THE DARRION WYATT RESIDENCE
2756 N SHERMAN BLVD, MILWAUKEE, WI 53210
4.500 kW (AC) AND 6.150 kW (DC) PHOTOVOLTAIC SYSTEM

SOLENERGY

COVER SHEET

THE DARRION WYATT RESIDENCE
2756 N SHERMAN BLVD,
MILWAUKEE, WI 53210
206-931-3566

SOLENERGY
PHIL SUTTER
LIC#: DC-04210045 EXP: 2023
7182 HWY 14, #201
MIDDLETON, WI 53562
608.558.3842
jdhirsbrunner@solenergysolar.com

SIGNED: _____ DATE: _____

07/19/2022

DRAWN BY: BPM

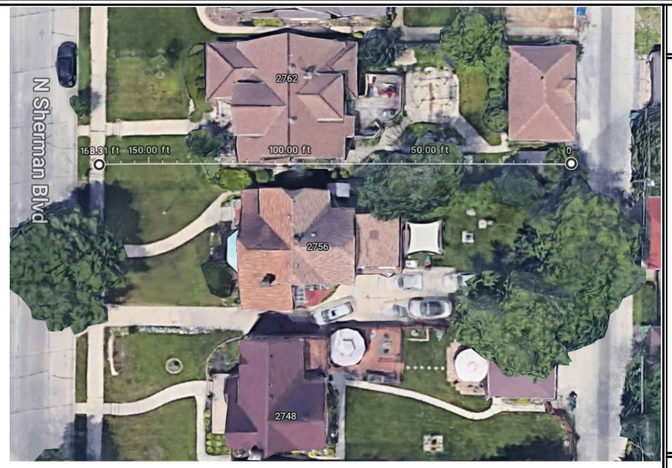
APN: 3080321000

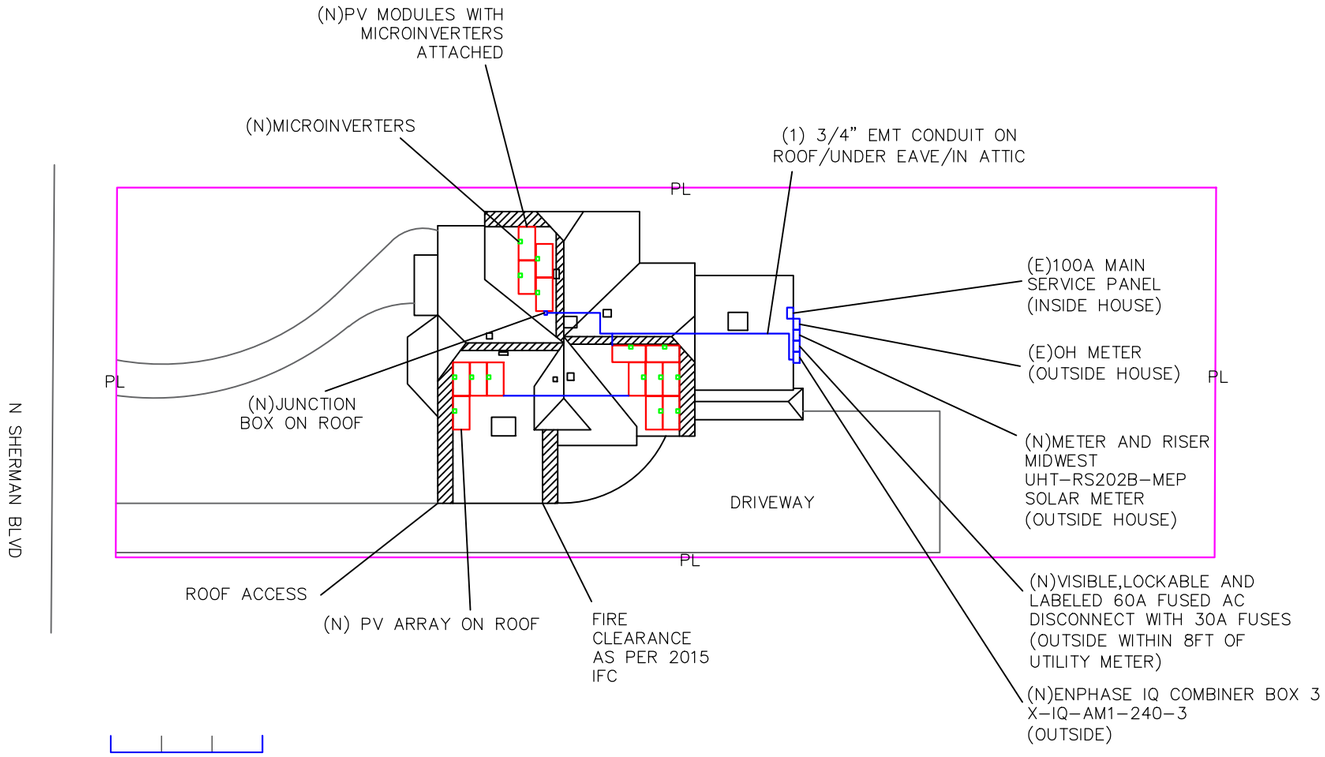
LOT: 8,250 Sq.Ft.

DWELLING: 2,028 Sq.Ft.

C-1

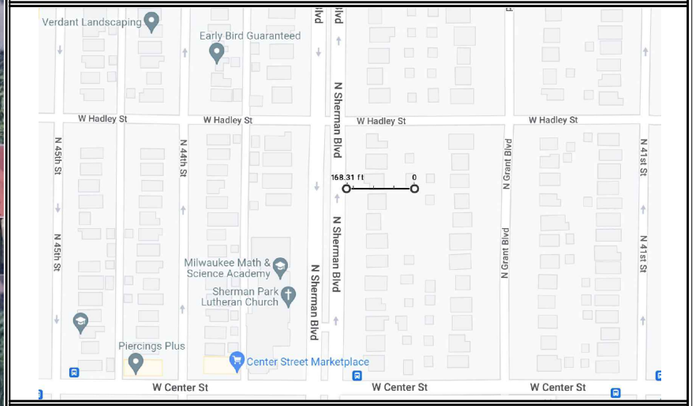
MODULE DIM: 79.06" X 39.45"
MODULE WEIGHT: 49.6 lbs
NUMBER OF STORIES: 02
STRUCTURE TYPE: SFR
ROOF FRAMING: 2" X 4"
RAFTERS: 24'' O.C
NUMBER OF ROOFS UTILIZED: 03
(01) STRING OF 08 MODULES WITH 08 MICROINVERTERS
(01) STRING OF 07 MODULES WITH 07 MICROINVERTERS





1 PHOTOVOLTAIC INSTALLATION PLAN
SCALE: 1"=30'

VICINITY MAP



SCOPE OF WORK

THIS PROJECT CONSISTS ON THE INSTALLATION OF (15) PHOTOVOLTAIC MODULES WITH (15) UTILITY INTERACTIVE MICROINVERTERS AND (1) ENPHASE IQ COMBINER BOX 3. PV MODULES WILL BE MOUNTED TO AN EXISTING ASPHALT SHINGLE ROOFTOP WITH SUNMODO NANO RAFTER ATTACHMENT AND SUNMODO SMR100 168'' RAIL.

THE ATTACHMENT SYSTEM IS SPECIFICALLY DESIGNED TO WITHSTAND 120MPH WIND LOADS, 30PSF SNOW LOADS AND SEISMIC LOADS ON EXISTING ROOFTOPS. REFER TO CODE COMPLIANT INSTALLATION MANUAL FOR DETAILED INFORMATION AND WATER PROOFING SPECIFICATIONS.

SHEET INDEX

SHEET NO.	INDEX NO.	DESCRIPTION:
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02	T-1	TITLE SHEET
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04	E-1	SINGLE LINE DIAGRAM
05	D-1	PHOTOVOLTAIC MODULE DATA SHEET
06	D-2	MICROINVERTER DATA SHEET
07	D-3	COMBINER BOX DATA SHEET
08	D-4	AC DISCONNECT DATA SHEET
09	D-5	METER DATA SHEET
10	D-6	ATTACHMENT DATA SHEET
11	D-7	RAIL DATA SHEET
12	L-1	WARNING PLACARDS

PROJECT JURISDICTION

PREPARED FOR:

CITY OF COUNTY:	CITY OF MILWAUKEE
ADDRESS:	200 E WELLS STREET,
CITY, STATE,ZIP	MILWAUKEE, WI 53202
PH:	414-286-2489

CODE COMPLIANCE

ALL WORK SHALL CONFORM TO ALL PERTINENT CODES, REGULATIONS, LAWS, AND ORDINANCES AS REQUIRED BY THE STATE OF WISCONSIN

2017 NATIONAL ELECTRICAL CODE
2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL EXISTIGN BUILDING CODE
2015 INTERNATIONAL FUEL GAS CODE
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE-RESIDENTIAL
2015 INTERNATIONAL ENERGY CONSERVATION CODE-COMMERCIAL

PV SYSTEM SPECIFICATIONS

MODULE	QTY.	MICROINVERTER	QTY.	RACKING	TILT	AZIMUTH	DC POWER RATING (STC)
JINKO 410W JKM410M-72HL-V	15	ENPHASE IQ8PLUS-72-2-US ENPHASE IQ COMBINER BOX 3 X-IQ-AM1-240-3	15 01	SUNMODO NANO RAFTER ATTACHMENT SUNMODO SMR100 168'' RAIL	45°	270° 180°	6.150kW

SOLENERGY

TITLE SHEET

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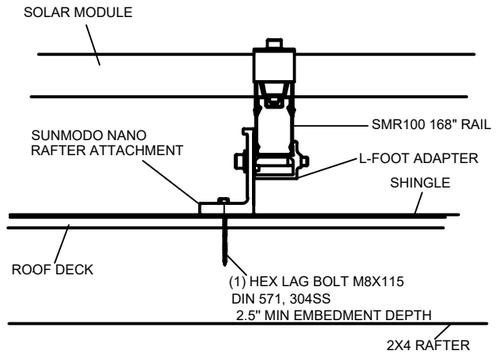
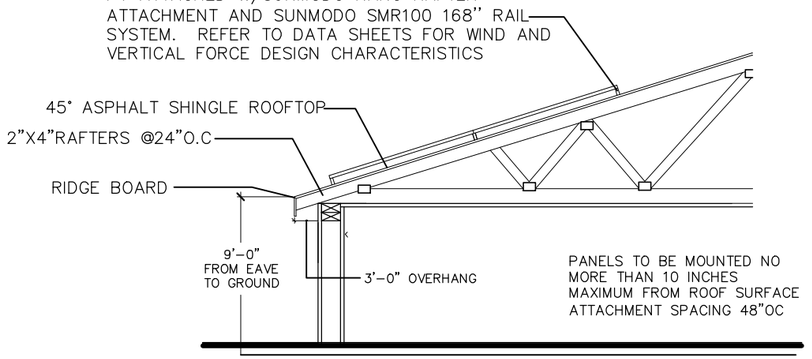
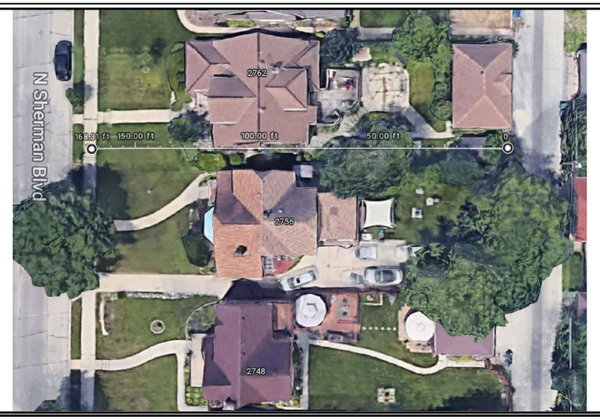
T-1



CONNECTION DETAIL N.T.S.



SECTION PLAN N.T.S.



AERIAL VIEW

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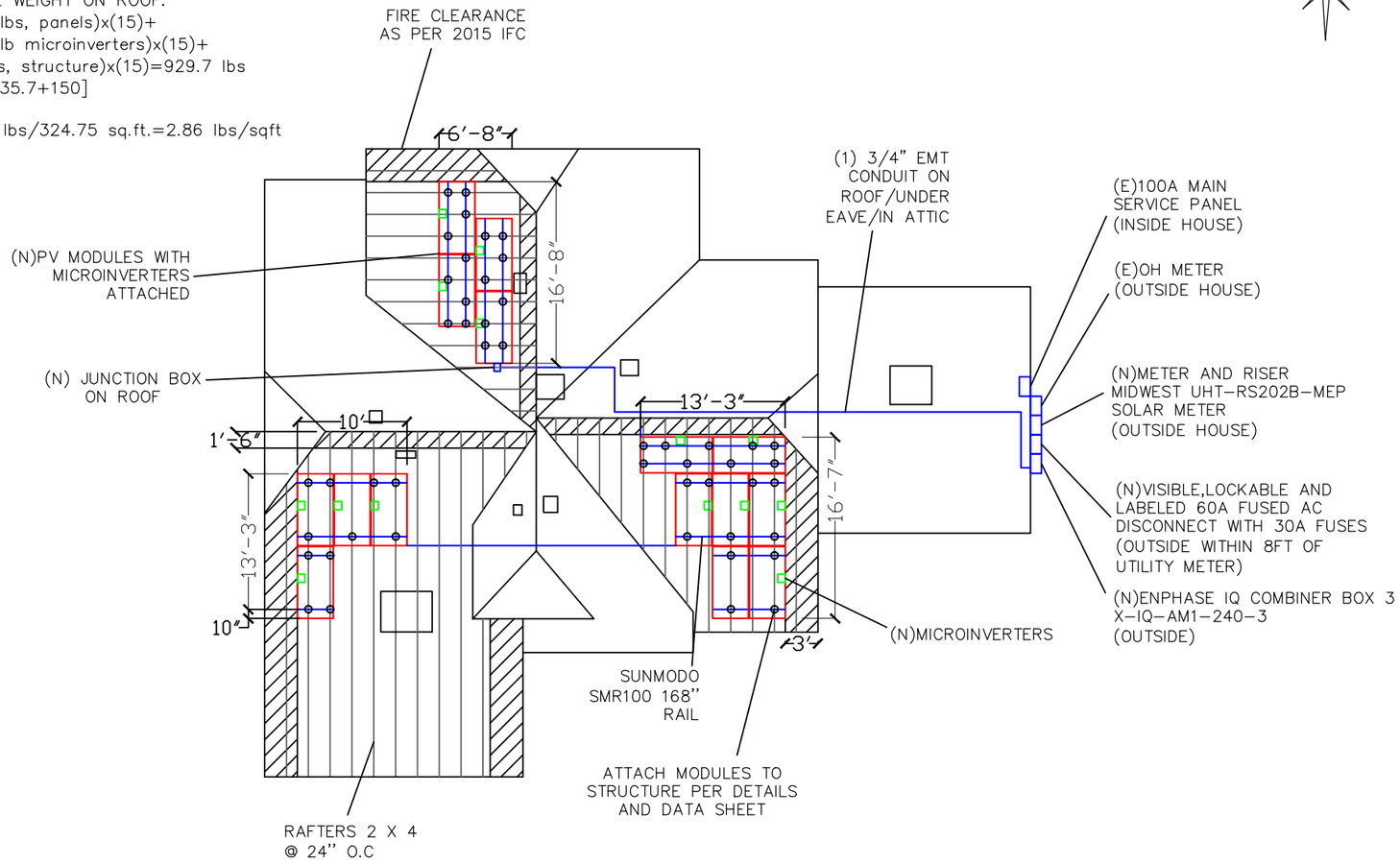
ROOF LOAD CALCULATION

ROOF:15 PANELS
PV AREA SINGLE MODULE: 21.65 SQ. FT.
PV AREA TOTAL: 324.75 SQ. FT.
PV PANEL WEIGHT = 49.6 lbs
MOUNTING HARDWARE WEIGHT=10 lbs/panel
ENTIRE WEIGHT ON ROOF:
(49.6 lbs, panels)x(15)+
(2.38 lb microinverters)x(15)+
(10 lbs, structure)x(15)=929.7 lbs
[744+35.7+150]

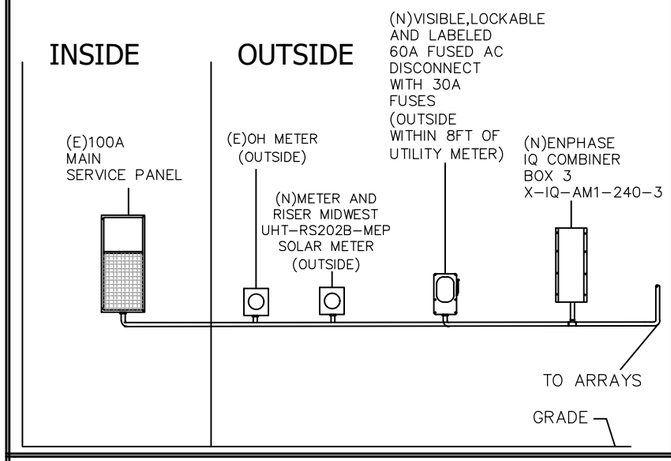
929.7 lbs/324.75 sq.ft.=2.86 lbs/sqft



1 PV LAYOUT PLAN
SCALE: 1/16" = 1'-0"

CLASS 1 – DIVISION 1
METALLIC CONDUIT W/NO JOINTS

(N) JUNCTION BOX ON ROOF



MAIN SERVICE ELEVATION

GENERAL NOTES:

1. CONDUIT RUNS ARE DIAGRAMMATIC, SUBJECT TO FIELD CONDITIONS AND INSTALLATION CONTRACTOR'S FINAL LOCATIONS THAT MEET NEC REQUIREMENTS.
2. ALL EQUIPMENT INSTALLED SHALL BE IN ACCORDANCE WITH ALL LOCAL BUILDING AND ELECTRICAL CODES.
3. THE INSTALLATION CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND UNDERSTANDING THE SECTION OF THE INVERTERS OPERATION AND MAINTENANCE MANUAL THAT PERTAINS TO THE SAFETY AND PROPER INSTALLATION.
4. THE SYSTEM SHALL NOT BE INTERCONNECTED UNTIL APPROVAL FROM LOCAL JURISDICTION AND THE UTILITY IS OBTAINED.
5. ALL CONDUCTORS TO BE COPPER UNLESS SPECIFIED OTHERWISE.
6. THE SOLAR PHOTOVOLTAIC INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.
7. LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE SUNLIGHT RESISTANT.
8. THIS IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES

PV EQUIPMENT PLAN

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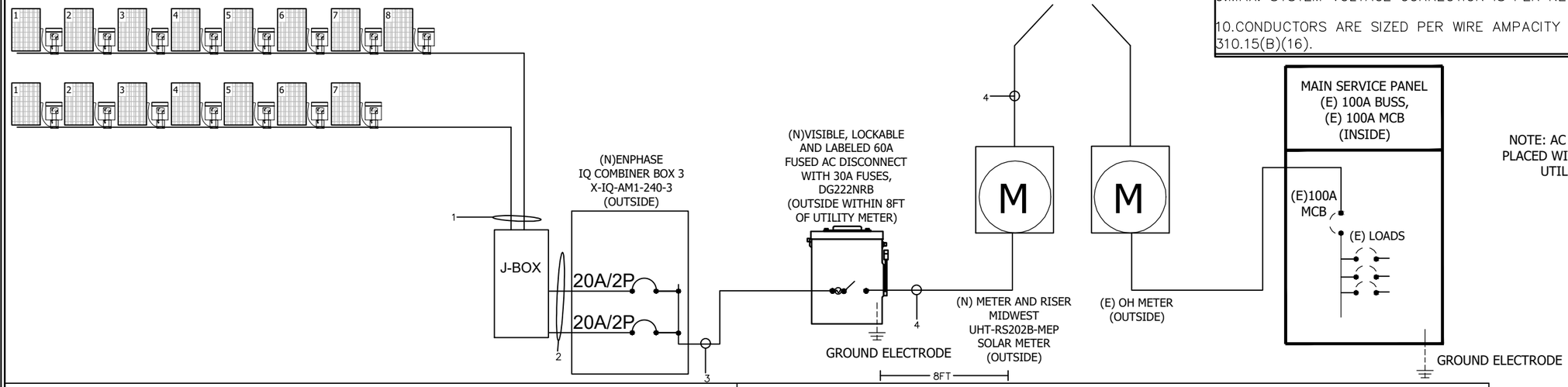
M-1

SINGLE LINE DIAGRAM: DC SYSTEM SIZE-6.150 kW, AC SYSTEM SIZE- 4.500kW

	MICROINVERTER SPECIFICATIONS	MODULE SPECIFICATIONS	
MODEL	ENPHASE IQ8PLUS-72-2-US MICROINVERTERS	MODEL	JINKO 410W JKM410M-72HL-V
MAX CONTINUOUS OUTPUT POWER	300W	MODULE POWER @ STC	410W
MAX OUTPUT CURRENT	1.21A	OPEN CIRCUIT VOLTAGE: VOC	50.4V
CEC WEIGHTED EFFICIENCY	97.6%	MAX POWER VOLTAGE: VMP	42.3V
MAX DC VOLTAGE	60V	SHORT CIRCUIT CURRENT: ISC	10.60A
MAX DC POWER	235-440W	MAX POWER CURRENT: IMP	9.69A

PV ARRAY WITH (15) MICROINVERTERS

(01) STRING OF (08) JKM410M-72HL-V 410W MODULES WITH (08)ENPHASE IQ8PLUS-72-2-US MICROINVERTERS
(01) STRING OF (07) JKM410M-72HL-V 410W MODULES WITH (07)ENPHASE IQ8PLUS-72-2-US MICROINVERTERS



NOTE: AC DISCONNECT IS PLACED WITHIN 8FT OF THE UTILITY METER

CONDUIT SCHEDULE

TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(4) #10 AWG THHN/THWN-2	NONE	(2)#6 AWG BARE COPPER
2	(1) 3/4 " EMT	(4) #10 AWG THHN/THWN-2	NONE	(1)#8 AWG BARE COPPER
3	(1) 3/4 " EMT	(2) #10 AWG THHN/THWN-2	(1) #10 AWG	(1)#8 AWG BARE COPPER
4	(1) 3/4 " EMT	(2) #6 AWG THHN/THWN-2	(1) #6 AWG	(1)#6 AWG BARE COPPER

NOTE:
MAIN PANEL RATING: 100A, MAIN BREAKER RATING: 100A
LINE SIDE TAP :100% ALLOWABLE BACKFEED IS = 100A
OCPD CALCULATIONS:

INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X CONTINOUS LOAD (1.21)=
(1.21A x 15 microinverter) = 18.15A
18.15A x 1.25 = 22.68A
TOTAL REQUIRED PV BREAKER SIZE/FUSE SIZE = 30A MIN

ELECTRICAL CALCULATIONS

AC WIRE SIZING CALCULATIONS BASED OF FOLLOWING EQUATIONS:

-REQUIRED CONDUCTORS AMPACITY: INVERTER OUTPUT CURRENT X #OF INVERTERS X MAX CURRENT PER 690.8(A)(3) X 125% PER 690.8(B)(2)(A)

-CORRECTED AMPACITY CALCULATIONS: AMPACITY X TEMPERATURE DERATE FACTOR X CONDUIT FILL DERATE= DERATED CONDUCTOR AMPACITY

-DERATED CONDUCTOR AMPACITY CHECK: MAX CURRENT PER 690.8(B)(2)(2)< DERATED CONDUCTOR AMPACITY.

AC WIRE CALCULATIONS: -MATERIAL: COPPER & TEMPERATURE RATING 90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY	CORRECTED AMPACITY CALCULATION	DERATED CONDUCTOR AMPACITY CHECK
3	18.15A X 1.25 = 22.68A	#10AWG = 40 X 0.87 X 1 = 34.8A	22.68A LESS THAN 34.8A
4	18.15A X 1.25 = 22.68A	#6AWG = 75 X 0.87 X 1 = 65.25A	22.68A LESS THAN 65.25A

DC WIRE CALCULATIONS: -MATERIAL: COPPER & TEMPERATURE RATING 90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY	CORRECTED AMPACITY CALCULATION	DERATED CONDUCTOR AMPACITY CHECK
1,2	N/A	N/A	N/A

ELECTRICAL NOTES

1. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.10(D).
2. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.10(C).
3. MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
4. ALL CONDUCTORS SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED.
5. BREAKER/FUSE SIZES CONFORMS TO NEC 240.6 CODE SECTION.
6. AC GROUNDING ELECTRODE CONDUCTOR SIZED PER NEC 250.66.
7. AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 690.31(C).
8. AMBIENT TEMPERATURE ADJUSTMENT FACTOR IS BASED ON NEC 310.15(B)(2).
9. MAX. SYSTEM VOLTAGE CORRECTION IS PER NEC 690.7.
10. CONDUCTORS ARE SIZED PER WIRE AMPACITY TABLE NEC 310.15(B)(16).

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SINGLE LINE DIAGRAM

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E-1

jinkosolar.us

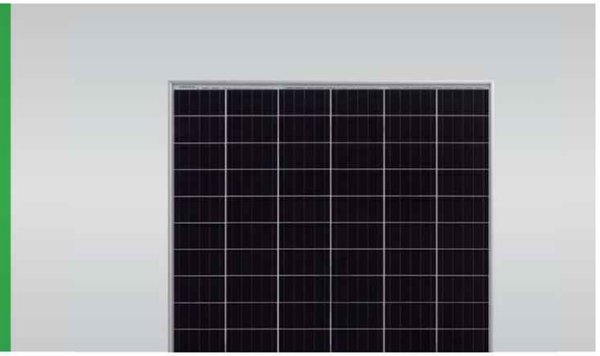
JinKO Solar
Building Your Trust in Solar

Eagle 72 HM G2

390-410 Watt

MONO PERC HALF CELL MODULE

Positive power tolerance of 0~+3%



- ISO9001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
- OHSAS18001 Occupational Health & Safety Standards
- IEC61215, IEC61730 certified products
- UL1703 certified products

Nomenclature:

JKM410M-72HL-V

Code	Cell	Code	Cell	Code	Certification
null	Full	null	Normal	null	1000V
H	Half	L	Diamond	V	1500V

KEY FEATURES

Diamond Cell Technology
Uniquely designed high performance 5 busbar mono PERC half cell

High Voltage
UL and IEC 1500V certified; lowers BOS costs and yields better LCOE

Higher Module Power
Decrease in current loss yields higher module efficiency

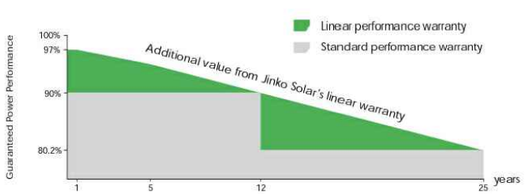
Shade Tolerance
More shade tolerance due to twin arrays

PID FREE
Reinforced cell prevents potential induced degradation

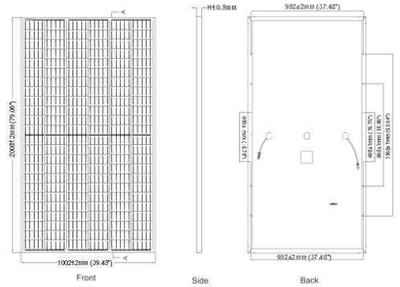
Strength and Durability
Certified for high snow (5400 Pa) and wind (2400 Pa) loads

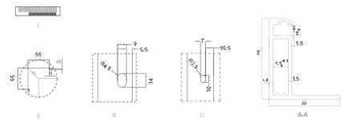
LINEAR PERFORMANCE WARRANTY

10 Year Product Warranty • 25 Year Linear Power Warranty



Engineering Drawings



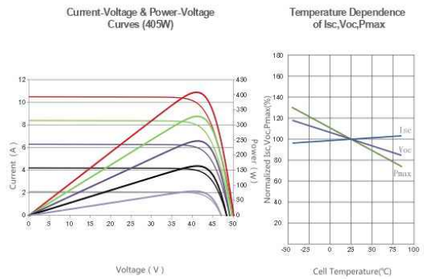


Packaging Configuration

(Two pallets = One stack)

26pcs/pallet, 52pcs/stack, 572pcs/40'HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	Mono PERC Diamond Cell (158.75 x 158.75 mm)
No.of Half-cells	144 (6×24)
Dimensions	2008×1002×40mm (79.06×39.45×1.57 inch)
Weight	22.5 kg (49.6 lbs)
Front Glass	3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	12AWG, (+) 1400mm(55.12 in), (-) 1400mm(55.12 in) or Customized Length
Fire Type	Type 1

SPECIFICATIONS

Module Type	JKM390M-72HL-V		JKM395M-72HL-V		JKM400M-72HL-V		JKM405M-72HL-V		JKM410M-72HL-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	390Wp	294Wp	395Wp	298Wp	400Wp	302Wp	405Wp	306Wp	410Wp	310Wp
Maximum Power Voltage (Vmp)	41.1V	39.1V	41.4V	39.3V	41.7V	39.6V	42.0V	39.8V	42.3V	40.0V
Maximum Power Current (Imp)	9.49A	7.54A	9.55A	7.60A	9.60A	7.66A	9.65A	7.72A	9.69A	7.76A
Open-circuit Voltage (Voc)	49.3V	48.0V	49.5V	48.2V	49.8V	48.5V	50.1V	48.7V	50.4V	48.9V
Short-circuit Current (Isc)	10.12A	8.02A	10.23A	8.09A	10.36A	8.16A	10.48A	8.22A	10.60A	8.26A
Module Efficiency STC (%)	19.38%		19.63%		19.88%		20.13%		20.38%	
Operating Temperature (℃)	-40℃~+85℃									
Maximum System Voltage	1500VDC(UL)/1500VDC(IEC)									
Maximum Series Fuse Rating	20A									
Power Tolerance	0~+3%									
Temperature Coefficients of Pmax	-0.36%/℃									
Temperature Coefficients of Voc	-0.28%/℃									
Temperature Coefficients of Isc	0.048%/℃									
Nominal Operating Cell Temperature (NOCT)	45±2℃									

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

* Power measurement tolerance: ± 3%

1 MODULE DATA SHEET
SCALE: N.T.S.

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MODULE DATA SHEET

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ENPHASE

DATA SHEET

IQ8 Series 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 55nm technology with high speed digital logic and has super-fast 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.

Enphase 25 year limited warranty

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-n-play MC4 connectors.

UL CERTIFIED SAFETY

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

Easy to install

- Lightweight and compact with plug-n-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

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

IQ8SE-DS-0001-01-EN-US-2022-03-17

IQ8 Series Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US[1]
Commonly used module pairings[2]	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell				
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45
Operating range	V	25 – 48	25 – 58				
Min/max start voltage	V	30 / 48	30 / 58				
Max input DC voltage	V	50	60				
Max DC current[3] [module Isc]	A	15					
Overvoltage class DC port		II					
DC port backfeed current	mA	0					
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**	**IQ8M-72-2-US**	**IQ8A-72-2-US**	**IQ8H-240-72-2-US**	**IQ8H-208-72-2-US[1]**
Peak output power	VA	245	300	330	366	384	366
Max continuous output power	VA	240	290	325	349	380	360
Nominal (L-L) voltage/range[4]	V	240 / 211 – 264					208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73
Nominal frequency	Hz	60					
Extended frequency range	Hz	50 – 68					
AC short circuit fault current over 3 cycles	Arms	2					4.4
Max units per 20 A (L-L) branch circuit[5]		16	13	11	11	10	9
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	%	97.5	97.6	97.6	97.6	97.6	97.4
CEC weighted efficiency	%	97	97	97	97.5	97	97
Night-time power consumption	mW	60					
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 (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")					
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					
Environ. category / UV exposure rating		NEMA Type 6 / outdoor					
COMPLIANCE							
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, 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, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.					

* Only when installed with IQ System Controller 2, meets UL 1741. IQ8H-208V operates only in grid-tied mode.
** IQ8 Series Microinverters supports split phase, 240V. IQ8H-208 supports split phase, 208V only.

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SE-DS-0001-01-EN-US-2022-03-17

1 MICROINVERTER DATA SHEET
SCALE: N.T.S.

SOLENERGY

MICROINVERTER DATA SHEET

THE DARRION WYATT RESIDENCE
2756 N SHERMAN BLVD,
MILWAUKEE, WI 53210
206-931-3566

SOLENERGY
PHIL SUTTER
LIC#: DC-04210045 EXP: 2023
7182 HWY 14, #201
MIDDLETON, WI 53562
608.558.3842
jdhirsbrunner@solenergysolar.com

SIGNED: _____ DATE: _____

07/19/2022
DRAWN BY: BPM
APN: 3080321000
LOT: 8,250 Sq.Ft.
DWELLING: 2,028 Sq.Ft.

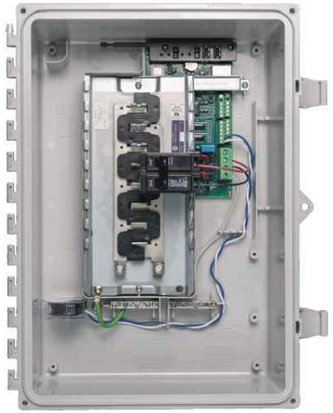
D-2

Data Sheet
Enphase Networking

Enphase IQ Combiner 3

(X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3**™ with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV 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 Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

Simple

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

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- UL listed

LISTED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 X-IQ-AM1-240-3	IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV **production** metering (ANSI C12.20 +/- 0.5%) and optional* **consumption** monitoring (+/- 2.5%).
ACCESSORIES and **REPLACEMENT PARTS** (not included, order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G/12-year data plan) CELLMODEM-01 (3G/5-year data plan) CELLMODEM-M1 (4G based LTE-M/5-year data plan)	Plug and play industrial grade cellular modem with data plan 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.)
Consumption Monitoring* CT CT-200-SPLIT * Consumption monitoring is required for Enphase Storage Systems	Split core current transformers enable whole home **consumption** metering (+/- 2.5%).
Wireless USB adapter COMMS-KIT-01	Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows redundant wireless communication with Encharge and Enpower.
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	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
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 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. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80A of distributed generation / 90A with IQ Envoy breaker included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" 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	• 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
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included)
COMPLIANCE	
Compliance, 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)
Compliance, IQ Envoy	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

2019-11-04

ENPHASE.

1 COMBINER BOX DATA SHEET
SCALE: N.T.S.

SOLENERGY

COMBINER BOX DATA SHEET

THE DARRION WYATT RESIDENCE
2756 N SHERMAN BLVD,
MILWAUKEE, WI 53210
206-931-3566

SOLENERGY
PHIL SUTTER
LIC#: DC-04210045 EXP: 2023
7182 HWY 14, #201
MIDDLETON, WI 53562
608.558.3842
jdhirsbrunner@solenergysolar.com

SIGNED: _____ DATE: _____

07/19/2022
DRAWN BY: BPM
APN: 3080321000
LOT: 8,250 Sq.Ft.
DWELLING: 2,028 Sq.Ft.

D-3

pe.eaton.com

Eaton general duty cartridge fuse safety switch

DG222NRB

UPC:782113144221

Dimensions:

- **Height:** 14.37 IN
- **Length:** 7.35 IN
- **Width:** 8.4 IN

Weight:10 LB

Notes: Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

Warranties:

- Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

Specifications:

- **Type:** General duty, cartridge fused
- **Amperage Rating:** 60A
- **Enclosure:** NEMA 3R
- **Enclosure Material:** Painted galvanized steel
- **Fuse Class Provision:** Class H fuses
- **Fuse Configuration:** Fusible with neutral
- **Number Of Poles:** Two-pole
- **Number Of Wires:** Three-wire
- **Product Category:** General duty safety switch
- **Voltage Rating:** 240V

Supporting documents:

- Eatons Volume 2-Commercial Distribution
- Eaton Specification Sheet - DG222NRB

Certifications:

- UL Listed

Product compliance: No Data

1 AC DISCONNECT DATA SHEET
SCALE: N.T.S.

SOLENERGY

AC DISCONNECT DATA SHEET

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D-4

Catalog No. UHTRS202BMEP

Description: RESIDENTIAL 200 AMP OH

UPC No 784567721751

Home > Single Socket Metering > Single Socket Metering

METER SKT – (1) 200A 600V 1P3W N3R G90 4-TERM SMALL HUB OPNG HORN BYP TRIPLEX GRD TOP/BOTTOM FEED

Descriptors

Category	Single Socket Metering

Specifications

Phase	1
Voltage	600
Amps	200
Hub Type	Small Hub Opening
# of Terminals	4
Lever Bypass	No
Horned Bypass	Yes
Socket Type	Ringless
Enclosure Type	N3R
Metal Type	G90 Steel
Overhead/ Underground Line Feed	Top/Bottom
Wire Range (Cu/Al)	#8-250MCM
Triplex Ground	Yes

1 METER DATA SHEET
SCALE: N.T.S.

SOLENERGY

METER DATA SHEET

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DWELLING: 2,028 Sq.Ft.

D-5

Damaging roof shingles used to be one of a solar installers' worst challenges.

Now, the easy, affordable solution is NanoMount®, SunModo's patented solar mounting innovation.

The mount eliminates the need for lifting shingles and dramatically reduces the installation time.

The NanoMount® Advantage

- ✓ The fastest roof attachment in solar.
- ✓ Versatile mounting options including direct-to-decking.
- ✓ Eliminates the need to lift shingles and prevents damage to shingles.
- ✓ High-Velocity Hurricane Zone Approved - Passed TAS 100 (a) Wind-Driven Rain Test.
- ✓ All materials are compatible with asphalt shingles and single-ply roof membranes.

Key Features of NanoMount®

SUNMODO

5 levels of protection against water penetration

Technical Data

Application	Residential roof coverings, commercial single-ply roof membranes
Material	High grade aluminum, 304 stainless steel hardware
Finish	Black powder coating
Roof Attachment	Rafter and decking
Structural integrity	IBC and IRC Compliant
Warranty	25 years

SunModo, Corp. Vancouver, WA., USA • www.sunmodo.com • 360.844.0048 • info@sunmodo.com

1 ATTACHMENT DATA SHEET
SCALE: N.T.S.

SOLENERGY

ATTACHMENT DATA SHEET

THE DARRION WYATT RESIDENCE
2756 N SHERMAN BLVD,
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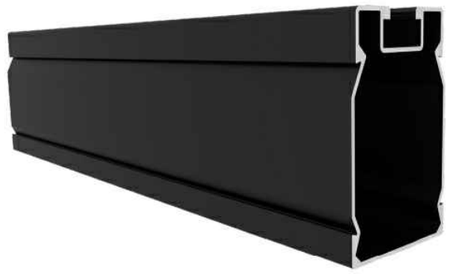
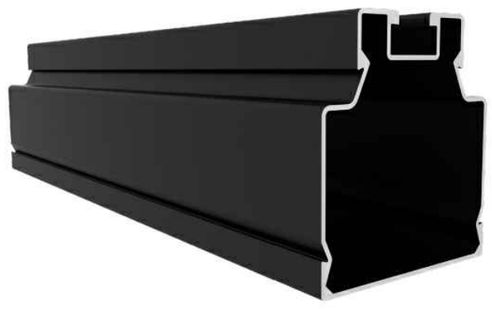
D-6

SUNMOD

SMR100 Rail



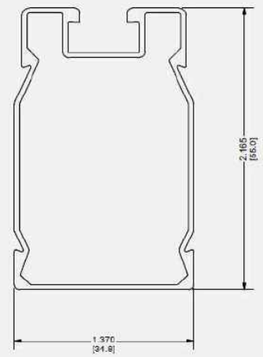
SMR200 Rail



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

Cut Sheet

SMR100 Rail



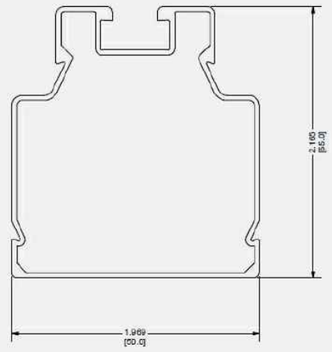
Mechanical Properties

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)

D10225-V001

Dimensions shown are inches (and millimeters)

Details are subject to change without notice

1 RAIL DATA SHEET
SCALE: N.T.S.

SOLENERGY

RAIL DATA SHEET

THE DARRION WYATT RESIDENCE
2756 N SHERMAN BLVD,
MILWAUKEE, WI 53210
206-931-3566

SOLENERGY
PHIL SUTTER
LIC#: DC-04210045 EXP: 2023
7182 HWY 14, #201
MIDDLETON, WI 53562
608.558.3842
jdhirsbrunner@solenergysolar.com

SIGNED: _____ DATE: _____

07/19/2022
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APN: 3080321000
LOT: 8,250 Sq.Ft.
DWELLING: 2,028 Sq.Ft.

D-7

JUNCTION BOX & CONDUIT RACEWAYS

NEC 690.31(E)(3) – CONDUIT / ALL JUNCTION BOXES

WARNING:
PHOTOVOLTAIC POWER SOURCE

NEC 690.35(F) – UNDERGROUND SYSTEM JUNCTION BOXES

WARNING:
ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNDERGROUND AND MAY BE ENERGIZED.

DC DISCONNECTS

NEC 690.14(4) GROUNDED SYSTEMS

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

NEC 690.35(F) UNGROUNDED SYSTEMS

WARNING:
ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNDERGROUND AND MAY BE ENERGIZED.

NEC 690.14(C)(2)

PHOTOVOLTAIC
DC DISCONNECT

NEC 690.53

"GRID–TIED PHOTOVOLTAIC POWER SOURCE"
OPERATING CURRENT: 18.15A
OPERATING VOLTAGE: 240V
MAXIMUM SYSTEM VOLTAGE: 240V
MAXIMUM SYSTEM CURRENT: 22.68A
MAXIMUM INVERTER OUTPUT: 4,500W, 22.68A, 240VAC

INVERTER

NEC 690.5(C) – GROUNDED SYSTEMS

WARNING:
ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNDERGROUND AND ENERGIZED

NEC 690.35(F) – UNGROUNDED SYSTEMS

WARNING:
ELECTRIC SHOCK HAZARD
DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNDERGROUND AND MAY BE ENERGIZED

PRODUCTION METER

ONLY AT METER LOCATION

PHOTOVOLTAIC SYSTEM METER

AC DISCONNECTS

NEC 690.14(C)(2)

PHOTOVOLTAIC AC DISCONNECT

NEC 690.54

NOMINAL AC VOLTAGE	240V
RATED AC OUTPUT CURRENT	18.15A

NEC 705.12(D)(4) – ON A LINE SIDE TAP

WARNING: DUAL POWER SOURCE
SECOND SOURCE IS PV SYSTEM

PER CODE NEC 690.56(C)

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

MAIN SERVICE PANEL

NEC 705.12(D)(7) – NEAR PV BREAKER

WARNING:
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT PROTECTION DEVICE

NEC 705.12(D)(4), 690.56(B) – ON PANEL COVER

WARNING: DUAL POWER SOURCE
POWER IS BEING SUPPLIED TO THIS PANEL FROM THE UTILITY AND A SOLAR PV SYSTEM.
THE SOLAR PV DISCONNECT IS LOCATED:

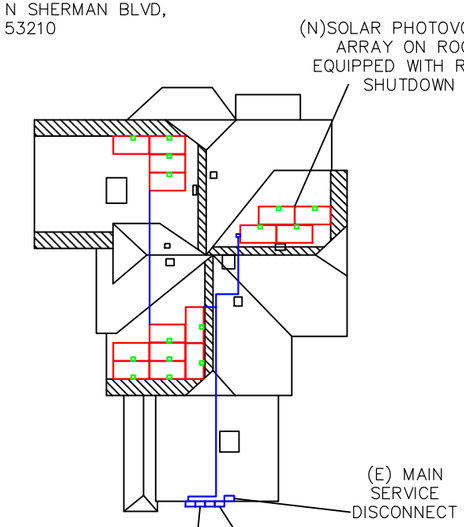
RED SIGNAGE W/WHITE 3/8" FONT

CAUTION

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

RED SIGNAGE W/WHITE 1/4" FONT

ADDRESS: 2756 N SHERMAN BLVD,
MILWAUKEE, WI 53210



RED SIGNAGE W/WHITE 1/8" FONT TYP.

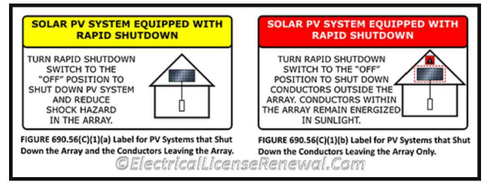
NEC 690.14(C)(2) – NEAR PV BREAKER

PHOTOVOLTAIC AC DISCONNECT

NEC 690.54 – ON PANEL COVER

NOMINAL AC VOLTAGE	240V
RATED AC OUTPUT CURRENT	18.15A

690.56(C) Buildings with Rapid Shutdown.



1 WARNING PLACARDS
SCALE: N.T.S.

SOLENERGY

WARNING PLACARDS

THE DARRION WYATT RESIDENCE
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L-1