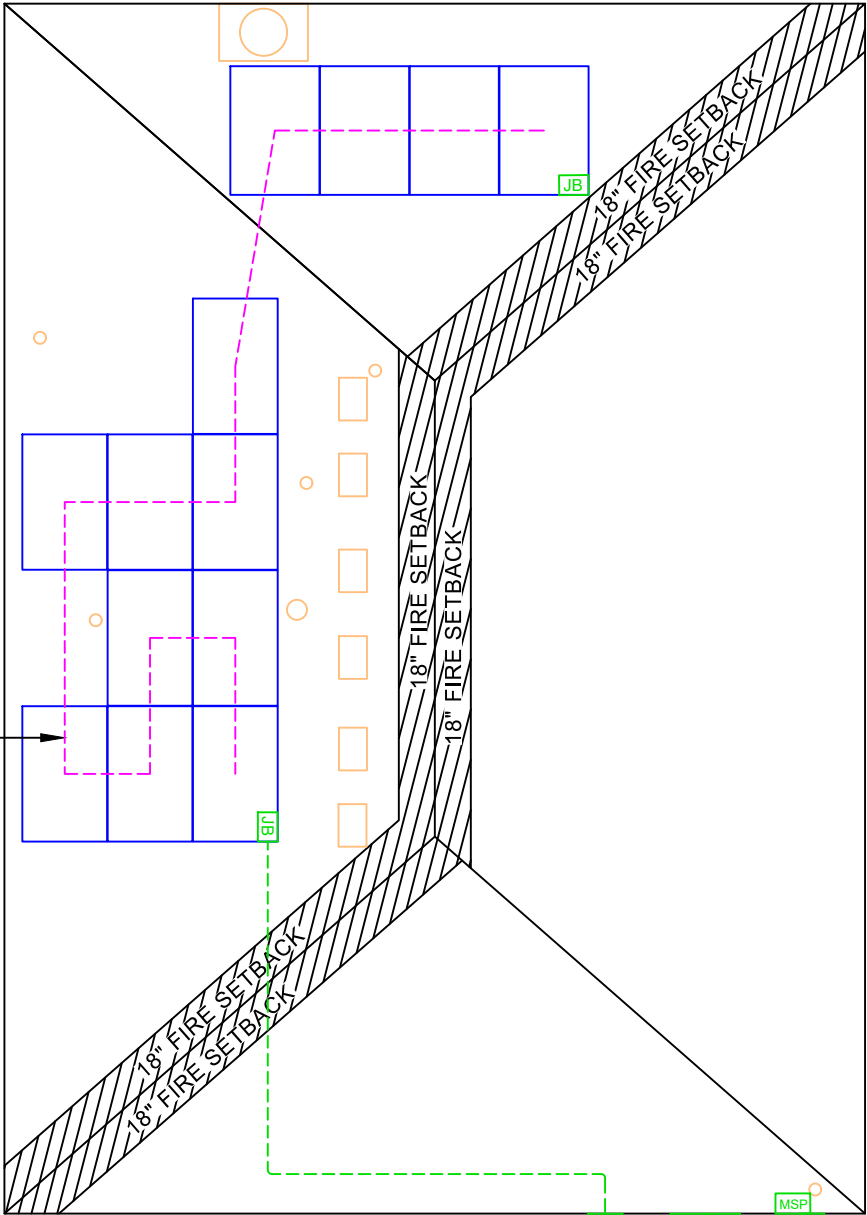
(E) FRONT OF RESIDENCE
NORTHEAST HARDAGE CIRCLE

44.65"
67.79"
JINKO
JKM425N-54HL4-B
MODULES

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	13	JINKO JKM425N-54HL4-B MODULES
MICROINVERTER	13	ENPHASE IQ8PLUS-72-2-US (240V) MICROINVERTERS
COMBINER BOX	1	ENPHASE IQ COMBINER 4C W/ IQ GATEWAY (X-IQ-AM1-240-4C)
SMART METER	1	PRODUCTION METER
AC DISCONNECT	1	30A NON FUSED AC DISCONNECT, (EATON DG221URB), 240V NEMA ,3R UL LISTED
JUNCTION BOX	2	JUNCTION BOX, NEMA 3R, UL LISTED
ENPHASE Q CABLE	19	ENPHASE Q CABLE 240V (PER CONNECTOR)
BRANCH TERMINATOR	1	BRANCH TERMINATOR
IQ WATER TIGHT CAP	6	IQ WATER TIGHT CAP
ATTACHMENT	43	5/16" x 4" SS LAG BOLT W/ SS EPDM BONDED WASHER
ATTACHMENT	43	SS SERRATED T-BOLT W/ SS SERRATED FLANGE NUT
ATTACHMENT	43	FLASHLOC BASE
RAILS	10	UNIRAC SOLARMOUNT LIGHT RAIL 14 FEET (168")
SPLICE	4	RAIL SPLICE
CLAMPS	16	MODULES CLAMPS (MID CLAMPS)
CLAMPS	20	MODULES CLAMPS (END CLAMPS)
GROUNDING LUG	5	GROUNDING LUG

(E) BACK OF RESIDENCE

(13) BRANCH-1



(E) FRONT OF RESIDENCE
NORTHEAST HARDAGE CIRCLE



1

STRING LAYOUT & BOM

PV-2A

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



brightsun
energy

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CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

DATE: 12/20/2024

DESIGNER DETAILS:

SHEET NAME
STRING
LAYOUT & BOM

SHEET SIZE

ANSI B

11" X 17"

RELEASE FOR CONSTRUCTION
SHEET NUMBER
PV-2A
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025



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HOUSTON TX 77092

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DATE: 12/20/2024

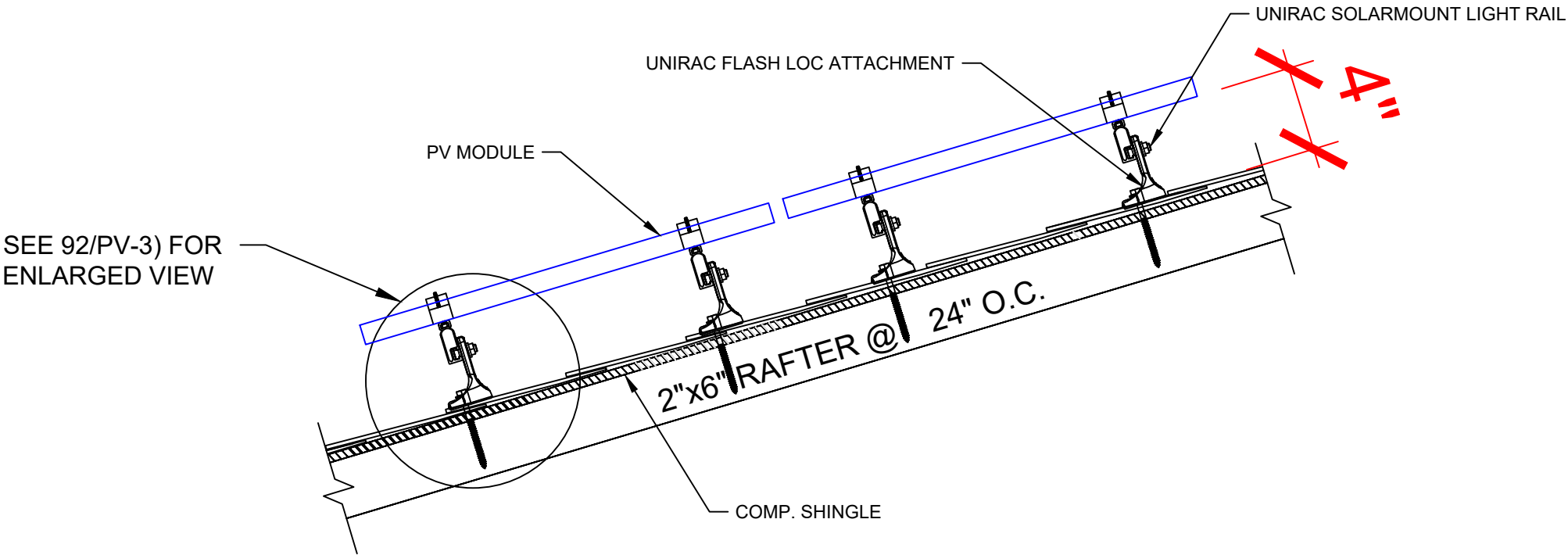
DESIGNER DETAILS:

SHEET NAME
ATTACHMENT
DETAILS

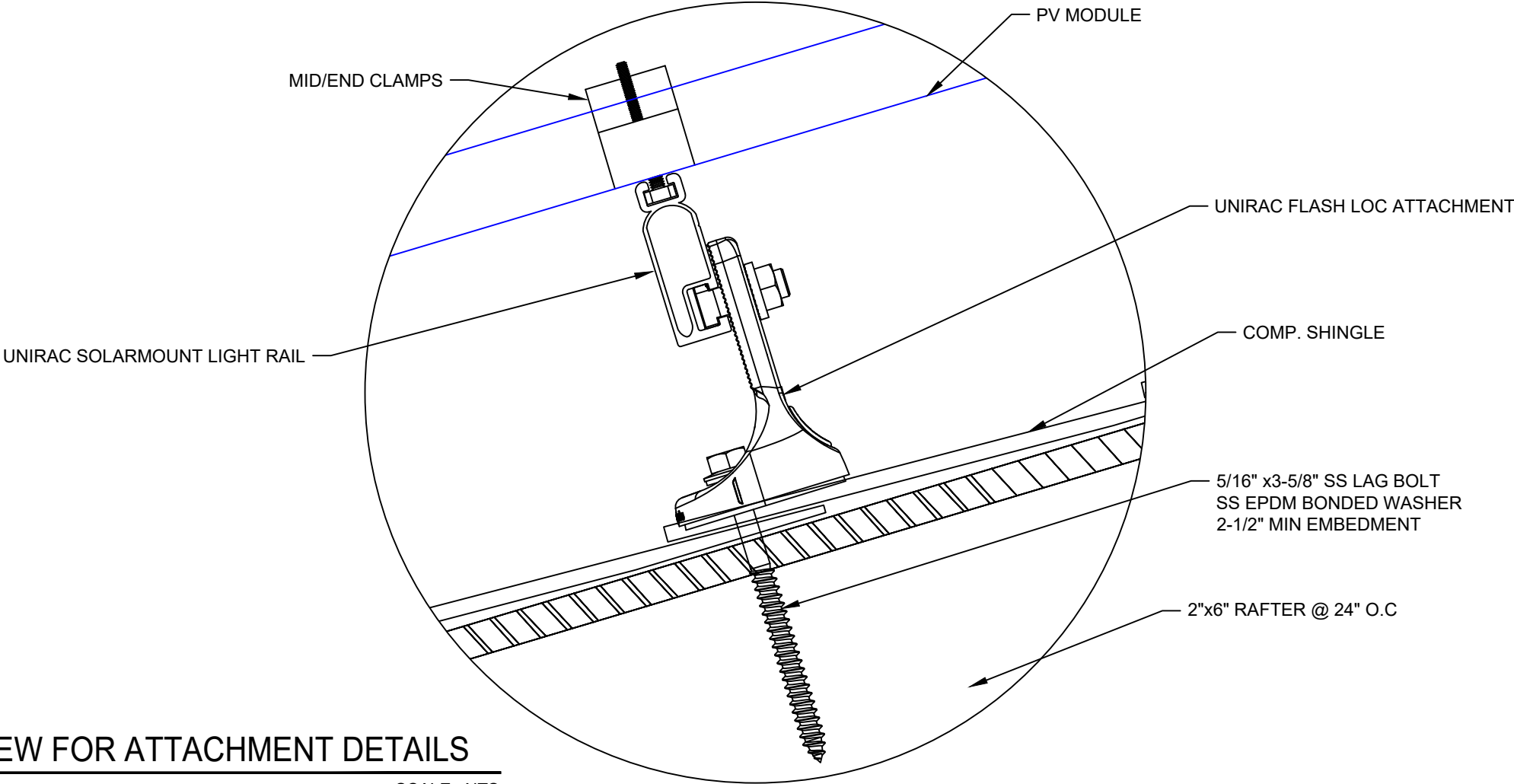
SHEET SIZE
ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
SHEET NUMBER
AS NOTED FOR PLAN REVIEW
PV-3
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

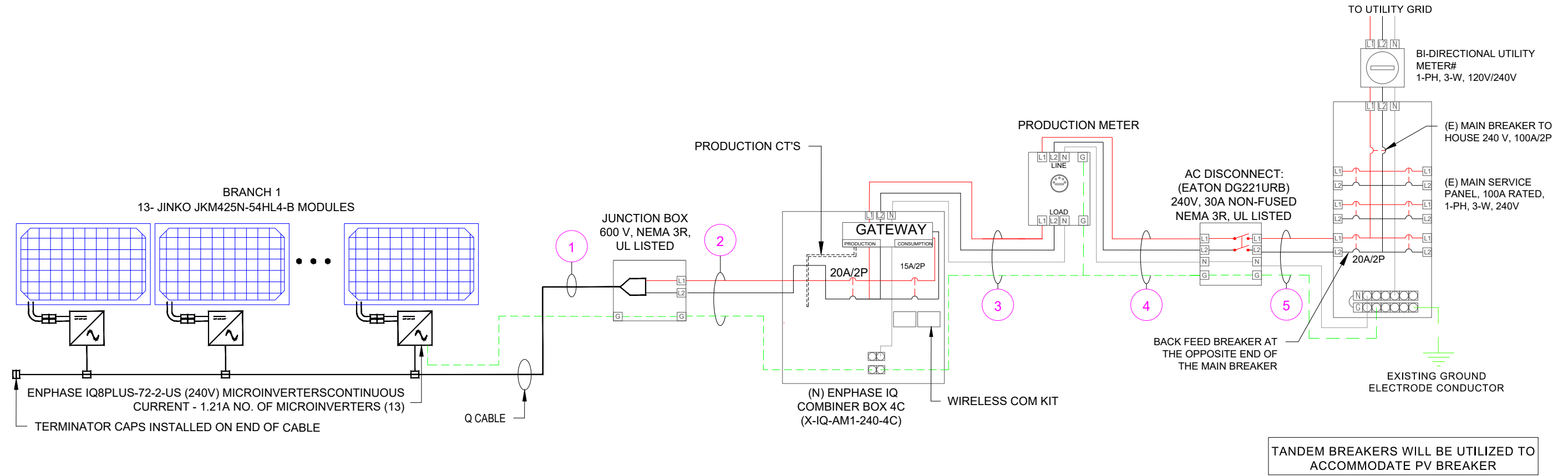


1 | ATTACHMENT DETAILS
PV-3



2 | ENLARGED VIEW FOR ATTACHMENT DETAILS
PV-3
SCALE: NTS

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CONDUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOLTAGE DROP
1	1	STRING	JUNCTION BOX	12 AWG	Q CABLE	-	-	1	2	N/A	N/A	6 AWG	BARE COPPER	0.71	(57°C)	N/A	15.73A	19.66A	N/A	N/A	75°C	63FT	1.36%
2	1	JUNCTION BOX	COMBINER BOX	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	2	11.45%	20A	8 AWG	THWN-2 COPPER	0.96	(35°C)	1	15.73A	19.66A	40A	38.4A	75°C	32FT	0.53%
3	1	COMBINER BOX	PRODUCTION METER	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	15.27%	N/A	6 AWG	THWN-2 COPPER	0.96	(35°C)	1	15.73A	19.66A	40A	38.4A	75°C	5FT	0.03%
4	1	PRODUCTION METER	NON FUSED AC DISCONNECT	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	15.27%	N/A	6 AWG	THWN-2 COPPER	0.96	(35°C)	1	15.73A	19.66A	40A	38.4A	75°C	5FT	0.03%
5	1	NON FUSED AC DISCONNECT	MSP	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	15.27%	20A	6 AWG	THWN-2 COPPER	0.96	(35°C)	1	15.73A	19.66A	40A	38.4A	75°C	5FT	0.03%



INTERCONNECTION 120% RULE - NEC 705.12(B)(2)(3)(b)
UTILITY FEED + SOLAR BACKFEED 100 A + 20A = 120A
BUSS RATING x 120% 100 A x 120% = 120A

SERVICE INFO
AHJ NAME: CITY OF LEE'S SUMMIT
MAIN SERVICE VOLTAGE: 240V
MAIN SERVICE PANEL: 100A
MAIN CIRCUIT BREAKER RATING: 100A
MAIN SERVICE LOCATION: SOUTH-EAST
SERVICE FEED SOURCE: OVERHEAD

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DESIGNER DETAILS:

SHEET NAME
ELECTRICAL LINE & CALCS

SHEET SIZE
ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI

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SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	JINKO JKM425N-54HL4-B MODULES
VMP	32.37 V
IMP	13.13 A
VOC	38.95 V
ISC	13.58 A
TEMP. COEFF. VOC	-0.25%/C
MODULE DIMENSION	67.79"(L) x 44.65"(W)
PANEL WATTAGE	425W
PTC RATING	398.1W

INVERTER SPECIFICATION	
MANUFACTURER / MODEL	ENPHASE IQ8PLUS-72-2-US (240V) MICROINVERTERS
MAX DC SHORT CIRCUIT CURRENT	25 A
CONTINUOUS OUTPUT CURRENT	1.21 (240 V)

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-19°C
AMBIENT TEMP (HIGH TEMP 2%)	35°C
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	75°C
CONDUCTOR TEMPERATURE RATE	57°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.25%/C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
1	1-3
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 13 IQ 8+ Micros, the voltage rise on the 240 VAC Q Cable is 1.36%

Voltage rise from the Junction Box to the IQ Combiner box

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft) × (2-way wire length in ft.)
= (1.21 amp ×13) × (0.00129 Ω/ft) × (32 ft × 2)
= 15.73 amps × 0.00129 Ω/ft × 64 ft
= 1.29 volts

%VRise =1.29 volts ÷ 240 volts = 0.53%

The voltage rise from the Junction Box to the IQ Combiner Box is 0.53%

Voltage rise from the IQ Combiner box to the Production Meter

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft.) × (2-way wire length in ft.)
= (1.21 amp × 13) × (0.00129 Ω/ft) × (2 ft. × 2)
= 15.73 amps × 0.00129 Ω/ft × 4 ft.
= 0.08 volts

%VRise = 0.08 volts ÷ 240 volts = 0.03%

The voltage rise from the IQ Combiner Box to the Production Meter is 0.03%

Voltage rise from the Production Meter to Non Fused AC Disconnect

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft.) × (2-way wire length in ft.)
= (1.21 amp ×13) × (0.00129 Ω/ft) × (2 ft. × 2)
= 15.73 amps × 0.00129 Ω/ft × 4 ft.
= 0.08 volts

%VRise = 0.08 volts ÷ 240 volts =0.03%

The voltage rise from the Production Meter to the Non Fused AC Disconnect is 0.03%

Voltage rise from the Non Fused AC Disconnect to Main Service Panel

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft.) × (2-way wire length in ft.)
= (1.21 amp × 13) × (0.00129 Ω/ft) × (2 ft. × 2)
= 15.73 amps × 0.00129 Ω/ft × 10 ft.
= 0.08 volts

%VRise = 0.08 volts ÷ 240 volts =0.03%

The voltage rise from the Non Fused AC Disconnect to the Main Service Panel is 0.03%

Total system voltage rise for all three wire sections

1.36% + 0.53% + 0.03%+ 0.03%+ 0.03% = 1.98%



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DESIGNER DETAILS:

SHEET NAME
SPECIFICATIONS
& NOTES

SHEET SIZE
ANSI B
11" X 17"

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SHEET NUMBER
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PV-4A
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

1

WARNING

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

LABEL LOCATION:
POINT OF INTERCONNECTION,
(PER CODE: NEC 690.17(E))

2

WARNING - Electric Shock Hazard

No user serviceable parts inside
Contact authorized service provider for assistance

LABEL LOCATION:
INVERTER, JUNCTION BOXES (ROOF),
(PER CODE: NEC690.13.G.3 & NEC 690.13.G.4)

3

WARNING: DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(D)(4))

4

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC690.31(G)(3)(4) & NEC 690.13(G)(4)

5

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT 15.73 AMPS
NOMINAL OPERATING AC VOLTAGE 240 VOLTS

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

6

WARNING

INVERTER OUTPUT CONNECTION DO NOT
RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings
of all overcurrent devices supplying it]

7

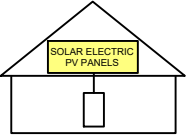
CAUTION: SOLAR ELECTRIC
SYSTEM CONNECTED

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC690.15, 690.13(B))
INVERTER

8

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 PER NEC 690.56(C)- PROVIDE AT
AC DISCONNECT FOR RAPID
SHUTDOWN COMPLIANT SYSTEM

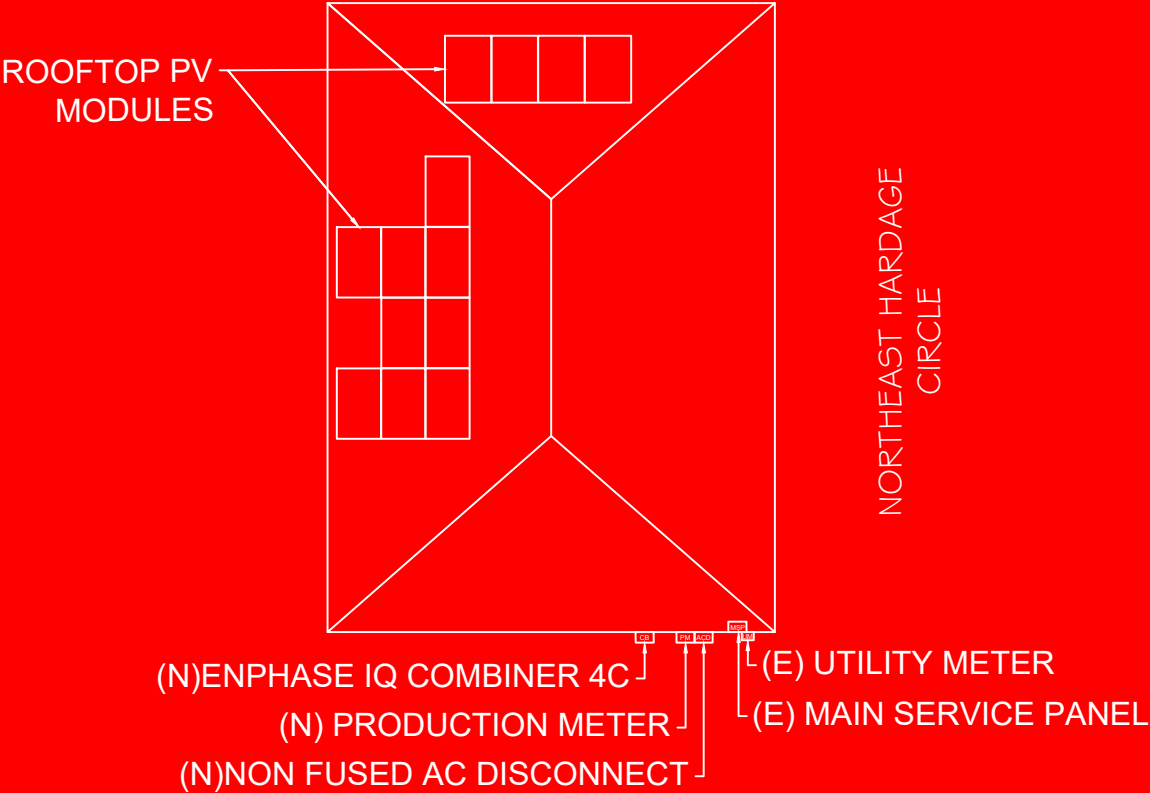
9

CAUTION: SOLAR CIRCUIT

LABEL LOCATION:
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC 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 605.11.1.4)



PV ELECTRICAL EQUIPMENT LAYOUT



5709 GARDENDALE DR.
HOUSTON TX 77092

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

PROJECT NAME & ADDRESS

SARAH BENNETT
RESIDENCE
1502 NORTHEAST HARDAGE
CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

DATE: 12/20/2024

DESIGNER DETAILS:

SHEET NAME

SIGNAGE

SHEET SIZE

ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

www.jinkosolar.com

Tiger Neo N-type
54HL4-B
425 Watt
ALL-BLACK MODULE

N-Type

Positive power tolerance of 0~+3%

IEC61215 (2016), IEC61730 (2016)
ISO9001:2015: Quality Management System
ISO14001:2015: Environment Management System
ISO45001:2018
Occupational health and safety management systems

Key Features



SMBB Technology
Better light trapping and current collection to improve module power output and reliability.



PID Resistance
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.



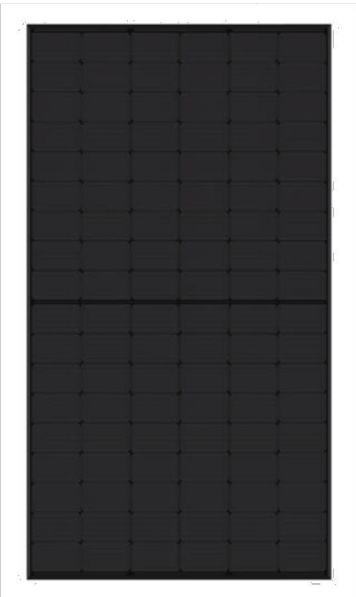
Durability Against Extreme Environmental Conditions
High salt mist and ammonia resistance.



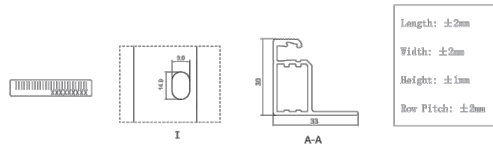
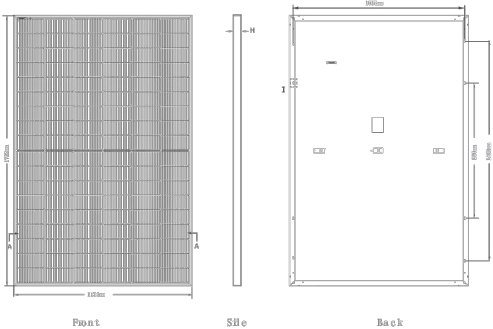
Hot 2.0 Technology
The N-type module with Hot 2.0 technology has better reliability and lower LID/LETID.



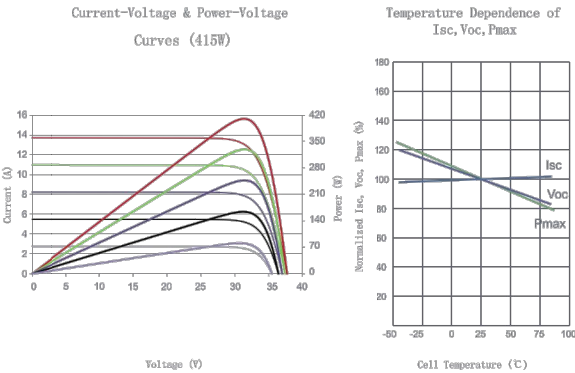
Enhanced Mechanical Load
Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).



Engineering Drawings



Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	N type Mono-crystalline
No. of cells	108 (6×18)
Dimensions	1722×1134×30mm (67.79×44.65×1.18 inch)
Weight	22 kg (48.50 lbs)
Front Glass	3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm (+): 400mm, (-): 200mm or Customized Length

Packaging Configuration

(Two pallets = One stack)
36pcs/pallets, 72pcs/stack, 936pcs/ 40'HQ Container

SPECIFICATIONS

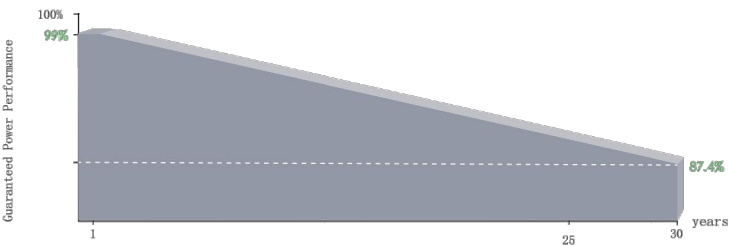
Module Type	JKM425N-54HL4-B	
	STC	NOCT
Maximum Power (Pmax)	425Wp	320Wp
Maximum Power Voltage (Vmp)	32.37V	30.19V
Maximum Power Current (Imp)	13.13A	10.60A
Open-circuit Voltage (Voc)	38.95V	37.00V
Short-circuit Current (Isc)	13.58A	10.96A
Module Efficiency SIC (%)	21.76%	
Operating Temperature(°C)	-40°C~+85 °C	
Maximum system voltage	1000VDC (IEC)	
Maximum series fuse rating	25A	
Power tolerance	0~+3%	
Temperature coefficients of Pmax	-0.29%/°C	
Temperature coefficients of Voc	-0.25%/°C	
Temperature coefficients of Isc	0.045%/°C	
Nominal operating cell temperature (NOCT)	45±2°C	

*STC : Irradiance 1000W/m² Cell Temperature 25° C AM=1.5
NOCT: Irradiance 800W/m² Ambient Temperature 20° C AM=1.5 Wind Speed 1m/s

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Specifications included in this datasheet are subject to change without notice.

JKM425N-54HL4-B-F3C2-EN (IEC 2016)

LINEAR PERFORMANCE WARRANTY



25 Year Product Wa rranty
30 Year Linear Power Warranty
0.40% Annual Degradation Over 30 years



5709 GARDENDALE DR.
HOUSTON TX 77092

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RESIDENCE
1502 NORTHEAST HARDAGE
CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

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DESIGNER DETAILS:

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EQUIPMENT
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SHEET NUMBER
PV-6
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025



DATA SHEET



IQ8 and IQ8+ 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 using 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 IQ Battery, 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 shutdown equipment and conform with various regulations, when installed according to the manufacturer's instructions.

*Meets UL 1741 only when installed with IQ System Controller 2.
**IQ8 and IQ8+ 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

- Compliant 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 the time of installation to meet local Authority Having Jurisdiction (AHJ) requirements.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings ¹	W	235–350	235–440
Module compatibility	—	To meet compatibility, PV modules must be within maximum input DC voltage and maximum module I _{sc} listed below. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator	
MPPT voltage range	V	27–37	27–45
Operating range	V	16–48	16–58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	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 maximum 20 A per branch circuit.	
OUTPUT DATA (AC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage ²	V	211–264	
Maximum continuous output current	A	1.0	1.21
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	—	16	13
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	%	97.7	
CEC weighted efficiency	%	97	
Nighttime power consumption	mW	23	25
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)	
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	
Environmental category/UV exposure rating		NEMA Type 6/Outdoor	

(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.



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LESS SUMMIT, MISSOURI 64086,
USA

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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

IQ Combiner 4/4C



To learn more about Enphase offerings, visit enphase.com
IQ-C-4-4C-DS-0103-EN-US-12-29-2022

The **IQ Combiner 4/4C** with IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure. It 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 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
- Supports Wi-Fi, Ethernet, or cellular connectivity
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Mounts on single stud with centered brackets
- Supports bottom, back and side conduit entry
- Allows up to four 2-pole branch circuits for 240VAC 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
- X2-IQ-AM1-240-4 and X2-IQ-AM1-240-4C comply with IEEE 1547:2018 (UL 1741-SB, 3rd Ed.)



IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 X-IQ-AM1-240-4 X2-IQ-AM1-240-4 (IEEE 1547:2018)	IQ Combiner 4 with 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 and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C X-IQ-AM1-240-4C X2-IQ-AM1-240-4C (IEEE 1547:2018)	IQ Combiner 4C with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ± 0.5%) and consumption monitoring (± 2.5%). Includes 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)	
Supported microinverters	IQ6, IQ7, and IQ8. (Do not mix IQ6/7 Microinverters with IQ8)
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 - 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
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)
X-IQ-NA-HD-125A	Hold-down kit for Eaton circuit breaker with screws
Consumption monitoring CT (CT-200-SPLIT/CT-200-CLAMP)	A pair of 200A split core current transformers
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240VAC, 60 Hz
Eaton BR series busbar rating	125A
Max. continuous current rating	65A
Max. continuous current rating (input from PV/storage)	64A
Max. fuse/circuit rating (output)	90A
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
IQ Gateway breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200A solid core pre-installed and wired to IQ Gateway
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 cm x 49.5 cm x 16.8 cm (14.75 in x 19.5 in x 6.63 in). Height is 53.5 cm (21.06 in) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40°C to +46°C (-40°F to 115°F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20A to 50A breaker inputs: 14 to 4 AWG copper conductors • 60A 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	Up to 3,000 meters (9,842 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	IEEE 802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Mobile Connect cellular modem is required for all Enphase Energy System installations.
Ethernet	Optional, IEEE 802.3, Cat5E (or Cat6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	CA Rule 21 (UL 1741-SA) IEEE 1547:2018 - UL 1741-SB, 3 rd Ed. (X2-IQ-AM1-240-4 and X2-IQ-AM1-240-4C) CAN/CSA C22.2 No. 107.1, Title 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

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IQ-C-4-4C-DS-0103-EN-US-12-29-2022



5709 GARDENDALE DR.
HOUSTON TX 77092

REVISIONS

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SARAH BENNETT
RESIDENCE
1502 NORTHEAST HARDAGE
CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

DATE: 12/20/2024

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ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
PV-8

03/06/2025

FLASH LOC

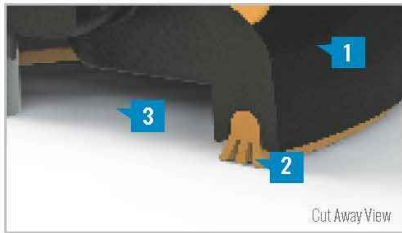


FLASHLOC is the ultimate attachment for composition shingle and rolled comp roofs. The all-in-one mount installs fast — no kneeling on hot roofs to install flashing, no prying or cutting shingles, no pulling nails. Simply drive the lag bolt and inject sealant into the base. FLASHLOC's patented TRIPLE SEAL technology preserves the roof and protects the penetration with a permanent pressure seal. Kitted with lag bolts, sealant, and hardware for maximum convenience. Don't just divert water, LOC it out!



PROTECT THE ROOF

Install a high-strength waterproof attachment without lifting, prying or damaging shingles.



LOC OUT WATER

With an outer shield 1 contour-conforming gasket 2 and pressurized sealant chamber 3 the Triple Seal technology delivers a 100% waterproof connection.



HIGH-SPEED INSTALL

Simply drive lag bolt and inject sealant into the port 4 to create a permanent pressure seal.

FLASH LOC

INSTALLATION GUIDE



PRE-INSTALL

Snap chalk lines for attachment rows. On shingle roofs, snap lines 1-3/4" below upslope edge of shingle course. Locate rafters and mark attachment locations.

At each location, drill a 7/32" pilot hole. Clean roof surface of dirt, debris, snow, and ice. Next, BACKFILL ALL PILOT HOLES WITH SEALANT.

NOTE: Space mounts per racking system install specifications.



STEP 1: SECURE

Place FLASHLOC over pilot hole with lag on down-slope side. Align indicator marks on sides of mount with chalk line. Pass included lag bolt and sealing washer through FLASHLOC into pilot hole. Drive lag bolt until mount is held firmly in place.

NOTE: The EPDM in the sealing washer will expand beyond the edge of the metal washer when proper torque is applied.



STEP 2: SEAL

Insert tip of UNIRAC provided sealant into port. Inject until sealant exits both vents.

Continue array installation, attaching rails to mounts with provided T-bolts.



NOTE: When FLASHLOC is installed over gap between shingle tabs or vertical joints, fill gap/joint with sealant between mount and upslope edge of shingle course.

USE ONLY UNIRAC APPROVED SEALANTS: ChemLink Duralink 50, ChemLink M-1, Geocel 4500, or Geocel S-4

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

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PV-9
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

SOLARMOUNT



SOLARMOUNT is the professionals' choice for residential PV mounting applications. Every aspect of the system is designed for an easier, faster installation experience. **SOLARMOUNT** is a complete solution with revolutionary universal clamps, **FLASHKIT PRO**, full system UL 2703 certification and 25-year warranty. Not only is **SOLARMOUNT** easy to install, but best-in-class aesthetics make it the most attractive on any block!



New & Improved:
THE PROFESSIONALS' CHOICE
With Superior Aesthetics



NOW FEATURING FLASHKIT PRO
The Complete Roof Attachment Solution
FEATURING SHED & SEAL TECHNOLOGY



NOW WITH UNIVERSAL MIDCLAMPS
Accommodates 30mm-51mm module frames
One tool, one-person installs are here!



REVOLUTIONARY NEW ENDCLAMPS
Concealed design and included End Caps

THE PROFESSIONALS' CHOICE FOR RESIDENTIAL RACKING

BEST INSTALLATION EXPERIENCE • CURB APPEAL • COMPLETE SOLUTION • UNIRAC SUPPORT
FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

SOLARMOUNT



BETTER DESIGNS

TRUST THE INDUSTRY'S BEST DESIGN TOOL

Start the design process for every project in our U-Builder on-line design tool. It's a great way to save time and money.

BETTER SYSTEMS

ONE SYSTEM - MANY APPLICATIONS

Quickly set modules flush to the roof on steep pitched roofs. Orient a large variety of modules in Portrait or Landscape. Tilt the system up on flat or low sloe roofs. Components available in mill, clear, and dark finishes to optimize your design financials and aesthetics.

BETTER RESULTS

MAXIMIZE PROFITABILITY ON EVERY JOB

Trust Unirac to help you minimize both system and labor costs from the time the job is quoted to the time your teams get off the roof. Faster installs. Less Waste. More Profits.

BETTER SUPPORT

WORK WITH THE INDUSTRIES MOST EXPERIENCED TEAM

Professional support for professional installers and designers. You have access to our technical support and training groups. Whatever your support needs, we've got you covered. Visit Unirac.com/solarmount for more information.



UL2703

BONDING & GROUNDING
MECHANICAL LOADING
SYSTEM FIRE CLASSIFICATION

UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT



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

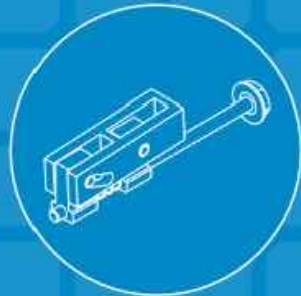
Unirac is the only PV mounting vendor with ISO certifications for 9001:2008, 14001:2004 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.



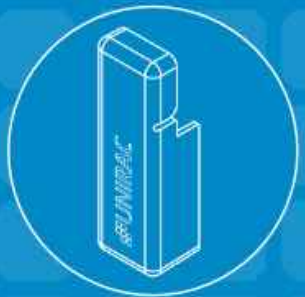
BANKABLE WARRANTY

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 providing products of exceptional quality. SOLARMOUNT is covered by a 25 year limited product warranty and a 5 year limited finish warranty.

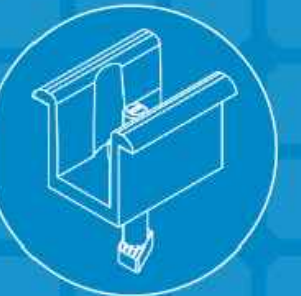
CONCEALED UNIVERSAL
ENDCLAMPS



END CAPS INCLUDED
WITH EVERY ENDCLAMP



UNIVERSAL SELF
STANDING MIDCLAMPS



U-BUILDER ONLINE DESIGN
TOOL SAVES TIME & MONEY
Visit design.unirac.com



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03/06/2025

SOLARMOUNT



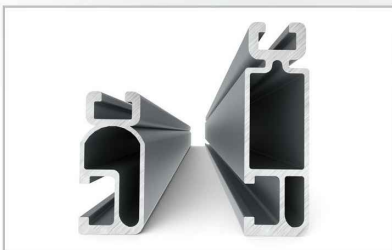
SOLARMOUNT defined the standard in solar racking. Features are designed to get installers off the roof faster. Our grounding & bonding process eliminates copper wire and grounding straps to reduce costs. Systems can be configured with standard or light rail to meet your design requirements at the lowest cost possible. The superior aesthetics package provides a streamlined clean edge for enhanced curb appeal, with no special brackets required for installation.



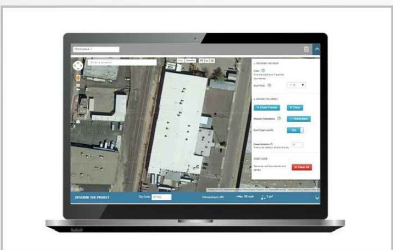
Now Featuring:
THE NEW FACE OF SOLAR RACKING
Superior Aesthetics Package



LOSE ALL OF THE COPPER & LUGS
System grounding through Enphase microinverters and trunk cables



SMALL IS THE NEXT NEW BIG THING
Light Rail is Fully Compatible with all SM Components



ENHANCED DESIGN & LAYOUT TOOLS
Featuring Google Map Capabilities within U-Builder

FAST INSTALLATION. SUPERIOR AESTHETICS

OPTIMIZED COMPONENTS • VERSATILITY • DESIGN TOOLS • QUALITY PROVIDER

SOLARMOUNT



OPTIMIZED COMPONENTS

INTEGRATED BONDING & PRE-ASSEMBLED PARTS

Components are pre-assembled and optimized to reduce installation steps and save labor time. Our new grounding & bonding process eliminates copper wire and grounding straps or bonding jumpers to reduce costs. Utilize the microinverter mount with a wire management clip for an easier installation.

VERSATILITY

ONE PRODUCT - MANY APPLICATIONS

Quickly set modules flush to the roof or at a desired tilt angle. Change module orientation to portrait or landscape while securing a large variety of framed modules on flat, low slope or steep pitched roofs. Available in mill, clear and dark anodized finishes to outperform your projects financial and aesthetic aspirations.

AUTOMATED DESIGN TOOL

DESIGN PLATFORM AT YOUR SERVICE

Creating a bill of materials is just a few clicks away with U-Builder, a powerful online tool that streamlines the process of designing a code compliant solar mounting system. Save time by creating a user profile, and recall preferences and projects automatically when you log in. You will enjoy the ability to share projects with customers: there's no need to print results and send to a distributor, just click and share.



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. SOLARMOUNT is covered by a twenty five (25) year limited product warranty and a five (5) year limited finish warranty.

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

PUB207/FEB28-PRINTED

INTEGRATED BONDING MIDCLAMP

INTEGRATED BONDING SPLICE BAR

INTEGRATED BONDING L-FOOT w/ T-BOLT

INTEGRATED BONDING MICROINVERTER MOUNT w/ WIRE MANAGEMENT



5709 GARDENDALE DR.
HOUSTON TX 77092

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

PROJECT NAME & ADDRESS

SARAH BENNETT
RESIDENCE
1502 NORTHEAST HARDAGE
CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

DATE: 12/20/2024

DESIGNER DETAILS:

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
SHEET NUMBER
PV-11
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025

Product specifications

Eaton DG221URB

Catalog Number: DG221URB

Eaton General duty non-fusible safety switch, single-throw, 30 A, 240 V, NEMA 3R, Rainproof, Painted galvanized steel, Two-pole, Two-wire

General specifications

Product Name	Catalog Number
Eaton general duty non-fusible safety switch	DG221URB
	UPC
	782113120232
Product Length/Depth	Product Height
6.88 in	10.81 in
Product Width	Product Weight
6.38 in	6 lb
Warranty	Compliances
Eaton Selling Policy 25-000, one (1) year NEC 230.62 (C) Compliant Barrier from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.	Certifications
	UL Listed
	Catalog Notes
	WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

defaultTaxonomyAttributeLabel

Type
Non-fusible, single-throw

Amperage Rating
30A

Number Of Poles
Two-pole

Product Category
General duty safety switch

Voltage rating
240V

Enclosure
NEMA 3R

Enclosure material
Painted galvanized steel

Fuse configuration
Non-fusible

Number of wires
2

Resources

Catalogs
Eaton's Volume 2—Commercial Distribution

Multimedia
Double Up on Safety
Switching Devices Flex Center

Specifications and datasheets
Eaton Specification Sheet - DG221URB



5709 GARDENDALE DR.
HOUSTON TX 77092

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

PROJECT NAME & ADDRESS

SARAH BENNETT
RESIDENCE
1502 NORTHEAST HARDAGE
CIRCLE
LESS SUMMIT, MISSOURI 64086,
USA

DATE: 12/20/2024

DESIGNER DETAILS:

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

RELEASE FOR CONSTRUCTION
SHEET NUMBER
PV-12
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI

03/06/2025



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Eaton House
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Dublin 4, Ireland
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