

DIRECTORY OF PLAN PAGES

PV1PROJECT INFORMATION

PV-2ASITE PLAN (GENERAL)

PV-2BSITE PLAN (DETAILED)

PV-3ASINGLE-LINE DIAGRAM

PV-3B

PV-3C

PV4PLACARDS

PV-5AATTACHMENT PLAN (ARRAY #1)

PV-5BATTACHMENT PLAN (ARRAY #2)

PV-5CATTACHMENT PLAN (ARRAY #3)

PV-5DATTACHMENT PLAN (ARRAY #4)

PV-6AS-SI SOLARFOOT DATASHEET

PV-6BS-SI SOLARFOOT INSTALLATION

PV-6CRACKING RAILS DATASHEET

PV-6DCLASS A FIRE RATING DATASHEET

PV-6ESTATE OF VIRGINIA ENGINEERING LETTER (IRONRIDGE RACKING)

PV-6FGROUNDING DETAILS (IRON RIDGE RACKING)

PV-7APV MODULE DATASHEET (EXISTING)

PV-7BPV MODULE DATASHEET (NEW)

PV-8AEG4 12000XP V2 HYBRID INVERTER DATASHEET

PV-8BEG4 12000XP V2 HYBRID INVERTER (UL CERTIFICATION)

PV-9AEG4 WALLMOUNT 314AH INDOOR BATTERY DATASHEET

PV-9BEG4 WALLMOUNT 314AH INDOOR BATTERY (UL CERTIFICATION)

PV10TIGO TS4-A-F MODULE-LEVEL RAPID SHUTDOWN DATASHEET

PV11EG4 CHARGEVERTER DATASHEET

PV12STANDBY GENERATOR DATASHEET

PROJECT DETAILS

PROPERTY OWNERSAMPLE OWNER

OWNER PHONE(000) 000-0000

OWNER EMAILOWNER@SAMPLECLIENT.COM

PROPERTY ADDRESS123 SAMPLE STREET

PRN31282

ZONINGRESIDENTIAL

CONST. TYPEFLUSH ROOF-MOUNTED PHOTOVOLTAIC ARRAY

AHJHALIFAX COUNTY

OBSERVED CODESVIRGINIA UNIFORM STATEWIDE BUILDING CODE (USBC)

VIRGINIA CONSTRUCTION CODE (VCC 2021)

VIRGINIA RESIDENTIAL CODE (VRC 2021)

VIRGINIA EXISTING BUILDING CODE (VEBC 2021)

VIRGINIA PROPERTY MAINTENANCE CODE (VPMC 2021)

VIRGINIA ENERGY CONSERVATION CODE (VECC 2021)

VIRGINIA MECHANICAL CODE (VMC 2021)

VIRGINIA PLUMBING CODE (VPC 2021)

VIRGINIA FUEL GAS CODE (VFGC 2021)

VIRGINIA STATEWIDE FIRE PREVENTION CODE (VSFPC 2021)

ICC A117.1-2017 ACCESSIBILITY STANDARD

NFPA 70 NATIONAL ELECTRICAL CODE (NEC 2020)

ALL APPLICABLE LOCAL AMENDMENTS AND AHJ REQUIREMENTS

UNDERWRITERS LABORATORIES (UL) STANDARDS

STRUCT. METHODASCE7-16

OWNER-BUILDER INFORMATION

OWNER-BUILDERSAMPLE OWNER

ADDRESS123 SAMPLE STREET

PHONE(000) 000-0000

EMAILOWNER@SAMPLECLIENT.COM

OWNER-BUILDER SIGNATURE

PLAN DESIGNER INFORMATION

COMPANYGEMINI SOLAR DESIGN, LLC.

NAMEGSD DESIGN TEAM

ADDRESSGEMINISOLARDESIGN.COM

PHONENATIONWIDE DESIGN SERVICES

PLAN DESIGNER SIGNATURESantay Mallouki

SYSTEM DETAILS

DC RATING OF SYSTEM30.300W

TOTAL CONTINUOUS AC OUTPUT CURRENT187.5A @ 240VAC

HYBRID INVERTER(3) EG4 12000XP V2 OFF-GRID INVERTER

SOLAR MODULE(42) AXITEC AXIBLACKPREMIUM XXL HC AC-400MH/108VB

BATTERY MODULE(30) PEIMAR DR10H450M (FB)

MODULE-LEVEL RAPID SHUTDOWN(9) EG4 WALLMOUNT 314AH INDOOR BATTERY

STANDBY GENERATOR(72) TIGO TS4-A-F

PROJECT TYPE(1) BRIGGS AND STRATTON, MODEL: 40346

FULLY OFF-GRID WITH DC-COUPLED BATTERY STORAGE (WHOLE-HOME BACKUP APPLICATION)

SITE SPECIFICATIONS

MAIN SERVICE PANEL200A RATED BUSBAR

BACKED-UP LOADS PANEL200A / 2P MAIN BREAKER

ASHRAE EXTREME ANNUAL MEAN MINIMUM DENSITY DRY BULB TEMP.-14°C

ASHRAE 2% ANNUAL DRY DENSITY BULB TEMP.31°C

DESIGN WIND SPEED115 MPH

GROUND SNOW LOAD20 PSF

WIND EXPOSURE CATEGORYC

SEISMIC EXPOSURE CATEGORYB

RISK CATEGORYIII

PROJECT LOCATION MAP

WITHHELD IN PUBLIC SAMPLE

VICINITY MAP

WITHHELD IN PUBLIC SAMPLE

2

LOCALE

PV-1

SCALE: NTS

CONSTRUCTION NOTES	
1	CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
2	CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
3	ALL EQUIPMENT SHALL BE LISTED BY THE U.L. (OR EQUAL) AND LISTED FOR ITS SPECIFIC APPLICATION.
4	ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.
5	ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6	ACCESS TO ELECTRICAL COMPONENTS OVER 150 VOLTS TO GROUND SHALL BE RESTRICTED TO QUALIFIED PERSONNEL.
7	ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 VOLTS AND 90°C WET ENVIRONMENT, UNLESS OTHERWISE NOTED.
8	WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
9	PV MODULES FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER G.E.C. PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
10	PV MODULES RACKING RAIL SHALL BE BONDED TO BARE COPPER G.E.C VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVALENT LISTED LUG.
11	GROUNDING ELECTRODE CONDUCTOR (G.E.C) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED
12	ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
13	WORKING SPACE AROUND ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC SECTION 110.26.

SCOPE OF WORK DESCRIPTION

*THE **PROPOSED SYSTEM** IS A ROOF MOUNTED PHOTOVOLTAIC ARRAY. THE PHOTOVOLTAIC (PV) SYSTEM IS TO BE INSTALLED ON THE RESIDENTIAL ZONED PROPERTY IN THE UNINCORPORATED COMMUNITY OF SAMPLE CITY LOCATED WITHIN HALIFAX COUNTY, VIRGINIA.*

THE PROJECT WILL INCLUDE DC-COUPLED STORAGE BATTERIES EMPLOYED IN A WHOLE-HOME BACKUP CONFIGURATION. THE PROJECT WILL ALSO INCLUDE A STANDBY GENERATOR.

THE PROJECT IS FULLY OFF-GRID, WITH NO INTERCONNECTION TO THE EXISTING UTILITY COMPANY.

See structural letter for roof areas that require tighter connection spacing than listed.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING SET IS CONFIDENTIAL AND SHALL NOT BE DISCLOSED IN FULL OR IN PART TO ANYONE EXCEPT THOSE INVOLVED IN THE DESIGN AND INSTALLATION OF THE PV SYSTEM REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

PROJECT INFO

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-1



NOTE TO PLAN REVIEWER:
SHEET PV-2A REPRESENTS A GENERAL SITE PLAN DEPICTING THE
RELEVANT ELEMENTS OF THE PARCEL, AND THE SETBACKS FROM
THE PROPOSED PV ARRAY TO THE PROPERTY LINES. THIS HAS
BEEN DONE BECAUSE THE LOT LINES ARE RATHER LARGE, AND
THE RESULTING SCALING MAKES THE READABILITY DIFFICULT.
PLEASE REFER TO SHEET PV-2B FOR A DETAILED SITE PLAN WITH
REGARDS TO THE DESIGN, AND ALL RELEVANT ELECTRICAL
DETAILS. THANK YOU.

GEMINI SOLAR DESIGN	
SAMPLE PROJECT	
CONTACT: ON FILE	
PROJECT INFO WITHHELD	
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OFF-GRID SOLAR SYSTEM 30.30kW	SAMPLE RESIDENCE PROJECT ADDRESS WITHHELD UNITED STATES
SITE PLAN	
PROJECT NO: GSD-SAMPLE	
DRAWN BY: GSD	
DATE: SAMPLE	
PV-2A	



(E) SINGLE FAMILY DWELLING

(N) PV ARRAY #2
(34) AXITEC AXIBLACKPREMIUM XXL HC AC-400MH/108VB
(34) TIGO POWER TS4-A-F (RAPID SHUTDOWN MLPE)
207° AZIMUTH, 3:12 PITCH

(E) 200A RATED LOAD CENTER
(E) 200A / 2P MAIN BREAKER
*THIS 200A LOAD CENTER SHALL BE BACKED UP BY
(TYP. OF 3) EG4 12000XP V2 OFF-GRID INVERTERS
IN A WHOLE-HOME BACKUP OFF-GRID APPLICATION*
120 / 240VAC, 1-φ, NEMA 1 RATED
(LOC. INTERIOR OF SFD)

(N) HYBRID INVERTER #1
MODEL: EG4 12000XP OFF-GRID INVERTER V2
(LOC. INTERIOR OF SFD)

(N) HYBRID INVERTER #2
MODEL: EG4 12000XP OFF-GRID INVERTER V2
(LOC. INTERIOR OF SFD)

(N) HYBRID INVERTER #3
MODEL: EG4 12000XP OFF-GRID INVERTER V2
(LOC. INTERIOR OF SFD)

(N) PV ARRAY #3
(10) PEIMAR DR10H450M (FB)
(10) TIGO POWER TS4-A-F (RAPID SHUTDOWN MLPE)
207° AZIMUTH, 3:12 PITCH

(N) PV ARRAY #4
(20) PEIMAR DR10H450M (FB)
(20) TIGO POWER TS4-A-F (RAPID SHUTDOWN MLPE)
117° AZIMUTH, 3:12 PITCH

(N) PV ARRAY #1
(8) AXITEC AXIBLACKPREMIUM XXL HC AC-400MH/108VB
(8) TIGO POWER TS4-A-F (RAPID SHUTDOWN MLPE)
117° AZIMUTH, 3:12 PITCH



651 W. GALENA PARK BLVD., STE. 101 PHONE (801) 990-1775
DRAPER, UTAH 84020 WWW.VECTORSE.COM

ELECTRICAL ONLY



06/22/2026

Firm License Number: 0413000316

VSE Project Number: U2717.0110.261

The contractor must notify Vector Structural Engineering, LLC, should discrepancies between the as-built electrical system and what is shown on the permit plans be found. Vector Structural Engineering shall be notified of any changes from the approved design before installation. Vector Structural Engineering assumes no responsibility for improper installation of the solar system.

(N) NEMA 3R JUNCTION BOX
TRANSITION FROM PV WIRE TO #10 THWN-2
CONDUCTORS RAN INSIDE 0.75" DIA. EMT CONDUIT
RAN OVER ROOF SURFACE TO HYBRID INVERTER

(N) RAPID SHUTDOWN INITIATOR WITH
ONE NORMALLY CLOSED SWITCH
AND ONE NORMALLY OPEN SWITCH
(EMERGENCY POWER OFF SWITCH)
(LOC. ON EXTERIOR OF SFD)

(N) 200A RATED LOAD CENTER, MAIN LUG ONLY
120 / 240VAC, 1-φ, NEMA 1 RATED
(LOC. INTERIOR OF SFD)
*(*LOAD* INPUT / OUTPUT PANELBOARD)*
NEUTRAL TO GROUND BOND LOCATED HERE

(BATTERY BANK #1), (TYP. OF 3)
(N) EG4 WALLMOUNT 314AH INDOOR BATTERY
51.2VDC NOMINAL VOLTAGE
16KWH, 314 AMP-HOURS CAPACITY
(LOC. INTERIOR OF SFD)

(N) UNIT #1, EG4 CHARGEVERTER - GC
MODEL: CU-48J5000-GD
(LOC. INTERIOR OF SFD)

(BATTERY BANK #2), (TYP. OF 3)
(N) EG4 WALLMOUNT 314AH INDOOR BATTERY
51.2VDC NOMINAL VOLTAGE
16KWH, 314 AMP-HOURS CAPACITY
(LOC. INTERIOR OF SFD)

(N) UNIT #2, EG4 CHARGEVERTER - GC
MODEL: CU-48J5000-GD
(LOC. INTERIOR OF SFD)

(BATTERY BANK #3), (TYP. OF 3)
(N) EG4 WALLMOUNT 314AH INDOOR BATTERY
51.2VDC NOMINAL VOLTAGE
16KWH, 314 AMP-HOURS CAPACITY
(LOC. INTERIOR OF SFD)

(N) UNIT #3, EG4 CHARGEVERTER - GC
MODEL: CU-48J5000-GD
(LOC. INTERIOR OF SFD)

(N) NEMA 3R JUNCTION BOX
TRANSITION FROM PV WIRE TO #10 THWN-2
CONDUCTORS RAN INSIDE 0.75" DIA. EMT CONDUIT
RAN OVER ROOF SURFACE TO HYBRID INVERTER

(N) 20KW RESIDENTIAL STANDBY GENERATOR
MODEL: BRIGGS & STRATTON, MODEL: 040336
120/240VAC, 1-φ, 60HZ, 100A CIRCUIT BREAKER
(LOC. ON EXTERIOR)

NOTE TO INSTALLER:
**REMOVE 'NEUTRAL TO GROUND' BOND FROM THE GENERATOR
IF IT EXISTS. THERE SHALL ONLY BE ONE 'NEUTRAL TO GROUND'
BOND IN THE SYSTEM, AND THAT IS WITHIN THE
SERVICE-ENTRANCE.**

(N) 1/2" SCH. 40 PVC CONDUIT BURIED UNDERGROUND
CARRYING AC CONDUCTORS FROM THE STANDBY GENERATOR
TO THE GENERATOR INPUT / OUTPUT PANELBOARD

19" BURIAL DEPTH MINIMUM, ~18 FT. RUN LENGTH

(TYP. OF 3) 2 AWG THWN-2 (L1, L2, N)
(TYP. OF 1) 8 AWG THWN-2 (GROUND)

(N) 125A RATED LOAD CENTER, MLO
120 / 240VAC, 1-φ, NEMA 1 RATED
(GENERATOR INPUT / OUTPUT PANELBOARD)
(CHARGEVERTER INPUT / OUTPUT PANELBOARD)
(LOC. INTERIOR OF SFD)

SITE PLAN NOTES

1	CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 319.0(D).
2	CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.8(C).
3	DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER NEC ARTICLE 690.1(E)
4	ARRAYS SHALL BE INSTALLED IN A WAY THAT ENSURES THAT PV SOURCE CONDUCTORS SHALL NOT BE READILY ACCESSIBLE.
5	UNDERGROUND PVC CONDUIT SHALL BE BURIED AT 19" MINIMUM DEPTH, WARNING TAPE 12" ABOVE.
6	VERIFY UNDERGROUND UTILITIES PRIOR TO EXCAVATION.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

SITE PLAN

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

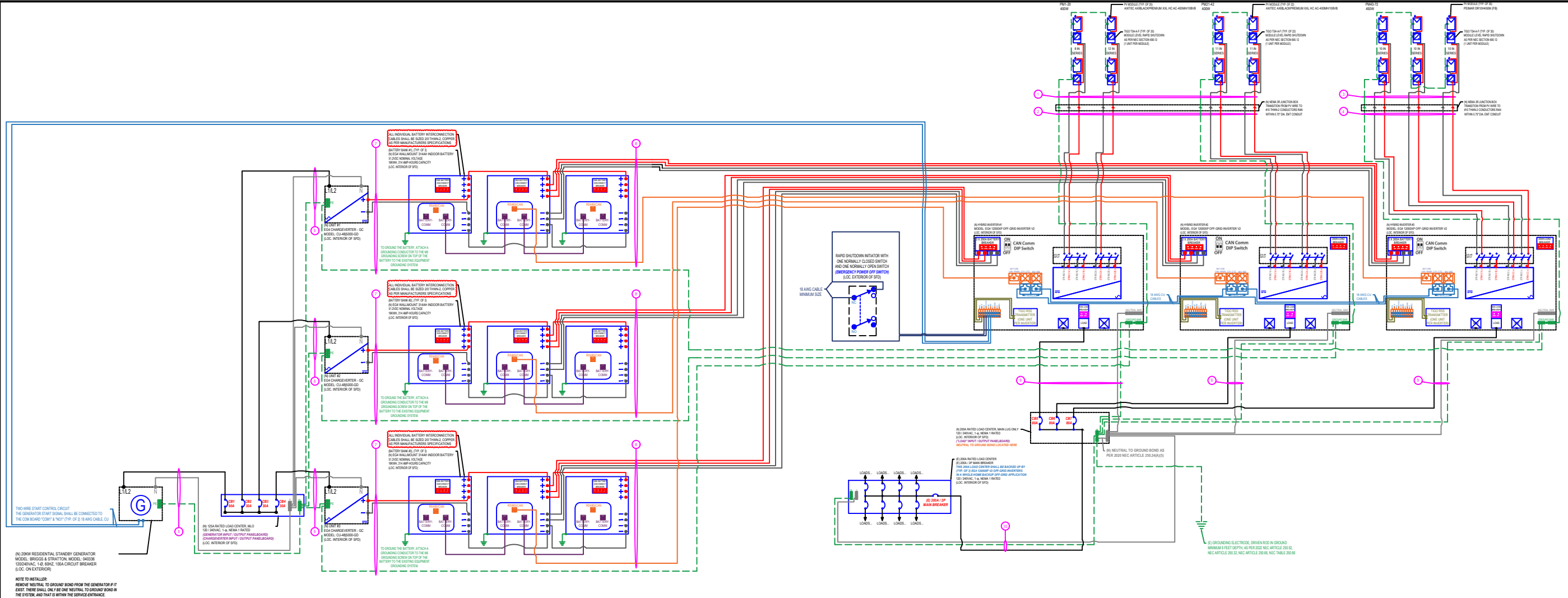
DATE: SAMPLE

PV-2B

1

SITE PLAN (DETAILED)

PV-2B SCALE: 1" = 13'



GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

SINGLE-LINE DIAGRAM

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-3A

VECTORENGINEERS

651 W. GALENA PARK BLVD, STE. 101
DRAPER, UTAH 84020

PHONE (801) 990-1775
WWW.VECTORSE.COM

ELECTRICAL ONLY

COMMONWEALTH OF VIRGINIA

DEAN P. LEVORSEN

No. 0402062156

PROFESSIONAL ENGINEER

06/22/2026

Firm License Number: 0413000316
VSE Project Number: U2717.0110.261

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PHOTOVOLTAIC MODULE								
REF.	TYP.	MODULE	STC POWER	ISC	IMP	VOC	VMP	FUSE RATING
PM1-42	42	AXITEC AXIBLACKPREMIUM XXL HC AC-400MH/108VB	400W	13.79A	12.90A	37.07V	31.01V	25A
PM43-72	30	PEIMAR DR10H450M (FB)	450W	13.85A	13.27A	41.18V	33.91V	25A

HYBRID INVERTER								
TYP.	HYBRID INVERTER	MPPT OPERATING VOLTAGE RANGE	NUMBER OF MPPT/ MAX SOLAR STRINGS PER MPPT	MAX. USABLE INPUT CURRENT (I_MP) PER MPPT	MAXIMUM PV INPUT VOLTAGE	NOMINAL POWER OUTPUT	EFFICIENCY RATINGS	RAPID SHUTDOWN COMPLIANT AS PER NEC 690.12
3	EG4 12000XP V2 OFF-GRID INVERTER	120-385VDC	2 MPPT IN TOTAL 2 STRINGS (MPPT 1) 2 STRINGS (MPPT 2)	35A / 35A	500VDC	W/ PV: 15,000W @ 240VAC W/ OUT PV: 15,000W @ 240VAC	(MPPT) - 99% (PV TO BATTERY) - 92.8% (AC TO BATTERY) - 92.5% (PV TO LOADS) - 93.5% (BATTERY TO LOADS) - 90.2%	YES

BATTERY MODULE									
TYP.	BATTERY	CHEMISTRY	NOMINAL VOLTAGE	CAPACITY	NOMINAL ENERGY CAPACITY	COMMUNICATION PROTOCOL	MAX CONTINUOUS / RECOMMENDED CHARGE CURRENT	MAX CONTINUOUS / RECOMMENDED DISCHARGE CURRENT	INTEGRATED BATTERY CIRCUIT BREAKER
9	EG4 WALLMOUNT 314AH INDOOR BATTERY	LiFePO4	51.2VDC (48VDC)	314AH	16KWH	RS485/CAN	157A / 157A	200A / 157A	250ADC

STANDBY GENERATOR								
TYP.	GENERATOR	AC LOAD	RUNNING WATTAGE	INTERNAL CIRCUIT BREAKER	COMPRESSION RATIO	DISPLACEMENT	ENGINE FUEL	
1	BRIGGS AND STRATTON, MODEL: 40346	120 / 240VAC, 1-Ø	20,000W	100A / 2P BREAKER	8.5 : 1	993CC	LIQUID PROPANE (LP) NATURAL GAS (NG)	

MODULE LEVEL RAPID SHUTDOWN									
TYP.	MODEL	NEC 690.12 COMPLIANT	MAXIMUM OUTPUT POWER	MAXIMUM INPUT VOLTAGE	OPEARTING VOLTAGE RANGE	MAXIMUM INPUT CURRENT (I _{mp})	COMMUNICATION	RECOMMENDED FUSE RATING	
72	TIGO TS4-A-F	YES	700W	80VDC	16VDC - 80VDC	15A	PLC	25A	

SYSTEM SUMMARY (INVERTER #1)	
ARRAY STC POWER	8,000W
ARRAY CIRCUITS	1 X 8 (MPPT #1) 1 X 12 (MPPT #2)
ARRAY VMP @ STC (25°C)	248.08VDC (MPPT #1) 372.12VDC (MPPT #2)
ARRAY VOC @ STC (25°C)	296.56VDC (MPPT #1) 444.84VDC (MPPT #2)
MAXIMUM ARRAY VOC @ MIN. TEMP (-14°C)	328.94VDC (MPPT #1) 493.41VDC (MPPT #2)
ARRAY I_MP @ STC (SELF-LIMITING OVER 35A FOR MPPT 1 & MPPT 2)	12.90A (MPPT #1) 12.90A (MPPT #2)
ARRAY I_SC (MAX) (MAXIMUM INPUT OF 44A FOR MPPT 1 & MPPT 2)	13.79A (MPPT #1) 13.79A (MPPT #2)
MAXIMUM CONTINUOUS OUTPUT CURRENT	15,000W, 62.5A @ 240VAC

SYSTEM SUMMARY (INVERTER #2)	
ARRAY STC POWER	8,800W
ARRAY CIRCUITS	1 X 11 (MPPT #1) 1 X 11 (MPPT #2)
ARRAY VMP @ STC (25°C)	341.11VDC (MPPT #1) 341.11VDC (MPPT #2)
ARRAY VOC @ STC (25°C)	407.77VDC (MPPT #1) 407.77VDC (MPPT #2)
MAXIMUM ARRAY VOC @ MIN. TEMP (-14°C)	452.29VDC (MPPT #1) 452.29VDC (MPPT #2)
ARRAY I_MP @ STC (SELF-LIMITING OVER 35A FOR MPPT 1 & MPPT 2)	12.90A (MPPT #1) 12.90A (MPPT #2)
ARRAY I_SC (MAX) (MAXIMUM INPUT OF 44A FOR MPPT 1 & MPPT 2)	13.79A (MPPT #1) 13.79A (MPPT #2)
MAXIMUM CONTINUOUS OUTPUT CURRENT	15,000W, 62.5A @ 240VAC

SYSTEM SUMMARY (INVERTER #3)	
ARRAY STC POWER	13,500W
ARRAY CIRCUITS	1 X 10 (MPPT #1) 2 X 10 (MPPT #2)
ARRAY VMP @ STC (25°C)	339.1VDC (MPPT #1) 339.1VDC (MPPT #2)
ARRAY VOC @ STC (25°C)	411.8VDC (MPPT #1) 411.8VDC (MPPT #2)
MAXIMUM ARRAY VOC @ MIN. TEMP (-14°C)	458.37VDC (MPPT #1) 458.37VDC (MPPT #2)
ARRAY I_MP @ STC (SELF-LIMITING OVER 35A FOR MPPT 1 & MPPT 2)	13.27A (MPPT #1) 26.54A (MPPT #2)
ARRAY I_SC (MAX) (MAXIMUM INPUT OF 44A FOR MPPT 1 & MPPT 2)	13.85A (MPPT #1) 27.7A (MPPT #2)
MAXIMUM CONTINUOUS OUTPUT CURRENT	15,000W, 62.5A @ 240VAC



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06/22/2026

Firm License Number: 0413000316

VSE Project Number: U2717.0110.261

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OCPD SCHEDULE				
REF.	TYPE OF OCPD	POLES	CURRENT RATING	RATED VOLTAGE
CB1 (BACKFED CIRCUIT BREAKER, STANDBY GENERATOR)	CIRCUIT BREAKER	2	90A	240VAC
CB2 (FEEDER BREAKER, EG4 CHARGEVERTER)	CIRCUIT BREAKER	2	30A	240VAC
CB3 (FEEDER BREAKER, EG4 CHARGEVERTER)	CIRCUIT BREAKER	2	30A	240VAC
CB4 (FEEDER BREAKER, EG4 CHARGEVERTER)	CIRCUIT BREAKER	2	30A	240VAC
CB5 (CIRCUIT BREAKER, HYBRID INVERTER, "LOAD" OUTPUT)	CIRCUIT BREAKER	2	80A	240VAC
CB6 (CIRCUIT BREAKER, HYBRID INVERTER, "LOAD" OUTPUT)	CIRCUIT BREAKER	2	80A	240VAC
CB7 (CIRCUIT BREAKER, HYBRID INVERTER, "LOAD" OUTPUT)	CIRCUIT BREAKER	2	80A	240VAC

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

SINGLE-LINE DIAGRAM

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-3B

3 JUNCTION BOX

⚠ WARNING ⚠
**PHOTOVOLTAIC
POWER SOURCE**

NEC 690.35

4 HYBRID INVERTER #1 NEC 690.53

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

RATED MPP VOLTAGE 372.12 VDC

RATED MPP CURRENT 12.90 A
(MPPT #1 / MPPT #2) 12.90 A

MAX SYSTEM VOLTAGE 493.41 VDC

8 HYBRID INVERTER #1

**SOLAR INVERTER
MAXIMUM RATING**

OPERATING CURRENT	62.5 AMPS
OPERATING VOLTAGE	240 VAC

NEC 690.54

SIGNAGE REQUIREMENTS	
1	ALL PLACARDS AND SIGNAGE REQUIRED BY THE 2020 NATIONAL ELECTRICAL CODE, AND ANY OTHER STATE CODES OR LOCAL ORDINANCES WILL BE INSTALLED AS REQUIRED.
2	RED BACKGROUND
3	WHITE LETTERING
4	MINIMUM 3/8" LETTER HEIGHT
5	ALL CAPITAL LETTERS
6	ARIAL OR SIMILAR FONT
7	WEATHER RESISTANT MATERIAL, PER UL 969

10 HYBRID INVERTER #2 NEC 690.53

**PHOTOVOLTAIC SYSTEM
DC DISCONNECT**

RATED MPP VOLTAGE	341.11 VDC
RATED MPP CURRENT (MPPT #1 / MPPT #2)	12.90 A 12.90 A
MAX SYSTEM VOLTAGE	452.29 VDC

14 HYBRID INVERTER #2

**SOLAR INVERTER
MAXIMUM RATING**

OPERATING CURRENT 62.5 AMPS
 OPERATING VOLTAGE 240 VAC

NEC 690.54

16	HYBRID INVERTER #3	NEC 690.53
PHOTOVOLTAIC SYSTEM DC DISCONNECT		
RATED MPP VOLTAGE		339.1 VDC
RATED MPP CURRENT (MPPT #1 / MPPT #2)		13.27 A 26.54 A
MAX SYSTEM VOLTAGE		458.37 VDC

18 HYBRID INVERTER #3

⚠ WARNING ⚠

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF
THIS PHOTOVOLTAIC SYSTEM
ARE UNGROUNDED AND
MAY BE ENERGIZED

NEC 690.35(F)

20 HYBRID INVERTER #3

SOLAR INVERTER MAXIMUM RATING	
OPERATING CURRENT	62.5 AMPS
OPERATING VOLTAGE	240 VAC

NEC 690.54

22 RACEWAYS, CABLES PER 10 FT.

⚠ WARNING ⚠
PHOTOVOLTAIC
POWER SOURCE

NEC 690.31(E)(3),(4)

23 200A LOAD CENTER ("BACKED UP LOADS PANEL")

WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS

TERMINALS ON BOTH THE LINE AND

LOAD SIDES MAY BE ENERGIZED

IN THE OPEN POSITION

NEC 690.17.4

25

200A LOAD CENTER ("BACKED UP LOADS PANEL")

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION
TO SHUT DOWN CONDUCTORS
OUTSIDE THE ARRAY
CONDUCTORS WITHIN
THE ARRAY REMAIN
ENERGIZED IN SUNLIGHT

26 BATTERY BANK

▲ MAIN BATTERY ▲
SYSTEM
DISCONNECT

27 ESS RAPID SHUTDOWN SWITCH

⚠ MAIN BATTERY ⚠
SYSTEM
DISCONNECT

24 200A LOAD CENTER ("BACKED UP LOADS PANEL")

**BATTERY
BACKED UP
ELECTRICAL
PANEL**

[illegible]A circular professional engineer seal for the Commonwealth of Virginia. The outer ring contains the text "COMMONWEALTH OF VIRGINIA" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by a jagged border. In the center, the name "DEAN P. LEVORSEN" is printed above the number "No. 0402062156". A blue ink signature is written across the bottom half of the seal.

06/22/2026

Firm License Number: 0413000316
VSE Project Number: U2717.0110.261

The contractor must notify Vector Structural Engineering, LLC, should discrepancies between the as-built electrical system and what is shown on the permit plans be found. Vector Structural Engineering shall be notified of any changes from the approved design before installation. Vector Structural Engineering assumes no responsibility for improper installation of the solar system.

1 PLACARDS
PV-4 SCALE: NTS

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

CONFIDENTIAL: THE INFORMATION CONTAINED
IN THIS DRAWING SET IS CONFIDENTIAL AND
SHALL NOT BE DISCLOSED IN FULL OR IN PART
TO ANYONE EXCEPT THOSE INVOLVED IN THE
DESIGN AND INSTALLATION OF THE PV SYSTEM
REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 30.30kW

**SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES**

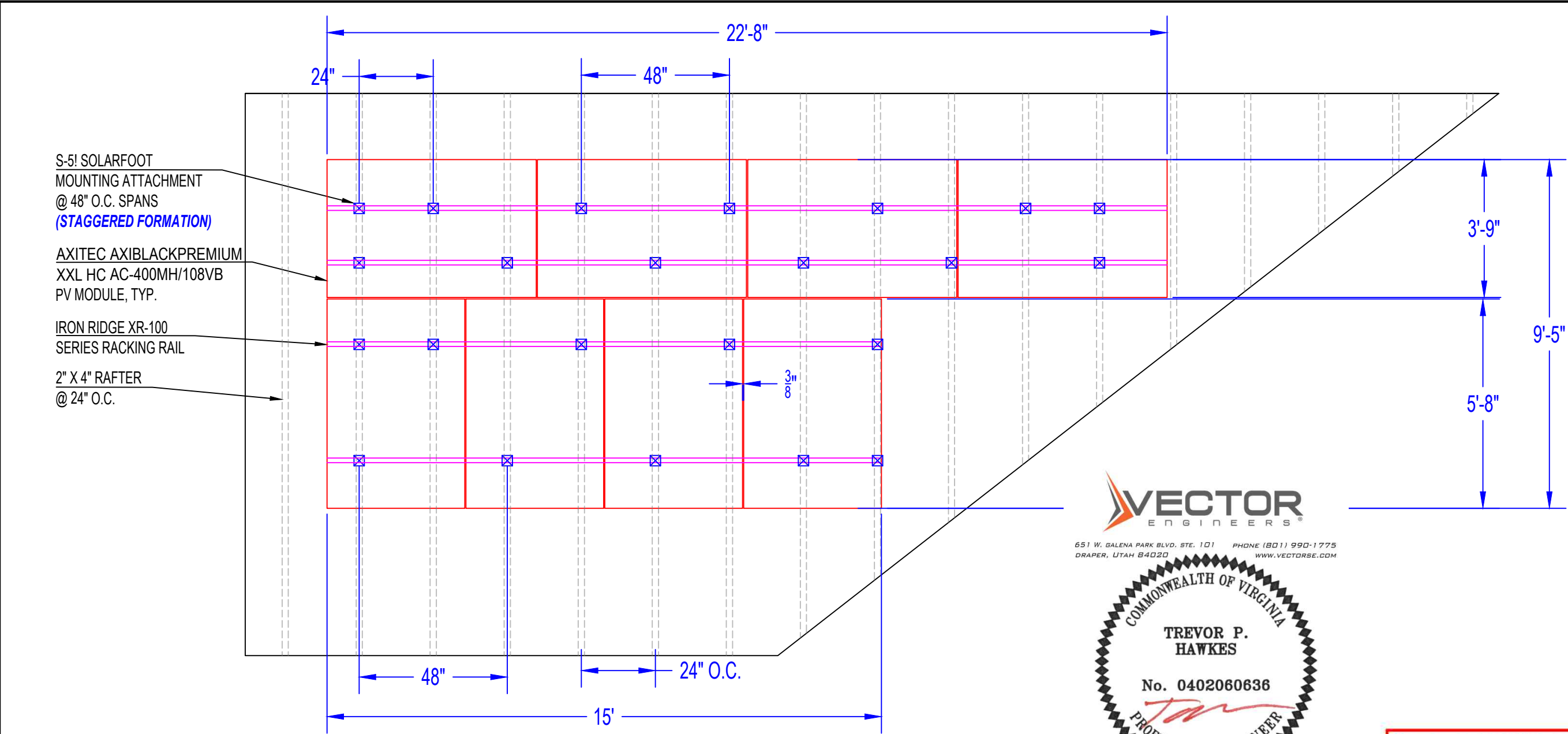
PLACARDS

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-4



Vector Structural Engineering has reviewed the existing structure with loading from the solar array and clamps capacity to the metal roofing. The design of the racking system, racking connections, and all other structural is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.

VECTOR
ENGINEERS
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DRAPER, UTAH 84020 WWW.VECTORSE.COM



05/26/2026
Firm License Number: 0413000316
VSE Project Number: U27170110-261

See structural letter for
roof areas that require
tighter connection
spacing than listed.

ROOF INFORMATION	
ROOF TYPE	EXPOSED FASTENER METAL ROOFING
PITCH	3:12
RAFTER SPACING	24" O.C.
RAFTER DIMENSIONS	2" X 4"
LAYOUT SPECIFICATIONS	
NUMBER OF MODULES	8
AREA	170.8 SQ. FT
AZIMUTH	117°
TOTAL WEIGHT OF ARRAY	482.7 LBS
DEAD LOAD	2.83 PSF

LOCAL DESIGN CRITERIA	
WIND EXPOSURE CATEGORY	C
SEISMIC DESIGN CATEGORY	B
RISK CATEGORY	II
DESIGN WIND SPEED	115 MPH
GROUND SNOW LOAD	20 PSF
PV MODULES AND IRON RACKING SYSTEM HAVE A CLASS A FIRE RATING CLASSIFICATION.	

ATTACHMENT PLAN NOTES	
1	ROOF MEMBERS AND PENETRATIONS TO BE DETERMINED IN THE FIELD.
2	THE SOLAR PHOTOVOLTAIC INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
3	PLEASE SEE SHEETS PV-6A AND PV-6B FOR DETAILS REGARDING THE S-5! SOLARFOOT MOUNTING ATTACHMENT TO BE USED, AS WELL AS THE RELEVANT CUTSHEETS.
4	PLEASE SEE SHEET PV-6E FOR A STRUCTURAL CERTIFICATION LETTER FOR THE IRON RIDGE FLUSH MOUNT SYSTEM. LETTER IS STAMPED BY A STATE OF VIRGINIA REGISTERED PROFESSIONAL ENGINEER (PE).

1 ATTACHMENT PLAN (ARRAY #1)
PV-5A SCALE: 1" = 3'

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

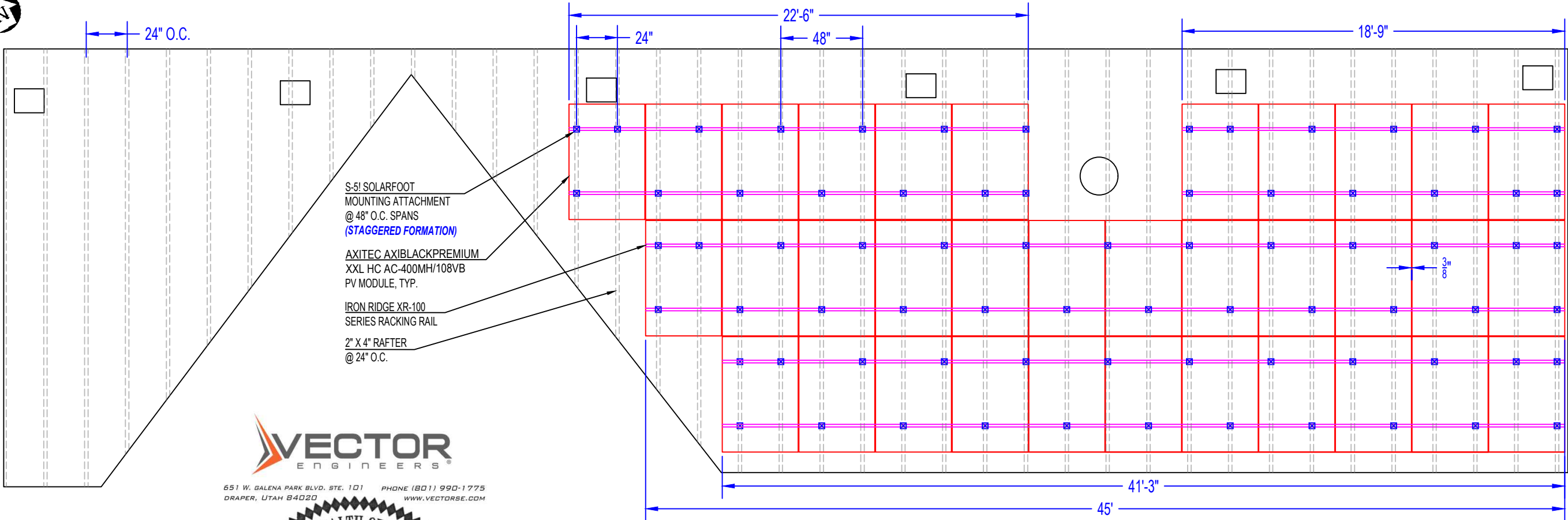
ATTACHMENT PLAN

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-5A



VECTOR
ENGINEERS®
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DRAPER, UTAH 84020 WWW.VECTORSE.COM



05/26/2026

Firm License Number: 0413000316
VSE Project Number: U27170110-261

See structural letter for
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ROOF INFORMATION	
ROOF TYPE	EXPOSED FASTENER METAL ROOFING
PITCH	3:12
RAFTER SPACING	24" O.C.
RAFTER DIMENSIONS	2" X 4"
LAYOUT SPECIFICATIONS	
NUMBER OF MODULES	34
AREA	725.9 SQ. FT
AZIMUTH	207°
TOTAL WEIGHT OF ARRAY	2,051.4 LBS
DEAD LOAD	2.83 PSF

LOCAL DESIGN CRITERIA	
WIND EXPOSURE CATEGORY	C
SEISMIC DESIGN CATEGORY	B
RISK CATEGORY	II
DESIGN WIND SPEED	115 MPH
GROUND SNOW LOAD	20 PSF
PV MODULES AND IRON RACKING SYSTEM HAVE A CLASS A FIRE RATING CLASSIFICATION.	

ATTACHMENT PLAN NOTES	
1	ROOF MEMBERS AND PENETRATIONS TO BE DETERMINED IN THE FIELD.
2	THE SOLAR PHOTOVOLTAIC INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
3	PLEASE SEE SHEETS PV-6A AND PV-6B FOR DETAILS REGARDING THE S-5! SOLARFOOT MOUNTING ATTACHMENT TO BE USED, AS WELL AS THE RELEVANT CUTSHEETS.
4	PLEASE SEE SHEET PV-6E FOR A STRUCTURAL CERTIFICATION LETTER FOR THE IRON RIDGE FLUSH MOUNT SYSTEM. LETTER IS STAMPED BY A STATE OF VIRGINIA REGISTERED PROFESSIONAL ENGINEER (PE).

1 ATTACHMENT PLAN (ARRAY #2)
PV-5B SCALE: 1" = 5'-6"

GEMINI SOLAR DESIGN

SAMPLE PROJECT
CONTACT: ON FILE
PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

ATTACHMENT PLAN

PROJECT NO: GSD-SAMPLE
DRAWN BY: GSD
DATE: SAMPLE

PV-5B



651 W. GALENA PARK BLVD. STE. 101 PHONE (801) 990-1775
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05/26/2026

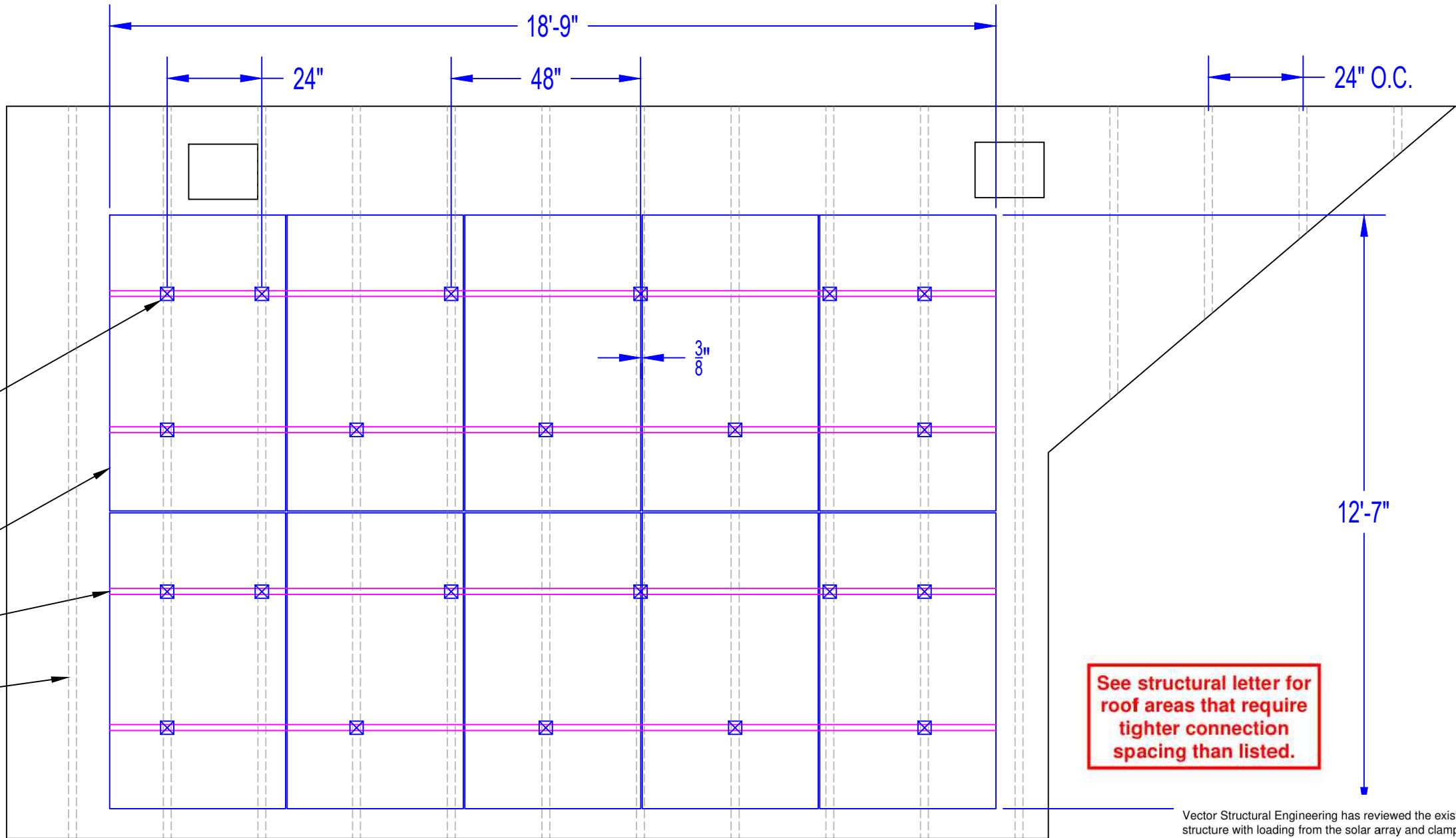
Firm License Number: 0413000316
VSE Project Number: U27170110-261

S-5! SOLARFOOT
MOUNTING ATTACHMENT
@ 48" O.C. SPANS
(**STAGGERED FORMATION**)

PEIMAR DR10H450M (FB)
PV MODULE, TYP.

IRON RIDGE XR-100
SERIES RACKING RAIL

2" X 4" RAFTER
@ 24" O.C.



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GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

ATTACHMENT PLAN

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-5C

ROOF INFORMATION

ROOF TYPE	EXPOSED FASTENER METAL ROOFING
PITCH	3:12
RAFTER SPACING	24" O.C.
RAFTER DIMENSIONS	2" X 4"

LAYOUT SPECIFICATIONS

NUMBER OF MODULES	10
AREA	237.3 SQ. FT
AZIMUTH	207°
TOTAL WEIGHT OF ARRAY	696.4 LBS
DEAD LOAD	2.94 PSF

LOCAL DESIGN CRITERIA

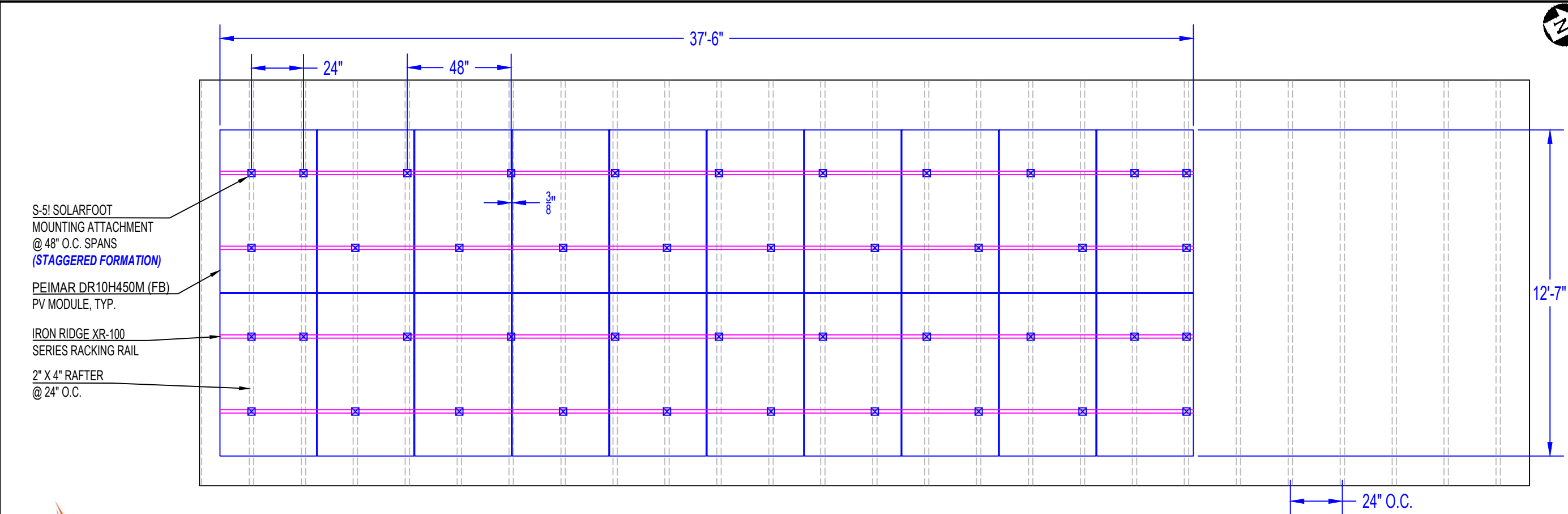
WIND EXPOSURE CATEGORY	C
SEISMIC DESIGN CATEGORY	B
RISK CATEGORY	II
DESIGN WIND SPEED	115 MPH
GROUND SNOW LOAD	20 PSF

PV MODULES AND IRON RACKING SYSTEM HAVE A CLASS A FIRE RATING CLASSIFICATION.

ATTACHMENT PLAN NOTES

- 1 ROOF MEMBERS AND PENETRATIONS TO BE DETERMINED IN THE FIELD.
- 2 THE SOLAR PHOTOVOLTAIC INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- 3 **PLEASE SEE SHEETS PV-6A AND PV-6B FOR DETAILS REGARDING THE S-5! SOLARFOOT MOUNTING ATTACHMENT TO BE USED, AS WELL AS THE RELEVANT CUTSHEETS.**
- 4 **PLEASE SEE SHEET PV-6E FOR A STRUCTURAL CERTIFICATION LETTER FOR THE IRON RIDGE FLUSH MOUNT SYSTEM. LETTER IS STAMPED BY A STATE OF VIRGINIA REGISTERED PROFESSIONAL ENGINEER (PE).**

1 ATTACHMENT PLAN (ARRAY #3)
PV-5C SCALE: 1" = 2'-9"



S-5! SOLARFOOT
MOUNTING ATTACHMENT
@ 48" O.C. SPANS
(*STAGGERED FORMATION*)

PEIMAR DR10H450M (FB)
PV MODULE, TYP.

IRON RIDGE XR-100
SERIES RACKING RAIL

2" X 4" RAFTER
@ 24" O.C.



Firm License Number: 0413000316
VSE Project Number: U27170110-261

See structural letter for
roof areas that require
tighter connection
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ROOF INFORMATION	
ROOF TYPE	EXPOSED FASTENER METAL ROOFING
PITCH	3:12
RAFTER SPACING	24" O.C.
RAFTER DIMENSIONS	2" X 4"
LAYOUT SPECIFICATIONS	
NUMBER OF MODULES	20
AREA	474.6 SQ. FT
AZIMUTH	117°
TOTAL WEIGHT OF ARRAY	1,392.8 LBS
DEAD LOAD	2.94 PSF

LOCAL DESIGN CRITERIA	
WIND EXPOSURE CATEGORY	C
SEISMIC DESIGN CATEGORY	B
RISK CATEGORY	II
DESIGN WIND SPEED	115 MPH
GROUND SNOW LOAD	20 PSF
PV MODULES AND IRON RACKING SYSTEM HAVE A CLASS A FIRE RATING CLASSIFICATION.	

ATTACHMENT PLAN NOTES	
1	ROOF MEMBERS AND PENETRATIONS TO BE DETERMINED IN THE FIELD.
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GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

ATTACHMENT PLAN

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

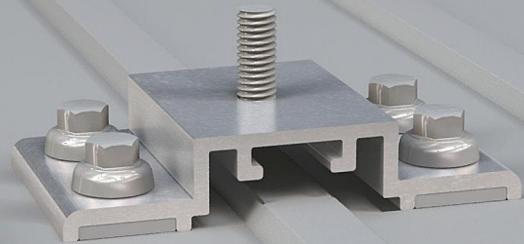
DATE: SAMPLE

PV-5D



Introducing the new SolarFoot™ for exposed fastener metal roofing with the strength, testing, quality, and time-proven integrity you expect from S-5!. The SolarFoot provides an ideal mounting platform to attach the L-Foot (not included) of a rail-mounted PV system to the roof. This solution is The Right Way to secure rail-mounted solar systems to exposed fastener metal such as AG-Panel or R-Panel.

The right way to attach almost anything to metal roofs!



SolarFoot Features:

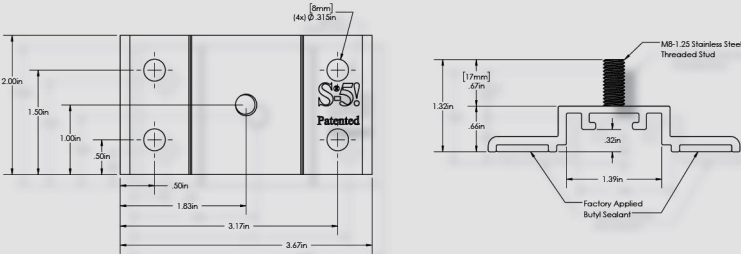
- Manufactured in the U.S.A. from certified raw material
- Fabricated in our own ISO 9002 certified factory
- All aluminum and stainless components
- Lifetime limited warranty
- Compatible with all commercial L-Foot products on the market
- Factory applied 40-year isobutylene/isoprene crosslink polymer sealant for reliable weathertightness
- Sealant reservoir to prevent over compression of sealant
- Load-to-failure tested Normal to Seam by a nationally accredited laboratory on thousands of metal roof manufacturers, profiles and materials
- Four points of attachment into structure or deck with tested holding strength for engineered applications
- Integrated with M8-1.25x17mm stud and M8-1.25 stainless steel hex flange nut included

888-825-3432 | www.S-5.com



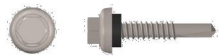
SolarFoot™: Mounting for Exposed Fastener Roofing

The SolarFoot is a simple, cost-effective pedestal for L-Foot (not included) attachment of rail-mounted solar PV. The unique design is compatible with all rail producer L-Foot components. The new SolarFoot assembly ensures a durable weathertight solution for the life of the roof. Special factory applied butyl co-polymeric sealant contained in a reservoir is The Right Way, allowing a water-tested seal. Stainless integrated stud and hex flange lock-nut secure the L-Foot into position. A low center of gravity reduces the moment arm commonly associated with L-Foot attachments. Direct attachment of the SolarFoot to the structural member or deck provides unparalleled holding strength.



*Fasteners sold separately. Fastener type varies with substrate. Contact S-5! on how to purchase fasteners and obtain our test results. L-Foot also sold separately.

Fastener Selection



Metal to Metal:
1/4-14 Self Drilling Screw
1-1/2" to 2-1/2"



Metal to Wood:
1/4-14 Type 17 AB Milled Point
1-1/2" to 2-1/2"

To source fasteners for your projects, contact S-5!

When other brands claim to be "just as good as S-5!", tell them to PROVE IT.

S-5!® Warning! Please use this product responsibly!

The independent lab test data found at www.S-5.com can be used for load-critical designs and applications.

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, fastener torque, patents, and trademarks, visit the S-5! website at www.S-5.com. Copyright 2021, Metal Roof Innovations, Ltd. S-5! products are patent protected.

Copyright 2021, Metal Roof Innovations, Ltd. Version 083121

SolarFoot Advantages:

- Exposed fasten mounting platform for solar arrays attached via L-Foot and Rails
- Weatherproof attachment to exposed fastener roofing
- Butyl sealant reservoir provides long-term waterproof seal
- M8-1.25x17mm stud with M8 hex flange nut for attachment of all popular L-Foot/rail combinations
- Tool: 13 mm Hex Socket or 1/2" Hex Socket
- Electric screw gun with hex drive socket for self tapping screws
- Low Center of Gravity reduces moment arm commonly associated with L-Foot/Rail solar mounting scenarios
- Attaches directly to structure or deck for optimal holding strength
- S-5! Recommended substrate-specific (e.g. steel purlin, wood 2x4, OSB, etc.) fasteners provide excellent waterproofing and pull out strength
- Fastener through-hole locations comply with NDS (National Design Specification) for Wood Construction

Distributed by:

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

S-5! SOLARFOOT

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-6A



The right way to attach almost anything to metal roofs!

Please read these install instructions in their entirety before beginning work.

Installation Instructions

S-5!® Warning! Please use these products responsibly! Visit our website or contact your S-5! distributor for available load test results. The user and/or installer of these parts is responsible for all necessary engineering and design to ensure the Solar Feet™ have been properly spaced and configured.

Notice to S-5! users: Due to the many variables involved with specific panel products, climates, wind loads, snow loads, and job particulars, the manufacturer cannot and does not express any opinions as to the suitability of any S-5! assembly for any specific application and assumes no liability with respect thereto. S-5! products are tested for ultimate holding strength on various profile types and materials. This information is available from the S-5! website: www.S-5.com.

These install instructions serve to illustrate the correct procedure for securing the SolarFoot to a roof. Proper layout and frequency will vary on a job specific basis and should be determined by a qualified professional. This document is an installation guide only and the photographs and drawings herein are for the purpose of illustrating installation, tools and techniques, not system designs.

The SolarFoot™ is made for exposed-fastened metal roofing. It provides an ideal, weatherproof mounting platform to attach the L-foot of a rail mounted solar system or other ancillaries to the roof.

Tools Needed

- Electric Screw Gun
- Rag
- String Line
- Tape Measure
- 3/8" Hex Socket Drive
- 13 mm (or 1/2") Hex Socket Drive

Placement Tip

The SolarFoot should be placed in the flat of the panel, between the ribs. It is designed to straddle striations or minor stiffening ribs when necessary. The SolarFoot must be mounted directly over and into the supporting structure of the roof, i.e. wood decking, wood or steel purlins, or trusses, NEVER into the metal roofing material alone.

Fastener Selection

Fastener selection will depend on whether the supporting structure of the roof is metal or wood. When relying upon tested load values one of the below fasteners MUST be used.

To source fasteners visit www.S-5.com



Not Provided

Metal to Metal Screw Specifications: 1/4-14 Self Drilling Screw - 1-1/2" to 2-1/2" Length - 3/8" Hex Washer Head - Zinc/Aluminum Cap



Not Provided

Metal to Wood Screw Specifications: 1/4-14 Type 17-AB Milled Point - 1-1/2" to 2-1/2" Length - 3/8" Hex Washer Head - Zinc/Aluminum Cap

S-5!® Warning! Please use this product responsibly!

These instructions are for use by those experienced in the trade. Always follow appropriate safety precautions and use appropriate tools.

SolarFoot™ Install



888-825-3432 | www.S-5.com

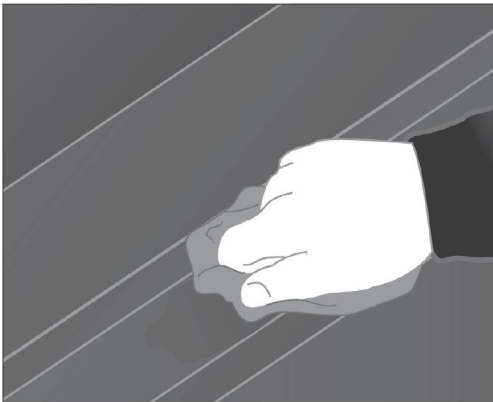
SolarFoot Installation Instructions

To Install SolarFoot™

1. Determine the location of the supporting structure of the roof. Wipe away excess oil and debris from the desired mounting location.
2. Peel the release paper from the base, align, and apply to roof surface so that fasteners will engage the structure below.
3. Install screws through the pre-punched holes in the SolarFoot into the structure below.
4. Install the L-Foot over the stud and secure in place with the provided M8-1.25 hex flange nut tightened to 160 inch pounds (13 ft lbs).

NOTE: Attachment frequency and spacing for PV arrays is the responsibility of the system designer. The makers of S-5! SolarFoot make no representations with respect to the variables involved in PV array design. Visit the S-5! website for load testing data.

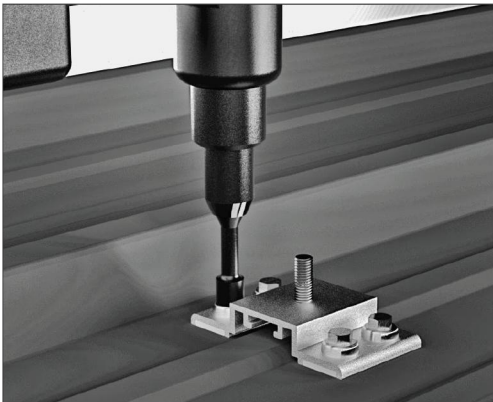
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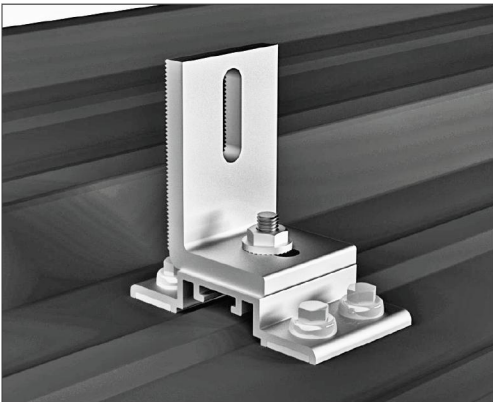
2



3



4



S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, fastener torque, patents, and trademarks, visit the S-5! website at www.S-5.com. Copyright 2017, Metal Roof Innovations, Ltd. S-5! products are patent protected. S-5! aggressively protects its patents, trademarks, and copyrights. .

These instructions are for use by those experienced in the trade. Always follow appropriate safety precautions and use appropriate tools. LP66-V1.0_08/17



S-5! SOLARFOOT INSTALLATION
SCALE: NTS

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

S-5! SOLARFOOT

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-6B



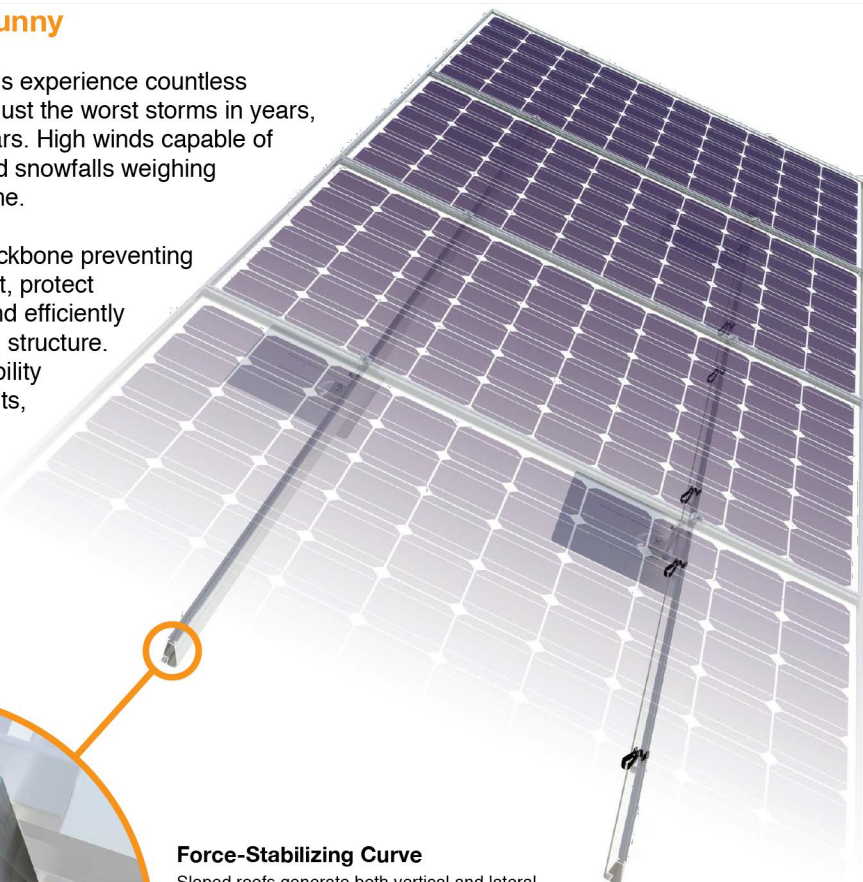
XR Rail Family

Tech Brief

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 marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



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 6 foot spans, while remaining light and economical.

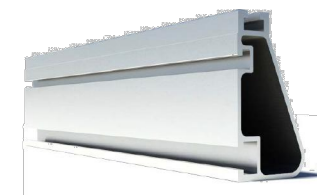
- 6' spanning capability
- Moderate load capability
- Clear anodized finish
- Internal splices available



XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' 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 12 feet or more for commercial applications.

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

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING SET IS CONFIDENTIAL AND SHALL NOT BE DISCLOSED IN FULL OR IN PART TO ANYONE EXCEPT THOSE INVOLVED IN THE DESIGN AND INSTALLATION OF THE PV SYSTEM REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

RAILS DATASHEET

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-6C

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1 RACKING RAILS DATASHEET
PV-6C SCALE: NTS



8431 Murphy Drive
Middleton, WI 53562 USA

Telephone: 608.836.4400
Facsimile: 608.831.9279
www.intertek.com

Test Verification of Conformity

In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

Applicant Name & Address:	IronRidge, Inc. 1495 Zephyr Ave. Hayward, CA 94544 USA		
Product Description:	Flush Mount System with XR Rails.		
Ratings & Principle Characteristics:	<u>Fire Class Resistance Rating:</u> -Flush Mount (Symmetrical). Class A Fire Rated for Low Slope applications when using Type 1, 2 and 3, listed photovoltaic modules. Class A Fire Rated for Steep Slope applications with Type1, 2 and 3, listed photovoltaic modules. Tested with a 5" gap (distance between the bottom the module frame and the roof covering), per the standard this system can be installed at any gap allowed by the manufacturers installation instructions. No perimeter guarding is required. This rating is applicable with any IronRidge or 3'rd party roof anchor.		
Models:	IronRidge Flush Mount with XR Rails		
Brand Name:	IronRidge Flush Mount		
Relevant Standards:	UL 2703 (Section 15.2 and 15.3) Standard for Safety Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, First Edition dated Jan. 28, 2015 Referencing UL1703 Third Edition dated Nov. 18, 2014, (Section 31.2) Standard for Safety for Flat-Plate Photovoltaic Modules and Panels.		
Verification Issuing Office:	Intertek Testing Services NA, Inc. 8431 Murphy Drive Middleton, WI 53562		
Date of Tests:	08/27/2014 to 03/17/2015		
Test Report Number(s):	101769343MID-001r1, 101769343MID-001a, 101915978MID-001 & 101999492MID-001ar1-cr1.		
This verification is part of the full test report(s) and should be read in conjunction with them. This report does not automatically imply product certification.			
Completed by:	Chris Zimbrich	Reviewed by:	Chad Naggs
Title:	Technician II, Fire Resistance	Title:	Technician I, Fire Resistance
Signature:		Signature:	
Date:	05/25/2016	Date:	05/25/2016

This Verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to permit copying or distribution of this Verification. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test/inspection results referenced in this Verification are relevant only to the sample tested/inspected. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

GFT-OP-11a (24-MAR-2014)



Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

System	Roof Slope	Module	Fire Rating*
Flush Mount 	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount 	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Tech Brief

Class A Fire Rating

Fire Testing Process

Test Setup

Solar Modules

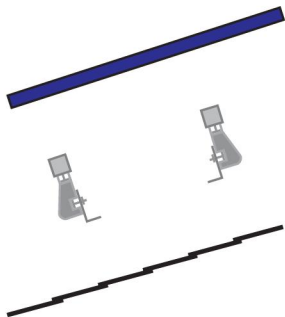
Solar modules are given a Type classification based on their materials and construction.

Mounting System

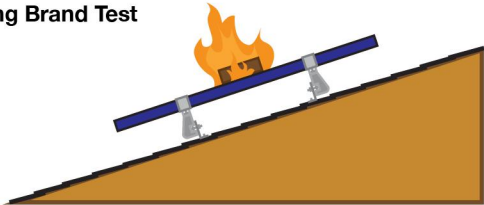
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering

Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

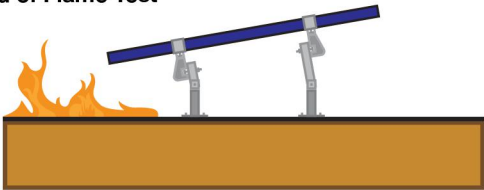


Burning Brand Test



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

CLASS A FIRE RATING

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-6D



CLASS A FIRE RATING DATASHEET
SCALE: NTS



28357 Industrial Blvd.
Hayward, CA 94545
1-800-227-9523
IronRidge.com

Attn: Sean McDonald, CEO, IronRidge Inc.
Date: March 25th, 2024

Re: Structural Certification and Span Tables for the IronRidge Flush Mount System

This letter addresses the structural performance and code compliance of IronRidge’s Flush Mount System. The contents of the letter shall be read in its entirety before applying to any project design. The Flush Mount System is a proprietary rooftop mounting system used to support photovoltaic (PV) modules installed in portrait or landscape orientation and set parallel to the underlying roof surface. PV modules are supported by extruded aluminum XR Rails and secured to the rails with IronRidge mounting clamps. The XR Rails are side mounted to a selected roof attachment with 3/8” stainless steel bonding hardware and then attached directly to the roof structure or to a stanchion that is fastened to the underlying roof structure. Assembly details of a typical Flush Mount installation and its core components are shown in Exhibit EX-0015.

The IronRidge Flush Mount System is designed and certified to the structural requirements of the reference standards listed below, for the load conditions and configurations tabulated in the attached span tables.

- ASCE/SEI 7-16 Minimum Design Loads for Buildings and Other Structures (ASCE 7-16)
- 2021 International Building Code (IBC-2021)
- 2021 Virginia Uniform Statewide Building Code, Part 1, Construction
- 2020 Aluminum Design Manual (ADM-2020)
- Report SEAOC (Structural Engineer Association of California) PV2-2017 Wind Design for Solar Arrays

The span tables provided in this letter are certified based on the structural performance of IronRidge XR Rails only with no consideration of the structural adequacy of the chosen roof attachments, PV modules, or the underlying roof supporting members. It is the responsibility of the installer or system designer to verify the structural capacity and adequacy of the aforementioned system components in regards to the applied or resultant loads of any chosen array configuration. This letter certifies the IronRidge products referenced within this document and provides no determination of the project specific conditions including site loads, building profile, & roof zones, which remain the responsibility of the installer or system designer.

Sincerely,



Nancy Schubert
Digitally signed by Nancy Schubert
Date: 2024.03.25 13:34:45 -04'00'



28357 Industrial Blvd.
Hayward, CA 94545
1-800-227-9523
IronRidge.com

Span values for *Exposed* and *Edge* module conditions, as defined below, are included in the attached span tables and shall be used when each condition exists. The maximum allowable span for *Exposed* or *Edge* modules shall be the lesser of the following two: (1) The span value for the *Exposed* or *Edge* module condition; (2) The span value determined by site wind speed and ground snow load. Additionally, irrespective of the lesser span, the shaded cells for the *Exposed* and *Edge* module conditions which reflect the UFO clamp usage limitation detailed in note 9 of page 2 shall apply to the respective condition.

1. Exposed Module conditions:

A module is defined as *Exposed* (per Section 29.4.4 of ASCE 7-16) if the distance from any of its free edges (an edge with no connectivity to other modules) to its facing roof edge (such as eave, ridge, rake, or hip) is greater than $0.5h$ (h is ASCE defined building height) AND if the distance from its free edge to any other adjacent array or panel is greater than 4 feet.

The allowable spans and cantilever shall only be applied to the portion of rail directly under *Exposed* Modules.

2. Edge Module conditions:

A module is defined as an *Edge Module* when its distance from any side of the module to its facing perimeter roof edge (such as eave, ridge, rake, or hip) is less than 2 times the height of the array ($2h_2$) where h_2 is measured from the roof surface to the top surface of the module.

The allowable spans and cantilever shall only be applied to the portion of rail directly under *Edge Modules*. Additionally, if the roof edge is the eave or ridge, only the rail nearest to that roof edge shall be considered for this span adjustment.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

ENGINEERING LETTER

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-6E



UFO Family of Components

Tech Brief

Simplified Grounding for Every Application

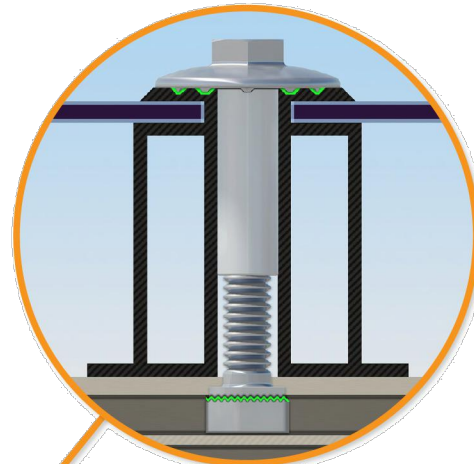
The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



Stopper Sleeve

The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



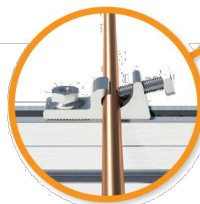
Universal Fastening Object (UFO)

The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



Bonded Splice

Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.



Grounding Lug

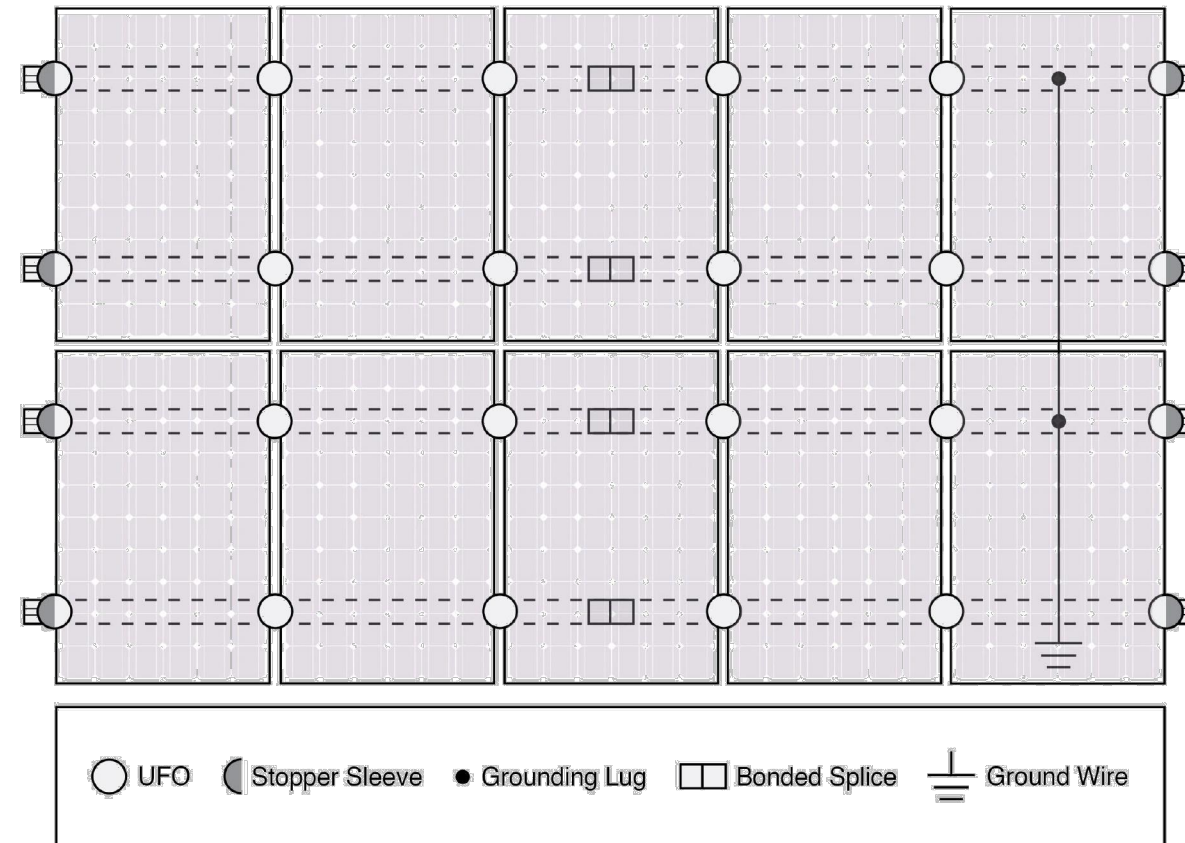
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



Bonded Attachments

The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

System Diagram



⚡ Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

[Go to IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
Bonded Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

GROUNDING DETAILS

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-6F

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1 GROUNDING DETAILS (IRON RIDGE RACKING)
PV-6F SCALE: NTS

AXIblackpremium XXL HC

400 - 420 Wp

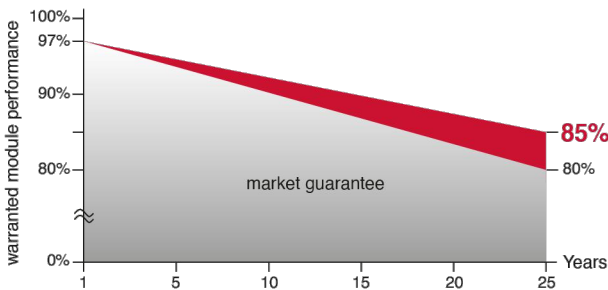
High performance solar module
108 halfcell, monocrystalline



The advantages:

- 25 Years 25 years Manufacturer's warranty
- HC High module performance through Half-Cut-technology and selected materials
- + Wp Guaranteed positive power tolerance from 0-5 Wp by individual measurement
- 100% 100% visual electroluminescence inspection in production
- Frame High stability due to innovative frame design
- IP 68 High quality junction box and connector systems
- 25 Years 25 years Performance guarantee

Exclusive linear AXITEC high performance guarantee!



85% AXITEC Warranty Added Value: up to 5% more power after 25 years



Conforms to ETL STD No.1703
Certified to ULC/ORD Std. C1703

AXITEC, LLC, 150 N. Radnor Chester Road, Suite F-200, Radnor, PA 19087, www.axitecsolar.com



Fig. similar 108MHEN25021A

AXIblackpremium XXL HC 400 - 420 Wp

Electrical data (at standard conditions (STC) irradiance 1000 watt/m², spectrum AM 1.5 at a cell temperature of 25°C)

Type	Nominal output P _{mp}	Nominal voltage U _{mp}	Nominal current I _{mp}	Short circuit current I _{sc}	Open circuit voltage U _{oc}	Module conversion efficiency
AC-400MH/108VB	400 Wp	31.01 V	12.90 A	13.79 A	37.07 V	20.48 %
AC-405MH/108VB	405 Wp	31.21 V	12.98 A	13.87 A	37.23 V	20.74 %
AC-410MH/108VB	410 Wp	31.45 V	13.04 A	13.95 A	37.32 V	21.00 %
AC-415MH/108VB	415 Wp	31.61 V	13.13 A	14.02 A	37.45 V	21.25 %
AC-420MH/108VB	420 Wp	31.80 V	13.21 A	14.10 A	37.58 V	21.51 %

Design

Frontside	0.13 inch (3.2 mm) hardened, low-reflection white glass
Cells	108 monocrystalline high efficiency cells
Backside	Composite film
Frame	1.18 inch (30 mm) black aluminium frame

Mechanical data

L x W x H	67.80 x 44.65 x 1.18 inch(1722 x 1134 x 30 mm)
Weight	47.40 lbs (21.5 kg) with frame

Mechanical load

Design load (pressure/suction)	75.3 PSF / 33.3 PSF
Test load (pressure/suction)	113 PSF / 50 PSF

Power connection

Socket	Protection Class IP68
Wire	47.25 inch, AWG 12
Plug-in system	Plug/socket IP68, Stäubli MC4 / Stäubli EVO2

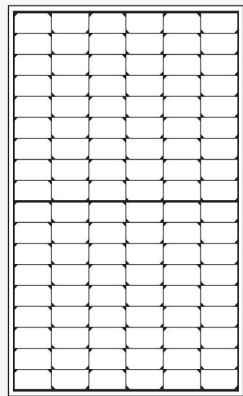
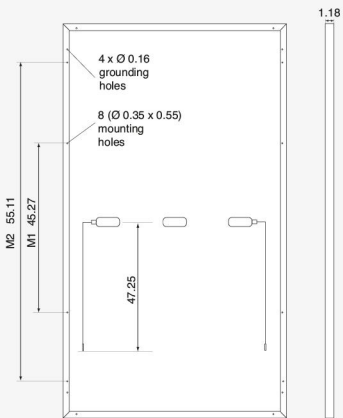


Fig. principle sketch



All dimensions in inch

Limit values

System voltage	1500 VDC (UL) 1500 VDC (IEC)
Module Fire Performance	TYPE 1 (UL 1703) or CLASS C (IEC 61730)
NOCT (nominal operating cell temperature)*	45°C +/-2K
Reverse current feed IR	25.0 A

Permissible operating temperature	-40°C to 85°C / -40°F to 185°F
-----------------------------------	--------------------------------

(No external voltages greater than V_o may be applied to the module)

* NOCT, irradiance 800 W/m²; AM 1.5; wind speed 1 m/s; Temperature 20°C

Temperature coefficients

Voltage U _{oc}	-0.28 %/K
Current I _{sc}	0.045 %/K
Output P _{mp}	-0.35 %/K

Low-light performance (Example for AC-420MH/108VB)

I-U characteristic curve	Current I _{pp}	Voltage U _{pp}
200 W/m²	2.70 A	30.60 V
400 W/m²	5.45 A	30.96 V
600 W/m²	8.14 A	31.20 V
800 W/m²	10.76 A	31.47 V
1000 W/m²	13.21 A	31.80 V

Packaging

Module pieces per pallet	36
Module pieces per HC-container	936

Technical data are subject to change without prior notice, errors excepted. The measurement tolerances are +/-3%. Please be aware: All technical data provided in our data sheets are property of Axitec LLC and intended for information purposes for our customers only. We cannot accept any guarantee of completeness or accuracy. These data are prohibited for any kind of commercial use.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

MODULE DATASHEET

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-7A



DR10H450M (FB)

HALF CELL LINE

● HALF-CELL MODULE

The 120 Half Cut module of the Half Cell Line combines the high production efficiency of the half cell technology with an excellent quality / price ratio.

The half-cell configuration improves the electrical distribution inside the panel to increase the yield of the product. For these reasons, the Half Cell Line is suitable not only for industrial installations but also for residential and commercial installations.

Cells



120 CELLS
MONO gBB / 10BB M10 HALF | PERC
182 x 91 mm / 7.16 x 3.58"

Frame



COMPACT AND STURDY | 35 mm
ANCHORABLE ALSO ON
THE SHORT SIDE ⁽⁶⁾

30 YEAR LINEAR POWER WARRANTY
25 YEAR PRODUCT WARRANTY

PERC TECHNOLOGY

ANTI-REFLECTIVE GLASS

QBE INSURANCE
Product Liability Insurance QBE

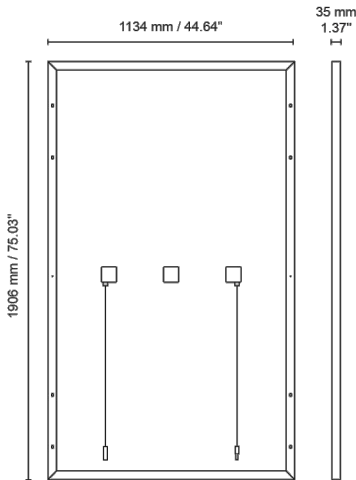
Electrical Characteristics (STC) ⁽¹⁾

	DR10H450M (FB)
Nominal Output (Pmax) ⁽²⁾	450 W
Sorting Tolerance	0/+5 W
Voltage at Pmax (Vmp)	33.91 V
Current at Pmax (Imp)	13.27 A
Open Circuit Voltage (Voc) ⁽³⁾	41.18 V
Short Circuit Current (Isc) ⁽³⁾	13.85 A
Maximum System Voltage	1500 V
Maximum Series Fuse Rating	25 A
Module Efficiency	20.82 %
Protection class against electric shock	Class II

Mechanical Characteristics

Solar Cells	120 M10 HALF monocrystalline PERC
Solar Cells Size	182 x 91 mm / 7.16 x 3.58"
Front Cover	3.2 mm / 0.13" thick, low iron tempered glass
Back Cover	TPT (Tedlar-PET-Tedlar)
Encapsulant	EVA (Ethylene vinyl acetate)
Frame	Anodized aluminium alloy, double wall
Frame finishing	Black
Backsheet finishing	Black
Diodes	3 Bypass diodes serviceable
Junction Box	IP68 rated
Connector	MC4 or compatible connector
Cables Length	1200 mm / 47.24"
Cables Section	4.0 mm ² / 0.006 in ²
Dimensions	1906 x 1134 x 35 mm / 75.03 x 44.64 x 1.37"
Weight	24 Kg / 52.9 lbs
Max Load (Test Load) - SF	5400 Pa - 1.5 ⁽⁵⁾

Dimensions



1 STC (Standard Test Condition) Irradiance 1000W/m², Module Temperature 25°C, Air Mass 1.5

2 Pmax, Voc, Isc measurement tolerance: ±3%

3 NMOT: Nominal Module Operating Temperature; Irradiance 800W/m², Air 20°C, Wind speed 3m/s

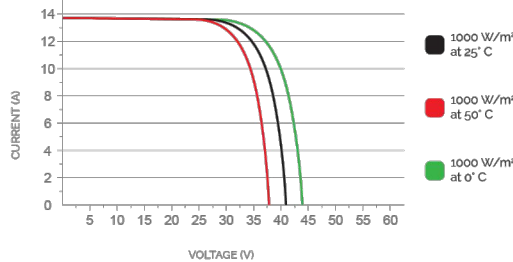
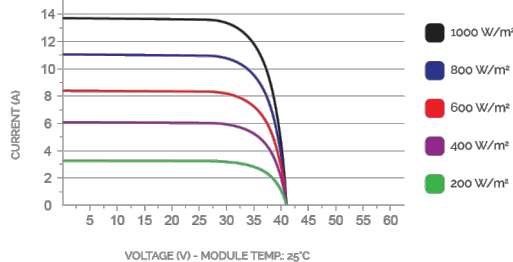
Temperature Characteristics

NMOT ⁽³⁾	45±2 °C
Temperature Coefficient of Pmax	-0.37 %/°C
Temperature Coefficient of Voc	-0.29 %/°C
Temperature Coefficient of Isc	0.05 %/°C
Operating Temperature	-40 °C - +85 °C

Packaging ⁽⁴⁾

Pallet dimensions	1940 x 1130 x 1270 mm / 76.38 x 44.49 x 50.00"
Pieces per pallet	31
Weight	775 kg / 1708.58 lbs

Current/Voltage Characteristics



4 Pallets can be stacked up to two

5 Consult the installation manual for the relative mounting configurations

It is important to point out, that all technical specifications, information and figures contained in this datasheet are estimated values. Peimar reserves the right to change the technical specifications, information and figures contained in this document at any time without notice.

USA_2024_10_00

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

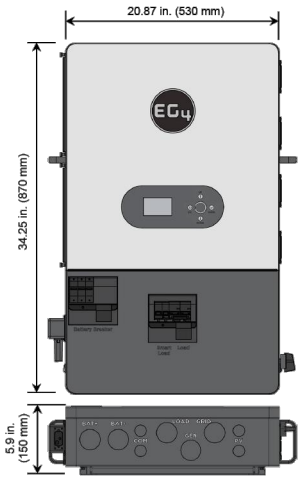
MODULE DATASHEET

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-7B



EG4® 12000XP OFF-GRID INVERTER

The EG4 12000XP is a 48V split-phase, off-grid inverter/charger capable of utilizing 24kW of PV input and efficiently outputting 15kW* of power while also charging your battery bank. Parallel up to 16 units for 240kW of output power and control multiple stations and units using the EG4 Monitor Center.

HIGH
FREQUENCY
SPLIT-PHASE
DESIGN

5-YEAR
WARRANTY

REMOTE
ADJUSTMENT
VIA EG4
SOFTWARE

ALL-IN-ONE OFF-GRID INVERTER

Capable of running entirely off the grid or using grid electricity.

UP TO 480 VDC INPUT

The extra high voltage enables lower cable sizing for the 2 MPPTs and a maximum utilized PV input of 24kW, eliminating the need for a combiner box.

PLUG-IN WI-FI DEVICE

Enables wireless connection between the 12000XP and the EG4 app or EG4 Monitor system.

CLOSED-LOOP COMMUNICATIONS

Able to communicate with EG4 48V batteries and other supported battery brands.

SMART LOADS

The smart load port enhances the efficiency and effectiveness of solar power systems by intelligently managing energy consumption. This allows the port to have multiple use cases via load shedding, accepting AC Couple power, or power shedding for individual smart appliances.

*15kW Output only with model #: IV-15000-XP-IN-01

©2025 EG4® ELECTRONICS, LLC. ALL RIGHTS RESERVED.
VERSION 1.2.6 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL #: IV-12000-XP-IN-01 | IV-15000-XP-IN-01*



EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

AC INPUT DATA	
NOMINAL AC VOLTAGE (GRID GENERATOR)	120/240VAC; 120/208VAC (L1/L2/N required)
FREQUENCY (GRID GENERATOR)	60 Hz (Default) 50 Hz (Configurable)
GRID MAX. CONTINUOUS AC CURRENT	100A @ 240VAC
MAX. AC INPUT POWER	24000W
GENERATOR MAX. CONTINUOUS CURRENT	62.5A @ 240VAC
RECOMMENDED GENERATOR CAPACITY	6000W – 15000W
AC BYPASS (GRID GENERATOR)	100A 90A
AVAILABLE FAULT CURRENT	5kA
INPUT SHORT CIRCUIT CURRENT	150A peak @100us, per inverter
AC OUTPUT DATA	
OUTPUT VOLTAGE	120/240VAC; 208VAC
OUTPUT FREQUENCY	60 Hz (Default) 50 Hz (Configurable)
MAX. CONTINUOUS OUTPUT CURRENT*	62.5A @ 240VAC 62.5A @ 208V
NOMINAL POWER OUTPUT*	w/ PV: 15000W @ 240V 13000W @ 208V
MAX. CONTINUOUS WATTAGE	w/ out PV: 12000W @ 240V 12000W @ 208V
PEAK POWER (SURGE CAPACITY)**	15000W (L1-L2) 7500W (L1-N or L2-N)
POWER FACTOR VALUE	15360W for ≈10s
THD (V)	.99
SWITCHING TIME	<10 ms @ Single / <20 ms @ Parallel
PV INPUT DATA	
NUMBER OF MPPTS	2
INPUTS PER MPPT	2/2
MAX. USABLE INPUT CURRENT	35A/35A
MAX. SHORT CIRCUIT INPUT CURRENT	44A/44A
DC INPUT VOLTAGE RANGE***	100 – 480 VDC
MIN. STARTUP VOLTAGE	100 VDC
MPPT OPERATING VOLTAGE RANGE	120 – 385 VDC
NOMINAL MPPT VOLTAGE	320 VDC
MAX. PV INPUT VOLTAGE***	500 VDC
MAX. UTILIZED SOLAR POWER	24000W (12000 per MPPT)
MAX. RECOMMENDED SOLAR INPUT	28000W (14000 per MPPT)

*15kW nominal power output with model #: IV-15000-XP-IN-01 only. Previous models are limited to 12kW nominal output with max. continuous output current at 50A for 240 VAC, and 57.7A at 208 VAC.

**With battery only.

***When sizing the system, it is best practice to follow the DC Input Voltage Range. Do not exceed the Max. PV Input Voltage. Any damage caused by reaching >500 VDC will not be covered under warranty.

EG4 ELECTRONICS

EFFICIENCY	
MAXIMUM EFFICIENCY (MPPT)	99%
MAXIMUM EFFICIENCY (PV TO BATTERY)	92.8%
MAXIMUM EFFICIENCY (AC TO BATTERY)	92.5%
MAXIMUM EFFICIENCY (PV TO LOADS)	93.5%
MAXIMUM EFFICIENCY (BATTERY TO LOADS)	90.2%
IDLE CONSUMPTION (STANDBY MODE)*	<70W
BATTERY DATA	
COMPATIBLE TYPES	Lead-Acid/Lithium
MAX. CHARGE/DISCHARGE CURRENT (A)	250A
MAX. CHARGE/DISCHARGE POWER (W)	12000W
NOMINAL VOLTAGE	48 VDC
BATTERY VOLTAGE RANGE	46.4 – 60 VDC (Lithium) 38.4 – 60 VDC (Lead-Acid)
RECOMMENDED BATTERY CAPACITY PER INVERTER	>400Ah
HIGH DC CUT-OFF VOLTAGE	59 VDC (Lithium) 60 VDC (Lead-acid)
GENERAL DATA	
MAX. UNITS IN PARALLEL	16
PRODUCT DIMENSIONS (H×W×D)	34.25×20.87×5.91 in. (870×530×150 mm)
UNIT WEIGHT	104.7 lbs. (47.5 kg)
DESIGN TOPOLOGY	High Frequency - Transformerless
RELATIVE HUMIDITY	5 – 95% (non-condensing)
OPERATING ALTITUDE	<6561 ft. (<2000 m)
OPERATING AMBIENT TEMPERATURE RANGE	32°F – 113°F (0°C – 45°C) @ Full Load
STORAGE AMBIENT TEMPERATURE RANGE	5°F – 140°F (-15°C – 60°C)
NOISE EMISSION (TYPICAL)	<60 dB
LOCKED ROTOR AMPS (LRA)	195A
COOLING METHOD	Fan
COMMUNICATION INTERFACE	RS485/CAN/WI-FI
STANDARD WARRANTY**	5-year standard warranty
INGRESS PROTECTION RATING	IP20
SAFETY FEATURES	PV Reverse Polarity Protection, Surge Protection Device, Output Over-Voltage Protection, Output Over-Voltage Protection Varistor
STANDARDS AND CERTIFICATIONS	
UL1741	
FCC PART 15, CLASS B	

*Idle consumption value tested with constant 300 VDC PV source

**For information regarding warranty registration on EG4® Electronics products, please navigate to <https://eg4electronics.com/warranty/> and select the corresponding product to begin the registration process.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING SET IS CONFIDENTIAL AND SHALL NOT BE DISCLOSED IN FULL OR IN PART TO ANYONE EXCEPT THOSE INVOLVED IN THE DESIGN AND INSTALLATION OF THE PV SYSTEM REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

INVERTER DATASHEET

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-8A



EG4 12000XP V2 HYBRID INVERTER DATASHEET
SCALE: NTS

CERTIFICATE OF COMPLIANCE



CERTIFICATE OF COMPLIANCE



This certificate confirms the model(s) for the product listed are in compliance and authorized to bear the Certification Mark(s) shown below when made in accordance with the conditions set forth in the Certification Agreement and Listing Report.

EG4 Electronics LLC

Address: 1130 Como St S Sulphur Springs, TX 75482-4502

Country: USA

Report Issuing Office: Intertek Testing Services NA, Inc., Plano, TX

Control Number: 5027869, 5029656 Authorized by: [Signature] for L Matthew Snyder, Certification Manager

VALID LISTING MARKS



This Certificate of Compliance is for the exclusive use of Intertek's Client and is provided pursuant to the Certification Agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the Agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the Agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to permit copying or distribution of this Certificate and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions laid out in the Agreement and in this Certificate. Any further use of the Intertek name for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow up Services are for the purpose of assuring appropriate usage of the Certification mark in accordance with the Agreement, they are not for the purposes of production quality control and do not relieve the Client of their obligations in this respect.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667

Standard(s):	Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3+R:23Oct2024] Power Conversion Equipment [CSA C22.2#107.1:2016 Ed.4+U1]
Product:	PV Off-grid Inverter
Brand Name:	EG4 ELECTRONICS

Models:	IV-12000-XP-IN- may be followed by 00-99, IV-15000-XP-IN- may be followed by 00-99
---------	---

GEMINI SOLAR DESIGN

SAMPLE PROJECT
CONTACT: ON FILE
PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

INVERTER UL CERT.

PROJECT NO: GSD-SAMPLE
DRAWN BY: GSD
DATE: SAMPLE

PV-8B



EG4® WALLMOUNT 314AH INDOOR BATTERY

The EG4® WallMount 314Ah Indoor battery delivers dependable, high-efficiency storage for clean, protected spaces. Each unit uses advanced lithium iron phosphate cells and provides about 16kWh of energy. The form factor stays compact and familiar, sized to fit where earlier models fit, which keeps retrofits and system expansions straightforward. This model includes EG4’s smart BMS with active balancing, network connectivity, and over the air firmware updates. Installers and homeowners get faster setup, stronger control, and long-term performance support through the EG4 battery monitoring app.

FASTER
COMMISSION
TIME

REMOTE
FIRMWARE
UPDATES

UNIVERSALLY
EXPANDABLE

LONGER CELL LIFE

Active balancing (2 – 3A) speeds up cell equalization for longer life.

AUTO CONFIGURATION

Eliminates manual DIP switch setup, detects and configures automatically for faster commissioning.

MULTIPLE COMPATIBLE INVERTERS

Smart BMS automatically detects and communicates with EG4 inverters for true plug-and-play operation.

CONFIGURABLE PORTS

NO/NC + 12V outputs for generator start, alarms, or custom triggers.

ENHANCED SAFETY

Internal fire arrestors, reinforced cell enclosures, and compliance with the latest UL and AHJ standards.

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VERSION 1.0.3 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL#: WM 48 314 IN XX / WM48314INXX (XX is a number between 00 – 99)

*For more information regarding warranty registration on EG4® Electronics products, please navigate to <https://eg4electronics.com/warranty/> and select the corresponding product to begin the registration process.



EG4

TECHNICAL SPECIFICATIONS

TYPE & MODEL #		
PARAMETER		SPECIFICATION
PRODUCT TYPE		LFP Battery
BATTERY TYPE		Lithium Iron Phosphate (LFP)
MODEL NUMBER		WM-48-314-IN-XX / WM48314INXX (XX is a number between 00 – 99)
ELECTRICAL CHARACTERISTICS		
NOMINAL ENERGY CAPACITY		16kWh
USABLE ENERGY [DOD%]		12.86kWh (80% recommended)
RECOMMENDED VOLTAGE RANGE		47.5 – 57.6 VDC
NOMINAL VOLTAGE		51.2 VDC
CAPACITY		314Ah
CHARGING VOLTAGE RANGE		56 – 57 VDC
DISCHARGING CUT-OFF VOLTAGE		47.5 VDC
MAX CONTINUOUS/RECOMMENDED CHARGE CURRENT		157A/157A
MAX CONTINUOUS/RECOMMENDED DISCHARGE CURRENT		200A/157A
CONTINUOUS CHARGE/DISCHARGE POWER		8/10.2 kW
RECOMMENDED CHARGING/DISCHARGING RATE		0.5C
SHORT CIRCUIT CURRENT		1700A, 15ms delay
PEAK POWER		12.8kW (3 sec)
ROUND-TRIP EFFICIENCY		95%
MAX PARALLEL UNITS		32
PROTECTION FEATURES		Over/Under Voltage, Over-Current, Short Circuit, High/Low Temp
BATTERY MANAGEMENT SYSTEM [BMS]		Integrated, Active Balancing
COMMUNICATION PROTOCOLS		RS485, CAN
BATTERY BREAKER		250A
BATTERY HEATER SPECIFICATIONS		
PARAMETER	SPEC	CONDITION
VOLTAGE	56V	-
POWER CONSUMPTION	448W	-
INTERNAL BATTERY TEMPERATURE	≤32°F (0°C)/≥37°F (3°C)	Heat On/Heat Off
ENVIRONMENTAL SPECIFICATIONS		
STORAGE TEMPERATURE RANGE*		-4 – 131°F (-20 – 55°C)
HUMIDITY RANGE		5% – 95% RH (non-condensing)
ALTITUDE		9843 ft. (<3000 m)
COOLING METHOD		Natural Convection
DIMENSIONS [H × W × D]		34.1 in. × 18.1 in. × 9.6 in. (865 mm × 460 mm × 245 mm)
OPERATING TEMPERATURE RANGE		Charge: 32 – 122°F (0 – 50°C) Discharging: -4 – 131°F (-20 – 55°C)

*Less than 3 months of storage. If longer than 3 months, recommended storage temperature will be 59°F – 86°F (15°C - 30°C). Refer to section 6.4 of the battery user manual for complete storage requirements.

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

BATTERY MODULE

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-9A



EG4 WALLMOUNT 314AH INDOOR BATTERY DATASHEET
SCALE: NTS

Test Verification of Conformity

Verification Number: 251120146GZU-VOC001

On the basis of the tests undertaken, the sample<s> of the below product has been tested by an accredited 3rd party laboratory in accordance to the referenced specification<s>/standard<s> at the time the tests were carried out. This verification is part of the full test report<s> and should be read in conjunction with it <them>.

Applicant Name & Address: EG4 Electronics LLC
1130 Como Street South, Sulphur Springs, TX 75482, USA

Product Description: Rechargeable Li-ion Battery

Ratings & Principle Characteristics: See Appendix: Test Verification of Conformity

Models/Type References: WM48314IN, WM-48-314-1-IN-, WM-48-314-2-IN-, WM-48-314-3-IN-, WM-48-314-4-IN-, WM-48-314-5-IN-, WM-48-314-6-IN-, may be followed by 00 to 99

Brand Names: **EG4 ELECTRONICS** (EG4 ELECTRONICS)

Specification<s>/Standards: ANSI/CAN/UL 9540A:2025
Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
Unit level test (clause 9.1-9.8)

Verification Issuing Office Name & Address: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch.
Room101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu District, Guangzhou, Guangdong, China

Date of Tests: 01 September 2025 – 02 September 2025

Test Report Number(s): 251120146GZC-001. 28 November 2025

Additional information in Appendix.

Jason Fu

Signature

Name: Jason Fu
Position: Manager
Date: 28 November 2025

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Page 1 of 3

GFT-OP-11a (09 March 2024)

APPENDIX: Test Verification of Conformity

This is an Appendix to Test Verification of Conformity Number: 251120146GZU-VOC001.

Ratings & Principle Characteristics:

Model:	WM48314IN, WM-48-314-1- IN-, may be followed by 00 to 99	WM-48-314-2- IN-, may be followed by 00 to 99	WM-48-314-3- IN-, may be followed by 00 to 99
Rated capacity (Ah):	314 Ah	628 Ah	942 Ah
Rated energy (kWh):	16 kWh	32 kWh	48 kWh
Nominal voltage (V):	51.2 V		
Weight(kg):	133(±0.5) kg	266(±1) kg	399(±1.5) kg
Module series and/or parallel configuration:	1S1P	1S2P	1S3P
Total number of cells:	16	32	48
Standard charge method:			
Charge current (A):	157 A	314 A	471 A
End of charge voltage (V):	57 V		
Standard discharge method:			
Discharge current (A):	157 A	314A	471 A
End of discharge voltage (V):	44.8 V		
Rest time between charge and discharge	30 min		

Jason Fu

Signature

Name: Jason Fu
Position: Manager
Date: 28 November 2025

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Page 2 of 3

GFT-OP-11a (09 March 2024)

APPENDIX: Test Verification of Conformity

This is an Appendix to Test Verification of Conformity Number: 251120146GZU-VOC001.

Ratings & Principle Characteristics:

Model:	WM-48-314-4-IN-, may be followed by 00 to 99	WM-48-314-5-IN-, may be followed by 00 to 99	WM-48-314-6-IN-, may be followed by 00 to 99
Rated capacity (Ah):	1256 Ah	1570 Ah	1884 Ah
Rated energy (kWh):	64 kWh	80 kWh	96 kWh
Nominal voltage (V):	51.2 V		
Weight(kg):	532(±2) kg	665(±2.5) kg	798(±3) kg
Module series and/or parallel configuration:	1S4P	1S5P	1S6P
Total number of cells:	64	80	96
Standard charge method:			
Charge current (A):	628 A	785 A	942 A
End of charge voltage (V):	57 V		
Standard discharge method:			
Discharge current (A):	628 A	785 A	942 A
End of discharge voltage (V):	44.8 V		
Rest time between charge and discharge	30 min		

Jason Fu

Signature

Name: Jason Fu
Position: Manager
Date: 28 November 2025

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Page 3 of 3

GFT-OP-11a (09 March 2024)

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

BATTERY UL CERT.

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-9B

1
PV-9B

EG4 WALLMOUNT 314AH INDOOR BATTERY (UL CERTIFICATION)
SCALE: NTS



TS4-A-F

Module-level rapid shutdown

The TS4-A-F (Fire Safety) is the advanced add-on rapid shutdown solution that brings smart module functionality to standard PV modules for higher reliability. Ensure safety by upgrading existing PV systems or by adding safety features to new installations.

The TS4-A-F complies with NEC 2017, 2020, and 2023 690.12 Rapid Shutdown specifications when installed with the Tigo RSS Transmitter or an inverter with a built-in Tigo certified transmitter.

Features

- High input current rating – now rated for 20 A I_{MP} /25 A I_{SC} to better accommodate bifacial and high-current modules
- Simple, fast installation – snaps to a standard PV module frame or mounts to racking
- Power-line communications (PLC) signaling – rapid shutdown signaling over PV conductors
- Automatic shutdown – PV array enters rapid shutdown mode in the event of AC grid loss
- UL Standards-certified – tested and certified with hundreds of top inverter models
- 25-year warranty

Specifications

	20 A	25 A
Electrical		
Maximum current (I_{MP}/I_{SC})	15 A/20 A	20 A/25 A
Input voltage range (V_{MP})	16 – 80 V	
Maximum input voltage	80 V	
Maximum system voltage (V_{MAX})	1000 V/1500 V*	
Maximum output current (I_{MAX})	15 A	
Maximum output power (P_{MAX})	700 W	
Maximum fuse rating	25 A	30 A
Maximum efficiency	99.9%	
Rapid Shutdown		
TS4 conductor AWG	12	
Rapid shutdown time limit	<30 sec.	
PVRSE-controlled conductor limits	≤ 240 VA, ≤ 8 A, ≤ 30 V _{DC}	
UL 1741-compliant PVRSE	Yes	
Communications	PLC	
Connections		
Input (from module) cable lengths	0.12/0.62 m	
Output (to string) cable lengths	1.2/2 m	
Connectors	MC4/EVO2	

* Depending on UL/IEC certification



tigoenergy.com

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Specifications

	20 A	25 A
Environmental		
Operating temperature range	-40 – 85 °C (-40 – 185 °F)	
Storage temperature range	-40 – 85 °C (-40 – 185 °F)	
Maximum elevation	3000 m (9840 ft.)	
Outdoor IP rating	IP68/NEMA 3R	
Mechanical		
Dimensions (H/W/D)	139.7 x 138.4 x 22.9 mm (5.4 x 5.5 x 0.9 in.)	
Weight	490 g (1.1 lb.)	
General		
Standards compliance	UL 1741 PVSRE, UL 1741 PVRSS, CSA 22.2, IEC 62109, NEC 690.12	
Warranty	25 years	

* 20 A UL rating: -30 – 75 °C (-22 – 167 °F)

Ordering Information

Part Number	V _{MAX}	Certifications UL/IEC	Cable Lengths	Connectors
20 A I_{SC}				
481-00252-20	1500 V/1000 V		1.2/2 m	MC4
481-00252-32	1500 V/1000 V		0.12/1.2 m	MC4
481-00252-62	1500 V/1000 V		0.62/1.2 m	MC4
481-00261-32	1500 V/1500 V		0.12/1.2 m	EVO2
481-00261-62	1500 V/1500 V		0.62/1.2 m	EVO2
481-01252-32	1500 V/1000 V		0.12/1.2 m	MC4
481-01252-62	1500 V/1000 V		0.62/1.2 m	MC4
481-01261-32	1500 V/1500 V		0.12/1.2 m	EVO2
481-01261-62	1500 V/1500 V		0.62/1.2 m	EVO2
25 A I_{SC}				
486-00252-32	1500 V/1000 V		0.12/1.2 m	MC4
486-00252-62	1500 V/1000 V		0.62/1.2 m	MC4
486-00261-32	1500 V/1500 V		0.12/1.2 m	EVO2
486-00261-62	1500 V/1500 V		0.62/1.2 m	EVO2
488-00252-32	1000 V*		0.12/1.2 m	MC4
488-00252-62	1000 V*		0.62/1.2 m	MC4
488-00261-32	1500 V*		0.12/1.2 m	EVO2
488-00261-62	1500 V*		0.62/1.2 m	EVO2

* IEC certified only

More Resources



tigoenergy.com

TS4-A-F Specifications and Ordering Information

GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

RAPID SHUTDOWN

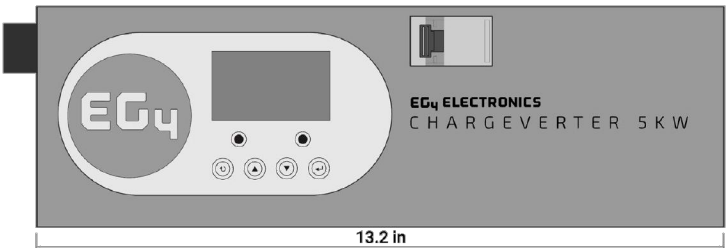
PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-10

CHARGEVERTER-GC
5KW AC CHARGER



48V/100A
BATTERY CHARGER

RS485
COMMUNICATION
PORT

AUTO GENERATOR
START

The EG4 Chargeverter-GC is a powerful 48V battery charger capable of rapidly charging at 100 amps, or more than 5000 watts, significantly faster than traditional chargers.

120VAC/208VAC/240VAC INPUT CAPABILITY

Optimized for 240VAC power supplies for maximum output. 120VAC or 208VAC input can be used with an optional adapter plug.

RS485 COMMUNICATIONS PORT

An RS485 port on the side of the Chargeverter-GC allows the user to establish closed-loop communication between the charger and battery. This facilitates the exchange of SOC information for user-defined charging thresholds. Without closed-loop communication (SOC information), the charger uses battery voltage for user-defined charging thresholds.

BUILT-IN BREAKER

The unit has a built-in breaker to quickly shut off the charger output for added safety and protection.

OPTIMIZED FOR GENERATOR USE

Plug the Chargeverter-GC directly into a generator to charge batteries without concern for generator power quality issues, commonly referred to as “dirty power.” Connect the automatic generator start circuit to the Chargeverter-GC dry contacts to allow the generator to charge the battery bank at preset start/stop voltages or SOC thresholds.

SCAN FOR UPDATED
DOCUMENTS



SPECIFICATION SHEET

CHARGER OUTPUT SPECIFICATIONS	
Battery Voltage	48VDC nominal
Charge Current (adjustable)	0-100A @240VAC, 0-45A @120VAC, 0-50A @208VAC
Charge Voltage (adjustable)	43-57VDC (default 54VDC)
Max. Output	5120W @240VAC, 3050W @120VAC
Max. Efficiency	94% @240VAC, 92% @120VAC
AC INPUT SPECIFICATIONS	
AC Input Voltage Range	90-264VAC
AC Frequency	50-60Hz
Max. Input Current	26A @240VAC, 28A @120VAC
Idle Consumption	~10W
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature Range	14°F – 131°F (-10°C – 55°C)
Storage Temperature Range	5°F – 140°F (-15°C – 60°C)
Humidity	5% to 95% relative humidity (non-condensing)
Ingress Protection	IP21
Operating Altitude	0~4921 ft. (0~1500m)
DRY CONTACT SPECIFICATIONS	
Interface Connector	NO, NC, and C (RJ11 Jack)
GENERAL SPECIFICATIONS	
Communication Port	RS485 (RJ45 Jack)
Dimensions H x W x D	5" x 13.2" x 4.9" (127mm x 335mm x 124mm)
Net Weight	13 lbs. (5.9 kg)
Warranty	3 years (only when used indoors)

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OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

EG4 CHARGEVERTER

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-11



17 & 20kW¹ STANDBY GENERATOR



BRIGGS & STRATTON® THE SMART CHOICE

For the discerning homeowner that is looking for the smartest, most reliable permanent backup power solution.



Unique Airflow Technology

- Making these models 50% quieter than most portable generators
- The unique design pushes engine exhaust out the front, directly away from your home

Flexible Placement

- Approved for installation as close as 18" to a building²

Symphony® II Power Management System

- Customizable to your home's needs
- Automatically balances the power of your home's electrical load including high wattage items like air conditioning units and electric ovens
- Offers whole house power with a more affordable home generator

Commercial-Grade Briggs & Stratton Vanguard™ Engine

- Powerful V-Twin OHV engine
- Easy conversion between natural gas (NG) and liquid propane vapor (LP) during installation

Quality Clean Power

- Ensures your electronics are safely powered

Corrosion Resistant Enclosure & Base

- Made with automotive grade galvalume steel to resist rust
- Powder-coated paint for years of protection against chips and abrasions



GENERATOR SET RATINGS										
					LIQUID PROPANE		NATURAL GAS		LIMITED WARRANTY ³	
	MODEL	VOLTAGE	PHASE	HZ	BREAKER	LP kW	LP AMPS	NG kW	NG AMPS	PARTS, LABOR, TRAVEL
17 kW	Briggs & Stratton 040549	120/240	1	60	80	17	70.8	15.3	63.8	5 Year
	Briggs & Stratton 040336	120/240	1	60	100	20	83.3	18	75	5 Year

¹ This generator is rated in accordance with UL (Underwriters Laboratories) 2200 (stationary engine generator assemblies) and CSA (Canadian Standards Association) standard C22.2 No. 100-04 (motors and generators).

² The installation manual contains specific instructions related to generator placement in addition to NFPA 37, including the requirement that carbon monoxide detectors be installed and maintained in your home.

³ Warranty details available at www.briggsandstratton.com



STANDBY GENERATORS

17 & 20kW STANDBY GENERATOR

ENGINE SPECIFICATIONS			
ENGINE		LUBRICATION	
Engine Model	Briggs & Stratton Vanguard™	Oil Capacity (oz)	79
Engine Model Type Trim Number	813275-0003-E1	Lubrication System	Full Pressure
Engine Speed (RPM)	3600	Recommended Oil	5W30 Full Synthetic
Engine Fuel	Liquid Propane (LP) or Natural Gas (NG)	Low Oil Pressure Sensor	Yes
Engine Cylinder Configuration	OHV	ALTERNATOR SPECS	
Number of Cylinders	2	Manufacturer	Briggs & Stratton
Displacement (cc)	60.6 / 99.3	Type	Self-Excited, Rotation Field
Bore & Stroke (in)	3.37 / 3.41	Voltage Regulator	Automatic
Compression Ratio	8.5:1	Insulation	Class F
Governor Type	Electronic	CONTROLLER FEATURES	
Frequency Regulation	±/ 1 Hz	Hour Meter	Yes
Valves	OHV with Hardened Seats	LED Digital Display	Yes
Ignition System	Fixed timing Magnatron® Electric Ignition	Fault Code Display	Yes
Starter Motor Rating Voltage	12 Volt	Weekly Exerciser	Yes
Battery	12 Volt		

OPERATIONS					
FUEL CONSUMPTION ¹				SOUND RATING AT 7 METERS	
		50% Load		100% Load	
17kW	Liquid Propane	74 ft³ / hr	2.06 gal / hr	118 ft³ / hr	3.28 gal / hr
	Natural Gas	170 ft³ / hr	—	248 ft³ / hr	—
20kW	Liquid Propane	83 ft³ / hr	2.31 gal / hr	135 ft³ / hr	3.75 gal / hr
	Natural Gas	187 ft³ / hr	—	260 ft³ / hr	—

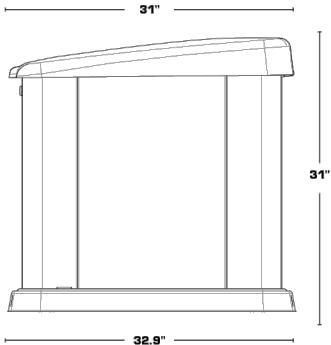
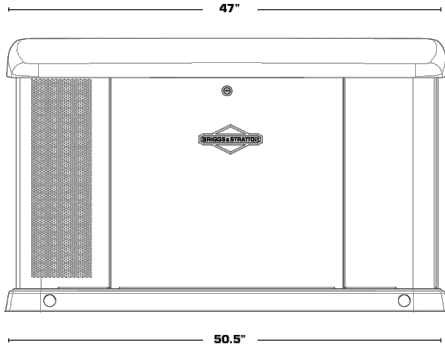
¹ Fuel consumption rates are estimated based on normal operating conditions. Generator operation may be greatly affected by elevation and the cycling operation of multiple electrical appliances – fuel flow rates may vary depending on these factors.



STANDBY GENERATORS

17 & 20kW STANDBY GENERATOR

ADDITIONAL INFORMATION			
OTHER FEATURES		CERTIFICATION	
Enclosure Material	Galvalume Steel with Corrosion Resistant Paint	CARB Compliant	Yes
Overcrank Protection	Yes	NFPA Approved	Yes
Engine Warm Up (sec)	20 or 50 Automatic Transfer Switch Controlled	cUL Listed to CSA 22.2 NO 100-04	Yes
Engine Cool Down (min)	1	NEMA Compliant	Yes
Response Time (sec)	26 or 56 Automatic Transfer Switch Controlled	EPA Certified Fuel System	Yes
Monitoring Options	Basic Wireless Monitor InfoHub™ Monitor	AVAILABLE ACCESSORIES	
Continuous Battery Charging	Yes	Maintenance Kit	6035
WEIGHT AND DIMENSIONS			
	17kW	20kW	
Assembled Weight (lbs)	484	500	
Overall Dimensions (in)	50.5 x 32.9 x 31	50.5 x 32.9 x 31	
Packaged Weight (lbs)	597	613	
Packaged Dimensions (in)	68.1 x 41 x 39.5	68.1 x 41 x 39.5	
		Cold Weather Kit	6231
		Basic Wireless Monitor	6264
		InfoHub	6260
		Remote Status Monitor	6144



GEMINI SOLAR DESIGN

SAMPLE PROJECT

CONTACT: ON FILE

PROJECT INFO WITHHELD

CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING SET IS CONFIDENTIAL AND SHALL NOT BE DISCLOSED IN FULL OR IN PART TO ANYONE EXCEPT THOSE INVOLVED IN THE DESIGN AND INSTALLATION OF THE PV SYSTEM REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 30.30kW

SAMPLE RESIDENCE
PROJECT ADDRESS WITHHELD
UNITED STATES

STANDBY GENERATOR

PROJECT NO: GSD-SAMPLE

DRAWN BY: GSD

DATE: SAMPLE

PV-12