RESIDENTIAL ROOFTOP SOLAR PERMIT PACKAGE

NABCEP CERTIFIED
PV Installation Professional
Scott Gurney
#PV-011719-015866

William Hensley
1801 SW Merryman Dr
Lee's Summit, Missouri 64082
8163923167

Enphase Platinum Installer

SUNPOWER® Authorized Dealer

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

SCOPE OF WORK
INSTALLATION OF ROOFTOP MOUNTED PHOTOVOLTAIC SOLAR SYSTEM

SHEET INDEX

TYPICAL STRUCTURAL INFORMATION
ROOF MATERIAL: Comp Shingle
SHEATHING TYPE: OSB
FRAMING TYPE: Manufactured Truss
RACKING TYPE: UNIRAC NXT UMOUNT
ATTACHMENT TYPE: UNIRAC STRONGHOLD
TOTAL ATTACHMENTS: 46

NEW PV SYSTEM INFORMATION
DC SYSTEM SIZE: 6.72 kW DC
AC SYSTEM SIZE: 5.04 kW AC
MODULE TYPE: (16) REC Solar REC420AA Pure-R
INVERTER TYPE: Enphase IQ7X-96-2-US

Sealed For Existing Roof & Attachment Only

STATE OF MISSOURI
JOHN A. CALVERT
NUMBER PE-2021040848
PROFESSIONAL ENGINEER

3/22/2024

TOTAL PV DC SYSTEM SIZE	TOTAL PV AC SYSTEM SIZE
6.720 kW DC	5.040 kW AC

DESIGN CRITERIA
WIND SPEED: 115
WIND EXPOSURE FACTOR: C
RISK CATEGORY: II
GROUND SNOW LOAD: 20
ROOF SNOW LOAD: 14
SEISMIC DESIGN CATEGORY: B

WEATHER STATION DATA
WEATHER STATION: KANSAS CITY INTL ARPT
HIGH TEMP 2% AVG: 35°C
EXTREME MINIMUM TEMP: -21°C

GENERAL NOTES
RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

Brandon Kalwei
Digitally signed by Brandon Kalwei
DN: CN=Brandon Kalwei, OU=Development, OU=LS Users, DC=COLS, DC=LOC
Date: 2024.04.04 15:25:24-05'00'

AHJ
City of Lee's Summit

Digitally signed by John A. Calvert
Date: 2024.03.22 10:14:08 -06'00'

UTILITY COMPANY
Evergy MO West

APPLICABLE CODES
*2017 NATIONAL ELECTRIC CODE (NEC)
*2018 INTERNATIONAL BUILDING CODE (IBC)
*2018 INTERNATIONAL RESIDENTIAL CODE (IRC), 2018 UNIFORM PLUMBING CODE (UPC), AND ALL STATE AND LOCAL BUILDING, ELECTRICAL, AND PLUMBING CODES

CUSTOMER NAME: William Hensley
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

AHJ: City of Lee's Summit

UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579

PV DC SYSTEM SIZE: 6.720 kW DC

PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:
A ----
B ----
C ----
D ----

DRAWN BY: Brendan Fillmore

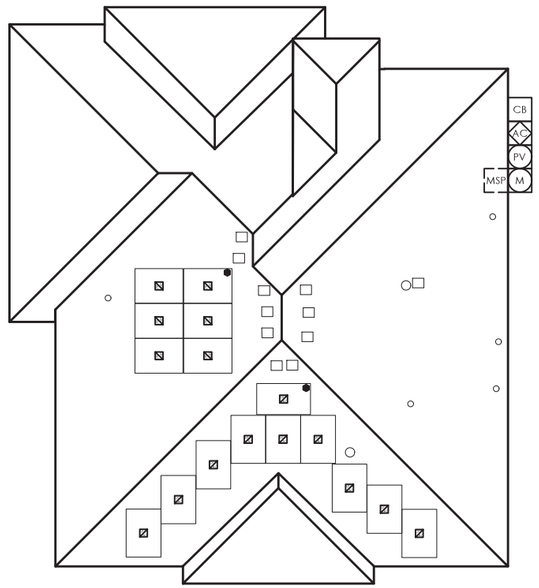
PLOT DATE: March 22, 2024

DRAWING TITLE: Cover Sheet

DRAWING NUMBER: PV1

FRONT OF HOME

1801 SW Merryman Dr



Sealed For
Existing Roof &
Attachment Only

3/22/2024

SITE PLAN

SCALE: 1/16" = 1'-0"

LEGEND

ROOF TOP JUNCTION BOX	BE	BREAKER ENCLOSURE	ATS	GENERATOR ATS PANEL	RPO	REMOTE POWER OFF SWITCH	TRENCH OR OVERHEAD
M UTILITY METER	AC	AC DISCONNECT	CT	UTILITY METER CT CABINET		FIRE SETBACK HATCH	PROPERTY LINE
MSP MAIN SERVICE PANEL	PV	PV PRODUCTION METER	BAT	ESS - BATTERY	DC/AC	MICROINVERTER	NEW PV SYSTEM
SUB SUBPANEL	CB	COMBINER BOX	ESC	ESS - CONTROLLER			

ICONS WITH DOTTED OUTLINE INDICATE INTERIOR LOCATION

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

PV SYSTEM SPECIFICATIONS

NEW PV SYSTEM INFORMATION

PV MODULE: (16) REC Solar REC420AA Pure-R, **POWER RATING:** 420 W
MICROINVERTER: Enphase IQ7X-96-2-US, **POWER RATING:** 315 W

COMPASS

N
W E
S

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

William Hensley
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

CUSTOMER NAME:

AHJ: City of Lee's Summit

UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579

PV DC SYSTEM SIZE: 6.720 kW DC

PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:

A	----
B	----
C	----
D	----

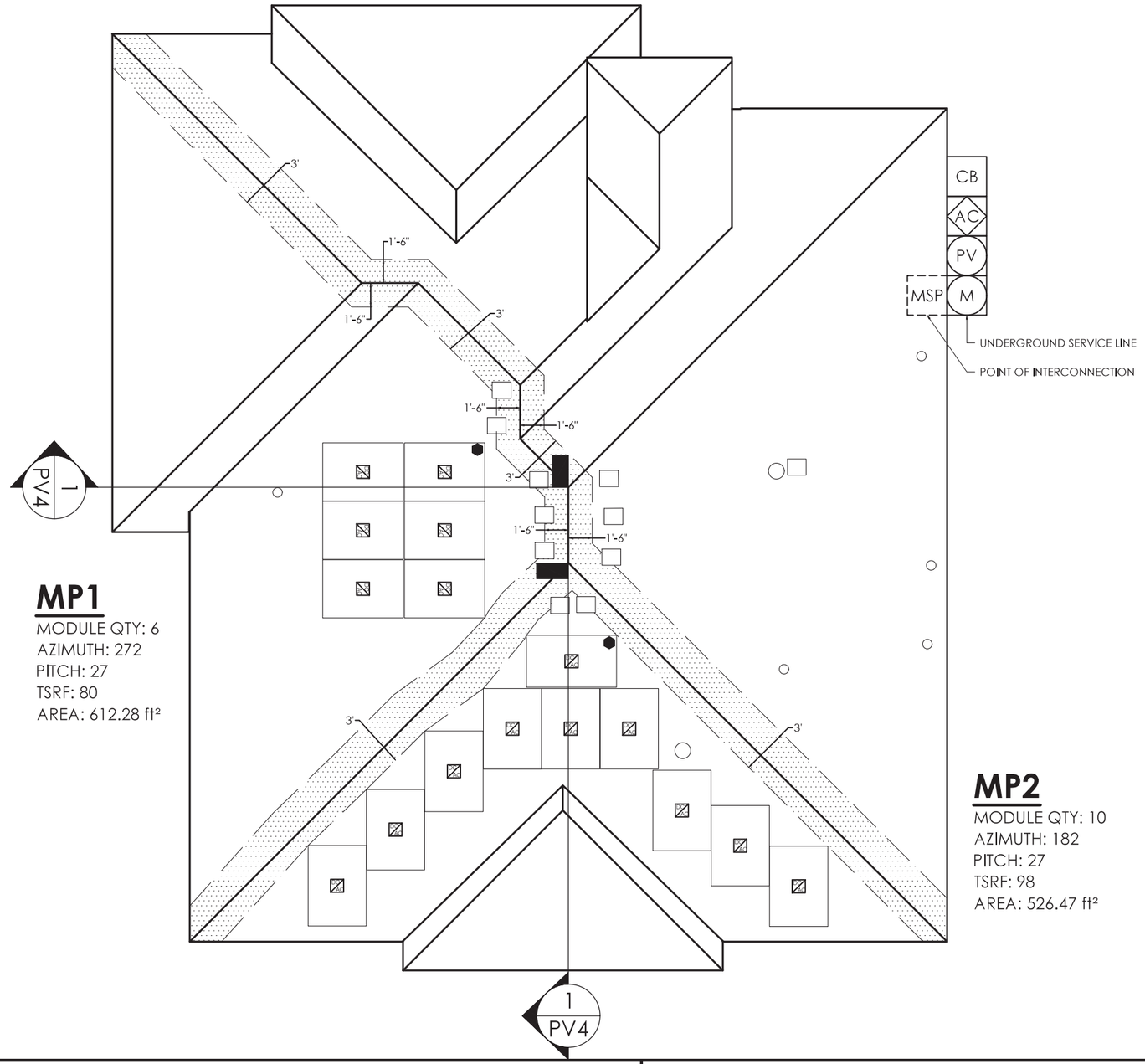
DRAWN BY: Brendan Fillmore

PLOT DATE: March 22, 2024

DRAWING TITLE: Site Plan

DRAWING NUMBER: PV2

FRONT OF HOME



MP1

MODULE QTY: 6
AZIMUTH: 272
PITCH: 27
TSRF: 80
AREA: 612.28 ft²

MP2

MODULE QTY: 10
AZIMUTH: 182
PITCH: 27
TSRF: 98
AREA: 526.47 ft²

ROOF PLAN

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

Sealed For Existing Roof & Attachment Only

STATE OF MISSOURI
JOHN A. CALVERT
NUMBER PE-2021040848
PROFESSIONAL ENGINEER

3/22/2024

LEGEND

- ROOF TOP JUNCTION BOX
- M — UTILITY METER
- MSP — MAIN SERVICE PANEL
- SUB — SUBPANEL
- BE — BREAKER ENCLOSURE
- AC — AC DISCONNECT
- PV — PV PRODUCTION METER
- CB — COMBINER BOX
- ATS — GENERATOR ATS PANEL
- CT — UTILITY METER CT CABINET
- BAT — ESS - BATTERY
- ESC — ESS - CONTROLLER
- RPO — REMOTE POWER OFF SWITCH
- FIRE SETBACK HATCH
- MICROINVERTER
- *ICONS WITH DOTTED OUTLINE INDICATE INTERIOR LOCATION*
- TRENCH OR OVERHEAD
- PROPERTY LINE
- NEW PV SYSTEM

PV SYSTEM SPECIFICATIONS

NEW PV SYSTEM INFORMATION

PV MODULE: (16) REC Solar REC420AA Pure-R, **POWER RATING:** 420 W
MICROINVERTER: Enphase IQ7X-96-2-US, **POWER RATING:** 315 W

COMPASS

N W E S

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

William Hensley
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

CUSTOMER NAME:
AHJ: City of Lee's Summit
UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579
PV DC SYSTEM SIZE: 6.720 kW DC
PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:
A ----
B ----
C ----
D ----

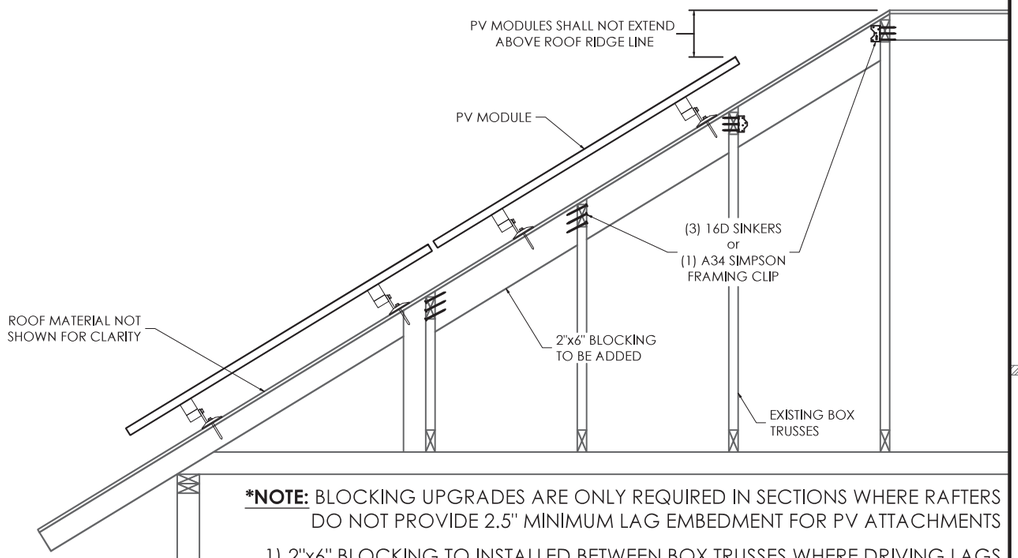
DRAWN BY: Brendan Fillmore
PLOT DATE: March 22, 2024
DRAWING TITLE: Roof Plan
DRAWING NUMBER: PV3

	PANEL COUNT	AZIMUTH (DEG)	PITCH (DEG)	TSRF (%)	AREA (ft²)	ROOF MATERIAL	SHEATHING TYPE	FRAMING TYPE	FRAMING SIZE AND SPACING	CEILING JOIST/ PURLINS SIZE AND SPACING	RACKING TYPE	ATTACHMENT TYPE	MAXIMUM ATTACHMENT SPACING (S)	MAXIMUM CANTILEVER (C)
MP1	6	272	27	80	612.28	Comp Shingle	OSB	Manufactured Truss	2x4 @ 24 in OC	2x4 @ 24 in OC	UNIRAC NXT UMOUNT	UNIRAC STRONGHOLD	72"L / 48"P	24"L / 16"P
MP2	10	182	27	98	526.47	Comp Shingle	OSB	Manufactured Truss	2x4 @ 24 in OC	2x4 @ 24 in OC	UNIRAC NXT UMOUNT	UNIRAC STRONGHOLD	72"L / 48"P	24"L / 16"P
MP3	0													
MP4	0													
MP5	0													
MP6	0													
MP7	0													
MP8	0													
MP9	0													
MP10	0													

TOTAL PV ARRAY AREA (ft²)	332.93
TOTAL ROOF AREA (ft²)	3163.45
DISTRIBUTED LOAD (psf)	2.28
ROOF COVERAGE (%)	10.52
TOTAL PV ARRAY WEIGHT (lbs)	758.4
TOTAL PV ATTACHMENTS	46
POINT LOAD (lbs/att.)	16.5

BLUE RAVEN SOLAR

1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com



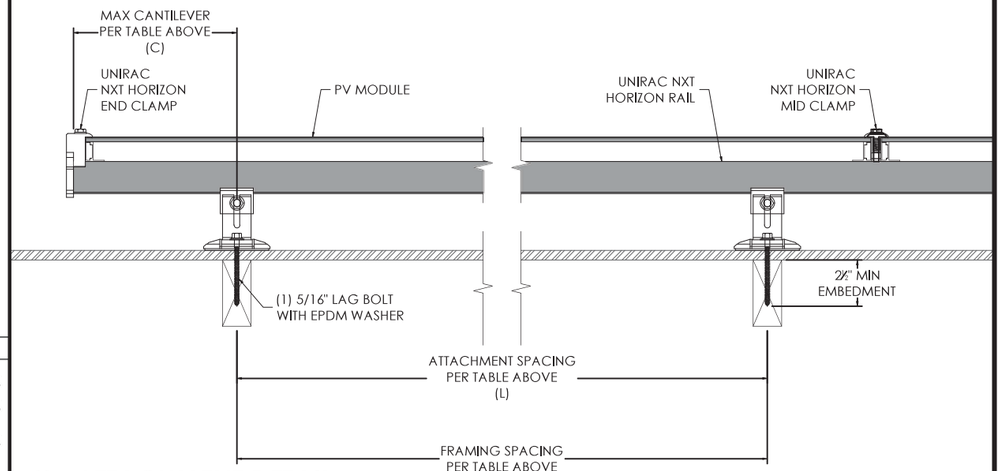
1 FRAMING DETAIL
SCALE: 1/2" = 1'-0"

***NOTE:** BLOCKING UPGRADES ARE ONLY REQUIRED IN SECTIONS WHERE RAFTERS DO NOT PROVIDE 2.5" MINIMUM LAG EMBEDMENT FOR PV ATTACHMENTS

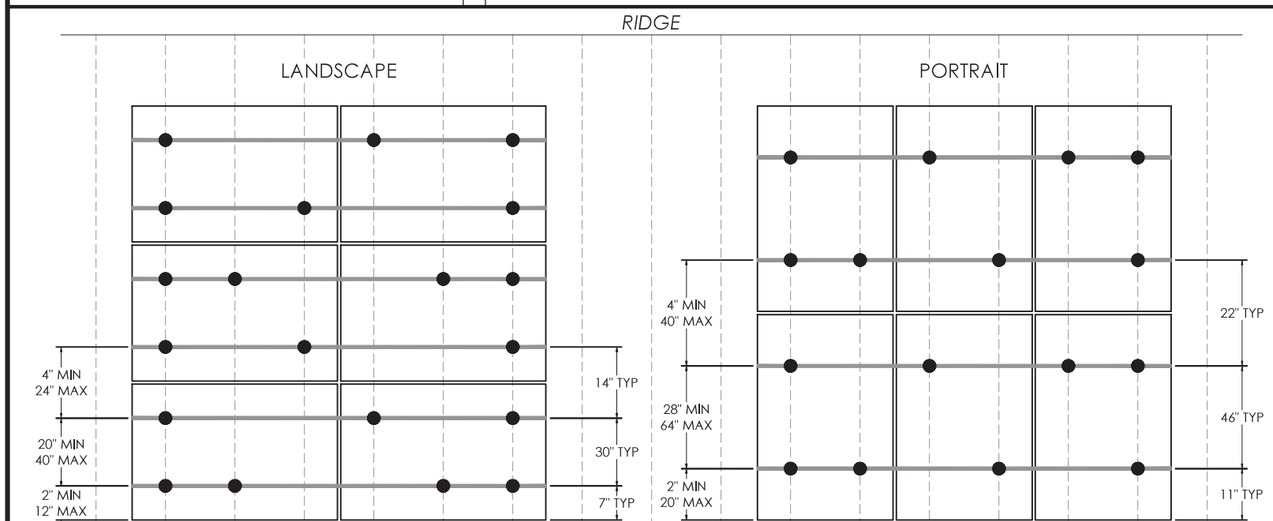
1) 2"x6" BLOCKING TO INSTALLED BETWEEN BOX TRUSSES WHERE DRIVING LAGS

2) INSTALL (3) 16D SINKERS OR (1) A34 SIMPSON FRAMING ANGLE CLIP AT EXISTING VERTICAL TRUSS MEMBER TO EACH END OF EACH BLOCK

ATTACHMENT TYPE:
Unirac Stronghold



2 ATTACHMENT DETAIL
SCALE: 1-1/2" = 1'-0"



3 ATTACHMENT PATTERN
SCALE: 1/4" = 1'-0"

*ATTACHMENT PATTERN SHOULD BE STAGGERED UNLESS OTHERWISE NOTED IN ENGINEERING LETTER

NOTES

Southeast corner of MP2 requires blocking, most of the plane does not.

BLOCKING REQUIRED. Structural Blocking upgrade may be required in hiproof MPs near the ridge to accommodate PV array standoff embedment. Approx. 46 blocks required. Install (3) 16D sinkers OR (1) A34 Simpson Clip at each vertical truss member to the end of each block. Material Required: (46) 2x6 lumber blocks at approx. 2 ft long. (276) 16D sinkers OR (92) A34 Simpson Clips.

Sealed For Existing Roof & Attachment Only

3/22/2024

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

William Hensley
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

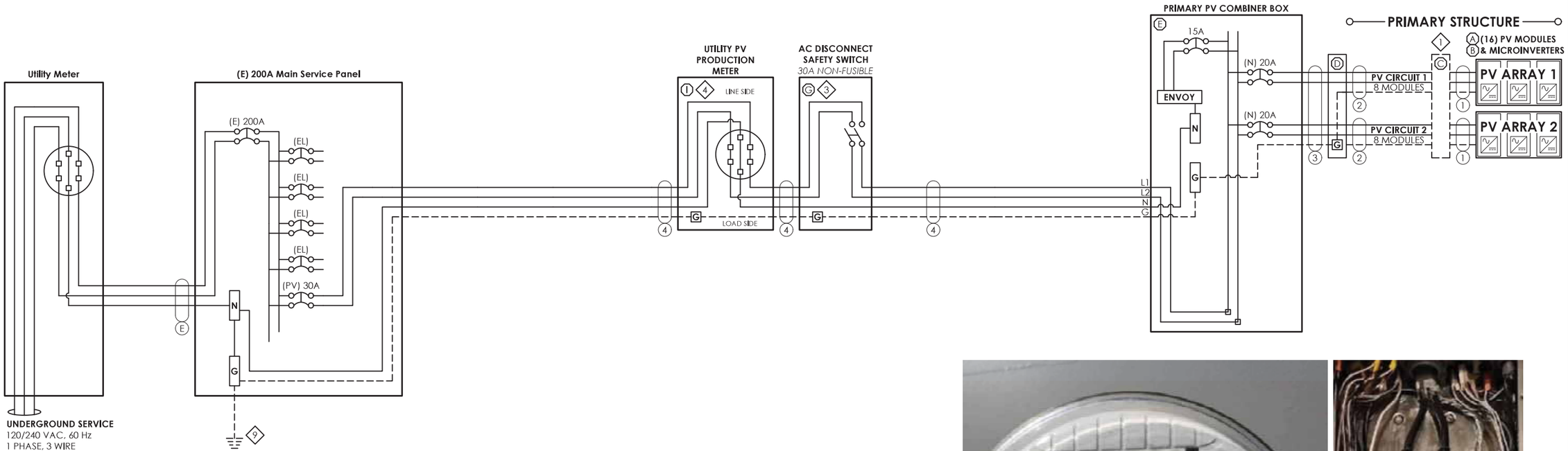
CUSTOMER NAME:
AHJ: City of Lee's Summit
UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579
PV DC SYSTEM SIZE: 6.720 kW DC
PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:
A ----
B ----
C ----
D ----

DRAWN BY: Brendan Fillmore
PLOT DATE: March 22, 2024
DRAWING TITLE: Structural
DRAWING NUMBER: PV4

4	L1 (1) 6 AWG THHN/THWN-2 CU BLACK L2 (1) 6 AWG THHN/THWN-2 CU RED N (1) 6 AWG THHN/THWN-2 CU WHITE G (1) 10 AWG THHN/THWN-2 CU GREEN 3/4 INCH EMT	Exterior
3	L1 (2) 10 AWG THHN/THWN-2 CU BLACK L2 (2) 10 AWG THHN/THWN-2 CU RED G (1) 10 AWG THHN/THWN-2 CU GREEN *TYPE UF CABLE MAY BE SUBSTITUTED FOR USE IN CONDUIT WHERE NEC CODE PERMITS	3/4 INCH EMT
2	L1 (1) 10 AWG THHN/THWN-2 CU BLACK L2 (1) 10 AWG THHN/THWN-2 CU RED G (1) 10 AWG THHN/THWN-2 CU GREEN *TYPE NM (ROMEX)/UF CABLE IS PERMITTED FOR INTERIOR OR ATTIC RUNS AND SHALL BE USED WHEN NEC CODE PERMITS	3/4 INCH *
1	L1 (1) 12 AWG THHN/THWN-2 CU BLACK L2 (1) 12 AWG THHN/THWN-2 CU RED G (1) 6 AWG BARE, CU ENPHASE Q-CABLE, 2-WIRE, FREE AIR	Exterior



GENERAL NOTES

Utility Meter Number: 23758558

Load side breaker in interior main panel on exterior wall.

LEGEND

(E)	EXISTING	(PV)	PV BREAKER
(N)	NEW	(FIB)	FACTORY INSTALLED BREAKER
(EL)	EXISTING LOADS	SPD	SURGE PROTECTIVE DEVICE
(RL)	RELOCATED LOADS	MI	MECHANICAL INTERLOCK

EQUIPMENT NOTES

1. FINAL CONFIGURATION OF PV CIRCUITS TO BE DECIDED BY INSTALLER. MUST COMPLY WITH MAX MICROINVERTERS PER CIRCUIT AS LISTED ON ATTACHED SPEC SHEET.
2.
3. KNIFE HANDLED SAFETY SWITCH TO BE INSTALLED IN READILY ACCESSBILE LOCATION
4. UTILITY PV METER FOR PRODUCTION MONITORING.
5.
6.
7.
8.
9. GROUNDING ELECTRODE SYSTEM SHALL BE IN ACCORDANCE WITH NEC 250.53.
10.
11.
12.

EQUIPMENT DESCRIPTIONS

- (A) **PV MODULE:** REC Solar REC420AA Pure-R, 420 W DC, UL 1703 / UL 61730 COMPLIANT
- (B) **MICROINVERTER:** ENPHASE IQ7X-96-2-US, 315 W AC (0.315 kW), 1 PHASE, UL 1741 COMPLIANT
- (C) **ROOFTOP JUNCTION BOX:** EZ SOLAR JB-1.2 JUNCTION BOX
- (D) **JUNCTION BOX:** PVC 4 X 4 JUNCTION BOX
- (E) **PV COMBINER BOX:** ENPHASE IQ COMBINER 4 (X-IQ-AM1-240-4)
- (F)
- (G) SQUARE-D SAFTEY SWITCH 30A, 2P, 240VAC, FUSIBLE (D221NRB)
- (H)
- (I) EATON B-LINE 011, METER SOCKET, 125A, RINGED, NEMA 3R
- (J)
- (K)
- (L)
- (M)
- (N)
- (O)
- (P)
- (Q)
- (R)
- (S)
- (T)

OTHER NOTES

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

CUSTOMER NAME: **William Hensley**
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

AHJ: City of Lee's Summit

UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579

PV DC SYSTEM SIZE: 6.720 kW DC

PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:

A	----
B	----
C	----
D	----

DRAWN BY: Brendan Fillmore

PLOT DATE: March 22, 2024

DRAWING TITLE: Electrical 3-Line

DRAWING NUMBER: PV5

ELECTRICAL INFORMATION

UTILITY ELECTRICAL SYSTEM

1-Phase, 3-Wire, 60Hz, 120/240V

NEW PV SYSTEM

1-Phase, 3-Wire, 60Hz, 120/240V

AC SYSTEM SIZE	5.04kW AC
DC SYSTEM SIZE	6.72kW DC
PV MODULES	
QUANTITY	16
TYPE	REC Solar REC420AA Pure-R
WATTAGE	420W DC
MICROINVERTERS	
TYPE	Enphase IQ7X-96-2-US
OUTPUT CURRENT	1.31A AC
NOMINAL VOLTAGE	240V AC
OUTPUT POWER	315W AC

DESIGN LOCATION AND TEMPERATURES

DATA SOURCE	ASHRAE Weather Station Data
STATE	Missouri
CITY	Lee's Summit
WEATHER STATION	KANSAS CITY INTL ARPT
HIGH TEMP 2% AVG	35°C
EXTREME MINIMUM TEMP	-21°C

PV BREAKER BACKFEED CALCULATIONS

NEC 705.12(B) -- "120% RULE"

(BUSBAR RATING * 120%) - OCPD RATING = AVAILABLE BACKFEED

	MAIN SERVICE PANEL	SUBPANEL 1	SUBPANEL 2
BUSBAR RATING	200A	----A	----A
PANEL OCPD RATING	200A	----A	----A
AVAILABLE BACKFEED (120% RULE)	40A	##A	##A
PV BREAKER RATING	30A	30A	30A

THESE CALCULATIONS ARE ONLY APPLICABLE IF PV INTERCONNECTION IS A LOAD SIDE BREAKER

PV BREAKER MUST BE RATED LESS THAN OR EQUAL TO AVAILABLE BACKFEED FOR CODE COMPLIANCE

WIRE SIZE SPECIFICATIONS

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
MINIMUM CONDUCTOR AMPACITY	13.1A AC	13.1A AC	13.1A AC	26.25A AC	----A AC	----A AC	----A AC	----A AC	----A AC	----A AC
CONDUCTOR MATERIAL	CU	CU	CU	CU	----	----	----	----	----	----
CONDUCTOR TYPE	THHN/THWN-2	THHN/THWN-2	THHN/THWN-2	THHN/THWN-2	----	----	----	----	----	----
CONDUCTOR SIZE	12 AWG	10 AWG	10 AWG	6 AWG	----					
CONDUCTOR AMPACITY	30A	40A	40A	75A	----A	----A	----A	----A	----A	----A
AMBIENT TEMPERATURE ADJUSTMENT FACTOR	0.96	0.96	0.96	0.96	----	----	----	----	----	----
CONDUIT FILL ADJUSTMENT FACTOR	1	1	0.8	1	----	----	----	----	----	----
ADJUSTED CONDUCTOR AMPACITY	28.8A	38.4A	30.72A	72A	----A	----A	----A	----A	----A	----A
WIRE RUN DISTANCE (FT)	52	50	10	10	----	----	----	----	----	----
CALCULATED VOLTAGE DROP	0.62%	0.54%	0.11%	0.09%	0%	0%	0%	0%	0%	0%

PV CIRCUIT SPECIFICATIONS

	PRIMARY STRUCTURE								DETACHED STRUCTURE				
	CIRCUIT 1	**CIRCUIT 2**	**CIRCUIT 3**	**CIRCUIT 4**	**CIRCUIT 5**	**CIRCUIT 6**	**CIRCUIT 7**	**CIRCUIT 8**	**CIRCUIT 1**	**CIRCUIT 2**	**CIRCUIT 3**	**CIRCUIT 4**	**CIRCUIT 5**
NUMBER OF MODULES PER CIRCUIT	8	8	0	0	0	0	0	0	0	0	0	0	0
RATED AC OUTPUT CURRENT (I_{out})	10.5A	10.5A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A
MINIMUM AMPACITY (I_{out} x 125%)	13.1A	13.1A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A	0.0A
OVERCURRENT PROTECTION RATING	20A	20A	20A	20A	20A	20A	20A	20A	20A	20A	20A	20A	20A
COMBINED AC OUTPUT CURRENT (C_{out})	21.0A								0.0A				
MINIMUM AMPACITY (C_{out} x 125%)	26.2A								0.0A				
COMBINED PV BREAKER RATING	30AA								0AA				

TOTAL VOLTAGE DROP

	VOLTAGE DROP
WIRE TAG #1	0.62%
WIRE TAG #2	0.54%
WIRE TAG #3	0.11%
WIRE TAG #4	0.09%
WIRE TAG #5	0%
WIRE TAG #6	0%
TOTAL	***1.360000%***

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

CUSTOMER NAME:
William Hensley
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

AHJ:
City of Lee's Summit

UTILITY COMPANY:
Evergy MO West

PROJECT ID:
945579

PV DC SYSTEM SIZE:
6.720 kW DC

PV AC SYSTEM SIZE:
5.040 kW AC

REVISIONS:

A	----
B	----
C	----
D	----

DRAWN BY:
Brendan Fillmore

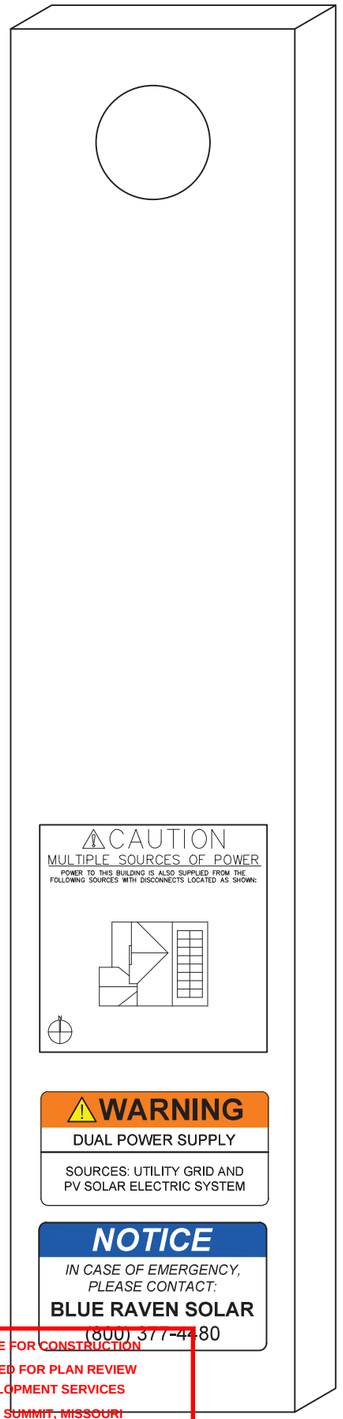
PLOT DATE:
March 22, 2024

DRAWING TITLE:
Electrical Calculations

DRAWING NUMBER:
PV6

WARNING LABELS

UTILITY METER

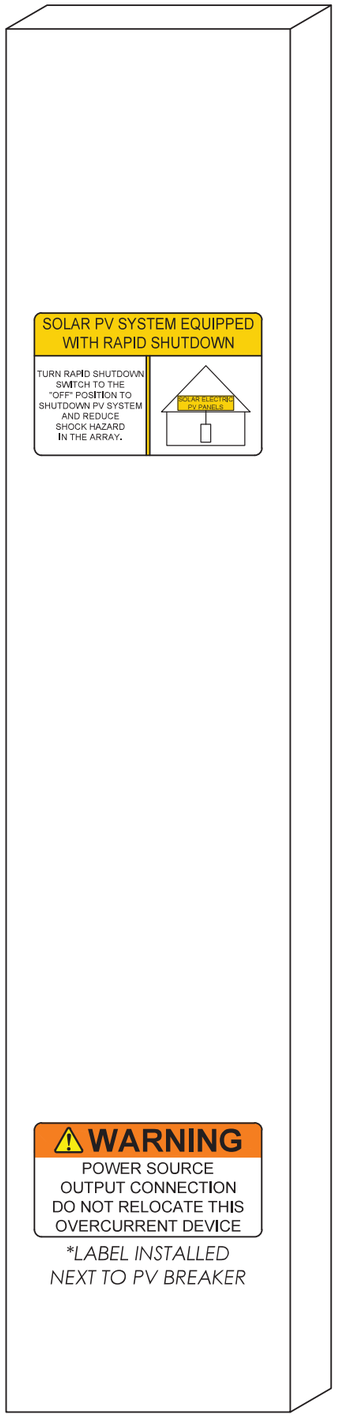


CAUTION
MULTIPLE SOURCES OF POWER
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:

WARNING
DUAL POWER SUPPLY
SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

NOTICE
IN CASE OF EMERGENCY, PLEASE CONTACT:
BLUE RAVEN SOLAR
(800) 377-4480

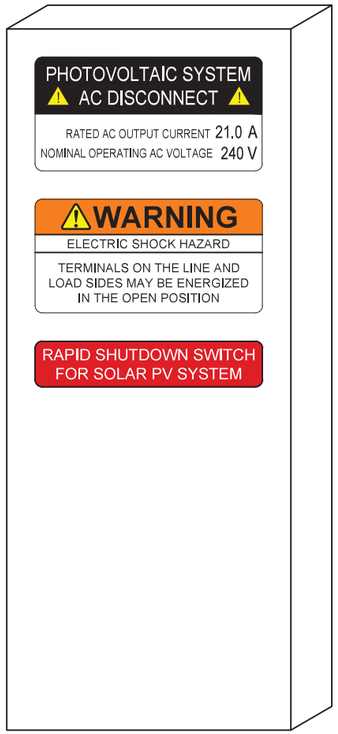
MAIN SERVICE PANEL



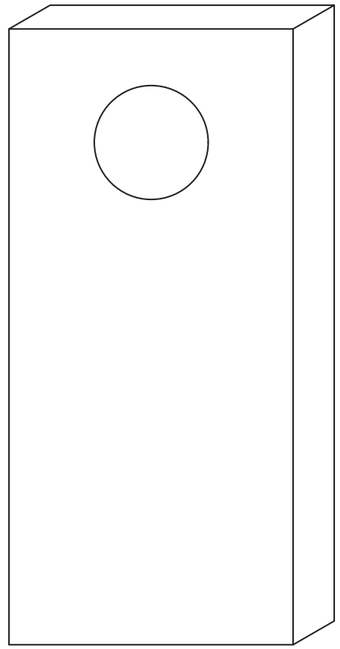
WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

**LABEL INSTALLED NEXT TO PV BREAKER*

AC DISCONNECT



PV METER



PV COMBINER BOX

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

CUSTOMER NAME: **William Hensley**
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

AHJ: City of Lee's Summit

UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579

PV DC SYSTEM SIZE: 6.720 kW DC

PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:

A	----
B	----
C	----
D	----

DRAWN BY: Brendan Fillmore

PLOT DATE: March 22, 2024

DRAWING TITLE: Warning Labels

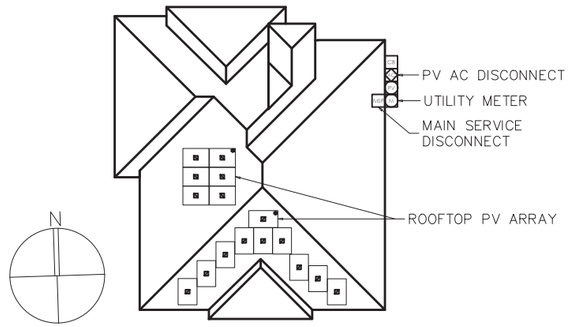
DRAWING NUMBER: PV7

⚠CAUTION

MULTIPLE SOURCES OF POWER

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

FRONT OF HOME



RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N 630 E
Orem, Utah 84097
(800) 377-4480
BlueRavenSolar.com

CUSTOMER NAME: **William Hensley**
1801 SW Merryman Dr
Lee's Summit, Missouri 64082

AHJ: City of Lee's Summit

UTILITY COMPANY: Evergy MO West

PROJECT ID: 945579

PV DC SYSTEM SIZE: 6.720 kW DC

PV AC SYSTEM SIZE: 5.040 kW AC

REVISIONS:

A	-----
B	-----
C	-----
D	-----

DRAWN BY: Brendan Fillmore

PLOT DATE: March 22, 2024

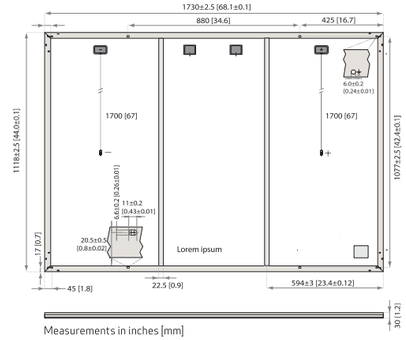
DRAWING TITLE: Directory Placard

DRAWING NUMBER: PV8

REC ALPHA PURE-R SERIES
PRODUCT SPECIFICATIONS

SOLAR'S MOST TRUSTED

GENERAL DATA	
Cell type:	80 half-cut REC bifacial, heterojunction cells with lead-free, gapless technology
Glass:	0.13 in (3.2 mm) solar glass with anti-reflective surface treatment in accordance with EN 12150
Backsheet:	Highly resistant polymer (black)
Frame:	Anodized aluminum (black)
Junction box:	4-part, 4 bypass diodes, lead-free IP68 rated, in accordance with IEC 62790
Connectors:	Stäubli MC4 PV-KBT4/KST4 (12 AWG) in accordance with IEC 62852, IP68 only when connected
Cable:	12 AWG (4 mm²) PV wire, 67 + 67 in (1.7 + 1.7 m) in accordance with EN 50618
Dimensions:	68.1 x 44.0 x 1.2 in (20.77 ft²) / 1730 x 1118 x 30 mm (1.93 m²)
Weight:	47.4 lbs (21.5 kg)
Origin:	Made in Singapore



Measurements in inches [mm]

ELECTRICAL DATA	Product Code*: RECxxxAA PURE-R			
STC				
Power Output - P_{MAX} (Wp)	400	410	420	430
Watt Class Sorting - (W)	0/+10	0/+10	0/+10	0/+10
Nominal Power Voltage - V_{MPP} (V)	48.8	49.4	50.0	50.5
Nominal Power Current - I_{MPP} (A)	8.20	8.30	8.40	8.52
Open Circuit Voltage - V_{OC} (V)	58.9	59.2	59.4	59.7
Short Circuit Current - I_{SC} (A)	8.80	8.84	8.88	8.91
Power Density (W/ft²)	19.26	19.74	20.22	20.70
Panel Efficiency (%)	20.7	21.2	21.8	22.3
NMOT				
Power Output - P_{MAX} (Wp)	305	312	320	327
Nominal Power Voltage - V_{MPP} (V)	46.0	46.6	47.1	47.6
Nominal Power Current - I_{MPP} (A)	6.64	6.70	6.80	6.88
Open Circuit Voltage - V_{OC} (V)	55.5	55.8	56.0	56.3
Short Circuit Current - I_{SC} (A)	7.11	7.16	7.20	7.24

Values at standard test conditions (STC: air mass AM 1.5, irradiance 1075 W/sq ft (1000 W/m²), temperature 77°F (25°C), based on a production spread with a tolerance of P_{MPP}, V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM 1.5, irradiance 800 W/m², temperature 68°F (20°C), windspeed 3.3 ft/s (1 m/s). * Where xxx indicates the nominal power class (P_{MPP}) at STC above.

MAXIMUM RATINGS	
Operational temperature:	-40 ... +85°C
System voltage:	1000 V
Test load (front):	+7000 Pa (146 lbs/ft²)*
Test load (rear):	-4000 Pa (83.5 lbs/ft²)*
Series fuse rating:	25 A
Reverse current:	25 A

* See installation manual for mounting instructions. Design load = Test load / 1.5 (safety factor)

WARRANTY	Standard	REC ProTrust	
Installed by an REC Certified Solar Professional	No	Yes	Yes
System Size	All	≤25 kW	25-500 kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	98%	98%	98%
Annual Degradation	0.25%	0.25%	0.25%
Power in Year 25	92%	92%	92%

See warranty documents for details. Conditions apply

Available from:

Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

CERTIFICATIONS	
IEC 61215:2016, IEC 61730:2016, UL 61730	
IEC 62804	PID
IEC 61701	Salt Mist
IEC 62716	Ammonia Resistance
UL 61730	Fire Type 2
IEC 62782	Dynamic Mechanical Load
IEC 61215-2:2016	Hailstone (35mm)
IEC 62321	Lead-free acc. to RoHS EU 863/2015
ISO 14001, ISO 9001, IEC 45001, IEC 62941	

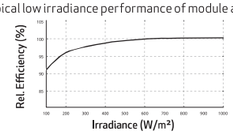
TEMPERATURE RATINGS*	
Nominal Module Operating Temperature:	44°C (±2°C)
Temperature coefficient of P_{MAX}:	-0.24 %/°C
Temperature coefficient of V_{OC}:	-0.24 %/°C
Temperature coefficient of I_{SC}:	0.04 %/°C

*The temperature coefficients stated are linear values

DELIVERY INFORMATION	
Panels per pallet:	33
Panels per 40 ft GP/high cube container:	858 (26 pallets)
Panels per 53 ft truck:	858 (26 pallets)

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



REC Solar PTE. LTD.
20 Tuas South Ave. 14
Singapore 637312
post@recgroup.com
www.recgroup.com

Specifications subject to change without notice.

Ref: PD-DS-AAPR Rev 3.1 03.23

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N. Research Way
Orem, UT 84097
800.377.4480
WWW.BLUERAVENSOLAR.COM

NABCEP CERTIFIED
PV INSTALLATION PROFESSIONAL
Scott Gurney
#PV-011719-015866

CONTRACTOR:
BRS FIELD OPS
385-498-6700

DRAWING BY:

PLOT DATE:

PROJECT NUMBER:

SHEET NAME:
SPEC SHEET

REVISION: ----

PAGE NUMBER: SS

ENPHASE

US DATA SHEET

IQ7X Microinverter

The high-powered, smart grid-ready IQ7X Microinverter dramatically simplifies the installation process while achieving the highest system efficiency for systems with 96-cell modules.

Part of the Enphase Energy System, the IQ7X Microinverter integrates with the IQ Gateway, IQ Battery, and the Enphase Installer App monitoring and analysis software.

Enphase 25 year limited warranty

The IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.*

Connect PV modules quickly and easily to IQ7X Microinverters using the included Q-DCC-2 adapter cable with plug-and-play MC4 connectors.

UL CERTIFIED SAFETY

IQ7X Microinverters are UL Listed as PV rapid shutdown equipment and conform with various regulations when installed according to the manufacturer's instructions.

Easy to install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014, 2017, 2020, and 2023)

Efficient and reliable

- Optimized for high powered 96-cell modules
- Highest CEC efficiency of 97.5%
- More than a million hours of testing
- Class II double-insulated enclosure
- UL Listed

Smart grid-ready

- Complies with advanced grid support, voltage, and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547:2018 (UL 1741-SB, 3rd Ed.)

* 25-year warranty is valid, provided an internet-connected IQ Gateway is installed.

To learn more about Enphase offering, visit Enphase.com

IQ7X Microinverters

INPUT DATA (DC)	UNITS	IQ7X-96-2-US	
Commonly used module pairings [1]	W	320–460	
Module compatibility	–	To meet compatibility, PV modules must be within the following maximum input DC voltage and maximum module I_{sc}. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator.	
MPPT voltage range	V	53–64	
Operating range	V	25–79.5	
Minimum/Maximum start voltage	V	33/79.5	
Maximum input DC voltage	V	79.5	
Maximum continuous input DC current	A	6.5	
Maximum module I_{sc}	A	10	
Overvoltage class DC port	–	II	
DC port backfeed current	mA	0	
PV array configuration	–	1 x 1 ungrounded array; no additional DC side protection required; AC side protection requires a maximum of 20 A per branch circuit.	
OUTPUT DATA (AC)	**UNITS**	**IQ7X-96-2-US@240 VAC**	**IQ7X-96-2-US@208 VAC**
Peak output power	VA	320	
Maximum continuous output power	VA	315	
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	208, single-phase (L-L), 120°
Minimum and Maximum grid voltage [2]	V	211–264	183–229
Maximum continuous output current	A	1.31	1.51
Nominal frequency	Hz	60	
Extended frequency range	Hz	49–68	
AC short-circuit fault current over three cycles	A_{rms}	5.8	
Maximum units per 20 A (L-L) branch circuit [3]	–	12	10
Overvoltage class AC port	–	III	
AC port backfeed current	mA	18	
Power factor setting	–	1.0	
Grid-tied power factor (adjustable)	–	0.85 leading ... 0.85 lagging	
CEC weighted efficiency	%	97.5	97.0
MECHANICAL DATA	**UNITS**		
Ambient temperature range	°C (°F)	-40 to 60 (-40 to 140)	
Relative humidity range	%	4 to 100 (condensing)	
DC connector type	–	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)	
Dimensions (H × W × D)	mm (in)	212 (8.3) × 175 (6.9) × 30.2 (1.2)	
Weight	kg (lbs)	1.1 (2.4)	
Cooling	–	Natural convection–no fans	
Approved for wet locations	–	Yes	
Pollution degree	–	PD3	
Enclosure	–	Class II double-insulated, corrosion-resistant polymeric enclosure	
Environmental category/UV exposure rating	–	NEMA Type 6/Outdoor	
COMPLIANCE			
Compliance		CA Rule 21 (UL 1741-SA), IEEE 1547:2018 (UL 1741-SB 3rd Ed.), HEI Rule 14H SRD 2.0 UL 62109-1, 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 shutdown equipment and conforms with NEC 2014, NEC 2017, NEC 2020, and NEC 2023 section 690.12 and C22.1-2015. Rule 64-218 rapid shutdown of PV Systems for AC and DC conductors when installed according to the manufacturer's instructions.	

(1) Pairing PV modules with wattage above the limit may result in additional clipping losses.
(2) Nominal voltage range can be extended beyond nominal if required by the utility.
(3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ7X-DSH-00208-2.0-EN-US-2023-11-08

BLUE RAVEN SOLAR

DRAWING NUMBER:
SS

Data Sheet
Enphase Q Cable Accessories
REGION: Americas

Enphase Q Cable Accessories

The **Enphase Q Cable™** and accessories are part of the latest generation Enphase IQ System™. These accessories provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

Enphase Q Cable Accessories

CONDUCTOR SPECIFICATIONS	
Certification	UL3003 (raw cable), UL 9703 (cable assemblies), DG cable
Flame test rating	FT4
Compliance	RoHS, OIL RES I, CE, UV Resistant, combined UL for Canada and United States
Conductor type	THHN/THWN-2 dry/wet
Disconnecting means	The AC and DC bulkhead connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.

Q CABLE TYPES / ORDERING OPTIONS

Connectorized Models	Size / Max Nominal Voltage	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-12-10-240	12 AWG / 277 VAC	1.3 m (4.2 ft)	Portrait	240
Q-12-17-240	12 AWG / 277 VAC	2.0 m (6.5 ft)	Landscape (60-cell)	240
Q-12-20-200	12 AWG / 277 VAC	2.3 m (7.5 ft)	Landscape (72-cell)	200

ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable	Q-12-RAW-300	300 meters of 12 AWG cable with no connectors
Field-wireable connector (male)	Q-CONN-10M	Make connections from any open connector
Field-wireable connector (female)	Q-CONN-10F	Make connections from any Q Cable open connector
Cable Clip	Q-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator	Q-TERM-10	Terminator cap for unused cable ends
Enphase EN4 to MC4 adaptor[1]	ECA-EN4-S22	Connect PV module using MC4 connectors to IQ micros with EN4 (TE PV4-S SOLARLOK). 150mm/5.9” to MC4.
Enphase EN4 non-terminated adaptor[1]	ECA-EN4-FW	For field wiring of UL certified DC connectors. EN4 (TE PV4-S SOLARLOK) to non-terminated cable. 150mm/5.9”
Enphase EN4 to MC4 adaptor (long)[1]	ECA-EN4-S22-L	Longer adapter cable for EN4 (TE PV4-S SOLARLOK) to MC4. Use with split cell modules or PV modules with short DC cable. 600mm/23.6”
Replacement DC Adaptor (MC4)	Q-DCC-2	DC adaptor to MC4 (max voltage 100 VDC)
Replacement DC Adaptor (UTX)	Q-DCC-5	DC adaptor to UTX (max voltage 100 VDC)

1. Qualified per UL subject 9703.

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-10)

SEALING CAPS
Sealing caps for unused aggregator and cable connections (Q-BA-CAP-10 and Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)

CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (Q-CLIP-100)

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

2020-06-26

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

BLUE RAVEN SOLAR

DRAWING NUMBER:
SS

Data Sheet
Enphase Networking

IQ Combiner 4/4C

X-IQ-AM1-240-4C
X2-IQ-AM1-240-4C (IEEE 1547:2018)

X-IQ-AM1-240-4
X2-IQ-AM1-240-4 (IEEE 1547:2018)

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

Smart

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

Simple

- Mounts on single stud with centered brackets
- Supports bottom, back and side conduit entry
- Allows up to four 2-pole branch circuits for 240VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed
- X2-IQ-AM1-240-4 and X2-IQ-AM1-240-4C comply with IEEE 1547:2018 (UL 1741-SB, 3rd Ed.)

LISTED

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

ENPHASE

IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 X-IQ-AM1-240-4 X2-IQ-AM1-240-4 (IEEE 1547:2018)	IQ Combiner 4 with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ± 0.5%) and consumption monitoring (± 2.5%). Includes a silver solar shield to match the IQ Battery and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C X-IQ-AM1-240-4C X2-IQ-AM1-240-4C (IEEE 1547:2018)	IQ Combiner 4C with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ± 0.5%) and consumption monitoring (± 2.5%). Includes Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Supported microinverters	IQ6, IQ7, and IQ8. (Do not mix IQ6/7 Microinverters with IQ8)
Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	 - Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
X-IQ-NA-HD-125A	Hold-down kit for Eaton circuit breaker with screws
Consumption monitoring CT (CT-200-SPLIT/CT-200-CLAMP)	A pair of 200A split core current transformers
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240VAC, 60 Hz
Eaton BR series busbar rating	125A
Max. continuous current rating	65A
Max. continuous current rating (input from PV/storage)	64A
Max. fuse/circuit rating (output)	90A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation/95A with IQ Gateway breaker included
IQ Gateway breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200A solid core pre-installed and wired to IQ Gateway
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 cm x 49.5 cm x 16.8 cm (14.75 in x 19.5 in x 6.63 in). Height is 53.5 cm (21.06 in) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40°C to +46°C (-40°F to 115°F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20A to 50A breaker inputs: 14 to 4 AWG copper conductors • 60A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors • Always follow local code requirements for conductor sizing.
Altitude	Up to 3,000 meters (9,842 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	IEEE 802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Mobile Connect cellular modem is required for all Enphase Energy System installations.
Ethernet	Optional, IEEE 802.3, Cat5E (or Cat6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	CA Rule 21 (UL 1741-SA) IEEE 1547:2018 - UL 1741-SB, 3rd Ed. (X2-IQ-AM1-240-4 and X2-IQ-AM1-240-4C) CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

BLUE RAVEN SOLAR

DRAWING NUMBER:
SS

Data Sheet
Enphase Networking

Enphase IQ Envoy

The **Enphase IQ Envoy**™ communications gateway delivers solar production and energy consumption data to Enphase Enlighten™ monitoring and analysis software for comprehensive, remote maintenance and management of the Enphase IQ System.

With integrated revenue grade production metering and optional consumption monitoring, Envoy IQ is the platform for total energy management and integrates with the Enphase Ensemble™and the Enphase IQ Battery™.

Smart

- Enables web-based monitoring and control
- Bidirectional communications for remote upgrades
- Supports power export limiting and zeroexport applications

Simple

- Easy system configuration using Enphase Installer Toolkit™ mobile app
- Flexible networking with Wi-Fi, Ethernet, or cellular

Reliable

- Designed for installation indoors or outdoors
- Five-year warranty

CERTIFIED

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

ENPHASE

Enphase IQ Envoy

MODEL NUMBERS	
Enphase IQ Envoy™ ENV-IQ-AM1-240	Enphase IQ Envoy communications gateway with integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%). Includes one 200A continuous rated production CT (current transformer).
ACCESORIES (Order Seperately)	
Enphase Mobile Connect™ CELLMODEM-M1 (4G based LTE-M/5-year data plan) CELLMODEM-M1-B (4G-based LTE-M1/5-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	Split-core consumption CTs enable whole home metering.
Ensemble Communications Kit 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 wireless communication with Encharge and Enpower.
POWER REQUIREMENTS	
Power requirements	120/240 VAC split-phase. Max 20 A overcurrent protection required.
Typical Power Consumption	5W
CAPACITY	
Number of microinverters polled	Up to 600
MECHANICAL DATA	
Dimensions (WxHxD)	21.3 x 12.6 x 4.5 cm (8.4” x 5” x 1.8”)
Weight	17.6 oz (498 g)
Ambient temperature range	-40° to 65° C (-40° to 149° F) -40° to 46° C (-40° to 115° F) if installed in an enclosure
Environmental rating	IP30. For installation indoors or in an NRTL-certified, NEMA type 3R enclosure.
Altitude	To 2000 meters (6,560 feet)
Production CT	- Limited to 200A of continuous current / 250A OCPD – 72kW AC - Internal aperture measures 19.36mm to support 250MCM THWN conductors (max) - UL2808 certified for revenue grade metering
Consumption CT	- For electrical services to 250A with parallel runs up to 500A - Internal aperture measures 0.84” x 0.96” (21.33mm x 24.38mm) to support 3/0 THWN conductor - UL2808 certified, for use at service entrance for services up to 250Vac
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Mobile	CELLMODEM-M1 (4G) or CELLMODEM-M1-B (4G). Not included. Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
COMPLIANCE	
Compliance	UL 61010-1 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2010, EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2 Metering: ANSI C12.20 accuracy class 0.5 (PV production only)

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

ENPHASE

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N. Research Way
Orem, UT 84097
800.377.4480
WWW.BLUERAVENSOLAR.COM

NABCEP CERTIFIED
PV INSTALLATION PROFESSIONAL
Scott Gurney
#PV-011719-015866

CONTRACTOR:
BRS FIELD OPS
385-498-6700

DRAWING BY:
PLOT DATE:
PROJECT NUMBER:
SHEET NAME:
SPEC SHEET
REVISION: ----
PAGE NUMBER: SS

Single Meter Sockets - Without Bypass

125 & 200 Amp

011 (closed)

U204 (open)

Application
- Single meter position
- Receive ANSI C12.10 watthour meters
- Surface or flush mount (see chart)

Construction
- Ring type
- NEMA Type 3R
- ANSI 61 gray painted finish
- Aluminum snap ring included

Standards
- UL 414 Listed
- ANSI C12.7

Accessories
- 5th Jaw Kit - see chart
- AW Hub

Part/UPC Number	Catalog Number	Amp Rating	Jaws	Service Type	Access	Connections			Overall Dimensions			Top Provision	Knockout Layout	5th Jaw Kit
						Line	Load	Neutral	Height	Width	Depth			
78205142000	**011**	125	4	1Ø/3W	OH/UG	#8 - 2/0	#8 - 2/0	#8 - 2/0	11"	8¼"	3⅝"	AW Hub	Fig.5	MSR5TK
78205142040	**011 F**	125	4	1Ø/3W	OH/UG	#14 - 2/0	#14 - 2/0	#14 - 2/0	12"	8"	4⅝"	2" max KO	Fig. 1	50365
78205142045	**011 MS73**	125	4	1Ø/3W	OH/UG	#8 - 2/0	#8 - 2/0	#8 - 2/0	11"	8¼"	3⅝"	AW Hub	Fig. 5	MSR5TK
78205142050	**011 SF**	125	4	1Ø/3W	OH/UG	#14 - 2/0	#14 - 2/0	#14 - 2/0	12"	8"	4⅝"	None	None	50365
78205102315	**011 SS**	125	4	1Ø/3W	OH/UG	#14 - 2/0	#14 - 2/0	#14 - 2/0	12"	8"	4⅝"	None	None	50365
79903882585	**011 SS6**	125	4	1Ø/3W	OH/UG	#14 - 2/0	#14 - 2/0	#14 - 2/0	12"	8"	4⅝"	None	None	50365
79903882586	**011 MS25A**	125	4	1Ø/3W	OH/UG	#14 - 2/0	#14 - 2/0	#14 - 2/0	12"	8"	4⅝"	AW Hub	Fig. 1	50365
79903856283	**011 MS25**	125	4	1Ø/3W	OH/UG	#14 - 2/0	#14 - 2/0	#14 - 2/0	12"	8"	4⅝"	AW Hub	Fig. 1	50365
79903868944	**011 MS-18**	125	4	1Ø/3W	OH/UG	#8 - 2/0	#8 - 2/0	#8 - 2/0	11"	8¼"	3⅝"	AW Hub	Fig.5	MSR5TK
79903878861	**011 SRP**	125	4	1Ø/3W	OH/UG	#8 - 2/0	#8 - 2/0	#8 - 2/0	11"	8¼"	3⅝"	AW Hub	Fig.5	MSR5TK
79903878953	**011 SRP MS18**	125	4	1Ø/3W	OH/UG	#8 - 2/0	#8 - 2/0	#8 - 2/0	11"	8¼"	3⅝"	AW Hub	Fig.5	MSR5TK
78205144030	**927**	100	7	3Ø/4W	OH/UG	#14 - 1/0	#14 - 2/0	#14 - 2/0	17"	8"	4⅝"	AW Hub	Fig. 1	50365
78205156000	**204**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	4⅝"	AW Hub	Fig. 2	50365
78205156020	**204 F**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	6"	2" max KO	Fig. 2	50365
78205108796	**204 SS**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	6"	None	None	50365
79903882318	**U204 PSE**	200	4	1Ø/3W	UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	None	Fig. 7	50365
78205122640	**U204 F SS**	200	4	1Ø/3W	UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	None	None	50365
78205134301	**U204 SS**	200	4	1Ø/3W	UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	None	None	50365
78205153193	**U204 MS73 SS**	200	4	1Ø/3W	UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	None	None	50365
78205156080	**U204 MS21 SS**	200	4	1Ø/3W	UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	None	None	50365
78205156030	**204 F MS73**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	6"	2" max KO	Fig. 2	50365
78205156040	**204 MS68**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	4⅝"	AW / 2" Hub	Fig. 2	50365
78205156035	**204 MS68A**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	4⅝"	AW / 2" Hub	Fig. 2	50365
78205108490	**204 MS73**	200	4	1Ø/3W	OH	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	8"	4⅝"	AW Hub	Fig. 2	50365
78205156005	**U204**	200	4	1Ø/3W	UG	#6 - 350MCM	#6 - 350MCM	#6 - 350MCM	15⅛"	11¼"	4½"	None	Fig. 6	MSR5TK
78205156045	**U204 F**	200	4	1Ø/3W	OH/UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	(2) 2" max KO	Fig. 3	50365
78205156060	**U204 MS21**	200	4	1Ø/3W	OH/UG	#6 - 350MCM	#6 - 350MCM	#6 - 350MCM	15⅛"	11¼"	4½"	AW / Cap	Fig. 6	MSR5TK
78205156060	**U204 F MS73**	200	4	1Ø/3W	UG	#6 - 250MCM	#6 - 350MCM	#6 - 350MCM	15"	12"	6"	None	Fig. 3	50365
78205156070	**U204 MS73**	200	4	1Ø/3W	OH/UG	#6 - 350MCM	#6 - 350MCM	#6 - 350MCM	15⅛"	11¼"	4½"	(2) 2" max KO	Fig. 6	MSR5TK
78205156140	**U207**	200	7	3Ø/4W	OH/UG	#6 - 250MCM	#6 - 250MCM	#6 - 250MCM	18"	12"	5"	AW Hub	Fig. 4	50365
78205156170	**U207 F**	200	7	3Ø/4W	OH/UG	#6 - 250MCM	#6 - 250MCM	#6 - 250MCM	18"	12"	5"	2½" max KO	Fig. 4	50365
78205156180	**U207 MS73**	200	7	3Ø/4W	OH/UG	#6 - 250MCM	#6 - 250MCM	#6 - 250MCM	18"	12"	5"	AW Hub	Fig. 4	50365

Data subject to change without notice. Consult local utility for area acceptance. All dimensions are in inches.

Single Meter Sockets - Without Bypass

125 & 200 Amp

Single Meter Sockets Without Bypass

Style #	Suffixes
011	**F** - Flush Mount
(U) 207	**MS18** - Lexan Cover
(U) 204	**MS21** - Top Hub Provision
(U) 207	**MS25** - Solar Ready
(U) 207	**MS25A** - MS25 + MS18
927	**MS68** - 2" Conduit Hub
	MS68A - MS73 + MS68
	MS73 - AL Screw Type Ring
	SF - Semi Flush Mount
	SS - Stainless Steel 304 *
	SS6 - Stainless Steel 316 *

Knockouts - Conduit Sizes

1W = ¼"
1A = ½"
2A = ½" - ¼"
4D = 1¼" - 1" - ¾" - ½"
4E = 1½" - 1¼" - 1" - ¾"
4F = 2" - 1½" - 1¼" - 1"
4G = 2½" - 2" - 1½" - 1¼"
4H - 3" - 2½" - 2" - 1½"
6G = 2½" - 2" - 1½" - 1¼" - 1" - ¾"
Top Provision = See Chart

* Knockouts and top provisions are not available in Stainless Steel (SS) finish

Knockout Layouts

Fig. 1

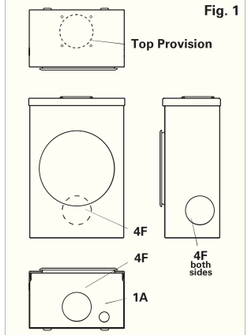


Fig. 2

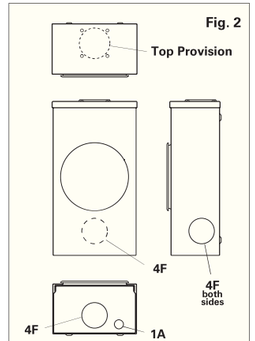


Fig. 3

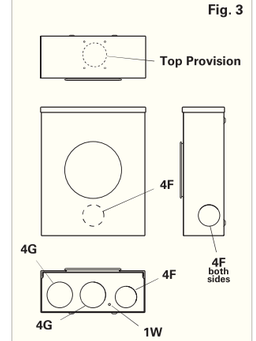


Fig. 4

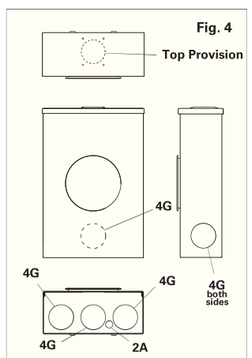


Fig. 5

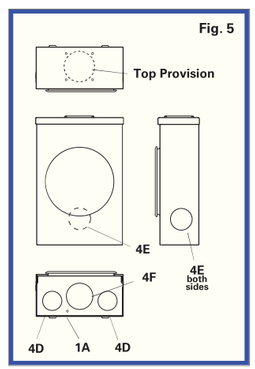


Fig. 6

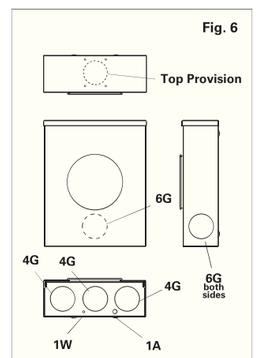
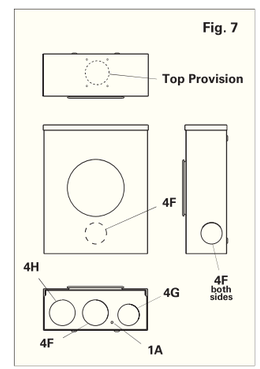


Fig. 7



Data subject to change without notice. Consult local utility for area acceptance. All dimensions are in inches.

BLUE RAVEN SOLAR
1403 N. Research Way
Orem, UT 84097
800.377.4480
WWW.BLUERAVENSOLAR.COM

NABCEP CERTIFIED
PV INSTALLATION PROFESSIONAL
Scott Gurney
#PV-011719-015866

CONTRACTOR:
BRS FIELD OPS
385-498-6700

DRAWING BY:

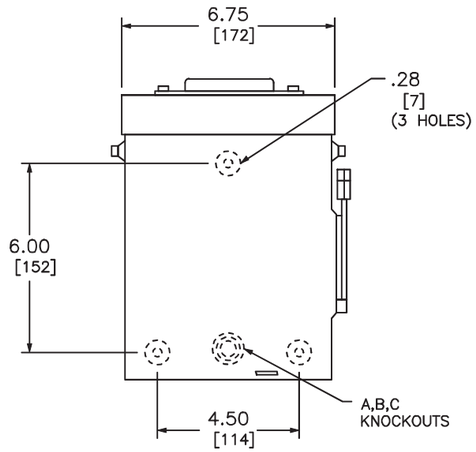
PLOT DATE:

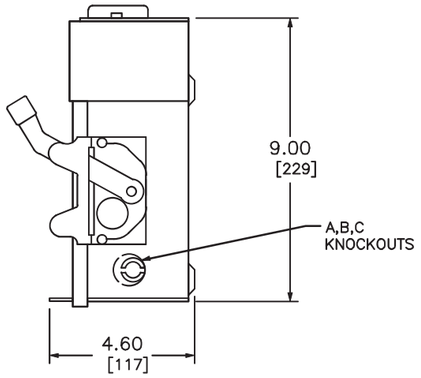
PROJECT NUMBER:

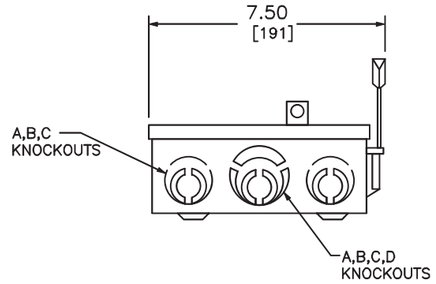
SHEET NAME:
SPEC SHEET

REVISION: ----

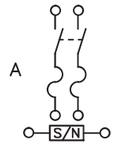
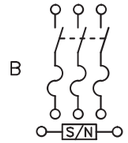
PAGE NUMBER: SS







NEMA TYPE 3R
ILLUSTRATED

WIRING DIAGRAMS	
FUSIBLE	NOT FUSIBLE
A 	C 
B 	D 

TERMINAL LUGS ‡			
AMPERES	MAX. WIRE	MIN. WIRE	TYPE
30	# 6 AWG	# 12 AWG	AL
	# 6 AWG	# 14 AWG	CU

KNOCKOUTS				
SYMBOL	A	B	C	D
CONDUIT SIZE	.50	.75	1	1.25

DUAL DIMENSIONS: INCHES / MILLIMETERS

CATALOG NUMBER	VOTAGE RATINGS	WIRING DIAG.	HORSEPOWER RATINGS					
			120VAC		240VAC			
			STD.	MAX.	STD.		MAX.	
			1 Ø	1 Ø	1 Ø	3 Ø	1 Ø	3 Ø
D211NRB●■	240VAC	A	1/2	2	1 1/2	–	3	–
D221NRB	240VAC	A	–	–	1 1/2	3*	3	7 1/2*
D321NRB	240VAC	B	–	–	1 1/2	3	3	7 1/2
DU221RB	240VAC	C	–	–	–	–	3	–
DU321RB	240VAC	D	–	–	–	–	3	7 1/2

NOTES:
FINISH – GRAY BAKED ENAMEL ELECTRODEPOSITIED OVER CLEANED PHOSPHATIZED STEEL.
UL LISTED – FILE E–2875
ALL NEUTRALS – INSULATED GROUNDABLE
SUITABLE FOR USE AS SERVICE EQUIPMENT
TOP OF NEMA TYPE 3R SWITCHES HAVE PROVISIONS FOR MAXIMUM 2 1/2" BOLT–ON HUB.
SHORT CIRCUIT CURRENT RATINGS:
● 10,000 AMPERES.
10,000 AMPERES WHEN USED WITH OR PROTECTED BY CLASS H OR K FUSES.
100,000 AMPERES WITH CLASS R FUSES.
* FOR CORNER GROUNDED DELTA SYSTEMS.
■ PLUG FUSES
‡ LUGS SUITABLE FOR 60°C OR 75° CONDUCTORS.

GENERAL DUTY SAFETY SWITCHES
VISIBLE BLADE TYPE
30 AMPERE
ENCLOSURE – NEMA TYPE 3R RAINPROOF

SQUARE D
by Schneider Electric

DWG# NO. 1852

FEBRUARY 2014

REF DWG #1852

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR
1403 N. Research Way
Orem, UT 84097
800.377.4480
WWW.BLUERAVENSOLAR.COM

NABCEP CERTIFIED
PV INSTALLATION PROFESSIONAL
Scott Gurney
#PV-011719-015866

CONTRACTOR:
BRS FIELD OPS
385-498-6700

DRAWING BY:

PLOT DATE:

PROJECT NUMBER:

SHEET NAME:
SPEC SHEET

REVISION: ----

PAGE NUMBER: SS

EZ SOLAR
making solar simple.

JB-1.2
Specification Sheet
PV Junction Box for Composition/Asphalt Shingle Roofs

EZ SOLAR
making solar simple.

PHONE: 385-202-4150
WWW.EZSOLARPRODUCTS.COM

A. System Specifications and Ratings

- Maximum Voltage: 1,000 Volts
- Maximum Current: 80 Amps
- Allowable Wire: 14 AWG – 6 AWG
- Spacing: Please maintain a spacing of at least ½" between uninsulated live parts and fittings for conduit, armored cable, and uninsulated live parts of opposite polarity.
- Enclosure Rating: Type 3R
- Roof Slope Range: 2.5 – 12:12
- Max Side Wall Fitting Size: 1"
- Max Floor Pass-Through Fitting Size: 1"
- Ambient Operating Conditions: (-35°C) - (+75°C)
- Compliance:
  - JB-1.2: UL1741
  - Approved wire connectors: must conform to UL1741
- System Marking: **Interek Symbol and File #5019942**
- Periodic Re-inspections: If re-inspections yield loose components, loose fasteners, or any corrosion between components, components that are found to be affected are to be replaced immediately.

Table 1: Typical Wire Size, Torque Loads and Ratings

	1 Conductor	2 Conductor	Torque				
			Type	NM	Inch Lbs	Voltage	Current
ABB ZS6 terminal block	10-24 awg	16-24 awg	Sol/Str	0.5-0.7	6.2-8.85	600V	30 amp
ABB ZS10 terminal block	6-24 awg	12-20 awg	Sol/Str	1.0-1.6	8.85-14.16	600V	40 amp
ABB ZS16 terminal bock	4-24 awg	10-20 awg	Sol/Str	1.6-2.4	14.6-21.24	600V	60 amp
ABB M6/8 terminal block	8-22 awg		Sol/Str	.08-1	8.85	600V	50 amp
Ideal 452 Red WING-NUT Wire Connector	8-18 awg		Sol/Str	Self Torque	Self Torque	600V	
Ideal 451 Yellow WING-NUT Wire Connector	10-18 awg		Sol/Str	Self Torque	Self Torque	600V	
Ideal, In-Sure Push-In Connector Part #39	10-14 awg		Sol/Str	Self Torque	Self Torque	600V	
WAGO, 2204-1201	10-20 awg	16-24 awg	Sol/Str	Self Torque	Self Torque	600V	30 amp
WAGO, 221-612	10-20 awg	10-24 awg	Sol/Str	Self Torque	Self Torque	600V	30 amp
Dottie DRC75	6-12 awg		Sol/Str	Snap-In	Snap-In		
ESP NG-53	4 6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
ESP NG-717	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		
Brumall 4-5,3	4-6 awg		Sol/Str		45	2000V	
	10-14 awg		Sol/Str		35		

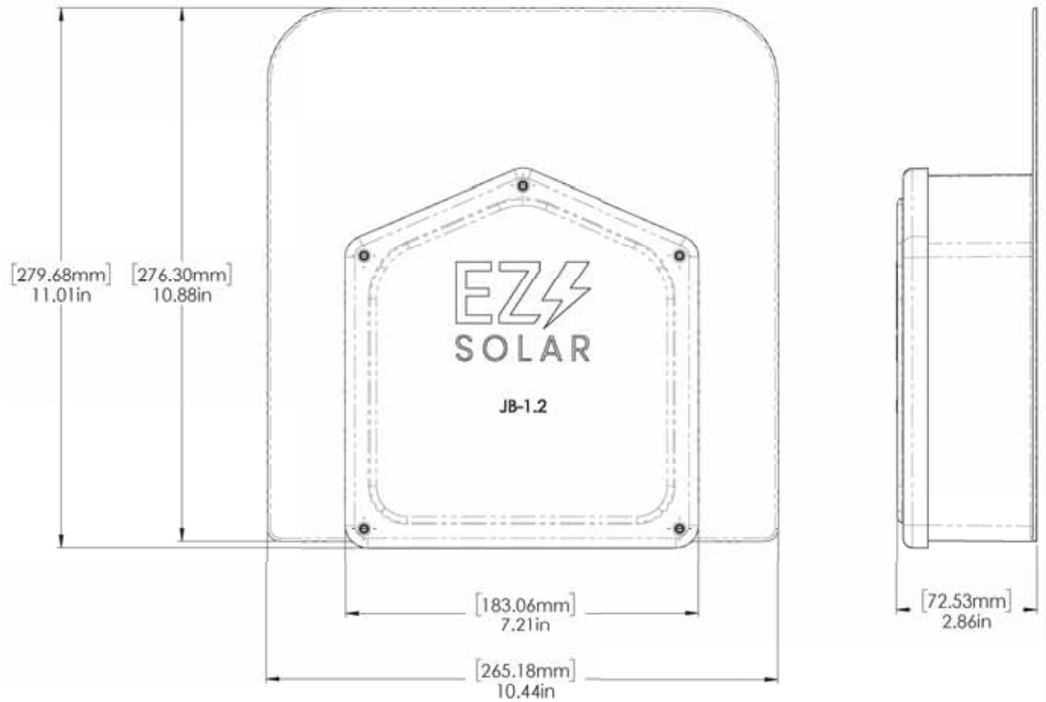
Table 2: Minimum wire-bending space for conductors through a wall opposite terminals in mm (inches)

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

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	JB-1.2 BODY	POLYCARBONATE WITH UV INHIBITORS	1
2	JB-1.2 LID	POLYCARBONATE WITH UV INHIBITORS	1
3	#10 X 1-1/4" PHILLIPS PAN HEAD SCREW		6
4	#8 X 3/4" PHILLIPS PAN HEAD SCREW		6

SIZE	DWG. NO.	REV
B	JB-1.2	
SCALE: 1:2	WEIGHT: 1.45 LBS	SHEET 1 OF 3

TORQUE SPECIFICATION:	15-20 LBS
CERTIFICATION:	UL STANDARD 1741, NEMA 3R
WEIGHT:	1.45 LBS



BLUE RAVEN SOLAR
1403 N. Research Way
Orem, UT 84097
800.377.4480
WWW.BLUERAVENSOLAR.COM

NABCEP CERTIFIED
PV INSTALLATION PROFESSIONAL
Scott Gurney
#PV-011719-015866

CONTRACTOR:
BRS FIELD OPS
385-498-6700

DRAWING BY:

PLOT DATE:

PROJECT NUMBER:

SHEET NAME:
SPEC SHEET

REVISION:	PAGE NUMBER:
----	SS

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

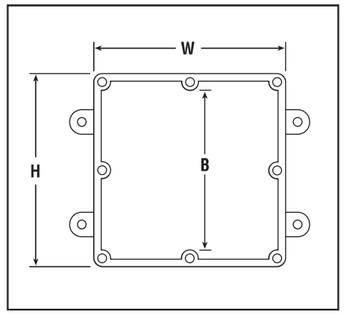
Molded Nonmetallic Junction Boxes 6P Rated

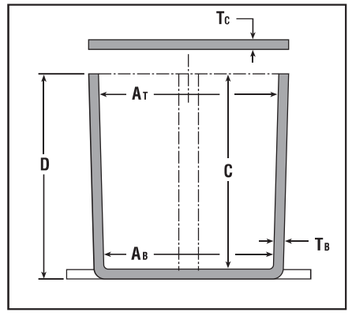
Except where noted by †

UL LISTED E42728

It's another first from Carlon® - the first nonmetallic junction boxes UL Listed with a NEMA 6P rating per Section 314.29, Exception of the National Electrical Code. Manufactured from PVC or PPO thermoplastic molding compound and featuring foam-in-place gasketed lids attached with stainless steel screws, these rugged enclosures offer all the corrosion resistance and physical properties you need for direct burial applications.

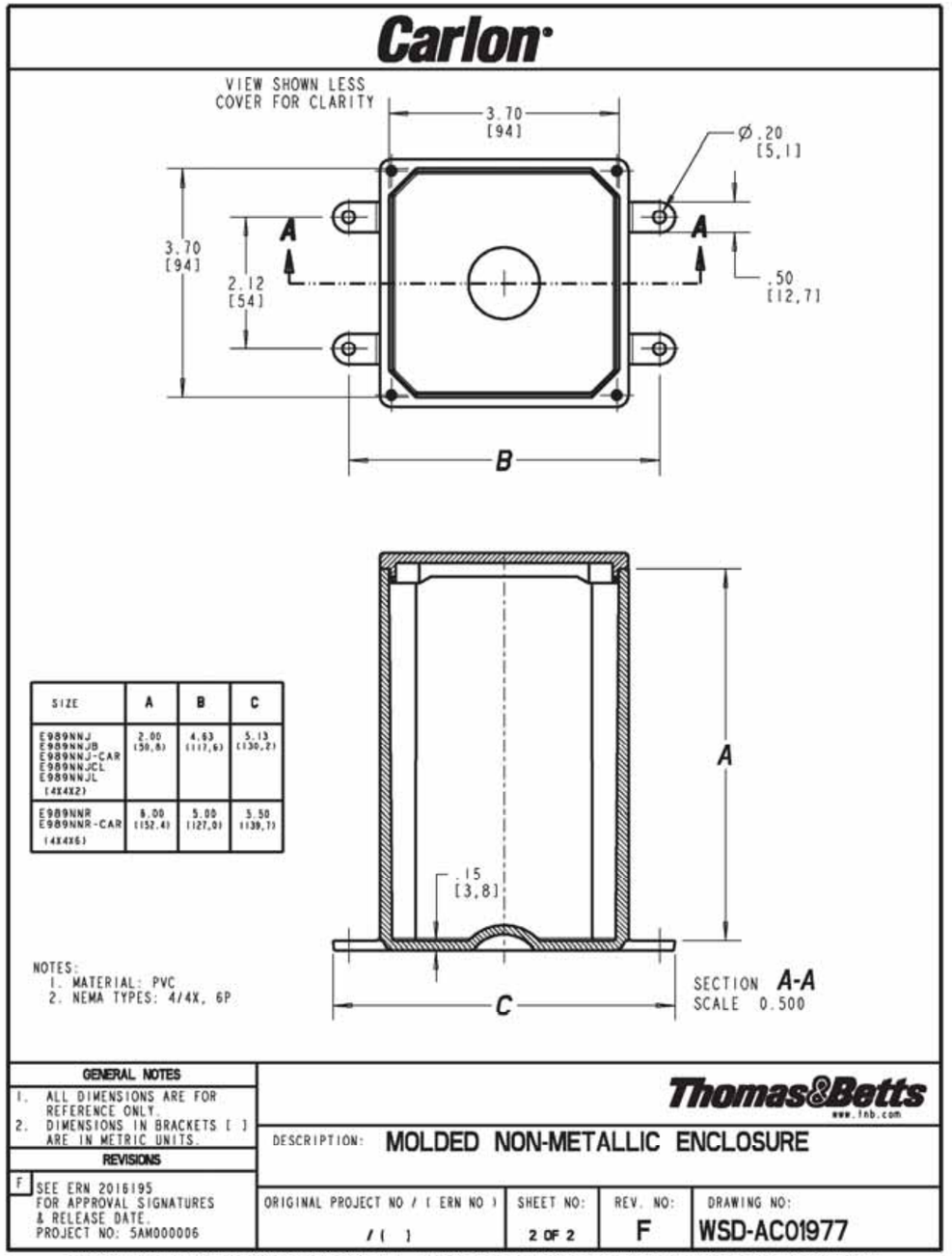
Type 6P enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against contact with enclosed equipment, falling dirt, hose-directed water, entry of water during prolonged submersion at a limited depth, and external ice formation.





- All Carlon Junction Boxes are UL Listed and maintain a minimum of a NEMA Type 4/4x Rating.
- Parts numbers with an asterisk (*) are UL Listed and maintain a NEMA Type 6P Rating and Type 4/4X Rating.

Part No.	Size in Inches H x W x D	Std. Ctn. Qty.	Min Ar	Min. AB	Min. B	Min. C	Ta Typical	Tc Typical	Material PVC	Material Thermo-plastic	Std. Ctn. Wt. (Lbs.)
E989NNJ-CAR*	4 x 4 x 2	5	3 11/16	3 5/8	N/A	2	.160	.155	X		3
E987N-CAR*	4 x 4 x 4	5	3 11/16	3 1/2	N/A	4	.160	.155	X		4
†E989NNR-CAR*	4 x 4 x 6	4	3 11/16	3 3/8	N/A	6	.160	.200	X		5
E989PPJ-CAR*	5 x 5 x 2	4	4 11/16	4 1/2	N/A	2	.110	.150		X	3
E987R-CAR*	6 x 6 x 4	2	6	5 5/8	N/A	4	.190	.190		X	3
E989RRR-UPC*	6 x 6 x 6	8	5 5/8	5 3/8	N/A	6	.160	.150		X	14
E989N-CAR	8 x 8 x 4	1	8	8	N/A	4	.185	.190		X	2
E989SSX-UPC	8 x 8 x 7	2	7 21/32	7 5/16	N/A	7	.160	.150		X	6
E989UUN	12 x 12 x 4	3	11 5/8	11 1/2	11 1/8	4	.160	.150		X	12
E989R-UPC	12 x 12 x 6	2	11 15/16	11 7/8	11 7/16	6	.265	.185		X	10



SIZE	A	B	C
E989NNJ E989NNJB E989NNJ-CAR E989NNJCL E989NNJL (4X4X2)	2.00 (50,8)	4.63 (117,6)	5.13 (130,2)
E989NNR E989NNR-CAR (4X4X6)	6.00 (152,4)	5.00 (127,0)	3.50 (139,7)

BLUE RAVEN SOLAR
1403 N. Research Way
Orem, UT 84097
800.377.4480
WWW.BLUERAVENSOLAR.COM

NABCEP CERTIFIED
PV INSTALLATION PROFESSIONAL
Scott Gurney
#PV-011719-015866

CONTRACTOR:
BRS FIELD OPS
385-498-6700

DRAWING BY:

PLOT DATE:

PROJECT NUMBER:

SHEET NAME:
SPEC SHEET

REVISION: ----

PAGE NUMBER: SS

"Stay Connected" with HEYCO® Solar Power Components

a PennEngineering® Company

Heyco®-Tite Liquid Tight Cordgrips for Enphase Q Cables

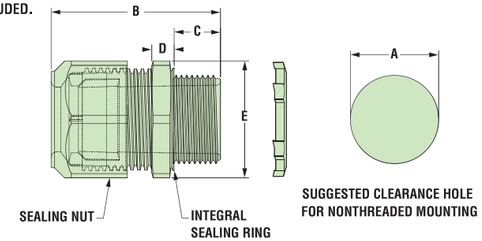
Straight-Thru, NPT Hubs with Integral Sealing Ring

The Ultimate in Liquid Tight Strain Relief Protection

ALL NEW PRODUCT!

GLAND CONFIGURATION Conductors Type *	Size mm.	No.	PART NO. Black	DESCRIPTION	UL/CSA	PART DIMENSIONS A Clearance Hole Dia. in.	mm.	B Max. O.A. Length in.	mm.	C Thread Length in.	mm.	D Wrenching Thickness in.	mm.	E Nut Flat Size in.	mm.
Oval Gland															
Q Cable	6,1 x 9,7	1	**M3231GCZ**	LTCG 1/2 6.1x9.7MM	UL/CSA	.875	22,2	1.70	43,2	.61	15,5	.21	5.3	.98	24,9
Break-Thru Skinned Over Gland															
Q Cables plus Ground	6,1 x 9,7 3,3	2 1	**M3234GDA-SM**	SMCG 3/4 2-6.1x9.7MM 1-3.3MM	UL/CSA	1.040	26,4	2.00	50,8	.62	15,7	.25	6.4	1.30	33,0

Metal Locknuts INCLUDED.



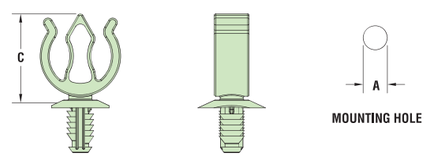
Material	Nylon 6/6 with TPE Sealing Gland
Certifications	UL Listed under Underwriters' Laboratories File E504900
	CSA Certified by the Canadian Standards Association File 93876
Flammability Rating	94V-2
Temperature Range	Static -40°F (-40°C) to 239°F (115°C) Dynamic -4°F (-20°C) to 212°F (100°C)
IP Rating	IP 68

- Two new cordgrips now accommodate the Enphase Q Cable – M3231GCZ (1/2˝ NPT) and M3234GDA-SM (3/4˝ NPT).
- The 1/2˝ version provides liquid tight entry for one Enphase Q Cable – .24 x .38˝ (6,1 x 9,7 mm).
- The 3/4˝ version provides liquid tight entry for up to two Enphase Q Cables – .24 x .38" (6,1 x 9,7 mm) and an additional .130" (3,3 mm) dia. hole for a #8 solid grounding cable.
- The 3/4˝ version utilizes our skinned-over technology so any unused holes will retain a liquid tight seal.
- Rated for use with DG Cable.

Heyco® Helios® UVX Clip – Blind Mount

ALL NEW PRODUCT!

PANEL THICKNESS RANGE Minimum in.	mm.	Maximum in.	mm.	WIRE DIAMETER RANGE 1-2 Wires	PART NO.	DESCRIPTION	MOUNTING HOLE DIA. A in.	mm.	OVERALL HEIGHT C in.	mm.
1-2 Wires										
.028	0,7	.250	6,4	.23 (5,8 mm) - .32 (8,0 mm) each cable	**S6520** **S6560**	Helios UVX Clip 100 Pack Helios UVX Clip Bulk	.260	6,6	.96	24,4



Material	Nylon 6/6 with extended UV Capabilities
Flammability Rating	94V-2
Temperature Range	Dynamic -4°F (-20°C) to 185°F (85°C)

- The jersey pine tree mounting style installs easily with superior holding power.
- UVX nylon protects from corrosion due to outdoor exposure.
- Installs into .260˝ (6,6 mm) mounting hole.
- Holds up to 2 cables between .230 - .315˝ (5,8 - 8,0 mm) each.
- Cables install with fingertip pressure.
- Molded from our robust UVX nylon 6/6 with extended UV capabilities for our Solar 20 Year Warranty.

1-800-526-4182 • 732-286-1800 (NJ) • FAX: 732-244-8843 • www.heyco.com

DRAWING NUMBER:
SS

NXT UMOUNT™

UNIRAC
BETTER SOLAR STARTS HERE

UNIRAC 25 YEAR FULL-SYSTEM WARRANTY

DISCOVER YOUR **NXT** UMOUNT™

The culmination of over two decades of experience. Thoughtful design, rigorous engineering, world-class support, and a reliable supply chain are the foundation of what makes us confident that NXT UMOUNT™ is the NXT Level of DESIGN, SIMPLICITY, and VALUE.

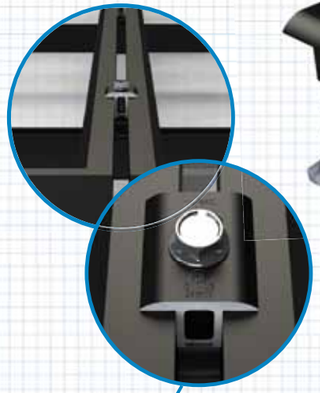
NEW NXT UMOUNT™ CLAMP

DARK: SHCLMPD2
MILL: SHCLMPM2

Clicks into rail anywhere (even where there are cables!) Self-standing clamp with spring combines as both mid and end clamp. Clamps 30-40 mm modules

1/2 inch module spacing for efficiency.

Unirac-quality bonding that works both as mid and end clamps.



NXT UMOUNT™ COMBO CLAMP

DARK: CCLAMPD1
MILL: CCLAMPM1

Clicks into rail anywhere (even where there are cables!) Self-standing clamp with spring combines as both mid and end clamp. Clamps 30-40 mm modules

1/2 inch module spacing for efficiency.

Unirac-quality bonding that works both as mid and end clamps.

NXT UMOUNT™ CAP KIT

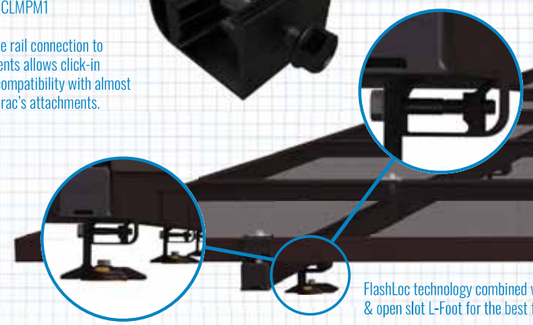
ENDCAPD1

Make the install look clean with the end cap kit designed to complement the module end clamp and rail ends.

STRONGHOLD™ RAIL CLAMP

DARK: SHCLMPD1
MILL: SHCLMPM1

Adaptable rail connection to attachments allows click-in feature compatibility with almost all of Unirac's attachments.



FlashLoc technology combined with new features: click-in rail & open slot L-Foot for the best flash-less install experience.

STRONGHOLD™ ATTACHMENT KIT

DARK: SHCPKTD1
MILL: SHCPKTM1

Rail clicks into the clamps attached to the STRONGHOLD™ base. Open slot in L-foot allows drop-in rail clamp.

Alternative attachment options:

SOLARHOOKS

All varieties

FLASHKIT PRO

DARK: 004055D
MILL: 004055M

FLASHLOC™ DUO

DARK: 004275D
MILL: 004275M

BUTYL™ ATTACHMENT KIT

DARK: SBUTYLD1
MILL: SBUTYLM1

BUTYL™ PADS

XTRABUTL-SH

DIRECT-TO-DECK SCREWS

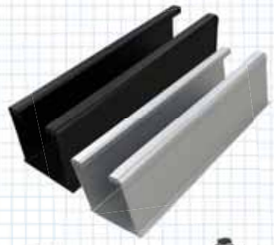
003250W

The pre-applied butyl pad removes the need for additional flashing. Just peel the liner, place the attachment, and fasten it to the roof. Butyl conforms to the screws and roof for a robust, dependable seal with no extra work!

NXT UMOUNT™ RAIL

DARK: 168RLD1
MILL: 168RLM1

Strong, lightweight open channel rail with invisible, easy, unfailing and integrated wire management system.

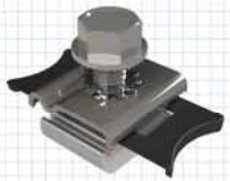


NXT UMOUNT™ RAIL SPLICE

RLSPLCM1

Structural internal splice that does not interfere with roof connection nor module connection.
Pre-assembled thread cutting bolts.

WIRE MANAGEMENT OPTONS



NXT UMOUNT™ MLPE & LUG CLAMP

LUGMLPE1

Works as either MLPE Mount or Grounding Lug connection to the rail. Why source two parts when one can do the job?

NXT UMOUNT™ WIRE MANAGEMENT CLIP

WRMCLPD1

Aesthetic, yet functional accessory that works to help installers keep wires inside the rail. No zip-ties required. Optional zip tie loop for extra wire management capabilities!

NXT UMOUNT™ N/S WIRE MGMT CLIP

WRMCNSD1

An elegant solution to help installers get to the home run. The same hardware works to provide both easy entry to rail and adjustability for cable thickness.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL 505-242-6411

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

BLUE RAVEN SOLAR

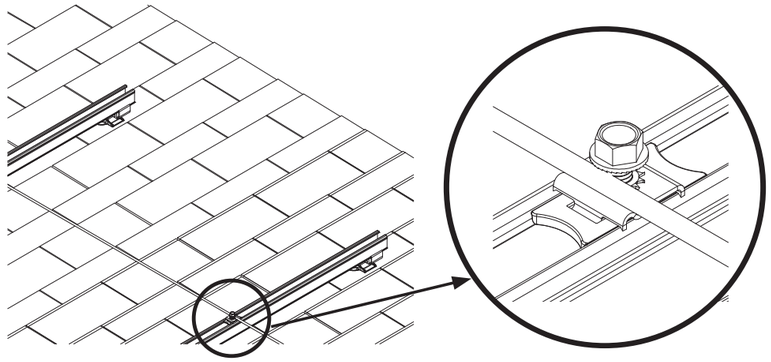
DRAWING NUMBER:
SS

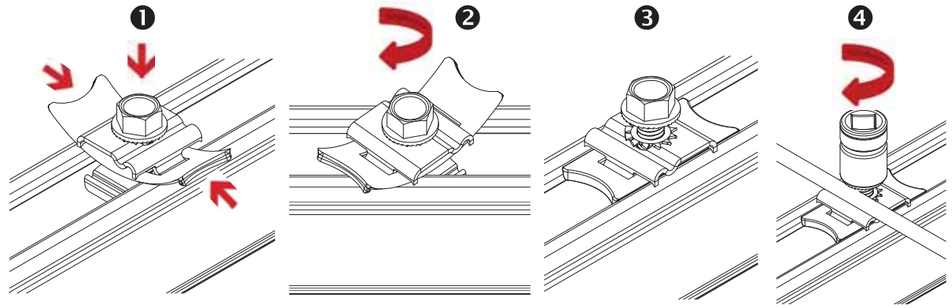
NXT UMOUNT™

SYSTEM GROUNDING

INSTALLATION GUIDE

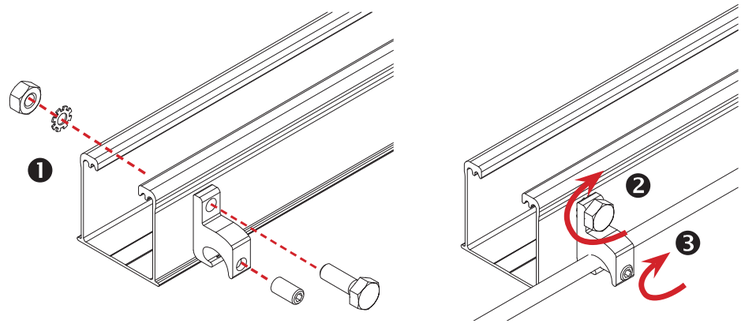
BLUE RAVEN SOLAR





SYSTEM GROUNDING: Rails can be bonded using an NXT UMOUNT MLPE & Lug Clamp, GROUND WEEBLUG #1 or ILSCO LAY IN LUG (GBL4DBT). At least one rail per row of modules in an array must be bonded to electrical ground. Each additional row of modules must be grounded with at least one rail lug per row or with a row-to-row bonding devise listed here.

Note: See Page 5 for additional lugs required for expansion joints.



ALTERNATE SYSTEM GROUNDING WITH ILSCO LAY-IN LUG - UNIRAC P/N 008009P: Alternate Grounding Lug. Drill hole in rail 7/32" in diameter, deburr hole and bolt through one wall of rail.

BOLT TORQUE VALUE: 5 ft lbs.
TERMINAL TORQUE: 4-6 AWG: 35in-lbs, 8 AWG: 25 in-lbs.

⚠ WARNING

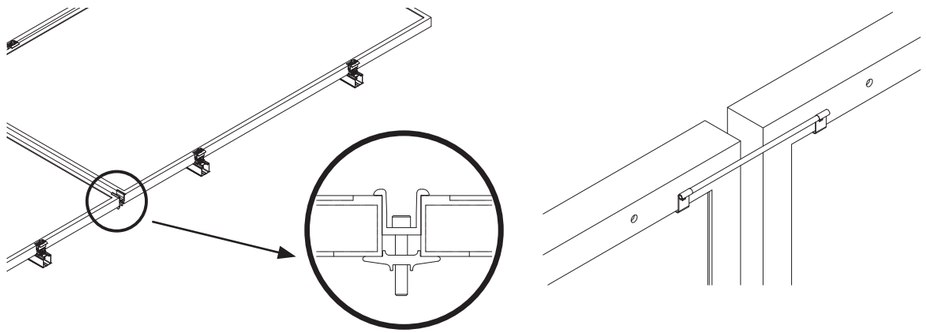
Ensure Copper does contact Aluminum to avoid corrosion.

SYSTEM GROUNDING WITH MLPE & LUG CLAMP: Insert the rail nut profile in the opening by lifting the flaps of the plastic clip. Rotate the clamp 90 deg and release the flaps to get flush with rail. Ensure that the rail nut is engaged in the rail profile. Align the ground wire in the depression of the washer. Tighten bolt.

TORQUE VALUE: 6-8 AWG SOLID COPPER: 12 ft lbs.

⚠ CAUTION

MLPE & Lug Clamp cannot be used to simultaneously mount a MLPE and ground wire.



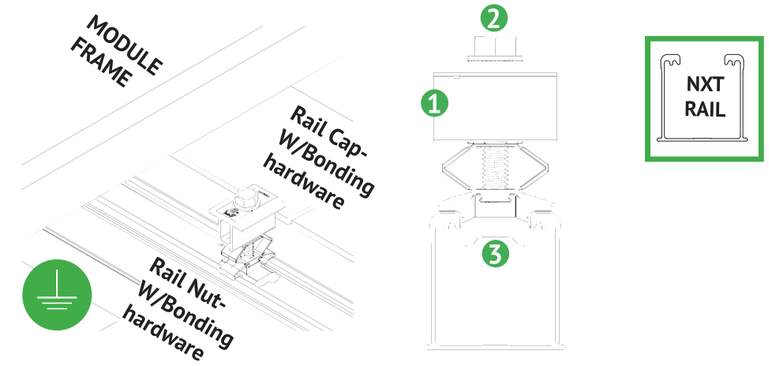
ALTERNATE ROW GROUNDING WITH N/S BONDING CLAMP:
Insert clamp between module rows and tighten bolt.

TORQUE VALUE: 20 ft-lbs.

ALTERNATE ROW GROUNDING WITH N/S BONDING CLIP:
Fully seat bonding clip on each module flange to provide bond across N/S module gap.

DRAWING TITLE:
SPEC SHEET

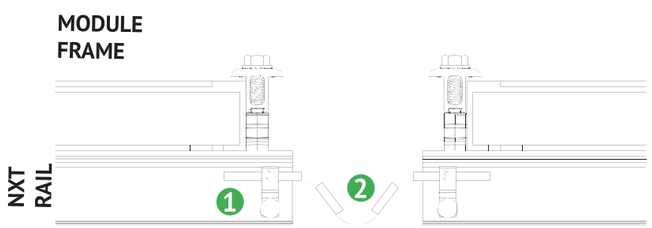
DRAWING NUMBER:
SS



BONDING COMBO MID-END CLAMP ASSEMBLY

1. Aluminum combo mid-end clamp cap with stainless steel bonding pins that pierce module frame anodization to bond module to module through clamp
2. Stainless steel bolt bonds aluminum clamp to stainless steel Hex bolt
3. Aluminum combo mid-end clamp rail nut with stainless steel bonding pins that pierce rail anodization to bond module to module through clamp

NOTE: See Page 19 for installation details.



BONDING BETWEEN THERMAL BREAKS

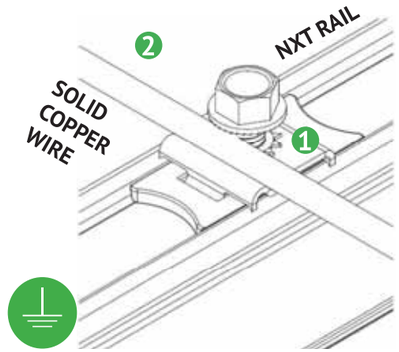
1. Lug is connected at the end of each thermal break to the rail.
2. Solid copper wire is connected across the gap to bond the two ends.

NOTE: See Page 5 for installation details.

BONDING RAIL SPLICE

1. Bonding Hardware creates bond between Splice bar and each rail section.
2. Aluminum splice bar spans across rail gap to create rail to rail bond. Rail on at least one side of splice will be grounded.

NOTE:
- **See Page 15 for installation details**
- **Splice certified for single-use only**



RACK SYSTEM GROUNDING

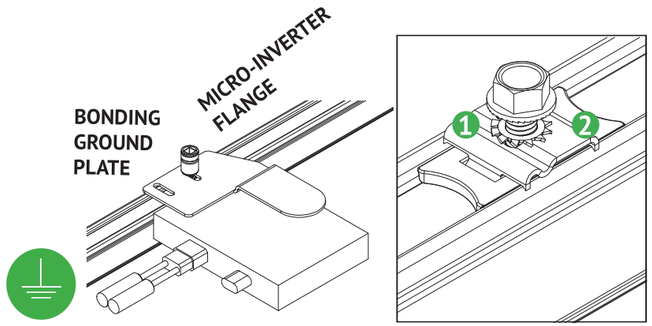
1. Tabs on the stainless-steel washer pierce anodization on the rail to bond rail to ground wire.
2. Solid copper wire connected to lug is routed to provide final system ground connection.

NOTE: See Page 16 for installation details and alternate racking system grounding methods.

BLUE RAVEN SOLAR

DRAWING TITLE:
SPEC SHEET

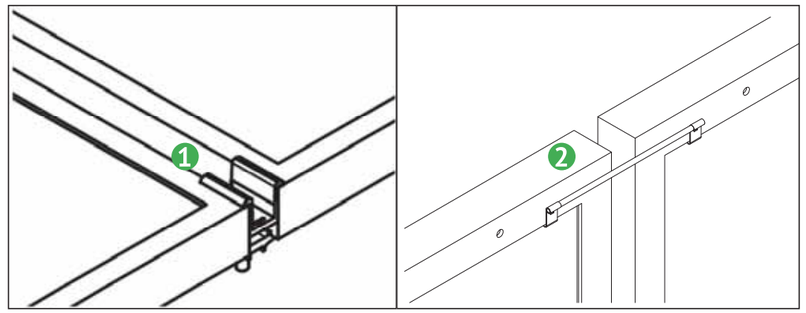
DRAWING NUMBER:
SS



BONDING MICROINVERTER MOUNT

1. Stainless steel Tooth lock washer beneath the MLPE flange remove anodization on the MLPE and bonds.
2. Tabs on the stainless steel washer remove anodization on the rail and bonds.

NOTE: See Page 17 for installation details



ALTERNATE ROW-TO-ROW BONDING PATHS

1. Row-to-row module bonding is accomplished with bonding clamp with 2 integral bonding pins.
2. Alternate method by connecting clips on either module to complete the bonding path.

NOTE:
- See Page 16 for installation details
- Row-to-row module bonding certified for single-use only

⚠ CAUTION

- **If loose components or loose fasteners are found during periodic inspection, re-tighten immediately.**
- **Any components showing signs of corrosion or damage that compromise safety shall be replaced immediately.**

BLUE RAVEN SOLAR

DRAWING TITLE: SPEC SHEET

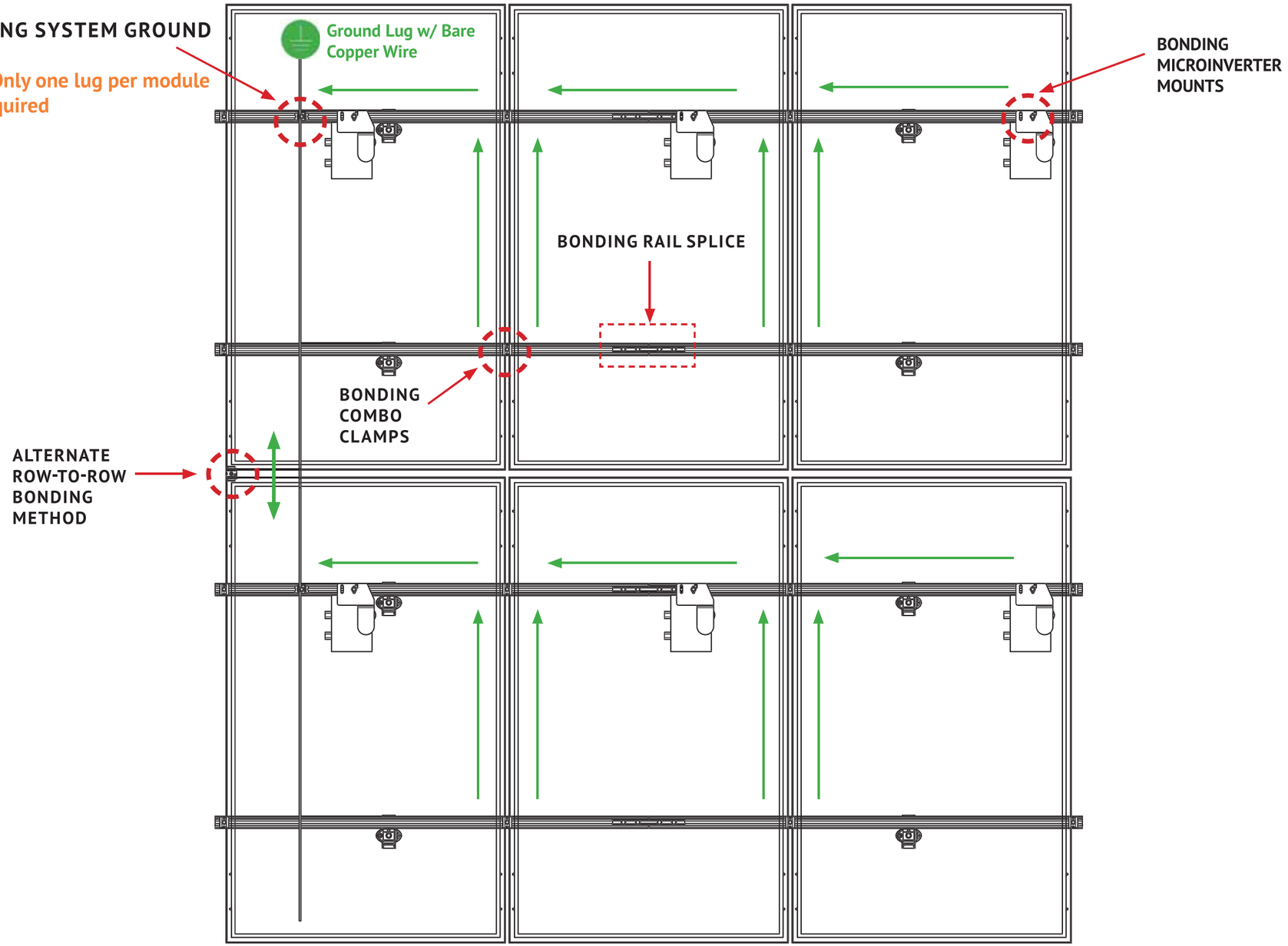
DRAWING NUMBER: SS

NXT UMOUNT®

BONDING CONNECTIONS & GROUNDING PATHS

INSTALLATION GUIDE | PAGE 24

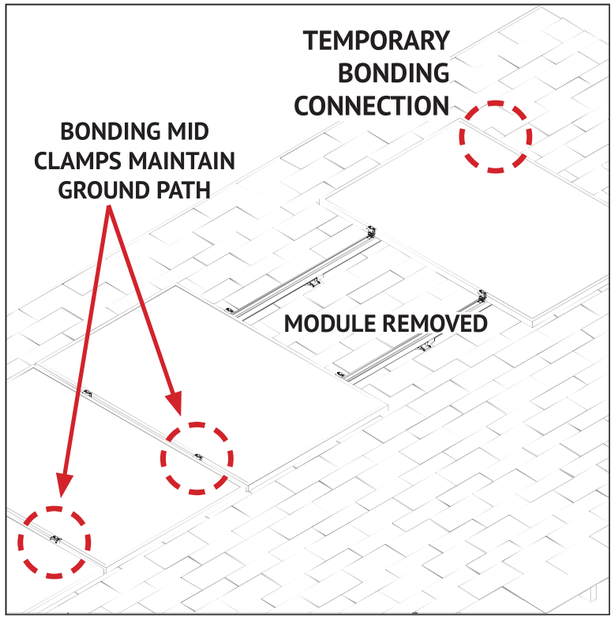
BLUE RAVEN SOLAR

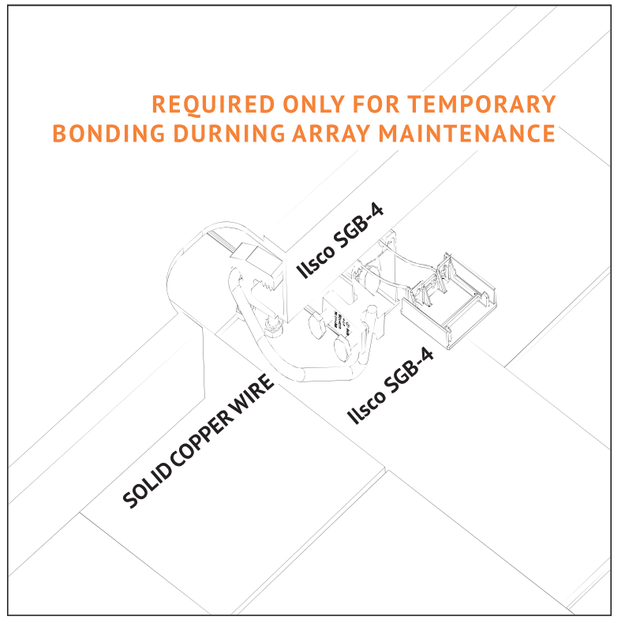


RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS





TEMPORARY BONDING CONNECTION DURING ARRAY MAINTENANCE

When removing modules for replacement or system maintenance, any module left in place that is secured with a bonding Midclamp will be properly grounded. If a module adjacent to the end module of a row is removed or if any other maintenance condition leaves a module without a bonding mid clamp, a temporary bonding connection must be installed as shown

- Attach Ilsco SGB4 to wall of rail
- Attach Ilsco SGB4 to module frame
- Install solid copper wire jumper to Ilsco lugs

⚠ CAUTION

Module removal may disrupt the bonding path and could introduce the risk of electric shock. Follow above mentioned instructions to maintain the bonding path.

ELECTRICAL CONSIDERATIONS

NXT UMOUNT is intended to be used with PV modules that have a system voltage less than or equal to that allowable by NEC. For standard system grounding a minimum 10AWG, 105°C copper grounding conductor should be used to ground a system, according to the National Electric Code (NEC). It is the installer's responsibility to check local codes, which may vary. See below for interconnection information.

INTERCONNECTION INFORMATION

There is no size limit on how many NXT UMOUNT & PV modules can be mechanically interconnected for any given configuration, provided that the installation meets the requirements of applicable building and fire codes.

GROUNDING NOTES

The installation must be conducted by a licensed and bonded electrician or solar contractor in accordance with the National Electric Code (NEC) and the authority having jurisdiction. Please refer to these resources in your location for required grounding lug quantities specific to your project.

The grounding / bonding components may overhang parts of the array so care must be made when walking around the array to avoid damage.

Conductor fastener torque values depend on conductor size. See product data sheets for correct torque values.

PERIODIC INSPECTION

Conduct periodic inspections for loose components, loose fasteners or any corrosion, immediately replace any affected components.

BLUE RAVEN SOLAR

DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS

NXT UMOUNT

APPENDIX A | 26
SYSTEM CERTIFICATION | PAGE

BLUE RAVEN SOLAR

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

SYSTEM LEVEL FIRE CLASSIFICATION

The system fire class rating requires installation in the manner specified in the NXT UMOUNT Installation Guide. NXT UMOUNT has been classified to the system level fire portion of UL 2703. NXT UMOUNT has achieved system level performance for steep sloped roofs and low sloped roofs. System level fire performance is inherent in the NXT UMOUNT design, and no additional mitigation measures are required. See table below for definition of steep sloped and low sloped roofs. The system is to be mounted over fire resistant roof covering rated for the application. There is no required minimum or maximum height limitation above the roof deck to maintain the system fire rating for NXT UMOUNT. Approved Module Types & System Level Fire Ratings are listed below:

Roof Type	Module Type	System Level Fire Rating	Rail Direction	Module Orientation
Steep Slope - roof pitches ≥ 2 in/ft	Type 1, 2, 3 with metal frame, 10 with metal frame, 19, 22, 25, 29, & 30	Class A	Parallel OR Perpendicular to Ridge	Landscape OR Portrait
Low Slope - roof pitches < 2in/ft	Type 1, 2, 29, & 30			

MECHANICAL LOAD TEST MODULES

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

Tested Module	UL2703 Certification Load Ratings	Tested Loads	Tested Module Area
SunPower SPR-A440 -COM	Down: 50 psf, Up: 50 psf , Slope: 15 psf	Down: 75 psf, Up: 75 psf , Slope: 23 psf	21.86 sq ft
Jinko JKM-xxxM 72HL4-V	Down: 39.47 psf, Up: 22.28 psf, Slope: 8 psf	Down: 59.20 psf, Up: 33.42 psf, Slope: 12 psf	27.76 sq ft

UL2703 CERTIFICATION MARKING:

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

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

RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS

NXT UMOUNT®

COMPATIBLE MODULES | 27

SYSTEM CERTIFICATION | PAGE

BLUE RAVEN SOLAR

Electrical Bonding and Grounding Test Modules

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

Manufacture	Module Model / Series
Aionrise	AION60G1, AION72G1
Aleo	P-Series & S-Series
Aptos Solar	DNA-120-(MF/BF)10-xxxW DNA-120-MF10 DNA-120-(MF/BF)23 DNA-144-(MF/BF)23 DNA-120-(MF/BF)26 DNA-144-(MF/BF)26 DNA-108-(MF/BF)10-xxxW
Astronergy	CHSM6612 M, M/HV CHSM6612P Series CHSM6612P/HV Series CHSM72M-HC CHSM72M(DG)/F-BH
Auxin	AXN6M610T AXN6P610T AXN6M612T AXN6P612T
Axitec	AC-xxx(M/P)/60S, AC-xxx(M/P)/72S AC-xxxP/156-60S AC-xxxMH/120(S/V/SB/VB) AC-xxxMH/144(S/V/SB/VB)
Boviet	BVM6610, BVM6612
BYD	P6K & MHK-36 Series

Manufacture	Module Model / Series
Canadian Solar	CS1(H/K/U/Y)-MS CS3K-(MB/MB-AG/MS/P/P HE/PB-AG) CS3L-(MS/P), CS3N-MS CS3U-(MB/MB-AG/MS/P/P HE/PB/PB-AG) CS3W-(MB-AG/MS/P/P-PB-AG) CS3Y-MB-AG, CS5A-M CS6K-(M/MS/MS AllBlack/P/P HE) CS6P-(M/P), CS6R-MS CS6U-(M/P/P HE), CS6W-(MB-AG/MS) CS6X-P, CSX-P, CS7L-MB-AG CS7L-xxxMB-AG ELPS CS6(A/P)-MM
Centrosolar America	C-Series & E-Series
CertainTeed	CT2xxMxx-01, CT2xxPxx-01, CTxxxMxx-01 CTxxxPxx-01, CTxxxMxx-02, CTxxxMxx-03 CTxxxMxx-04, CTxxxHC11-04
Eco Solargy	Orion 1000 & Apollo 1000
ET Solar	ET AC Module, ET Module ET-M772BH520-550WW/WB
First Solar	FS-6XXX(A) FS-6XXX(A)-P, FS-6XXX(A)-P-I
Flextronics	FXS-xxxBB
Freedom Forever	FF-MP-BBB-xxx, FF-MP1-BBB-xxx
FreeVolt	PVGraf
GCL	GCL-P6 & GCL-M6 Series

Manufacture	Module Model / Series
Hansol	TD-AN3, TD-AN4 UB-AN1, UD-AN1
Hanwha SolarOne	HSL 60
Heliene	36M, 36P 60M, 60P, 72M & 72P Series 144HC M6 144HC M10 SL Bifacial
H-SAAE	HT60-156M-C HT60-156M(V)-C HT72-156(M/P) HT72-156P-C, HT72-156P(V)-C HT72-156M(PDV)-BF, HT72-156M(PD)-BF HT72-166M, HT72-18X
Hyperion Solar	HY-DH108P8(B), HY-DH108N8B HY-DH144P8
Hyundai	KG, MG, RW, TG, RI, RG, TI, KI, HI Series HiA-SxxxHG, HiD-SxxxRG(BK), HiN-SxxxXG(BK), HiS-S400PI, HiS-SxxxYH(BK), HiS-SxxxXG(BK)
ITEK	iT-SE Series
Japan Solar	JPS-60 & JPS-72 Series

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- **Listed models can be used to achieve a Class A fire system rating, for steep slope or low slope applications, only when modules of fire typed mentioned in Appendix A, Page 26 are used.**

DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS

NXT UMOUNT®

COMPATIBLE MODULES | 28

SYSTEM CERTIFICATION | PAGE

BLUE RAVEN SOLAR

Electrical Bonding and Grounding Test Modules

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

Manufacture	Module Model / Series
JA Solar	JAM54S31 xxx/MR JAM72D30MB, JAM78D10MB JAM72S30 /MR JAP6 60-xxx JAM6(K)-60/xxx, JAP6(k)-72-xxx/4BB JAP72S##-xxx/** JAP6(k)-60-xxx/4BB, JAP60S##-xxx/** JAM6(k)-72-xxx/**, JAM72S##-xxx/** JAM6(k)-60-xxx/**, JAM60S##-xxx/** i. ##: 01, 02, 03, 09, 10 ii. **: SC, PR, BP, HiT, IB, MW, MR ** = Backsheet, ## Cell technology
Jinko	JKM & JKMS Series JKMxxxM-72HL-V JKMxxxM-72HLM-TV JKMxxxM-72HL4-(T)V JKMxxxM-7RL3-V JKMxxxM-72HL4-TV
Kyocera	KD-F & KU Series
LA Solar	LSxxxHC(166) LSxxxBL LSxxxHC

Manufacture	Module Model / Series
LG Electronics	LGxxx(E1C/E1K/N1C/N1K/N2T/N2W/S1C/S2W/Q1C/Q1K)-A5 LGxxx(A1C/M1C/M1K/N1C/N1K/Q1C/Q1K/QAC/QAK)-A6 LGxxxN2W-B3 LGxxxN2T-B5 LGxxxN1K-B6
LG Electronics (Cont.)	LGxxx(N1C/N1K/N2T/N2W)-E6 LGxxx(N1C/N1K/N2W/S1C/S2W)-G4 LGxxxN2T-J5 LGxxx(N1K/N1W/N2T/N2W)-L5 LGxxx(M1C/N1C/Q1C/Q1K)-N5 LGxxx(N1C/N1K/N2W/Q1C/Q1K)-V5 LGxxxN3K-V6
LONGi	LR4-60(HPB/HPH) LR4-72(HPH) LR6-60 LR6-60(BK/HPB/HPH/HV/PB/PE/PH) LR6-72 LR6-72(BK/HV/PB/PE/PH) RealBlack LR4-60HPB RealBlack LR6-60HPB
Maxeon	SPR-MAX3-xxx-COM
Meyer Burger	Meyer Burger Black, Meyer Burger White Meyer Burger Glass
Mission Solar Energy	MSE Mono, MSE Perc MSExxx(SR8T/SR8K/SR9S/SX5T) MSExxx(SX5K/SX6W)

Manufacture	Module Model / Series
Mitrex	Mxxx-L3H, Mxxx-I3H
Mitsubishi	MJE & MLE Series
Neo Solar Power Co.	D6M Series
NE Solar	NESE xxx-72MHB-M10 NESE xxx-60MH-M6
Panasonic	VBHNxxxSA06/SA06B/SA11/SA11B VBHNxxxSA15/SA15B/SA16/SA16B, VBHNxxxKA, VBHNxxxKA03/04, VBHNxxxSA17/SA17G/SA17E/SA18/SA18E, VBHNxxxZA01/ZA02/ZA03/VBHNxxxZA04 EVPVxxx EVPVxxx(H/K/PK/HK)
Peimar	SGxxxM (FB/BF) SMxxxM
Phono Solar	PSxxxM1-20/U PSxxxM1H-20/U PSxxxM1-20UH PSxxxM1H-20UH PSxxxM4(H)-24/TH PSxxxM1-20/UH PSxxxM1H-20/UH PSxxxM-24/T PSxxxMH-24/T PSxxxM-24/TH PSxxxMH-24/TH
Prism Solar	P72 Series, P72X-xxx

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- **Listed models can be used to achieve a Class A fire system rating, for steep slope or low slope applications, only when modules of fire typed mentioned in Appendix A, Page 26 are used.**

DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS

NXT UMOUNT®

COMPATIBLE MODULES | 29 PAGE

SYSTEM CERTIFICATION

BLUE RAVEN SOLAR

Electrical Bonding and Grounding Test Modules

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

Manufacture	Module Model / Series
Q.Cells	Plus, Pro, Peak, G3, G4, Peak G5(SC) , G6(+)(SC)(AC), G7, G8(+), Plus, Pro, Peak L-G2, L-G4, L-G5 Peak L-G5, L-G6, L-G7, L-G8(BFF) Q.PEAK DUO(BLK)-G6+ Q.PEAK DUO BLK-G6+/TS
Q.Cells (Cont.)	Q.PEAK DUO (BLK)-G7 Q.PEAK DUO L-(G7/G7.1/G7.2/G7.3/G7.7) Q.PEAK DUO (BLK) G8(+) Q.PEAK DUO L-(G8/G8.1/G8.2/G8.3) Q.PEAK DUO L-G8.3 (BFF/BFG/BGT) Q.PEAK DUO (BLK) ML-G9(+) Q.PEAK DUO XL-(G9/G9.2/G9.3) Q.PEAK DUO XL-G9.3/BFG Q.PEAK DUO-G10+ Q.PEAK DUO BLK G10(+) Q.PEAK DUO BLK G10+ /AC Q.PEAK DUO (BLK) ML-G10(a)(+) Q.PEAK DUO BLK ML-G10+ / t Q.PEAK DUO XL-(G10/G10.2/G10.3/G10.c/G10.d) Q.PEAK DUO XL-G10.3/BFG Q.PEAK DUO XL-G10.d/BFG Q.PEAK DUO XL-G11S Q.PEAK DUO XL-(G11.2/G11.3) Q.PEAK DUO XL-G11.3/BFG

Manufacture	Module Model / Series
REC	RECxxxAA (BLK/Pure/Pure-R) RECxxxNP (N-PEAK) RECxxxNP2 (Black) RECxxxNP3 Black RECxxxPE, RECxxxPE72 RECxxxTP, RECxxxTP72 RECxxxTP2(M/BLK2) RECxxxTP2S(M)72 RECxxxTP3M (Black) RECxxxTP4 (Black)
Renesola	All 60-cell modules
Risen	RSM Series, RSM110-8-xxxBMDG
S-Energy	SN72 & SN60 Series
SEG Solar	SEG-xxx-BMD-HV SEG-xxx-BMD-TB
Seraphim	SEG-(6PA/6PB/6MA/6MA-HV/6MB/E01/E11) SRP-(6QA/6QB) SRP-xxx-6MB-HV, SRP-320-375-BMB-HV, SRP-xxx-BMC-HV, SRP-390-450-BMA-HV, SRP-xxx-BMZ-HV, SRP-390-405-BMD-HV
Sharp	NU-SA & NU-SC Series
Silfab	SLA-M, SLA-P, SLG-M, SLG-P & BC Series SILxxx(BG/BK/BL/HC/HC+/HL/HM/HN/ML/NL/NT/NX/NU)
Solar4America	S4Axxx-108MH10BB, S4Axxx-72MH5BB
SolarEver USA	SE-166*83-xxxM-120N SE-182*91-xxxM-108N

Manufacture	Module Model / Series
Solaria	PowerXT-xxxR-(AC/PD/BD) PowerXT-xxxC-PD PowerXT-xxxR-PM (AC) PowerX-400R
Solartech	STU HJT, STU PERC & Quantum PERC
SolarWorld	Sunmodule Protect, Sunmodule Plus/Pro
Sonali	SS-M-360 to 390 Series SS-M-390 to 400 Series SS-M-440 to 460 Series SS-M-430 to 460 BiFacial Series
Sun Edison	F-Series, R-Series
Suniva	MV Series & Optimus Series (35mm)
Sunmac Solar	M754SH-BB Series
SunPower	AC, X-Series, E-Series & P-Series SPR E20 435 COM (G4 Frame) Axxx-BLK-G-AC, SPR-Mxxx-H-AC
SunTech	STP, STPXXXS - B60/Wnhb
Talesun	TP572, TP596, TP654, TP660 TP672, Hipor M, Smart TD6I72M
Tesla	SC, SC B, SC B1, SC B2, TxxxS, TxxxH
Trina	PA05, PD05, DD05, DD06, DE06, DE09.05 PD14, PE14, DD14, DE14, DE15, DE15V(II) DEG15HC.20(II), DEG15MC.20(II) DEG15VC.20(II), DE18M(II), DEG18MC.20(II) DE19, DEG19C.20

- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- **Listed models can be used to achieve a Class A fire system rating, for steep slope or low slope applications, only when modules of fire typed mentioned in Appendix A, Page 26 are used.**

DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS

BLUE RAVEN SOLAR

Electrical Bonding and Grounding Test Modules

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

Manufacture	Module Model / Series
TSMC	TS-150C2 CIGSw
Universal Solar	UNI4xx-144BMH-DG UNI5xx-144BMH-DG UNIxxx-108M-BB UNIxxx-120M-BB UNIxxx-120MH
Upsolar	UP-MxxxP, UP-MxxxM(-B)
URECO	D7Kxxx(H7A/H8A), D7Mxxx(H7A/H8A) FAKxxx(C8G/E8G), FAMxxxE7G-BB FAMxxxE8G(-BB), FBKxxxM8G F6MxxxE7G-BB FBMxxxMFG-BB
Vikram	Eldora, Somera, Ultima PREXOS VSMDHT.60.AAA.05 PREXOS VSMDHT.72.AAA.05
Vina	VNS-72M1-5-xxxW-1.5, VNS-72M3-5-xxxW-1.5, VNS-144M1-5-xxxW-1.5, VNS-144M3-5-xxxW-1.5, VNS-120M3-5-xxxW-1.0
VSUN	VSUNxxx-60M-BB, VSUNxxx-72MH VSUN4xx-144BMH, VSUN4xx-144BMH-DG VSUN5xx-144BMH-DG, VSUNxxx-108M-BB VSUNxxx-120M-BB, VSUNxxx-120BMH VSUNxxx-132BMH, VSUNxxx-108BMH
Waaree	Arka Series WSMDi
Winaico	WST & WSP Series

Manufacture	Module Model / Series
Yingli	YGE & YLM Series
Yotta Energy	YSM-B450-1
ZNShine Solar	ZXM6-72 Series, ZXM6-NH144 ZXM6-NHLDD144, ZXM7-SH108 Series

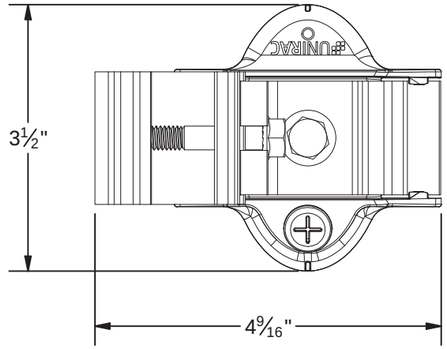
- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- **Listed models can be used to achieve a Class A fire system rating, for steep slope or low slope applications, only when modules of fire typed mentioned in Appendix A, Page 26 are used.**

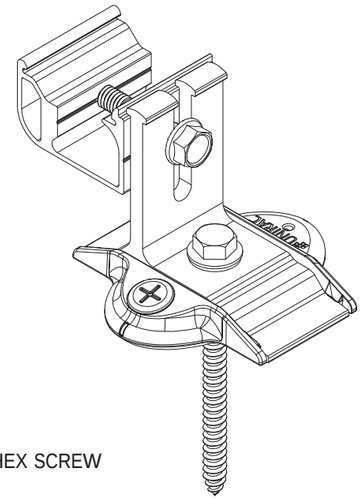
RELEASE FOR CONSTRUCTION
AS NOTED FOR PLAN REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/04/2024

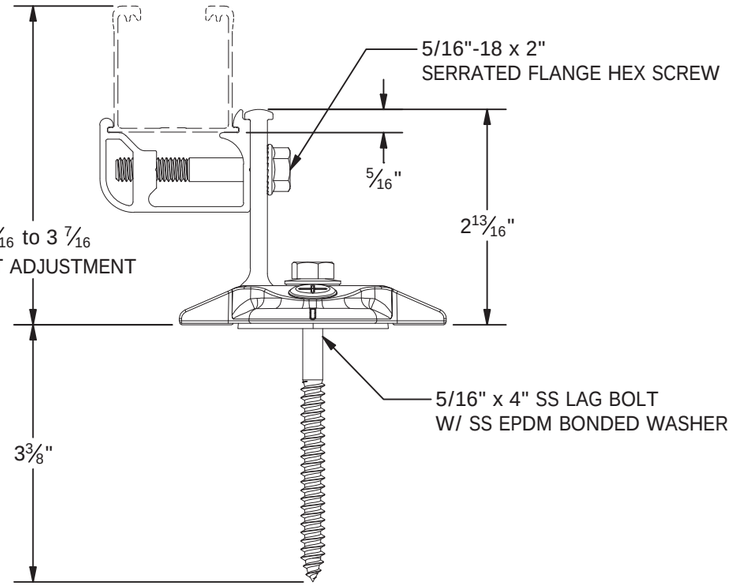
DRAWING TITLE:
SPEC SHEET

DRAWING NUMBER:
SS

PART # TABLE	
P/N	DESCRIPTION
SHCPKTM1	STRONGHOLD ATT KIT COMP MILL
SHCPKTD1	STRONGHOLD ATT KIT COMP DRK
SHCPKTM1-NS	STRONGHOLD ATT COMP MILL (NS)
SHCPKTD1-NS	STRONGHOLD ATT COMP DRK (NS)







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

PRODUCT LINE:	NXT UMOUNT
DRAWING TYPE:	PARTS ASSEMBLY
DESCRIPTION:	STRONGHOLD ATTACHMENT
REVISION DATE:	11/17/2022

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

NU-A04
SHEET

BLUE RAVEN SOLAR

DRAWING NUMBER:
SS