NEW PHOTOVOLTAIC ROOF MOUNT SYSTEM - 6.97 KW DC / 5.31 KW AC
2225 NW KILLARNEY LANE , LEES SUMMIT, MO, 64081

LEGEND

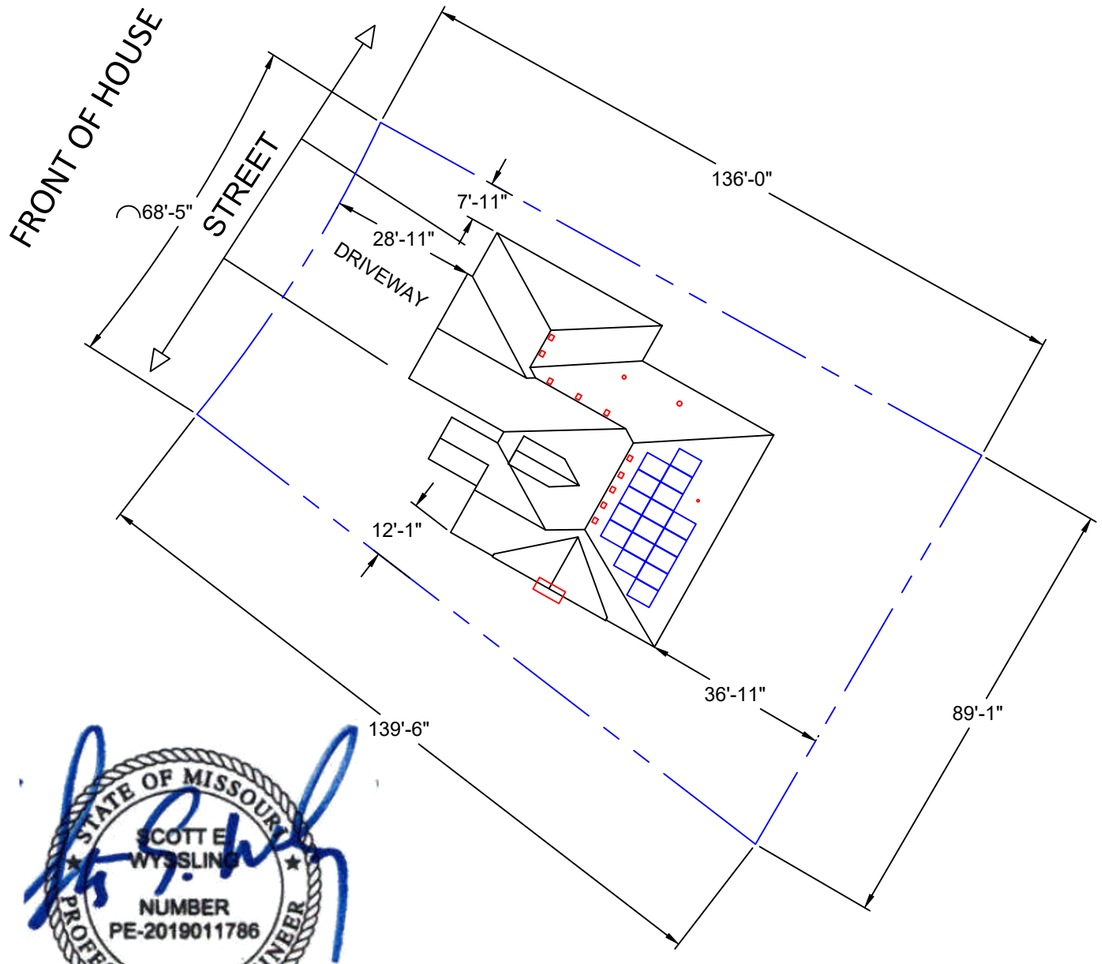
- PROPERTY LINE
- FENCE LINE

DESIGN CRITERIA
GROUND SNOW LOAD: 20 PSF
WIND SPEED: 109 MPH
WIND EXPOSURE: C
RISK CATEGORY: II
ROOF SURFACE TYPE: COMPOSITION SHINGLES

ROOF FRAMING: RAFTER - 2x6 @ 16" O.C.

BUILDING STORY: 2
OCCUPANCY TYPE: R-3
CONSTRUCTION TYPE: VB

NEW PV SYSTEM SPECIFICATIONS - 6.97kW (DC) / 5.31kW (AC)
MODULES: (17) MISIO MSE410HT0B
INVERTER: (9) NEP BDM-600X



NOTES:
1. STRUCTURES, PATIO COVERS, AND/OR ADDITIONS BUILT WITHOUT PERMITS TO BE RESOLVED BY A SEPARATE PERMIT.

2. ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

SCOPE OF WORK
1.2.1 CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTION OF EXISTING ONSITE CONDITIONS TO DESIGN, SPECIFY, AND INSTALL THE PHOTOVOLTAIC SYSTEM DETAILED IN THIS DOCUMENT

STATE OF MISSOURI
SCOTT E WYSSLING
NUMBER PE-2019011786
PROFESSIONAL ENGINEER

Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
Missouri COA # 2020037943
Signed 5/23/2025

N

1 PV-01 PROPERTY PLAN
SCALE:1"=30'-0"

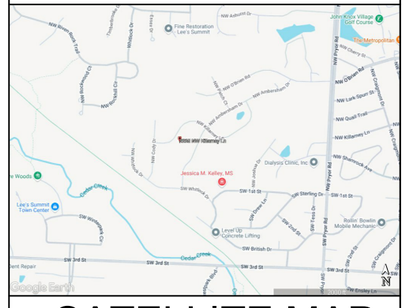
APPLICABLE CODES
AS ADOPTED BY: CITY OF LEE'S SUMMIT

2017 NATIONAL ELECTRICAL CODE (NEC)
2018 INTERNATIONAL BUILDING CODE (IBC)
2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
2018 INTERNATIONAL FIRE CODE (IFC)

SHEET INDEX

INSTALLATION RESOURCE AND EQUIPMENT DATASHEETS ATTACHED

VICINITY MAP



SATELLITE MAP

CONTRACTOR

LIFETIME SOLAR

1251 MAIN STREET
KANSAS CITY, MO 64105

LICENSE #: 2023009815

PROJECT NAME & ADDRESS
MATT BREWER
2225 NW KILLARNEY LANE
LEES SUMMIT, MO 64081

APN #: 999999

AHJ: CITY OF LEE'S SUMMIT

UTILITY: EVERGY

SYSTEM DETAILS
DC SYSTEM SIZE: 6.97 kW
AC SYSTEM SIZE: 5.31 kW

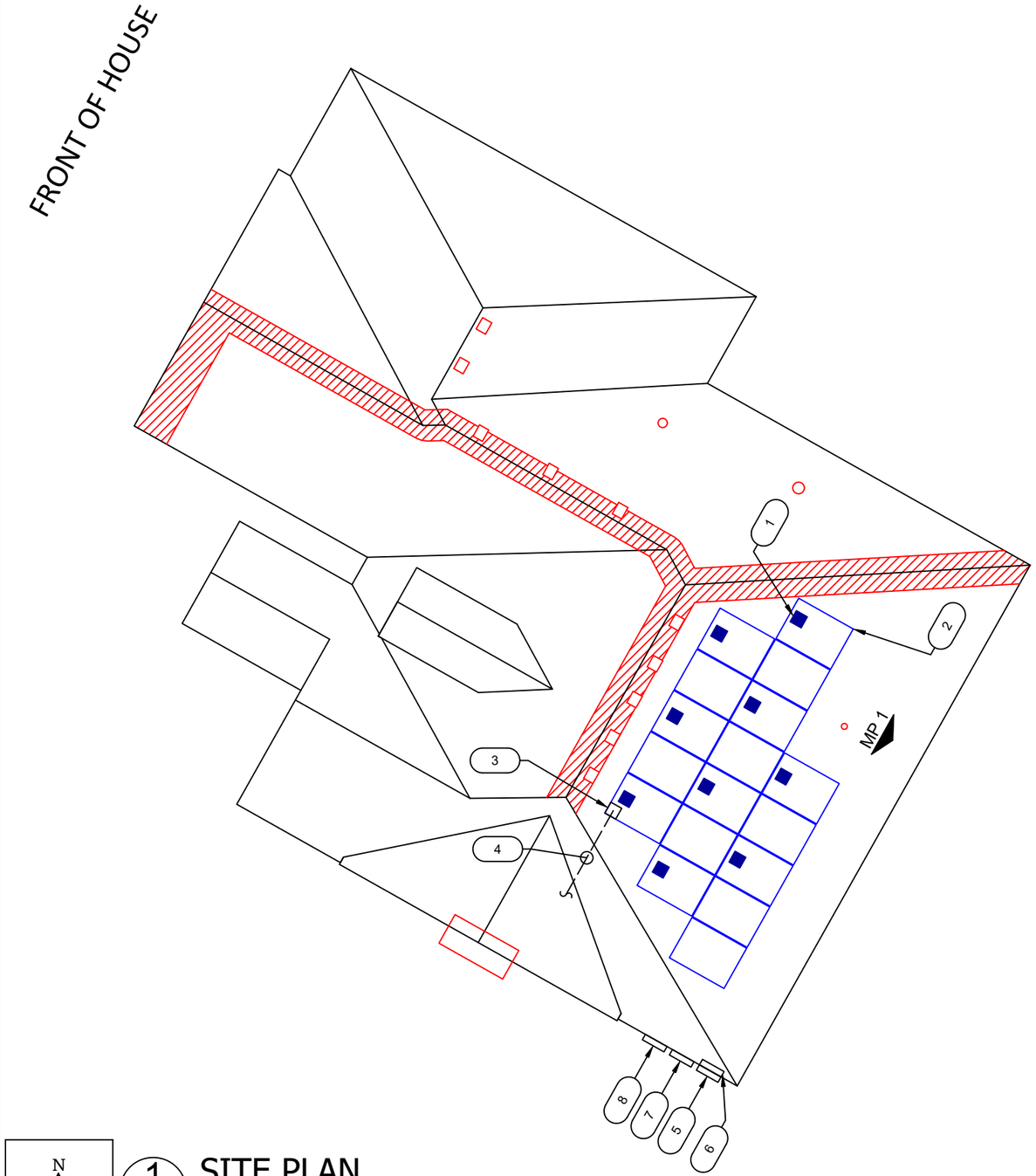
REVISIONS

REV # - DESCRIPTION - DATE

SHEET TITLE
COVER PAGE

DRAWN DATE	5/22/2025
DRAWN BY	AAJ

SHEET NUMBER
PV-01



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1 PV-02 **SITE PLAN**

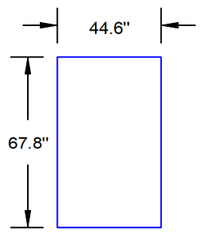
SCALE:3/32" = 1'-0"

PLAN VIEW TOTAL ROOF AREA (SQFT):	3889
TOTAL PV ARRAY AREA (SQFT):	356.99
TOTAL % OF ROOF COVERED BY PV:	9.18%

MP #1	MODULE QTY: 17 AZIMUTH: 119 PITCH: 26.6 RAFTER: 2x6 @ 16" OC COMPOSITION SHINGLES

Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
Missouri COA # 2020037943
Signed 5/23/2025

MODULE DIMENSIONS



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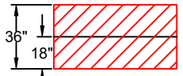
LEGEND



FIRE SETBACKS

= MECHANICAL VENT

= FLUE / PLUMBING VENT

1 MICROINVERTER (1 PER 2 MODULES)

2 PV MODULES

3 JUNCTION BOX (NEMA 3R); SIZE DETERMINED IN FIELD

4 CONDUIT RUN; SURFACE MOUNTED (ACTUAL CONDUIT RUNS TO BE DETERMINED IN FIELD)

5 UTILITY METER
METER #: 25 277 629

6 (E) MAIN SERVICE PANEL

7 AC DISCONNECT AND PV PRODUCTION METER

8 SOLAR LOAD CENTER

CONTRACTOR

LIFETIME SOLAR

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2225 NW KILLARNEY LANE
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AHJ: CITY OF LEE'S SUMMIT

UTILITY: EVERGY

SYSTEM DETAILS

DC SYSTEM SIZE: 6.97 kW
AC SYSTEM SIZE: 5.31 kW

REVISIONS

REV # - DESCRIPTION - DATE

SHEET TITLE

SITE PLAN

DRAWN DATE	5/22/2025
DRAWN BY	AAJ

SHEET NUMBER

PV-02

DISTRIBUTED LOAD CALCULATIONS		
MISIO MSE410HT0B MODULES		
TOTAL QTY OF MODULES		17
APPROX. ATTACHMENT QTY		38
MODULE WEIGHT	[LBS]	42.00
MODULE LENGTH	[IN]	67.80
MODULE WIDTH	[IN]	44.60
AREA OF MODULE	[SQFT]	21.00
TOTAL ARRAY AREA	[SQFT]	356.99
DISTRIBUTED WEIGHT OF RACKING	[PSF]	0.50
TOTAL WEIGHT OF ARRAY	[LBS]	1038.69
DISTRIBUTED LOAD	[PSF]	2.91

RACKING AND ATTACHMENT INFORMATION	
SURFACE TYPE	COMPOSITION SHINGLES
ATTACHMENT	SUNMO NANOMOUNT (DECKING) @ 48" O.C.
RACKING	SUNMO SMR100

NOTE:

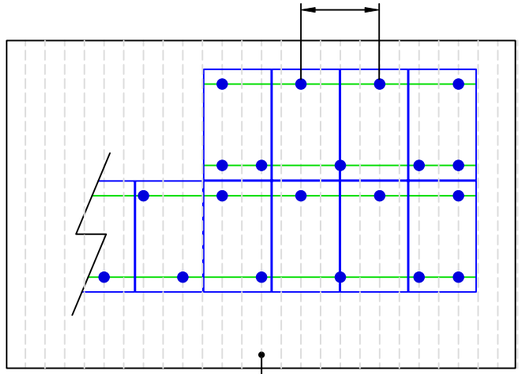
1.CONTRACTOR/INSTALLER TO VERIFY COMPATIBILITY OF ANY BRANDS OR PRODUCTS SUBSTITUTED OR USED AS ALTERNATES WITHIN ANY BRAND-SPECIFIC SYSTEMS. CONTRACTOR SHALL SUPPLY AND PRESENT CERTIFICATES OF COMPATIBILITY TO THE BUILDING OFFICIAL UPON INSPECTION AS NEEDED.

2.REFER TO PV MODULE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR RAIL SPACING SPECIFICATIONS

LEGEND

- ATTACHMENT POINTS
- RAIL
- STRUCTURAL MEMBER

48" OC ATTACHMENT SPACING



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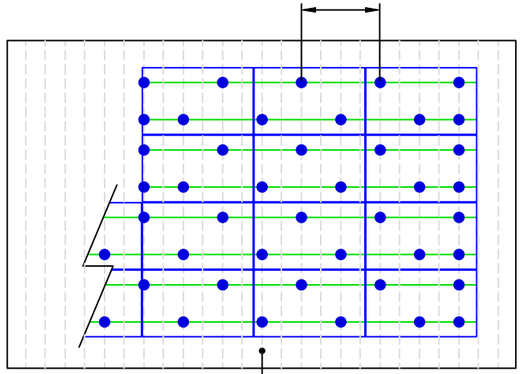
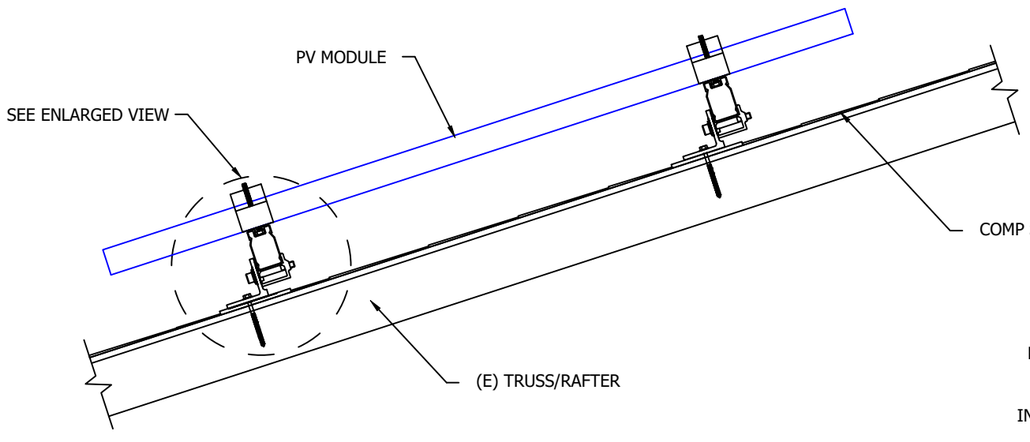
48" OC ATTACHMENT SPACING



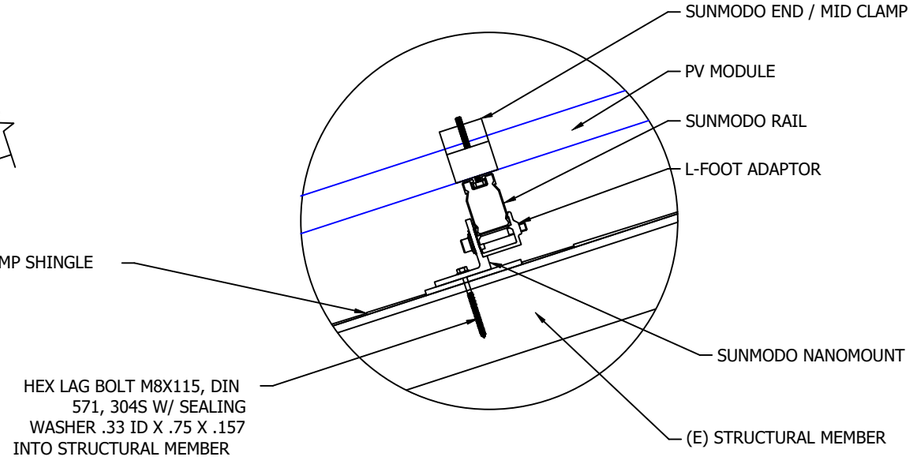
1.0 PV-03 **TYPICAL ATTACHMENT PLAN (PORTRAIT)**
SCALE: NTS

1.1 PV-03 **TYPICAL ATTACHMENT PLAN (LANDSCAPE)**
SCALE: NTS

NOTE: 6" MAXIMUM DISTANCE FROM ROOF SURFACE TO TOP OF PV MODULES



2 PV-03 **ATTACHMENT DETAIL**
Scale: NTS



3 PV-03 **ENLARGED VIEW**
Scale: NTS

CONTRACTOR

LIFETIME SOLAR

LIFETIME SOLAR

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KANSAS CITY, MO 64105

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PROJECT NAME & ADDRESS

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2225 NW KILLARNEY LANE
LEES SUMMIT, MO 64081

APN #: 999999

AHJ: CITY OF LEE'S SUMMIT

UTILITY: EVERGY

SYSTEM DETAILS

DC SYSTEM SIZE: 6.97 kW
AC SYSTEM SIZE: 5.31 kW

REVISIONS

REV # - DESCRIPTION - DATE

SHEET TITLE

ATTACHMENT PLAN & DETAILS

DRAWN DATE	5/22/2025
DRAWN BY	
AAJ	

SHEET NUMBER

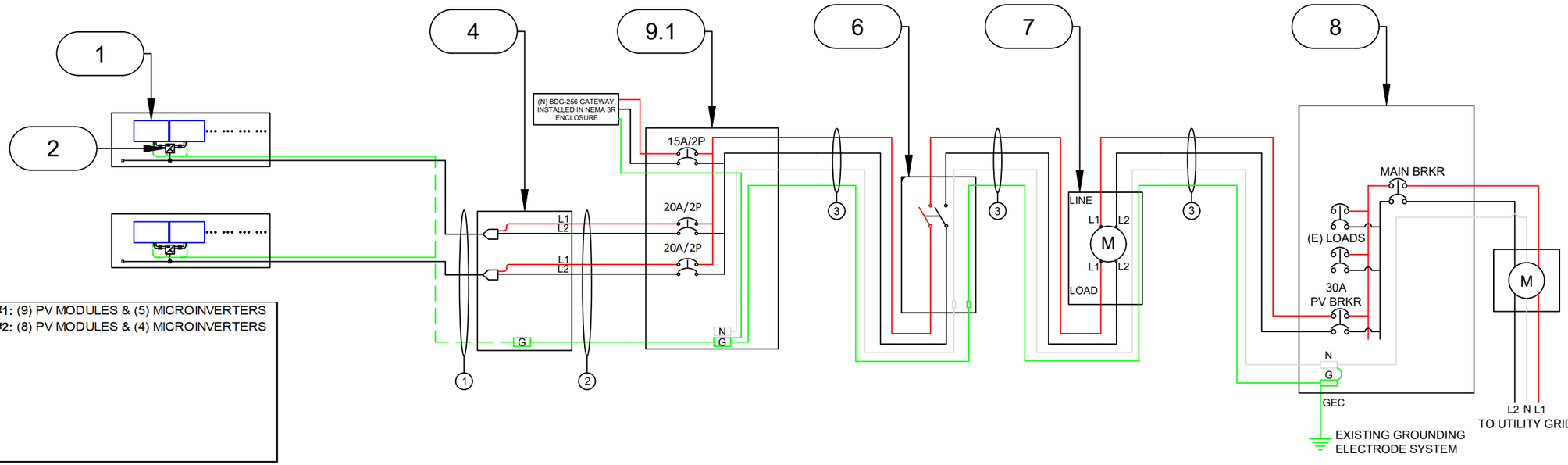
PV-03

MODULE SPECIFICATIONS		
MISIO MSE410HT0B		
MAX POWER-POINT CURRENT (IMP)	[A]	13.07
MAX POWER-POINT VOLTAGE (VMP)	[V]	31.38
OPEN CIRCUIT VOLTAGE (VOC)	[V]	37.41
SHORT CIRCUIT CURRENT (ISC)	[A]	13.9
MAX POWER (PMAX)	[W]	410
TEMP COEFF OF VOC	[% / °C]	-0.254
TEMP COEFF OF VMP	[% / °C]	-0.343
TEMP COEFF OF ISC	[% / °C]	-0.257

INVERTER SPECIFICATIONS		
NEP BDM-600X		
MAX DC INPUT VOLTAGE	[V]	60
MIN/MAX STARTUP RANGE	[V]	22 - 55
MAX CONTINUOUS OUTPUT CURRENT	[A]	2.46
MAX CONTINUOUS OUTPUT POWER	[W]	590
NOMINAL AC OUTPUT VOLTAGE	[V]	240
MODULE WATTAGE ALLOWANCE	[W]	450

EXISTING MAIN SERVICE PANEL INFORMATION			
INTERCONNECTION VIA 120% RULE - 705.12(B)(2)(3)(b) (200 x 120%) - 200 = 40 MAX ALLOWABLE AMPS			
MANUFACTURER:		BUS RATING:	200A
PART NUMBER:		MAIN BRKR:	200A
		PV BRKR:	30A

SERVICE ENTRANCE: UNDERGROUND
METER #: 25 277 629



STRING #1: (9) PV MODULES & (5) MICROINVERTERS
STRING #2: (8) PV MODULES & (4) MICROINVERTERS

CONDUIT AND CONDUCTOR SCHEDULE							
ID	CONDUCTOR TYPE	MATERIAL	# OF CONDUCTORS	CCC (AWG)	ECG (AWG)	CONDUIT TYPE	CONDUIT SIZE
1	TRUNK CABLE	CU	4	#10	#10	IN AIR	IN AIR
2	THWN-2	CU	4	#10	#10	METAL	3/4"
3	THWN-2	CU	3	#10	#10	METAL	3/4"

CONDUCTOR CALCULATIONS PER 2017 NATIONAL ELECTRICAL CODE (NEC)

MAX STRING CALCULATIONS

MAX STRING CURRENT = 12.3 x 1.25 = 15.38 A
ADJUSTED MAX STRING CURRENT (IN AIR) = 15.38 / 0.96 = 16.02 A
ADJUSTED MAX STRING CURRENT (IN CONDUIT) = 15.38 / 0.96 / 0.8 = 20.03 A
#10 TRUNK CABLE @ 90 °C = 40 A >= ADJUSTED MAX STRING CURRENT (IN AIR)
#10 THWN-2 @ 90 °C = 40 A >= ADJUSTED MAX STRING CURRENT (IN CONDUIT)

CONDUIT FILL/TEMP. DERATE SPECIFICATIONS

RECORD LOW / 2% AVG. HIGH TEMP [°C] = -19 / 35
310.15(B)(3)(a)
CONDUIT FILL DERATE (ROOF) 0.80
CONDUIT FILL DERATE 1.00
310.15(B)(2)(a)
TEMP. DERATE @ 90°C 0.96
TEMP. DERATE @ 75°C 0.94

SYSTEM CALCULATIONS

MAX SYSTEM CURRENT = 22.14 A x 1.25 = 27.68 A
ADJUSTED MAX SYSTEM CURRENT = 27.68 A / 0.94 / 1 = 29.45 A
#10 THWN-2 @ 75 °C = 35 A >= ADJUSTED MAX SYSTEM CURRENT

NOTES

1. CONDUIT TO BE INSTALLED AT A MINIMUM OF 7/8" ABOVE ROOF SURFACE.
2. ALL CONDUCTORS ARE DESIGNED FOR LESS THAN 2% VOLTAGE DROP.
3. ALL EXTERIOR CONDUITS SHALL HAVE WATERPROOF FITTINGS.
4. ROMEX CAN BE USED IN LIEU OF CONDUIT FOR INTERIOR AC RUNS ONLY.

VISIBLE, LOCKABLE & LABELED AC DISCONNECT LOCATED WITHIN 10FT OF THE UTILITY METER

EQUIPMENT SCHEDULE				
ID	DESCRIPTION	MANUFACTURER AND PART NUMBER	QUANTITY	NOTES
1	PV MODULE	MISIO MSE410HT0B	17	240V
2	INVERTER	NEP BDM-600X	9	240V
4	J-BOX	GENERIC	1	NEMA 3R
6	AC (UTILITY) DISCONNECT	GENERIC - 60 NON-FUSED	1	240V, NEMA 3R
7	PV PRODUCTION METER	GENERIC	1	NEMA 3R, 125A RATED
8	EXISTING MAIN SERVICE PANEL		1	200 BUSBAR & 200 MCB
9.1	SOLAR LOAD CENTER	GENERIC	1	125A, 240V, MLO, NEMA 3R

CONTRACTOR

LIFETIME SOLAR

1251 MAIN STREET
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LICENSE #: 2023009815

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MATT BREWER
2225 NW KILLARNEY LANE
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APN #: 999999

AHJ: CITY OF LEE'S SUMMIT

UTILITY: EVERGY

SYSTEM DETAILS
DC SYSTEM SIZE: 6.97 kW
AC SYSTEM SIZE: 5.31 kW

REVISIONS

REV # - DESCRIPTION - DATE

SHEET TITLE
ELECTRICAL DIAGRAM

DRAWN DATE	5/22/2025
DRAWN BY	AAJ

SHEET NUMBER
PV-04

GENERAL NOTES

SITE NOTES

2.1.1 A LADDER WILL BE IN PLACE FOR INSPECTION IN ACCORDANCE WITH OSHA REGULATIONS.
2.1.2 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
2.1.3 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
2.1.4 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED IN ACCORDANCE WITH SECTION NEC 110.26.
2.1.5 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

EQUIPMENT LOCATIONS

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

STRUCTURAL NOTES

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

WIRING & CONDUIT NOTES

2.4.1 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.4.2 CONDUCTORS SIZED IN ACCORDANCE WITH THE NEC
2.4.3 AC CONDUCTORS TO BE COLORED OR MARKED PER NEC
2.4.4 LISTED OR LABELED EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING PER NEC

GROUNDING NOTES

2.5.1 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.5.2 PV EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH NEC 690.43 AND NEC TABLE 250.122.
2.5.3 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A).
2.5.4 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC 690.45 AND INVERTER MANUFACTURER'S INSTALLATION PRACTICES
2.5.5 EACH MODULE WILL BE GROUNDED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.
2.5.6 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.5.7 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER PER NEC 250.119
2.5.8 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED IN ACCORDANCE WITH NEC 250, NEC 690.47 AND THE AHJ.
2.5.9 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

DISCONNECTION AND OVERCURRENT PROTECTION NOTES

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

INTERCONNECTION NOTES

2.7.1 LOAD SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.12.
2.7.2 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120 PERCENT OF BUSBAR RATING PER NEC 705.12.
2.7.3 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD IN ACCORDANCE WITH NEC 705.12.
2.7.4 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING PER NEC 705.12.

CONTRACTOR

LIFETIME SOLAR

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AC SYSTEM SIZE: 5.31 kW

REVISIONS

REV # - DESCRIPTION - DATE

SHEET TITLE

NOTES

DRAWN DATE	5/22/2025
DRAWN BY	
AAJ	

SHEET NUMBER

PV-05

⚠ WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION: POINT OF INTERCONNECTION, COMBINER PANEL, AC DISCONNECT

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

LABEL LOCATION: COMBINER PANEL(S), MAIN SERVICE DISCONNECT

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION: MAIN SERVICE DISCONNECT, UTILITY METER

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL LOCATION: RSD INITIATION DEVICE, AC DISCONNECT

PV SYSTEM

DISCONNECT

LABEL LOCATION: AC DISCONNECT

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION: DC CONDUIT, DC JUNCTION BOX

DO NOT DISCONNECT UNDER LOAD

LABEL LOCATION: MAIN SERVICE DISCONNECT

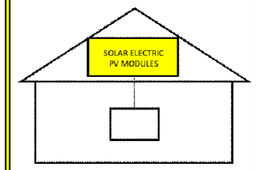
⚠ WARNING DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT, PRODUCTION/NET METER

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

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION: MAIN SERVICE DISCONNECT

⚠ WARNING

POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

LABEL LOCATION: POINT OF INTERCONNECTION, COMBINER PANEL

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT: 22.14 A

NOMINAL OPERATING AC VOLTAGE: 240 V

LABEL LOCATION: AC DISCONNECT/POINT OF INTERCONNECTIO

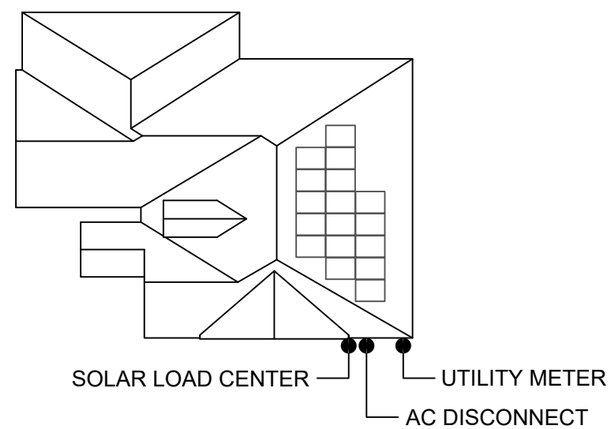
PV METER

LABEL LOCATION: PV METER

CAUTION

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

ADDRESS: 2225 NW KILLARNEY LANE , LEES SUMMIT, MO, 64081



CONTRACTOR

LIFETIME SOLAR

LIFETIME SOLAR

1251 MAIN STREET
KANSAS CITY, MO 64105

LICENSE #: 2023009815

PROJECT NAME & ADDRESS

MATT BREWER
2225 NW KILLARNEY LANE
LEES SUMMIT, MO 64081

APN #: 999999

AHJ: CITY OF LEE'S SUMMIT

UTILITY: EVERGY

SYSTEM DETAILS

DC SYSTEM SIZE: 6.97 kW
AC SYSTEM SIZE: 5.31 kW

REVISIONS

REV # - DESCRIPTION - DATE

SHEET TITLE

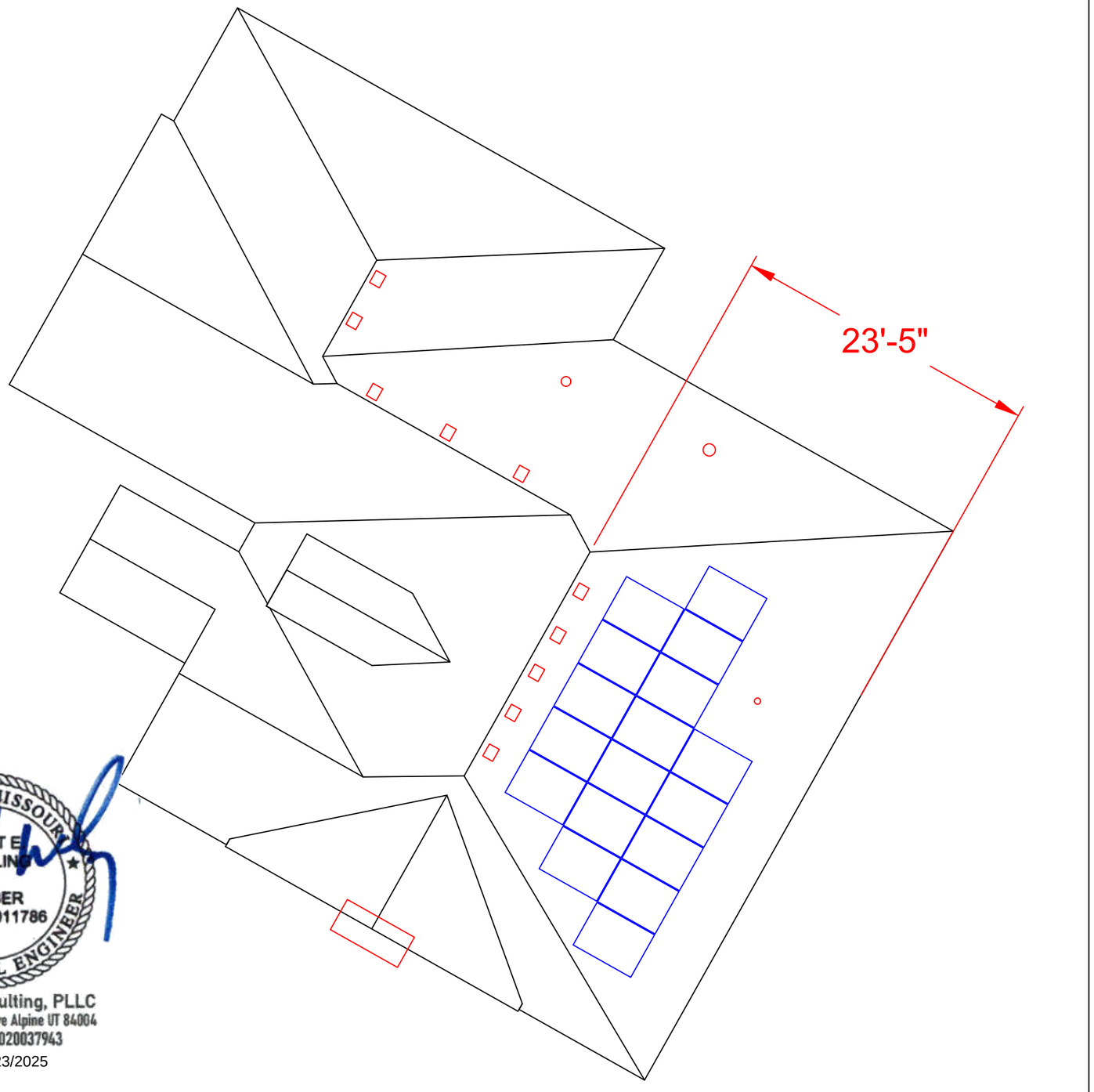
WARNING LABELS

DRAWN DATE	5/22/2025
DRAWN BY	AAJ

SHEET NUMBER

PV-06

REFERENCE ONLY



STATE OF MISSOURI
SCOTT E. WYSSLING
NUMBER PE-2019011786
PROFESSIONAL ENGINEER

Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
Missouri COA # 2020037943
Signed 5/23/2025

**DIMENSIONS ARE 2D (FLAT)

MSE PERC 108HC

MISSION SOLAR ENERGY

410W
Class leading power output

Positive Power Tolerance
-0 to +3%

FRAME-TO-FRAME WARRANTY

Degradation guaranteed not to exceed 2% in year 1 and .55% annually from years 2 to 25 with 84.8% capacity guaranteed in year 25.
For more information, visit www.missionsolar.com/warranty

American Solar Built for the Long Haul

Mission Solar Energy is headquartered in San Antonio, Texas where we manufacture our modules. We produce American, high-quality solar modules ensuring the highest-in-class power output and best-in-class reliability. This product is tailored for residential and commercial applications. Every Mission Solar Energy solar module is certified and surpasses industry standard regulations, providing excellent performance over the long term.

America's Module Company®

Fair Trade Practices
- Free of forced labor at all stages of the supply chain
- Not subject to AD/CVD tariffs or investigations
- Polysilicon manufactured with sustainable hydroelectric power

Certified Reliability
- Tested to UL 61730 & IEC Standards
- PID resistant
- Resistance to salt mist corrosion

Advanced Technology
- M10 half-cut cell with 10 busbars
- Passivated Emitter Rear Contact
- Engineered for residential and commercial applications

Extreme Weather Resilience
- Up to 5,400 Pa snow and wind load
- Third-party hail tests exceed 55 mm at 33.9 m/s

BAA Compliant for Government Projects
- Buy American Act
- American Recovery & Reinvestment Act

CERTIFICATIONS

FSEC-Registered Standard 203 · CEC · TÜV SÜD · c UL us LISTED

If you have questions or concerns about certification of our products in your area, please contact Mission Solar Energy.

MODULES ASSEMBLED DESIGNED & ENGINEERED IN THE USA OF U.S. AND NON-U.S. PARTS ®

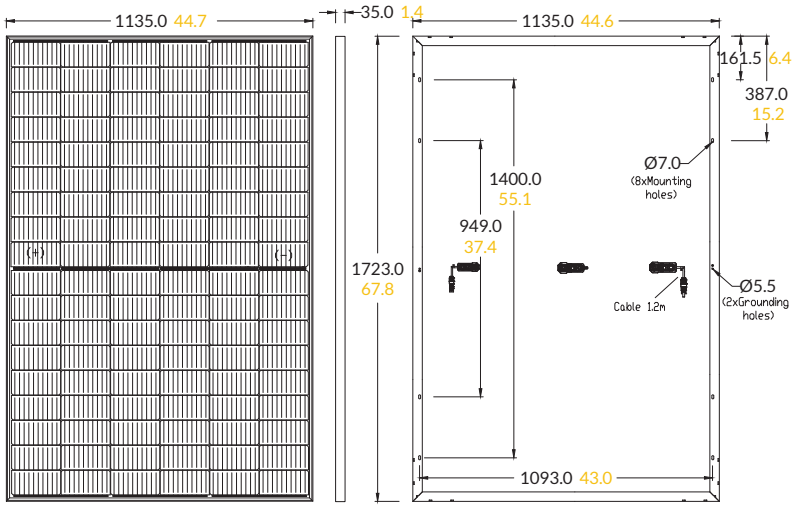
FRAME-TO-FRAME 25 YEAR WARRANTY ®

Class Leading
400-410W

MSE PERC 108HC

BASIC DIMENSIONS

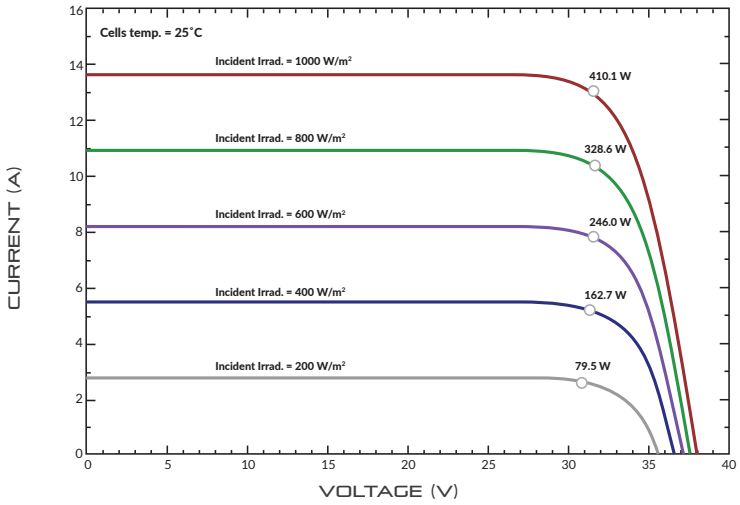
[UNITS: MM/IN]



CURRENT-VOLTAGE CURVE

MSE410HT0B: 410W, 108 HALF-CUT CELL SOLAR MODULE

Current-voltage characteristics with dependence on irradiance and module temperature



CERTIFICATIONS AND TESTS

IEC	61215, 61730, 61701
UL	61730

FSEC-Registered Standard 203 | CEC | TÜV SÜD | c UL us LISTED

Mission Solar Energy
8303 S. New Braunfels Ave., San Antonio, Texas 78235
www.missionsolar.com | info@missionsolar.com

ELECTRICAL SPECIFICATION

PRODUCT TYPE	MSExxxHT0B (xxx = P_{max})				
Power Output	P_{max}	W_p	400	405	410
Module Efficiency		%	20.5	20.7	21.0
Tolerance		%	0/+3	0/+3	0/+3
Short Circuit Current	I_{sc}	A	13.75	13.82	13.90
Open Circuit Voltage	V_{oc}	V	37.09	37.27	37.41
Rated Current	I_{mp}	A	12.92	13.00	13.07
Rated Voltage	V_{mp}	V	30.96	31.16	31.38
Fuse Rating		A	25A	25A	25A
System Voltage		V	1,000	1,000	1,000

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	45.52°C (±3.7%)
Temperature Coefficient of Pmax	-0.343%/°C (±5.0%)
Temperature Coefficient of Voc	-0.254%/°C (±5.0%)
Temperature Coefficient of Isc	+0.0266%/°C (±10.0%)

OPERATING CONDITIONS

Maximum System Voltage	1,000Vdc
Operating Temperature Range	-40°F to 185°F (-40°C to +85°C)
Maximum Series Fuse Rating	25A
Fire Safety Classification	Type 1*
Front & Back Load (UL Standard)	Up to 5,400 Pa front and 5,400 Pa back load. Tested to UL 61730
Hail Safety Impact Velocity	55mm at 33.9m/s

**Mission Solar Energy uses quality sourced materials that result in a Type 1 fire rating. Please note, the 'Fire Class' Rating is designated for the fully-installed PV system, which includes, but is not limited to, the module, the type of mounting used, pitch and roof composition.*

MECHANICAL DATA

Solar Cells	P-PERC 182mm x 182mm
Cell Orientation	108 half-cut cells
Module Dimension	1723mm x 1135mm x 35mm
Weight	42 lbs. (19kg)
Front Glass	3.2mm tempered, low-iron, anti-reflective
Frame	35mm anodized interlocking
Encapsulant	Ethylene vinyl acetate (EVA)
Junction Box	Protection class IP68 with 3 bypass-diodes
Cable	1.2m, Wire 4mm² (12AWG)
Connector	MC4 Staubli PV-KBT4/6II-UR and PV-KST4/6II-UR

SHIPPING INFORMATION

Container Feet	Ship To	Pallets	Modules	410W Bin
53'	Most States	26	806	330.46 kW

Double Stack: (Horizontal Orientation): 31 panels per pallet

PALLET [31 MODULES]

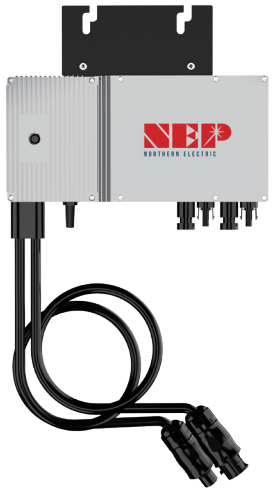
Weight	Height	Width	Length
1,610 lbs. (730 kg)	51 in (129.5 cm)	47 in (119.4 cm)	70 in (119.4 cm)

PRODUCT DATASHEET

BDM-500/(300x2)600X MICROINVERTER

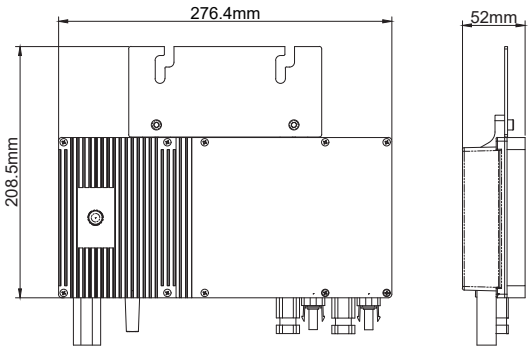
CEC Listing as Utility Interactive Grid Support Inverter

(NC0141, NC0142)



STANDARD DIMENSIONS

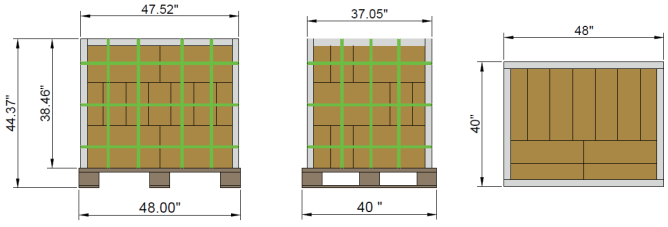
(mm)



Weight: 3.9 kg

Certifications

UL 1741, CSA C22.2, NO. 107.1, IEC/EN 62109-1, IEC/EN 62109-2, IEEE 1547, VDE-AR-N 4105*, VDE V 0126-1-1/A1, G83/2, CEI 21, AS 4777.2, AS 4777.3, EN50438, ABNT NBR 16149/16150



Per box: 5 pcs
Boxes per layer: 8
Layers: 3

Pallet Qty: 120 pcs
Pallet weight: 473 kg

SPECIFICATIONS

Model	BDM-500	BDM-300x2 (BDM-600X)
Input (DC)		
Recommended Max PV Power:	375 W x 2	450 W x 2
Max DC Open Circuit Voltage:	60 Vdc	60 Vdc
Max DC Input Current:	20 A x 2	20 A x 2
MPPT Tracking Accuracy:	> 99.5%	> 99.5%
MPPT Tracking Range:	22 – 55 Vdc	22 – 55 Vdc
ISC PV (Absolute Maximum):	20 A x 2	20 A x 2
Maximum Backfeed Current to Array:	0 A	0 A
Output (AC)		
Peak AC Output Power:	500 W	600 W
Max Continuous Output Power(240V):	500 W	590 W
Max Continuous Output Power(208V):	476 W	590 W
Nominal Power Grid Voltage:	1φ: 240 Vac	
	3φ: 208 Vac	
Allowable Power Grid Voltage:	1φ: 211-264 Vac (adjustable)	
	3φ: 183-228 Vac (adjustable)	
Rated Output Current:	1φ: 2.08A	1φ: 2.46 A
	3φ: 2.29 A	3φ: 2.84 A
Maximum Units Per Branch (20A): *(All NEC adjustment factors considered)*	1φ: 7 units	1φ: 6 units
	3φ: 7 units	3φ: 5 units
Allowable Power Grid Frequency:	59.3 - 60.5 Hz (adjustable)	
THD:	< 5% (at rated power)	
Power Factor:	-0.9~0.9	
Current (inrush) (Peak and Duration):	9.4 A, 15 US	
Nominal Frequency:	60 Hz	
Max Output Fault Current:	2.4 Arms for 3 cycles	
Max Output Overcurrent Protection:	10 A	
System Efficiency		
Weighted Average Efficiency (CEC):	95.5%	
Nighttime Tare Loss:	0.2 W	
Protection Function		
Over/Under Voltage Protection:	Yes	
Over/Under Frequency Protection:	Yes	
Anti-Islanding Protection:	Yes	
Over Current Protection:	Yes	
Reverse DC Polarity Protection:	Yes	
Overload Protection:	Yes	
Protection Degree:	NEMA-6 / IP-66 / IP-67	
Ambient Temperature:	-40°F to +149°F (-40°C to +65°C)	
Operating Temperature:	-40°F to +185°F (-40°C to +85°C)	
Display:	LED Light	
Communications:	Power line Communications / WiFi	
Environment Category:	Indoor and outdoor	
Wet Location:	Suitable	
Pollution Degree:	PD 3	
Over Voltage Category:	II(PV), III (AC MAINS)	

All NEC required adjustment factors have been considered for AC outputs. AC current outputs will not exceed stated values for Rated output AC Current.

COMPLIANCE

- NEC 2023 Section 690.11 DC Arc-Fault Circuit Protection
- NEC 2023 Section 690.12 Rapid Shutdown of PV Systems on Buildings
- NEC 2023 Section 690.33 Mating Connectors
- NEC 2023 Section 705.12 Point of Connection (AC Arc-Fault Protection)

BDG-256

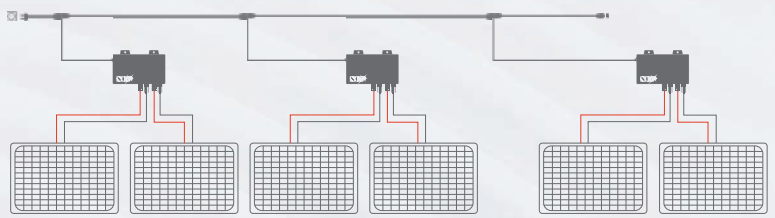
Monitoring Gateway

Features

Convenient
- WiFi, Ethernet, or Cell
- Easy to configure web portal
- Touch screen for easy Configuration and Troubleshooting
- Supports dual voltage (100/240) and dual frequency (50/60 Hz)

Safe and reliable
- Supports local monitoring without internet

Globally Certified
- UL 60950-1 2nd edition, CSA C22.2 2nd edition, FCC Part 15 Clase B AS/NZS 60950.1:2011 Inc A1, AS/NZS CISPR 22: 2009+A1:2010
- EN 60950-1:2006+A11:2009+A1:2010
- Revenue Grade Production Monitoring ANSI C12.20 +/- 0.5%



More efficiency Maximum 3.5W

Certification global UL 60950-1 2.ª edition, CSA C22.2 2.ª edition, FCC Part 15 Clase B

More reliability IP30

northernep.com

Ver No.: BDG-256-05232024

Model

BDG-256

Communications interface	**BDM-256**
Communication with Microinverter	PLC
Ethernet	10/100 auto-sensing, auto-negotiation
USB	USB 2.0 interface, auto-sensing, auto-negotiation
Wi-Fi	Support
Monitoring Capability	255 devices (depending on power grid interference)
Human interface	
Display	LCD touch screen
Power requirements	
AC input	100-240 Vac, 50/60Hz, 60mA
Power Consumption	3.5 Watts maximum
Revenue Grade Production Monitoring	
Accessory required	ANSI C12.20 +/-0.5% accuracy
Mechanical data	
Dimensions	6.69” x 4.33” x 1.46” (170mm x 110 mm x 37 mm)
Weight	5.29 oz (150g)
Ambient temperature range	40˚C to +55˚C (-40˚F to 131˚F) -40˚C to +49˚C (-40˚F to 120˚F) if installed in an enclosure
Cooling	Natural convection - no fans
Environmental Rating	IP30. For installation indoors or in an NRTL-certified NEMA type 3R enclosure
Characteristics	
Standard warranty term	5 year
Compliance	UL 60950-1 2nd Edition Rev Dec 19, 2011 CSA C22.2 2nd Edition Rev Dec 19, 2011 FCC Part 15 Class B AS/NZS 60950.1:2011 Inc A1 AS/NZS CISPR 22: 2009+A1:2010 EN 60950-1:2006+A11:2009+A1:2010 +A12:2011 EN 55022:201 EN 61000-3-2:2006+A1:2009+A2:2009 EN 61000-3-3:2008 EN 55024:2010 EMC Directive 2004/108/EC

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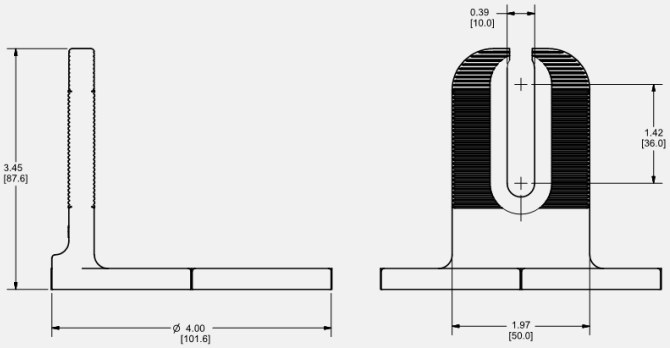
SUNMOD

Cut Sheet

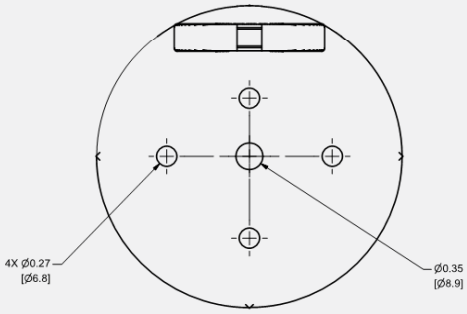
NanoMount

Part Number	Description
K50058-BK1	NanoMount • NanoMount • USWR Gasket

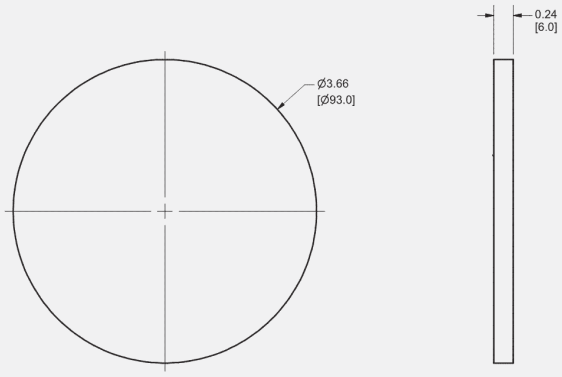
NanoMount



Material: Aluminum
Finish: Black Powder Coating



NanoMount Gasket



Material: USWR Gasket with Adhesive

D10214-V003

Dimensions shown are inches (and millimeters)

Details are subject to change without notice

SUNMOD

Cut Sheet

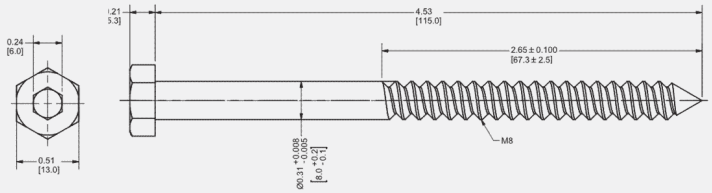
NanoMount Lag Bolt

NanoMount Decking Screw

Part Number	Description
K50049-BK1	Lag Bolt Assembly • Hex Lag Bolt M8X115, DIN 571, 304S • Sealing Washer .33 ID X .75 X .157
K50055-BK1	Decking Screw Assembly • Self-Tapping Screw, #6.3 X 76 • Sealing Washer .26ID X .50X .125

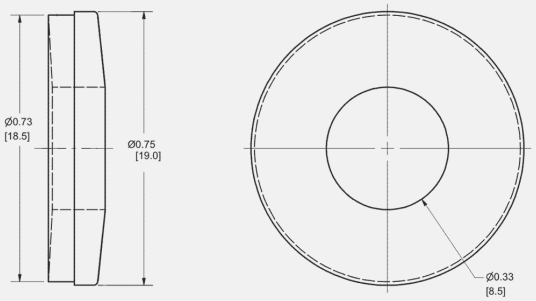
Lag Bolt Assembly

1. Hex Lag Bolt M8X115, DIN 571, 304



Material: Stainless Steel
Finish: Clear

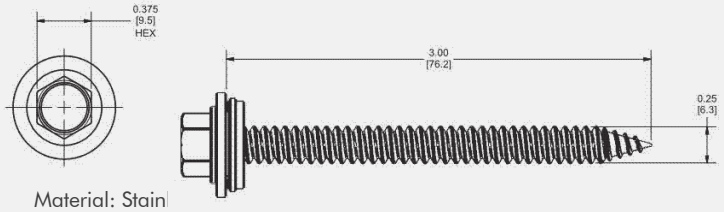
2 Sealing Washer .33ID X.75X.157



Material: EPDM + Stainless Steel

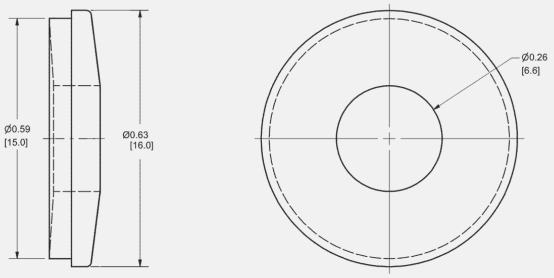
Decking Screw Assembly

1. Self-Tapping Screw, #6.3 X 76



Material: Stain
Finish: Clear

2. Sealing Washer .26ID X .50X .125



Material: EPDM + Stainless Steel

Dimensions shown are inches (and millimeters)

SUNMOD

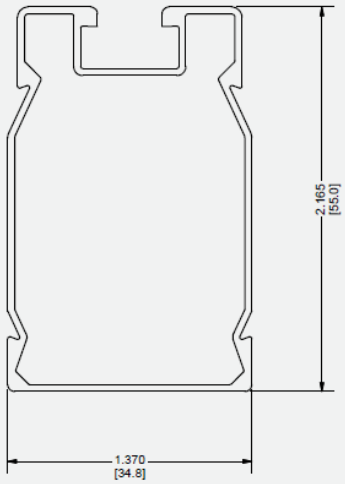
Cut Sheet

SMR100 Rail

SMR200 Rail

Part Number	Description
A20422-168-BK	SMR100 Rail, Black Anodized, 168"
A20431-168-BK	SMR200 Rail, Black Anodized, 168"
A20440-BK1	SMR100 Rail End Cap, Black
A20440-BK2	SMR200 Rail End Cap, Black

SMR100 Rail



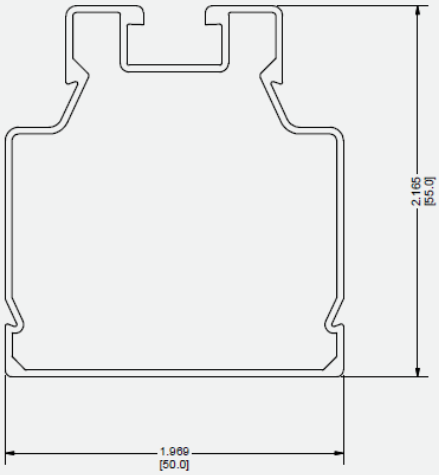
Mechanical Properties

Material: 6005-T5 Aluminum
Weight: 0.4126 lbs/ft (0.614 kg/m)
Ultimate Tensile Strength: 37.7 ksi (260 MPa)
Yield Strength: 34.8 ksi (240 MPa)

Section Properties

Sx: 0.196 in^3 (3.21 cm^3)
Sy: 0.146 in^3 (2.39 cm^3)
Area (X-section): 0.352 in^2 (2.27 cm^2)

SMR200 Rail



Mechanical Properties

Material: 6005-T5 Aluminum
Weight: 0.453 lbs/ft (0.626 kg/m)
Ultimate Tensile Strength: 37.7 ksi (260 MPa)
Yield Strength: 34.8 ksi (240 MPa)

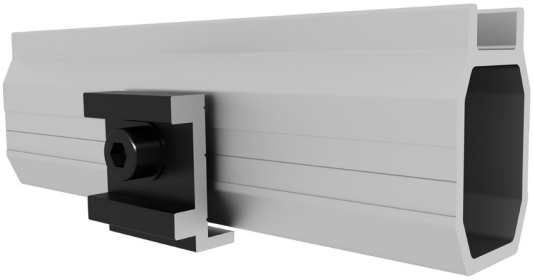
Section Properties

Sx: 0.223 in^3 (3.74 cm^3)
Sy: 0.189 in^3 (3.10 cm^3)
Area (X-section): 0.388 in^2 (1.22 cm^2)

SUNMOD

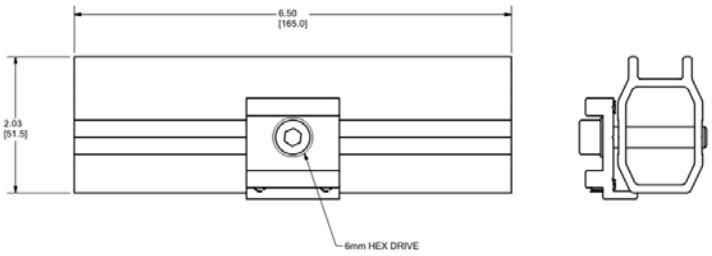
Cut Sheet

SMR Rail Splices



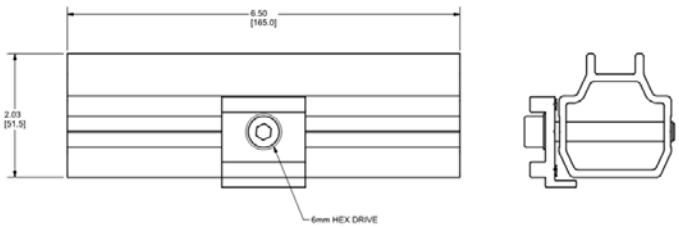
SMR100 Bonding Rail Splice

Material: Aluminum

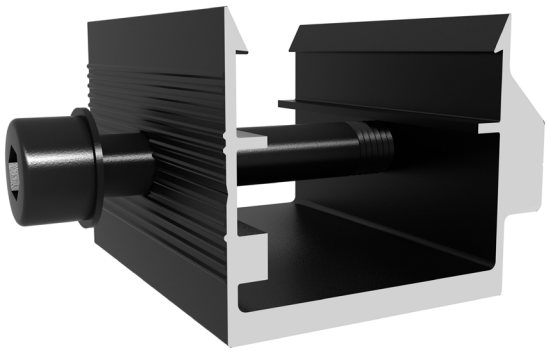


SMR200 Bonding Rail Splice

Material: Aluminum

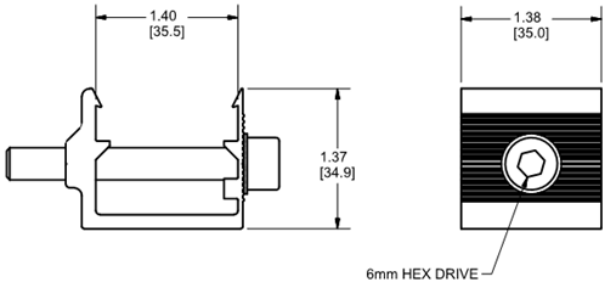


L-Foot Adaptors



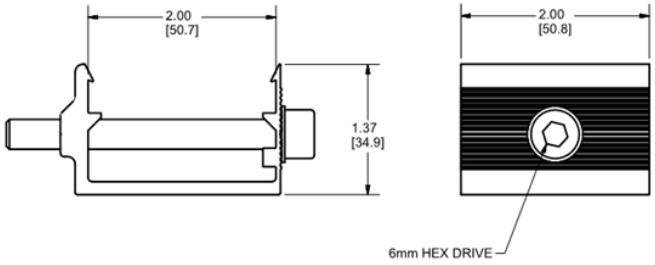
SMR 100 L-Foot Adaptor

Material: Aluminum



SMR 200 L-Foot Adaptor

Material: Aluminum



Part Number	Description
K10421-BK1	SMR100 Structural Bonding Rail Splice
K10427-BK1	SMR200 Structural Bonding Rail Splice
K10433-BK1	SMR100 L-Foot Adaptor
K10434-BK1	SMR200 L-Foot Adaptor

Dimensions shown are inches (and millimeters)

SUNMODO

Cut Sheet

Pop-On Mid Clamp

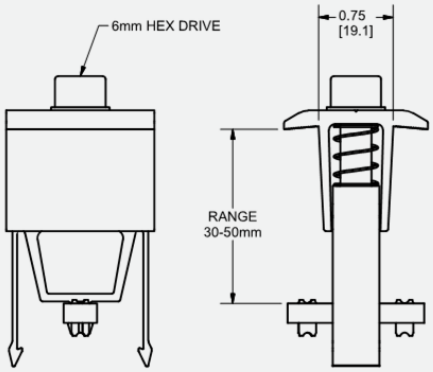
Pop-On End Clamp

Shared Rail Mid/End Clamp

Part Number	Description
K10417-BK1	Pop-On Bonding Mid Clamp, Black
K10418-BK1	Pop-On End Clamp, Black
K10419-BK1	Shared Rail Bonding Mid Clamp, Black
K10420-BK1	Shared Rail End Clamp, Black

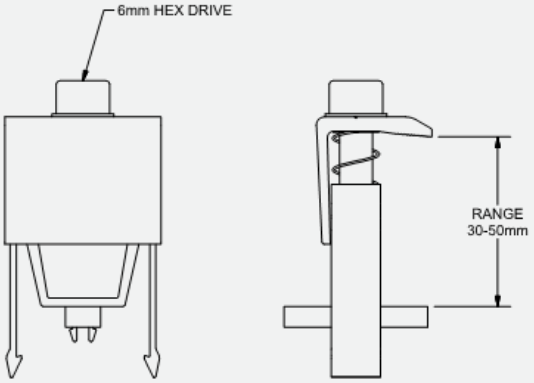
Pop-On Bonding Mid Clamp

Material: Aluminum



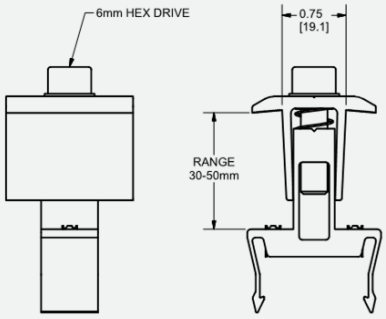
Pop-On End Clamp

Material: Aluminum



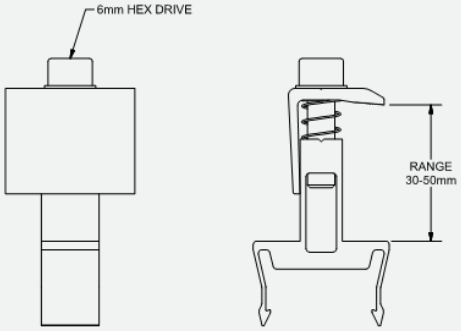
Shared Rail Bonding Mid Clamp

Material: Aluminum



Shared Rail End Clamp

Material: Aluminum



Dimensions shown are inches (and millimeters)

Details are subject to change without notice

SUNMOD

Cut Sheet

SunDock Rail-Free Accessories

Parts Description: Top Mount Cable Clip

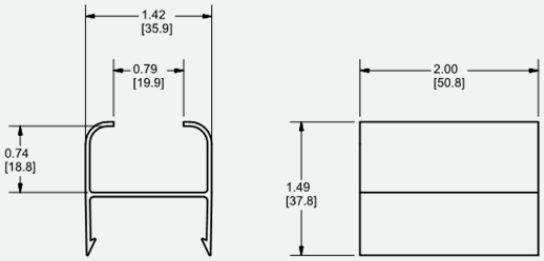
Parts Description: Side Mount Cable Clip

Parts Description: Microinverter Mount

Part Number	Description
A20408-001	Top Mount Cable Clip
A20427-BK1	Side Mount Cable Clip (SMR100)
A20434-BK1	Side Mount Cable Clip (SMR200)
K50052-001	Microinverter Mount Kit

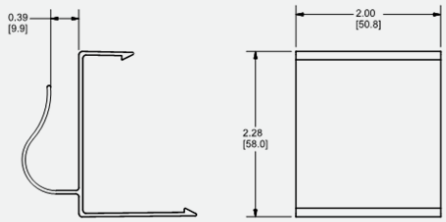
Top Mount Cable Clip

Material: Aluminum



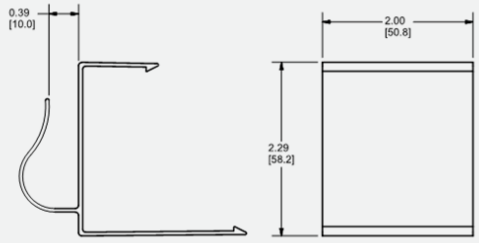
Side Mount Cable Clip (SMR100)

Material: Aluminum



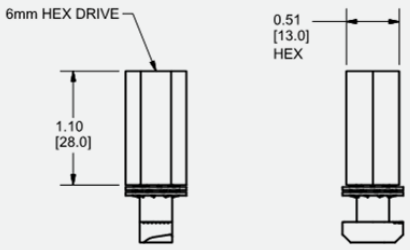
Side Mount Cable Clip (SMR200)

Material: Aluminum



Microinverter Mount

Material: Aluminum



D10225-V001

Dimensions shown are inches (and millimeters)

Details are subject to change without notice