SCOPE OF WORK

TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 1115 N 1100 W, FARMINGTON, UT 84025, USA.
THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ELECTRICAL SERVICE EQUIPMENT.
THE PV SYSTEM DOES NOT INCLUDE STORAGE BATTERIES.

EQUIPMENT SUMMARY
12 BLUESUN SOLAR BSM415M10-54HPH MODULES
6 APTOS MAC 800R MICROINVERTERS

GENERAL NOTES

- THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS
- CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAIN ALL PERMITS, LICENSES AND PAY ALL REQUIRED FEES AND COMPLETE INSTALLATION.
- CONTRACTOR SHALL OBTAIN BULDING PERMIT. NO WORK TO START UNLESS BUILDING PERMIT IS PROPERLY DISPLAYED.
- ALL WORKMANSHIP AND MATERIALS SHALL BE OF FIRST QUALITY AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL BUILDING CODE, THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL PERTINENT AGENCIES.
- IT IS ESSENTIAL THAT ALL WORK PROCEED WITH THE MAXIMUM COOPERATION OF ALL PARTIES AND WITH MINIMUM INTERFERENCE TO THE OCCUPANTS WITHIN THE BUILDING. THE OWNER'S DIRECTIONS IN THIS REGARD SHALL BE FULLY COMPLIED WITH.
- THE CONTRACTOR SHALL PERFORM THE WORK IN STRICT CONFORMANCE WITH THE LOCAL LAWS, REGULATIONS AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL OBTAIN ALL PERMITS, APPROVALS, AFFIDAVITS, CERTIFICATIONS, ETC. AND PAY ALL FEES AS REQUIRED BY THE LOCAL AUTHORITIES.
- CONTRACTORS SHALL OBTAIN FIRE CERTIF. UPON COMPLETION OF WORK.

ELECTRICAL NOTES

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURERS INSTRUCTION.
- MODULE SUPPORT RAIL SHALL BE BONDED TO THE MODULE

GOVERNING CODES
2020 NATIONAL ELECTRICAL CODE 2021 INTERNATIONAL FIRE CODE 2021 INTERNATIONAL BUILDING CODE 2021 INTERNATIONAL RESIDENTIAL CODE
AHJ NAME : FARMINGTON CITY

WIRING AND CONDUIT NOTES

- ALL CONDUIT SIZES AND TYPES SHALL BE LISTED FOR ITS PURPOSE AND APPROVAL FOR THE SITE APPLICATIONS
- ALL PV CABLES AND HOMERUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED
- ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO AS PER LATEST NEC CODE.
- EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES
- PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 1000V AS PER APPLICABLE NEC
- 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS
- ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION
- VOLTAGE DROP LIMITED TO 2%
- AC CONDUCTORS >4AWG COLOR CODED OR MARKED: PHASE A OR L1- BLACK, PHASE B OR L2- RED, PHASE C OR L3- BLUE, NEUTRAL- WHITE/GRAY

VICINITY MAP

SCALE: NTS

SYSTEM RATING
4.980 kWDC
4.800 kWAC

PHOTOVOLTAIC SYSTEM FIRE CLASSIFICATION LISTING IN ACCORDANCE WITH UL 1703 STANDARD.

SHEET INDEX	
PV1	COVER PAGE
PV2	SITE PLAN
PV3	ROOF PLAN
PV4	STRING LAYOUT & BOM
PV5-PV6	ATTACHMENT DETAILS
PV7	ELECTRICAL LINE & CALCS.
PV8	SPECIFICATIONS & NOTES
PV9-PV10	SIGNAGE
PV11-PV14	EQUIPMENT SPECIFICATIONS

HOUSE PHOTO

SCALE: NTS

H2 SOLAR
11 W LADY LN, BOUNTIFUL, UT 84010, USA
PH# : (801) 859-2313
Contractor License #13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

BRIAN GREE
RESIDENCE
1115 N 1100 W, FARMINGTON, UT 84025, USA
EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
COVER PAGE

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

SITE NOTES

- A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26]

LEGEND

- JB — (N) JUNCTION BOX
- UM — (E) UTILITY METER
- MSP — (E) MAIN SERVICE PANEL
- SUB — (N) SUB PANEL
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- CONDUIT
- APTOS MAC 800R MICROINVERTER
- BLUESUN SOLAR BSM415M10-54HPH MODULES
- IRONRIDGE BLACK XR-10 RAIL
- 168 TRENCH
- CP — COMBINER PANEL

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

METER NO#: 51 241 201

H2 SOLAR
11 W LADY LN, BOUNTIFUL, UT 84010, USA
PH# : (801) 859-2313
Contractor License #13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

BRIAN GREE
RESIDENCE
1115 N 1100 W, FARMINGTON, UT 84025, USA
EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
SITE PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

DESIGN SPECIFICATION	
RISK CATEGORY:	II
CONSTRUCTION:	SFD
ZONING:	RESIDENTIAL
SNOW LOAD (ASCE7-16):	36 PSF
EXPOSURE CATEGORY:	C
WIND SPEED (ASCE7-16):	103 MPH

MODULE TYPE, DIMENSIONS & WEIGHT	
NUMBER OF MODULES:	12 MODULES
MODULE TYPE:	BLUESUN SOLAR BSM415M10-54HPH
MODULE WEIGHT:	47.4 LBS
MODULE DIMENSIONS:	67.8" X 44.65" = 21.02 SF
UNIT WEIGHT OF AREA:	2.26 PSF

NOTE : ATTACHMENT SPACING @ 48" O.C.

ROOF DESCRIPTION				
ROOF	ROOF TILT	RAFTER SIZE	RAFTER SPACING	ROOF MATERIAL
#1	24°	2" x 6"	24" o.c.	COMP SHINGLE

ARRAY AREA & ROOF AREA CALC'S		
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)
#1	12	252.28
(TOTAL ARRAY AREA/TOTAL ROOF AREA) X 100%		
= (252.28/1557) X 100% = 16.21%		

LEGEND

- JB (N) JUNCTION BOX
- UM (E) UTILITY METER
- MSP (E) MAIN SERVICE PANEL
- SUB (N) SUB PANEL
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- CONDUIT
- APTOS MAC 800R MICROINVERTER
- BLUESUN SOLAR BSM415M10-54HPH MODULES
- IRONRIDGE BLACK XR-10 RAIL
- 168 TRENCH
- CP COMBINER PANEL

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

METER NO#: 51 241 201

H2 SOLAR
11 W LADY LN, BOUNTIFUL, UT 84010, USA
PH# : (801) 859-2313
Contractor License #13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

BRIAN GREE
RESIDENCE
1115 N 1100 W, FARMINGTON, UT 84025, USA
EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	12	BLUESUN SOLAR BSM415M10-54HPH
INVERTER	6	APTOS MAC 800R
JUNCTION BOX	1	JUNCTION BOX, NEMA 3R, UL LISTED
ATTACHMENT	29	BOLT, LAG 5/16 X 4.25", WASHER, EPDM BACKED, FM FLASHING, MILL OR BLACK, GRIP CAP, MILL OR BLACK
ENPHASE Q CABLE	14	ENPHASE Q CABLE 240V (PER CONNECTOR)
BRANCH TERMINATOR	2	BRANCH TERMINATOR
IQ WATER TIGHT CAP	2	IQ WATER TIGHT CAPS
RAILS	8	IRONRIDGE BLACK XR-10 RAIL 168
BONDED SPLICE	4	SPLICE KIT
CLAMPS	30	UNIVERSAL FASTENING OBJECT (UFO)
CLAMP	12	STOPPER SLEEVE
GROUNDING LUG	3	GROUNDING LUG

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

A B - MODULE STRINGING

H2 SOLAR
11 W LADY LN, BOUNTIFUL,
UT 84010, USA
PH# : (801) 859-2313
Contractor License
#13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
STRING LAYOUT & BOM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

1 ATTACHMENT DETAILS

SCALE: NTS

2 ENLARGED VIEW OF ATTACHMENT

SCALE: NTS

H2 SOLAR
11 W LADY LN, BOUNTIFUL,
UT 84010, USA
PH# : (801) 859-2313
Contractor License
#13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

BRIAN GREE
RESIDENCE
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EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
ATTACHMENT DETAILS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

Cut Sheet

IRONRIDGE

XR10 Rail

Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.363 in^2
Section Modulus (X-axis)	0.136 in^3
Moment of Inertia (X-axis)	0.124 in^4
Moment of Inertia (Y-axis)	0.032 in^4
Torsional Constant	0.076 in^3
Polar Moment of Inertia	0.033 in^4

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-10-132A	XR-10-132B	XR10, Rail 132" (11 Feet)	6000-Series Aluminum	4.67 lbs.
XR-10-168A	XR-10-168B	XR10, Rail 168" (14 Feet)		5.95 lbs.
XR-10-204A	XR-10-204B	XR10, Rail 204" (17 Feet)		7.22 lbs.

v1.0

H2 SOLAR
11 W LADY LN, BOUNTIFUL,
UT 84010, USA
PH# : (801) 859-2313
Contractor License
#13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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RESIDENCE
1115 N 1100 W, FARMINGTON, UT 84025, USA
EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
ATTACHMENT DETAILS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CIRCUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	LENGTH	VOTAGE DROP
1	2	ARRAY	JUNCTION BOX	12 AWG	AC WIRE	-	MIN 1.25" DIA EMT	1	2	35.38%	N/A	6 AWG	BARE COPPER	0.65	(61°C)	N/A	9.57A	11.96A	N/A	N/A	22FT	0.35%
2	1	JUNCTION BOX	COMBINER PANEL	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	2	4	21.76%	N/A	8 AWG	THWN-2 COPPER	0.91	(39°C)	0.8	9.57A	11.96A	35A	25.48A	30FT	0.31%
3	1	COMBINER PANEL	SUB PANEL	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	1	3	18.01%	30A	8 AWG	THWN-2 COPPER	0.91	(39°C)	1	19.14A	23.93A	35A	31.85A	5FT	0.10%
4	1	SUB PANEL	MSP	10 AWG	THWN 2	COPPER	MIN 0.75" DIA EMT	1	3	18.01%	N/A	8 AWG	THWN-2 COPPER	0.91	(39°C)	1	19.14A	23.93A	35A	31.85A	5FT	0.10%

H2 SOLAR
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UT 84010, USA
PH# : (801) 859-2313
Contractor License
#13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
ELECTRICAL
LINE & CALCS.

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

SYSTEM RATING
4.980 kWDC
4.800 kWAC

METER NO#: 51 241 201

INTERCONNECTION
120% RULE - NEC 705.12(B)(3)(2)
UTILITY FEED + SOLAR BACKFEED 0A + 30A = 30A
BUSS RATING X 120% 200A x 120% = 240A

SERVICE INFO	
UTILITY PROVIDER:	BRIGHAM CITY
AHJ NAME:	FARMINGTON CITY
MAIN SERVICE VOLTAGE:	240V
MAIN SERVICE PANEL:	200 A
SERVICE FEED SOURCE:	UNDERGROUND

SCALE: NTS

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	BLUESUN SOLAR BSM415M10-54HPH
VMP	31.63 V
IMP	13.13 A
VOC	37.75 V
ISC	14.02 A
TEMP. COEFF. VOC	-0.26%/K
PTC RATING	387.2 W
MODULE DIMENSION	67.8"(L) x 44.65"(W)
PANEL WATTAGE	415 W

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	APTOS MAC 800R
MAX DC SHORT CIRCUIT CURRENT	15 A
CONTINUOUS OUTPUT CURRENT	3.19 A

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-16°C
AMBIENT TEMP (HIGH TEMP 2%)	39°C
CONDUIT HEIGHT	7/8"
ROOF TOP TEMP	58°C
CONDUCTOR TEMPERATURE RATE	90°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.26%/K

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

H2 SOLAR
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UT 84010, USA
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Contractor License
#13494061-5501

SYSTEM INFO

(12) BLUESUN SOLAR BSM415M10-54HPH

(6) APTOS MAC 800R

DC SYSTEM SIZE: 4.980 kWDC

AC SYSTEM SIZE: 4.800 kWAC

METER: 51 241 201

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

BRIAN GREE
RESIDENCE
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EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME

SPECIFICATIONS & NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

1

WARNING

ELECTRIC SHOCK HAZARD

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

LABEL LOCATION:
POINT OF INTERCONNECTION, MAIN SERVICE DISCONNECT, AC DISCONNECT, AC COMBINER, INVERTER
PER CODE: NEC 690.13(B)

2

CAUTION : SOLAR ELECTRIC SYSTEM CONNECTED

LABEL LOCATION:
POINT OF INTERCONNECTION & INVERTER
PER CODE: NEC 690.15 & 690.13(B)

3

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

LABEL LOCATION:
MAIN SERVICE DISCONNECT IF MSD IS OUTSIDE PLACE IT THERE / IF MSD IS INSIDE PLACE ON THE AC DISCONNECT
PER CODE: 2020 NEC 690.56(C)

4

PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH

LABEL LOCATION:
AC DISCONNECT
PER CODE: NEC 690.56(C)(2)

5

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT	19.14 AMPS
NOMINAL OPERATING AC VOLTAGE	240 VOLTS

LABEL LOCATION:
AC DISCONNECT
PER CODE: NFPA 70, NEC 690.54

6

WARNING

INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
PLACE THIS LABEL AT P.O.C. TO SERVICE DISTRIBUTION EQUIPMENT (I.E. MAIN PANEL (AND SUBPANEL IF APPLICABLE))
PER CODE: NEC 705.12(B)(3)(2)

7

WARNING:

PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
CONDUIT
PER CODE: NEC 690.31(D)(2)

8

WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY AND PV POWER SOURCE ELECTRIC SYSTEM

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

9

CAUTION

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC

LABEL LOCATION:
MAIN SERVICE DISCONNECT/ AC DISCONNECT/ MAIN SERVICE PANEL/ REVENUE METER/ AC COMBINER
PER CODE: 2020 NEC 705.12(C)

ADHESIVE FASTENED SIGNS

- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNING AND MARKINGS SHOULD COMPLY WITH ANSI 2535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

H2 SOLAR
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SYSTEM INFO
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(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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RESIDENCE
1115 N 1100 W, FARMINGTON, UT 84025, USA
EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
SIGNAGE

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-9

CAUTION!

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCE WITH DISCONNECTS LOCATED AS SHOWN

LABEL LOCATION:
EACH SERVICE EQUIPMENT LOCATION AND AT THE LOCATION(S) OF THE SYSTEM DISCONNECT(S) FOR ALL ELECTRIC POWER PRODUCTION SOURCES CAPABLE OF BEING INTERCONNECTED (PER CODE: NEC 705.10)

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(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS		
DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

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DATE: 8/22/2024

SHEET NAME
SIGNAGE

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-10

US SOLAR SUPPLIER

BSM415M10-54HPH

182 Bifacial Module With Transparent Backsheet
10BB Half-cut Mono Perc

Made In Thailand

- Long Beach, CA Stock
- All Black, High Aesthetic
- 2M² Panel, Best Home Roof Fit

• Dimensions:1722*1134*30mm
• Weight:21.5kg
• Max. System Voltage: 1000V/1500 V (IEC/UL)

GREAT PERFORMANCE AND RELIABILITY

10BB Half-cut Cell Technology
New circuit design, lower internal current, lower Rs loss
Ga dopped wafer, attenuation＜2% (1st year) / ≤0.55% (Linear)

Industry Leading High Yield
Bifacial PERC cell technology,
5%-25% more yield depends on different conditions

Excellent Anti-PID Performance
2 times of industry standard Anti-PID test by TUV SUD

Lower LCOE
2% more power generation, lower LCOE

IP68 Junction Box
High waterproof level

PERFORMANCE WARRANTY

12 Years — Enhanced Product Warranty on Materials and Workmanship*

25 Years — Linear Power Performance Warranty*
*According to the applicable Bluesun Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES

- ISO 9001: 2015 Quality Management System
- ISO 14001: 2015 Environment Management System
- ISO 45001: 2018 Occupational Health and Safety Management Systems

PRODUCT CERTIFICATES

- IEC 61215 / IEC 61730 / UL 61730

US Solar Supplier
Add: 552 East , Suite 200, Louisville, KY 40205
Tel: 502-956-0427
Web: www.ussolarsupplier.com

US SOLAR SUPPLIER

ELECTRICAL CHARACTERISTICS

Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power (Pmax/W)	400	298	405	302	410	306	415	309	420	313
Operating Voltage (Vmpp/V)	31.05	29.0	31.24	29.2	31.43	29.3	31.63	29.5	31.82	29.7
Operating Current (Impp/A)	12.89	10.30	12.97	10.36	13.05	10.42	13.13	10.49	13.21	10.55
Open-Circuit Voltage (Voc/V)	37.00	34.8	37.25	35.1	37.50	35.3	37.75	35.6	38.00	35.8
Short-Circuit Current (Isc/A)	13.78	11.11	13.86	11.17	13.94	11.24	14.02	11.31	14.10	11.38
Module Efficiency (%)	20.50		20.70		21.00		21.25		21.51	

STC: Irradiance 1000W/m², Spectra at AM1.5, Module Temperature 25℃.Power output tolerance: 0~+5W, Test uncertainty for Pmax : ±3%
NMOT: Irradiance 800W/m², Spectra at AM1.5, Ambient Temperature 20 ℃, Wind speed 1m/s

MECHANICAL CHARACTERISTICS

Solar Cell	Monocrystalline182*182mm
No. of Cells	108 (6*18)
Module Dimensions	1722*1134*30mm (67.80*44.65*1.18inches)
Weight	21.5kg (47.4lbs.)
Front Glass	3.2mm AR Coating Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68, 3 Bypass Diodes
Output Cables	4mm² (IEC), 12AWG(UL) 300mm in Length or Customized Length
Connectors	T01/LJQ-3-CSY/MC4/MC4-EVO2

I-V CURVE

BSM410M10-54HPH/410W

APPLICATION CONDITIONS

Maximun System Voltage	1000V/1500VDC(IEC)
Operating Temperature	-40°C~+85°C
Maximun Series Fuse	25A
Safety Protection Class	Class II
Mechanical Load	Front side 5400Pa，Back side 2400Pa
Refer. Bifaciality Factor	70%(+5%~-10%)

TECHNICAL DRAWINGS

TEMPERATURE CHARACTERISTICS

Temperature Coefficient of Pmax	-0.35%/°C
Temperature Coefficient of Voc	-0.26%/°C
Temperature Coefficient of Isc	+0.048%/°C
Nominal Module Operating Temperature(NMOT)	43±2°C

PACKING CONFIGURATION

Pieces Per Pallet	36	36(USA)
Pieces Per Container(40'HQ)	936	828

US Solar Supplier
Add: 552 East , Suite 200, Louisville, KY 40205
Tel: 502-956-0427
Web: www.ussolarsupplier.com

US SOLAR SUPPLIER

H2 SOLAR
11 W LADY LN, BOUNTIFUL,
UT 84010, USA
PH# : (801) 859-2313
Contractor License
#13494061-5501

SYSTEM INFO
(12) BLUESUN SOLAR BSM415M10-54HPH
(6) APTOS MAC 800R
DC SYSTEM SIZE: 4.980 kWDC
AC SYSTEM SIZE: 4.800 kWAC
METER: 51 241 201

REVISIONS

DESCRIPTION	DATE	REV

PROJECT NAME & ADDRESS

BRIAN GREE
RESIDENCE
1115 N 1100 W, FARMINGTON, UT 84025, USA
EMAIL ID: BPGREEN@GMAIL.COM
PHONE NO. (801) 884-7127

DATE: 8/22/2024

SHEET NAME
EQUIPMENT SPECIFICATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

MAC™ 800R

Solar for Innovators

Maximize AC Power Output

The high-performance MAC-800R dual unit microinverter is engineered for maximum AC power output when paired with Aptos Solar Technology's high-power solar panels. The MAC-800R is built for simple system integration and is compatible with third-party devices.

The MAC-800R is equipped and ready for system monitoring and trend tracking through Aptos Solar Technology's cloud based software.

UL LISTED CE CSA C US

High-performance 2:1 Microinverter

Up to 800W

Maximum AC Power Output

- Up to 800W
- 10% more AC power output than competing products

Superior Long-term Reliability

- Industry leading 25-year warranty
- Over 7MW of long-term reliability testing hours spread across 28 countries
- NEMA6 (IP67) enclosure rated for protection in harsh outdoor conditions

Streamlined Installation

- Fully integrated trunk cables
- Compatible with 120 & 144 cell PV panels with daisy-chain interconnection
- Battery integration ready

Built for Safety

- Built-in rapid shutdown feature in compliance with National Electrical Code (NEC)
- 6,000V surge protection feature

aptos solar technology

3140 De La Cruz Blvd., Ste 200
Santa Clara, CA 95054
www.aptossolar.com I info@aptossolar.com

MAC™ 800R

Solar for Innovators

Input Data (DC)

Commonly used module power (W)	320W-540W+
Maximum input voltage(V)	60
voltage range(V)	16-60
Start-up voltage(V)	22
Maximum input current(A)	2*12.5

Mechanical Data

Ambient temperature range (°C)	-40 to +65
Dimensions (W X H X D mm)	250 X 170 X 28
Weight (kG)	3.0
Enclosure rating	Outdoor-NEMA (IP67)
Cooling	Natural convection - No fans

Output Data (AC)

Peak output power(VA)	800	
Maximum continuous output power(VA)	766	
Maximum continuous output current (A)	3.19	3.68
Nominal output voltage/range(V)[1]	240/211-264	208/183-228
Nominal frequency/range (Hz)[1]	60/55-65	
Power factor (adjustable)	>0.99 default 0.8 leading...0.8 lagging	
Total harmonic distortion	<3%	
Maximum units per branch[2]	5/4	

Efficiency

CEC peak efficiency	96.7%
CEC weighted efficiency	96.5%
Nominal MPPT efficiency	99.8%
Nighttime power consumption (mW)	<50

Loading Quantity

Container	1 X 20'GP	1 X 40'GP/1 X 40'HQ
Pallet No.	10	22
Carton No.	480	1008
Total quantity	2400	5040

Features

Communication	2.4GHz Proprietary RF(Nordic)
Monitoring	AST Cloud [3]
Warranty	25 Years
Compliance	UL 1741, IEEE 1547, UL 1741 SA (240Vac), CA Rule 21 (240Vac), CSA C22.2 No. 107.1-16, FCC Part 15B, FCC Part 15C
PV Rapid Shutdown	Conforms with NEC-2017 and NEC-2020 Article 690.12 and CEC-2021 Sec 64-218 Rapid Shutdown of PV Systems

*1 Nominal voltage/frequency range can be changed due to the requirements of local power department.
*2 Refer to local requirements for exact number of microinverters per branch.
*3 Aptos Monitoring System.

Aptos Solar Technology reserves the right to make specification changes without notice

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SHEET NUMBER
PV-12

Cut Sheet

IRONRIDGE

FlashVue®

ITEM NO	DESCRIPTION	QTY IN KIT
1	BOLT, LAG 5/16 X 4.25"	1
2	WASHER, EPDM BACKED	1
3	FM FLASHING, MILL OR BLACK	1
4	GRIP CAP, MILL OR BLACK	1

FLASHVUE

PART NUMBER	DESCRIPTION
FV-01-M1	FLASHING, FLASHFOOT, MILL
FV-01-B1	FLASHING, FLASHFOOT, BLACK

1) BOLT, LAG 5/16 x 4.25"

Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.0

Cut Sheet

2) Washer, EPDM Backed

Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) Grip Cap

Property	Value
Material	Aluminum
Finish	Mill/Black

4) FM Flashing

Property	Value
Material	Aluminum
Finish	Mill/Black

v1.01

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PV-13

Tech Brief

IRONRIDGE

XR Rail® Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails® are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.

Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails® is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails® are compatible with FlashFoot® and other pitched roof attachments.

IronRidge® offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails® are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

XR Rail® Family

The XR Rail® Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail® to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

XR100

XR100 is a residential and commercial mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

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PV-14