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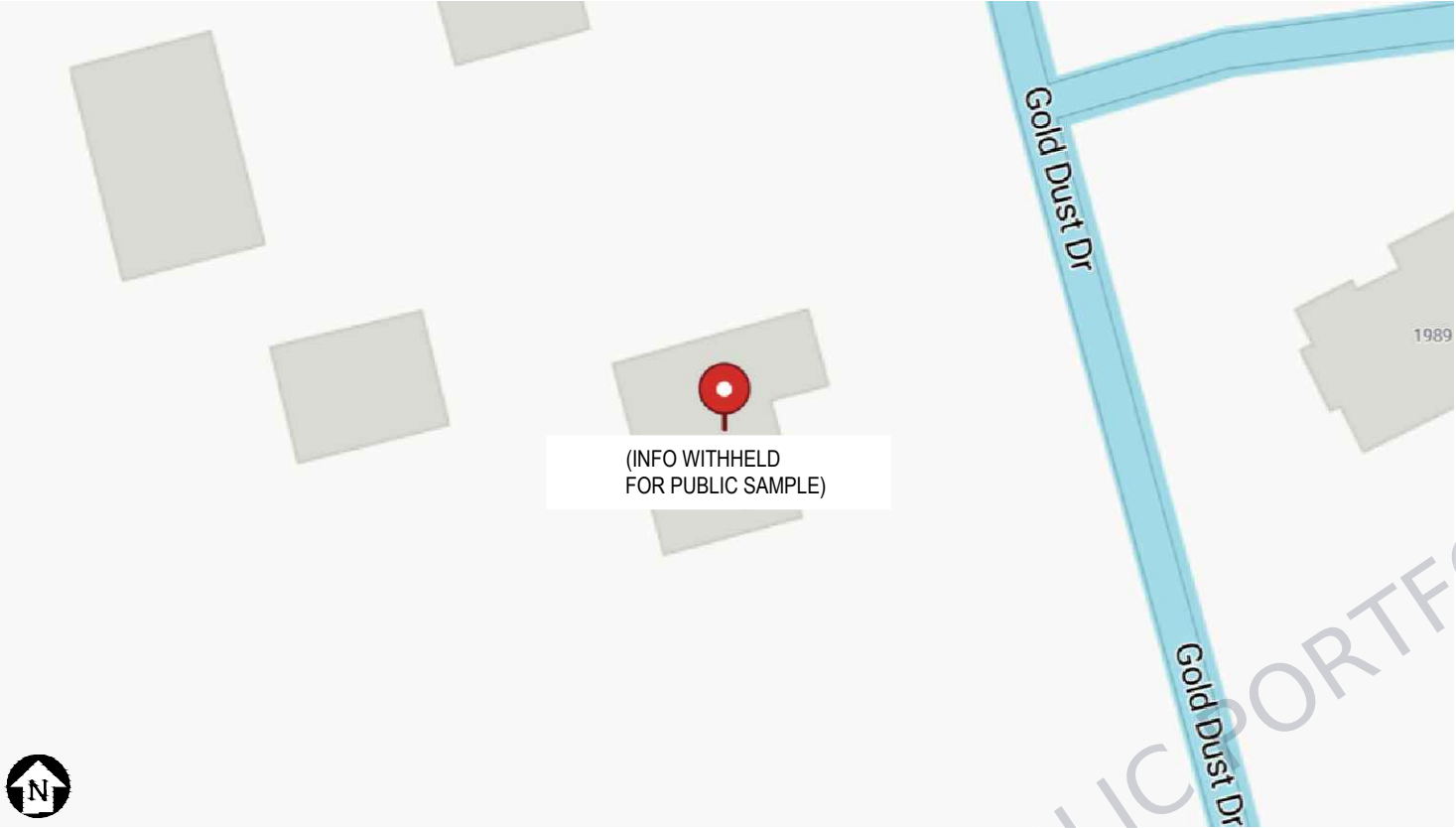
PROJECT DETAILS	
PROPERTY OWNER	(INFO WITHHELD FOR PUBLIC SAMPLE)
OWNER PHONE	(INFO WITHHELD FOR PUBLIC SAMPLE)
OWNER EMAIL	(INFO WITHHELD FOR PUBLIC SAMPLE)
PROPERTY ADDRESS	(INFO WITHHELD FOR PUBLIC SAMPLE)
AHJ	(INFO WITHHELD FOR PUBLIC SAMPLE)
ZONING	RESIDENTIAL
CONST. TYPE	FLUSH ROOF-MOUNTED PHOTOVOLTAIC ARRAY
UTILITY COMPANY	ROCKY MOUNTAIN POWER
OBSERVED CODES	2021 INTERNATIONAL RESIDENTIAL CODE (IRC) 2021 INTERNATIONAL SWIMMING POOL AND SPA CODE (ISPS) 2021 INTERNATIONAL ENERGY CONSERVATION CODE 2023 NATIONAL ELECTRICAL CODE (NEC) 2021 INTERNATIONAL BUILDING CODE (IBC), INCLUDING APPENDIX J 2021 INTERNATIONAL PLUMBING CODE (IPC) 2021 INTERNATIONAL MECHANICAL CODE (IMC) 2021 INTERNATIONAL FUEL GAS CODE (IFGC) 2021 INTERNATIONAL ENERGY CONSERVATION CODE 2021 INTERNATIONAL EXISTING BUILDING CODE ICC / ANSI A117.1-2009 APPLICABLE UTAH STATE AMENDMENTS (SEE LAWS AND RULES) OSHA 29 CFR 1910.269 UNDERWRITERS LABORATORIES (UL) STANDARDS
STRUCT. METHOD	ASCE7-16

CONTRACTOR INFORMATION	
CONTRACTOR	(INFO WITHHELD FOR PUBLIC SAMPLE)
LICENSE NO.	(INFO WITHHELD FOR PUBLIC SAMPLE)
ADDRESS	(INFO WITHHELD FOR PUBLIC SAMPLE)
PHONE	(INFO WITHHELD FOR PUBLIC SAMPLE)
CONTRACTOR SIGNATURE	

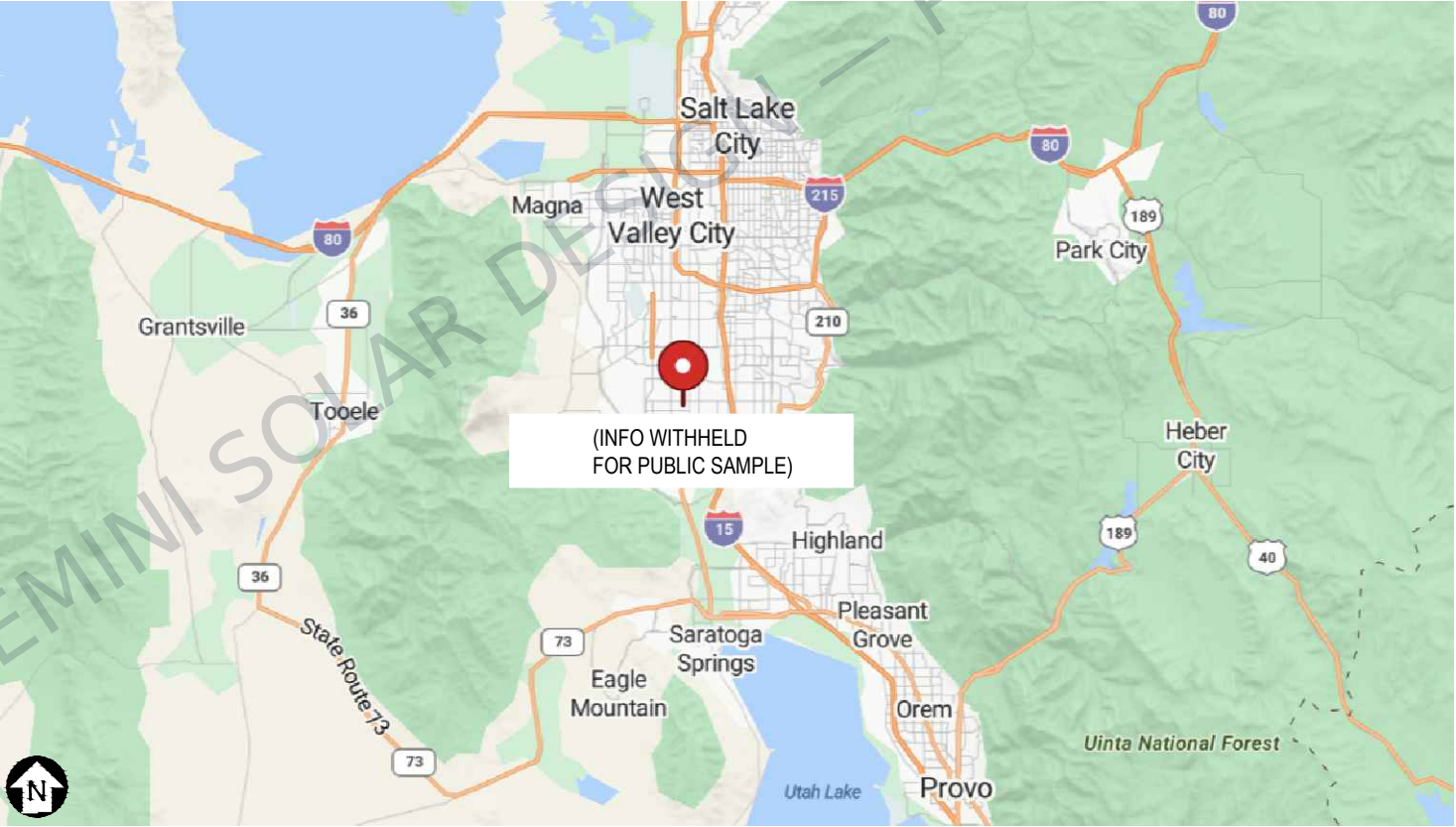
PLAN DESIGNER INFORMATION	
COMPANY	GEMINI SOLAR DESIGN, LLC.
NAME	SANJAY CHRISTOPHER MALLIPUDI
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503
PHONE	(609) 802-5743
PLAN DESIGNER SIGNATURE	<i>Sanjay Mallipudi</i>

SYSTEM DETAILS	
DC RATING OF SYSTEM	18.920W
MAX. CONTINUOUS OUTPUT CURRENT	66.7A @ 240VAC
HYBRID INVERTER	(1) EG4 FLEXBOSS 21 (IV-16000-HYB-AW-FX-00)
SOLAR MODULE	(44) PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W
BATTERY MODULE	(3) EG4 WALLMOUNT INDOOR 280AH LITHIUM BATTERY
MODULE-LEVEL RAPID SHUTDOWN	(20) TIGO TS4-A-2F (4) TIGO TS4-A-F
PROJECT TYPE	GRID-TIED WITH DC-COUPLED BATTERY STORAGE (WHOLE-HOME BACKUP APPLICATION)

SITE SPECIFICATIONS	
UTILITY SERVICE	120 / 240VAC, 1-Ø, 3-WIRE
MAIN SERVICE PANEL ("BACKED-UP LOADS PANEL")	200A RATED BUSBAR 200A / 2P MAIN BREAKER
ASHRAE EXTREME ANNUAL MEAN MINIMUM DENSITY DRY BULB TEMP.	-16°C
ASHRAE 2% ANNUAL DRY DENSITY BULB TEMP.	36°C
DESIGN WIND SPEED	115 MPH
DESIGN GROUND SNOW LOAD	32 PSF
WIND EXPOSURE CATEGORY	C
SEISMIC ZONE	D
RISK CATEGORY	II



1 PLOT
PV-1 SCALE: NTS



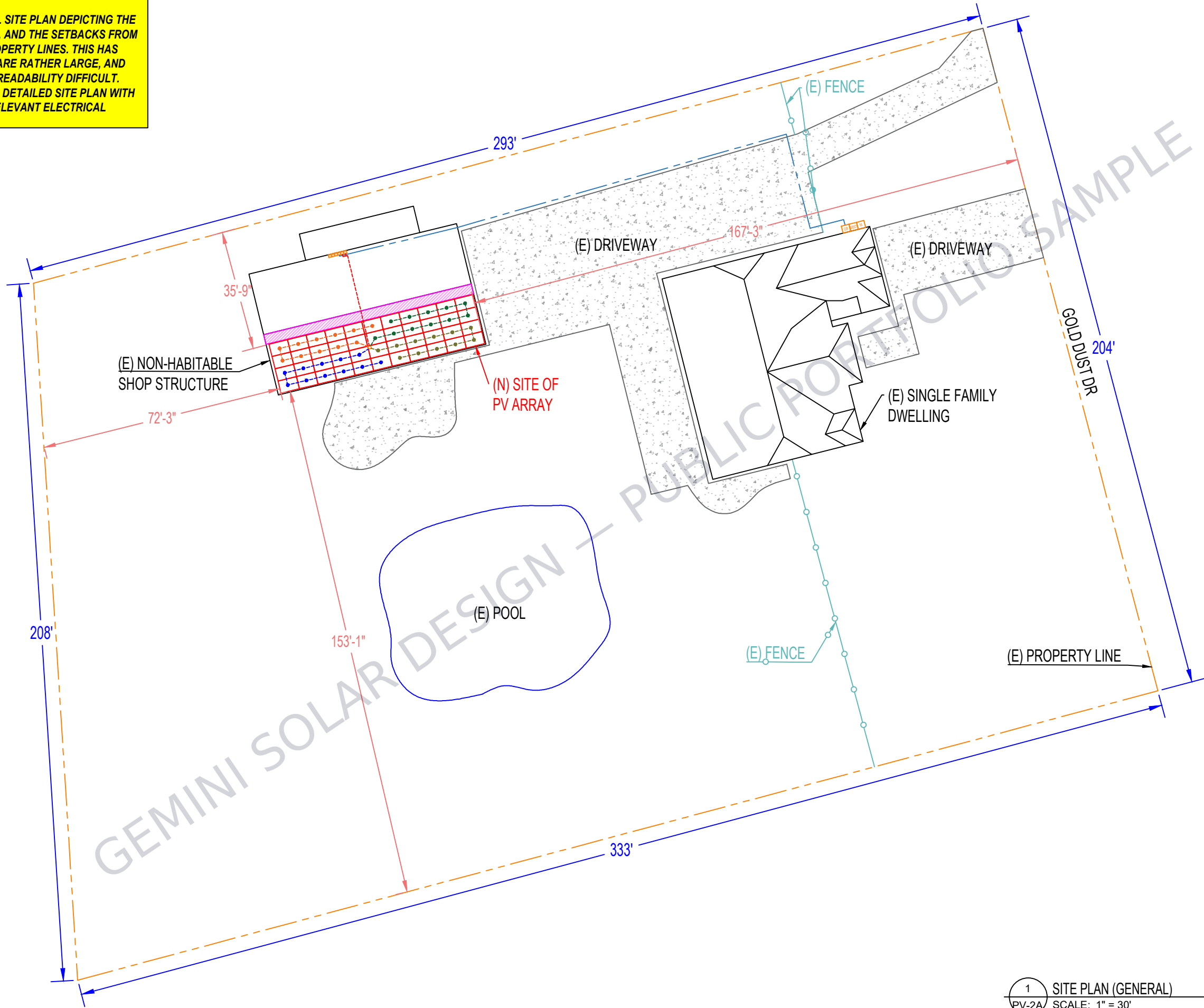
2 LOCALE
PV-1 SCALE: NTS

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 CITY OF SOUTH JORDAN, UTAH. THE ENERGY PRODUCED BY THE PV SYSTEM SHALL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ON-SITE ELECTRICAL EQUIPMENT.	
THE PROJECT WILL INCLUDE DC-COUPLED BATTERY STORAGE WITH A WHOLE-HOME BACKUP SOLUTION.	

(INFO WITHHELD)	
PHONE: (INFO WITHHELD)	
LICENSE NO. (INFO WITHHELD)	
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GRID-TIED SOLAR SYSTEM 18.92KW DC WITH DC-COUPLED BATTERY STORAGE (WHOLE HOME BACKUP APPLICATION)	
(INFO WITHHELD FOR PUBLIC SAMPLE)	
PLAN DESIGNER INFORMATION	COMPANY
	GEMINI SOLAR DESIGN, LLC.
	NAME
	SANJAY CHRISTOPHER MALLIPUDI
	ADDRESS
PROJECT INFO	495 HOWARD HEIGHTS ROAD
	FRESHWATER, CA 95503
	PHONE
	(609) 802-5743
	PLAN DESIGNER SIGNATURE
	<i>Sanjay Mallipudi</i>
PROJECT NO: GSD-20250705-SCM	
DRAWN BY: SCM	
DATE: 7/5/2025	
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.



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GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION				
COMPANY	GEMINI SOLAR DESIGN, LLC.			
NAME	SANJAY CHRISTOPHER MALLIPUDI			
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503			
PHONE	(609) 802-5743			
PLAN DESIGNER SIGNATURE				

SITE PLAN

PROJECT NO: GSD-20250705-SCM
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DATE: 7/5/2025

PV-2A



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

(N) DC ISOLATOR (TYP. OF 2 UNITS)
MODEL: IMO SI32-PEL64R-4
NEMA 4X, 32A @ 600VDC
4-POLE SERIES
(LOC. ON INTERIOR OF SHOP)

(N) EG4 FLEXBOSS21 HYBRID INVERTER
MODEL: IV-16000-HYB-AW-FX-00
(LOC. ON INTERIOR OF SHOP)

(N) TIGO POWER RSS TRANSMITTER - OUTDOOR KIT
MODEL: SINGLE CORE RSS
I. PASS POSITIVE HOMERUNS THROUGH EACH RSS CORE
II. CONNECT WIRES TO AC SIDE OF THE POWER SUPPLY
III. TRANSMITTER POWER SUPPLY MUST BE ON SAME AC BRANCH CIRCUIT AS INVERTER TO MEET CEC 690.12 RAPID SHUTDOWN REQUIREMENTS.
(LOC. ON INTERIOR OF SHOP, WITHIN FLEXBOSS 21 CABINET)

(N) EG4@ WALLMOUNT INDOOR 280AH LITHIUM BATTERY (TYP. OF 3)
51.2VDC NOMINAL VOLTAGE
14.3KWH, 280 AMP-HOURS CAPACITY
DC-COUPLED SOLAR BATTERIES MUST BE SPACED A MINIMUM OF 36 INCHES APART IN ALL DIRECTIONS
(LOC. INTERIOR OF SHOP)

36" FIRE ACCESS PATHWAYS AS PER 2021 INTL. FIRE CODE

(N) NEMA 3R JUNCTION BOX
TRANSITION FROM PV WIRE TO #10 THWN-2 CONDUCTORS RAN INSIDE 0.75" DIA. EMT CONDUIT TO DC ISOLATOR(S) LOCATED INSIDE SHOP

(N) PV ARRAY
(44) PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W
(20) TIGO POWER TS4-A-2F (RAPID SHUTDOWN MLPE)
(4) TIGO POWER TS4-A-F (RAPID SHUTDOWN MLPE)
166° AZIMUTH, 4:12 PITCH

(N) 1.25" SCH. 40 PVC CONDUIT BURIED IN TRENCH CARRYING HYBRID INVERTER OUTPUT CIRCUIT
19" BURIAL DEPTH MINIMUM, ~175 FT. LENGTH

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

SITE PLAN NOTES

- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 319.0(D).
- CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.8(C).
- 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)
- ARRAYS SHALL BE INSTALLED IN A WAY THAT ENSURES THAT PV SOURCE CONDUCTORS SHALL NOT BE READILY ACCESSIBLE.

(N) EG4 GRID BOSS MICRO-GRID INTERCONNECTION DEVICE (MID)
(LOC. ON EXTERIOR OF HOUSE)

(E) 200A MAIN BREAKER DISCONNECT
**SERVICE-ENTRANCE RATED
NEUTRAL TO GROUND BOND LOCATED HERE**
120 / 240VAC, 1- ϕ , 3-WIRE, NEMA 3R
200A RATED BUSBAR
200A / 2P MAIN BREAKER
(LOC. ON EXTERIOR OF HOUSE)

(E) UTILITY METER
(LOC. ON EXTERIOR OF HOUSE)

(E) 200A LOAD CENTER
(E) 200A / 2P MAIN BREAKER
120 / 240VAC, 1- ϕ , NEMA 1 RATED
THIS LOAD CENTER SHALL BE BACKED UP BY THE EG4 GRID BOSS MID IN A WHOLE-HOME BACKUP APPLICATION
(LOC. ON INTERIOR OF HOUSE)

(INFO WITHHELD)

PHONE: (INFO WITHHELD)

LICENSE NO. (INFO WITHHELD)

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GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION

COMPANY	GEMINI SOLAR DESIGN, LLC.
NAME	SANJAY CHRISTOPHER MALLIPUDI
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503
PHONE	(609) 802-5743
PLAN DESIGNER SIGNATURE	

SITE PLAN

PROJECT NO: GSD-20250705-SCM

DRAWN BY: SCM

DATE: 7/5/2025

PV-2B

- 1 STRING OF 11 MODULES (PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W, MPPT #1)
- 1 STRING OF 11 MODULES (PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W, MPPT #1)
- 1 STRING OF 11 MODULES (PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W, MPPT #2)
- 1 STRING OF 11 MODULES (PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W, MPPT #3)

1 SITE PLAN (DETAILED)
PV-2B SCALE: 1" = 18'

PHOTOVOLTAIC MODULE								
REF.	TYP.	MODULE	STC POWER	ISC	IMP	VOC	VMP	FUSE RATING
PM1-44	44	PHILADELPHIA SOLAR PS-MNB108(HCBF)-430W	430W	14.13A	13.28A	38.42V	32.49V	30A

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	MAX DC VOLTAGE (V_OC)	NOMINAL POWER OUTPUT	BACKUP/UPS AC OUTPUT DATA (PEAK POWER)	MAX. EFFICIENCY @ PV TO GRID	RAPID SHUTDOWN COMPLIANT AS PER NEC 690.12
1	EG4 FLEXBOSS 21 (IV-16000-HYB-AW-FX-00)	120-440VDC	3 MPPT IN TOTAL 2 STRINGS (MPPT 1 & 2) 1 STRING (MPPT 3)	26A / 26A / 15A	600VDC	16,000W @ 240VAC	24KW (.5 SEC) 18KW (1 SEC) 15KW (6 MIN) 13.2KW (12 MIN)	97%	YES

BATTERY MODULE									
TYP.	BATTERY	CHEMISTRY	NOMINAL VOLTAGE	CAPACITY	TOTAL ENERGY CAPACITY	COMMUNICATION PROTOCOL	CHARGING CURRENT	DISCHARGING CURRENT	CERTIFICATIONS
3	EG4® WALLMOUNT INDOOR 280AH LITHIUM BATTERY	LiFePO4	51.2VDC (48VDC)	280AH	14.3KWH @ 25C, 100% STATE OF CHARGE	RS485/CAN	60A - 160A	160A	UL1973 UL 9540A (PASSED)

MODULE LEVEL RAPID SHUTDOWN								
TYP.	MODEL	NEC 690.12 COMPLIANT	MAXIMUM POWER	MAXIMUM INPUT VOLTAGE (PER INPUT)	OPEARTING VOLTAGE RANGE	MAXIMUM INPUT CURRENT (IMP)	COMMUNICATION	RECOMMENDED FUSE RATING
20	TIGO TS4-A-2F	YES	1000W (500W PER INPUT)	80VDC	16VDC - 80VDC	15A PER INPUT	PLC	30A
4	TIGO TS4-A-F	YES	500W	80VDC	16VDC - 80VDC	15A PER INPUT	PLC	30A

SYSTEM SUMMARY	
ARRAY STC POWER	18,920W
ARRAY CIRCUITS	2 X 11 (MPPT #1) 1 X 11 (MPPT #2) 1 X 11 (MPPT #3)
ARRAY VMP @ STC (25°C)	357.3VDC (MPPT #1) 357.3VDC (MPPT #2) 357.3VDC (MPPT #3)
ARRAY VOC @ STC (25°C)	422.6VDC (MPPT #1) 422.6VDC (MPPT #2) 422.6VDC (MPPT #3)
MAXIMUM ARRAY VOC @ MIN. TEMP (-16°C)	465.9VDC (MPPT #1) 465.9VDC (MPPT #2) 465.9VDC (MPPT #3)
ARRAY I_MP @ STC (SELF-LIMITING OVER 26A FOR MPPT 1 & 2, 15A FOR MPPT 3)	26.56A (MPPT #1) 13.28A (MPPT #2) 13.28A (MPPT #3)
ARRAY I_SC (MAX) (MAXIMUM INPUT OF 31A FOR MPPT 1 & 2, 19A FOR MPPT 3)	28.26A (MPPT #1) 14.13A (MPPT #2) 14.13A (MPPT #3)

OCPD SCHEDULE				
REF.	TYPE OF OCPD	POLES	CURRENT RATING	RATED VOLTAGE
(EXISTING) MAIN CIRCUIT BREAKER, 200A LOAD CENTER	CIRCUIT BREAKER	2	200A	240VAC
(EXISTING) MAIN CIRCUIT BREAKER, BREAKERED ENCLOSURE	CIRCUIT BREAKER	2	200A	240VAC
CB1 (POWER FOR TIGO POWER RSS TRANSMITTER)	CIRCUIT BREAKER	1	15A	120VAC
CB2 (SHOP SUBPANEL CIRCUIT, SMART PORT #1, LOAD SHED)	CIRCUIT BREAKER	2	90A	240VAC
CB3 (HYBRID INVERTER, BACKFED CIRCUIT BREAKER)	CIRCUIT BREAKER	2	90A	240VAC
CB4 (BACKED UP LOADS, GRID BOSS, MAIN BREAKER)	CIRCUIT BREAKER	2	200A	240VAC
CB5 (MANUAL BYPASS, GRID BOSS, MAIN BREAKER)	CIRCUIT BREAKER	2	200A	240VAC

DC DISCONNECT SCHEDULE			
REF.	TYPE	SWITCHING CONFIGURATION	CURRENT RATING & VOLTAGE RATING
DC ISOLATOR (TYP. OF 2 UNITS) MODEL: IMO SI32-PEL64R-4, NEMA 4X	ROTARY ACTUATOR SWITCH	4-POLE SERIES	32A @ 600VDC

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REPRESENTED IN THIS PLAN.

GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION
COMPANY GEMINI SOLAR DESIGN, LLC.
NAME SANJAY CHRISTOPHER MALLIPUDI
ADDRESS 495 HOWARD HEIGHTS ROAD
FRESHWATER, CA 95503
PHONE (609) 802-5743
PLAN DESIGNER SIGNATURE 

THREE-LINE DIAGRAM

PROJECT NO: GSD-20250705-SCM
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DATE: 7/5/2025

PV-3B

JUNCTION BOX

1JUNCTION BOX

⚠

WARNING

⚠

ELECTRIC SHOCK HAZARD

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

NEC 690.35(F)

3JUNCTION BOX

⚠

WARNING

⚠

PHOTOVOLTAIC POWER SOURCE

NEC 690.35

HYBRID INVERTER (FLEXBOSS21)

4HYBRID INVERTER (FLEXBOSS21)

⚠

WARNING

⚠

ELECTRIC SHOCK HAZARD

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

NEC 690.35(F)

6HYBRID INVERTER (FLEXBOSS21)

SOLAR INVERTER

MAXIMUM RATING

OPERATING CURRENT

66.7 AMPS

OPERATING VOLTAGE

240 VAC

NEC 690.54

8HYBRID INVERTER (FLEXBOSS21)

SOLAR DC DISCONNECT

NEC 690.13(B)

2JUNCTION BOX

⚠

DO NOT DISCONNECT UNDER LOAD

⚠

NEC 690.16(B)

5HYBRID INVERTER (FLEXBOSS21)

⚠

WARNING

⚠

ELECTRIC SHOCK HAZARD

IF GROUND FAULT IS INDICATED ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

NEC 690.5(C)

7HYBRID INVERTER (FLEXBOSS21)

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

SOLAR ELECTRIC PV PANELS

RACEWAYS

9RACEWAYS, CABLES PER 10 FT.

⚠

WARNING

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PHOTOVOLTAIC POWER SOURCE

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

200A LOAD CENTER (BACKED UP LOADS)

10200A LOAD CENTER (BACKED UP LOADS)

⚠

WARNING

⚠

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 690.17.4

12200A LOAD CENTER (BACKED UP LOADS)

⚠

WARNING

⚠

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

NEC 690.56(B)

11200A LOAD CENTER (BACKED UP LOADS)

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

SOLAR ELECTRIC PV PANELS

13200A LOAD CENTER (BACKED UP LOADS)

BATTERY BACKED UP ELECTRICAL PANEL

RAPID SHUTDOWN SWITCH (LOCATED ON GRID BOSS MID)

14GRID BOSS MID

⚠

MAIN BATTERY SYSTEM DISCONNECT

⚠

15GRID BOSS MID

⚠

WARNING

⚠

BATTERY SYSTEM RAPID SHUTDOWN SWITCH. TURN DIAL TO OFF POSITION TO SHUTDOWN ESS

DIRECTORY PLACARD

16DIRECTORY PLACARD

⚠

CAUTION

⚠

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

(TYP. OF 3) BATTERY MODULE (LOC. ON INTERIOR OF SHOP) EMERGENCY POWER OFF SWITCH (LOC. ON EXTERIOR) EG4 FLEXBOSS21 (LOC. ON INTERIOR OF SHOP) (TYP. OF 2) AIO DC ISOLATOR (LOC. ON INTERIOR OF SHOP)

NON-HABITABLE SHOP STRUCTURE

PV ARRAY

200A LOAD CENTER BACKED UP LOADS PANEL (LOC. ON INTERIOR OF HOUSE)

EG4 GRID BOSS (LOC. ON EXTERIOR OF SFD) 200A MAIN BREAKER DISCONNECT ENCLOSURE (LOC. ON EXTERIOR OF SFD) UTILITY METER (LOC. ON EXTERIOR OF SFD)

SINGLE FAMILY DWELLING

NEC 690.56(B)

SIGNAGE REQUIREMENTS	
1	ALL PLACARDS AND SIGNAGE REQUIRED BY THE 2023 NATIONAL ELECTRIC 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

(INFO WITHHELD)

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GRID-TIED SOLAR SYSTEM 18.92KW DC WITH DC-COUPLED BATTERY STORAGE (WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION

COMPANY

GEMINI SOLAR DESIGN, LLC.

NAME

SANJAY CHRISTOPHER MALLIPUDI

ADDRESS

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PHONE

(609) 802-5743

PLAN DESIGNER SIGNATURE



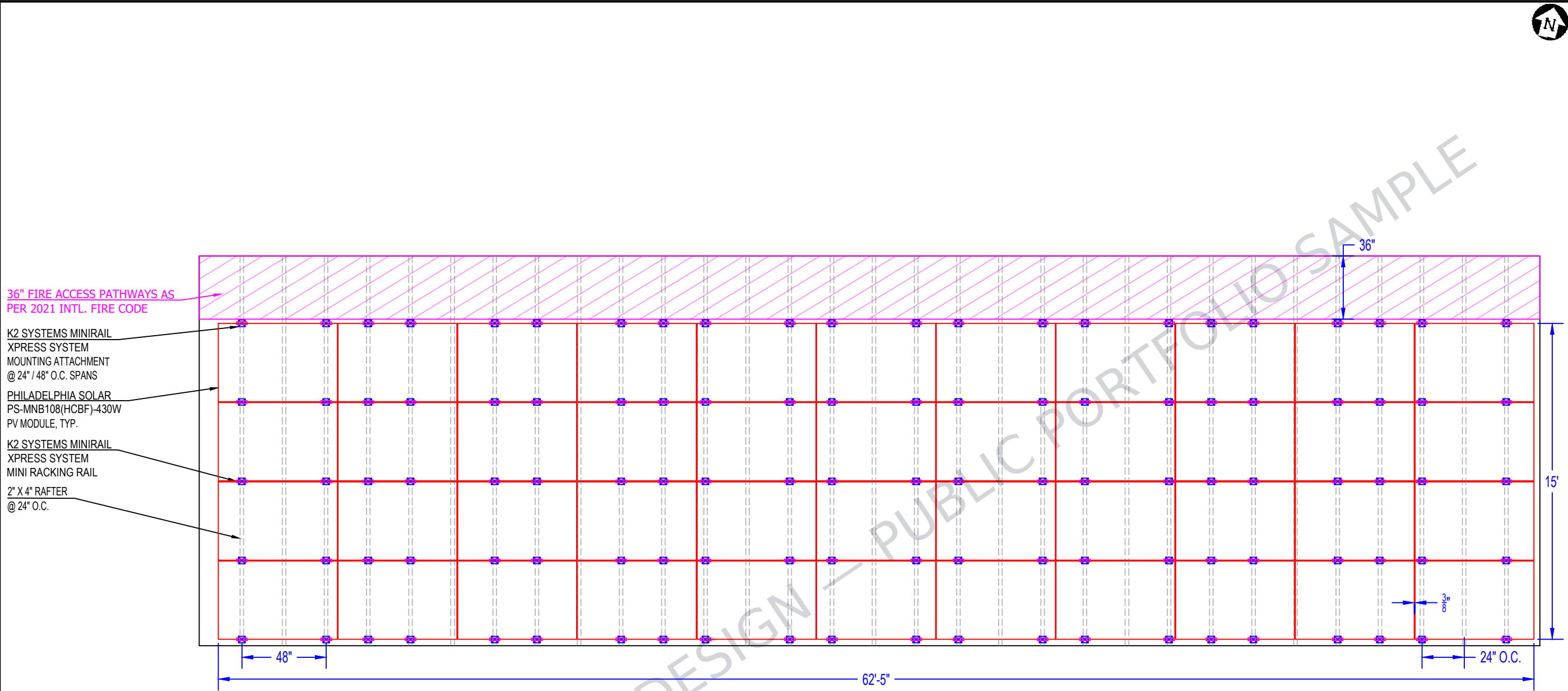
PLACARDS

PROJECT NO: GSD-20250705-SCM

DRAWN BY: SCM

DATE: 7/5/2025

PV-4



(INFO WITHHELD)
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GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION

COMPANY	GEMINI SOLAR DESIGN, LLC.
NAME	SANJAY CHRISTOPHER MALLIPUDI
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503
PHONE	(609) 802-5743
PLAN DESIGNER SIGNATURE	

ATTACHMENT PLAN

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-5

ROOF INFORMATION	
ROOF TYPE	COMPOSITE SHINGLE
PITCH	4:12
RAFTER SPACING	24" O.C.
RAFTER DIMENSIONS	2" X 4"
LAYOUT SPECIFICATIONS	
NUMBER OF MODULES	44
AREA	940.4 SQ. FT
AZIMUTH	166°
TOTAL WEIGHT OF ARRAY	2,614.5 LBS
DEAD LOAD	2.78 PSF

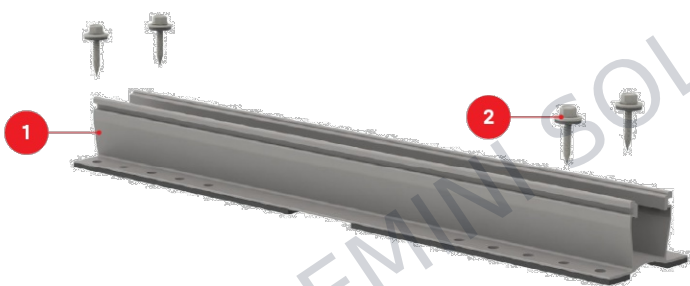
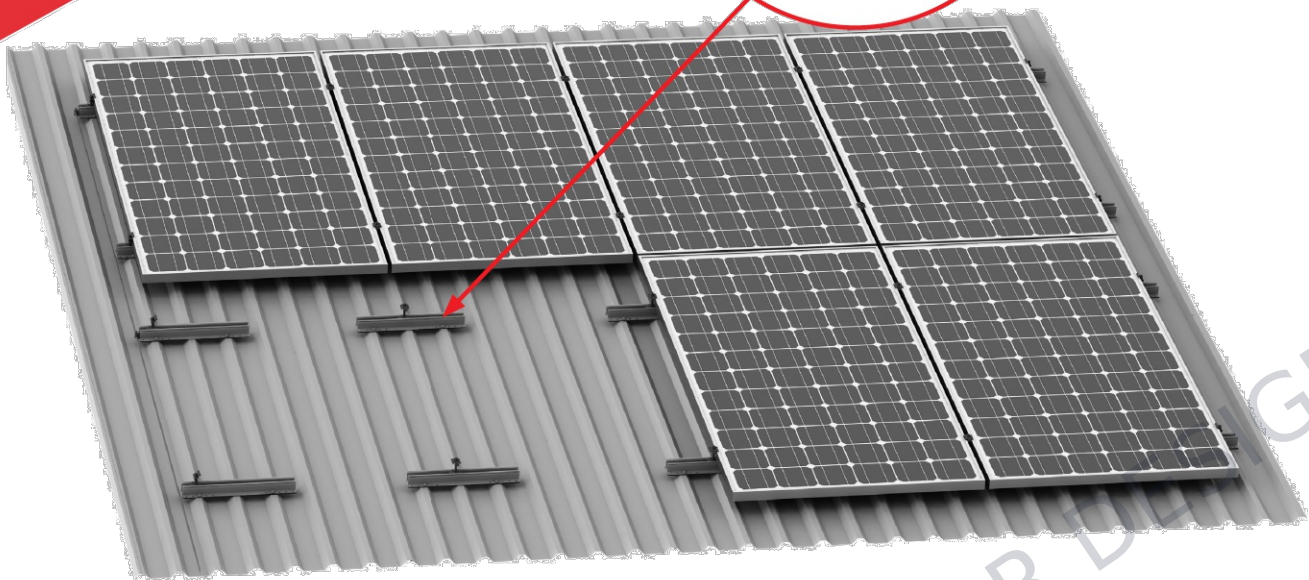
LOCAL DESIGN CRITERIA	
WIND EXPOSURE CATEGORY	C
SEISMIC ZONE	D
RISK CATEGORY	II
DESIGN WIND SPEED	115 MPH
DESIGN GROUND SNOW LOAD	32 PSF
PV MODULES AND K2 SYSTEMS MINIRAIL XPRESS SYSTEM HAVE CLASS A FIRE RATING CLASSIFICATION.	

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-6 THROUGH PV-9 FOR DETAILS REGARDING THE K2 SYSTEMS MINIRAIL XPRESS SYSTEM, AS WELL AS THE RELEVANT INSTALLATION INSTRUCTIONS.

MiniRail XPress Base Set, Mill

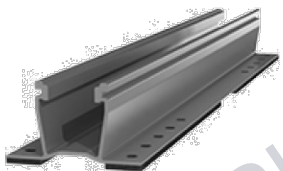


DATA SHEET



Item Number	Description	Part Number
1	MiniRail XPress Base 17in w/EPDM, Mill	4000073 MiniRail XPress Base Set, Mill
2	MiniRL Screw w/EPDM JF3, 29g, 25mm	

MINIRAIL XPRESS BASE



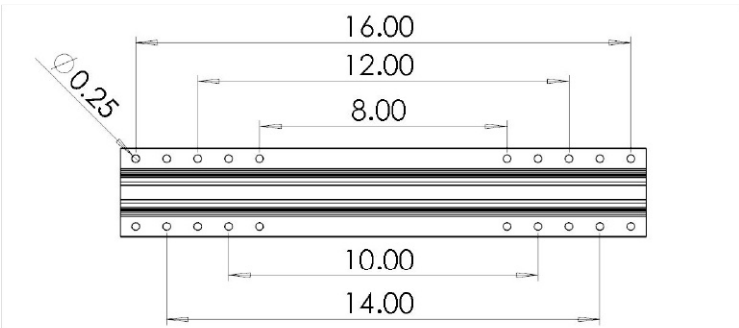
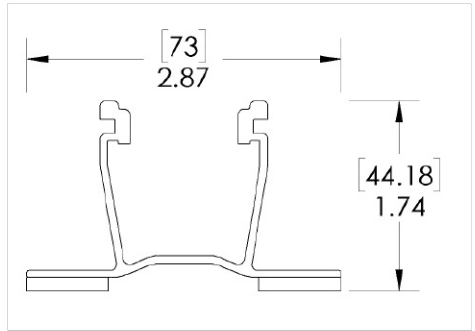
Mechanical Properties

	MiniRail XPress
Material	6000 Series Aluminum, stainless steel MiniRail Screw
Ultimate Tensile Strength	37.7 ksi (260 MPa)
Yield Strength	34.8 ksi (240 MPa)
Weight	0.84 lbs/pc (0.378 kg/pc)
Finish	Mill

Sectional Properties

	MiniRail XPress
Sx	0.183 in ³ (2.9988 cm ³)
Sy	0.176 in ³ (2.8841 cm ³)
A (X-Section)	0.507in ² (3.2709 cm ²)

Units: [mm] in



Notes:

- / Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- / UL2703 Listed System for Fire and Bonding

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GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

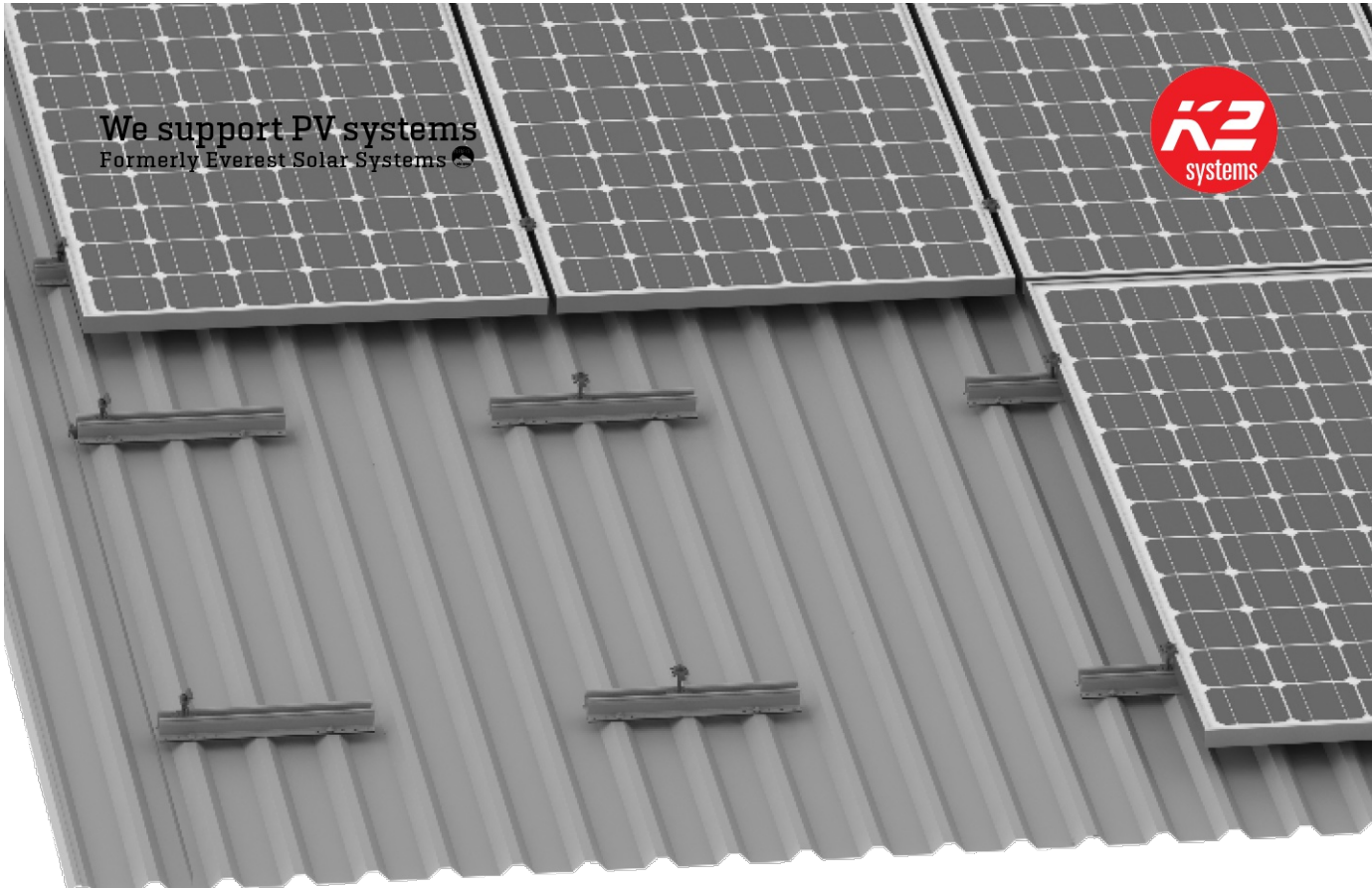
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PLAN DESIGNER INFORMATION					
COMPANY	GEMINI SOLAR DESIGN, LLC.	NAME	SANJAY CHRISTOPHER MALLIPUDI	ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503
PHONE	(609) 802-5743	PLAN DESIGNER SIGNATURE			

K2 MINIRAIL XPRESS

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-6



We support PV systems
Formerly Everest Solar Systems



MiniRail XPRESS System

PRODUCT SHEET

- ▶ High quality, German-engineered system optimized for residential installations
- ▶ Design flexibility with 17" sections of rail
- ▶ Redundant waterproofing with EPDM backed base and washers
- ▶ Simple 3 part installation
- ▶ MK3 technology provides highest rail engagement
- ▶ 100% code compliant, structural validation for all solar states
- ▶ Minimize pallet and freight costs
- ▶ Simple to design using our code compliant online design tool, Base



k2-systems.com

Components



MiniRail XPRESS Base

Part Number	Description
4000667	MiniRail XPRESS Base 17" w/EPDM, Mill
4000073	MiniRail XPRESS Base Set, Mill



CrossRail End Clamp

Part Number	Description
4000429	CR EC Silver 30-50mm, SR 33-40mm
4000430	CR EC Dark 30-50mm, SR 33-40mm
4000003	Shared Rail End Clamp Silver 46-50mm
4000004	Shared Rail End Clamp Dark, 46-50mm



Wire Management

Part Number	Description
4000069	Wire Management Clip, TC
4000382	HEYClip SunRunner Cable Clip SS, S6404



MiniRail Screw

Part Number	Description
4000672	MiniRail Screw w/EPDM JF3, 29g, 25mm



CrossRail Mid Clamp

Part Number	Description
4000601-H	CR MC Silver 30-47mm, Shared RL 30-37mm 13mm Hex
4000602-H	CR MC Dark 30-47mm, Shared RL 30-37mm 13mm Hex



Yeti Clamp

Part Number	Description
4000050-H	Yeti Hidden EC for CR, 13mm Hex Set



Everest Ground Lug

Part Number	Description
4000006-H	Everest Ground Lug, 13mm Hex Set

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K2 MINIRAIL XPRESS

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-7

Fire Rating

The MiniRail XPRess System has undergone fire performance testing in accordance with UL 2703, Fire Performance. A System Class A fire rating is achieved when using MiniRail XPRess under the following conditions:

/Roof slope of 0° to 45°

/CrossRail may be mounted using any stand-off height to maintain the Class A fire rating. Always consult the module manufacturer’s installation instructions to ensure your installation is in compliance with their UL 1703 Listing.

/The results of the racking system do not improve a roof covering Class rating.

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PLAN DESIGNER SIGNATURE	
CLASS A FIRE RATING	
PROJECT NO: GSD-20250705-SCM	
DRAWN BY: SCM	
DATE: 7/5/2025	

Bonding and Grounding

Appropriate means of bonding and grounding are required by regulation. The information provided in this manual shall always be verified with local and national building codes.

A sample bonding path diagram is shown in Figure 1 below. Your specific installation may vary, based upon site conditions and your AHJ's requirements. Caution: module removal may disrupt the bonding path and could introduce the risk of electric shock. Additional steps may be required to maintain the bonding path. Modules should only be removed by qualified persons in compliance with the instruction manual.

In case of module removal, a temporary ground lug and wire will be required to attach to the module to maintain the bond path.

Each electrical connection has been evaluated to a maximum fuse rating of 30A. Every row of modules must be connected to at least one MiniRail XPress Base having a ground lug, although additional may be used for redundancy. When installed per these installation instructions, all connections meet the requirements of NEC 690.43.

This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

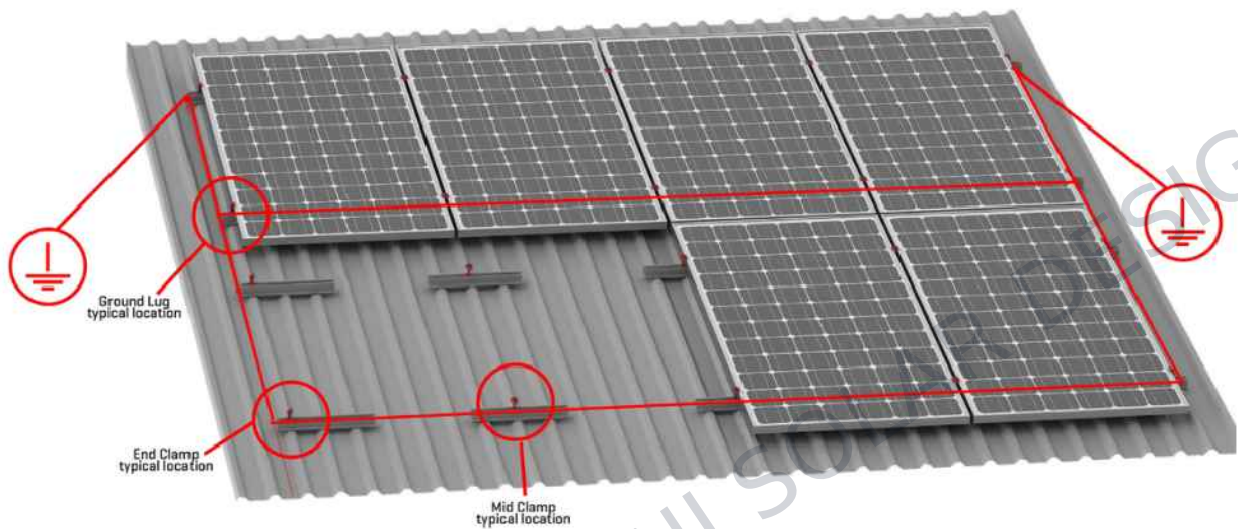


Figure 1: Bonding connections and bond path shown in red. For certain jurisdictions, bonding and grounding connections are identified at typical locations.

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	ADDRESS
	495 HOWARD HEIGHTS ROAD
	FRESHWATER, CA 95503
	PHONE
	(609) 802-5743
	PLAN DESIGNER SIGNATURE
	<i>Sanjay Mallipudi</i>
GROUNDING DETAILS	
PROJECT NO: GSD-20250705-SCM	
DRAWN BY: SCM	
DATE: 7/5/2025	
PV-9	



PHILADELPHIA SOLAR

DELIVERING CLEAN ENERGY SOLUTIONS

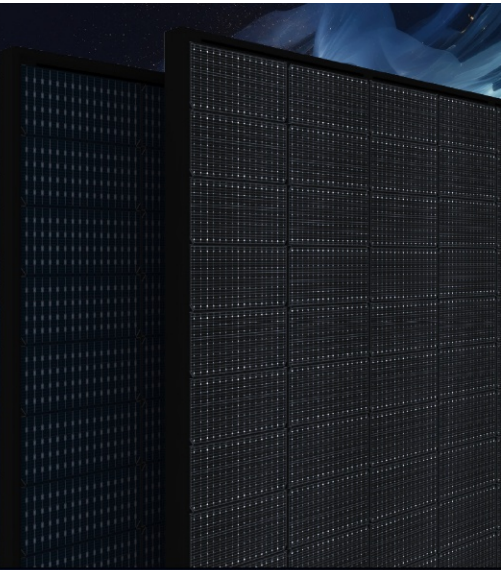
NEXUS

PS-MNB108(HCBF)-xxxW

Half-Cell N-Type 16BB Bifacial Module

425 - 440 Watt

Positive power tolerance of 0 ~+3%



Philadelphia Solar's Mono-Crystalline N-type modules with power up to **440Wp** are produced using the state-of-the-art (automated) robotic production lines. These modules are suitable to be used for most electrical power applications and have excellent durability to prevailing weather conditions

CERTIFICATIONS

UL 61215 / UL 61730
IEC 61215 / IEC 61730
CSA C22.2#61730:2019

HALT TEST Highly Accelerated Life And Extended Reliability Test
IEC 61853 PAN File
IEC TS 62804 PID Resistance
IEC 60068 Dust and Sand Resistance
IEC 62716 Ammonia Resistance
IEC 61701 Salt Mist Resistance
Bankability Report
EN ISO 9001: 2015
Quality Management System
EN ISO 14001: 2015
Environmental Management System
EN ISO 45001: 2018
Occupational health and safety management systems



APPLICATIONS

On-Grid Commercial/
Industrial Roof-Tops

Off-Grid Systems
(Including Lighting Systems)

Solar Power Plants

FEATURES



Power output increases by 5-25% from the backside resulting in significantly reduced LCOE and (IRR).



Withstand High Mechincal load :
Front (5400 Pascal)
Back (5400 Pascal)



Exceptional Anti-PID performance through the use of optimized mass-production processes and strict materials control.



Improved light trapping and current collection technology enhance module power output and reliability.



Less partial shading current mismatch loss so more power output.

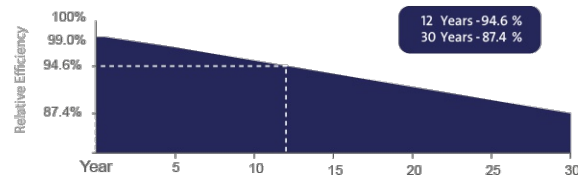


Better temperature coefficients come from half-cell design.



Made In Jordan

LINEAR PERFORMANCE WARRANTY

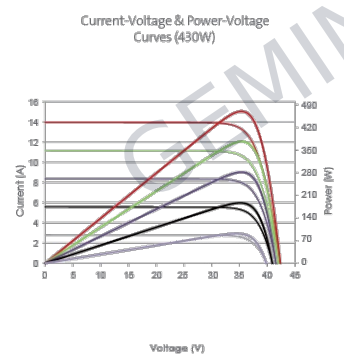


12 Years -94.6 %
30 Years - 87.4 %

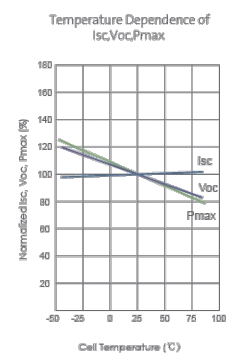


12 Year Product Warranty
30 Year Linear Power Warranty
Only -0.4% Annual Degradation

Electrical Performance & Temperature Dependence



Current-Voltage & Power-Voltage Curves (430W)



Temperature Dependence of Isc, Voc, Pmax

QP-04-CAD/Rev.3

ELECTRICAL CHARACTERISTICS				
POWER AT STC	425 W	430 W	435 W	440 W
Short Circuit Current - Isc (A)	14.05	14.13	14.22	14.30
Maximum Power Current - Imp (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.50	38.63
Maximum Power Voltage - Vmpp (V)	32.23	32.49	32.76	32.98
Module Efficiency - η' (%)	21.80%	22.05%	22.31%	22.57%
Bifaciality Ratio (%)	80% ± 5			
Power tolerance (%)	0~+3%			

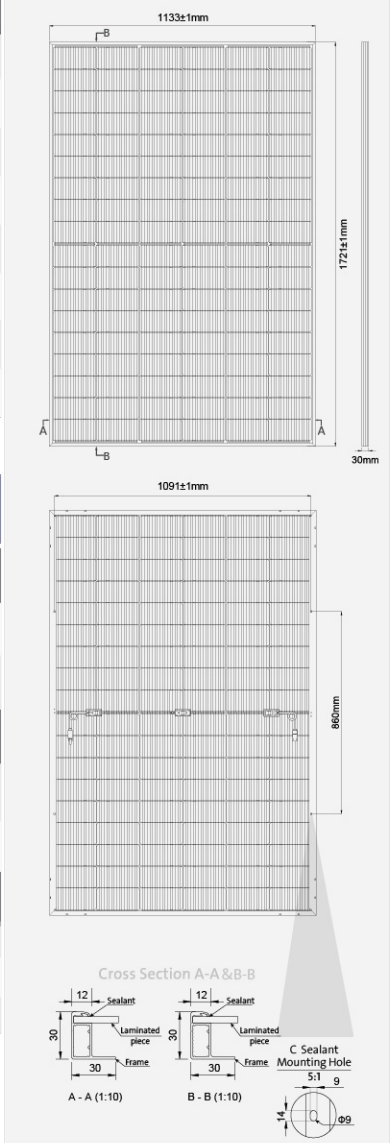
Values at Standard Test Conditions STC (Air Mass AM 1.5 , Irradiance 1000 W/m², Cell Temperature 25° C).

MATERIAL CHARACTERISTICS	
Characteristics	Value
Cells per Module	108 (54x 2)
Cell Type	N Type Mono-Crystalline
Front Surface	3.2mm Tempered AR Coated Glass
Back Cover	Transparent Backsheet
Frame	Anodized Aluminum (Black/Silver)
Junction Box	IP 68 With original MC4
Cable Length	1200mm Cable length could be customized
Fire Classification	Type 1

THERMAL CHARACTERISTICS		PHYSICAL CHARACTERISTICS	
Characteristics	Value	Characteristics	Value
Open Voltage Temperature Coefficient VOC (%/C°)	-0.25	Module Dimensions (mm)	1721 x 1133 x 30
Short Circuit Current Temperature Coefficient ISC (%/C°)	+0.046	Module Weight (kg)	20.5±1Kg
Power Temperature Coefficient PMP (%/C°)	-0.30	Packaging	
NOCT (°C)	45±2	Modules per Pallet	37
OPERATING CONDITIONS		40 Feet High-Cube Container	
Maximum Sytem Voltage - Vmax (V)	1500	962 Modules	
Maximum Series Fuse (A)	30	Mechanical Load**	
Operating Temperature Range (°C)	IEC: -40 to +85 UL: -40 to +90	Max Static load (Front)	5400 Pa
		Max Static load (Back)	5400 Pa
		Dynamic load	1000 Pa

- ♦ Tolerance of power Current and Voltage (ISC,VOC)±3 %
- ♦ Datasheet is subjected to change without prior notice, always obtain the most recent version of the datasheet.
- ♦ ** Caution: For professional use only, the installation and handling of PV modules and cleaning modules require professional skills and should only be performed by qualified professionals, please read the Installation and Operation Manual before using the modules, also Cleaning Guidelines

MODULE DRAWINGS



1133±1mm
1721±1mm
30mm
1091±1mm
860mm
Cross Section A-A & B-B
A - A (1:10)
B - B (1:10)

Updated 1 Oct 2024

1

PV MODULE DATASHEET

PV-10

SCALE: NTS

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PHONE: (INFO WITHHELD)

LICENSE NO. (INFO WITHHELD)

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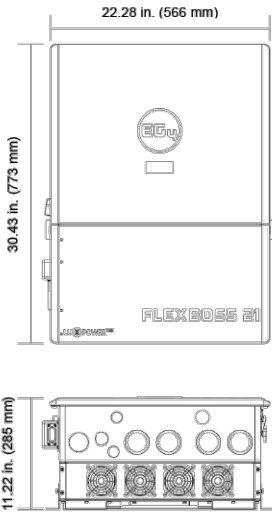
MODULE DATASHEET

PROJECT NO: GSD-20250705-SCM

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PV-10



EG4® FLEXBOSS21 HYBRID INVERTER

The EG4 FlexBOSS21 is a versatile 48V split-phase, hybrid inverter/charger that offers the same dependable power as the 18kPV with enhanced flexibility. Powerful enough to start a 5-ton AC unit, the FlexBOSS21 supports up to 21kW of PV input. Capable of paralleling up to 16 units together, the FlexBOSS21 has an impressive total output of 560kW. Able to provide 16kW of continuous output power with PV & battery, and up to 12kW continuous output by using battery alone. Three individual MPPTs give users optimal control over their solar needs, while the updated EG4 monitoring software allows for convenient total remote management, complete with mobile notifications and remote setting. Seamless interaction with the EG4 GridBOSS gives users control over the entire Energy Storage System (ESS).

HIGH
FREQUENCY
SPLIT-PHASE
DESIGN

10-YEAR
WARRANTY

REMOTE
ADJUSTMENT
VIA EG4
SOFTWARE

ALL-IN-ONE HYBRID INVERTER

Capable of running entirely off grid, using grid electricity, and selling power back to the grid.

UP TO 600VDC INPUT

The extra high voltage enables lower cable sizing for the 3 MPPTs and a maximum recommended PV input of 24kW, eliminating the need for a combiner box.

PLUG-IN WI-FI DEVICE

Enables wireless connection between our monitoring platform and the FlexBOSS21 through the EG4® app or EG4 Monitor system for remote system management.

CLOSED-LOOP COMMUNICATIONS

Able to communicate with EG4 48V batteries and other battery brands. A battery firmware update is required for closed-loop communications with LifePower4 batteries.

RAPID SHUTDOWN

The FlexBOSS21 is CSA C22.2#330:2017 and NEC 690.12 ready with its built-in RSD capabilities.

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VERSION 1.1.1 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL# IV-16000-HYB-AW-FX-00



EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

AC INPUT DATA	
NOMINAL AC VOLTAGE	120/240VAC; 120/208VAC (L1/L2/N required)
FREQUENCY	60 Hz (Default) 50 Hz
MAX. AC CURRENT	50A @ 240V 57.7A @ 208V
MAX. AC INPUT POWER	12kW
MAX. AC BYPASS	90A
AC GRID OUTPUT DATA	
MAX. OUTPUT CURRENT	66.7A
OUTPUT VOLTAGE	120/240VAC; 120/208VAC (L1/L2/N required)
OPERATING VOLTAGE RANGE	180 – 270VAC
NOMINAL POWER OUTPUT	w/ PV: 16000W @240V 13800kW @208V w/ out PV: 12000W @240V 12000W @208V
OUTPUT FREQUENCY	60 Hz (Default) 50 Hz
POWER FACTOR	.99 @ Full Load
REACTIVE POWER ADJUST RANGE	(-0.8) – (+0.8) Leading Adjustable
THD @FULL LOAD	<5%
TRANSFER TIME	20ms (Default), 10ms (Configurable) Parallel – 20ms
BACKUP/UPS AC OUTPUT DATA	
RATED OUTPUT CURRENT (240 208VAC)	50A 57.7A
NOMINAL OUTPUT VOLTAGE	120/240 120/208 VAC
RATED OUTPUT POWER	12kW @ 240VAC 12kW @ 208VAC
PEAK POWER	24kW (.5 sec) 18kW (1 sec) 15kW (6 min) 13.2kW (12 min)
OPERATING FREQUENCY	60 Hz (Default) 50 Hz
THDV (TOTAL HARMONIC DISTORTION VOLTAGE)	<5%
TRANSFER TIME	20ms (Default), 10ms (Configurable), 20ms (Parallel)
PV INPUT DATA	
NUMBER OF MPPTS	3
INPUTS PER MPPT	2 (MPPT 1) 2 (MPPT 2) 1 (MPPT 3)
MAX. USABLE INPUT CURRENT	26A (MPPT 1) 26A (MPPT 2) 15A (MPPT 3)
MAX. SHORT CIRCUIT INPUT CURRENT	31A (MPPT 1) 31A (MPPT 2) 19A (MPPT 3)
DC INPUT VOLTAGE RANGE	100 – 600VDC
UNIT START-UP VOLTAGE	100VDC
MPPT OPERATING VOLTAGE RANGE	120 – 440VDC
NOMINAL MPPT VOLTAGE	360VDC
MAX. UTILIZED SOLAR POWER	21kW
MAX. RECOMMENDED SOLAR INPUT	25kW
EFFICIENCY	
CEC	96.9%
MAX. EFFICIENCY (PV TO GRID)	97%
MAX. EFFICIENCY (BATTERY TO GRID)	94%
MAX. EFFICIENCY (PV TO BATTERY)	94.5%
IDLE CONSUMPTION (NORMAL) (STANDBY MODE)	<80W <60W

EG4 ELECTRONICS

BATTERY DATA	
COMPATIBLE BATTERY TYPES	Lead-acid/ Lithium
MAX. CHARGE/DISCHARGE POWER	12000W
NOMINAL VOLTAGE	48VDC
VOLTAGE RANGE	40 – 60 VDC
RECOMMENDED BATTERY CAPACITY PER INVERTER	>300Ah
GENERAL DATA	
MAX. UNITS IN PARALLEL	16
PRODUCT DIMENSIONS (H×W×D)	30.43 × 22.28 × 11.22 in. (750 × 520 × 285 mm)
UNIT WEIGHT	88 lbs. (52 kg)
DESIGN TOPOLOGY	High Frequency – Transformerless
RELATIVE HUMIDITY	0 – 100%
OPERATING ALTITUDE	<6561 ft (<2000 m)
OPERATING AMBIENT TEMPERATURE RANGE	-13° – 140°F (-25° – 60°C)
STORAGE AMBIENT TEMPERATURE RANGE	-13° – 140°F (-25° – 60°C)
NOISE EMISSION (TYPICAL)	<50dB @ 3 ft
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
STANDARD WARRANTY	10-year standard warranty*
OUTDOOR RATING	NEMA 4X
SAFETY FEATURES	
Integrated DC disconnect, Reverse polarity protection, Output over-voltage protection varistor, Output over current protection, Ground fault monitoring, Grid monitoring, Pole sensitive leakage current monitoring unit, AFCI, RSD	
STANDARDS AND CERTIFICATIONS	
UL1741, SA, SB, PCS CRD	
California Rule 21 Phase I, II, III	
Arc-Fault Circuit Interrupter (AFCI) NEC 2020:690.11/UL1699B	
Ground Fault Monitoring (GFDI) NEC 2020:690.41(B)	
CSA 22.2.107.1:2016 Ed. 4	
CSA 22.2.330:2017 Ed. 1	
IEEE 1547.1:2020; IEEE 1547:2018	
Hawaii Rule 14H [HECO SRD IEEE 1547.1-2020 Ed. 2]	
Rapid Shutdown (RSD) NEC 2020:690.12	
FCC Part 15, Class B (PENDING)	

*See EG4 Warranty Registration for terms and conditions

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ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503				
PHONE	(609) 802-5743				
PLAN DESIGNER SIGNATURE					

INVERTER DATASHEET

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

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 Street South Sulphur Springs, TX 75482

Country: USA

Report Issuing Office: Intertek Testing Services Shenzhen Limited Guangzhou Branch

Control Number: 5028091, 5025969 Authorized by: *Jordan Holbert*
for L. Matthew Snyder, Certification Manager

VALID LISTING MARKS



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

Standard(s):	Grid Support Utility Interactive Equipment - Supplement SA to UL 1741:2021 Ed.3 - Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3 (Supplement SA)]
	Grid Support Utility Interactive Inverters and Converters Based Upon IEEE 1547:2018 & IEEE 1547.1:2020 - Supplement SB to UL 1741:2021 Ed.3 - Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3 (Supplement SB)]
	Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed

Certificate for Report: 240726072GZU-002

Page 1 of 2

Certificate Issued: November 8, 2024

CERTIFICATE OF COMPLIANCE



	Energy Resources [UL 1741:2021 Ed.3] Power Conversion Equipment (R2021) [CSA C22.2#107.1:2016 Ed.4] Photovoltaic Rapid Shutdown Systems (R2022) [CSA C22.2#330:2017 Ed.1] IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces [IEEE 1547:2018] IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces [IEEE 1547.1:2020] Hawaiian Electric IEEE 1547.1-2020 Standard Source Requirements Document Version 2.0 [HECO SRDIEEE-1547.1:2020 Ed.2.0]
Product:	Grid Support Hybrid inverter
Brand Name:	EG4 ELECTRONICS
Models:	IV-16000-HYB-AW-FX-, may be followed by 00-99

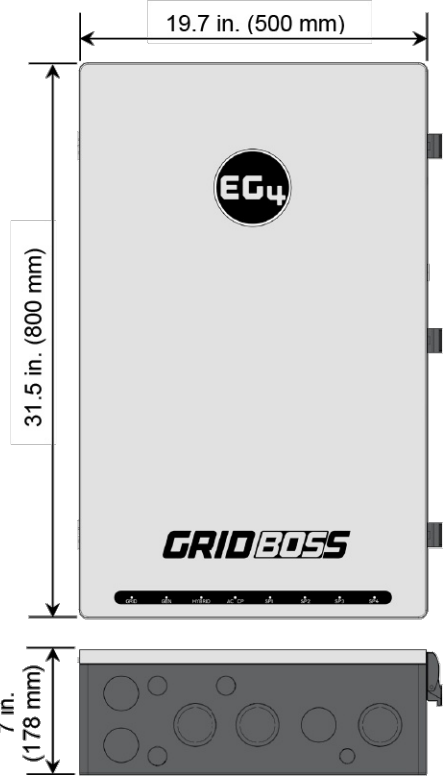
Certificate for Report: 240726072GZU-002

Page 2 of 2

Certificate Issued: November 8, 2024

1
PV-11B
EG4 FLEXBOSS21 HYBRID INVERTER (UL CERTIFICATION)
SCALE: NTS

(INFO WITHHELD)	
PHONE: (INFO WITHHELD)	
LICENSE NO. (INFO WITHHELD)	
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GRID-TIED SOLAR SYSTEM 18.92KW DC WITH DC-COUPLED BATTERY STORAGE (WHOLE HOME BACKUP APPLICATION)	(INFO WITHHELD FOR PUBLIC SAMPLE)
PLAN DESIGNER INFORMATION	COMPANY
	NAME
	ADDRESS
	PHONE
	PLAN DESIGNER SIGNATURE
GEMINI SOLAR DESIGN, LLC.	
SANJAY CHRISTOPHER MALLIPUDI	
495 HOWARD HEIGHTS ROAD	
FRESHWATER, CA 95503	
(609) 802-5743	
<i>Sanjay Mallipudi</i>	
INVERTER UL CERT.	
PROJECT NO: GSD-20250705-SCM	
DRAWN BY: SCM	
DATE: 7/5/2025	
PV-11B	



EG4® GRID BOSS

MICRO-GRID INTERCONNECTION DEVICE (MID)

The EG4 GridBOSS Micro-Grid Interconnection Device (MID) simplifies Energy Storage Systems (ESS) by consolidating multiple components into a single, innovative unit. It replaces traditional elements such as the point of common connection, back-fed breakers, feeder taps, tap breakers, supply-side taps, transfer switches, and dedicated combiner panels for grid-in, grid-out, and generator input. As a versatile solution, the GridBOSS serves as the service entrance equipment* when paired with the utility meter, providing a single point of connection for utilities, hybrid inverters, generators, smart loads, and AC-coupled inverters.

200A SERVICE ENTRANCE*

4 CONFIGURABLE SMART PORTS

INTEGRATED GENERATOR SUPPORT

CENTRALIZED ESS CONTROL

Provides a single point of connection for utility, hybrid inverters, generators, smart loads, and AC-coupled inverters.

REDUCED ESS COMPLEXITY

Replaces up to 10 components with one unit, including point of common connection, back-fed breakers, feeder taps, feeder tap breakers, supply side taps & breakers, transfer switches, and dedicated combiner panels for grid-in, load/EPs, and generator input.

SERVICE ENTRANCE RATED

200 Amp service entrance with a 22 kAIC main breaker, acts as service entrance equipment in conjunction with a utility meter and a 200A Eaton braker (CSR25K).

REMOTE MONITORING

Enable remote monitoring, configuration, and firmware updates through the EG4 mobile app or online monitoring system.

SMART PORTS

Includes load shedding, which disconnects loads during low battery voltage and reconnects on high voltage. Power shedding connects loads when at full SOC and PV flow and disconnects on low SOC or PV loss.

*When used with an Eaton 200A main breaker (model CSR25K).

EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

GRID	
NOMINAL AC VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
SERVICE ENTRANCE RATED	22kAIC with 200A Eaton breaker (model: (CSR2200N) CSR25K)
GENERATOR	
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	125A
NON-BACKUP	
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
BACKUP	
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT	200A
HYBRID	
NUMBER OF PORTS	3
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT PER PORT	70A*
SUPPORTED INVERTERS**	EG4® 12kPV, 18kPV, & FlexBOSS21
SMART PORTS	
NUMBER OF PORTS	4
NOMINAL VOLTAGE	120/240VAC (L1/L2/N required)
FREQUENCY	60 Hz
MAXIMUM CURRENT PER PORT	1: 125A 2: 80A 3: 60A 4: 60A
GENERAL DATA	
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
INTERNAL BUS RATING	350A
INTERNAL FUSE RATING	315A
OPERATING ALTITUDE	<6561 ft (<2000 m)
RELATIVE HUMIDITY	0 – 100%
OUTDOOR RATING	NEMA 3R
OPERATING AMBIENT TEMPERATURE RANGE	-40°F – 140°F (-40°C – 60°C)
PRODUCT DIMENSIONS (H×W×D)	31.5×19.7×7 in (800×500×178 mm)
UNIT WEIGHT	55 lbs. (25 kg)
STANDARD WARRANTY	10-year standard warranty
STANDARDS AND CERTIFICATIONS	
UL1741, UL67, UL869A***	
FCC PART 15, CLASS B (PENDING)	
*Install a properly sized breaker based on the connected inverter: 50A - 12kPV; 70A - 18kPV; 90A - FlexBOSS21.	
**Third party inverters are not supported and cannot be connected to the hybrid ports.	
***When used with an Eaton 200A main breaker (model (CSR2200N) CSR25K).	

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GRID-TIED SOLAR SYSTEM 18.92KW DC WITH DC-COUPLED BATTERY STORAGE (WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION

COMPANY

NAME

ADDRESS

PHONE

PLAN DESIGNER SIGNATURE

GEMINI SOLAR DESIGN, LLC.

SANJAY CHRISTOPHER MALLIPUDI

495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503

(609) 802-5743

Sanjay Mallipudi

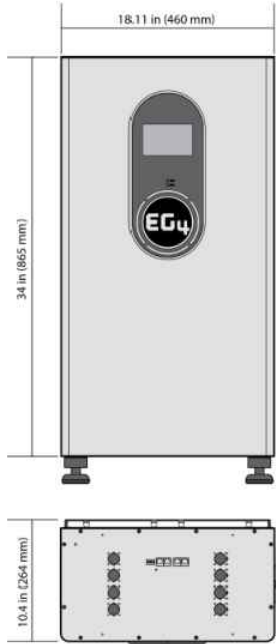
EG4 GRID BOSS

PROJECT NO: GSD-20250705-SCM

DRAWN BY: SCM

DATE: 7/5/2025

PV-12



EG4® WALLMOUNT INDOOR 280Ah LITHIUM BATTERY

The WallMount Indoor 280Ah batteries are ideal for low-voltage residential indoor energy storage applications. The batteries use lithium iron phosphate cells with the highest safety performance and an intelligent Battery Management System (BMS) that can monitor and record the voltage of each cell along with the current, voltage, and temperature of the module in real-time. The BMS also contains a passive balance function and an advanced battery control method, both of which improve the performance of the battery pack.

BUILT-IN
200A BMS

INTEGRATED
600A BUSBARS

82.6MWh
LIFETIME
PRODUCTION*

*10 YEAR
WARRANTY
>8000 CYCLES @
80% DOD

ON-BOARD LCD TOUCH SCREEN

Easy to see BMS monitoring, and selectable closed-loop communications with EG4, Schneider, Sol-Ark, Victron, Growatt, Megarevo, Luxpower, and Deye inverters.

DUAL ON-BOARD FIRE ARRESTORS

Offer fail-safe protection against thermal runaway.

INTEGRATED SELF-HEATING FEATURE

Internal heating keeps cells operating during cold temperatures.

INTEGRATED BUSBARS

The battery design comes manufactured with 600A internal busbars with multiple terminals (4 positive & 4 negative) eliminating the need for external busbars when paralleling batteries and/or multiple inverters.

INNOVATIVE EMERGENCY STOP FUNCTION

The optional ESS disconnect can shut down all batteries and inverters (if equipped with rapid shut down capability) with the press of a button.

THE PERFECT PARTNER TO EG4 INVERTERS

The optional conduit box mates up directly to the connection ports of EG4 inverters allowing a sleek and efficient installation. For other inverters or stand-alone battery installation, the conduit box plugs should be installed.



*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.

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VERSION 1.1.4 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL #: WM-48|280-LL-00 / WM-48-280-1-IN-LL-00

EG4 ELECTRONICS

TECHNICAL SPECIFICATIONS

MODULE OPERATING PARAMETERS

PARAMETER	BMS	RECOMMENDED SETTING
TOTAL ENERGY CAPACITY	14.3kWh @25C, 100% SOC	-
VOLTAGE	51.2V	-
CAPACITY	280Ah	-
CHARGING VOLTAGE (BULK/ABSORB)	56.0V (+/-0.8V)	56.2V (+/-0.2V)
FLOAT	-	54V (+/-0.2V)
SOC CUTOFF	-	20%*
CHARGING CURRENT	200A (Max. continuous)	60A – 160A
DISCHARGING CURRENT	200A (Max. continuous)	160A
DISCHARGE RATE	10.24kW (Max. continuous)	-

BMS PARAMETERS

CHARGE	SPEC	DELAY	RECOVERY
CELL VOLTAGE PROTECTION	3.8V	1 sec	3.45V
MODULE VOLTAGE PROTECTION	60.0V	1 sec	55.2V
OVER CHARGING CURRENT 1	>205A	10 sec	-
OVER CHARGING CURRENT 2	>225A	3 sec	-
TEMPERATURE PROTECTION	<23°F or >158°F <-5°C or >70°C	1 sec	>32°F or <140°F >0°C or <60°C

DISCHARGE	SPEC	DELAY	RECOVERY
CELL VOLTAGE PROTECTION	2.3V	1 sec	3.1V
MODULE VOLTAGE PROTECTION	44.8V	1 sec	48V
OVER-CHARGING CURRENT 1	>205A	10 sec	60 sec
OVER-CHARGING CURRENT 2	>300A	3 sec	60 sec
SHORT CIRCUIT	>600A	<0.1 mS	-
TEMPERATURE PROTECTION	<-4°F or >167°F <-20°C or >75°C	1 sec	>14°F or <149°F >-10°C or <65°C
PCB TEMP PROTECTION	>230°F (>110°C)	1 sec	@ <176°F (<80°C)

GENERAL SPECIFICATIONS

PARAMETER	SPEC	CONDITION
CELL BALANCE	120mA	Passive Balance
TEMPERATURE ACCURACY	3%	Cycle Measurement
VOLTAGE ACCURACY	0.5%	Cycle Measurement
CURRENT ACCURACY	3%	Cycle Measurement
SOC	5%	-
POWER CONSUMPTION	Sleep & Off Mode	<300uA
POWER CONSUMPTION	Operating Mode	<25mA
COMMUNICATION PORTS	RS485/CAN	Can be customized

BATTERY HEATER SPECIFICATIONS

PARAMETER	SPEC	CONDITION
VOLTAGE	56V	-
POWER CONSUMPTION	224W	-
INTERNAL BATTERY TEMPERATURE	≤32°F (0°C)/≥41°F (5°C)	Heat On/Heat Off

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GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION				
COMPANY	GEMINI SOLAR DESIGN, LLC.	NAME	SANJAY CHRISTOPHER MALLIPUDI	
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503	PHONE	(609) 802-5743	
PLAN DESIGNER SIGNATURE				

BATTERY MODULE

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-13A

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 Street South, Sulphur Springs, TX 75482

Country: USA

Report Issuing Office: Intertek Testing Services Shenzhen Limited Guangzhou Branch

Control Number: 5026744 Authorized by: [Signature] for L. Matthew Snyder, Certification Manager

VALID LISTING MARKS



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

Standard(s):	Energy Storage Systems and Equipment [ANSI/CAN/UL 9540:2023 Ed.3]
Product:	Energy Storage Systems
Brand Name:	EG4 ELECTRONICS (EG4 ELECTRONICS)
Models:	PP-48-280A1-18K1-IN-LL-00, PP-48-280A2-18K1-IN-LL-00, PP-48-280A3-18K1-IN-LL-00, PP-48-280A4-18K1-IN-LL-00, PP-48-280A5-18K1-IN-LL-00, PP-48-280A6-18K1-IN-LL-00, PP-48-280A2-18K2-IN-LL-00, PP-48-280A3-18K2-IN-LL-00, PP-48-280A4-18K2-IN-LL-00,

CERTIFICATE OF COMPLIANCE



PP-48-280A5-18K2-IN-LL-00, PP-48-280A6-18K2-IN-LL-00, PP-48-280A3-18K3-IN-LL-00, PP-48-280A4-18K3-IN-LL-00, PP-48-280A5-18K3-IN-LL-00, PP-48-280A6-18K3-IN-LL-00

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GRID-TIED SOLAR SYSTEM 18.92KW DC WITH DC-COUPLED BATTERY STORAGE (WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

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NAME	SANJAY CHRISTOPHER MALLIPUDI
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503
PHONE	(609) 802-5743
PLAN DESIGNER SIGNATURE	[Signature]

BATTERY UL CERT.

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-13B

DC21A IEC60947-3				UL Ratings UL508i				Poles in series	No. of Strings	Weight Kg/pcs.	Part Number	Contact Configuration
600V	800V	1000V	1500V	350V	500V	600V	1000V					
16A	16A	9A	3A	16A	16A	16A	-	2	1	0.43	SI16 PEL64R 2	
25A	20A	11A	4A	20A	20A	20A	-	2	1	0.43	SI25 PEL64R 2	
32A	23A	13A	5A	25A	25A	25A	-	2	1	0.43	SI32 PEL64R 2	
40A	30A	20A	6A	40A	40A	40A	16A	2	1	1.59	SI40 PEL64R 2	
55A	45A	25A	8A	55A	55A	55A	20A	2	1	1.59	SI55 PEL64R 2	
29A	16A	9A	3A	29A	29A	21A	-	2	1	0.49	SI16 PEL64R 2H	
45A	20A	11A	4A	45A	38A	23A	-	2	1	0.49	SI25 PEL64R 2H	
50A	23A	13A	5A	58A	40A	25A	-	2	1	0.49	SI32 PEL64R 2H	
64A	30A	20A	6A	72A	53A	42A	22A	2	1	1.74	SI40 PEL64R 2H	
80A	45A	25A	8A	85A	66A	55A	25A	2	1	1.74	SI55 PEL64R 2H	
16A	16A	9A	3A	16A	16A	16A	-	2	2	0.46	SI16 PEL64R 4	
25A	20A	11A	4A	20A	20A	20A	-	2	2	0.46	SI25 PEL64R 4	
32A	23A	13A	5A	25A	25A	25A	-	2	2	0.46	SI32 PEL64R 4	
40A	30A	20A	6A	40A	40A	40A	16A	2	2	1.67	SI40 PEL64R 4	
55A	45A	25A	8A	55A	55A	55A	20A	2	2	1.67	SI55 PEL64R 4	
16A	16A	16A	16A	16A	16A	16A	-	4	1	0.47	SI16 PEL64R 4S	
25A	25A	25A	20A	25A	25A	25A	-	4	1	0.47	SI25 PEL64R 4S	
32A	32A	32A	23A	32A	32A	32A	-	4	1	0.47	SI32 PEL64R 4S	
40A	40A	40A	30A	40A	40A	40A	40A	4	1	1.70	SI40 PEL64R 4S	
55A	55A	55A	40A	55A	55A	55A	55A	4	1	1.70	SI55 PEL64R 4S	
16A	16A	9A	3A	16A	16A	16A	-	2	3	1.53	SI16 PEL64R 6	
25A	20A	11A	4A	20A	20A	20A	-	2	3	1.53	SI25 PEL64R 6	
32A	23A	13A	5A	25A	25A	25A	-	2	3	1.53	SI32 PEL64R 6	
16A	16A	9A	3A	16A	16A	16A	-	2	4	1.58	SI16 PEL64R 8	
25A	20A	11A	4A	20A	20A	20A	-	2	4	1.58	SI25 PEL64R 8	
32A	23A	13A	5A	25A	25A	25A	-	2	4	1.58	SI32 PEL64R 8	
29A	29A	29A	16A	29A	29A	29A	-	4	1	1.63	SI16 PEL64R 4H	
45A	45A	45A*	20A	45A	45A	45A	-	4	1	1.63	SI25 PEL64R 4H	
58A	58A*	58A*	23A	58A	58A	50A	-	4	1	1.63	SI32 PEL64R 4H	

Switching Configurations

Type	2-pole	2-pole 4 parallel poles	4-pole	2-pole 4 poles in series Input on top Output bottom	2-pole 4 poles in series Input and Output bottom	2-pole 4 poles in series Input and Output on top
SI16	2	2H	4	4S	4T	4B
SI25	2	2H	4	4S	4T	4B
SI32	2	2H	4	4S	4T	4B
SI40	2	2H	4	4S	4T	4B
SI55	2	2H	4	4S	4T	4B
Contacts Wiring Diagram						
Switching example						

Type	6-pole	2-pole 6 parallel poles	8-pole	2-pole 8 parallel poles
SI16	6	3H	8	4H
SI25	6	3H	8	4H
SI32	6	3H	8	4H
SI40	-	-	-	-
SI55	-	-	-	-
Contacts Wiring Diagram				
Switching example				

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NAME	SANJAY CHRISTOPHER MALLIPUDI			
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503			
PHONE	(609) 802-5743			
PLAN DESIGNER SIGNATURE				

DC ISOLATOR

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-14



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

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)

More Resources



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



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TS4-A-F Specifications and Ordering Information

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PHONE: (INFO WITHHELD)
LICENSE NO. (INFO WITHHELD)

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GRID-TIED SOLAR SYSTEM 18.92KW DC
WITH DC-COUPLED BATTERY STORAGE
(WHOLE HOME BACKUP APPLICATION)

(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION				
COMPANY	GEMINI SOLAR DESIGN, LLC.			
NAME	SANJAY CHRISTOPHER MALLIPUDI			
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503			
PHONE	(609) 802-5743			
PLAN DESIGNER SIGNATURE				

RAPID SHUTDOWN

PROJECT NO: GSD-20250705-SCM
DRAWN BY: SCM
DATE: 7/5/2025

PV-15A



Tigo®

TS4-A-2F

Module-level PV Rapid Shutdown for two modules

The TS4-A-2F (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-2F complies with NEC 2017 & 2020 690.12 Rapid Shutdown specifications when installed with the Tigo RSS Transmitter or an inverter with built-in Tigo certified transmitter.

Features

- High input current rating**
Now rated for 20A Imp/ 25A Isc to better accommodate bifacial and high current modules
- Simple, Fast Installation**
Snap to standard PV module frame or remove clips for rack mounting
- PLC Signaling**
Rapid shutdown signaling over PV conductors
- Automatic Shutdown**
PV array enters rapid shutdown in the event of AC grid loss
- PVRSS Certified**
Tested and UL certified with hundreds of top inverter models



Standard
Warranty



NEC Rapid Shutdown
Compliant

Tigo®

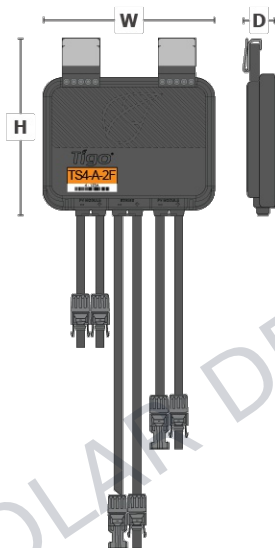
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PN: 002-00092-00 | Rev. 2.1 2022.11.3

Quick Specs

TS4-A-2F			
Dimensions (W x H x D)	138.4 x 139.7 x 22.9mm (5.4 x 5.5 x 0.9in)		
Weight	590g (1.3lbs)		
Max Current (Imp/Isc)*	15A	20A/25A	
Max Wattage	1000W	1400W	

*Use local codes/requirements to calculate maximum current.



Electrical Data	15A	25A
Maximum input voltage (per input)		80V
Operating voltage range ¹		16 - 80V
Maximum input current (Isc)	N/A	25A per input
Maximum input current (Imp)	15A per input	20A per input
Maximum wattage (total)	1000W (500W per input)	1400W (700W per input)

¹Maximum output voltage of the TS4 is dependent on the PV module voltage. Refer to PV modules nameplate.

Connections	
Module Conductor lengths ²	0.12/1.2/1.3m, options available ²
String Conductor lengths	2.2/2.4m, options available ²
Connectors ²	MC4, EVO2, options available ²

²Contact sales for additional connector and conductor length options. MOQ may apply.

General Data	
Operating temperature range	-30°C to +80°C (-22°F to +176°F)
Storage temperature range	-40°C to +85°C (-40°F to +185°F)
Recommended fuse rating	30A
Outdoor rating	IP68
Maximum altitude	3000m
Efficiency	99.9%
Communication	PLC
Rapid Shutdown UL Listed (NEC 2017 & 2020 690.12)	Yes
Rapid Shutdown Time Limit	30 secs or less ³
Conductor AWG Range	10-12 AWG
PVRSE Controlled Conductors	≤30 Vdc, ≤240VA, ≤8A ³

³Limits are based on NEC 690.12 rapid shutdown requirements.

Warranty	25 years
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Ordering Information

		UL/IEC	IEC
484-00252-22	TS4-A-2F, 15A, 1000W, 1500V UL / 1000V IEC, 2.2m Cable, MC4	•	
484-00252-24	TS4-A-2F, 15A, 1000W, 1500V UL / 1000V IEC, 1.2/1.3/2.4m Cable, MC4	•	
484-00261-22	TS4-A-2F, 15A, 1000W, 1500V UL / IEC, 2.2m Cable, EVO2	•	
484-00261-24	TS4-A-2F, 15A, 1000W, 1500V UL / IEC, 1.2/1.3/2.4m Cable, EVO2	•	
485-00252-22	TS4-A-2F, 25A, 1400W, 1500V UL / 1000V IEC, 0.12/0.2/2.2m Cable, MC4	•	
485-00252-24	TS4-A-2F, 25A, 1400W, 1500V UL / 1000V IEC, 1.2/1.3/2.4m Cable, MC4	•	
485-00261-22	TS4-A-2F, 25A, 1400W, 1500V UL / IEC, 0.12/0.2/2.2m Cable, EVO2	•	
485-00261-24	TS4-A-2F, 25A, 1400W, 1500V UL / IEC, 1.2/1.3/2.4m Cable, EVO2	•	
487-00252-22	TS4-A-2F, 25A, 1400W, 1500V IEC, 0.12/0.2/2.2m Cable, MC4		•
487-00252-24	TS4-A-2F, 25A, 1400W, 1000V IEC, 1.2/1.3/2.4m Cable, MC4		•
487-00261-22	TS4-A-2F, 25A, 1400W, 1500V IEC, 0.12/0.2/2.2m Cable, EVO2		•
487-00261-24	TS4-A-2F, 25A, 1400W, 1500V IEC, 1.2/1.3/2.4m Cable, EVO2		•

Additional resources



Tigo TS4-A-2F



Tigo RSS



Support



Community

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Certifications

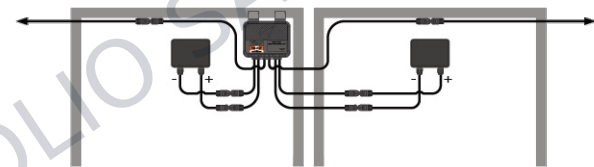
UL1741, PVRSS, CSA22.2, IEC 62109



PVRSS certified inverters

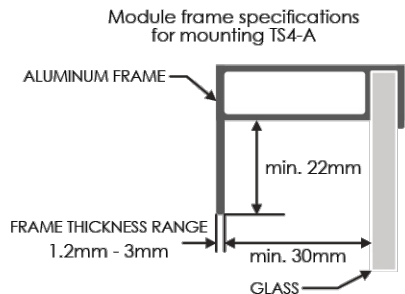
For a list of all PVRSS certified inverters, please see: www.tigoenergy.com/ul-pvrss

Installation example



Installation example: Serial connection of two PV modules to a TS4-A-2F

Module mounting requirements



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

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RAPID SHUTDOWN

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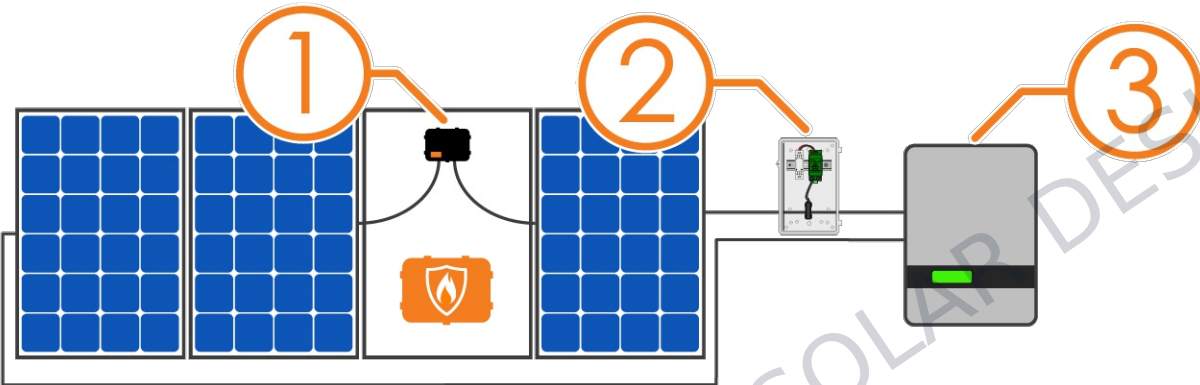
PV-15B

RSS TRANSMITTER - OUTDOOR KIT
Rapid Shutdown Activator for TS4-F

The Tigo Rapid Shutdown System (RSS) Transmitter is part of a rapid shutdown solution when paired with Tigo TS4-F (Fire Safety), a PV module rapid shutdown unit. While powered on, the RSS Transmitter sends a signal to the TS4-F units to keep their PV modules connected and supplying energy.

TS4-F units automatically enter rapid shutdown mode when the RSS Transmitter is switched off and resume energy production when power is restored to the RSS Transmitter. This solution complies with NEC 690.12 specifications for 2014, 2017, and 2020 and uses PLC signaling for rapid shutdown.

The RSS Transmitter Outdoor Kit includes an RSS Transmitter, outdoor enclosure, 120/240V_{AC} power supply, and one or two RSS Cores.

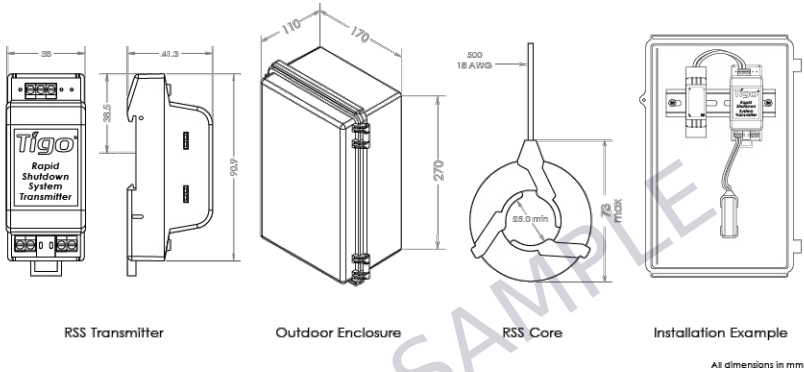


- 1. Modules equipped with Tigo TS4-F (Fire Safety)
- 2. Tigo RSS Transmitter with Outdoor Kit
- 3. Inverter

11/20/20

RSS TRANSMITTER - OUTDOOR KIT

- Meets NEC 690.12 requirements
- Module-level deactivation with TS4-F
- Automatic or manual shutdown
- Weatherproof outdoor enclosure
- Includes one or two RSS Cores
- Includes 120/240V_{AC} power supply



Input
Transmitter Input Voltage: 12V _{DC} (+/- 2%)
Transmitter Input Current: 1A
RSS Core
Max Current (in Outdoor Kit): 100A per RSS Core (Single Core: 100A, Dual Core: 200A)
Max String Voltage: 1500V _{DC}
Max Number of Strings per Core: 10
Max Supported PV Modules per String: 30
Environmental
Operating Temperature Range: -20°C to 50°C (in Outdoor Enclosure)
Enclosure: IP68, NEMA 4

ORDERING OPTIONS

492-00000-10	Single Core RSS DIN Rail Transmitter Kit, 120/240V _{AC} Power Supply, Outdoor Enclosure
492-00000-20	Dual Core RSS DIN Rail Transmitter Kit, 120/240V _{AC} Power Supply, Outdoor Enclosure

For sales info:
sales@tigoenergy.com or 1.408.402.0802

For technical information:
http://support.tigoenergy.com

For product info:
Visit www.tigoenergy.com/products

For technical info:
<http://support.tigoenergy.com>

For additional info and product selection assistance, use Tigo's online design tool at www.tigoenergy.com/design



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PV-15C