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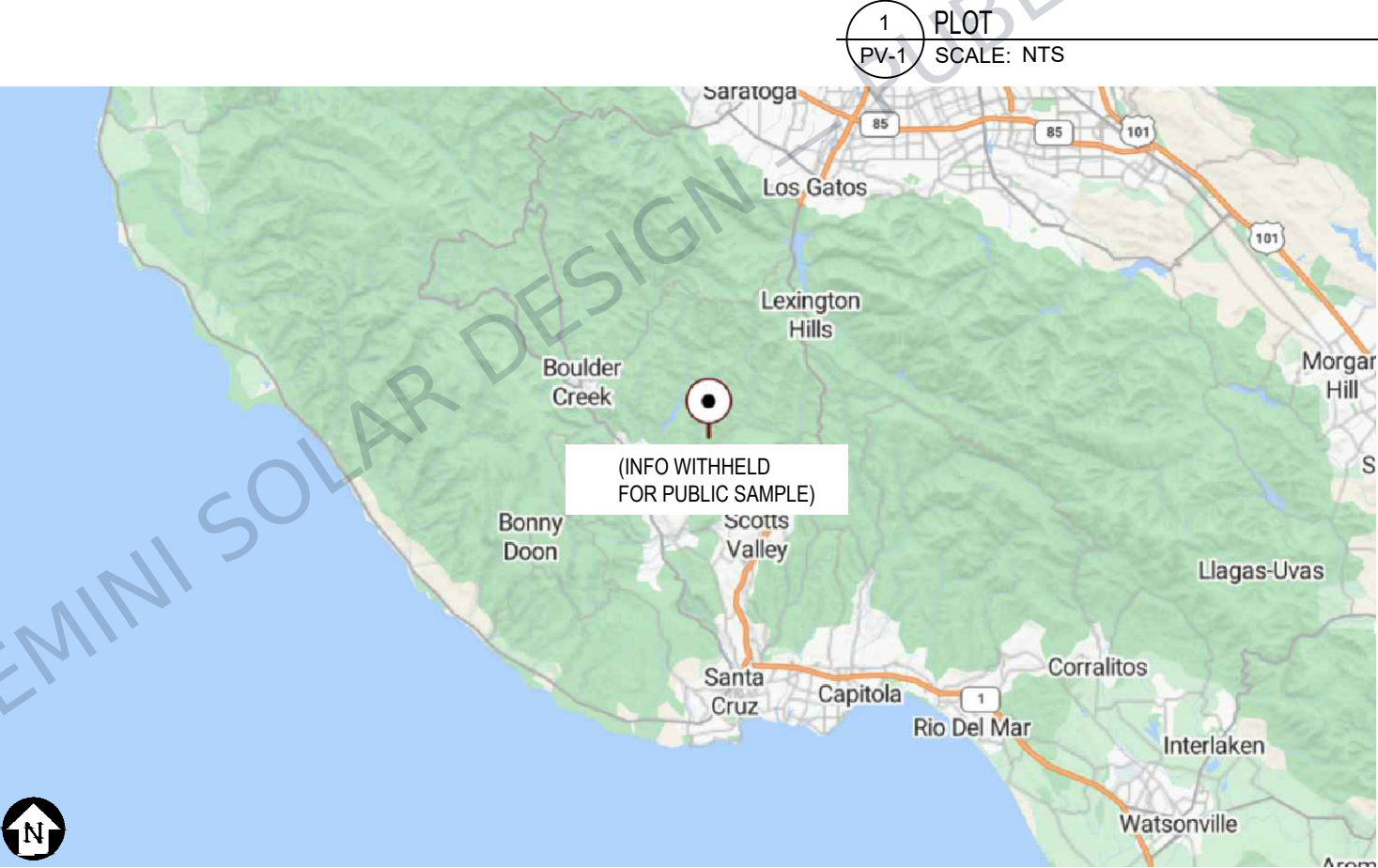
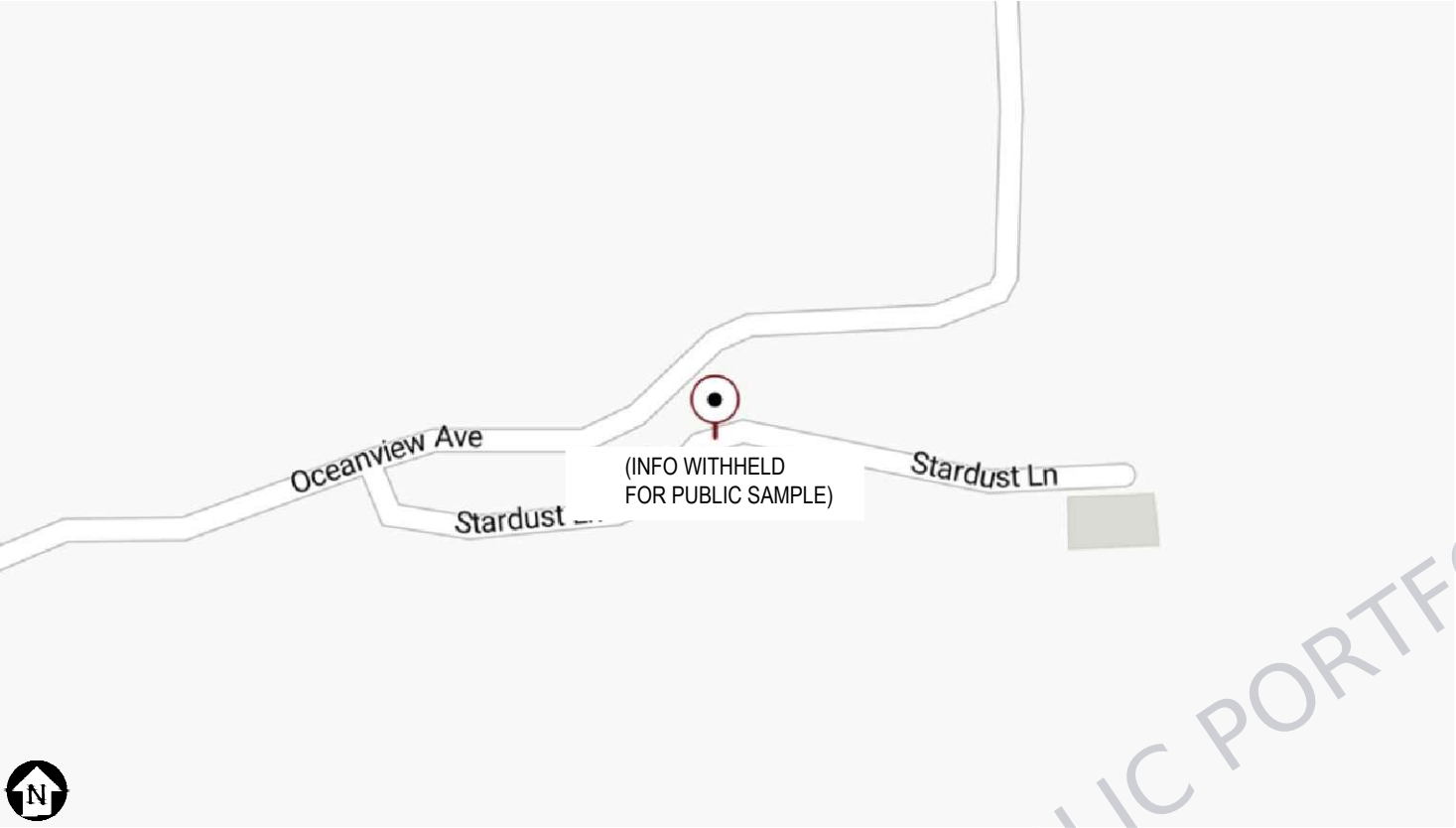
| PROJECT DETAILS   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| APN               | (INFO WITHHELD FOR PUBLIC SAMPLE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| AHJ               | SANTA CRUZ COUNTY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ZONING            | RESIDENTIAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| UTILITY COMPANY   | NONE (FULLY OFF-GRID)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| CONSTRUCTION TYPE | FLUSH ROOF-MOUNTED PHOTOVOLTAIC ARRAY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| OBSERVED CODES    | 2022 CALIFORNIA ADMINISTRATIVE CODE<br>TITLE 24, PART 1<br>2022 CALIFORNIA BUILDING CODE<br>TITLE 24, PART 2, VOL. 1 & 2<br>2022 CALIFORNIA RESIDENTIAL CODE<br>TITLE 24, PART 2.5<br>2022 CALIFORNIA ELECTRICAL CODE<br>TITLE 24, PART 3<br>2022 CALIFORNIA MECHANICAL CODE<br>TITLE 24, PART 4<br>2022 CALIFORNIA ENERGY CODE<br>TITLE 24, PART 6<br>2022 CALIFORNIA FIRE CODE, TITLE 24, PART 9<br>2022 CALIFORNIA EXISTING BUILDING CODE<br>TITLE 24, PART 10<br>2022 CALIFORNIA GREEN BUILDING STANDARDS CODE, TITLE 24, PART 11<br>UNDERWRITERS LABORATORIES (UL) STANDARDS |
| STRUCT. METHOD    | ASCE7-16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| OWNER-BUILDER INFORMATION |                                   |
|---------------------------|-----------------------------------|
| OWNER-BUILDER             | (INFO WITHHELD FOR PUBLIC SAMPLE) |
| ADDRESS                   | (INFO WITHHELD FOR PUBLIC SAMPLE) |
| PHONE                     | (INFO WITHHELD FOR PUBLIC SAMPLE) |
| EMAIL                     | (INFO WITHHELD FOR PUBLIC SAMPLE) |
| OWNER-BUILDER SIGNATURE   |                                   |

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

| SYSTEM DETAILS                     |                                                                                                                                  |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| DC RATING OF SYSTEM                | 24.610W                                                                                                                          |
| TOTAL CONTINUOUS AC OUTPUT CURRENT | 83.33A @ 240VAC (SPLIT-PHASE CONFIGURATION)                                                                                      |
| SOLAR MODULE                       | (48) ADANI SOLAR AS8-M10-144-AAA 535W                                                                                            |
| CHARGE CONTROLLER                  | (6) VICTRON ENERGY SMARTSOLAR CHARGE CONTROLLER<br>MPPT 250/100-TR VE CAN                                                        |
| INVERTER / CHARGER                 | (2) VICTRON ENERGY QUATTRO 48/10000/140-100/100 120V                                                                             |
| BATTERY MODULE                     | (6) EG4-LL-S 48V 100AH SERVER RACK BATTERY                                                                                       |
| STANDBY GENERATOR                  | (1) PREDATOR 9000 WATT PORTABLE GENERATOR                                                                                        |
| PROJECT TYPE                       | FULLY OFF-GRID WITH:<br>A. DC-COUPLED BATTERY STORAGE<br>B. STANDBY GENERATOR BACKUP<br>C. WHOLE-HOME BACKUP OF 225A LOAD CENTER |

| SITE SPECIFICATIONS                                          |                                    |
|--------------------------------------------------------------|------------------------------------|
| UTILITY SERVICE                                              | NONE (OFF-GRID)                    |
| MAIN SERVICE PANEL<br>("BACKED UP LOADS PANEL")              | 225A RATED BUSBAR<br>MAIN LUG ONLY |
| ASHRAE EXTREME ANNUAL MEAN MINIMUM DENSITY<br>DRY BULB TEMP. | 0°C                                |
| ASHRAE 2% ANNUAL DRY DENSITY BULB TEMP.                      | 30°C                               |
| ULTIMATE WIND SPEED                                          | 110 MPH (3-SECOND GUST)            |
| GROUND SNOW LOAD                                             | 0 PSF (NONE)                       |
| WIND EXPOSURE CATEGORY                                       | C                                  |
| RISK CATEGORY                                                | II                                 |

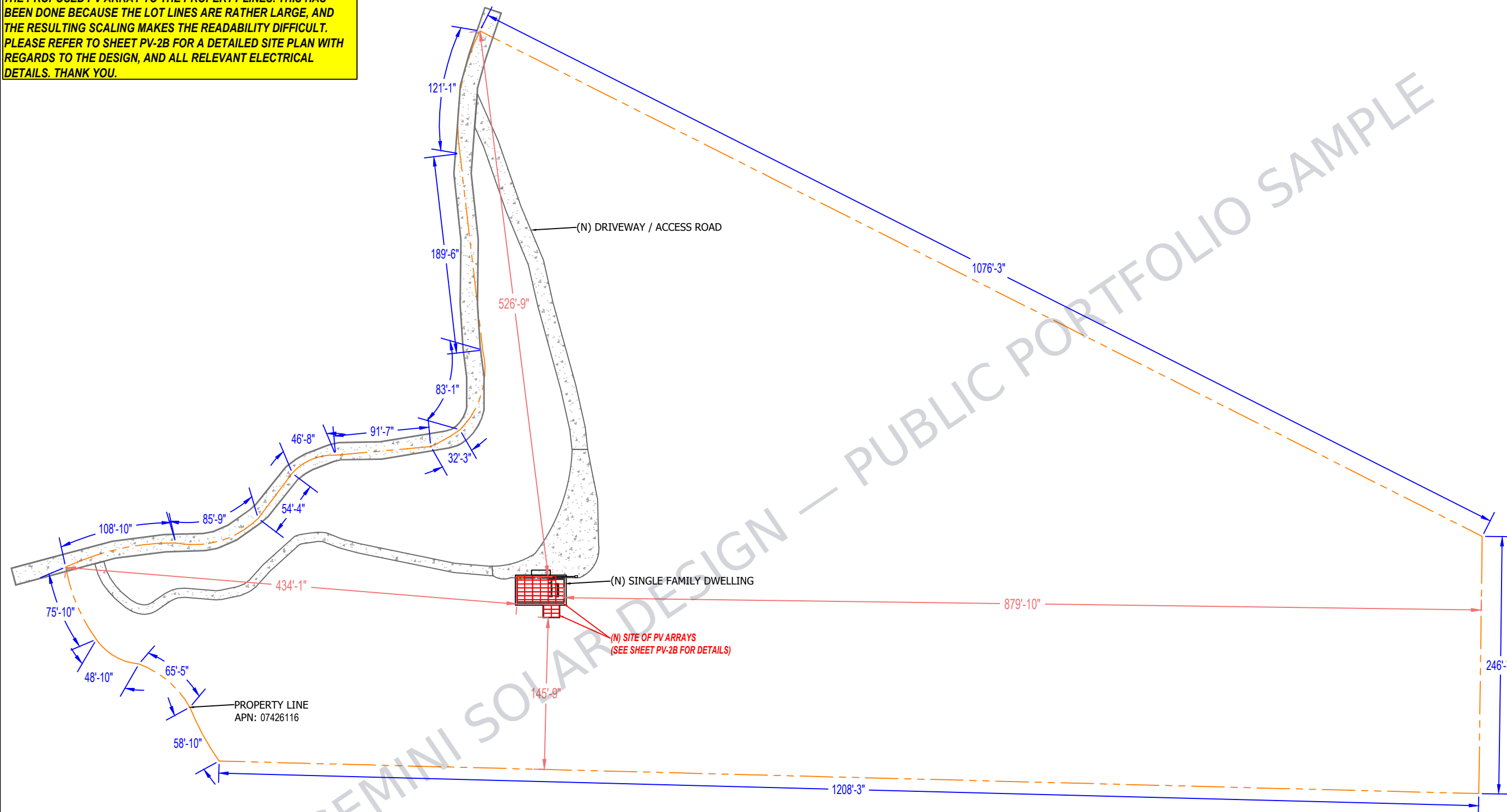


| CONSTRUCTION NOTES |                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 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 CEC 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 UNINCORPORATED SANTA CRUZ COUNTY, CALIFORNIA. THE ENERGY PRODUCED BY THE PV SYSTEM WILL NOT BE INTERCONNECTED WITH THE UTILITY GRID. |  |
| THIS PROJECT WILL INCLUDE A DC-COUPLED BATTERY STORAGE AND A STANDBY GENERATOR BACKUP SOLUTION.                                                                                                                                                                                     |  |
| THE PROPOSED SYSTEM IS FULLY OFF-GRID, AND WILL NOT INTERCONNECT WITH THE LOCAL UTILITY GRID.                                                                                                                                                                                       |  |

| OWNER-BUILDER                                                                                                                                                                                                                       |                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| NAME: (INFO WITHHELD)                                                                                                                                                                                                               |                                                 |
| PHONE: (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 24.61kW DC<br>WITH DC-COUPLED BATTERY STORAGE<br>(WHOLE-HOME BACKUP APPLICATION)                                                                                                                              |                                                 |
| (INFO WITHHELD FOR PUBLIC SAMPLE)                                                                                                                                                                                                   |                                                 |
| PLAN DESIGNER INFORMATION                                                                                                                                                                                                           | COMPANY                                         |
|                                                                                                                                                                                                                                     | GEMINI SOLAR DESIGN, LLC.                       |
|                                                                                                                                                                                                                                     | NAME                                            |
|                                                                                                                                                                                                                                     | SANJAY CHRISTOPHER MALLIPUDI                    |
|                                                                                                                                                                                                                                     | ADDRESS                                         |
| PLAN DESIGNER INFORMATION                                                                                                                                                                                                           | 495 HOWARD HEIGHTS ROAD<br>FRESHWATER, CA 95503 |
|                                                                                                                                                                                                                                     | PHONE                                           |
|                                                                                                                                                                                                                                     | (609) 802-5743                                  |
|                                                                                                                                                                                                                                     | PLAN DESIGNER SIGNATURE                         |
|                                                                                                                                                                                                                                     | Sanjay Mallipudi                                |
| PROJECT INFO                                                                                                                                                                                                                        |                                                 |
| PROJECT NO: GSD-20251002-SCM                                                                                                                                                                                                        |                                                 |
| DRAWN BY: SCM                                                                                                                                                                                                                       |                                                 |
| DATE: 10/2/2025                                                                                                                                                                                                                     |                                                 |
| 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.



OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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DESIGN AND INSTALLATION OF THE PV SYSTEM  
REPRESENTED IN THIS PLAN.**

# OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                      | (609) 802-5743                                  |
| PLAN DESIGNER<br>SIGNATURE | <i>Sanjay Mallipudi</i>                         |

## SITE PLAN

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

# PV-2A



1 STRING OF 4 MODULES (ADANI SOLAR ASB-M10-144-AAA 535W)

1 STRING OF 4 MODULES (ADANI SOLAR ASB-M10-144-AAA 535W)

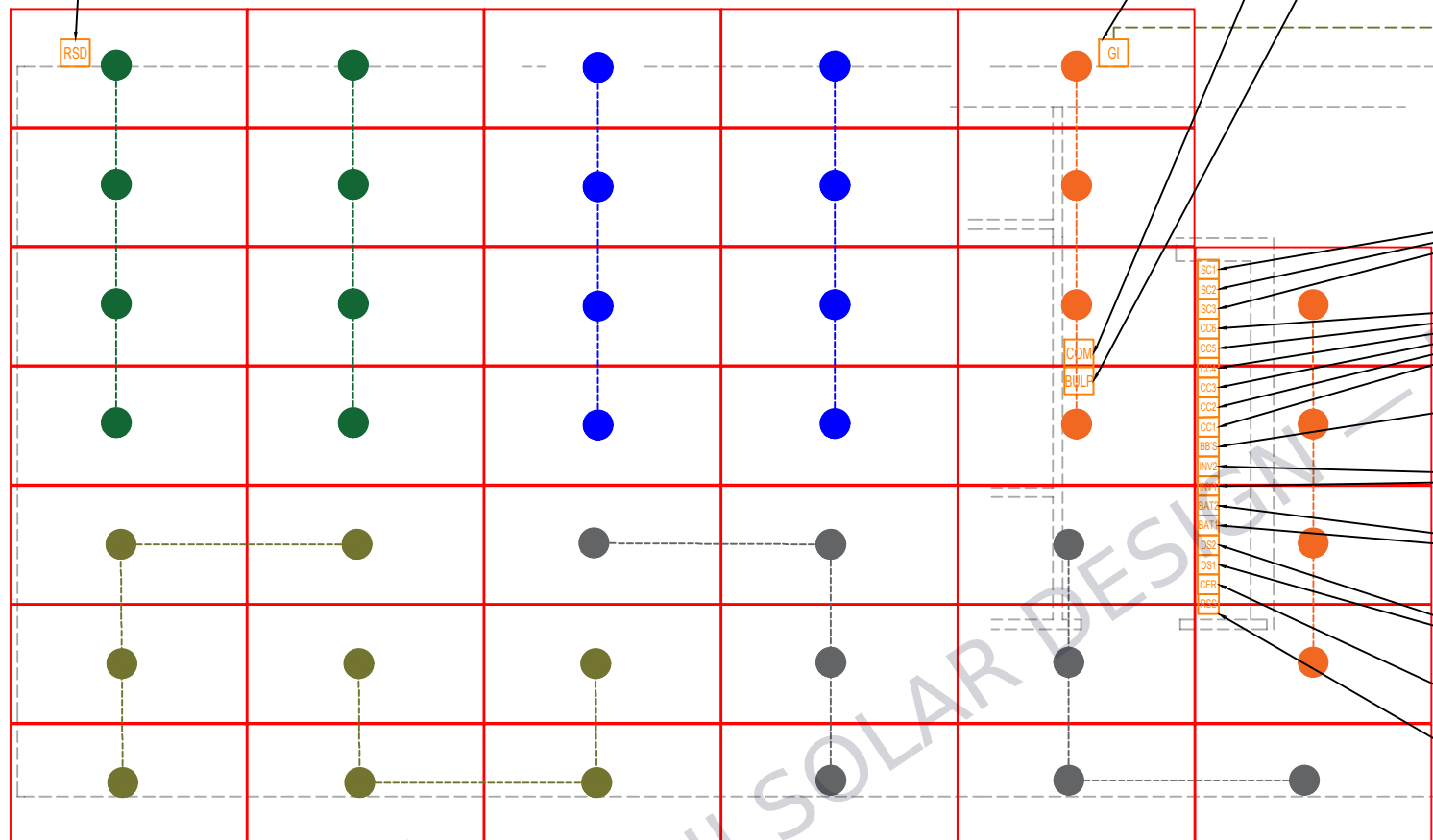
- 1 STRING OF 4 MODULES (ADANI SOLAR ASB-M10-144-AAA 535W)
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1 STRING OF 4 MODULES (ADANI SOLAR ASB-M10-144-AAA 535W)

1 STRING OF 4 MODULES (ADANI SOLAR ASB-M10-144-AAA 535W)

1 STRING OF 3 MODULES (ADANI SOLAR ASB-M10-144-AAA 535W)

/ (N) SINGLE FAMILY DWELLING



(N) PV ARRAY #2  
180° AZIMUTH, 7° PITCH  
(6) ADANI SOLAR ASB-M10-144-AAA 535W  
(6) TIGO TS4-A-F, FOR RAPID SHUTDOWN  
AS PER CEC SECTION 690.12

(N) GENERATOR INLET  
(LOC. INTERIOR OF STRUCTURE)

(N) 225A RATED LOAD CENTER, MAIN LUG ONLY  
120 / 240VAC, 1  $\phi$ , NEMA 1 RATED  
**THIS LOAD CENTER WILL HAVE EACH LEG (L1) FROM THE "AC OUT-1" TERMINAL OF THE VICTRON ENERGY QUATTRO LAND ON A 110A / 1P CIRCUIT BREAKER. THE OUTPUT CIRCUIT WILL HAVE 240VAC VIA BOTH INVERTERS OPERATING IN A SPLIT-PHASE CONFIGURATION.**  
(LOC. INTERIOR OF STRUCTURE)

(N) 225A RATED LOAD CENTER, MAIN LUG ONLY  
120 / 240VAC, 1- $\phi$ , NEMA 1 RATED  
**ALL LOADS SHALL BE LOCATED WITH THIS LO.**  
(LOC. INTERIOR OF STRUCTURE)

(N) 0.75" SCH. 40 PVC CONDUIT BURIED  
UNDERGROUND CARRYING AC CONDUCTORS FROM GENERATOR  
TO "INVERTER / CHARGER (TYP. OF 2 UNITS)

19" BURIAL DEPTH MINIMUM, 10 FT. TRENCH LENGTH  
(TYP. OF 3) 6 AWG THWN-2, CU (L1, L2, N)  
(TYP. OF 1) 10 AWG THWN-2, CU (GROUND)

(N) STANDBY GENERATOR  
MODEL: PREDATOR 9000 WATT PORTABLE GENERATOR  
60.4A AT 120VAC; 30.2A AT 240VAC, 120/240VAC, 1-Ø  
(LOC. ON EXTERIOR, MINIMUM 10 FT. SETBACK FROM SFD)  
**NOTE TO INSTALLER: REMOVE 'NEUTRAL TO GROUND'  
BOND FROM THE GENERATOR IF IT EXIST**

—(N) AUXILIARY GROUND ROD TO BE DRIVEN 6 FT.  
MINIMUM DEPTH IN GROUND AS PER CEC 250.54  
(BOND #6 BARE CU EGC FROM GENERATOR TO GROUND ROD)

—(N) SOLAR PANEL COMBINER BOX (TYP. OF 3 UNITS)  
4 CIRCUITS TO 2 (2 TO 1), 1000VDC RATED  
EACH CIRCUIT IS FUSED 15A (POSITIVE / NEGATIVE)  
(LOC. INTERIOR OF STRUCTURE)

(N) CHARGE CONTROLLER (TYP. OF 6 UNITS)  
MODEL: VICTRON ENERGY SMARTSOLAR CHARGE CONTROLLER MPPT 250/100-TR VE.CAN  
(LOC. INTERIOR OF STRUCTURE)

(N) LYNX DISTRIBUTOR M10  
BUSBARS ARE RATED FOR 1000ADC  
POSITIVE AND NEGATIVE BUSBARS SHALL BE ELECTRICALLY ISOLATED.  
(LOC. INTERIOR OF STRUCTURE)

—(N) INVERTER / CHARGER (MASTER, UNIT #1 & FOLLOWER, UNIT #2)  
MODEL: VICTRON ENERGY QUATTRO INVERTER/CHARGER 120V 48/10000/140-100/100 120V  
(LOC. INTERIOR OF STRUCTURE)

(N) EG4 LL-S 48V 100AH SERVER RACK BATTERY (TYP. OF 3 BATTERIES PER CABINET)  
EG4 WELDED 3-SLOT INDOOR CABINET (TYP. OF 2 CABINETS)  
15.36KWH, 3 SERVER RACK BATTERIES WITH PRE-ASSEMBLED  
ENCLOSED RACK WITH DOOR & WHEELS, BUSBAR COVERS  
(LOC. INTERIOR OF STRUCTURE)

(N) VICTRON ENERGY BATTERY SWITCH  
275A MAX. CONTINUOUS CURRENT  
60VDC MAXIMUM OPERATING VOLTAGE  
(LOC. INTERIOR OF STRUCTURE)

(N) COMMUNICATION CENTER & MONITORING  
MODEL: VICTRON ENERGY CERBO GX  
(LOC. INTERIOR OF STRUCTURE)

(N) TIGO POWER RSS TRANSMITTER  
MODEL: DUAL RSS CORE  
I. PASS (TYP. OF 6) NEGATIVE HOMERUNS THROUGH EACH RSS CORE  
(LOC. INTERIOR OF STRUCTURE)

| SITE PLAN NOTES |                                                                                                                                                                  |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1               | CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER CEC 319.0(D).                                                                           |
| 2               | CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER CEC 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 CEC 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.                                                                                                                |

OWNER-BUILDER

NAME: (INFO WITHHELD)

PHONE: (INFO WITHHELD)

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DESIGN AND INSTALLATION OF THE PV SYSTEM  
REPRESENTED IN THIS PLAN.

## OFF-GRID SOLAR SYSTEM 24.61kW DC WITH DC-COUPLED BATTERY STORAGE (WHOLE-HOME BACKUP APPLICATION)

(INFO WILL BE HELD FOR PUBLIC SAMPLE)

|         |                          |
|---------|--------------------------|
| COMPANY | GEMINI COLLAB REGION LLC |
|---------|--------------------------|

|         |                            |
|---------|----------------------------|
| COMPANY | GEMINI SOLAR DESIGN, LLC.  |
| NAME    | SAN JAY CHRISTOPHER MALIBI |

|         |                         |
|---------|-------------------------|
| ADDRESS | 495 HOWARD HEIGHTS ROAD |
|---------|-------------------------|

|  |                      |
|--|----------------------|
|  | FRESHWATER, CA 95503 |
|--|----------------------|

|              |                                                                                       |
|--------------|---------------------------------------------------------------------------------------|
| PHONE        | (609) 802-5743                                                                        |
| LAN DESIGNER |  |

Sanjay Alluri

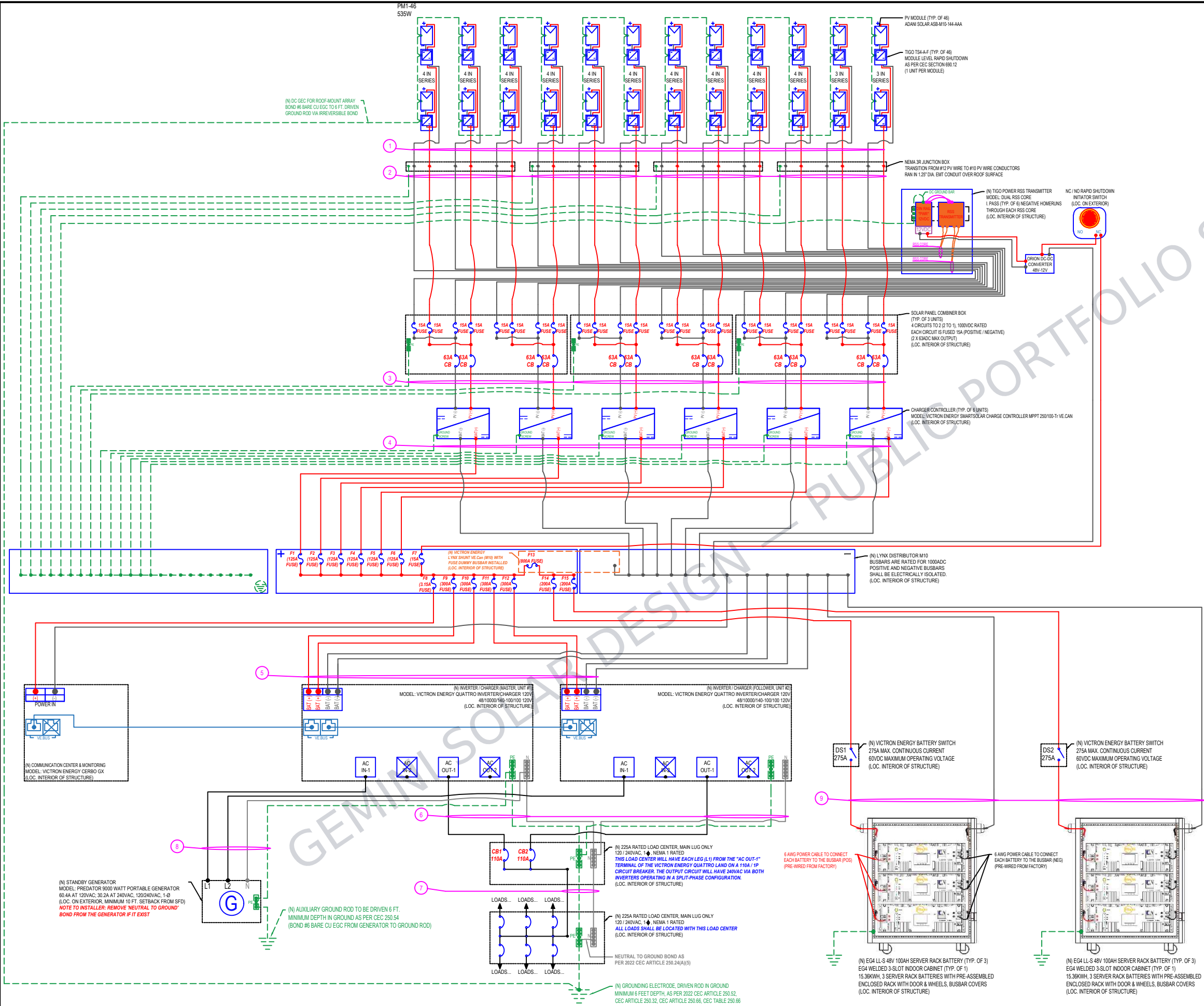
## SITE PLAN

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

# PV-2B



**PLEASE SEE SHEET PV-3B FOR THE CORRESPONDING DATA TABLES, EQUIPMENT SPECIFICATIONS, AND OCPD / DISCONNECT SCHEDULES.**

**PLEASE SEE SHEET PV-3C FOR THE WIRE & CONDUCTOR SCHEDULE.**

**SEPARATE SHEETS WERE CREATED DUE TO SPACE LIMITATIONS.**

OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |  |  |  |
| PHONE                     | (609) 802-5743                                  |  |  |  |
| PLAN DESIGNER SIGNATURE   |                                                 |  |  |  |

## SINGLE-LINE DIAGRAM

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

PV-3A



| PHOTOVOLTAIC MODULE |      |                                  |           |        |        |        |        |                            |
|---------------------|------|----------------------------------|-----------|--------|--------|--------|--------|----------------------------|
| REF.                | TYP. | MODULE                           | STC POWER | ISC    | IMP    | VOC    | VMP    | MAXIMUM SERIES FUSE RATING |
| PM1-46              | 46   | ADANI SOLAR ASB-M10-144-AAA 535W | 535W      | 13.63A | 12.86A | 49.12V | 41.64V | 30A                        |

| CHARGE CONTROLLER |                                                                    |                          |                      |                         |                                  |                                            |                    |                                 |                              |
|-------------------|--------------------------------------------------------------------|--------------------------|----------------------|-------------------------|----------------------------------|--------------------------------------------|--------------------|---------------------------------|------------------------------|
| TYP.              | CHARGE CONTROLLER                                                  | BATTERY VOLTAGE          | RATED CHARGE CURRENT | NOMINAL PV POWER, 48VDC | MAXIMUM PV SHORT CIRCUIT CURRENT | MAXIMUM PV OPEN CIRCUIT VOLTAGE            | MAXIMUM EFFICIENCY | DATA COMMUNICATION              | PARALLEL OPERATION           |
| 6                 | VICTRON ENERGY SMARTSOLAR CHARGE CONTROLLER MPPT 250/100-Tr VE.CAN | 12/24/48 VDC AUTO SELECT | 100A                 | 5,800W                  | 70A                              | 250VDC ABSOLUTE MAXIMUM COLDEST CONDITIONS | 99%                | VE.CAN, VE.DIRECT AND BLUETOOTH | YES (VIA VE.CAN / BLUETOOTH) |

| INVERTER / CHARGER |                                                  |                              |                                |            |                    |                                    |                               |                                 |                                      |
|--------------------|--------------------------------------------------|------------------------------|--------------------------------|------------|--------------------|------------------------------------|-------------------------------|---------------------------------|--------------------------------------|
| TYP.               | INVERTER / CHARGER                               | MAXIMUM FEED THROUGH CURRENT | CONTINUOUS OUTPUT POWER @ 25°C | PEAK POWER | MAXIMUM EFFICIENCY | CHARGE VOLTAGE 'ABSORPTION' (V DC) | CHARGE VOLTAGE 'FLOAT' (V DC) | AC INPUTS (2x)                  | VE.BUS COMMUNICATION PORT            |
| 2                  | VICTRON ENERGY QUATTRO 48/10000/140-100/100 120V | 2x 100A                      | 10,000 VA                      | 20,000W    | 96%                | 57.6VDC                            | 55.2VDC                       | INPUT VOLTAGE RANGE: 90-140 VAC | FOR PARALLEL / SPLIT PHASE OPERATION |

| BATTERY MODULE |                                        |           |                   |          |                                |                        |                             |                           |                              |
|----------------|----------------------------------------|-----------|-------------------|----------|--------------------------------|------------------------|-----------------------------|---------------------------|------------------------------|
| TYP.           | BATTERY MODULE                         | CHEMISTRY | OPERATING VOLTAGE | CAPACITY | CHARGING / DISCHARGING CURRENT | COMMUNICATION PROTOCOL | MAXIMUM MODULES IN PARALLEL | MAXIMUM MODULES IN SERIES | STORAGE RANGE                |
| 6              | EG4-LL-S 48V 100AH SERVER RACK BATTERY | LiFePO4   | 51.2VDC           | 100AH    | 100A (MAX CONTINUOUS)          | RS485/CAN              | 64                          | 1                         | -4°F – 122°F (-20°C TO 50°C) |

| STANDBY GENERATOR |                                       |               |                        |                                                      |              |                                         |
|-------------------|---------------------------------------|---------------|------------------------|------------------------------------------------------|--------------|-----------------------------------------|
| TYP.              | GENERATOR                             | RUNNING WATTS | MAXIMUM STARTING WATTS | OUTPUT                                               | DISPLACEMENT | ENGINE TYPE                             |
| 1                 | PREDATOR 9000 WATT PORTABLE GENERATOR | 7,250W        | 9,000W                 | 120 / 240 VAC, 60 HZ<br>60.4A AT 120V; 30.2A AT 240V | 420 cc       | HORIZONTAL SINGLE CYLINDER 4 STROKE OHV |

| SYSTEM SUMMARY<br>(TYP. OF CHARGE CONTROLLERS #1, #2, #3, #4, #5) |                                      |
|-------------------------------------------------------------------|--------------------------------------|
| ARRAY STC POWER                                                   | 4,280W                               |
| ARRAY CIRCUITS                                                    | 2 STRINGS OF 4 MODULES (IN PARALLEL) |
| ARRAY VMP @ STC (25°C)                                            | 166.56VDC                            |
| ARRAY VOC @ STC (25°C)                                            | 196.48VDC                            |
| MAXIMUM ARRAY VOC @ MIN. TEMP (0°C)                               | 210.7VDC                             |
| ARRAY I_MP @ STC                                                  | 25.72A                               |
| ARRAY I_SC @ STC                                                  | 27.26A                               |

| SYSTEM SUMMARY<br>(INVERTER / CHARGER, MASTER, UNIT #1) |                  |
|---------------------------------------------------------|------------------|
| CONTINUOUS OUTPUT POWER @ 25°C                          | 10,000W @ 120VAC |
| CONTINUOUS AC OUTPUT CURRENT                            | 83.33A @ 120VAC  |

| SYSTEM SUMMARY<br>(INVERTER / CHARGER, FOLLOWER, UNIT #2) |                  |
|-----------------------------------------------------------|------------------|
| CONTINUOUS OUTPUT POWER @ 25°C                            | 10,000W @ 120VAC |
| CONTINUOUS AC OUTPUT CURRENT                              | 83.33A @ 120VAC  |

THE TWO INVERTER / CHARGER UNITS ARE OPERATING IN A SPLIT-PHASE CONFIGURATION. THIS WILL CREATE A MEASURED LINE TO LINE VOLTAGE OF 240VAC ACROSS BOTH LEGS, WITH A TOTAL COMBINED CONTINUOUS AC OUTPUT CURRENT OF 83.33A.

| SYSTEM SUMMARY<br>(TYP. OF CHARGE CONTROLLER #6) |                                      |
|--------------------------------------------------|--------------------------------------|
| ARRAY STC POWER                                  | 3,210W                               |
| ARRAY CIRCUITS                                   | 2 STRINGS OF 3 MODULES (IN PARALLEL) |
| ARRAY VMP @ STC (25°C)                           | 124.92VDC                            |
| ARRAY VOC @ STC (25°C)                           | 147.36VDC                            |
| MAXIMUM ARRAY VOC @ MIN. TEMP (0°C)              | 158.02VDC                            |
| ARRAY I_MP @ STC                                 | 25.72A                               |
| ARRAY I_SC @ STC                                 | 27.26A                               |

| OCPD SCHEDULE                                                                     |                 |          |                |               |
|-----------------------------------------------------------------------------------|-----------------|----------|----------------|---------------|
| REF.                                                                              | TYPE OF OCPD    | QUANTITY | CURRENT RATING | RATED VOLTAGE |
| PRE-INSTALLED (FUSES FOR SOLAR PANEL COMBINER BOX)                                |                 |          |                |               |
| PRE-INSTALLED (4-POLE CIRCUIT BREAKER FOR SOLAR PANEL COMBINER BOX)               | CIRCUIT BREAKER | 6        | 63A            | 1000VDC       |
| F1-6 (FUSES FOR POSITIVE CONDUCTOR FROM "CHARGE CONTROLLER" TO POSITIVE BUSBAR)   | FUSE            | 6        | 125A           | 70VDC         |
| F7 (FUSE FOR POSITIVE CONDUCTOR FROM "ORION DC-DC CONVERTER" TO POSITIVE BUSBAR)  | FUSE            | 1        | 15A            | 250VDC        |
| F8 (FUSE FOR POSITIVE CONDUCTOR FROM "CERBO GX" TO POSITIVE BUSBAR)               | FUSE            | 1        | 3.15A          | 250VDC        |
| F9-12 (FUSES FOR POSITIVE CONDUCTOR FROM "INVERTER / CHARGER" TO POSITIVE BUSBAR) | FUSE            | 4        | 300A           | 70VDC         |
| F13 (FUSE FOR "VICTRON ENERGY LYNX SHUNT")                                        | FUSE            | 1        | 800A           | 80VDC         |
| F14-15 (FUSES FOR POSITIVE CONDUCTOR OF "BATTERY BANK" TO POSITIVE BUSBAR)        | FUSE            | 2        | 200A           | 125VDC        |
| CB1 (CIRCUIT BREAKER FOR "AC OUT-1", "MASTER" INVERTER #1)                        | CIRCUIT BREAKER | 1        | 110A           | 120VAC        |
| CB2 (CIRCUIT BREAKER FOR "AC OUT-1", "FOLLOWER" INVERTER #2)                      | CIRCUIT BREAKER | 1        | 110A           | 120VAC        |

| SYSTEM SUMMARY (TOTAL AGGREGATE SYSTEM)     |                                      |
|---------------------------------------------|--------------------------------------|
| TOTAL COMBINED ARRAY STC POWER              | 24,610W                              |
| TOTAL COMBINED BATTERY CAPACITY             | 600 AMP-HOURS (30.72 KILOWATT-HOURS) |
| TOTAL COMBINED CONTINUOUS AC OUTPUT CURRENT | 83.33A @ 240VAC                      |

| DC BATTERY DISCONNECT SCHEDULE      |                            |                           |
|-------------------------------------|----------------------------|---------------------------|
| REF.                                | MAXIMUM CONTINUOUS CURRENT | MAXIMUM OPERATING VOLTAGE |
| DS1 (VICTRON ENERGY BATTERY SWITCH) | 275A                       | 60VDC                     |
| DS2 (VICTRON ENERGY BATTERY SWITCH) | 275A                       | 60VDC                     |

|                        |
|------------------------|
| OWNER-BUILDER          |
| NAME: (INFO WITHHELD)  |
| PHONE: (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 24.61kW 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<br>FRESHWATER, CA 95503                                       |  |  |  |  |
| PHONE                     | (609) 802-5743                                                                        |  |  |  |  |
| PLAN DESIGNER SIGNATURE   |  |  |  |  |  |

SINGLE-LINE DIAGRAM

|                              |
|------------------------------|
| PROJECT NO: GSD-20251002-SCM |
| DRAWN BY: SCM                |
| DATE: 10/2/2025              |

PV-3B

| CONDUCTOR SCHEDULE WITH CEC ELECTRICAL CALCULATIONS                                                                           |     |                                                                                                                  |                                          |                                                                             |                                                                          |                      |                                                                                      |                                                                     |                                                                                                                                                          |                                        |                                                                                                         |                                                                                      |                                                                                        |                                                                      |                                   |                                             |
|-------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------|---------------------------------------------|
| ID                                                                                                                            | TYP | DESCRIPTION                                                                                                      | CONDUCTOR                                | CONDUIT                                                                     | NO. OF CURRENT CARRYING CNDRS. IN CNDT.                                  | FILL %               | RATED AMPS                                                                           | OCPD                                                                | EGC                                                                                                                                                      | TEMP. CORR. FACTOR @ 90°C TEMP. RATING | FILL ADJ. FACTOR                                                                                        | CONT. CURRENT                                                                        | MAX. CURRENT                                                                           | TERMINAL RATING CHECK (ASSUME 75°C) SHALL EXCEED 1.25X CONT. CURRENT | BASE AMPACITY @ 90°C TEMP. RATING | CONDITIONS OF USE (COU) @ 90°C TEMP. RATING |
| 1                                                                                                                             | 12  | PV SOURCE CIRCUIT: SERIES STRING OUTPUT TO JUNCTION BOX                                                          | 12 AWG PV WIRE COPPER                    | FREE AIR                                                                    | N/A                                                                      | N/A                  | 13.63A (I_sc) - PER STRING                                                           | N/A                                                                 | 6 AWG BARE COPPER<br>(BOND TO GROUNDING ELECTRODE)                                                                                                       | 0.76 (52°C)                            | 1.0                                                                                                     | 17.04A (I_sc) - PER STRING                                                           | 21.29A (I_sc) - PER STRING                                                             | 35A ≥ 21.29A<br>PASS                                                 | 40A<br>(IN FREE AIR)              | 30.4A<br>(IN FREE AIR)                      |
| 2                                                                                                                             | 4   | PV SOURCE CIRCUIT (TRANSTIONED): JUNCTION BOX TO SOLAR PANEL COMBINER BOX                                        | 10 AWG PV WIRE COPPER                    | 1.25" DIA. EMT                                                              | 6<br>3 X (DC +)<br>3 X (DC -)                                            | 25.5%                | 13.63A (I_sc) - PER STRING                                                           | INTEGRATED 15A FUSES AND 63A CIRCUIT BREAKERS WITHIN SOLAR COMBINER | 10 AWG PV WIRE COPPER                                                                                                                                    | 0.76 (52°C)                            | 0.8                                                                                                     | 17.04A (I_sc) - PER STRING                                                           | 21.29A (I_sc) - PER STRING                                                             | 35A ≥ 21.29A<br>PASS                                                 | 40A<br>(IN CONDUIT)               | 24.32A<br>(IN CONDUIT)                      |
| 3                                                                                                                             | 3   | OUTPUT OF SOLAR PANEL COMBINER BOX: SOLAR PANEL COMBINER BOX TO CHARGE CONTROLLER ("PV" TERMINAL)                | 8 AWG THWN-2 COPPER                      | 0.75" DIA. EMT<br>(EACH SOLAR COMBINER PANEL OUTPUT RAN IN ITS OWN CONDUIT) | 4<br>2 X (DC +)<br>2 X (DC -)                                            | 31.5%                | 27.26A (I_sc) - PER STRING                                                           | N/A                                                                 | 10 AWG THWN-2 COPPER                                                                                                                                     | 1.0 (30°C)                             | 0.8                                                                                                     | 34.08A (I_sc) - PER STRING                                                           | 42.59A (I_sc) - PER STRING                                                             | 50A ≥ 42.59A<br>PASS                                                 | 55A<br>(IN CONDUIT)               | 44A<br>(IN CONDUIT)                         |
| 4                                                                                                                             | 1   | CHARGE CONTROLLER ("BAT" TERMINAL): CHARGE CONTROLLER TO LYNX DISTRIBUTOR M10                                    | 1 AWG THWN-2 COPPER                      | WIREWAY TROUGH RACEWAY                                                      | 12<br>6 X (DC +)<br>6 X (DC -)                                           | SHALL NOT EXCEED 20% | 100A<br>(RATED CHARGE CURRENT)                                                       | 125ADC FUSES (F1-6)                                                 | 6 AWG THWN-2 COPPER                                                                                                                                      | 1.0 (30°C)                             | 1.0<br>THE NUMBER OF CURRENT-CARRYING CONDUCTORS IS LESS THAN 30, THEREFORE, NO FILL DERATE IS REQUIRED | 100A<br>(RATED CHARGE CURRENT)                                                       | 125A<br>(RATED CHARGE CURRENT)                                                         | 130A ≥ 125A<br>PASS                                                  | 150A<br>(IN WIRE TROUGH)          | 150A<br>(IN WIRE TROUGH)                    |
| 5                                                                                                                             | 1   | INVERTER / CHARGER ("BAT" TERMINAL): INVERTER / CHARGER TO LYNX DISTRIBUTOR M10                                  | 2 PARALLEL SETS OF 4/0 AWG THWN-2 COPPER | WIREWAY TROUGH RACEWAY                                                      | 8<br>4 X (DC +)<br>4 X (DC -)                                            | SHALL NOT EXCEED 20% | 140A<br>(HOUSE BATTERY CHARGE CURRENT)                                               | 300ADC FUSES (F9-12)                                                | N/A                                                                                                                                                      | 1.0 (30°C)                             | 1.0<br>THE NUMBER OF CURRENT-CARRYING CONDUCTORS IS LESS THAN 30, THEREFORE, NO FILL DERATE IS REQUIRED | 140A<br>(HOUSE BATTERY CHARGE CURRENT)                                               | 175A<br>(HOUSE BATTERY CHARGE CURRENT)                                                 | 460A ≥ 175A<br>PASS                                                  | 520A<br>(IN WIRE TROUGH)          | 520A<br>(IN WIRE TROUGH)                    |
| 6                                                                                                                             | 2   | INVERTER / CHARGER ("AC OUT-1" TERMINAL): INVERTER / CHARGER TO 225A LOAD CENTER                                 | 1 AWG THWN-2 COPPER                      | 1.25" DIA. EMT<br>(EACH INVERTER / CHARGER OUTPUT RAN IN ITS OWN CONDUIT)   | "MASTER" INV.<br>2<br>1 X (L2, N)<br>"FOLLOWER" INV.<br>2<br>1 X (L1, N) | 24.3%                | 83.33A ("MASTER" INV.) @ 120VAC<br>83.33A ("FOLLOWER" INV.) @ 120 VAC                | 110A / 1P (CB1)<br>110A / 1P (CB2)                                  | 6 AWG THWN-2 COPPER                                                                                                                                      | 1.0 (30°C)                             | 1.0                                                                                                     | 83.33A ("MASTER" INV.) @ 120VAC<br>83.33A ("FOLLOWER" INV.) @ 120 VAC                | 104.2A ("MASTER" INV.) @ 120VAC<br>104.2A ("FOLLOWER" INV.) @ 120 VAC                  | 130A ≥ 104.2A<br>PASS                                                | 150A<br>(IN CONDUIT)              | 150A<br>(IN CONDUIT)                        |
| 7                                                                                                                             | 1   | OUTPUT OF 225A LOAD CENTER: 225A LOAD CENTER TO 225A LOAD CENTER                                                 | 1 AWG THWN-2 COPPER                      | 1.25" DIA. EMT                                                              | 3<br>1 X (L1, L2, N)                                                     | 34.6%                | 83.33A @ 240VAC                                                                      | N/A                                                                 | 6 AWG THWN-2 COPPER<br>(BOND TO 200A LOAD CENTER GROUND BAR)<br>6 AWG BARE COPPER<br>(BOND TO GROUNDING ELECTRODE)                                       | 1.0 (30°C)                             | 1.0                                                                                                     | 83.33A @ 240VAC                                                                      | 104.2A @ 240VAC                                                                        | 130A ≥ 104.2A<br>PASS                                                | 150A<br>(IN CONDUIT)              | 150A<br>(IN CONDUIT)                        |
| 8                                                                                                                             | 1   | OUTPUT OF STANDBY GENERATOR: STANDBY GENERATOR TO INVERTER / CHARGER ("MASTER" & "FOLLOWER", "AC IN-1" TERMINAL) | 6 AWG THWN-2 COPPER                      | 0.75" DIA. SCH. 40 PVC<br>(19" MINIMUM BURIAL DEPTH)                        | 3<br>1 X (L1, L2, N)                                                     | 34.2%                | 30.2A @ 240VAC                                                                       | N/A                                                                 | 10 AWG THWN-2 COPPER<br>(BOND TO "MASTER" INVERTER / CHARGER GROUND BAR)<br>6 AWG BARE COPPER<br>(BOND TO AUXILIARY GROUND ROD LOCATED AT GENERATOR PAD) | 1.0 (30°C)                             | 1.0                                                                                                     | 30.2A @ 240VAC                                                                       | 37.75A @ 240VAC                                                                        | 65A ≥ 37.75A<br>PASS                                                 | 75A<br>(IN CONDUIT)               | 75A<br>(IN CONDUIT)                         |
| 9                                                                                                                             | 2   | OUTPUT OF SERVER RACK BATTERY BANK: SERVER RACK BATTERY BANK TO LYNX DISTRIBUTOR M10                             | 4/0 AWG THWN-2 COPPER                    | FREE AIR / 1.50" DIA. EMT<br>(EACH BATTERY OUTPUT RAN IN ITS OWN CONDUIT)   | 2<br>1 X (DC +)<br>1 X (DC -)                                            | 31.8%                | 150A (LIMITED BY BMS)<br>(MAXIMUM CONTINUOUS BATTERY CHARGING / DISCHARGING CURRENT) | 200ADC FUSES (F14-15)                                               | GROUNDING WIRE FROM THE RACK/CABINET TO AN EQUIPMENT GROUNDING CONDUCTOR, THEN TERMINATE THE EGC AT A GROUNDING ELECTRODE.                               | 1.0 (30°C)                             | 1.0                                                                                                     | 150A (LIMITED BY BMS)<br>(MAXIMUM CONTINUOUS BATTERY CHARGING / DISCHARGING CURRENT) | 187.5A (LIMITED BY BMS)<br>(MAXIMUM CONTINUOUS BATTERY CHARGING / DISCHARGING CURRENT) | 230A ≥ 187.5A<br>PASS                                                | 260A<br>(IN CONDUIT)              | 260A<br>(IN CONDUIT)                        |
| ALL CONDUCTORS, OCPD SIZES AND TYPES SPECIFIED ACCORDING TO CEC ARTICLES 690.8(A)(1), CEC ARTICLE 240, AND CEC ARTICLE 690.7. |     |                                                                                                                  |                                          |                                                                             |                                                                          |                      |                                                                                      |                                                                     |                                                                                                                                                          |                                        |                                                                                                         |                                                                                      |                                                                                        |                                                                      |                                   |                                             |

|                                                                                                                                                                                                                                                    |  |                            |                                                 |                                                                                                        |  |                                                                  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------|--|--|--|
| OWNER-BUILDER                                                                                                                                                                                                                                      |  | PLAN DESIGNER INFORMATION  |                                                 | OFF-GRID SOLAR SYSTEM 24.61kW DC<br>WITH DC-COUPLED BATTERY STORAGE<br>(WHOLE-HOME BACKUP APPLICATION) |  | SINGLE-LINE DIAGRAM                                              |  |  |  |
| NAME: (INFO WITHHELD)                                                                                                                                                                                                                              |  |                            |                                                 |                                                                                                        |  |                                                                  |  |  |  |
| PHONE: (INFO WITHHELD)                                                                                                                                                                                                                             |  | COMPANY                    | GEMINI SOLAR DESIGN, LLC.                       | LUEDTKE RESIDENCE<br>STARDUST LANE<br>FELTON, CA 95018                                                 |  |                                                                  |  |  |  |
| CONFIDENTIAL: THE INFORMATION CONTAINED<br>IN THIS DRAWING SET IS CONFIDENTIAL AND<br>SHALL NOT BE DISCLOSED IN FULL OR IN PART<br>TO ANYONE EXCEPT THOSE INVOLVED IN THE<br>DESIGN AND INSTALLATION OF THE PV SYSTEM<br>REPRESENTED IN THIS PLAN. |  | NAME                       | SANJAY CHRISTOPHER MALLIPUDI                    |                                                                                                        |  |                                                                  |  |  |  |
|                                                                                                                                                                                                                                                    |  | ADDRESS                    | 495 HOWARD HEIGHTS ROAD<br>FRESHWATER, CA 95503 |                                                                                                        |  |                                                                  |  |  |  |
|                                                                                                                                                                                                                                                    |  | PHONE                      | (609) 802-5743                                  |                                                                                                        |  |                                                                  |  |  |  |
|                                                                                                                                                                                                                                                    |  | PLAN DESIGNER<br>SIGNATURE | <div>Sanjay Mallipudi</div>                     |                                                                                                        |  | PROJECT NO: GSD-20251002-SCM<br>DRAWN BY: SCM<br>DATE: 10/2/2025 |  |  |  |
|                                                                                                                                                                                                                                                    |  |                            |                                                 |                                                                                                        |  | PV-3C                                                            |  |  |  |



JUNCTION BOX

1

JUNCTION BOX

⚠

WARNING

⚠

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

CEC 690.35(F)

3

JUNCTION BOX

⚠

WARNING

⚠

PHOTOVOLTAIC  
POWER SOURCE

CEC 690.35

2

JUNCTION BOX

⚠

DO NOT  
DISCONNECT  
UNDER LOAD

⚠

CEC 690.16(B)

INVERTER / CHARGER (EACH UNIT)

12

INVERTER / CHARGER (EACH UNIT)

⚠

WARNING

⚠

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

CEC 690.35(F)

13

INVERTER / CHARGER (EACH UNIT)

⚠

WARNING

⚠

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

CEC 690.5(C)

14

INVERTER / CHARGER (EACH UNIT)

SOLAR INVERTER  
MAXIMUM RATING

OPERATING CURRENT 83.33 AMPS  
OPERATING VOLTAGE 120 VAC

CEC 690.54

15

INVERTER / CHARGER (EACH UNIT)

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

RACEWAYS

16

RACEWAYS, CABLES PER 10 FT.

⚠

WARNING

⚠

PHOTOVOLTAIC  
POWER SOURCE

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

225A LOAD CENTER  
("BACKED UP LOADS PANEL")

17

225A 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

CEC 690.17.4

18

225A LOAD CENTER ("BACKED UP LOADS PANEL")

BATTERY  
BACKED UP  
ELECTRICAL  
PANEL

19

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

BATTERY BANK

20

BATTERY BANK

⚠

MAIN BATTERY

⚠

SYSTEM  
DISCONNECT

ESS RAPID SHUTDOWN SWITCH

21

ESS RAPID SHUTDOWN SWITCH

⚠

MAIN BATTERY

⚠

SYSTEM  
DISCONNECT

22

ESS RAPID SHUTDOWN SWITCH

⚠

WARNING

⚠

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

DIRECTORY PLACARD

23

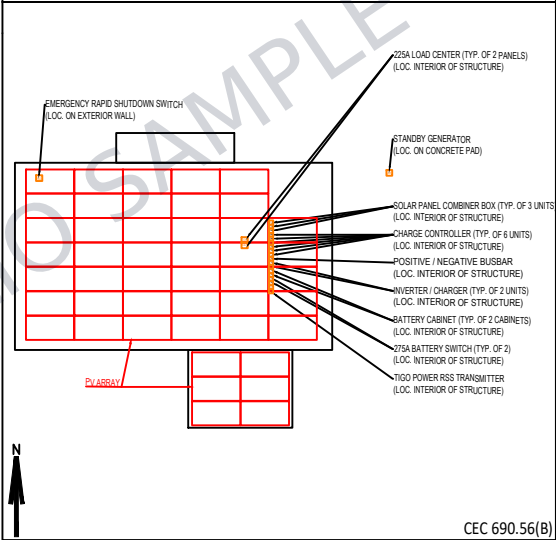
DIRECTORY PLACARD

⚠

CAUTION

⚠

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



CEC 690.56(B)

CHARGE CONTROLLERS #1 - #5

4

CHARGE CONTROLLERS #1 - #5

PHOTOVOLTAIC SYSTEM  
DC DISCONNECT

RATED MPP VOLTAGE 166.56 VDC  
RATED MPP CURRENT 25.72 A  
MAX SYSTEM VOLTAGE 210.7 VDC  
SHORT CIRCUIT CURRENT 27.26 A

CEC 690.53

5

CHARGE CONTROLLERS #1 - #5

⚠

WARNING

⚠

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

CEC 690.5(C)

6

CHARGE CONTROLLERS #1 - #5

⚠

WARNING

⚠

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

CEC 690.35(F)

7

CHARGE CONTROLLERS #1 - #5

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

CHARGE CONTROLLER #6

8

CHARGE CONTROLLER #6

PHOTOVOLTAIC SYSTEM  
DC DISCONNECT

RATED MPP VOLTAGE 124.92 VDC  
RATED MPP CURRENT 25.72 A  
MAX SYSTEM VOLTAGE 158.02 VDC  
SHORT CIRCUIT CURRENT 27.26 A

CEC 690.53

9

CHARGE CONTROLLER #6

⚠

WARNING

⚠

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

CEC 690.5(C)

10

CHARGE CONTROLLER #6

⚠

WARNING

⚠

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

CEC 690.35(F)

11

CHARGE CONTROLLER #6

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

SIGNAGE REQUIREMENTS

|   |                                                                                                                                                        |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | ALL PLACARDS AND SIGNAGE REQUIRED BY THE 2022 CALIFORNIA 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                                                                                                                 |

|                        |
|------------------------|
| OWNER-BUILDER          |
| NAME: (INFO WITHHELD)  |
| PHONE: (INFO WITHHELD) |

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OFF-GRID SOLAR SYSTEM 24.61kW DC  
WITH DC-COUPLED BATTERY STORAGE  
(WHOLE-HOME BACKUP APPLICATION)

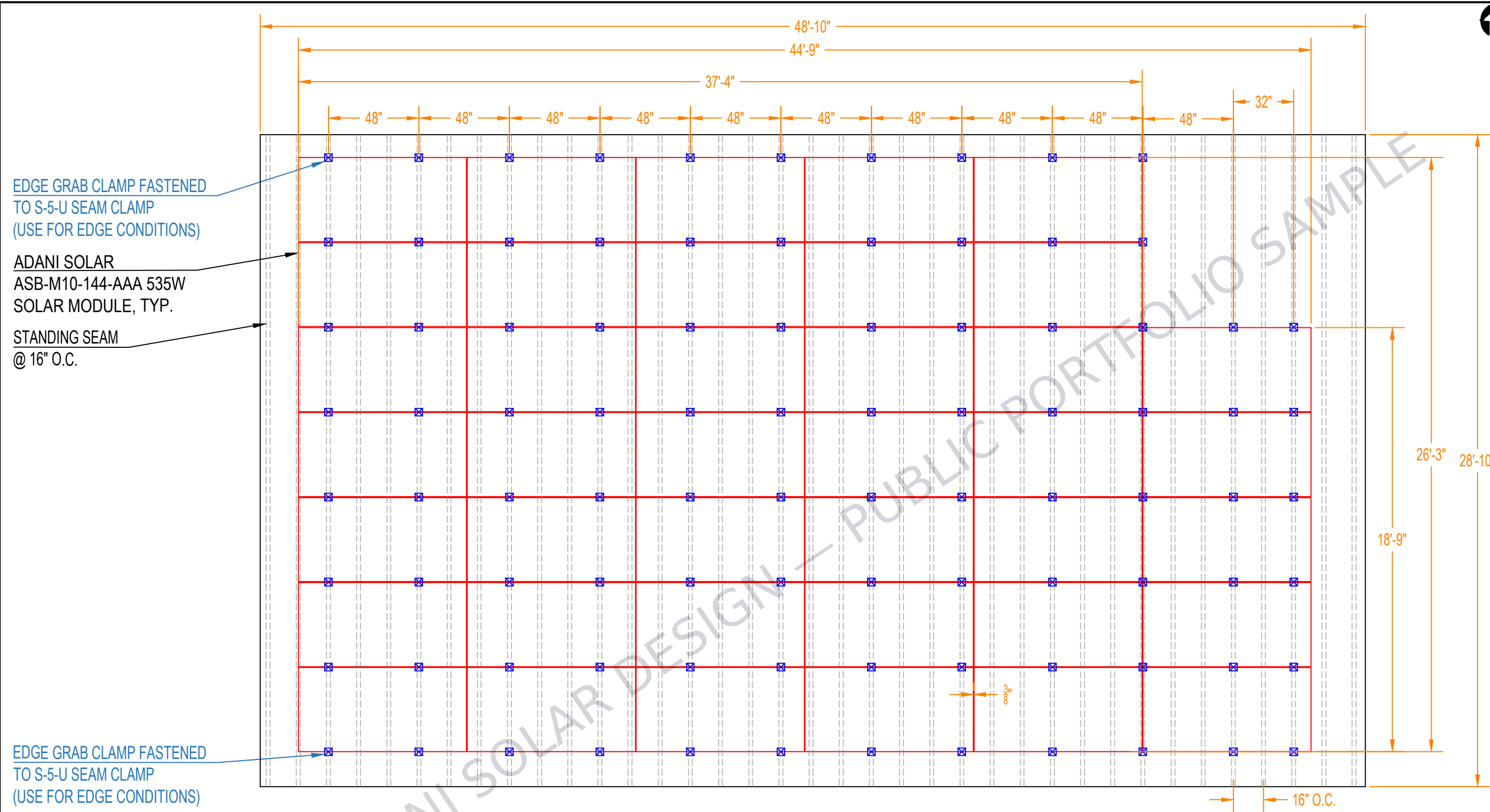
(INFO WITHHELD FOR PUBLIC SAMPLE)

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

PLACARDS

|                              |
|------------------------------|
| PROJECT NO: GSD-20251002-SCM |
| DRAWN BY: SCM                |
| DATE: 10/2/2025              |

PV-4



OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                   | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE | <i>Sanjay Mallipudi</i>                         |

ATTACHMENT PLAN

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

PV-5A

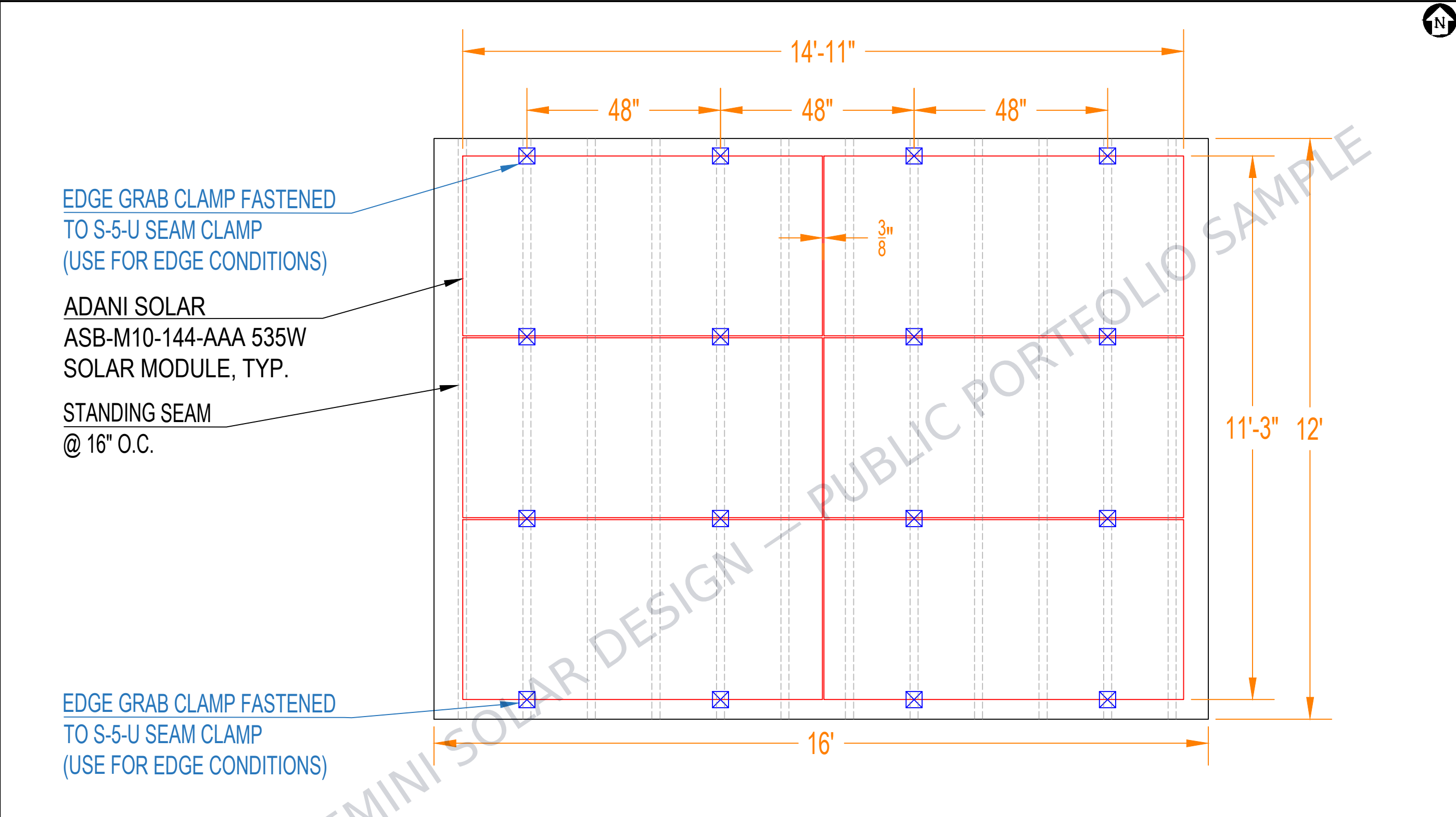
| ROOF INFORMATION |                     |
|------------------|---------------------|
| ROOF TYPE        | STANDING SEAM METAL |
| PITCH            | 7°                  |
| SEAM SPACING     | 16" O.C.            |

| LAYOUT SPECIFICATIONS  |                |
|------------------------|----------------|
| NUMBER OF MODULES      | 40             |
| NUMBER OF S-5-U CLAMPS | 92             |
| AREA                   | 1,120.4 SQ. FT |
| AZIMUTH                | 180°           |
| TOTAL WEIGHT OF ARRAY  | 2,863.2 LBS    |
| DEAD LOAD              | 2.56 PSF       |

| LOCAL DESIGN CRITERIA  |                         |
|------------------------|-------------------------|
| WIND EXPOSURE CATEGORY | C                       |
| RISK CATEGORY          | II                      |
| ULTIMATE WIND SPEED    | 110 MPH (3-SECOND GUST) |
| GROUND SNOW LOAD       | 0 PSF (NONE)            |

**PV MODULES AND S-5! PVKIT 2.0 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. |



| ROOF INFORMATION |                     |
|------------------|---------------------|
| ROOF TYPE        | STANDING SEAM METAL |
| PITCH            | 7°                  |
| SEAM SPACING     | 16" O.C.            |

| LAYOUT SPECIFICATIONS  |              |
|------------------------|--------------|
| NUMBER OF MODULES      | 6            |
| NUMBER OF S-5-U CLAMPS | 16           |
| AREA                   | 168.2 SQ. FT |
| AZIMUTH                | 180°         |
| TOTAL WEIGHT OF ARRAY  | 441.5 LBS    |
| DEAD LOAD              | 2.63 PSF     |

| LOCAL DESIGN CRITERIA  |                         |
|------------------------|-------------------------|
| WIND EXPOSURE CATEGORY | C                       |
| RISK CATEGORY          | II                      |
| ULTIMATE WIND SPEED    | 110 MPH (3-SECOND GUST) |
| GROUND SNOW LOAD       | 0 PSF (NONE)            |

PV MODULES AND S-5! PVKIT 2.0 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. |

OWNER-BUILDER

NAME: (INFO WITHHELD)

PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-5B



# S-5!®

The Right Way!®

The concept of combining photovoltaic arrays with standing seam metal roofing is growing—and for good reasons. A standing seam metal roof has a life expectancy consistent with that of framed PV modules—a 30-year power source on a 40-year roof, along with zero-penetration technology, creates the most sustainable roof system available with alternative power generation, all without compromising the roof manufacturer's warranty! PVKIT® 2.0 is also a great solution for attaching PV modules directly to many exposed fastener roofs when paired with S-5! brackets.

S-5! has introduced a new and improved PVKIT, boasting an improved installation experience for PV mounting technology. The kit comes preassembled with either the MidGrab or EdgeGrab for easier and more efficient installation. The kits were designed with thread lock on the standoff bolt so that the grab will seat to the PV Module frame by using one tool to drive the top bolt, eliminating a step required in the previous PVKIT. The PVKIT 2.0 features bonding teeth, which are more aggressive to secure a better ground path. No lugs or wire required except to connect one string of modules to another and to ground the system.

The S-5 PVKIT 2.0 is built to save you time and money —  
*The Right Way®* to install solar to your metal roof.

## PVKIT 2.0 Features:

Pre-assembled kit saves time and money

Only **one tool** needed for installation

Bolt head uses standard hex bit tip which is provided

Improved single piece EdgeGrab installs with ease

Low profile bolt head provides a sleek and clean finish

Also available in black by special order only

MidGrab leaves 1" gap between modules, allowing reduction per ASCE7

UL 2703 Listed

PVKIT 2.0 EdgeGrab Assembly

PVKIT® 2.0 MidGrab or EdgeGrab

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

# S-5!®

The Right Way!®

## PVKIT® 2.0: New Design

The PVKIT 2.0 is furnished with the hardware shown at right, excluding the attachment clamp, which is supplied separately. The PVKIT 2.0 is compatible with most common metal roofing materials, including copper.

The Module Placement Bevel Guide makes the module placement easier. The mounting disk is multi-directional and rails are not required. The PV grab ears, holding the solar panels in place, are broader to allow for ease of installation and precise module engagement.

Accommodating module thicknesses between 30 and 46mm, the PVKIT 2.0 fits the majority of solar panels on the market. Using the S-5! mini clamps, it fits most standing seam metal roofs. When paired with other S-5! products, the PVKIT 2.0 and EdgeGrab or MidGrab will also work on most exposed fastener including corrugated metal roofs. The MidGrab is designed to fit mid conditions (two adjacent panels), while the new EdgeGrab is designed specifically for end conditions.

Wind dynamics are complex; thus, each system should be reviewed by a qualified licensed professional who understands wind effects prior to purchase and installation. For more detailed information including specifications, installation instructions, and CAD drawings, visit [www.S-5.com](http://www.S-5.com) or your PVKIT 2.0 distributor.

The PVKIT 2.0 continues to be the easiest, most cost-effective way to install solar panels directly to standing seam and exposed fastener metal roofs, remaining the most popular choice worldwide.

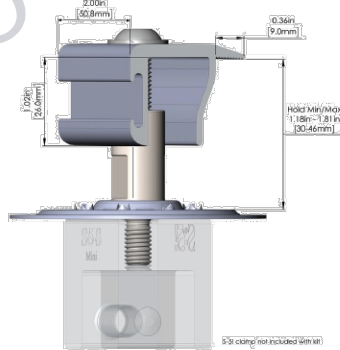
### S-5!® Warning! Please use this product responsibly!

The independent lab test data found at [www.S-5.com](http://www.S-5.com) can be used for load-critical designs and applications.

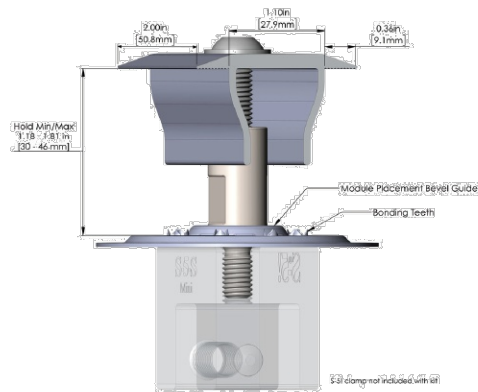
Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, fastener torque, patents, and trademarks, visit the S-5! website at [www.S-5.com](http://www.S-5.com). Copyright 2021, Metal Roof Innovations, Ltd. S-5! products are patent protected.

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### PVKIT 2.0 EdgeGrab



### PVKIT 2.0 MidGrab



Certain components featured in illustration may not be UL listed. Due to the variety of attachment needs, S-5-PVKIT 2.0 are sold separately from S-5! clamps.

### Distributed by:

OWNER-BUILDER

NAME: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503                                       |
| PHONE                   | (609) 802-5743                                                                        |
| PLAN DESIGNER SIGNATURE |  |

S-5! PVKIT 2.0

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-6A





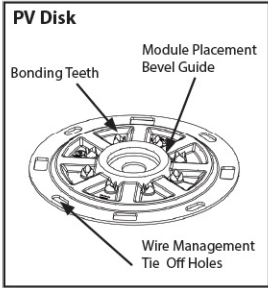
The Right Way™ to attach almost anything to metal roofs!

Installation Instructions

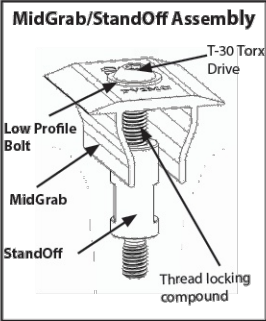
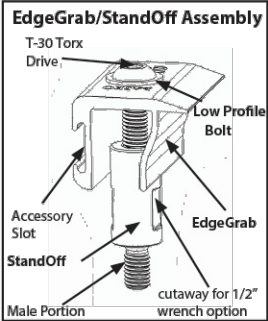
**S-5!® Warning!** Please use these products responsibly! Visit our website or contact your S-5! distributor for available load test results. The user and/or the installer of these parts is responsible for all necessary engineering and design for the intended use of these parts in an assembly or application. Note that a continuous ground must be followed in accordance with National Electric Code (NEC), ANSI/NFPA 70. Installation in Canada must be in accordance with CSA C22.1, Safety Standard for Electrical Installations, Canadian Electrical Code, Part 1. For UL 2703 Listed assemblies (UL Listed) use with PV Modules having a maximum fuse rating of 25A or less. Prior to installation, contact the local code Authority Having Jurisdiction (AHJ) to determine the proper grounding requirements. Visit [www.S-5.com](http://www.S-5.com) for more details. Exercise care when threading the Male Portion of the StandOff into the clamp to avoid cross-threading.

Tools Needed

- Screw Gun
- T-30 Torx Bit Tip (provided)
- Calibrated Dial Torque Wrench



Parts



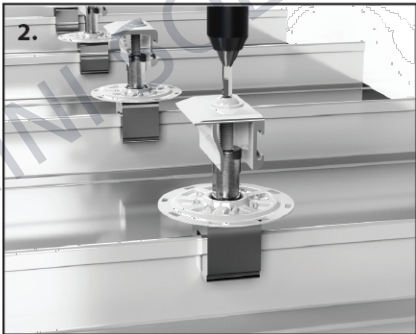
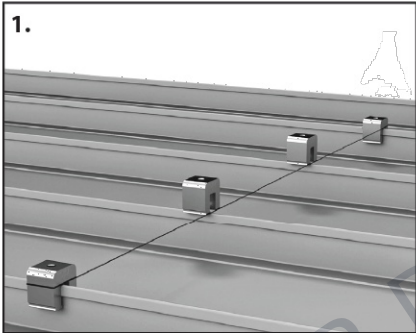
To install PV Kit 2.0 On Standing Seam

**1. Install the first row of S-5! clamps, at the edge of the array:** It is critical that this row is straight. Install a clamp at both ends of the row, by measuring from a reference point such as the eave of the roof. Tighten the setscrews with Screw Gun and the included Bit Tip. The setscrews will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench to ensure the tool is consistently achieving the proper torque range (see **Setscrew Torque Table below**). Please see installation instructions provided with clamps for specifics. Stretch a string line between the two end clamps to provide a true line to mount the remaining edge clamps (**Fig. 1**).

| Specified Torque                             | Inch Pounds | Foot Pounds | Nm    |
|----------------------------------------------|-------------|-------------|-------|
| 22ga steel                                   | 160-180     | 13-15       | 18-20 |
| All other metals and thinner gauges of steel | 130-150     | 11-12.5     | 15-17 |

S-5! Clamp Setscrew Torque Table (torque varies depending on roof material)

**2. Mount the PV Disks and the EdgeGrab/StandOff Assembly to the first row of clamps:** place the PV Disk atop the clamp and thread the Male Portion of the StandOff through the disk and into the clamp. Drive the EdgeGrab/StandOff Assembly down with provided Bit Tip (**Fig. 2**) until the base of the StandOff seats the disk in place and breaks the thread locking seal between the StandOff and Low Profile Bolt. Leave the grab up, to allow space for a module frame. A 1/2" open end wrench can be used to further tighten the StandOff atop the disk if desired.

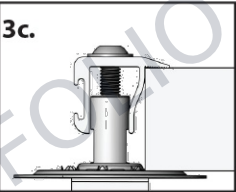
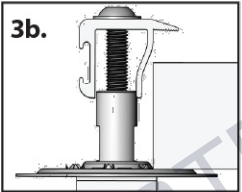


PV Kit 2.0 Installation Instructions

888-825-3432 [www.S-5.com](http://www.S-5.com)

**3. Install the first row of modules (Fig 3a):** Place first module in the grabs pushing on the frame to seat the module against the EdgeGrabs and Module Placement Bevel Guide (**Fig 3b**). Drive the Low Profile Bolt with the provided bit to tighten the grabs (**Fig 3c**). Low Profile Bolt and Standoff should be **torqued to 120-130 in lbs (13.6-14.7 Nm)**. Check torque periodically during install to ensure the tool is achieving torque.

**PV Kit 2.0 fits module frame thicknesses from 30 mm-46 mm.**



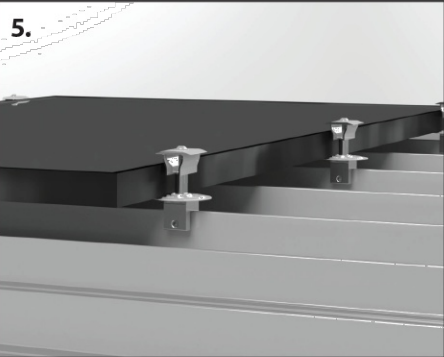
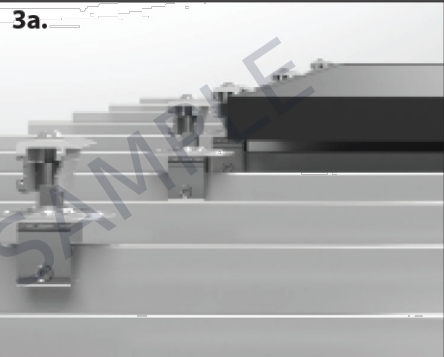
**4. Install MidGrab/StandOff Assembly & PV Disk on Clamps:** the PV Disk and MidGrab/StandOff Assembly should be mounted to the clamps **before mounting the clamps to the roof**. Place the PV Disk atop the clamp and thread the male portion of the StandOff through the disk and into the clamp. Drive the MidGrab/StandOff Assembly down with the provided bit tip (**Fig 4**) in similar fashion to Step 2. Note: When using the S-5-H90 or S-5-K Grip style clamps, the clamp must be secured to the roof prior to fixing the S-5-PV Kit 2.0 EdgeGrab or MidGrab assembly to clamps. See: **Tips for Mounting with CorruBrackets, S-5-H90, or S-5 K Grip Style Clamps** at end of installation instructions.

**5. Place MidGrab/StandOff/Disk & Clamp Assemblies:** using the PV module as a guide, place the throat of the clamp over the seam and slide the assembly into place so that the edge of the module is seated against the wall of the MidGrab and the Module Placement Bevel Guide, similar to (**Fig 3b**). Tighten the setscrew(s) of the clamp as described in **step 1**. The grabs should be left in the partially open position to accommodate the next row of modules before final tightening.

**6. Install Additional PV Modules-repeating steps 3-5:** place another module in the MidGrabs that were left open in the previous step. Tighten the downslope row of grabs each time a module is placed and leave the upslope open until the next module is placed (**Fig. 6**). The final row will be finished with EdgeGrab/StandOff Assemblies. Periodically look back at the modules you've installed to double check that the MidGrabs were tightened.

**S-5!® Warning! Please use this product responsibly!**  
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PV Kit 2.0 Installation Instructions



|                                                                                                                                                                                                                                     |                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| OWNER-BUILDER                                                                                                                                                                                                                       |                                                 |
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| PHONE: (INFO WITHHELD)                                                                                                                                                                                                              |                                                 |
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| OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                                                                                                                                                                                                                               | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE                                                                                                                                                                                                             |                                                 |
| S-5! PVKIT 2.0                                                                                                                                                                                                                      |                                                 |
| PROJECT NO: GSD-20251002-SCM                                                                                                                                                                                                        |                                                 |
| DRAWN BY: SCM                                                                                                                                                                                                                       |                                                 |
| DATE: 10/2/2025                                                                                                                                                                                                                     |                                                 |
| PV-6B                                                                                                                                                                                                                               |                                                 |



The right way to attach almost anything to metal roofs!

# S-5!<sup>®</sup>

## The Right Way!<sup>®</sup>

### S-5-U Clamp

The S-5-U clamp is by far our most popular and most versatile clamp. It fits about 85% of the standing seam profiles manufactured in North America—including most structural and architectural profiles. It can be used on vertically oriented seams and, by rotating the clamp 90 degrees, it can also be used on most horizontal 2" seam profiles.

Its simple design, generous dimensioning, and multiple hole orientations are what make the S-5-U clamp so versatile for use with the S-5!<sup>®</sup> snow retention products, such as ColorGard<sup>®</sup>, as well as with other heavy-duty applications.

Installation is as simple as setting the specially patented round-point setscrews into the clamp, placing the clamp on the seam, and tightening them to the specified tension. Then, affix ancillary items using the bolt provided with the product. Go to [www.S-5.com/tools](http://www.S-5.com/tools) for information and tools available for properly attaching and tensioning S-5! clamps.

### S-5-U Mini Clamp

The S-5-U Mini is a bit shorter than the S-5-U and has one setscrew rather than two. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!\*

\*S-5! mini clamps are not compatible with, and should not be used with S-5! SnoRail™/SnoFence™ or ColorGard® snow retention systems.



The S-5-U clamp is our most popular and versatile clamp, fitting about 85% of the standing seam profiles in North America.

888-825-3432 | [www.S-5.com](http://www.S-5.com) | 

S-5-U and S-5-U Mini

## S-5!<sup>®</sup>

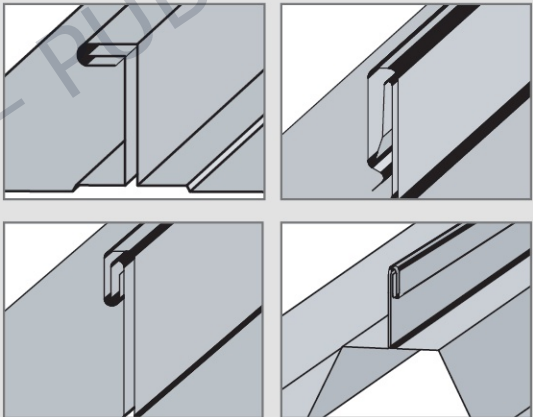
### The Right Way!<sup>®</sup>

The strength of the S-5-U clamp is in its simple design. The patented setscrews will slightly dimple the metal seam material but not pierce it—leaving the roof manufacturer's warranty intact.

The S-5-U and S-5-U Mini clamps are each furnished with the hardware shown to the right. Each box also includes a bit tip for tightening setscrews using an electric screw gun. A structural aluminum attachment clamp, the S-5-U is compatible with most common metal roofing materials excluding copper. All included hardware is stainless steel. Please visit [www.S-5.com](http://www.S-5.com) for more information including CAD details, metallurgical compatibilities and specifications.

The S-5-U clamp has been tested for load-to-failure results on most major brands and profiles of standing seam roofing. The independent lab test data found at [www.S-5.com](http://www.S-5.com) can be used for load-critical designs and applications. S-5!<sup>®</sup> holding strength is unmatched in the industry.

#### Example Profiles



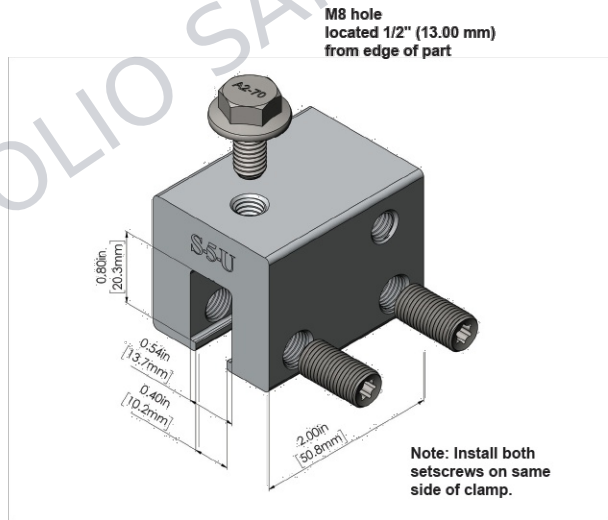
For horizontal seams under 0.65", do not use this clamp. Visit [www.S-5.com](http://www.S-5.com) for more detailed information and proper clamp usage.

#### S-5!<sup>®</sup> Warning! Please use this product responsibly!

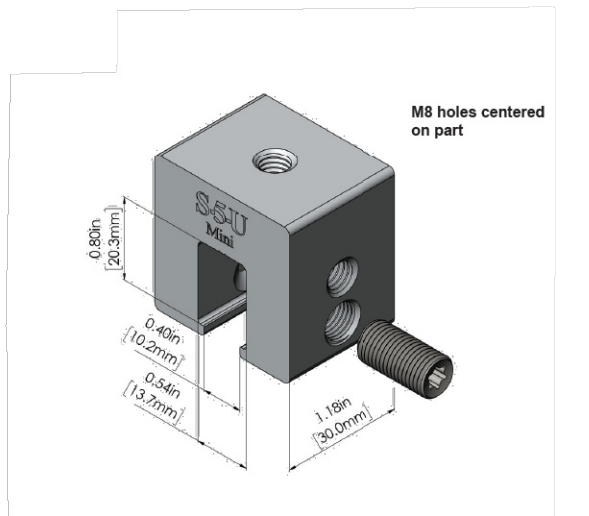
Products are protected by multiple U.S. and foreign patents. Visit the website at [www.S-5.com](http://www.S-5.com) for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at [www.S-5.com](http://www.S-5.com) for published data regarding holding strength.

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### S-5-U Clamp



### S-5-U Mini Clamp



Distributed by



S-5-U CLAMP DATASHEET  
SCALE: N/A

OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503                                       |
| PHONE                   | (609) 802-5743                                                                        |
| PLAN DESIGNER SIGNATURE |  |

#### S-5-U CLAMP

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-7A





The right way™ to attach almost anything to metal roofs!

## 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 S-5! clamps have been properly spaced and configured. **Notice to S-5! users:** Due to the many variables involved with specific panel products, climates, snow melt phenomena, 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. Visit [www.S-5.com](http://www.S-5.com) for more details. 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. Information contained within is intended to apply to the document as a whole.

**The S-5-U, S-5-S, S-5-E, S-5-B, and S-5-V clamps are made for standing seam profiles.** For horizontal seam applications, the setscrew(s) must be accessible from the top for tightening. S-5-U clamps have two bolt holes to accommodate either vertical or horizontal seam applications; visit [www.S-5.com](http://www.S-5.com) for more details.

## Tools Needed

- Screw Gun\*
- T30 Torx Bit Tip (provided)
- Dial-Calibrated Torque Wrench  
(For accurate tension values, do NOT use a clicking torque wrench; inquire with S-5! for proper tool sourcing)

## To Install the S-5-U, S-5-S, S-5-E, S-5-B, and S-5-V

- Partially thread the setscrews into the clamp by hand. (The S-5-U has four setscrew locations to make the clamp more versatile; however, only two setscrews are used per clamp. Both setscrews should always be loaded into the same side of the clamp.)
- Determine how to position the clamp. When attaching to machine-folded seams (regardless of panel profile and geometry), S-5! clamps are designed to engage the seam as shown in Illustration A; with setscrew opposite seam fold. On many snap-together type seams, the setscrews are on the open (or overlap) side of the seam. On some seams, this aspect of clamp orientation is not critical.
- Tighten the setscrews using a screw gun\* and the included screw gun bit tip. Setscrews should be tensioned and re-tensioned as the seam material compresses, i.e. tighten the first setscrew, then the second; then repeat until each setscrew achieves the recommended torque. The setscrews will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench as indicated below to ensure the tool is consistently achieving the proper torque range. **Note:** See "Step 3 Note" at bottom of document on fitting S-5-U and S-5-V on certain vertical double-folds.

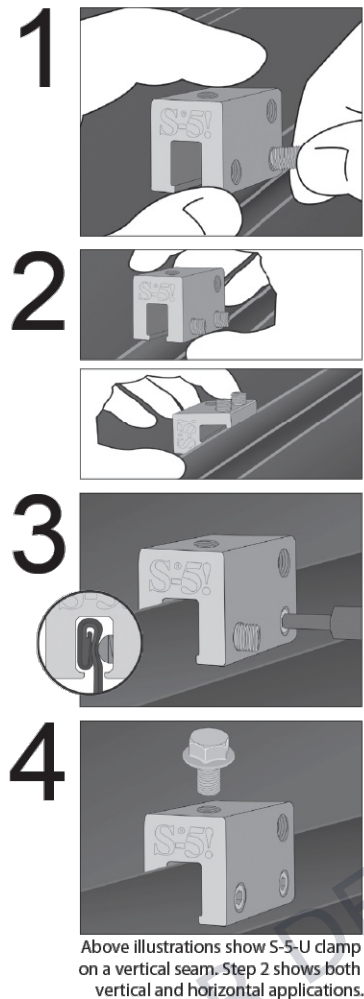
\* For time-saving tool recommendations, call S-5!

| Specified Torque                             | Inch Pounds | Foot Pounds | Nm    |
|----------------------------------------------|-------------|-------------|-------|
| 22ga steel                                   | 160–180     | 13–15       | 18–20 |
| All other metals and thinner gauges of steel | 130–150     | 11–12.5     | 15–17 |

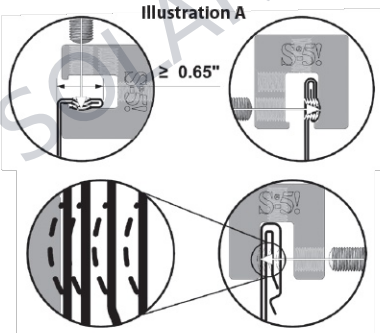
Once installed correctly, these clamps require no maintenance or re-inspection for the life of the roof.

- For critical attachment applications utilizing an M8-1.25 X 16 mm Hex Flange Bolt, tighten the included M8 bolt to 160 inch pounds (13 foot pounds).

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



Above illustrations show S-5-U clamp on a vertical seam. Step 2 shows both vertical and horizontal applications.



(Top) S-5-U clamp on both vertical and horizontal seams. (Bottom) S-5-S on a snap together seam with blow up illustrating deformation of seam as setscrew is tightened. For horizontal seams equal to or greater than .65\"/>

888-825-3432 | [www.S-5.com](http://www.S-5.com) S-5-U, S-5-S, S-5-E, S-5-B, S-5-V, & Mini Install

## To Install the S-5-U Mini, S-5-S Mini, S-5-E Mini, S-5-B Mini, and S-5-V Mini

- Partially thread the setscrew into the clamp by hand.
- Determine how to position the clamp. When attaching to machine-folded seams (regardless of panel profile and geometry), S-5!® clamps are designed to engage the seam as shown in Illustration A on the front page; with setscrew opposite seam fold. On many snap-together type seams, the setscrew is on the open (or overlap) side of the seam. On some seams, this aspect of clamp orientation is not critical.
- Tighten the setscrew using a screw gun\* and the included screw gun bit tip. The setscrew will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench as indicated below to ensure the tool is consistently achieving the proper torque range. **Note:** See "Step 3 Note" at bottom of document on fitting S-5-U Mini and S-5-V Mini on certain vertical double-folds.

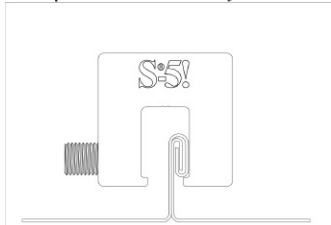
\*For time-saving tool recommendations, call S-5!

| Specified Torque                             | Inch Pounds | Foot Pounds | Nm    |
|----------------------------------------------|-------------|-------------|-------|
| 22ga steel                                   | 160–180     | 13–15       | 18–20 |
| All other metals and thinner gauges of steel | 130–150     | 11–12.5     | 15–17 |

Once installed correctly, these clamps require no maintenance or re-inspection for the life of the roof.

- For critical attachment applications utilizing an M8-1.25 X 16 mm Hex Flange Bolt (sold separately), tighten the bolt to 160 inch pounds (13 foot pounds).

**Step 3 Note:** When installing S-5-U, S-5-V, S-5-U Mini, or S-5-V Mini on a vertical double fold, you may need to lift clamp in a manner that allows the lip of the clamp to engage the bottom of the seam and the setscrew(s) to fully engage the fold while tightening the setscrew(s). See clamp lip engagement in figure below. This will assist in making the clamp sit more vertically on the seam.

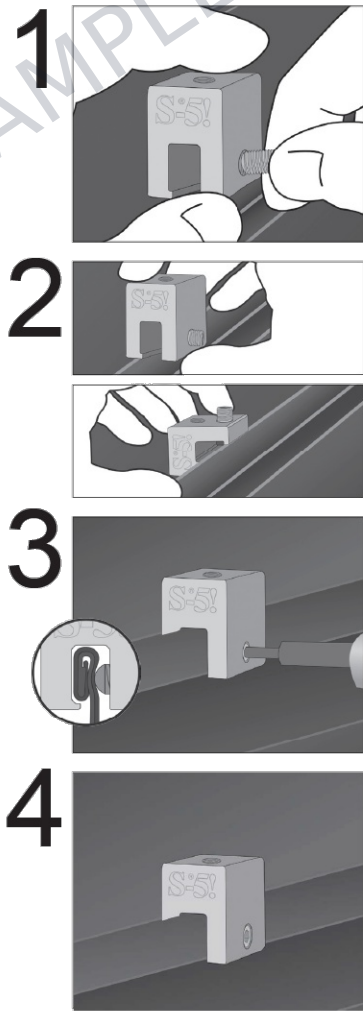


**NOTE:** Any S-5! warranty and/or calculation may be void if hardware is used that was not furnished by S-5! directly or through one of their licensed distributors

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

Products are protected by multiple U.S. and foreign patents. Visit the website at [www.S-5.com](http://www.S-5.com) for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses, i.e. tighten the first setscrew, then the second; then repeat until each setscrew achieves the recommended torque. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at [www.S-5.com](http://www.S-5.com) for published data regarding holding strength. Copyright 2020, Metal Roof Innovations, Ltd. S-5! products are patent protected. S-5! aggressively protects its patents, trademarks, and copyrights. Version 040820.

USEBVI-V1.2-0420



Above illustrations show S-5-E Mini clamp on a vertical seam. Step 2 shows S-5-E Mini on vertical applications and S-5-U Mini on horizontal applications.

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                   | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE |                                                 |

## S-5-U CLAMP

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-7B

# 2.5 SYSTEM FIRE CLASSIFICATION: CLASS A

S-5! PVKIT 2.0 With the following roof clamps:

- S-5-U, S-5-U Mini

S-5-S , S-5-S Mini

S-5-T, S-5-T Mini

S-5-Z, S-5-Z Mini

S-5-N, S-5-N Mini
- S-5-E, S-5-E Mini

S-5-V

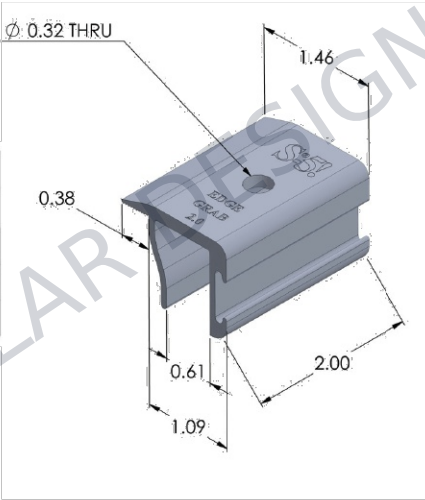
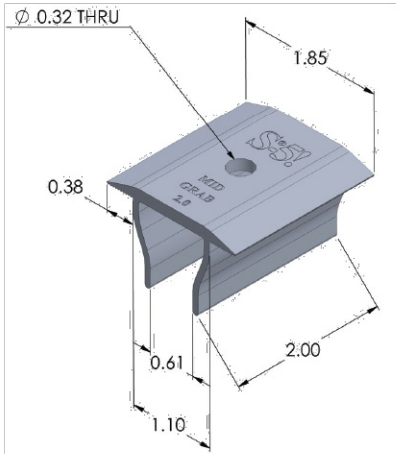
S-5-H90

S-5! PVKIT 2.0 [BLK], including S-5! EdgeGrab [Mill] with roof clamp: S-5-Z Mini [BLK]

Evaluated for use on existing non-combustible roofs. Any UL1703 Listed module with fire classification rating: Type 1 or Type 2

# 2.6 PVKIT 2.0 & BASIC CLAMP & BRACKET ENGINEERING DRAWINGS

| PV 2.0 EdgeGrab                                                    |       |      |      |      |      |      |      |     |      |     |      |      |
|--------------------------------------------------------------------|-------|------|------|------|------|------|------|-----|------|-----|------|------|
| 6000 Series Aluminum EdgeGrab for Module Edge/Perimeter Conditions |       |      |      |      |      |      |      |     |      |     |      |      |
| UNIT                                                               | A     | B    | C    | D    | E    | F    | G    | H   | I    | J   | K    | L    |
| INCH                                                               | Ø .32 | .90  | .56  | 1.00 | 2.00 | 1.00 | 1.14 | .38 | .61  | .23 | .43  | .63  |
| MM                                                                 | Ø 8.1 | 22.9 | 14.2 | 25.4 | 50.8 | 25.4 | 28.9 | 9.7 | 15.5 | 5.8 | 10.9 | 16.0 |



| PV 2.0 MidGrab                                                    |       |      |      |      |      |     |      |      |     |
|-------------------------------------------------------------------|-------|------|------|------|------|-----|------|------|-----|
| 6000 Series Aluminum MidGrab for Module Edge/Perimeter Conditions |       |      |      |      |      |     |      |      |     |
| UNIT                                                              | A     | B    | C    | D    | E    | F   | G    | H    | I   |
| INCH                                                              | Ø .32 | .92  | 2.00 | 1.00 | 1.13 | .15 | 1.85 | .61  | .38 |
| MM                                                                | Ø 8.1 | 23.4 | 50.8 | 25.4 | 28.7 | 3.8 | 47.0 | 15.5 | 9.7 |

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OFF-GRID SOLAR SYSTEM 24.61kW 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

CLASS A FIRE RATING

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-8



# 2.4 GROUNDING INFO & GROUNDING PATH FOR PVKIT 2.0

S-5! PVKIT 2.0 with the following roof clamps: S-5-U Mini, S-5-V Mini, S-5-S Mini, S-5-E Mini, S-5-T Mini, S-5-Z Mini, S-5-N Mini, S-5-U, S-5-V, S-5-S, S-5-E, S-5-T, S-5-Z, S-5-N, S-5-V, S-5-H90

UL Listed PV Modules:

**Hanwha Q CELLS**

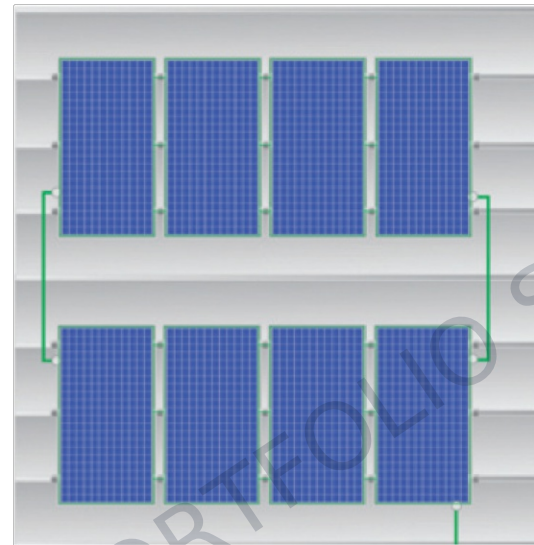
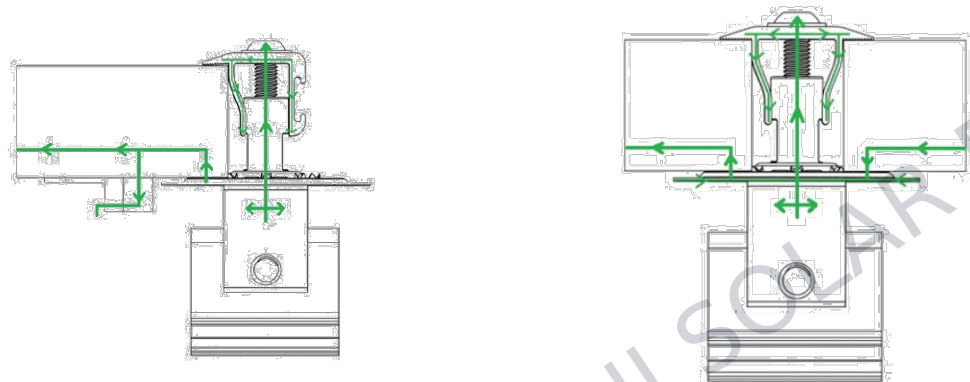
- **60 Cell Modules:** NRTL Listed PV Module - Q Cell model Q.PLUS BFR-G4.1, XXX, black frame, where XXX is 270-280.
- **72 Cell Modules:** NRTL Listed PV module - Q Cell model Q.PRO L-G4 XXX, 72 cells series, silver frame, where XXX is 310-320.
- **144 Cell Modules:** NRTL Listed PV Module- Q Cells Model Q.PEAK DUO L-G8.3 415-430 144 Cells

**Jinko Solar:**

- **60 Cell Modules:** JKMXXXPP-60, black frame where XXX is 260-345.
- **72 Cell Modules:** JKMXXXPP-72, 72 cells series, silver frame where XXX is 260-345.

The following illustrates the system ground path with the green lines:

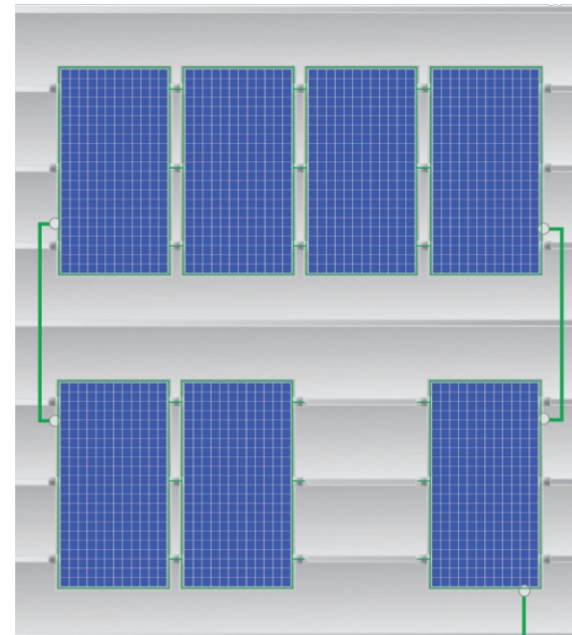
Please note the Mill Finish 3" Mounting Disc must be utilized to maintain a UL Listed assembly.



Change IMAGE  
to TORX BOLT  
& Setscrews

**Important Notes:**

1. Use QIMS UL 2703 Listed or recognized grounding lugs certified for frame thickness of the module being used and having a 15A fuse rating or less. (for example: (Burdny BTCGC4 or HEYCO S6527)
2. This ground lug must be utilized in conjunction with a ground wire to connect adjacent rows of modules. The ground lug should be secured to the PV module frame in accordance with manufacturers installation instructions.
3. In order to maintain a continuous ground path should a module be removed within a row, it is necessary to use a ground lug and ground wire at each end of the row of modules as illustrated to the right. If a ground lug and ground wire is not utilized at each end of a row of modules a temporary ground lug and ground wire must be used to connect modules at the location of the removed module.
4. The S-5-PV 3" Mounting Disc (Stainless Steel) is intended for SINGLE USE ONLY.
5. The intended ground path of black finished parts is through the Mill Finish 3" Stainless Steel Mounting Disc only. For non-separately derived systems, wire positioning must be out of reach of the black finish components.



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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |  |  |  |  |
| PHONE                      | (609) 802-5743                                  |  |  |  |  |
| PLAN DESIGNER<br>SIGNATURE |                                                 |  |  |  |  |

## GROUNDING DETAILS

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

PV-9





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Solar

## Elan Shine Bifacial PV Modules MBB P-Type PERC Half-cut

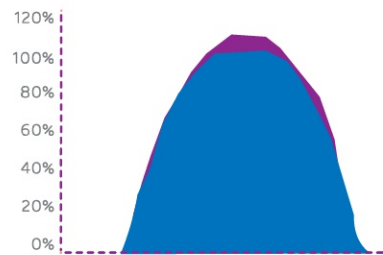
ASB-M10-144-AAA (AAA=520-545) | 144 Cells | 520-545 Wp

### Highlights

- MBB cell technology - excellent anti-microcracking performance with more balanced interior stress; grid pattern current path, lower cost
- Up to  $70 \pm 5\%$  bifaciality Factor
- Longer Product life and performance -0.45% year over year degradation with 30 years warranty on power
- Least Degradation for LID, LeTID
- Modules Made with Ga doped wafer, Smart Soldering, 10BB
- Excellent PID Resistance

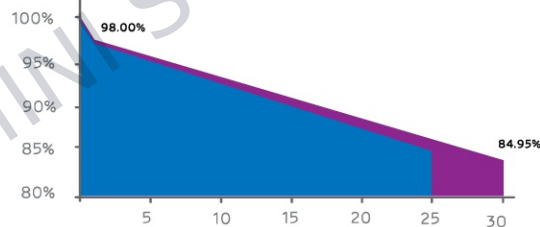
### Higher generation due to bifacial technology

Adani bifacial module Monofacial module



### Warranty based on power

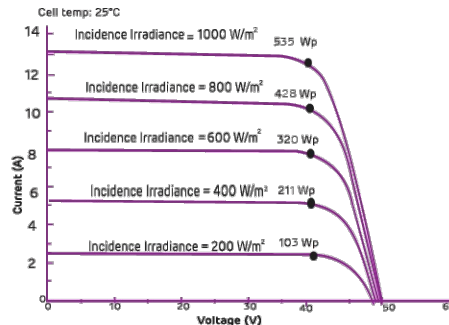
ADANI Linear warranty  
STD Linear warranty



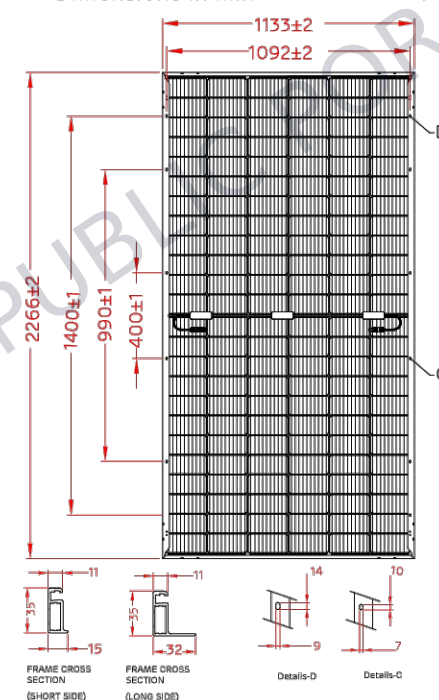
www.adanisolar.com

## Technical Data

### Multi irradiance curve Bifacial M10-144 HC cell Module



### Dimensions in mm



### Warranty and certifications

**Product warranty\*\***  
12 years of product warranty

**Performance warranty\*\***  
Power degradation < 2.0 % in first year  
< 0.45 % / year in 2-30 years

**Approvals and certificates**  
IEC 61215, IEC 61730, UL 61730, BIS, IEC 61853-1,  
IEC 62782, IEC 62716, IEC 60068-2-68, IEC 61701,  
IEC 61853-2

# CEC



# Certifications are under process

Specifications included in this datasheet are subject to change without notice.

adani  
Solar

### Electrical data – All data measured to STC\*

| Electrical Specification              | Only front (STC) |       |       |       |       |       |
|---------------------------------------|------------------|-------|-------|-------|-------|-------|
| Peak power, (0 → 4.99 Wp)<br>Pmax(Wp) | 520              | 525   | 530   | 535   | 540   | 545   |
| Maximum voltage, Vmpp (V)             | 41.18            | 41.34 | 41.49 | 41.64 | 41.80 | 41.94 |
| Maximum current, Imp (A)              | 12.65            | 12.72 | 12.79 | 12.86 | 12.93 | 13.01 |
| Open circuit voltage, Voc (V)         | 48.60            | 48.78 | 48.95 | 49.12 | 49.32 | 49.48 |
| Short circuit current, Isc (A)        | 13.41            | 13.48 | 13.55 | 13.63 | 13.71 | 13.79 |
| Module efficiency (%)                 | 20.25            | 20.44 | 20.64 | 20.83 | 21.03 | 21.22 |

\*STC: Irradiance 1000 W/m², cell temperature 25°C, Air Mass AM 1.5 according to EN 60904-3. Average efficiency reduction of 4.5 % at 200 W/m² according to EN 60904-1. Except Pmp, all other parameters have a tolerance of +/-3 %, measurement uncertainty <3 %

### Electrical Characteristics with different rear side power gain (Reference 525 Wp Front)

| Electrical Specification           | Pmax gain from rear side* |       |       |       |
|------------------------------------|---------------------------|-------|-------|-------|
| Bifaciality Gain                   | 10%                       | 15%   | 20%   | 25%   |
| Peak power, (0 → 4.99 Wp) Pmax(Wp) | 575                       | 600   | 630   | 650   |
| Maximum voltage, Vmpp (V)          | 41.35                     | 41.35 | 41.36 | 41.36 |
| Maximum current, Imp (A)           | 13.89                     | 14.50 | 15.25 | 15.75 |
| Open circuit voltage, Voc (V)      | 48.36                     | 48.36 | 48.36 | 48.36 |
| Short circuit current, Isc (A)     | 15.01                     | 15.66 | 16.47 | 17.01 |
| Module efficiency (%)              | 22.39                     | 23.37 | 24.54 | 25.32 |

\*Power gain from rear side depends upon the ground reflectance (Albedo) & Bifaciality factor.

### Temperature co-efficients (Tc) and permissible operating conditions

|                                 |                     |
|---------------------------------|---------------------|
| Tc of open circuit voltage (β)  | -0.29% /°C          |
| Tc of short circuit current (α) | 0.05% /°C           |
| Tc of power (γ)                 | -0.37% /°C          |
| Maximum system voltage          | 1500 VDC (IEC & UL) |
| NOCT                            | 45°C ± 2°C          |
| Temperature range               | -40°C to + 85°C     |

### Mechanical data

|                                   |                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------|
| Length                            | 2266 mm                                                                       |
| Width                             | 1133 mm                                                                       |
| Height                            | 35 mm                                                                         |
| Weight                            | 28.0 kg                                                                       |
| Junction box                      | IP68; Junction box, MC4 compatible                                            |
| Cable and connectors              | 300 mm length cable, MC4 compatible connectors                                |
| Application class                 | Class A (Safety class II)                                                     |
| Superstrate                       | High transmittance ARC glass-3.2mm                                            |
| Cells                             | 144 Half-cut mono-crystalline P-type PERC bifacial solar cells; Multi bus bar |
| Encapsulation                     | High volume resistivity and low MVTR                                          |
| Substrate                         | Transparent Backsheet                                                         |
| Frame                             | Anodized Frame                                                                |
| Design Mechanical Load            | 3600 Pa-downward; 1600 Pa-upward                                              |
| Safety factor for Mechanical load | 1.5                                                                           |
| Maximum series fuse rating        | 30 A                                                                          |

### Packaging Configuration

|                     |       |
|---------------------|-------|
| Container           | 40'HC |
| Pallets / Container | 20    |
| Pieces / Container  | 620   |

#### Note:

- The specifications included in this datasheet are subject to change without notice.
- The electrical data given here is for reference purpose only.
- Please confirm your exact requirements with the sales representative while placing your order.

#### \*\* Warranty:

Please read Adani solar warranty documents thoroughly.

#### \*Caution:

Please read safety and installation instructions before using the product.

OWNER-BUILDER

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PHONE: (INFO WITHHELD)

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DESIGN AND INSTALLATION OF THE PV SYSTEM  
REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                   | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE |                                                 |

### MODULE DATASHEET

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-10

1 PV MODULE DATASHEET  
PV-10 SCALE: NTS





# Quattro Inverter/Charger 120 V

3 kVA – 10 kVA    Lithium Ion battery compatible

www.victronenergy.com



Quattro  
48/5000/70-100/100



Ekran GX or Cerbo GX  
Provides intuitive system control and monitoring and enables access to our free remote monitoring website: the VRM Online Portal.



**VRM Portal**  
Our free remote monitoring website (VRM) will display all your system data in a comprehensive graphical format. System settings can be changed remotely via the portal. Alarms can be received by e-mail or push notification.



**VRM app**  
Monitor and manage your Victron Energy system from your smart phone and tablet. Available for both iOS and Android.

Two AC Inputs with integrated transfer switch

The Quattro can be connected to two independent AC sources, for example the public grid and a generator, or two generators. The Quattro will automatically connect to the active source.

Two AC Outputs

The main output has no-break functionality. The Quattro takes over the supply to the connected loads in the event of a grid failure or when shore/generator power is disconnected. This happens so fast (less than 20 milliseconds) that computers and other electronic equipment will continue to operate without disruption.

The second output is live only when AC is available on one of the inputs of the Quattro. Loads that should not discharge the battery, like a water heater for example, can be connected to this output.

Split phase and three phase capability

Two units can be configured for split phase, and three units can be configured for three phase output. But that's not all: up to 4 sets of three units can be parallel connected to provide 96W / 120kVA inverter power and more than 1600A charging capacity. For more detail please enter *parallel* in the search box on our website.

PowerControl – Dealing with limited generator, shore side or grid power

A current limit can be set on each AC input. The Quattro will then take account of other AC loads and use whatever is spare for charging, thus preventing the generator or mains supply from being overloaded.

PowerAssist – Boosting shore or generator power

This feature takes the principle of PowerControl to a further dimension allowing the Quattro to supplement the capacity of the alternative source. Where peak power is so often required only for a limited period, the Quattro will make sure that insufficient mains or generator power is immediately compensated for by power from the battery. When the load reduces, the spare power is used to recharge the battery.

Solar energy: AC power available even during a grid failure

The Quattro can be used in off grid as well as grid connected PV and other alternative energy systems. Loss of mains detection software is available.

System configuring

- In case of a stand-alone application, if settings have to be changed, this can be done in a matter of minutes with a DIP switch setting procedure.
- Parallel and three phase applications can be configured with VE.Bus Quick Configure and VE.Bus System Configurator software.
- Off grid, grid interactive and self-consumption applications, involving grid-tie inverters and/or MPPT Solar Chargers can be configured with Assistants (dedicated software for specific applications).

On-site Monitoring and control

Several options are available: Battery Monitor, Multi Control Panel, Color Control GX or other GX devices, smartphone or tablet (Bluetooth Smart), laptop or computer (USB or RS232).

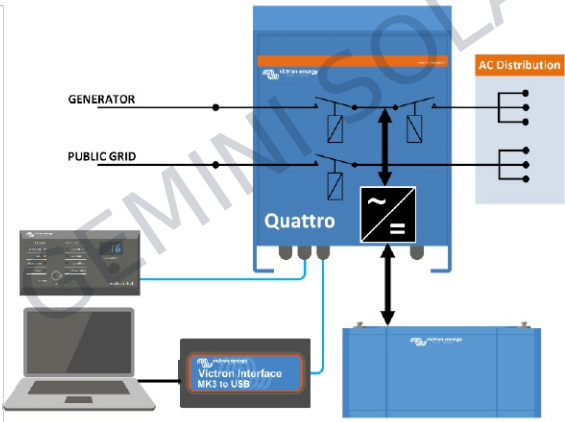
Remote Monitoring and control

Color Control GX or other GX devices.

Data can be stored and displayed on our VRM (Victron Remote Management) website, free of charge.

Remote configuring

When connected to the Ethernet, systems with a Color Control GX or other GX device can be accessed, and settings can be changed remotely.



| Quattro                                             |                                                                                                         | 48/3000/35-50/50 120V                                                                                        | 12/5000/220-100/100 120V<br>24/5000/120-100/100 120V<br>48/5000/70-100/100 120V | 48/10000/140-100/100 120V |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------|
| PowerControl / PowerAssist                          | Yes                                                                                                     |                                                                                                              |                                                                                 |                           |
| Integrated Transfer switch                          | Yes                                                                                                     |                                                                                                              |                                                                                 |                           |
| AC inputs (2x)                                      | Input voltage range: 90-140 VAC    Input frequency: 45 – 65 Hz    Power factor: 1                       |                                                                                                              |                                                                                 |                           |
| Maximum feed through current                        | 2x 50 A                                                                                                 | 2x 100 A                                                                                                     |                                                                                 | 2x 100 A                  |
| INVERTER                                            |                                                                                                         |                                                                                                              |                                                                                 |                           |
| Input voltage range                                 | 9,5 – 17 V    19 – 33V    38 – 66 V                                                                     |                                                                                                              |                                                                                 |                           |
| Output (1)                                          | Output voltage: 120 VAC ± 2 %    Frequency: 60 Hz ± 0,1 %                                               |                                                                                                              |                                                                                 |                           |
| Cont. output power at 25 °C (3)                     | 3000 VA                                                                                                 | 5000 VA                                                                                                      |                                                                                 | 10000 VA                  |
| Cont. output power at 25 °C                         | 2400 W                                                                                                  | 4000 W                                                                                                       |                                                                                 | 8000 W                    |
| Cont. output power at 40 °C                         | 2200 W                                                                                                  | 3700 W                                                                                                       |                                                                                 | 6500 W                    |
| Cont. output power at 65 °C                         | 1700 W                                                                                                  | 3000 W                                                                                                       |                                                                                 | 4500 W                    |
| Peak power                                          | 6000 W                                                                                                  | 10000 W                                                                                                      |                                                                                 | 20000 W                   |
| Maximum efficiency                                  | 94 %                                                                                                    | 94 / 94 / 95 %                                                                                               |                                                                                 | 96 %                      |
| Zero load power                                     | 25 W                                                                                                    | 30 / 30 / 35 W                                                                                               |                                                                                 | 60 W                      |
| Zero load power in AES mode                         | 20 W                                                                                                    | 20 / 25 / 30 W                                                                                               |                                                                                 | 40 W                      |
| Zero load power in Search mode                      | 12 W                                                                                                    | 10 / 10 / 15 W                                                                                               |                                                                                 | 15 W                      |
| CHARGER                                             |                                                                                                         |                                                                                                              |                                                                                 |                           |
| Charge voltage 'absorption' (V DC)                  | 57,6 V                                                                                                  | 14,4 / 28,8 / 57,6 V                                                                                         |                                                                                 | 57,6 V                    |
| Charge voltage 'float' (V DC)                       | 55,2 V                                                                                                  | 13,8 / 27,6 / 55,2 V                                                                                         |                                                                                 | 55,2 V                    |
| Storage mode (V DC)                                 | 52,8 V                                                                                                  | 13,2 / 26,4 / 52,8 V                                                                                         |                                                                                 | 52,8 V                    |
| Charge current house battery (A) (4)                | 35 A                                                                                                    | 200 / 120 / 70 A                                                                                             |                                                                                 | 140 A                     |
| Charge current starter battery (A)                  | 4 A (12 V and 24 V models only)                                                                         |                                                                                                              |                                                                                 |                           |
| Battery temperature sensor                          | Yes                                                                                                     |                                                                                                              |                                                                                 |                           |
| GENERAL                                             |                                                                                                         |                                                                                                              |                                                                                 |                           |
| Auxiliary output (5)                                | 32 A                                                                                                    | 50 A                                                                                                         |                                                                                 | 50 A                      |
| Programmable relay (6)                              | 3x                                                                                                      |                                                                                                              |                                                                                 |                           |
| Protection (2)                                      | a-g                                                                                                     |                                                                                                              |                                                                                 |                           |
| VE.Bus communication port                           | For parallel, split phase and three phase operation, remote monitoring and system integration           |                                                                                                              |                                                                                 |                           |
| General purpose com. port                           | 2x                                                                                                      |                                                                                                              |                                                                                 |                           |
| Remote on-off                                       | Yes                                                                                                     |                                                                                                              |                                                                                 |                           |
| Common Characteristics                              | Operating temp.: -40 to +65 °C    Humidity (non-condensing): max. 95 %                                  |                                                                                                              |                                                                                 |                           |
| ENCLOSURE                                           |                                                                                                         |                                                                                                              |                                                                                 |                           |
| Common Characteristics                              | Material & Colour: aluminium (blue RAL 5012)    Protection category: IP 21                              |                                                                                                              |                                                                                 |                           |
| Battery-connection                                  | Four M8 bolts (2 plus and 2 minus connections)                                                          |                                                                                                              |                                                                                 |                           |
| 120 V AC-connection                                 | Screw terminals 13 mm² (6 AWG)                                                                          | Bolts M6                                                                                                     |                                                                                 | Bolts M6                  |
| Weight (kg)                                         | 42 lb    19 kg                                                                                          | 75 / 66 / 66 lb    34 / 30 / 30 kg                                                                           |                                                                                 | 128 lb    58 kg           |
| Dimensions (hwxwd)                                  | 14,3 x 10,2 x 8,6 inch                                                                                  | 18,5 x 14,0 x 11,2 inch                                                                                      |                                                                                 | 22,6 x 19,2 x 13,6 inch   |
|                                                     | 362 x 258 x 218 mm                                                                                      | 17,5 x 13,0 x 9,6 inch                                                                                       |                                                                                 | 572 x 488 x 344 mm        |
|                                                     |                                                                                                         | 17,5 x 13,0 x 9,6 inch                                                                                       |                                                                                 | 444 x 328 x 240 mm        |
| STANDARDS                                           |                                                                                                         |                                                                                                              |                                                                                 |                           |
| Safety                                              | EN-IEC 60335-1, EN-IEC 60335-2-29, EN-IEC 62109-1, UL 1741 (only for 48V 5kVA and 10kVA)                |                                                                                                              |                                                                                 |                           |
| Emission, Immunity                                  | EN 55014-1, EN 55014-2, EN-IEC 61000-3-2, EN-IEC 61000-3-3, IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-3 |                                                                                                              |                                                                                 |                           |
| Road vehicles                                       | 12 V and 24 V models: ECE R10-5                                                                         |                                                                                                              |                                                                                 |                           |
| Anti-islanding                                      | See our website                                                                                         |                                                                                                              |                                                                                 |                           |
| 1) Can be adjusted to 60 Hz; 120 V 60 Hz on request |                                                                                                         | 3) Non-linear load, crest factor 3:1                                                                         |                                                                                 |                           |
| 2) Protection key:                                  |                                                                                                         | 4) Up to 25 °C ambient                                                                                       |                                                                                 |                           |
| a) output short circuit                             |                                                                                                         | 5) Switches off when no external AC source available                                                         |                                                                                 |                           |
| b) overload                                         |                                                                                                         | 6) Programmable relay that can a.o. be set for general alarm, DC under voltage or genset start/stop function |                                                                                 |                           |
| c) battery voltage too high                         |                                                                                                         | AC rating: 230 V / 4 A                                                                                       |                                                                                 |                           |
| d) battery voltage too low                          |                                                                                                         | DC rating: 4 A up to 35 VDC, 1 A up to 60 VDC                                                                |                                                                                 |                           |
| e) temperature too high                             |                                                                                                         |                                                                                                              |                                                                                 |                           |
| f) 120 VAC on inverter output                       |                                                                                                         |                                                                                                              |                                                                                 |                           |
| g) input voltage ripple too high                    |                                                                                                         |                                                                                                              |                                                                                 |                           |



**Digital Multi Control Panel**  
A convenient and low-cost solution for monitoring and control. With an on/off charger-only switch, full LED readout and a rotary knob to set PowerControl and PowerAssist levels.



**VE.Bus Smart Dongle**  
For monitoring and control via Bluetooth together with the VictronConnect app. It also measures battery voltage and temperature.



**Interface MK3-USB**  
Needed to configure the MultiPlus. Can be used with the VictronConnect app or VEConfigure software. The interface connects to the MultiPlus via an RJ45 UTP cable and plugs into a USB port.



**VictronConnect app**  
Use to monitor or configure the MultiPlus using your phone tablet or PC.



**Battery Monitor**  
To monitor battery state of charge via Bluetooth or the VRM portal. The BMV 712 Smart has display, while the SmartShunt does not have a display. Both communicate via Bluetooth and have a VEDirect communication port.

OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (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 24.61kW 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<br>FRESHWATER, CA 95503                                       |
| PHONE                   | (609) 802-5743                                                                        |
| PLAN DESIGNER SIGNATURE |  |

INVERTER DATASHEET

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

PV-11A



AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant: Victron Energy BV

Address: De Paal 35,  
1351 JG, Almere

Country: Netherlands

Party Authorized To Apply Mark: Same as Manufacturer  
Report Issuing Office: Intertek Testing Services NA, Inc., Cortland, NY

Control Number: 5029156 Authorized by:   
for L. Matthew Snyder, Certification Manager



This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark 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 Authorization to Mark. Only the Client is authorized to permit copying or distribution of this Authorization to Mark 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 Authorization to Mark. 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 Fax 312-283-1672

|              |                                                                                                                                       |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Standard(s): | Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3] |
|              | Power Conversion Equipment (R2021) [CSA C22.2#107.1:2016 Ed.4]                                                                        |
| Product:     | Inverter                                                                                                                              |
| Models:      | Quattro 48/10000/140-100/100 120V VE.Bus, Quattro 48/5000/70-100/100 120V VE.Bus                                                      |

|                                                                                                                                                                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| OWNER-BUILDER                                                                                                                                                                                                                       |                                                                                       |
| NAME: (INFO WITHHELD)                                                                                                                                                                                                               |                                                                                       |
| PHONE: (INFO WITHHELD)                                                                                                                                                                                                              |                                                                                       |
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|                                                                                                                                                                                                                                     |                                                                                       |
| OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503                                       |
| PHONE                                                                                                                                                                                                                               | (609) 802-5743                                                                        |
| PLAN DESIGNER SIGNATURE                                                                                                                                                                                                             |  |
| INVERTER UL CERT.                                                                                                                                                                                                                   |                                                                                       |
| PROJECT NO: GSD-20251002-SCM                                                                                                                                                                                                        |                                                                                       |
| DRAWN BY: SCM                                                                                                                                                                                                                       |                                                                                       |
| DATE: 10/2/2025                                                                                                                                                                                                                     |                                                                                       |





SmartSolar Charge Controllers with VE.Can interface  
MPPT 250/70 VE.Can up to MPPT 250/100 VE.Can



SmartSolar Charge Controller  
MPPT 250/100-Tr VE.Can  
with optional pluggable display



SmartSolar Charge Controller  
MPPT 250/100-Tr VE.Can  
without display



Bluetooth sensing:  
Smart Battery Sense



Bluetooth sensing:  
BMV-712 Smart Battery Monitor



Bluetooth sensing: SmartShunt



SmartSolar pluggable display



**Ultra-fast Maximum Power Point Tracking (MPPT)**  
Especially in case of a clouded sky, when light intensity is changing continuously, an ultra-fast MPPT controller will improve energy harvest by up to 30 % compared to PWM charge controllers and by up to 10 % compared to slower MPPT controllers.

**Advanced Maximum Power Point Detection in case of partial shading conditions**  
If partial shading occurs, two or more maximum power (MPP) points may be present on the power-voltage curve. Conventional MPPTs tend to lock to a local MPP, which may not be the optimum MPP. The innovative SmartSolar algorithm will always maximize energy harvest by locking to the optimum MPP.

**Outstanding conversion efficiency**  
No cooling fan. Maximum efficiency exceeds 99 %.

**Flexible charge algorithm**  
Fully programmable charge algorithm, and eight pre-programmed algorithms, selectable with a rotary switch (see manual for details).

**Extensive electronic protection**  
Over-temperature protection and power derating when temperature is high.  
PV short circuit and PV reverse polarity protection.  
PV reverse current protection.

**Bluetooth Smart built-in**  
The wireless solution to set-up, monitor, update and synchronise SmartSolar Charge Controllers.

**Internal temperature sensor and optional external battery voltage, temperature and current sensing via Bluetooth**  
A Smart Battery Sense, a BMV-712 Smart Battery Monitor or a SmartShunt can be used to communicate battery voltage and temperature (and current, in case of a BMV 712 or a SmartShunt) to one or more SmartSolar Charge Controllers.

**VE.Direct or VE.Can**  
For a wired data connection to a Color Control GX, other GX products, PC or other devices.

**Synchronized parallel charging with VE.Can or Bluetooth**  
Up to 25 units can be synchronized with VE.Can, and up to 10 units with Bluetooth.

**Fully discharged battery recovery function**  
Will initiate charging even if the battery has been discharged to zero volts.  
Will reconnect to a fully discharged Li-ion battery with integrated disconnect function.

**VE.Can: the multiple controller solution**  
Up to 25 units can be synchronised with VE.Can.

**Remote on-off**  
To connect for example to a VE.BUS BMS.

**Programmable relay**  
Can be programmed to trip on an alarm, or other events.

**Optional: SmartSolar pluggable LCD display**  
Simply remove the rubber seal that protects the plug on the front of the controller, and plug-in the display.

| SmartSolar Charge Controller with VE.Can interface                                                                                                                                                                                                                                                                                                                                                                                                                                             | 250/70                                                                                                         | 250/85                                                                                         | 250/100 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------|
| Battery voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 12/24/48 V Auto Select (36 V: manual)                                                                          |                                                                                                |         |
| Rated charge current                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 70 A                                                                                                           | 85 A                                                                                           | 100 A   |
| Nominal PV power, 12 V 1a,b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1000 W                                                                                                         | 1200 W                                                                                         | 1450 W  |
| Nominal PV power, 24 V 1a,b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2000 W                                                                                                         | 2400 W                                                                                         | 2900 W  |
| Nominal PV power, 36 V 1a,b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3000 W                                                                                                         | 3600 W                                                                                         | 4350 W  |
| Nominal PV power, 48 V 1a,b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4000 W                                                                                                         | 4900 W                                                                                         | 5800 W  |
| Max. PV short circuit current 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 35 A (max 30 A per MC4 conn.)                                                                                  | 70 A (max 30 A per MC4 conn.)                                                                  |         |
| Maximum PV open circuit voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 250 V absolute maximum coldest conditions                                                                      |                                                                                                |         |
| Maximum efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 245 V start-up and operating maximum                                                                           |                                                                                                |         |
| Self-consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 99 %                                                                                                           |                                                                                                |         |
| Charge voltage 'absorption'                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Less than 35 mA @ 12 V / 20 mA @ 48 V                                                                          |                                                                                                |         |
| Charge voltage 'float'                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Default setting: 14,4 / 28,8 / 43,2 / 57,6 V (adjustable with: rotary switch, display, VE.Direct or Bluetooth) |                                                                                                |         |
| Charge voltage 'equalization'                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Default setting: 13,8 / 27,6 / 41,4 / 55,2 V (adjustable: rotary switch, display, VE.Direct or Bluetooth)      |                                                                                                |         |
| Charge algorithm                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Default setting: 16,2 V / 32,4 V / 48,6 V / 64,8 V (adjustable)                                                |                                                                                                |         |
| Temperature compensation                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | multi-stage adaptive (eight pre-programmed algorithms) or user defined algorithm                               |                                                                                                |         |
| Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | -16 mV / -32 mV / -64 mV / °C                                                                                  |                                                                                                |         |
| Operating temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PV reverse polarity / Output short circuit / Over temperature                                                  |                                                                                                |         |
| Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -30 to +60 °C (full rated output up to 40 °C)                                                                  |                                                                                                |         |
| Maximum altitude                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 95 %, non-condensing                                                                                           |                                                                                                |         |
| Environmental condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5000 m (full rated output up to 2000 m)                                                                        |                                                                                                |         |
| Pollution degree                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Indoor, unconditioned                                                                                          |                                                                                                |         |
| Data communication                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PD3                                                                                                            |                                                                                                |         |
| Remote on/off                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | VE.Can, VE.Direct and Bluetooth                                                                                |                                                                                                |         |
| Programmable relay                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Yes (2 pole connector)                                                                                         |                                                                                                |         |
| Parallel operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | DPST AC rating: 240 VAC / 4 A DC rating: 4 A up to 35 VDC, 1 A up to 60 VDC                                    |                                                                                                |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Yes, parallel synchronised operation with VE.Can (max. 25 units) or Bluetooth (max. 10 units)                  |                                                                                                |         |
| ENCLOSURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                |                                                                                                |         |
| Colour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Blue (RAL 5012)                                                                                                |                                                                                                |         |
| PV terminals 3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 35 mm <sup>2</sup> / AWG2 (Tr models<br>Two pairs of MC4 connectors (MC4 models)                               | 35 mm <sup>2</sup> / AWG2 (Tr models)<br><del>Three pairs of MC4 connectors (MC4 models)</del> |         |
| Battery terminals                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 35mm <sup>2</sup> / AWG2                                                                                       |                                                                                                |         |
| Protection category                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IP43 (electronic components), IP22 (connection area)                                                           |                                                                                                |         |
| Weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3 kg                                                                                                           | 4,5 kg                                                                                         |         |
| Dimensions (h x w x d) in mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Tr models: 185 x 250 x 95 mm<br>MC4 models: 215 x 250 x 95 mm                                                  | Tr models: 216 x 295 x 103<br><del>MC4 models: 216 x 295 x 103</del>                           |         |
| STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                |                                                                                                |         |
| Safety                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | EN/IEC 62109-1, UL 1741, CSA C22.2                                                                             |                                                                                                |         |
| STORED TRENDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                |                                                                                                |         |
| Data stored                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Battery voltage, current and temperature, as well as load output current, PV voltage and PV current.           |                                                                                                |         |
| Number of days trends data is stored                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 46                                                                                                             |                                                                                                |         |
| 1a) If more PV power is connected, the controller will limit input power.<br>1b) The PV voltage must exceed Vbat + 5 V for the controller to start. Thereafter the minimum PV voltage is Vbat + 1 V.<br>2) A PV array with a higher short circuit current may damage the controller.<br>3) MC4 models: several splitter pairs may be needed to parallel the strings of solar panels<br>Maximum current per MC4 connector: 30 A (the MC4 connectors are parallel connected to one MPPT tracker) |                                                                                                                |                                                                                                |         |



With VE.Can up to 25 Charge Controllers can be daisy-chained and connected to a Color Control GX or other GX device  
Each Controller can be monitored individually, for example on a Color Control GX and on the VRM website

|                                                                                                                                                                                                                                     |                                   |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------|
| OWNER-BUILDER                                                                                                                                                                                                                       |                                   |                                                                                       |
| NAME: (INFO WITHHELD)                                                                                                                                                                                                               |                                   |                                                                                       |
| PHONE: (INFO WITHHELD)                                                                                                                                                                                                              |                                   |                                                                                       |
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| OFF-GRID SOLAR SYSTEM 24.61kW DC<br>WITH DC-COUPLED BATTERY STORAGE<br>(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<br>FRESHWATER, CA 95503                                       |
|                                                                                                                                                                                                                                     | PHONE                             | (609) 802-5743                                                                        |
|                                                                                                                                                                                                                                     | SIGNATURE                         |  |
| CHARGE CONTROLLER                                                                                                                                                                                                                   |                                   |                                                                                       |
| PROJECT NO: GSD-20251002-SCM                                                                                                                                                                                                        |                                   |                                                                                       |
| DRAWN BY: SCM                                                                                                                                                                                                                       |                                   |                                                                                       |
| DATE: 10/2/2025                                                                                                                                                                                                                     |                                   |                                                                                       |
| PV-12                                                                                                                                                                                                                               |                                   |                                                                                       |

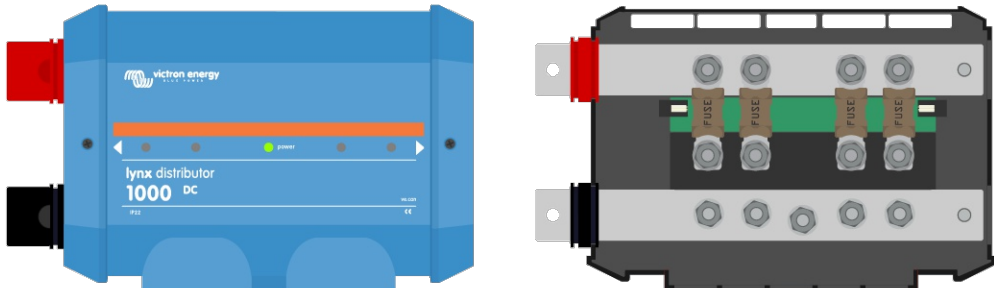
2. Introduction

2.1. The Lynx Distributor

The Lynx Distributor contains a positive and a negative busbar. The positive busbar has four fuse-protected connections with fuse monitoring. The negative busbar has four connections and a ground connection. It is part of the Lynx Distribution system and is available in two versions, with M8 or M10 busbar. Note that M10 refers to the busbar connection joints where the modules are connected to each other. The fuse and cable connections are always M8.

The Lynx Distributor has a power LED and four fuse status indication LEDs.

If connected to a Lynx Smart BMS, up to 4 Lynx Distributors can send fuse status information to the Lynx Smart BMS. This feature is not available when connected to a Lynx Shunt VE.Can.



The Lynx Distributor - with and without cover

The Lynx Distributor ships together with a 40cm RJ10 cable. This cable provides power to the Lynx Distributor and is also used to transmit data if connected to a Lynx Smart BMS.



The RJ10 cable

The Lynx Distributor is designed to hold MEGA fuses. These need to be purchased separately.

For more information, see the [Fuses & fuse holders product page](#).



A selection of MEGA fuses with a variety of current ratings

2.2. VictronConnect App

If the Lynx Distributor is connected to a Lynx Smart BMS, it can be monitored and set up with the VictronConnect App.

For more information, see the [VictronConnect App download page](#) and the [VictronConnect manual](#).

10. Technical specifications Lynx Distributor

| Power                                                                   |                                           |
|-------------------------------------------------------------------------|-------------------------------------------|
| Voltage range                                                           | 9 - 60Vdc                                 |
| Supported system voltages                                               | 12, 24 or 48V                             |
| Reverse polarity protection                                             | Yes <sup>(1)</sup>                        |
| Current rating                                                          | 1000Adc continuous                        |
| Power consumption <sup>(2)</sup>                                        | Maximum 100mA (with all LEDs illuminated) |
| (1) The RJ10 cable connection is not protected against reverse polarity |                                           |
| (2) Powered from Lynx Shunt VE.Can or Lynx Smart BMS                    |                                           |

| Connections                                          |                             |
|------------------------------------------------------|-----------------------------|
| Busbar                                               | M8 or M10                   |
| Fuses                                                | M8                          |
| Power <sup>(3)</sup> and data <sup>(4)</sup>         | 40 cm RJ10 cable (included) |
| (3) Powered from Lynx Shunt VE.Can or Lynx Smart BMS |                             |
| (4) Data can only be received by a Lynx Smart BMS    |                             |

| Physical                         |                   |
|----------------------------------|-------------------|
| Enclosure material               | ABS               |
| Enclosure dimensions (h x l x w) | 290 x 170 x 80 mm |
| Unit weight                      | 2.2 kg            |
| Busbar material                  | Tinned copper     |
| Busbar material (h x w)          | 8 x 30mm          |

| Environmental               |                           |
|-----------------------------|---------------------------|
| Operating temperature range | -40°C to +60°             |
| Storage temperature range   | -40°C to +60°             |
| Humidity                    | Max. 95% (non-condensing) |
| Protection class            | IP22                      |

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OFF-GRID SOLAR SYSTEM 24.61kW DC  
WITH DC-COUPLED BATTERY STORAGE  
(WHOLE-HOME BACKUP APPLICATION)

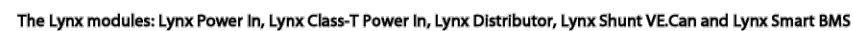
(INFO WITHHELD FOR PUBLIC SAMPLE)

PLAN DESIGNER INFORMATION

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

LYNX DISTRIBUTOR





- **Lynx Power In (M8, M10)** - A positive and negative busbar with 4 connections for batteries or DC equipment.
- **Lynx Class-T Power In (M10)** - A positive and negative busbar that connects and fuses up to two strings of lithium batteries using Class-T fuses (available in 225 A, 250 A, 350 A, and 400 A; must be purchased separately).
- **Lynx Distributor (M8, M10)** - A positive and negative busbar with 4 fused connections for batteries or DC equipment together with fuse monitoring.
- **Lynx Shunt VE.Can (M8, M10)** - A positive busbar with a space for a main system fuse and a negative busbar with a shunt for battery monitoring. It has VE.Can communication for monitoring and setup with a GX device.
- **Lynx Smart BMS 500 and 1000 (M8 – 1000A model only in M10)** - For use together with Victron Energy Smart Lithium batteries. It contains a positive busbar with a contactor that is driven by a battery management system (BMS) and a negative busbar with a shunt for battery monitoring. It has Bluetooth communication for monitoring and setup via the VictronConnect App and VE.Can communication for monitoring with a GX device and the VRM portal.
- **Lynx Smart BMS 500 and 1000 NG (M10)\*** - For use together with Victron Energy Lithium NG batteries. It contains a positive busbar with a contactor that is driven by a battery management system (BMS) and a negative busbar with a shunt for battery monitoring. It has Bluetooth communication for monitoring and setup via the VictronConnect App and VE.Can communication for monitoring with a GX device and the VRM portal.



System with Lynx Shunt VE.Can, lead acid batteries, a Lynx Shunt VE.Can and a Lynx Distributor





Cerbo GX

**Cerbo GX: communication-centre**

This communication-centre allows you to always have perfect control over your system from wherever you are and to maximise its performance. Simply access your system via our Victron Remote Management (VRM) portal, or access it directly, using the optional GX Touch screen, a Multi-Functional Display (MFD) or our VictronConnect app thanks to its Bluetooth capability.

**GX Touch: display accessory**

The GX Touch 50 and GX Touch 70 are display accessories for the Cerbo GX. The five inch and seven inch touch screen displays give an instant overview of your system and allows you to adjust settings. Simply connect the display to the Cerbo GX with just one cable. Both GX Touch displays have a waterproof design, a top-mountable setup and are simple to install.

**Remote Console on VRM**

Monitor, control and configure the Cerbo GX remotely, over the internet. Just like if you were standing in front of the device, using Remote Console. The same functionality is also available on the local network LAN, or using the WiFi Access Point of the Cerbo GX.

**Perfect monitoring & control**

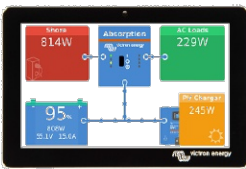
Instantly monitor the battery state of charge, power consumption, power harvest from PV, generator, and mains, or check tank levels and temperature measurements. Easily control the shore power input current limit, (auto)start/stop generator(s) or change any setting to optimise the system. Follow up on alerts, perform diagnostic checks and resolve complications remotely.

**Simple mounting and configuration**

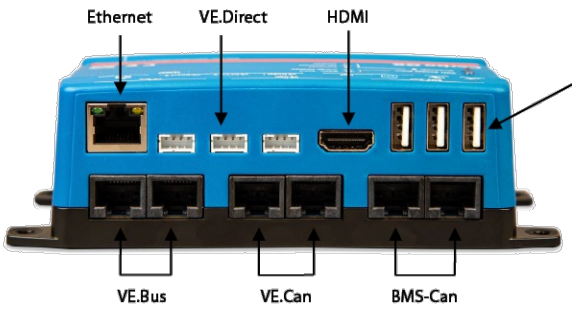
The Cerbo GX is easily mountable and can also be mounted on a DIN-Rail using the DIN35 adapter small, (not included). Its separate touchscreen can be bolted on a dashboard, eliminating the need to create perfect cut-outs (like with the Color Control GX). Connection is easy via just one cable, taking away the hassle of having to bring many wires to the dashboard. The Bluetooth feature enables a quick connection and configuration via our VictronConnect app.



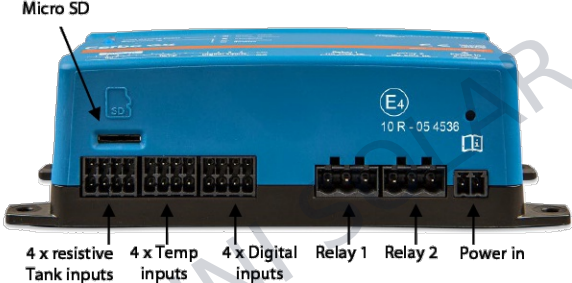
Accessories included with the Cerbo GX



GX Touch (optional display for Cerbo GX)



3 USB ports the USB socket closest to the HDMI connector can only be used to power a GX Touch



**WiFi indicator LED**

The Cerbo GX can connect to a WiFi Network

**Bluetooth indicator LED**

The Cerbo GX can be accessed directly via Bluetooth using the VictronConnect app



Accessories included with the GX Touch

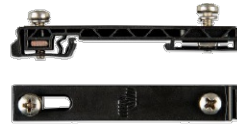
**Optional accessories**



**GX Touch adapter for CCGX cut-out**  
This adapter is designed to easily replace the CCGX display with the newer GX Touch 50 or the GX Touch 70. Contents of the packaging are the metal bracket, the plastic bezel, and four mounting screws.



Temperature sensor for Quattro, MultiPlus and GX Device (such as the Cerbo GX)



DIN35 adapter small  
DIN-Rail adapter to easily mount a device on a DIN-Rail. Suitable for the Cerbo GX.

|                                   | Cerbo GX                                                                         | Cerbo-S GX |
|-----------------------------------|----------------------------------------------------------------------------------|------------|
| Supply voltage                    | 8 – 70V DC                                                                       |            |
| Mounting                          | Wall or DIN rail (35mm) <sup>2)</sup>                                            |            |
|                                   | Communication ports                                                              |            |
| VE.Direct ports (always isolated) | 3 <sup>3)</sup>                                                                  |            |
| VE.Bus (always isolated)          | 2 paralleled RJ45 sockets                                                        |            |
| VE.Can                            | yes - non isolated                                                               |            |
| BMS-Can port                      | yes                                                                              | No         |
|                                   | IO                                                                               |            |
| Resistive tank level inputs       | 4                                                                                | 0          |
| Temperature sense inputs          | 4                                                                                | 0          |
| Digital Inputs                    | 4                                                                                | 4          |
|                                   | Other                                                                            |            |
| Outer dimensions (h x w x d)      | 78 x 154 x 48 mm                                                                 |            |
| Operating temperature range       | -20 to +50°C                                                                     |            |
|                                   | Standards                                                                        |            |
| Safety                            | IEC 62368-1                                                                      |            |
| EMC                               | EN 301489-1, EN 301489-17                                                        |            |
| Automotive                        | ECE R10-6                                                                        |            |
| GX Touch 50                       | GX Touch 70                                                                      |            |
| Mounting                          | With included mounting accessories                                               |            |
| Display Resolution                | <del>GX Touch 50: 800 x 480</del><br>→ GX Touch 70: 1024 x 600                   |            |
|                                   | Other                                                                            |            |
| Outer dimensions (h x w x d)      | <del>GX Touch 50: 97 x 120 x 12.4 mm</del><br>→ GX Touch 70: 113 x 176 x 13.5 mm |            |
| Cable length                      | 2 meter                                                                          |            |

- Notes**
- For more detailed information about the Cerbo GX and the GX Touch, please visit the Victron GX product range page at Victron live: [www.victronenergy.com/live/venus-os/start](http://www.victronenergy.com/live/venus-os/start)
  - DIN rail mounting requires additional accessory - DIN35 Adapter.
  - The listed maximum on the 'Performance' section in above table is the total connected VE.Direct devices such as MPPT Solar Charge controllers. Total means all directly connected devices plus the devices connected over USB. The limit is mostly bound by CPU processing power. Note that there is also a limit to the other type of devices of which often multiple are connected: PV Inverters. Up to three or four three phase inverters can typically be monitored on a CCGX. Higher power CPU devices can monitor more.





EG4® LL-S 48V 100AH  
SERVER RACK BATTERY



The performance and longevity of our EG4® batteries are second to none! Get peace of mind knowing our batteries are designed to last for more than 7,000 deep charge and discharge cycles and have a life cycle of more than 15 years with an 80% depth of discharge daily!

SUPPORTED  
E-STOP  
FUNCTIONALITY

\*10-YEAR  
WARRANTY

UL 1973 LISTED  
ETL CONFORMS  
TO UL 9540A

7,000 DEEP-CYCLE CELLS  
Charge and discharge with confidence thanks to our long-life batteries.

\*10 YEAR WARRANTY  
Have peace of mind knowing we will be there to take care of you should something go wrong!

SELECTABLE CLOSED LOOP COMMUNICATIONS  
Compatible with EG4, Schneider, Sol-Ark, Victron, Growatt, Megarevo, Luxpower, and Deye inverters.

ENHANCED SAFETY FEATURES  
E-Stop functionality offers fail-safe operation in potentially high-risk environments. Dual On-Board fire arrestors allow for added peace of mind during operations.

PARALLEL UP TO 64 BATTERIES  
For maximum power, our 6 DIP switch option allows you to have 327.7 kWh while preserving BMS communications.

\*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.



SPECIFICATION SHEET

| MODULE OPERATING PARAMETERS          |                                          |                             |                                                      |
|--------------------------------------|------------------------------------------|-----------------------------|------------------------------------------------------|
| PARAMETER                            | BMS                                      | RECOMMENDED SETTING         |                                                      |
| VOLTAGE                              | 51.2V                                    | NA                          |                                                      |
| CAPACITY                             | 100Ah                                    | NA                          |                                                      |
| CHARGING VOLTAGE (BULK/ABSORB)       | 56.8V                                    | 56.2V (+/-0.2V)             |                                                      |
| FLOAT                                | NA                                       | 54V (+/-0.2V)               |                                                      |
| SOC CUTOFF                           | -                                        | 20%*                        |                                                      |
| CHARGING CURRENT                     | 100A (Max. continuous)                   | 50A                         |                                                      |
| DISCHARGING CURRENT                  | 100A (Max. continuous)                   | 50A                         |                                                      |
| ENVIRONMENTAL PARAMETERS             |                                          |                             |                                                      |
| CHARGING RANGE                       |                                          | 32°F – 122°F (0°C – 50°C)   |                                                      |
| DISCHARGING RANGE                    |                                          | -4°F – 131°F (-20°C – 55°C) |                                                      |
| STORAGE RANGE                        |                                          | 32°F – 113°F (0°C – 45°C)   |                                                      |
| OPERATING ALTITUDE                   |                                          | <16404 ft. (<5000 m)        |                                                      |
| INGRESS PROTECTION                   |                                          | IP20                        |                                                      |
| BMS PARAMETERS                       |                                          |                             |                                                      |
| CHARGE                               | SPEC                                     | DELAY                       | RECOVERY                                             |
| CELL VOLTAGE PROTECTION              | 3.8V                                     | 1s                          | 3.45V                                                |
| MODULE VOLTAGE PROTECTION            | 60.0V                                    | 1s                          | 55.2V                                                |
| OVER CHARGING CURRENT 1              | >102A                                    | 10s                         | -                                                    |
| OVER CHARGING CURRENT 2              | ≥120A                                    | 3s                          | -                                                    |
| TEMPERATURE PROTECTION               | <23°F or >158°F<br><-5°C or >70°C        | 1s                          | <32°F or >140°F<br><0°C or >60°C                     |
| DISCHARGE                            |                                          |                             |                                                      |
| CELL VOLTAGE PROTECTION              | 2.3V                                     | 1s                          | 3.1V                                                 |
| MODULE VOLTAGE PROTECTION            | 44.8V                                    | 1s                          | 48.0V                                                |
| OVER DISCHARGING CURRENT 1           | >102A                                    | 10s                         | 60s                                                  |
| OVER DISCHARGING CURRENT 2           | >150A                                    | 3s                          | 60s                                                  |
| SHORT-CIRCUIT                        | >300A                                    | <0.1mS                      | -                                                    |
| TEMPERATURE PROTECTION               | <-4°F or >167°F<br><-20°C or >75°C       | 1s                          | >14°F or <149°F<br>>-10°C or <65°C                   |
| PCB TEMP PROTECTION                  | >230°F (>110°C)                          | 1s                          | <176°F (<80°C)                                       |
| GENERAL SPECIFICATIONS               |                                          |                             |                                                      |
| PARAMETER                            | SPEC                                     |                             | CONDITION                                            |
| CELL BALANCE                         | 120mA                                    | Passive Balance             | Cell Voltage Difference >40mV                        |
| TEMPERATURE ACCURACY                 | 3%                                       | Cycle Measurement           | Measuring Range:<br>-40°F – 212°F<br>(-40°C – 100°C) |
| VOLTAGE ACCURACY                     | 0.5%                                     | Cycle Measurement           | For Cells/Module                                     |
| CURRENT ACCURACY                     | 3%                                       | Cycle Measurement           | Measurement Range:<br>+/-200A                        |
| SOC                                  | 5%                                       | -                           | Integral Calculation                                 |
| POWER CONSUMPTION (SLEEP & OFF MODE) | <300uA                                   | -                           | Storage/Transport/<br>Standby                        |
| POWER CONSUMPTION (OPERATING)        | <25mA                                    | -                           | Charging/Discharging                                 |
| COMMUNICATION PORTS                  | RS485/CAN                                |                             | Customizable                                         |
| MAXIMUM UNITS IN SERIES              |                                          |                             | 1                                                    |
| MAXIMUM UNITS IN PARALLEL            |                                          |                             | 64                                                   |
| E-STOP FUNCTION                      |                                          |                             | Yes                                                  |
| DIMENSION (H×W×D)                    | 6.1in×17.4in×19.3in (15.5cm×44.2cm×49cm) |                             |                                                      |
| WEIGHT                               | 99.6 lbs. (45.2 kg)                      |                             |                                                      |
| STANDARDS AND CERTIFICATIONS         |                                          |                             |                                                      |
| UL1973, UL9540A                      |                                          |                             |                                                      |

\*EG4 recommends this value be set no lower than 20% to maintain the recommended 80% depth of discharge.

OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |  |  |  |
| PHONE                     | (609) 802-5743                                  |  |  |  |
| PLAN DESIGNER SIGNATURE   |                                                 |  |  |  |

BATTERY MODULE

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

PV-17A



# 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: Jordan Holbert  
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): | Energy Storage Systems and Equipment [ANSI/CAN/UL 9540:2023 Ed.3]                                                                                                                                                                                                   |
| Product:     | Energy Storage Systems                                                                                                                                                                                                                                              |
| Brand Name:  |                                                                                                                                                                                                                                                                     |
| Models:      | PP-100A13-18K1-LL, PP-100A14-18K1-LL, PP-100A15-18K1-LL, PP-100A16-18K1-LL, PP-100A26-18K2-LL, PP-100A27-18K2-LL, PP-100A28-18K2-LL, PP-100A29-18K2-LL, PP-100A210-18K2-LL, PP100A211-18K2-LL, PP-100A212-18K2-LL, PP-100A27-18K3-LL, PP-100A28-18K3-LL, PP-100A29- |

# CERTIFICATE OF COMPLIANCE



18K3-LL, PP-100A210-18K3-LL, PP-100A211-18K3-LL, PP-100A212-18K3-LL

OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                   | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE |                                                 |

### BATTERY UL CERT.

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

# PV-17B

EG4® WELDED 3-SLOT  
INDOOR CABINET

QUICK-START GUIDE



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VERSION 1.0.4 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.  
MODEL #: BC-3-WD-IN-00



EG4 ELECTRONICS

1. TECHNICAL SPECIFICATIONS

PHYSICAL SPECIFICATIONS

|                                      |                                                     |
|--------------------------------------|-----------------------------------------------------|
| CABINET DIMENSIONS (W×D×H)           | 23.6×26.8×26.5 in. (600×680×673.1 mm)               |
| DIMENSIONS WITH CASTERS (W×D×H)      | 23.6×26.8×29.6 in. (600×680×751.8 mm)               |
| WEIGHT                               | 100 lbs. (45.4 kg)                                  |
| TOP CABLE ENTRY/EXIT KNOCKOUTS       | 1.6 in. (40.6 mm)                                   |
| SIDE CABLE ENTRY/EXIT KNOCKOUTS      | 2.5 in. (63.5 mm)                                   |
| CABLE GLAND SIZE                     | 3/4 in.                                             |
| MAX. NUMBER OF BATTERIES             | 3 EG4® Server Rack Style                            |
| BATTERY CONNECTION BOLTS (IN BUSBAR) | M6-1.0x15 with a 10mm hex head (and Phillips head)  |
| SYSTEM CONNECTION BOLTS (IN BUSBAR)  | M8-1.25x15 with a 13mm hex head (and Phillips head) |
| BUSBAR TORQUE VALUE                  | 84 in. lbs. (9.5 Nm)                                |
| WEIGHT                               | 105 lbs. (47.6kg)                                   |
| CABINET MATERIAL                     | Heavy-duty steel                                    |
| FINISH COLOR                         | Black: Powder-coated                                |

ELECTRICAL SPECIFICATIONS

|                               |                 |
|-------------------------------|-----------------|
| MAX. BUSBAR CURRENT           | 300A            |
| ENERGY STORAGE CAPACITY       | 5.12 – 15.36kWh |
| BUSBAR COVERS                 | Yes             |
| BUSBAR HEAT SHRINK PROTECTION | Yes             |

WARRANTY

|                   |         |
|-------------------|---------|
| STANDARD WARRANTY | 3 years |
|-------------------|---------|

OWNER-BUILDER

NAME: (INFO WITHHELD)

PHONE: (INFO WITHHELD)

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REPRESENTED IN THIS PLAN.

OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                      | (609) 802-5743                                  |
| PLAN DESIGNER<br>SIGNATURE |                                                 |

BATTERY CABINET

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-18



Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

24g

PREDATOR®

9000 WATT  
PORTABLE  
GENERATOR

7250 RUNNING WATTS  
9000 MAX STARTING WATTS



Visit our website at: <https://www.harborfreight.com>  
Email our technical support at: [productsupport@harborfreight.com](mailto:productsupport@harborfreight.com)  
Email our engine support at: [predator@harborfreight.com](mailto:predator@harborfreight.com)

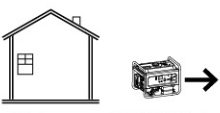
72935

⚠ DANGER

Using a generator indoors CAN KILL YOU IN MINUTES.  
Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.



NEVER use inside a home or garage, EVEN IF doors and windows are open.



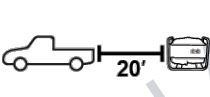
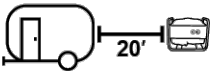
Only use OUTSIDE and far away from windows, doors, and vents.

⚠ DANGER

Do not use in trailers, truck beds, or tents.



Use at least 20 feet away from people, animals, and structures with exhaust pointed away.



⚠ WARNING

Read this material before using this product. Failure to do so can result in serious injury. SAVE THIS MANUAL.

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools.  
Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein.  
Tools required for assembly and service may not be included.

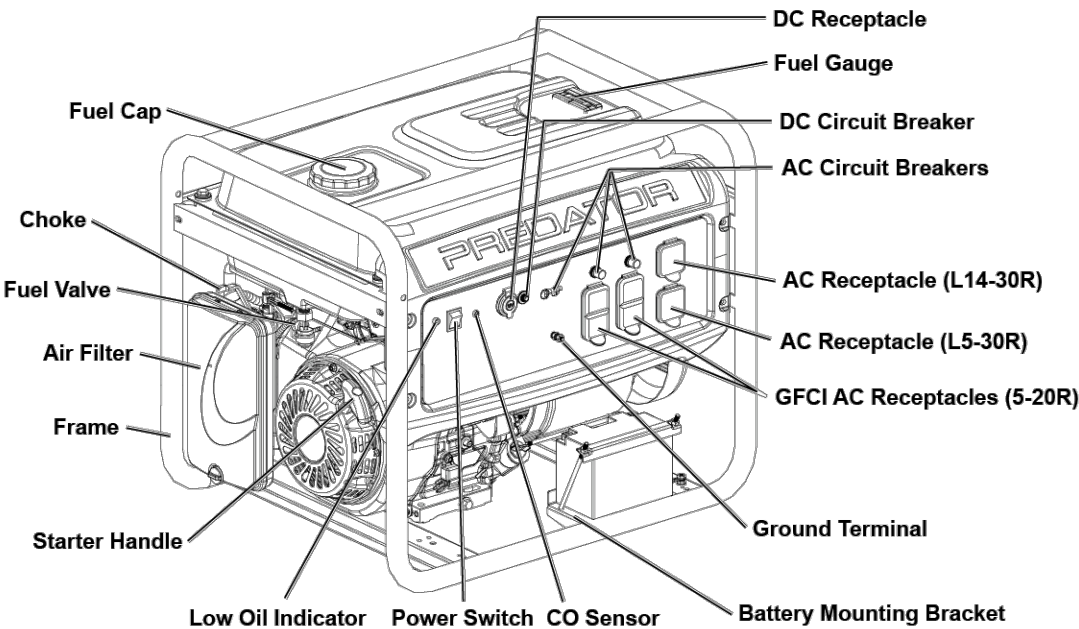
Functional Description

Specifications

|           |                                                  |                                                                                                                                                             |
|-----------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Generator | Output                                           | 120/240VAC, 60Hz<br>60.4A at 120V; 30.2A at 240V<br>7,250 Running Watts (9,000 Max. Starting Watts)                                                         |
|           | Battery needed for electric start (not included) | 12V, lead acid, 9Ah (minimum)                                                                                                                               |
|           | Electrical Receptacle                            | Two 3-Prong, duplex NEMA #5-20 120V GFCI<br>One 3-Prong, NEMA #L5-30 twistlock 120V<br>One 4-Prong, NEMA #L14-30 twistlock 120V/240V<br>One DC Outlet 12VDC |
| Engine    | Battery Type                                     | CR2032, 3V. Contains non-replaceable battery.                                                                                                               |
|           | Displacement                                     | 420cc                                                                                                                                                       |
|           | Engine Type                                      | Horizontal Single Cylinder 4 stroke OHV                                                                                                                     |
|           | Cooling System                                   | Forced air cooled                                                                                                                                           |
|           | Fuel                                             | Type 87+ octane stabilizer treated unleaded gasoline                                                                                                        |
|           |                                                  | Recommended fill level 8 Gallons                                                                                                                            |
|           | Engine Oil                                       | Type SAE 10W-30 above 32°F<br>5W-30 at 32°F or below                                                                                                        |
|           |                                                  | Capacity 1.16 Quart                                                                                                                                         |
|           | Spark Plug                                       | Type NHSP® / Torch® F7TC                                                                                                                                    |
|           |                                                  | Gap 0.028"-0.031"                                                                                                                                           |
|           | Valve Clearance                                  | Intake 0.004"-0.006"                                                                                                                                        |
|           |                                                  | Exhaust 0.004"-0.006"                                                                                                                                       |
|           | Run Time @ 50% load                              | Up to 13 hr.                                                                                                                                                |
|           | Available accessories                            | Wheel kit (sold separately)                                                                                                                                 |

The emission control system for this Generator's Engine is warranted for standards set by the U.S. Environmental Protection Agency and by the California Air Resources Board (also known as CARB). For warranty information, refer to the last pages of this manual.

Components and Controls



72935

For technical questions, please call 1-888-866-5797.

Page 7

SAFETY

SETUP

OPERATION

MAINTENANCE

OWNER-BUILDER

NAME: (INFO WITHHELD)

PHONE: (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 24.61kW 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 Sanjay Mallipudi

STANDBY GENERATOR

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-19

1

PV-19

STANDBY GENERATOR DATASHEET  
SCALE: NTS



4-2 Solar Panel Combiner Box – 4 circuits to 2 (2 to 1)- (2 x 63A max output)

| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ADDITIONAL INFORMATION |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <p>Solar Combiner boxes make connecting multiple solar panels in series and parallel a breeze.</p> <p>All your panel wiring troubles made really simple</p> <p>Built in DC Disconnect.</p> <p>Built in DC Overcurrent protection.</p> <p>Built in Lightning protection</p> <p>Built in fuse protection</p>                                                                                                                                                                                                                                                                                        |                        |
| <p>Features:</p> <p>Metal Box (no melting or fire hazard) IP65 Outdoor Weatherproof</p> <p>Key Lockable</p> <p>Each Circuit is fused 15A (on both Positive and Negative terminals )</p> <p>Reverse Polarity Diode Protection</p> <p>Available in a variety of configurations (<del>4 to 1</del> <b>4 to 2</b> <del>6 to 1, 8 to 2, 8 to 1.</del></p> <p>Acrylic face plate cover for full protection (most other suppliers simply ignore this feature) – often hundreds of volts</p> <p>Surge Protection – 1000V</p> <p>Specs:</p> <p>15A per PV Input string</p> <p>Max 2 x 63A A DC Output.</p> |                        |

|                                                                                                                                                                                                                                     |                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| OWNER-BUILDER                                                                                                                                                                                                                       |                                                 |
| NAME: (INFO WITHHELD)                                                                                                                                                                                                               |                                                 |
| PHONE: (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 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                                                                                                                                                                                                                               | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE                                                                                                                                                                                                             |                                                 |
| COMBINER DATASHEET                                                                                                                                                                                                                  |                                                 |
| PROJECT NO: GSD-20251002-SCM                                                                                                                                                                                                        |                                                 |
| DRAWN BY: SCM                                                                                                                                                                                                                       |                                                 |
| DATE: 10/2/2025                                                                                                                                                                                                                     |                                                 |
| PV-20                                                                                                                                                                                                                               |                                                 |





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      |
|--------------------------------------|------------------------------------|-----------|
| <b>Electrical</b>                    |                                    |           |
| 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                               | 20 A      |
| Maximum output power ( $P_{MAX}$ )   | 700 W                              |           |
| Maximum efficiency                   | 99.9%                              |           |
| Recommended fuse rating              | 25 A                               | 30 A      |
| <b>Rapid Shutdown</b>                |                                    |           |
| TS4 conductor AWG                    | 12                                 |           |
| Rapid shutdown time limit            | <30 sec.                           |           |
| PVRSE-controlled conductor limits    | ≤240 VA, ≤8 A, ≤30 V <sub>DC</sub> |           |
| UL 1741-compliant PVRSE              | Yes                                |           |
| Communications                       | PLC                                |           |
| <b>Connections</b>                   |                                    |           |
| 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



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Specifications

|                             | 20 A                                                                | 25 A |
|-----------------------------|---------------------------------------------------------------------|------|
| <b>Environmental</b>        |                                                                     |      |
| 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                                                        |      |
| <b>Mechanical</b>           |                                                                     |      |
| Dimensions (H/W/D)          | 139.7 x 138.4 x 22.9 mm<br>(5.4 x 5.5 x 0.9 in.)                    |      |
| Weight                      | 490 g (1.1 lb.)                                                     |      |
| <b>General</b>              |                                                                     |      |
| Standards compliance        | UL 1741 PVSRE, UL<br>1741 PVRSS, CSA 22.2,<br>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 <sub>MAX</sub> | Certifications<br>UL/IEC | Cable<br>Lengths | Connectors |
|----------------------|------------------|--------------------------|------------------|------------|
| 20 A I <sub>SC</sub> |                  |                          |                  |            |
| 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 <sub>SC</sub> |                  |                          |                  |            |
| 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

OWNER-BUILDER  
NAME: (INFO WITHHELD)  
PHONE: (INFO WITHHELD)

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OFF-GRID SOLAR SYSTEM 24.61kW 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 Sanjay Mallipudi

RAPID SHUTDOWN

PROJECT NO: GSD-20251002-SCM  
DRAWN BY: SCM  
DATE: 10/2/2025

PV-21A

NOTICE OF COMPLETION  
AND  
AUTHORIZATION TO APPLY THE UL MARK



2019-07-11

MR. BIJAY SHRESTHA  
TIGO ENERGY, INC.  
420 BLOSSOM HILL RD # 100  
LOS GATOS, CA, 95032-4511

Our Reference: File E469960, Vol 3      Order: 12786169  
Project: 4788939506

Your Reference: Bijay Shrestha 3/22/2019  
Project Scope: PVRSS system Phase 1 and 2 - Revisions to Delta's Inverter QIJS

Dear Mr. Shrestha:

Congratulations! UL's investigation of your product(s) has been completed under the above Reference Number and the product was determined to comply with the applicable requirements. This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Mark at authorized factories under UL's Follow-Up Service Program. To provide your manufacturer(s) with the intended authorization to use the UL Mark, you must send a copy of this notice to each manufacturing location currently authorized under File , Vol 3.

Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent in the near future. Until then, this letter authorizes application of the UL Mark for 90 days from the date indicated above.

Additional requirements related to your responsibilities as the Applicant can be found in the document "Applicant responsibilities related to Early Authorizations" that can be found at the following web-site: <http://www.ul.com/EAResponsibilities>

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

We are excited you are now able to apply the UL Mark to your products and appreciate your business. Feel free to contact me or any of our Customer Service representatives if you have any questions.

Very truly yours,

Ian McDonald  
Senior Staff Engineer  
Ian.McDonald@ul.com

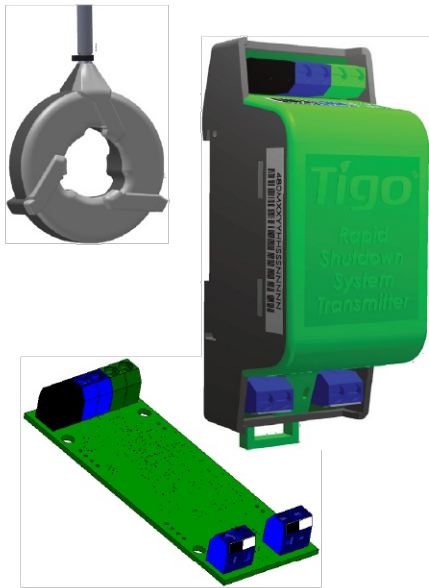
Reviewed by:

Bruce A. Mahrenholz  
CPO Director  
Bruce.A.Mahrenholz@ul.com

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|                                                                                                                                                                                                                                     |                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| OWNER-BUILDER                                                                                                                                                                                                                       |                                                 |
| NAME: (INFO WITHHELD)                                                                                                                                                                                                               |                                                 |
| PHONE: (INFO WITHHELD)                                                                                                                                                                                                              |                                                 |
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|                                                                                                                                                                                                                                     |                                                 |
| OFF-GRID SOLAR SYSTEM 24.61kW 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<br>FRESHWATER, CA 95503 |
| PHONE                                                                                                                                                                                                                               | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE                                                                                                                                                                                                             |                                                 |
| RAPID SHUTDOWN                                                                                                                                                                                                                      |                                                 |
| PROJECT NO: GSD-20251002-SCM                                                                                                                                                                                                        |                                                 |
| DRAWN BY: SCM                                                                                                                                                                                                                       |                                                 |
| DATE: 10/2/2025                                                                                                                                                                                                                     |                                                 |





Tigo®

## RSS Transmitter

Rapid shutdown activator with Pure Signal™ technology

Available as a module or PCBA, the Tigo RSS transmitter is part of a module-level rapid shutdown solution when paired with Tigo TS4-A-F/2F MLPE. The RSS transmitter links with multiple RSS transmitters, and it mitigates crosstalk with Tigo's Pure Signal technology that syncs one coordinated keep-alive signal to multiple arrays.

Each transmitter uses powerline communications (PLC) to send the keep-alive signal to MLPE via single or dual cores. Each core encircles up to 10 PV string conductors (negative or positive only).

### Features

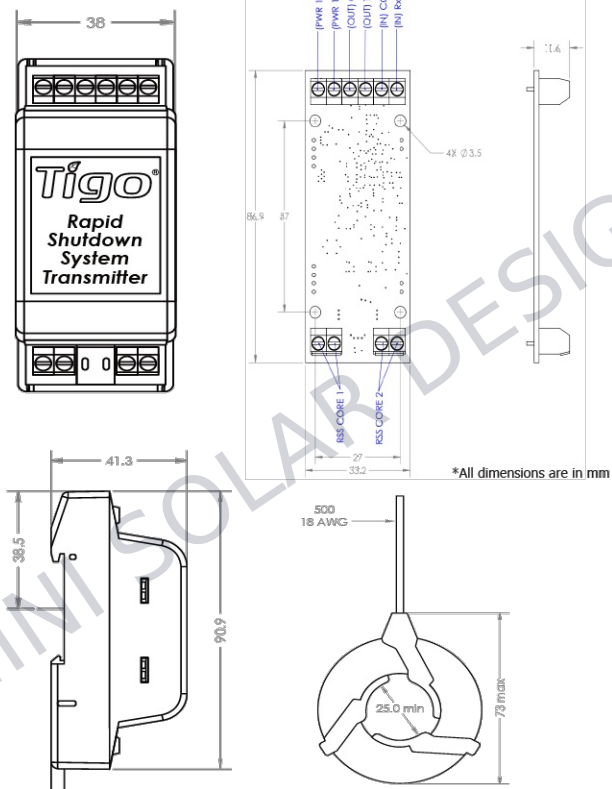
- PLC communication
- Scalable from residential to large utility projects
- Patented Pure Signal technology for mitigating crosstalk across multiple transmitters
- Configurable with one or two RSS cores
- Bi-colored core ensures consistent conductor polarity

### Benefits

- Meets NEC 690.12 2017, 2020, and 2023 requirements
- Automatic or manual shutdown
- Reduces total system cost
- Easy and fast to install
- Compatible with most inverters on the market

### Dimensions (height/width/depth)

| Module                                      | PCBA                                         |
|---------------------------------------------|----------------------------------------------|
| 90.9 x 38 x 41.3mm<br>(3.58 x 1.5 x 1.63in) | 86.9 x 32.8 x 11.6mm<br>(3.42 x 1.3 x .46in) |



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PN: 002-00146-00 | Rev 1.2 | 2023.06.19

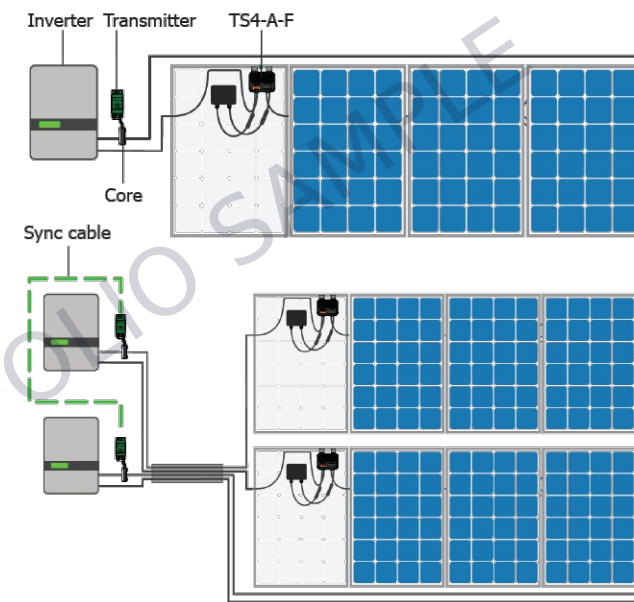
| Transmitter                                                 |                       |
|-------------------------------------------------------------|-----------------------|
| Input voltage                                               | 12V <sub>DC</sub> ±2% |
| Input current                                               | 1A                    |
| Power consumption (max/avg)                                 | 5.5W/0.85W            |
| Power standby <sup>1</sup>                                  | 0.06W                 |
| Maximum # of synced transmitters                            | 10                    |
| Maximum cable length to last transmitter in a synced series | 30m (100ft)           |

| Core                           |                     |
|--------------------------------|---------------------|
| Conductor length               | 500mm (19.7in)      |
| Maximum current per core       | 160A                |
| Maximum string voltage         | 1500V <sub>DC</sub> |
| Maximum # of strings/core      | 10                  |
| Maximum # of PV modules/string | 30                  |

| Environmental                             |                                              |
|-------------------------------------------|----------------------------------------------|
| Operating temperature range               | -40 – 85°C (-40 – 185°F)                     |
| Enclosure <sup>2</sup> temperature range  | -20 – 50°C (-4 – 122°F)                      |
| Enclosure <sup>2</sup> rating             | IP68, NEMA 3R                                |
| Enclosure <sup>2</sup> dimensions (H/W/D) | 270 x 170 x 110mm<br>(10.63 x 6.69 x 4.33in) |

<sup>1</sup> PCBA integrated into inverter  
<sup>2</sup> Optional Tigo outdoor enclosure

### Single and Multiple Inverter Applications



### Ordering Information

|              |                                                                                                |
|--------------|------------------------------------------------------------------------------------------------|
| 490-00000-51 | Single core, RSS transmitter, DIN rail                                                         |
| 490-00000-52 | Dual core, RSS transmitter, DIN rail                                                           |
| 490-00100-51 | Single core, RSS transmitter PCBA                                                              |
| 490-00100-52 | Dual core, RSS transmitter PCBA                                                                |
| 492-00000-51 | Single core, RSS transmitter, DIN rail, 120/240V <sub>AC</sub> power source, outdoor enclosure |
| 492-00000-52 | Dual core, RSS transmitter, DIN rail, 120/240V <sub>AC</sub> power source, outdoor enclosure   |
| 493-00000-52 | Dual core, RSS transmitter, DIN rail, 480/277V <sub>AC</sub> power source                      |

### Resources



Tigo®

Tigo®

OWNER-BUILDER

NAME: (INFO WITHHELD)

PHONE: (INFO WITHHELD)

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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<br>FRESHWATER, CA 95503 |
| PHONE                   | (609) 802-5743                                  |
| PLAN DESIGNER SIGNATURE |                                                 |

### RAPID SHUTDOWN

PROJECT NO: GSD-20251002-SCM

DRAWN BY: SCM

DATE: 10/2/2025

PV-21C

1 TIGO RSS TRANSMITTER KIT DATASHEET  
PV-21C SCALE: NTS