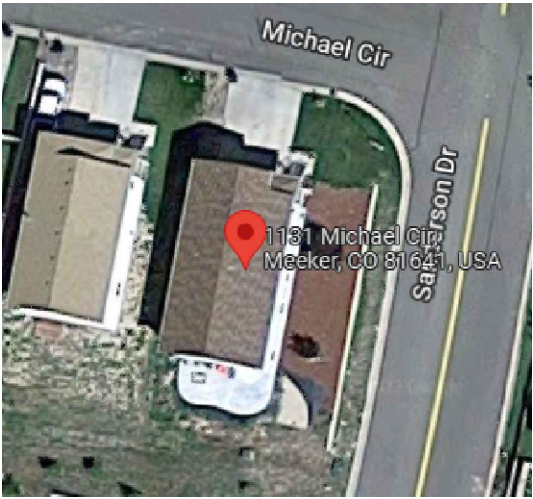



<div>ROOF MOUNT SOLAR PERMIT PACKAGE</div> <div>CUSTOMER NAME</div> <div>7.400KW DC GRID TIED PHOTOVOLTAIC SYSTEM</div> <div>1131 MICHAEL CIRCLE, MEEKER, CO 81641</div>		<div>CODE INFORMATION</div> <div>THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL COMPLY WITH THE FOLLOWING CODES: 2017 NATIONAL ELECTRICAL CODE 2018 INTERNATIONAL BUILDING CODE 2018 INTERNATIONAL FIRE CODE 2018 INTERNATIONAL EXISTING BUILDING CODE 2018 INTERNATIONAL RESIDENTIAL CODE 2018 INTERNATIONAL MECHANICAL CODE 2018 INTERNATIONAL PLUMBING CODE 2018 INTERNATIONAL FUEL & GAS CODE 2018 INTERNATIONAL ENERGY CONSERVATION CODE</div> <div>AHJ: TOWN OF MEEKER</div> <div>WIND SPEED : 104 SNOW LOAD : 0 EXPOSURE CATEGORY : B</div>																															
<div>BUILDING INFORMATION</div> <div>2 STORY HOUSE CONSTRUCTION TYPE: V-B ROOF: COMP SHINGLE</div> <div>SINGLE FAMILY RESIDENCE OCCUPANCY: R3/U APN: 140914300076</div>																																	
<div>PV SYSTEM SUMMARY:</div> <div>SYSTEM SIZE (DC) : STC: 370 x 20 = 7.400kW DC : PTC: 346.0 x 20 = 6.9200kW DC SYSTEM SIZE (AC) : 5.800kW AC @ 240V MODULES : (20) NE SOLAR NESE370-60MH BATTERY : (1) ENPHASE ENCHARGE 10 MICRO-INVERTERS : ENPHASE: IQ8PLUS-72-2-US MICRO-INVERTERS QTY : 20 TILT : 28° AZIMUTH : 100° ROOF : COMP SHINGLE RAFTER/TRUSS SIZE : 2" X 4" TRUSS @ 24" O.C. ATTACHMENT TYPE : ECOFASTEN ROCKIT SLIDE RAILLESS MAIN SERVICE PANEL : EXISTING 200 AMPS MSP WITH 200 AMPS MAIN BREAKER ON TOP FED INTERCONNECTION : PV BREAKER OCPD RATING : 35 AMPS UTILITY : WHITE RIVER ELECTRIC ASSOCIATION</div>		<div>AERIAL VIEW</div> <div></div>		<div>VICINITY MAP</div> <div></div>																													
<div>GENERAL NOTES:</div> <div>1. LOCAL UTILITY PROVIDER SHALL BE NOTIFIED PRIOR TO USE AND ACTIVATION OF ANY SOLAR PHOTOVOLTAIC INSTALLATION . 2. THIS PROJECT SHALL COMPLY WITH LOCAL ORDINANCES . 3. PROPER ACCESS AND WORKING CLEARANCE WILL BE PROVIDED . 4. ALL ELECTRICAL WORK SHOWN ON THESE PLANS WILL BE COMPLETED BY THE UNDERSIGNED . 5. ALL APPLICABLE PV EQUIPMENT LISTED AND COMPLIANT WITH UL2703, UL1741 AND UL1703 . 6. ALL ROOF PENETRATIONS TO BE SEALED WITH A HIGH PERFORMANCE ROOF SEALANT SUCH AS GeoCel 2300 CLEAR SEALANT . 7. THE SYSTEM WILL NOT BE INTERCONNECTED UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND THE UTILITY IS OBTAINED . 8. THE SOLAR PHOTOVOLTAIC INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS . 9. IF THE EXISTING MAIN PANEL DOES NOT HAVE VERIFIABLE GROUNDING ELECTRODE, IT IS THE NECESSARY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE . 10. EACH MODULE WILL BE GROUNDED UL 2703 OR UL 1703 APPROVED USING THE SUPPLIED CONNECTION POINTS IDENTIFIED ON THE MODULE AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS" . 11. A LADDER SHALL BE IN PLACE FOR THE INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS . 12. MAX HEIGHT OF MODULES OFF OF ROOF FACE : <6" . 13. PHOTOVOLTAIC SYSTEM WILL COMPLY WITH 2017 NEC. . 14. PHOTOVOLTAIC SYSTEM INVERTER IS UNGROUNDED. NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER, AND SYSTEM COMPLIES WITH 690.35. . 15. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703. . 16. INVERTER CONFORMS TO AND IS LISTED UNDER UL 1741. . 17. ELECTRICAL EQUIPMENT AND MATERIAL TO BE LISTED, LABELED, AND INSTALLED PER THE NEC, THE INSTALLATION STANDARDS/MANUFACTURER'S RECOMMENDATIONS AND IF REQUIRED A RECOGNIZED ELECTRICAL TESTING LABORATORY. . 18. CONDUITS EXPOSED TO SUNLIGHT ON ROOF SHALL BE LOCATED NOT LESS THAN 7/8" ABOVE ROOF SURFACE. 19. IN EXPOSED LOCATIONS, WIRING AND CABLING SHALL BE IN CONDUIT OR CABLE SHALL BE RATED FOR EXPOSURE; TYPE NM CABLE ALLOWED IN PROTECTED LOCATIONS. WITHIN ATTIC SPACES, ALLOWED TO RUN TYPE NM (ROMEX) 10/3 OR 12/3 CONDUCTORS THROUGH OPEN SPACE OR TYPE THHN IN MINIMUM 3/4" ALUMINUM CONDUIT 20. MATERIALS, EQUIPMENT AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS, STANDARDS, RULES AND REGULATIONS OF THE FOLLOWING AND BE MOST SUITABLE TO THE PURPOSE INTENDED:</div>		<div>SHEET INDEX</div> <table><tr><td>PV-1.0</td><td>COVER PAGE</td></tr><tr><td>PV-2.0</td><td>SITE PLAN</td></tr><tr><td>PV-3.0</td><td>ROOF PLAN</td></tr><tr><td>PV-4.0</td><td>STRUCTURAL</td></tr><tr><td>PV-5.0</td><td>ELECTRICAL 3LD</td></tr><tr><td>PV-6.0</td><td>ELECTRICAL SLD</td></tr><tr><td>PV-7.0</td><td>WIRE CALCULATION</td></tr><tr><td>PV-8.0</td><td>BOM</td></tr><tr><td>PV-9.0</td><td>ELECTRICAL PHOTOS</td></tr><tr><td>PV-10.0</td><td>SIGNAGE</td></tr><tr><td>PV-11.0</td><td>MICROINVERTER CHART</td></tr><tr><td>PV-12.0</td><td>SAFETY PLAN</td></tr><tr><td>PV-13.0 +</td><td>SAFETY PLAN</td></tr><tr><td>PV-14.0 +</td><td>SPEC. SHEETS</td></tr></table>		PV-1.0	COVER PAGE	PV-2.0	SITE PLAN	PV-3.0	ROOF PLAN	PV-4.0	STRUCTURAL	PV-5.0	ELECTRICAL 3LD	PV-6.0	ELECTRICAL SLD	PV-7.0	WIRE CALCULATION	PV-8.0	BOM	PV-9.0	ELECTRICAL PHOTOS	PV-10.0	SIGNAGE	PV-11.0	MICROINVERTER CHART	PV-12.0	SAFETY PLAN	PV-13.0 +	SAFETY PLAN	PV-14.0 +	SPEC. SHEETS		
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SHEET #	PV-1.0																																

R324.6.1 PATHWAYS:
NOT LESS THAN TWO MINIMUM 36-INCH WIDE PATHWAYS ON SEPARATE ROOF PLANES,
FROM LOWEST ROOF EDGE TO RIDGE, SHALL BE PROVIDED ON ALL BUILDINGS.
AT LEAST ONE PATHWAY SHALL BE PROVIDED ON THE STREET OR DRIVEWAY SIDE OF THE ROOF.
FOR EACH ROOF PLANE WITH A PHOTOVOLTAIC ARRAY, A MINIMUM 36 INCH-WIDE PATHWAY FROM THE LOWEST ROOF EDGE TO RIDGE SHALL BE PROVIDED ON THE SAME ROOF PLANE OR STRADDLING THE SAME AND ADJACENT ROOF PLANES. PATHWAYS SHALL BE OVER AREAS CAPABLE OF SUPPORTING FIRE FIGHTERS ACCESSING THE ROOF. PATHWAYS SHALL BE LOCATED IN AREAS WITH MINIMAL OBSTRUCTIONS SUCH AS VENT PIPES, CONDUIT, OR MECHANICAL EQUIPMENT.

R324.6.2 SETBACK AT RIDGE:
FOR PHOTOVOLTAIC ARRAYS OCCUPYING NOT MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, NOT LESS THAN AN 18 INCH CLEAR SET BACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.
FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, NOT LESS THAN A 36-INCH CLEAR SET BACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

R324.6.4 EMERGENCY ESCAPE AND RESCUE OPENING: PANELS AND MODULES INSTALLED ON DWELLINGS SHALL NOT BE PLACED THE PORTION OF A ROOF THAT IS BELOW AN EMERGENCY ESCAPE AND RESCUE OPENING. A 36-INCH-WIDE PATHWAY SHALL BE PROVIDED TO THE EMERGENCY ESCAPE AND RESCUE OPENING.

- A** - PATHWAY ON STREET
OR DRIVEWAY SIDE OF ROOF
B - FIRE ACCESS POINT



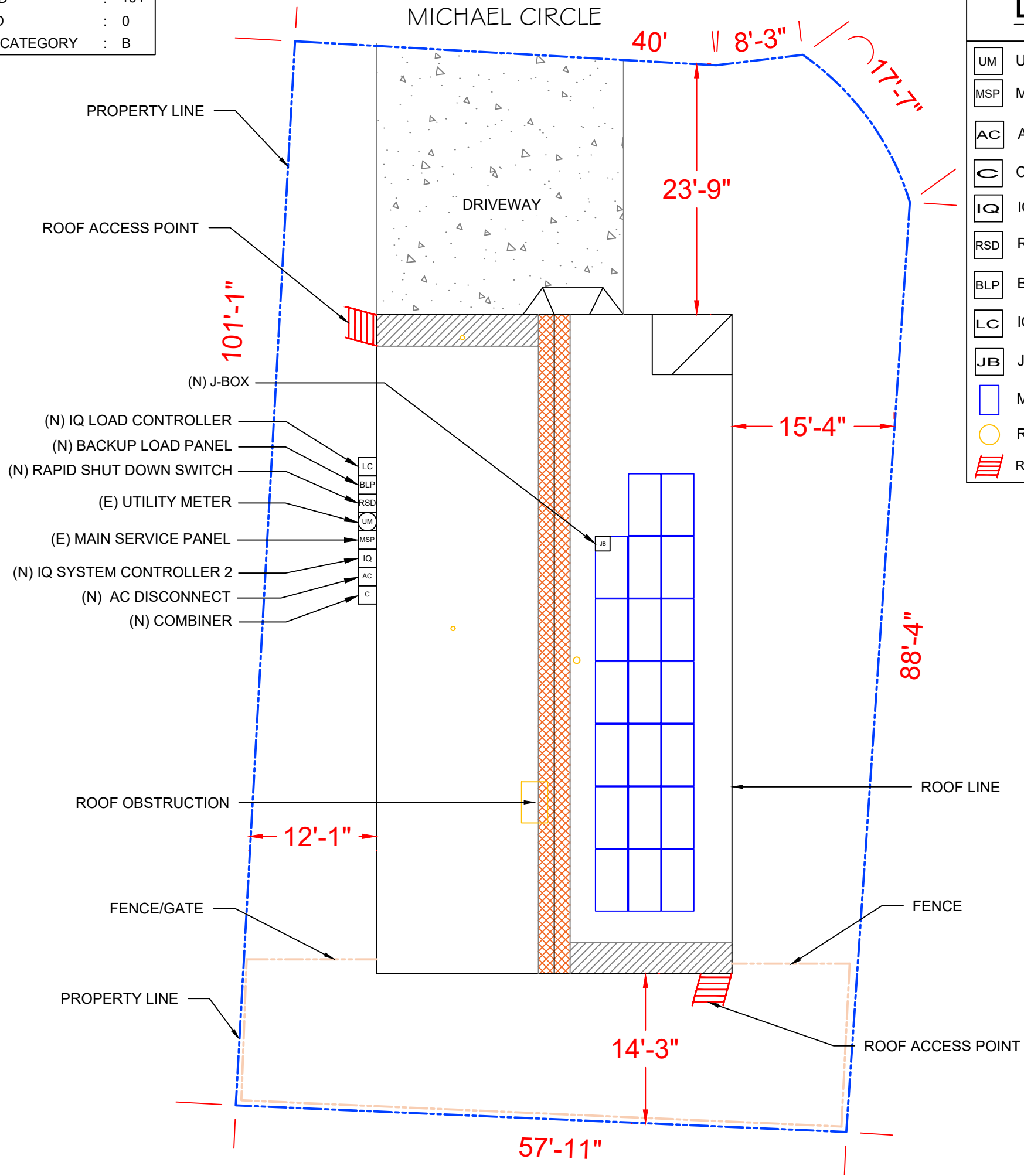
- NOTES:**
- MINOR FIELD ADJUSTMENTS ALLOWED BASED ON ACTUAL SITE CONDITION AND MEASUREMENTS.
 - CONDUIT SHALL BE PAINTED TO MATCH EXTERIOR WALL.
 - THE 30 SECOND SHUTDOWN REQUIREMENT IS INCORPORATED INTO THE 2017 NEC AND UL STANDARD 1741.
 - EXISTING ROOF VENT SHOULD NOT BE COVERED.

1

SITE PLAN

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

WIND SPEED : 104
SNOW LOAD : 0
EXPOSURE CATEGORY : B



LEGEND

- UM

UTILITY METER
- MSP

MAIN SERVICE PANEL
- AC

AC DISCONNECT
- C

COMBINER
- IQ

IQ SYSTEM CONTROLLER 2
- RSD

RAPID SHUTDOWN SWITCH
- BLP

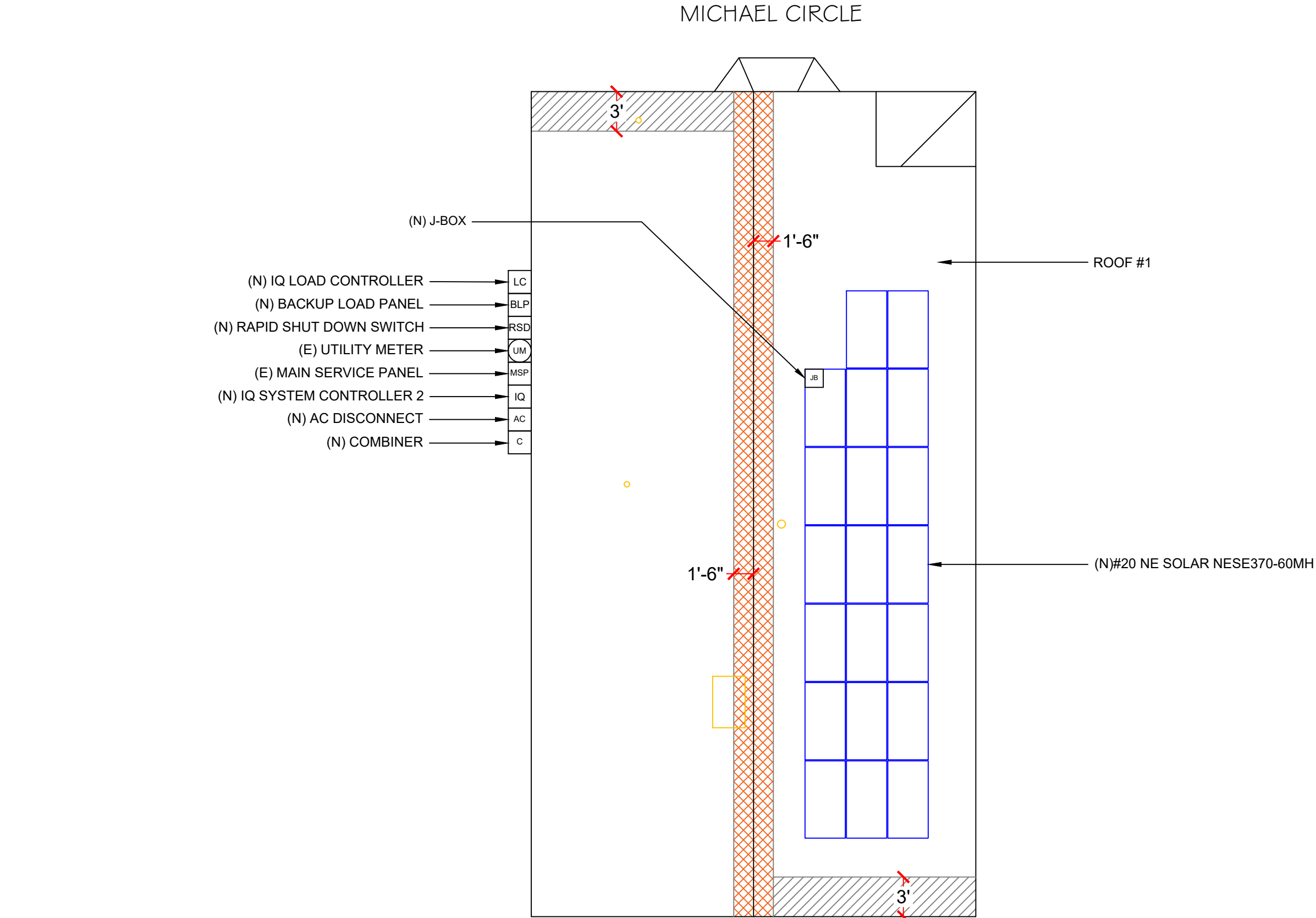
BACKUP LOAD PANEL
- LC

IQ LOAD CONTROLLER
- JB

JUNCTION BOX
- MODULE
- ROOF OBSTRUCTIONS
- ROOF ACCESS POINT

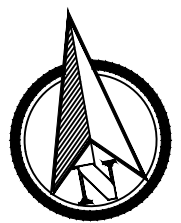
<u>CONTRACTOR INFO</u>		
Solar Individual Permit Package		
CUSTOMER NAME		
7.400KW Grid Tied Photovoltaic System		
1131 MICHAEL CIRCLE, MEEKER, CO 81641		
Rev	Description	Date
A	INITIAL DESIGN	10/28/2022
OPPORTUNITY		
PROJECT #	N/A	
DATE DRAWN	10/28/2022	
DRAWN BY	E.R	
SHEET #	PV-2.0	
TITLE		
SITE PLAN		

ARRAY AREA								
ROOF	ROOF TYPE	AZIMUTH	# OF MODULES	EAVE TO RIDGE DIMENSION (Ft.)	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)	TOTAL AREA COVERED BY ARRAY (%)
#1	COMP SHINGLE	100	20	18.00	392.00	2779.61	14.10	14.10



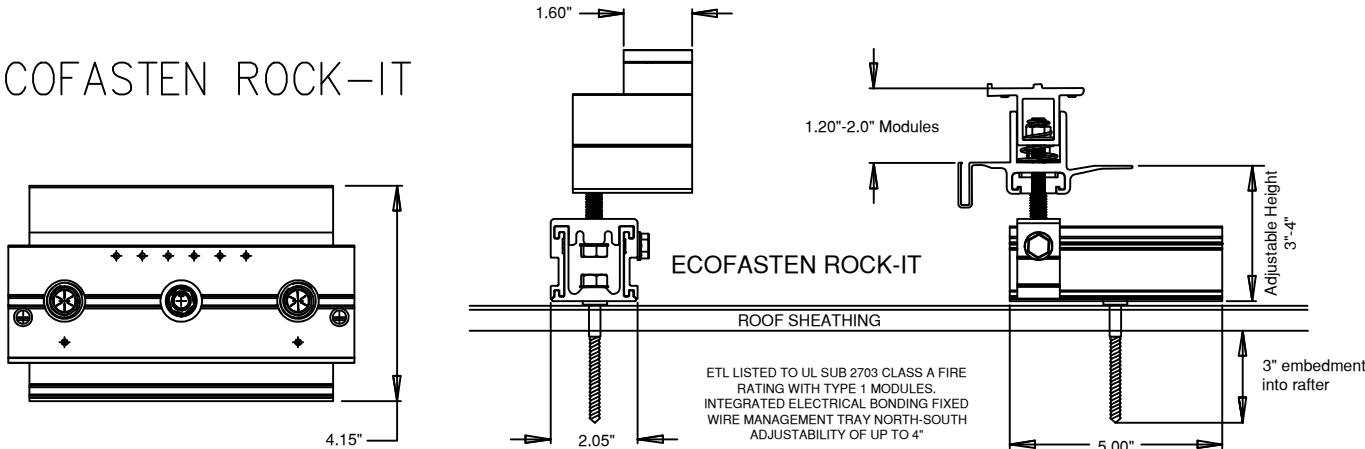
LEGEND	
UM	UTILITY METER
MSP	MAIN SERVICE PANEL
AC	AC DISCONNECT
C	COMBINER
IQ	IQ SYSTEM CONTROLLER 2
RSD	RAPID SHUTDOWN SWITCH
BLP	BACKUP LOAD PANEL
LC	IQ LOAD CONTROLLER
JB	JUNCTION BOX
	MODULE
	ROOF OBSTRUCTIONS

<u>CONTRACTOR INFO</u>		
Solar Individual Permit Package		
CUSTOMER NAME		
7.400KW Grid Tied Photovoltaic System		
1131 MICHAEL CIRCLE, MEEKER, CO 81641		
Rev	Description	Date
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OPPORTUNITY		
PROJECT #	N/A	
DATE DRAWN	10/28/2022	
DRAWN BY	E.R	
SHEET #	PV-3.0	
TITLE		
ROOF PLAN		



ROOF NO	ROOF TILT	ROOFING TYPE	ATTACHMENT TYPE	NO. OF STORIES	FRAMING TYPE	FRAMING SIZE	OC SPACING	PENETRATION PATTERN	MAX PENETRATION SPACING	MAX OVERHANG
ROOF 1	28	COMP SHINGLE	ECOFASTEN ROCKIT SLIDE RAILLESS	2	TRUSS	2" X 4"	24"	STAGGERED	72"	24"

ECOFASTEN ROCK-IT

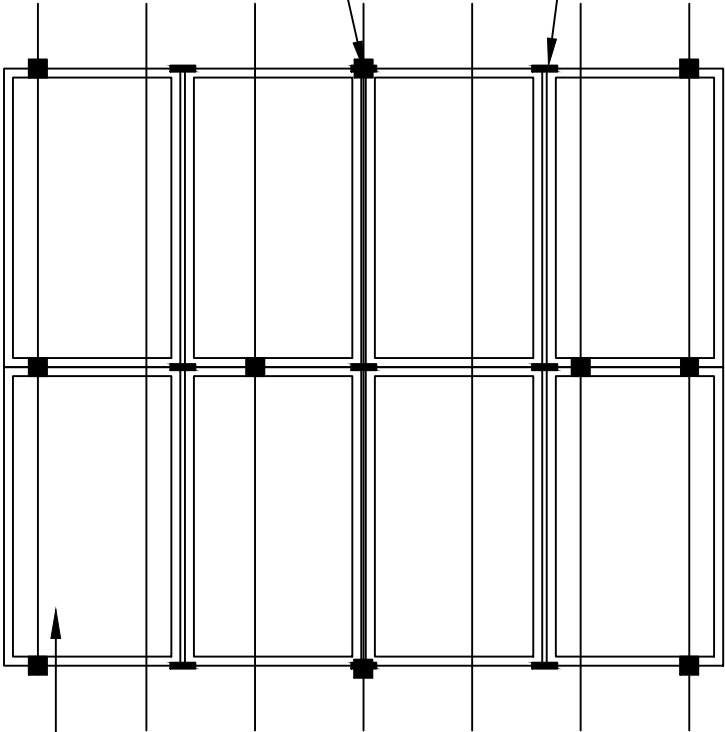


TECHNICAL RACKING SPECIFICATIONS – ECOFASTEN ROCK-IT

MATERIALS	RACKING COMPONENTS: ALUMINUM, STAINLESS HARDWARE, DARK BRONZE ANODIZED UPPER SURFACE, MILL FINISH LOWER SURFACES FLASHINGS: ALUMINUM, BLACK POWDER COATED FINISH
GROUNDING/BONDING VALIDATION	UL2703 – SEE INSTALLATION MANUAL FOR SPECIFIC MODULE APPROVALS
FIRE RESISTANCE VALIDATION	UL2703 – CLASS A, TYPE 1 AND TYPE 2 MODULES
MECHANICAL LOAD VALIDATION	UL2703 – SEE INSTALLATION MANUAL FOR SPECIFIC MODULE APPROVALS
FLASHING VALIDATION	ICC–ES AC286/UL441 RAIN TEST FOR ROOF FLASHING
ADJUSTABILITY	1" VERTICAL RANGE, 3.5" NORTH/SOUTH RANGE, CONNECT ANYWHERE IN EAST/WEST DIRECTION
WARRANTY	15 YEARS

ECOFASTEN ROCKIT ATTACHMENT PENETRATIONS @ 72" O.C.

ECOFASTEN ROCKIT COUPLING



NE SOLAR NESE370-60MH

CONTRACTOR INFO

Solar Individual Permit Package

CUSTOERM NAME

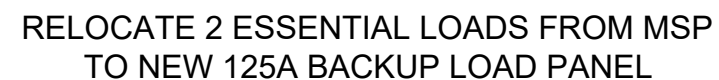
7.400KW Grid Tied Photovoltaic System

1131 MICHAEL CIRCLE, MEEKER, CO 81641

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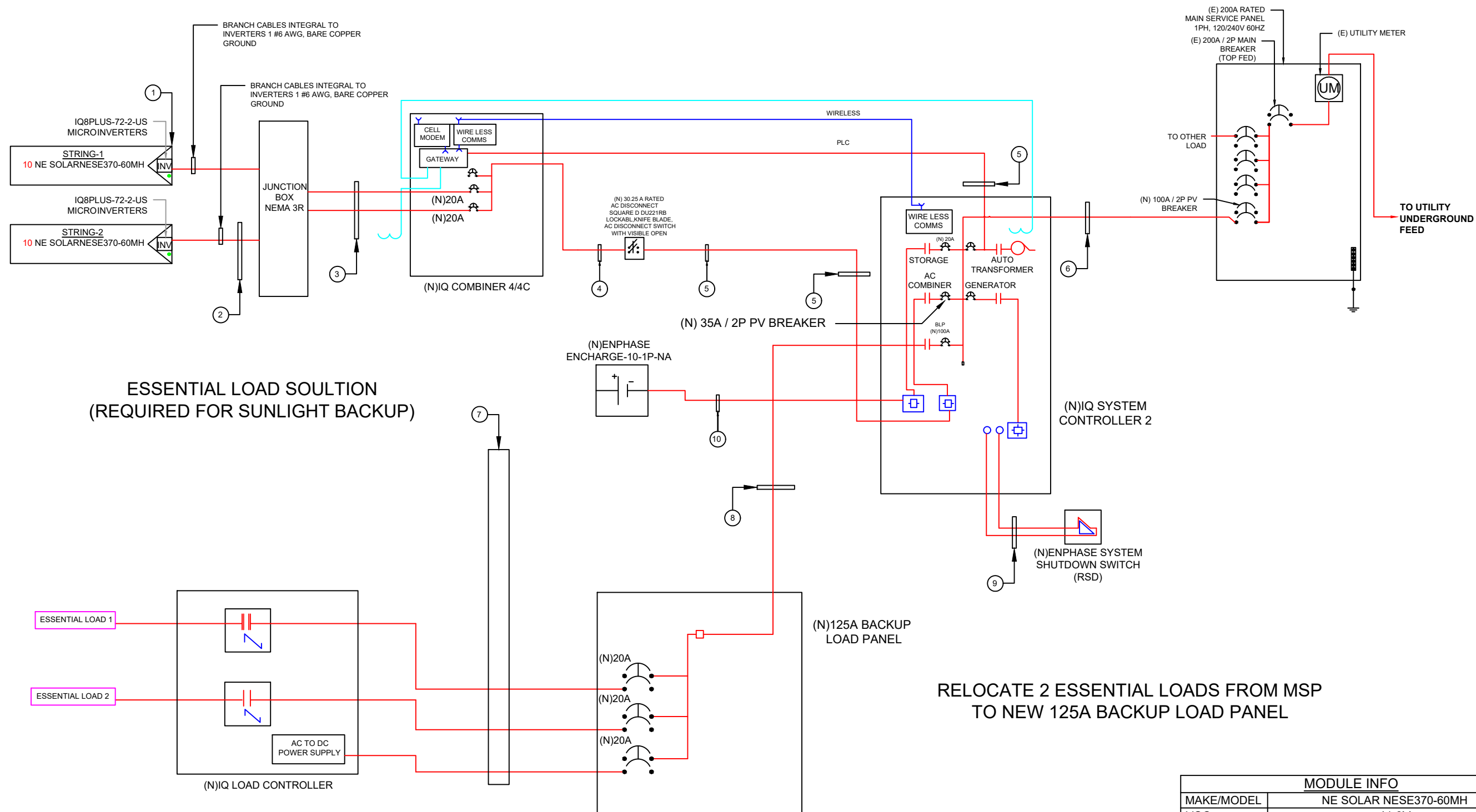
OPPORTUNITY	
PROJECT #	N/A
DATE DRAWN	10/28/2022
DRAWN BY	E.R
SHEET #	PV-4.0

TITLE
STRUCTURAL



BACKFEED BREAKER SIZING				
MAX. CONTINUOUS OUTPUT 1.21A @ 240V				
24.20	X	1.25	=	30.25AMPS 35A BREAKER - OK
SEE 705.12 OF 2017 NEC				
200	X	1.20	=	240
240	-	200	=	40A ALLOWABLE BACKFEED

Rev	Description	Date
A	INITIAL DESIGN	10/28/2022
OPPORTUNITY		
PROJECT #	N/A	
DATE DRAWN	10/28/2022	
DRAWN BY	E.R	
SHEET #	PV-5.0	
TITLE		
ELECTRICAL 3LD		



MODULE INFO	
MAKE/MODEL	NE SOLAR NESE370-60MH
VOC	41.0V
VMP	34.2V
ISC	11.42A
IMP	10.82A
STC RATING	370 W
PTC RATING	346 W

BACKFEED BREAKER SIZING			
MAX. CONTINUOUS OUTPUT 1.21A @ 240V			
24.20	X	1.25	= 30.25AMPS 35A BREAKER - OK
SEE 705.12 OF 2017 NEC			
200	X	1.20	= 240
240	-	200	= 40A ALLOWABLE BACKFEED

NOTE:
1)CONDUIT AND CONDUCTORS SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
2)ALL CONDUCTORS NOT UNDER ARRAY ARE TO BE IN CONDUIT MINIMUM 7/8" ABOVE ROOF WITH PROPER JUNCTION BOX AT EACH END PER 690.31A

CONTRACTOR INFO

Solar Individual
Permit Package

CUSTOMER NAME

7.400KW Grid Tied
Photovoltaic System

1131 MICHAEL CIRCLE,
MEEKER, CO 81641

Rev	Description	Date
A	INITIAL DESIGN	10/28/2022

OPPORTUNITY	
PROJECT #	N/A
DATE DRAWN	10/28/2022
DRAWN BY	E.R
SHEET #	PV-6.0

TITLE
ELECTRICAL SLD

<table><tr><th colspan="2">MODULE INFO</th></tr><tr><td>MAKE/MODEL</td><td>NE SOLAR NESE370-60MH</td></tr><tr><td>VOC</td><td>41.0V</td></tr><tr><td>VMP</td><td>34.2V</td></tr><tr><td>ISC</td><td>11.42A</td></tr><tr><td>IMP</td><td>10.82A</td></tr><tr><td>STC RATING</td><td>370 W</td></tr><tr><td>PTC RATING</td><td>346 W</td></tr></table> <div><p>NOTE:</p><p>1)CONDUIT AND CONDUCTORS SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.</p><p>2)ALL CONDUCTORS NOT UNDER ARRAY ARE TO BE IN CONDUIT MINIMUM 7/8" ABOVE ROOF WITH PROPER JUNCTION BOX AT EACH END PER 690.31A</p></div>														MODULE INFO		MAKE/MODEL	NE SOLAR NESE370-60MH	VOC	41.0V	VMP	34.2V	ISC	11.42A	IMP	10.82A	STC RATING	370 W	PTC RATING	346 W	
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WIRE SCHEDULE																														
RACEWAY #	EQUIPMENT				WIRE LOCATION	CONDUCTOR QTY.	AWG WIRE SIZE	STARTING ALLOWABLE AMPACITY @ 90°C 310.15(B)(16)	STARTING CURRENT APPLIED TO CONDUCTORS IN RACEWAY	TEMPERATURE CORRECTION FACTOR 310.15(B)(2)(a)	ADJUSTMENT FACTOR FOR MORE THAN 3 CONDUCTORS 310.15(B)(3)(a)	ADJUSTED CONDUCTOR AMPACITY @ 90°C	MAXIMUM CURRENT APPLIED TO CONDUCTORS IN RACEWAY	CONTRACTOR INFO																
1	DC	MODULE	TO	MICROINVERTER	ROOF/FREE-AIR	2	10	40	10.69	0.96	1	38.4	13.36																	
2	AC	MICROINVERTER	TO	JUNCTION BOX	ROOF/FREE-AIR	2	10	40	14.52	0.96	1	38.4	18.15																	
3	AC	JUNCTION BOX	TO	COMBINER	EXTERIOR WALL	4	10	40	14.52	0.96	0.8	30.72	18.15																	
4	AC	COMBINER	TO	AC DISCONNECT	EXTERIOR WALL	3	8	55	41.14	0.96	1	52.8	51.42																	
5	AC	AC DISCONNECT	TO	IQ SYSTEM CONTROLLER	EXTERIOR WALL	3	8	55	41.14	0.96	1	52.8	51.42																	
6	AC	IQ SYSTEM CONTROLLER	TO	POI	EXTERIOR WALL	3	3	115	80	0.96	1	110.4	100.0																	
7	AC	LOAD CONTROLLER	TO	BACKUP LOAD PANEL	EXTERIOR WALL	6	10	40	16	0.96	0.8	30.72	20.0																	
8	AC	BACKUP LOAD PANEL	TO	IQ SYSTEM CONTROLLER	EXTERIOR WALL	3	3	115	80	0.96	1	110.4	100.0																	
9	AC	RSD	TO	IQ SYSTEM CONTROLLER	EXTERIOR WALL	3	10	40	16	0.96	1	38.4	20.0																	
10	AC	BATTERY	TO	IQ SYSTEM CONTROLLER	EXTERIOR WALL	2	10	40	16	0.96	1	38.4	20.0																	
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SHEET #	PV-7.0																													
														<div>TITLE</div> <div>ELECTRICAL SLD</div>																

MATERIAL LIST

ELECTRICAL EQUIPMENTS

QTY.	PART	PART #	DESCRIPTION
20	MODULE	NESE370-60MH	NE SOLAR NESE370-60MH
20	OPTIMIZER	S440	SOLAREEDGE S440 POWER OPTIMIZERS
1	JUNCTION BOX	480-276	600VDC NEMA 3R UL LISTED JUNCTION BOX
20	MICROINVERTER	IQ8PLUS-72-2-US	ENPHASE IQ8PLUS-72-2-US 240V
1	AC DISCONNECT	DU221RB	30.25A RATED 240VAC NEMA 3R UL LISTED
1	IQ SYSTEM CONTROLLER 2	EP200G101-M240US01	ENPHASE IQ SYSTEM CONTROLLER 2
1	IQ LOAD CONTROLLER	EP-NA-LK02-040	ENPHASE IQ LOAD CONTROLLER
1	BACKUP LOAD PANEL	125A LOAD PANEL	125A BACKUP LOAD PANEL
1	RAPID SHUTDOWN SWITCH	SI16-PEL64R-2-ENP	ENPHASE IP66 / NEMA 4X Protection Rating

BREAKER AND FUSES

QTY.	PART	PART #	DESCRIPTION
1	BREAKER	35A 2-POLE BREAKER(S)	GENERAL 35A 2-POLE BREAKER(S)
1	BREAKER	100A 2-POLE BREAKER(S)	GENERAL 100A 2-POLE BREAKER(S)
1	COMBINER BREAKER	20A 2-POLE BREAKER(S)	GENERAL 20A 2-POLE BREAKER(S)
1	BLP BREAKER	20A 2-POLE BREAKER(S)	GENERAL 20A 2-POLE BREAKER(S)

RACKING

QTY.	PART	PART #	DESCRIPTION
23	COUPLING	2011021	RI COUPLING AL LBK
31	SLIDE	2011013	RI COM SLIDE AL BLK
31	MOUNT	2011020	RI MOUNT AL BLK
31	FLASHING	3012020	GF-1 FLASHING GLV BLK 8X10
1	GROUNDING LUG	N/A	GROUNDING LUG

CONTRACTOR INFO

Solar Individual
Permit Package

CUSTOMER NAME

7.400KW Grid Tied
Photovoltaic System

1131 MICHAEL CIRCLE,
MEEKER, CO 81641

Rev	Description	Date
A	INITIAL DESIGN	10/28/2022

OPPORTUNITY	
PROJECT #	N/A
DATE DRAWN	10/28/2022
DRAWN BY	E.R
SHEET #	

TITLE
BOM

EXISTING SERVICE PANEL PHOTOS



CONTRACTOR INFO		
Solar Individual Permit Package		
CUSTOMER NAME		
7.400KW Grid Tied Photovoltaic System		
1131 MICHAEL CIRCLE, MEEKER, CO 81641		
Rev	Description	Date
A	INITIAL DESIGN	10/28/2022
OPPORTUNITY		
PROJECT #	N/A	
DATE DRAWN	10/28/2022	
DRAWN BY	E.R	
SHEET #	PV-9.0	
TITLE		
ELECTRICAL PHOTOS		

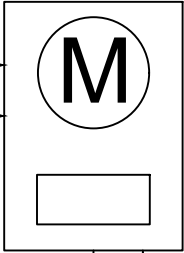
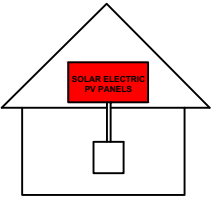
PHOTOVOLTAIC SYSTEM,
EQUIPPED WITH RAPID SHUTDOWN

690.12

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

690.56(C)(1)(B)



AC

PM

PV SYSTEM AC DISCONNECT
RATED AC OUTPUT CURRENT - **24.20** AMPS
AC NORMAL OPERATING VOLTAGE - 240 VOLTS

690.14, 690.15, 690.54

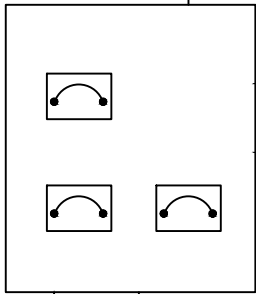
"WARNING"
DUAL POWER SOURCES
SECOND SOURCE IS PHOTO- VOLTAIC SYSTEM
RATED AC OUTPUT CURRENT - **24.20** AMPS
AC NORMAL OPERATING VOLTAGE - 240 VOLTS

690.54

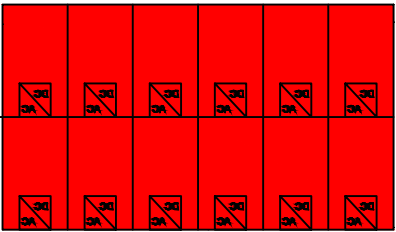
OPTIONAL SOLAR LOAD CENTER
ARRAY

"WARNING"
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

(UNLESS BUSBAR IS FULLY RATED)
705.12(D)(2)



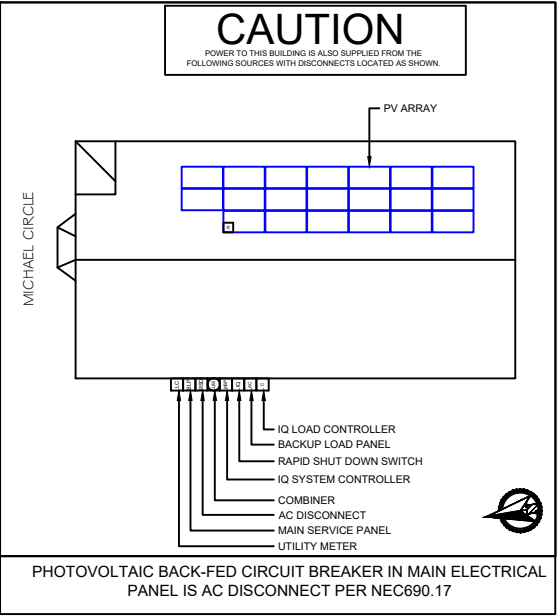
J/B



NEC 690.31(G)(3) & (4), CRC R324.7

"WARNING"
PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT AND ENCLOSURES



NOTES:

1. NEC ARTICLES 690 AND 705 AND NEC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
 - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
 - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
 - C. AERIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
3. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.

CONTRACTOR INFO

Solar Individual
Permit Package

CUSTOMER NAME

7.400KW Grid Tied
Photovoltaic System

1131 MICHAEL CIRCLE,
MEEKER, CO 81641

Rev	Description	Date
A	INITIAL DESIGN	10/28/2022

OPPORTUNITY	
PROJECT #	N/A
DATE DRAWN	10/28/2022
DRAWN BY	E.R
SHEET #	PV-10.0

SIGNAGE

MICROINVERTER CHART

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

1

2

3

4

5

6

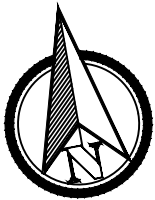
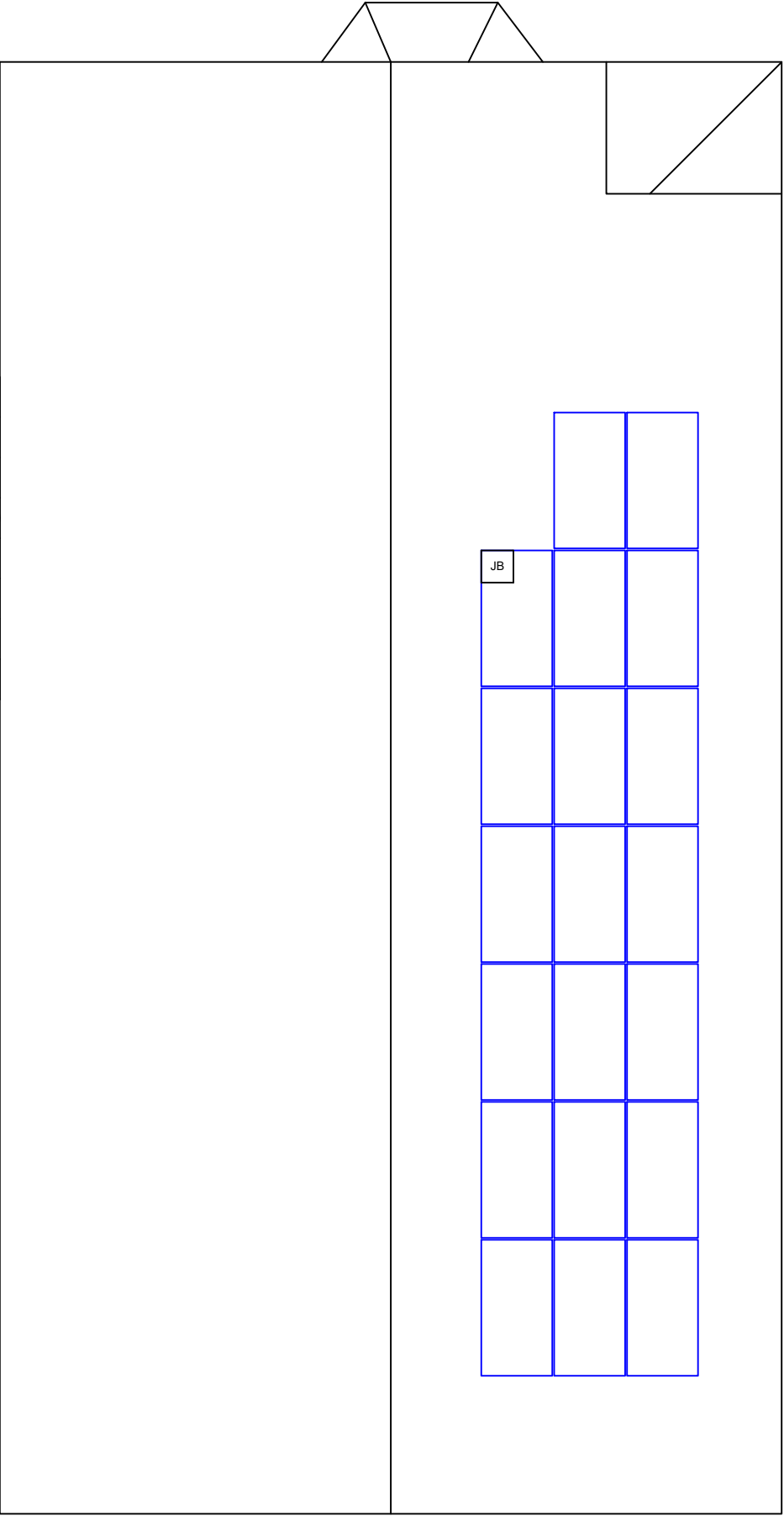
7

8

9

10

LC
BLP
RSD
UM
MSP
IQ
AC
C



CONTRACTOR INFO		
Solar Individual Permit Package		
CUSTOMER NAME		
7.400KW Grid Tied Photovoltaic System		
1131 MICHAEL CIRCLE, MEEKER, CO 81641		
Rev	Description	Date
A	INITIAL DESIGN	10/28/2022
OPPORTUNITY		
PROJECT #	N/A	
DATE DRAWN	10/28/2022	
DRAWN BY	E.R	
SHEET #	PV-11.0	
TITLE		
MICROINVERTER CHART		

SAFETY PLAN

INSTRUCTIONS:

- 1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
- 2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
- 3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

IN CASE OF EMERGENCY

NEAREST HOSPITAL OR OCCUPATIONAL/INDUSTRIAL CLINIC

NAME: _____

ADDRESS: _____

SAFETY COACH CONTACT INFORMATION

NAME: _____

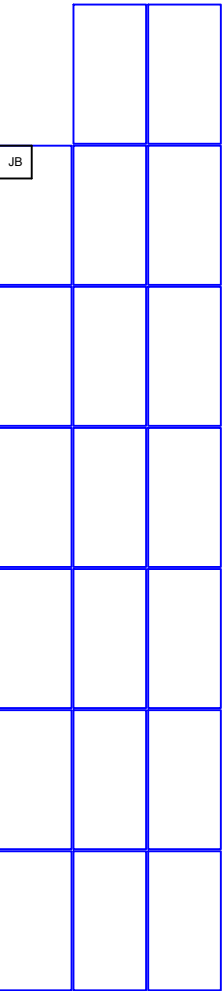
ADDRESS: _____

ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME	SIGNATURE
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DATE: _____ TIME: _____

LC
BLP
RSD
UM
MSP
IQ
AC
C



MARK UP KEY

- UM

UTILITY METER
- MSP

MAIN SERVICE PANEL
- C

COMBINER
- IQ

IQ SYSTEM CONTROLLER 2
- RSD

RAPID SHUTDOWN SWITCH
- BLP

BACKUP LOAD PANEL
- LC

IQ LOAD CONTROLLER
- JB

JUNCTION BOX
- MODULE
- P

PERMANENT ANCHOR
- T

TEMPORARY ANCHOR
- IL

INSTALLER LADDER
- S

STUB-OUT
- SKYLIGHT
- VLLD

LOCKABLE KNIFEBLADE AC DISCONNECT SWITCH WITH VISIBLE OPEN
- RESTRICTED ACCESS
- CONDUIT
- GAS

GAS SHUT OFF
- H2O

WATER SHUT OFF
- 7

SERVICE DROP
- Z

POWER LINES

CONTRACTOR INFO

Solar Individual Permit Package

CUSTOMER NAME

7.400KW Grid Tied Photovoltaic System

1131 MICHAEL CIRCLE, MEEKER, CO 81641

Rev	Description	Date
A	INITIAL DESIGN	10/28/2022

OPPORTUNITY	
PROJECT #	N/A
DATE DRAWN	10/28/2022
DRAWN BY	E.R
SHEET #	PV-12.0

TITLE

SAFETY PLAN

JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

Ladder Access

- Ladders must be inspected before each use.
 - Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
 - Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
 - A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).
- Additional notes:

Mobile Equipment

- Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
 - Type(s) of mobile equipment (Type/Make/Model):
- Qualified operator(s):

Material Handling and Storage

- Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from failing or sliding off.

Fall Protection

- A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
 - First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.
- FPCP (name and title):
- FPU and LPD (name and title):

Electrical Safety

- The Electrical Qualified Person (EQP) is required onsite to perform electrical work.
 - All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
 - Service drops and overhead electrical hazards will be identified and protected from contact, as neccessary.
- EQP (name and tile):

Public Protection

- The safety of the Client and the Public must be maintained at all times.
 - The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
 - Company, Client and Public property shall be protect from falling objects.
 - Pets (including dogs) shall be secured by their owners prior to work start.
 - The client should not leave pets, family members, or others in the charge or care of Employees, Contractors, or Temporary Workers.
- Crew leader responsible for communication with the client:
- Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing

- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

- Crew leader (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):

Airborne Contaminants:

- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

- If yes, list specific tasks and protection in place:

Weather and Environment

- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
 - The site supervisor will utilized a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
 - Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.
- Forecasted weather maximum temp (degrees F):

Heat Related Illness Prevention

- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
- Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
- New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
- Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
- Cool Vests are encouraged for all employees at all times during periods of high heat.
- Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

- What is the specific plan to provide and replenish sufficient water for all employees on site?
- If offsite replenish is necessary, where will you go to replenish water (location/address):
- Who will replenish the drinking water (name):

Restroom facilities

- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.
- Restroom facilities will be (circle one): Onsite - Offsite
 - If Offsite, add location name and address:

Incident Reporting Procedure

- Contact your Site Supervisor

Name:

Phone:

- Contact your Manager

Name:

Phone:

- Contact your Site Supervisor

Name:

Phone:

With: Your full name, phone number, office location, brief description of what happen and when.

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:

CONTRACTOR INFO

Solar Individual Permit Package

CUSTOMER NAME

7.400KW Grid Tied Photovoltaic System

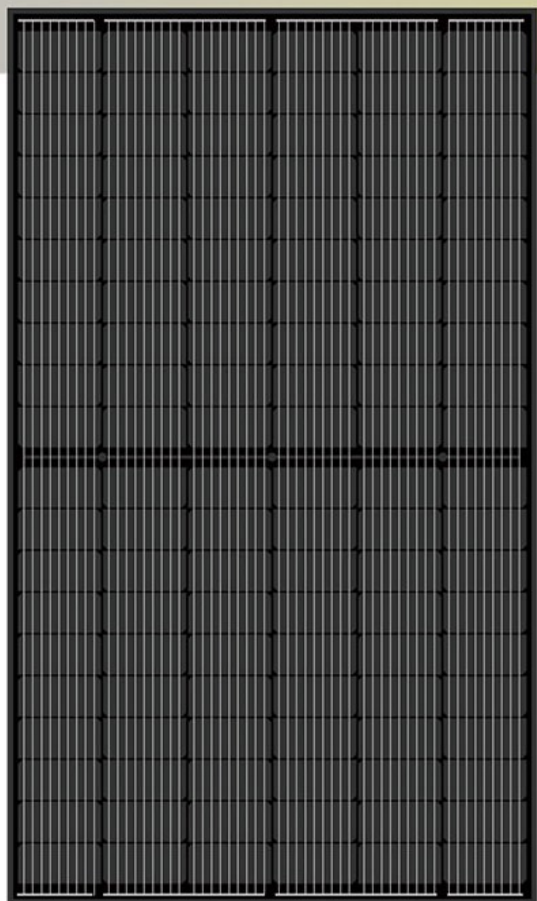
1131 MICHAEL CIRCLE, MEEKER, CO 81641

Rev	Description	Date
A	INITIAL DESIGN	10/28/2022

OPPORTUNITY	
PROJECT #	N/A
DATE DRAWN	10/28/2022
DRAWN BY	E.R
SHEET #	PV-13.0

TITLE

SAFETY PLAN

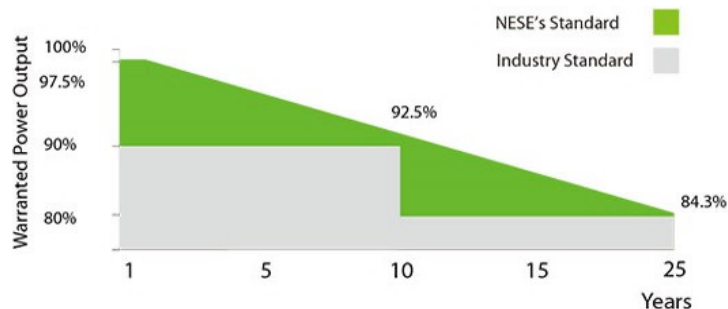


INSURED BY

CHUBB® Munich RE 

LINEAR PERFORMANCE WARRANTY

12 years product warranty. 25 years linear power warranty.



KEY FEATURES



High efficiency PERC

A high efficiency 166 (M6) PERC solar cell with 9 busbars technology to ensure the efficiency of the solar module up to 20.31% and stable operation.



0-5W tolerance

0- 5W positive power tolerance.



Excellent performance with weak light

More power output with a weak light condition-through advanced glass and solar cells.



Wind/Snow load

Wind load 2400 pa, snow load 5400 pa.



Pid Free

Excellent Anti-PID performance, minimized the degradation of power.



Resistance of extreme environment conditions

High Salt Mist and Ammonia resistance certified by TUV.

MANAGEMENT SYSTEM CERTIFICATES

ISO 9001:2015/QUALITY MANAGEMENT SYSTEM
ISO 14001:2015/STANDARDS FOR ENVIRONMENTAL MANAGEMENT SYSTEM

PRODUCT CERTIFICATES

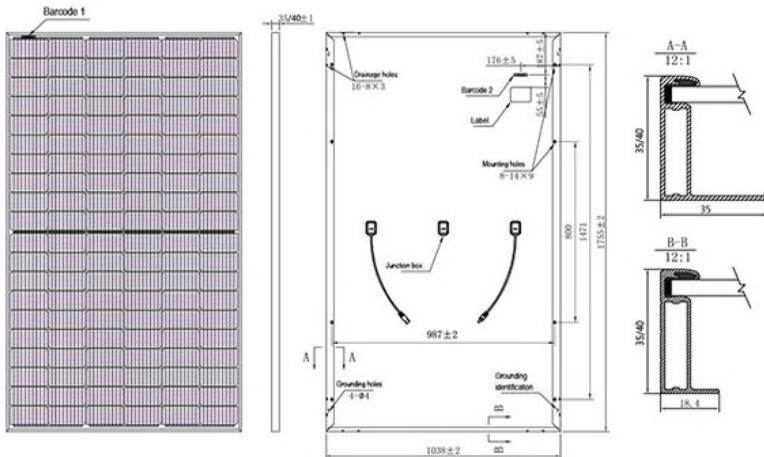
IEC 61215/IEC 61730:VDE/CE/CEC AU
UL 61730: CSA



SPECIFICATIONS

Module type	NESE 350-60MH		NESE 355-60MH		NESE 360-60MH		NESE365-60MH		NESE370-60MH	
	STC	(NOCT)	STC	(NOCT)	STC	(NOCT)	STC	(NOCT)	STC	(NOCT)
Maximum power(Pmax)	350Wp	256Wp	355Wp	260Wp	360Wp	264Wp	365Wp	267Wp	370Wp	270Wp
Maximum power voltage(Vmp)	33.4	30.9V	33.6V	31.1V	33.8V	31.3V	34.0V	31.4V	34.2V	31.6V
Maximum power current (Imp)	10.48A	8.28A	10.57A	8.36A	10.66A	8.43A	10.74A	8.50A	10.82A	8.57A
Open-circuit voltage(Voc)	40.2V	37.2V	40.4V	37.4V	40.6V	37.6V	40.8V	37.8V	41.0V	38.0V
Short-circuit current(Isc)	11.04A	8.92A	11.14A	9.00A	11.24A	9.08A	11.33A	9.15A	11.42A	9.22A
Module efficiency STC (%)	19.21%		19.49%		19.76%		20.04%		20.31%	
Operating temperature(°C)	-40°C ~ 85°C									
Maximum system voltage	1000/1500(IEC&UL)									
Maximum series fuse rating	20A									
Sorting power tolerance	0 ~ +3%									
Temperature coefficients of Pmax	-0.36%/°C									
Temperature coefficients of Voc	-0.29%/°C									
Temperature coefficients of Isc	+0.05%/°C									
Nominal operating cell temperature(NOCT)	44 ± 3°C									

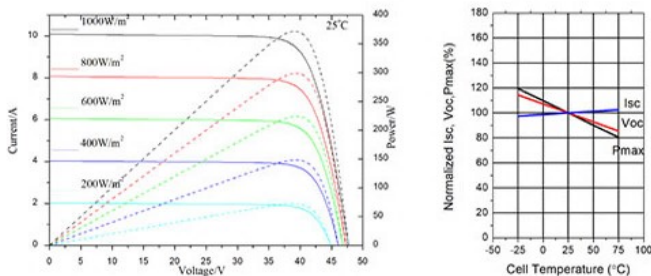
ENGINEERING DRAWING



MATERIAL CHARACTERISTICS

Number of cell	120 (6 * 20)
Dimensions	1755*1038*35/40
Weight	20.5/20.6kg
Front glass	3.2mm, anti-reflection Coating, high transmission, low iron, tempered glass
Frame	Anodized aluminium alloy
Junction box	IP68 rated 3 Diodes

ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE



Electrical performance & temperature dependence
Current-voltage & power-voltage curves (370W)
temperature dependence of Isc, Voc, Pmax

Output cables	12 awg, length: 350-1200 mm (13.78-47.24 inch) or Customized length
Connectors	MC4-Compatible

PACKAGING CONFIGURATION

40HQ	845/754PCS
------	------------



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 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.



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.



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

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings ¹	W	235 – 350	235 – 440
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
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 ² [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
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range ³	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit ⁴		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	%	97.5	97.6
CEC weighted efficiency	%	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			
		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	
Certifications		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.	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility>

(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Enphase IQ Combiner 4/4C

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



To learn more about Enphase offerings, visit enphase.com

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

Smart

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

Simple

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

Reliable

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



Enphase IQ Combiner 4/4C

MODEL NUMBER

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

ACCESSORIES AND REPLACEMENT PARTS

Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	(not included, order separately) - Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.

ELECTRICAL SPECIFICATIONS

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

MECHANICAL DATA

Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

INTERNET CONNECTION OPTIONS

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

COMPLIANCE

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

To learn more about Enphase offerings, visit enphase.com

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Enphase IQ System Controller 2

The **Enphase IQ System Controller 2** connects the home to grid power, the IQ Battery system, and solar PV. It provides microgrid interconnection device (MID) functionality by automatically detecting and seamlessly transitioning the home energy system from grid power to backup power in the event of a grid failure. It consolidates interconnection equipment into a single enclosure and streamlines grid independent capabilities of PV and storage installations by providing a consistent, pre-wired solution for residential applications.



Reliable

- Durable NEMA type 3R enclosure
- Ten-year limited warranty

Smart

- Controls safe connectivity to the grid
- Automatically detects grid outages
- Provides seamless transition to backup

Simple

- Connects to the load or service equipment¹ side of the main load panel
- Centered mounting brackets support single stud mounting
- Supports conduit entry from the bottom, bottom left side, and bottom right side
- Supports whole home and partial home backup and subpanel backup
- Up to 200A main breaker support
- Includes neutral-forming transformer for split phase 120/240V backup operation
- IQ System Controller supports backward compatibility with older generation of PV microinverters (M215, M250 and S series), making it simple for home owners to upgrade their systems
- Easy integration with generator from major manufacturers

1. IQ System Controller 2 is not suitable for use as service equipment in Canada.

Enphase IQ System Controller 2

MODEL NUMBER

EP200G101-M240US01	Enphase IQ System Controller 2 with neutral-forming transformer (NFT), Microgrid Interconnect Device (MID), breakers, and screws. Streamlines grid-independent capabilities of PV and battery installations.
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ACCESSORIES and REPLACEMENT PARTS

EP200G-NA-XA-E3	Replacement IQ System Controller 2 printed circuit board
EP200G-NA-HD-200A	Eaton type BR circuit breaker hold-down screw kit, BRHDK125
CT-200-SPLIT	200 A split core current transformers for Generator metering (+/- 2.5%)
Circuit breakers (as needed) ^{2,3}	Not included, must order separately: <ul style="list-style-type: none">• BRK-100A-2P-240V: Main breaker, 2 pole, 100A, 25kAIC, CSR2100• BRK-125A-2P-240V: Main breaker, 2 pole, 125A, 25kAIC, CSR2125N• BRK-150A-2P-240V: Main breaker, 2 pole, 150A, 25kAIC, CSR2150N• BRK-175A-2P-240V: Main breaker, 2 pole, 175A, 25kAIC, CSR2175N• BRK-200A-2P-240V: Main breaker, 2 pole, 200A, 25kAIC, CSR2200N• BRK-20A-2P-240V-B: Circuit breaker, 2 pole, 20A, 10kAIC, BR220B• BRK-30A-2P-240V: Circuit breaker, 2 pole, 30A, 10kAIC, BR230B• BRK-40A-2P-240V: Circuit breaker, 2 pole, 40A, 10kAIC, BR240B• BRK-60A-2P-240V: Circuit breaker, 2 pole, 60A, 10kAIC, BR260• BRK-80A-2P-240V: Circuit breaker, 2 pole, 80A, 10kAIC, BR280
EP200G-HNDL-R1	IQ System Controller 2 installation handle kit (order separately)
EP200G-LITKIT	IQ System Controller 2 literature kit, including labels, feed-through headers, screws, filler plates, and QIG
BRK-20A40A-2P-240V	2 pole, 20A/40A, 10kAIC, BQC220240

ELECTRICAL SPECIFICATIONS

Assembly rating	Continuous operation at 100% of its rating
Nominal voltage / range (L-L)	240 VAC / 100 - 310 VAC
Voltage measurement accuracy	±1% V nominal (±1.2V L-N and ±2.4V L-L)
Auxiliary contact for load control, excess PV control, and generator two-wire control	24V, 1A
Nominal frequency / range	60 Hz / 56 - 63 Hz
Frequency measurement accuracy	±0.1 Hz
Maximum continuous current rating	160A
Maximum input overcurrent protection device	200A
Maximum output overcurrent protection device	200A
Maximum overcurrent protection device rating for Generator circuit ⁴	80A
Maximum overcurrent protection device rating for storage branch circuit ⁴ (the storage branch circuit can be replaced with PV)	80A
Maximum overcurrent protection device rating for IQ8 PV combiner branch circuit ⁴	80A
Neutral Forming Transformer (NFT)	<ul style="list-style-type: none">• Breaker rating (pre-installed): 40A between L1 and Neutral; 40A between L2 and Neutral• Continuous rated power: 3600VA• Maximum continuous unbalance current: 30A @ 120V• Peak rated power: 8800VA for 30 seconds• Peak unbalanced current: 80A @ 120V for 30 seconds

MECHANICAL DATA

Dimensions (WxHxD)	50cm x 91.6cm x 24.6cm (19.7 in x 36 in x 9.7 in)
Weight	39.4 kg (87 lbs)
Ambient temperature range	-40° C to +50° C (-40° F to 122° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NEMA type 3R, polycarbonate construction
Altitude	To 2500 meters (8200 feet)

WIRE SIZES

Connections (All lugs are rated to 90C)	<ul style="list-style-type: none">• Main lugs and backup load lugs• CSR breaker bottom wiring lugs• BR breakers (wire provided)• AC combiner lugs, Encharge lugs, and generator lugs• Neutral (large lugs)	Cu/Al: 1 AWG – 300 KCMIL Cu/Al: 2 AWG – 300 KCMIL 6 AWG 14 AWG – 2 AWG Cu/Al: 6 AWG - 300 KCMIL
Neutral and ground bars	Large holes (5/16-24 UNF) Small holes (10-32 UNF)	14 AWG – 1/0 AWG 14 AWG – 6 AWG

COMPLIANCE

Compliance	UL 1741, UL 1741 SA, UL 1741 PCS, UL1998, UL869A ⁵ , UL67 ⁵ , UL508 ⁵ , UL50E ⁵ CSA 22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003, AC156. IQ System Controller 2 is approved for Use as Service Equipment in the United States ⁵ .
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2. Compatible with BRHDK125 Hold-Down Kit to comply with 2017 NEC 710.15E for back-fed circuit breakers.

3. The IQ System Controller 2 is rated 22 kAIC

4. Not included. Installer must provide properly rated breaker per circuit breaker list above.

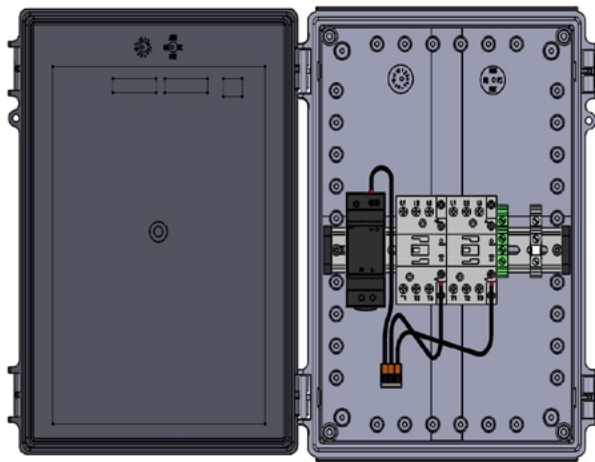
5. Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

To learn more about Enphase offerings, visit enphase.com

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Enphase IQ Load Controller



The **Enphase IQ Load Controller**, when used in conjunction with the IQ System Controller, enables control of up to 2 loads running 240VAC L-L or shedding of up to 2 solar circuits when operating in an off-grid mode with the Enphase energy management system.

The IQ Load Controller can also be used for controlling 4 loads running 120VAC L-L.

Up to 2 IQ Load Controllers can be integrated with each IQ System Controller on a site.

Powerful

- Control up to 2, 36A resistive loads or 3HP/25A inductive loads running at 240VAC or 4 loads running at 120VAC
- Shed up to 2 excess IQ6, IQ7, M215 or M250 solar branch circuits (up to 32A each) to maintain Solar-To-Storage ratio when off-grid
- Prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life
- Choose from three load control modes for flexibility or manually control loads from the Enphase App

Simple

- A complete solution for use with the IQ System Controller's load control feature
- DIN rail mounted components enable easy installation and servicing
- Easy configuration via Enphase Installer App

Reliable

- Designed for indoor or outdoor installations
- 5 years warranty
- Durable NEMA 4X Enclosure

Enphase IQ Load Controller

EP-NA-LK02-040		IQ Load Controller for use with IQ System Controller’s auxiliary contacts to shed non-essential loads or M-series, IQ series microinverters	
INPUT DATA			
DC Power Supply input voltage	120Vac		
DC Power Supply input Current rating	12A		
CAPACITY			
Total loads controlled	2 loads running at 240Vac or 4 loads at 120Vac		
Max load controlled	36A resistive, 25A inductive for dedicated loads, 32A resistive for branch circuits with 2 or more loads		
MECHANICAL DATA			
Ambient temperature range	-25 to 40 °C		
Dimensions (WxHxD)	12.58 x 14.58 x 5.96 (in)		
Weight	6.61 (lbs)		
Cooling	Natural Convection		
Enclosure	Outdoor, NEMA type 4X, polycarbonate construction		
WIRE SIZES			
Contactor	• Line/Load power terminals	14-8AWG	
	• Contactor A1/A2 control terminals	18-16AWG	
Power Supply	• 120V L-N input terminals	14-12AWG	
	• 120V V+/V- output terminals	18-16AWG	
Ground terminal block			24-6AWG
Neutral terminal block			24-6AWG
COMPLIANCE			
Compliance	UL1741		
WARRANTY			
Limited Warranty	5 years		

To learn more about Enphase offerings, visit enphase.com

Enphase P/N: EP200G-NA-02-RSD

IMO P/N: SI16-PEL64R-2-ENP



Key Features

- Enclosed Solar Isolator
- 600VDC, 16A
- IP66 / NEMA 4X Protection Rating
- 2 Pole, 1 String
- Grey/Black Enclosure Cover & Handle



Technical Data for DC

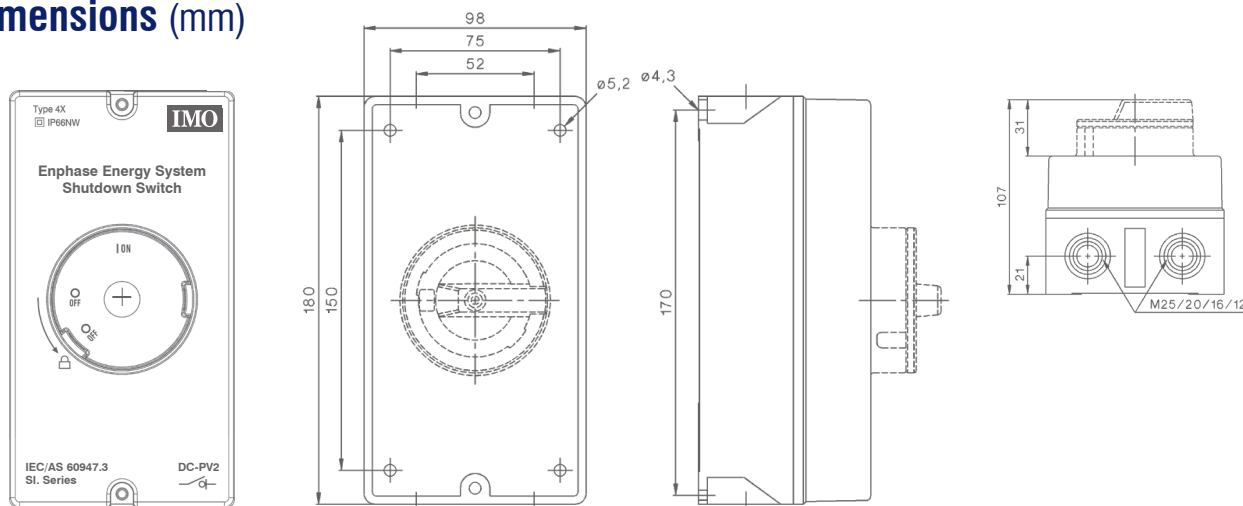
Main Contacts	DC	Units	SI16 DC-PV1 (acc. to IEC 60947-3)	SI16 (acc. to UL508i)
Rated Thermal Current I_{the}		A	16	
Rated Insulation Voltage U_i 1)		V	1000	
Rated Insulation Voltage U_i 2)		V	1500	
Distance of Contacts (per pole)		mm	8	
Rated Operational Current I_s	300V	A	16	16
	350V	A	16	16
	400V	A	16	16
	500V	A	16	16
	600V	A	16	16
Rated Conditional Short Circuit Current		kA _{eff}	5	
Max. Fuse Size	gL (gG)	A	40	
Mechanical Life		Ops	10,000	
Rated Short-time Withstand Current (1s) I_{cw}		A	800	
Short Circuit Making Capacity I_{cw}		A	800	
Size of Terminal Screw			M4 Pz2	
Cable Cross Sections (solid or stranded)		mm / AWG	4 - 16 / 12-10	
Tightening Torque		Nm / lb.in	1.7 - 1.8 / 9 - 16	
Maximum Operation Ambient Temperature		°C	-40 to +45	
Maximum Storage Ambient Temperature		°C	-50 to +90	
Power Loss at I_{onmax}		(A) / W	(16) / 1	

Contact Resistance per pole 1.75mΩ

1) Suitable at overvoltage category I to III, pollution degree 3 (standard-industry): $U_{imp} = 8kV$.

2) Suitable at overvoltage category I to III, pollution degree 2 (min. IP55): $U_{imp} = 8kV$.

Dimensions (mm)



Enphase Encharge 10

The **Enphase Encharge 10™** all-in-one AC-coupled storage system is **reliable, smart, simple, and safe**. It is comprised of three base Encharge 3™ storage units, has a total usable energy capacity of 10.08 kWh and twelve embedded grid-forming microinverters with 3.84 kW power rating. It provides backup capability and installers can quickly design the right system size to meet the needs of both new and retrofit solar customers.



Reliable

- Proven high reliability IQ Series Microinverters
- Ten-year limited warranty
- Three independent Encharge storage base units
- Twelve embedded IQ 8X-BAT Microinverters
- Passive cooling (no moving parts/fans)

Smart

- Grid-forming capability for backup operation
- Remote software and firmware upgrade
- Mobile app-based monitoring and control
- Support for self consumption
- Utility time of use (TOU) optimization

Simple

- Fully integrated AC battery system
- Quick and easy plug-and-play installation
- Interconnects with standard household AC wiring

Safe

- Cells safety tested
- Lithium iron phosphate (LFP) chemistry for maximum safety and longevity

Enphase Encharge 10

MODEL NUMBER	
ENCHARGE-10-1P-NA	Encharge 10 battery storage system with integrated Enphase Microinverters and battery management unit (BMU). Includes: - Three Encharge 3.36 kWh base units (B03-A01-US00-1-3) - One Encharge 10 cover kit with cover, wall mounting bracket, watertight conduit hubs, and interconnect kit for wiring between batteries (B10-C-1050-O)
ACCESSORIES	
ENCHARGE-HNDL-R1	One set of Encharge base unit installation handles
OUTPUT (AC)	@ 240 VAC ¹
Rated (continuous) output power	3.84 kVA
Peak output power	5.7 kVA (10 seconds)
Nominal voltage / range	240 / 211 – 264 VAC
Nominal frequency / range	60 / 57 – 61 Hz
Rated output current	16 A
Peak output current	24.6A (10 seconds)
Power factor (adjustable)	0.85 leading ... 0.85 lagging
Maximum units per 20 A branch circuit	1 unit (single phase)
Interconnection	Single-phase
Maximum AC short circuit fault current over 3 cycles	69.6 Arms
Round trip efficiency ²	89%
BATTERY	
Total capacity	10.5 kWh
Usable capacity	10.08 kWh
Round trip efficiency	96%
Nominal DC voltage	67.2 V
Maximum DC voltage	73.5 V
Ambient operating temperature range	-15° C to 55° C (5° F to 131° F) non-condensing
Optimum operating temperature range	0° C to 30° C (32° F to 86° F)
Chemistry	Lithium iron phosphate (LFP)
MECHANICAL DATA	
Dimensions (WxHxD)	1070 mm x 664 mm x 319 mm (42.13 in x 26.14 in x 12.56 in)
Weight	Three individual 44.2 kg (97.4 lbs) base units plus 21.1 kg (48.7 lbs) cover and mounting bracket; total 154.7 kg (341 lbs)
Enclosure	Outdoor – NEMA type 3R
IQ 8X-BAT microinverter enclosure	NEMA type 6
Cooling	Natural convection – No fans
Altitude	Up to 2500 meters (8200 feet)
Mounting	Wall mount
FEATURES AND COMPLIANCE	
Compatibility	Compatible with grid-tied PV systems. Compatible with Enphase M215/M250 and IQ Series Micros, Enphase Enpower, and Enphase IQ Envoy for backup operation.
Communication	Wireless 2.4 GHz
Services	Backup, self-consumption, TOU, Demand Charge, NEM Integrity
Monitoring	Enlighten Manager and MyEnlighten monitoring options; API integration
Compliance	UL 9540, UN 38.3, UL 9540A, UL 1998, UL 991, NEMA Type 3R, AC156 EMI: 47 CFR, Part 15, Class B, ICES 003 Cell Module: UL 1973, UN 38.3 Inverters: UL 62109-1, IEC 62109-2, UL 1741SA, CAN/CSA C22.2 No. 107.1-16, and IEEE 1547
LIMITED WARRANTY	
Limited Warranty ³	>70% capacity, up to 10 years or 4000 cycles

1. Supported in backup/off grid operations
2. AC to Battery to AC at 50% power rating.
3. Whichever occurs first. Restrictions apply.

To learn more about Enphase offerings, visit enphase.com



ROCKIT

COMPLETE RAIL-LESS RACKING SYSTEM

The RockIt system is the industry's premier rail-less PV racking system for composition shingle, tile, and metal roofs. Designed in conjunction with the needs of installers, RockIt quickly & easily installs with a single tool. Featuring an easy-to-position alignment slide and a top-down leveling system, RockIt is logistically intelligent with no need to ship or transport long rails. Components are available in a black finish that complements both commercial and residential applications. Conforms to UL 2703.

FEATURES & BENEFITS

- Patented watertight technology
- Fully integrated bonding
- Top-down leveling system
- North-South adjustability
- Single tool install

STREAMLINED INSTALLATION WITH MINIMAL ROOF PENETRATIONS



ROCKIT

COUPLING

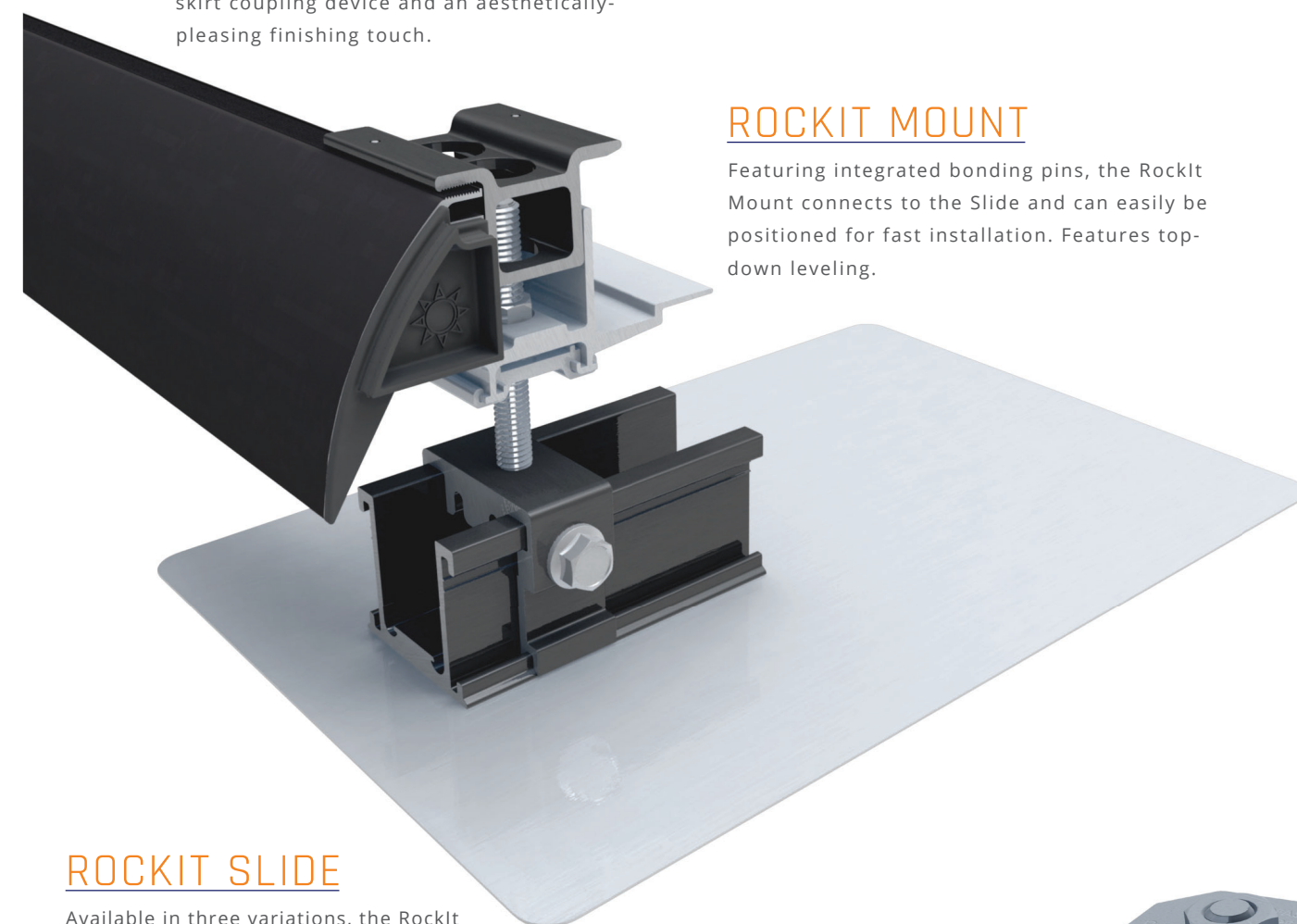
The fast installing RockIt Coupling easily attaches to the module frame to bridge the gaps between modules.

SKIRT

The sleek black Skirt installs first and acts as an alignment guide for the entire array. The Skirt End Cap does double duty as a skirt coupling device and an aesthetically-pleasing finishing touch.

ROCKIT MOUNT

Featuring integrated bonding pins, the RockIt Mount connects to the Slide and can easily be positioned for fast installation. Features top-down leveling.



ROCKIT SLIDE

Available in three variations, the RockIt Slide allows installation on composition shingle, tile, and metal roofs.

FRAME MLPE MOUNT

Attaches and fully bonds MLPE's (Module Level Power Electronics) to the module frame with a single bolt clip.

