DIVOCSG 17 LLC

Equipment Specifications

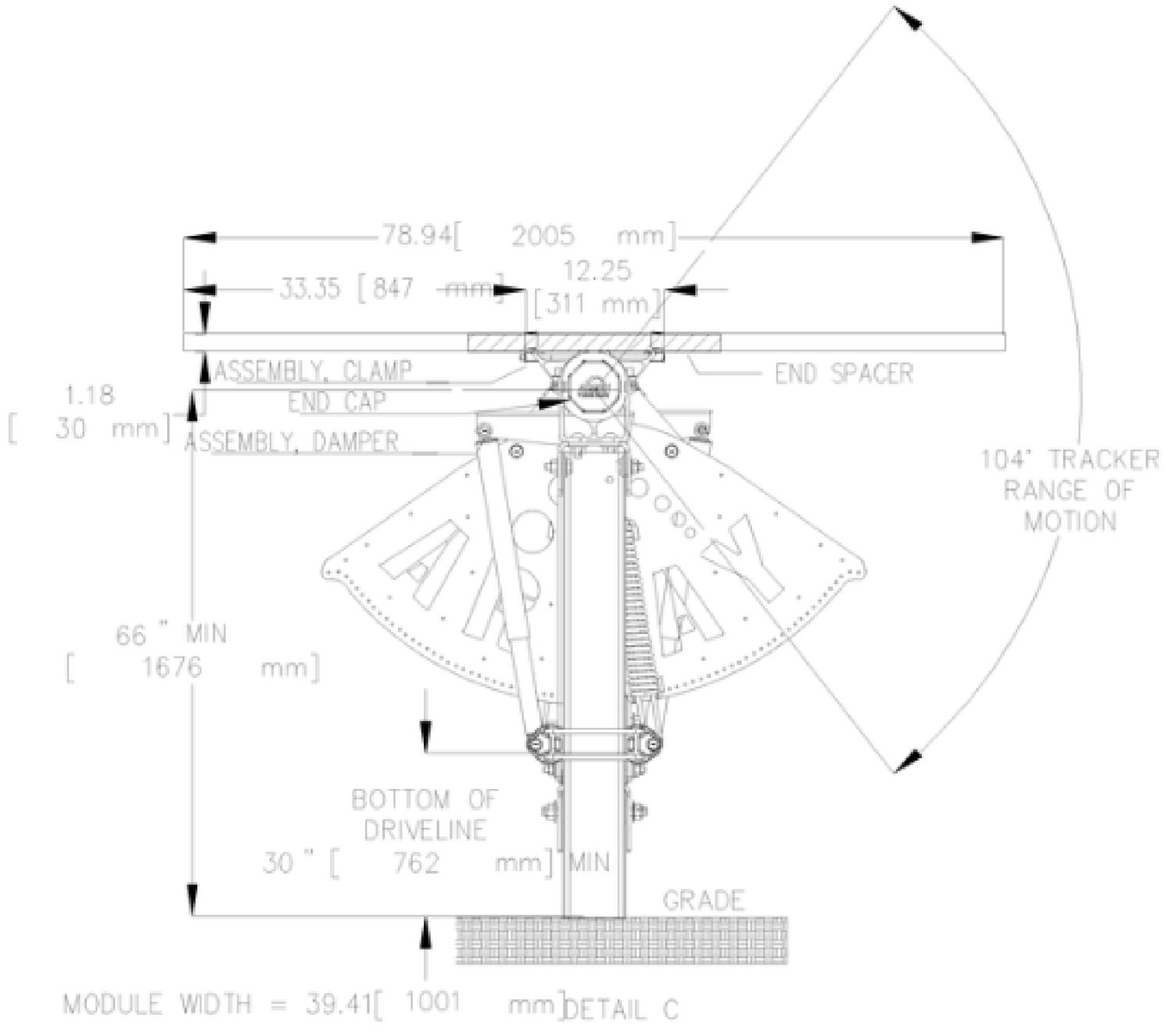
The 1.000MW solar PV project is rated to 1.000 MW AC/ 1.564 MW DC.

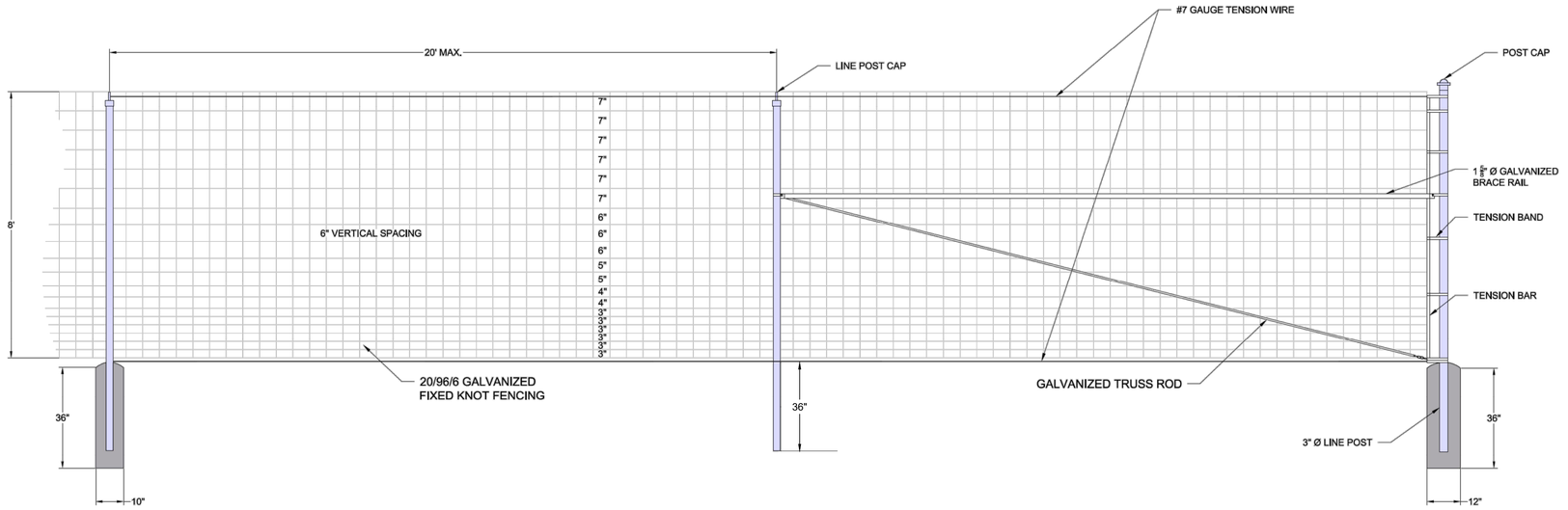
The system consists of the following:

A. 2925 modules (TRINA SOLAR, 535W, 1500V modules) feed into inverters.
B. 9 inverters (CHINT SCA125KTL-DO/US, 600 inverter W/integrated DC and AC disconnects) which feed into Low Voltage Switchgear
C. Low voltage switchgear- 1600A, 480V, 3 phase, 4 wire, 3R which is connected to the 480V side of the step-up transformer.
D. Step up three phase pad mounted transformer- 1.5MVA, 12.47kV:480V, 5.32%
E. Zig-zag grounding transformer on the 480V side

The 2925 modules are divided into strings and each string has 25 modules.
· Each inverter has up to 20 string input of 25 modules each.

The following attachments are the single line electrical drawings and equipment specs as well as the data sheets for the manufacturers.

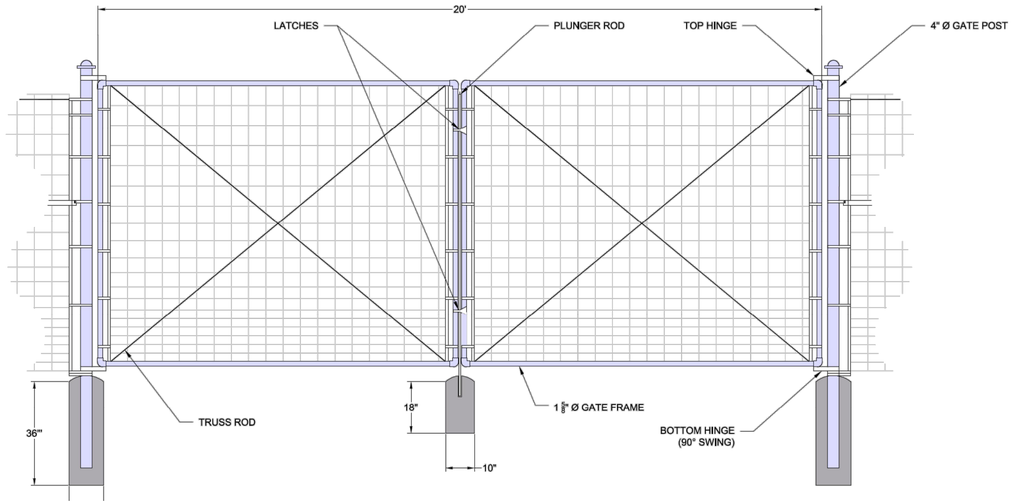

78.94[2005 mm]
33.35 [847 mm]
12.25
[311 mm]
ASSEMBLY, CLAMP
END CAP
END SPACER
1.18
[30 mm]
ASSEMBLY, DAMPER
104° TRACKER
RANGE OF
MOTION
66 " MIN
[1676 mm]
BOTTOM OF
DRIVELINE
30 " [762 mm] MIN
GRADE
MODULE WIDTH = 39.41[1001 mm]
DETAIL C



1 C602 FIXED KNOT FENCE
NOT TO SCALE

NOTES:

1. FENCE DETAILS SHOWN ARE INDUSTRY STANDARD DETAILS AND HAVE NOT BEEN DESIGNED SPECIFICALLY FOR THIS PROJECT AND/OR SPECIFIC SOILS. ANY MODIFICATIONS TO THIS DESIGN SHALL BE APPROVED BY THE OWNER. EVS HAS NOT PERFORMED ANY STRUCTURAL DESIGN REGARDING THESE DETAILS AND/OR THE FOUNDATION. THE DETAILS ARE FOR REFERENCE ONLY.
2. ALL POST, RAILS, FABRIC, WIRE, AND GATES SHALL BE GALVANIZED
3. CHAIN LINK MEMBER SIZES AND MATERIALS SHALL CONFORM TO APWA STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SPPWC OR THE "GREEN BOOK", LATEST EDITION, SECTIONS 206-6 AND 600-3.
4. ALL CORNER POST AND GATE POST SHALL BE SECURED IN CONCRETE PIERS.
5. CONCRETE SHALL BE 3000 PSI AVERAGE COMPRESSIVE STRENGTH. CONCRETE FOR ALL OTHER POSTS SHALL BE 12 INCHES IN DIAMETER, UNLESS NOTED OTHERWISE.
6. ALL END POST SHALL BE A MINIMUM OF 11' IN LENGTH. ALL LINE POST SHALL BE A MINIMUM OF 10'-6" LENGTH IF EMBEDDED IN CONCRETE AND 11'-6" IF PILE DRIVEN.
7. END, CORNER, OR GATE POSTS SHALL BE SET AT THE BEGINNING AND END OF EACH CONTINUOUIS LENGTH OF FENCE AND AT ABRUPT CHANGES IN VERTICAL OR HORIZONTAL ALIGNMENT.
8. PULL POST SHALL BE USED IN ALL STRAIGHT SPANS OF FENCE LONGER THAN 500 FEET.
9. ALL POSTS SHALL BE INSTALLED VERTICALLY. WHERE POST ARE INSTALLED ON INCLINED SURFACES, THE ANGLE OF THE POST SHALL BE ADJUSTED SO THAT THE POST WILL BE VERTICAL.

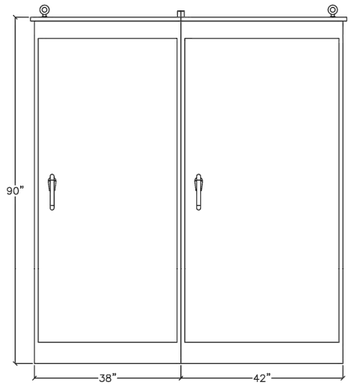


2 C602 FIXED KNOT FENCE/GATE
NOT TO SCALE

SHEET NAME
SITE DETAILS

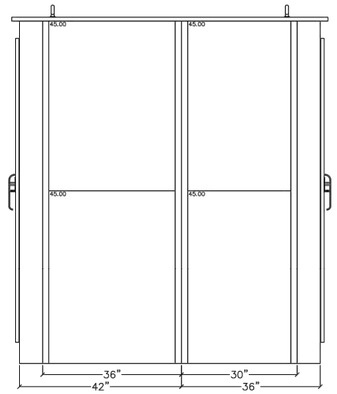
REAR EXTERIOR VIEW

SECTION #3 SECTION #4



RIGHT SIDE EXTERIOR VIEW

SECTION #2 SECTION #3



NOTES:
1) SHIP ALL FOUR SECTIONS AS ONE UNIT
2) DUAL PADLOCK PROVISIONS SECTION 1, 3 & 4

emi
ELECTRO-MECHANICAL INDUSTRIES, INC.
13300 6TH AVE NORTH PLYMOUTH, MN 55441
web: e-m-i.com (763) 546-3938

TITLE: 1600A SWITCHBOARD
DRAWING: 70154-A
SHEET: 2 OF 8
DATE: - -
JOB NAME:
JOB NUMBER: 70154
JOB LOCATION:
DISTRIBUTOR:
CONTRACTOR: TBD
DRAWN BY: ZLJ
CHECKED BY: JJB
ENGR BY: CJH
DRAWN FOR: APPROVAL
DRAWING LOCATION: (FLOOR)

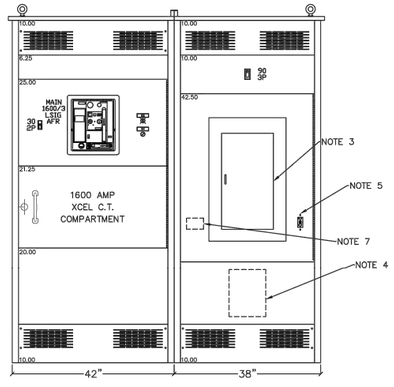
REVISIONS:

NO.	DATE:	DWG BY:

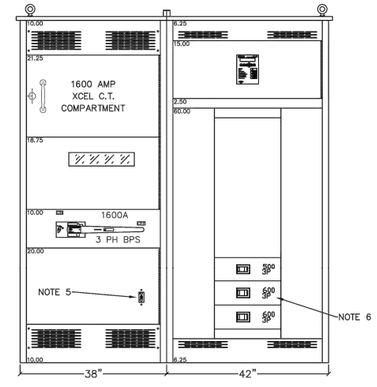
ELECTRICAL RATING

VOLTS:	480Y/277VAC
PHASE: THREE	WIRES: FOUR
AMPS: 1600A	FREQUENCY: 60HZ
SHORT CIRCUIT (kAIC):	65 KA
ENCLOSURE TYPE:	TYPE 3R: OUTDOOR
BUS BAR:	TIN PLATED AL. 750A/SQ IN
REAR COVER PLATES:	DOORS
SURFACE DISTRIBUTION:	S.U.S.E.
STANDARD:	UL891
SEE DISCONNECT RULE:	NO
PAINT COLOR:	ANSI 70

SECTION #1 SECTION #2
*NEMA 3R FRONT KIT REMOVED



SECTION #3 SECTION #4
*NEMA 3R FRONT KIT REMOVED



NAMEPLATE SCHEDULE		
TAGNAME	DESCRIPTION	MOUNT
01	ARC FLASH REDUCTION	1x3
	OFF ON	
02	ARC FLASH REDUCTION	1x3
	ACTIVE	
NAMEPLATE IS WHITE WITH BLACK LETTERS		

NOTES:
1) SHIP ALL FOUR SECTIONS AS ONE UNIT
2) DUAL PADLOCK PROVISIONS SECTION 1, 3 & 4
3) 120/240VAC PANEL FLUSH MOUNT ON DEADFRONT
4) 10KVA TRANSFORMER COMPARTMENT
5) 20A GFCI RECEPTACLE
6) PADLOCK PROVISIONS ON ALL CIRCUIT BREAKERS
7) ZIG-ZAG TRANSFORMER NEUTRAL CT MOUNTED ALONGSIDE LOADCENTER, CONTRACTOR TO CABLE THROUGH PRIOR TO CONNECTION TO NEUTRAL BUS

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TITLE: 1600A SWITCHBOARD
DRAWING: 70154-A
SHEET: 3 OF 8
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JOB NAME:
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JOB LOCATION:
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DRAWN BY: ZLJ
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DRAWN FOR: APPROVAL
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ELECTRICAL RATING

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BUS BAR:	TIN PLATED AL. 750A/SQ IN
REAR COVER PLATES:	DOORS
SURFACE DISTRIBUTION:	S.U.S.E.
STANDARD:	UL891
SEE DISCONNECT RULE:	NO
PAINT COLOR:	ANSI 70

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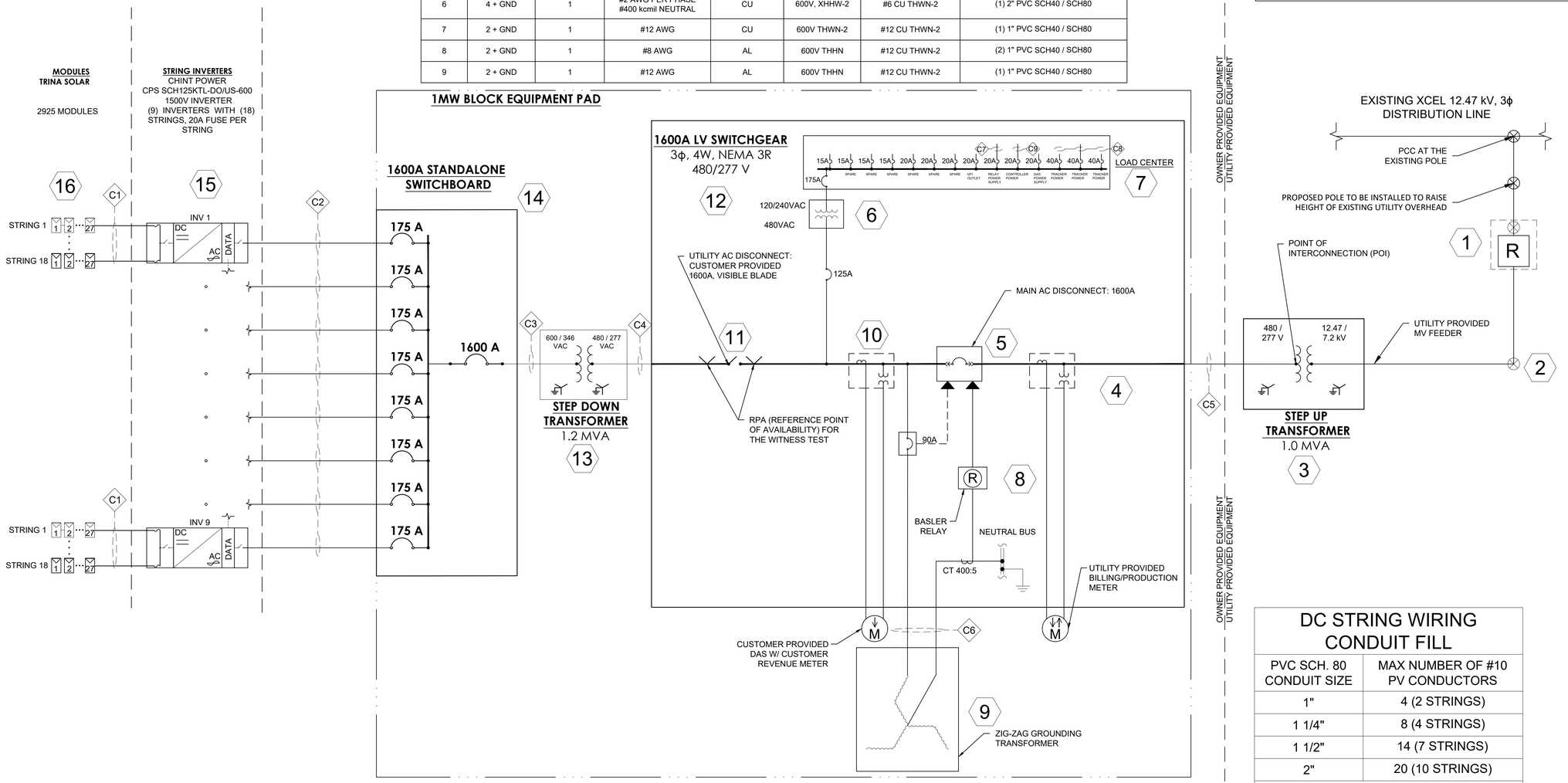
CABLE LIST

C#	WIRE QTY.	PARALLEL RUNS	WIRE SIZE	CONDUCTOR MATERIAL	INSULATION	GROUND SIZE & TYPE	CONDUIT TYPE (QUANTITY)
1	2 + GND	1	#10 AWG	CU	2kV, PV-WIRE	UL 2703 RACK OR #6 CU THWN-2	OPEN AIR OR PVC SCH 80 SEE TABLE FOR DC STRING WIRING CONDUIT FILL
2	3 + GND	1	4/0 AWG (SEE NOTE 4)	AL	600V, XHHW-2	#6 CU THWN-2	2-1/2" PVC SCH40 / SCH80
3	4 + GND	4	500 KCMIL	CU	600V, XHHW-2	#4/0 CU THWN-2	(4) 4" PVC SCH40 / SCH80
4	4 + GND	4	500 KCMIL	CU	600V, XHHW-2	#4/0 CU THWN-2	(4) 4" PVC SCH40 / SCH80
5	4	4	500 KCMIL	CU	600V, XHHW-2	-	(4) 4" PVC SCH40 / SCH80
6	4 + GND	1	#2 AWG PER PHASE #400 kcmil NEUTRAL	CU	600V, XHHW-2	#6 CU THWN-2	(1) 2" PVC SCH40 / SCH80
7	2 + GND	1	#12 AWG	CU	600V THWN-2	#12 CU THWN-2	(1) 1" PVC SCH40 / SCH80
8	2 + GND	1	#8 AWG	AL	600V THHN	#12 CU THWN-2	(2) 1" PVC SCH40 / SCH80
9	2 + GND	1	#12 AWG	AL	600V THHN	#12 CU THWN-2	(1) 1" PVC SCH40 / SCH80

NOTES:

1. REFER TO EQUIPMENT SCHEDULE (SHEET E-201-03) FOR HEXAGONAL EQUIPMENT CALLOUTS.
2. SCHEDULE 40 TO BE USED FOR ALL UNDERGROUND EXCEPT WHERE SCHEDULE 80 ELBOWS TRANSITION TO ABOVE GROUND.SCHEDULE 80 TO BE USED STARTING AT THE 90° ELBOW AND UP TO AT LEAST 24" ABOVE GROUND.
3. GROUNDING TRANSFORMER CALCULATIONS NEED TO BE REVIEWED AND APPROVED BY XCEL PRIOR TO PROCUREMENT.
4. CONTRACTOR IS RESPONSIBLE FOR USING PIGTAILS TO ENSURE APPROPRIATE INVERTER CABLE INSTALLATIONS.



INVERTER SPECIFICATIONS

CHINT POWER CPS SCH125KTL-DO/US-600 (UL 1741 CERTIFIED)	125kW, 125KVA, 3ϕ, 3W, 600V, 120.3A MAX OUTPUT

SYSTEM SUMMARY

CSG QTY.	1
SITE CSG SIZE (AC)	1.000 MW
SITE CSG SIZE (DC)	1.445 MW
DC/AC RATIO	1.445
ASHRAE SITE EXTREME MIN. TEMPERATURE (°C)	-29.2
ASHRAE SITE 2% AVG. HIGH TEMPERATURE (°C)	28.8

GROUNDING TRANSFORMER CALCULATIONS - 1MW

X0	0.13133Ω
R0	≤ 0.02955Ω
Z	0.1346Ω
CONTINUOUS NEUTRAL CURRENT	254.5A
5 SECOND WITHSTAND RATING	> 2913.5A
*SEE SEPARATE CALCULATIONS PAGE FOR FORMULAS	

DC STRING WIRING CONDUIT FILL

PVC SCH. 80 CONDUIT SIZE	MAX NUMBER OF #10 PV CONDUCTORS
1"	4 (2 STRINGS)
1 1/4"	8 (4 STRINGS)
1 1/2"	14 (7 STRINGS)
2"	20 (10 STRINGS)

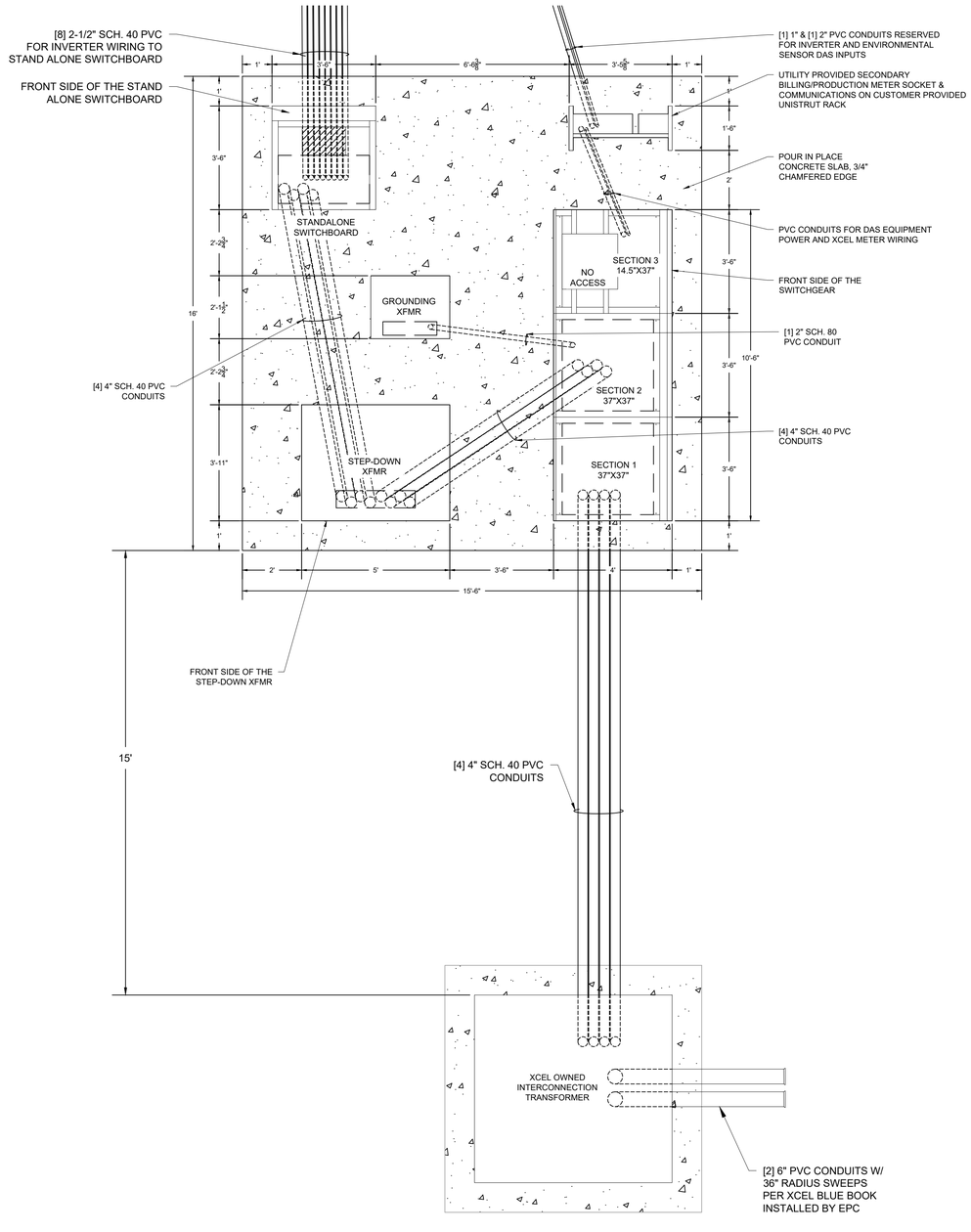
1. DO NOT EXCEED 20 CONDUCTORS IN ONE CONDUIT. THIS WILL DERATE THE CONDUCTOR AMPACITY AND REQUIRE UPSIZING OF THE WIRE. CONDUCTOR AMPACITY CALCULATED USING NEC TABLE 310.15(B)(16) ASSUMING <15A CIRCUIT AMPACITY.

2. CONDUIT FILL IS FOR #10 AWG XHHW-2 PV WIRE CONDUCTORS (OD = 0.18") INCLUDING [1] #6 AWG INSULATED COPPER GROUND WIRE.

SHEET
ONE LINE & CABLE LIST

NOTES:

1. POSSIBLE EXTRA CONTROL CONDUITS WILL BE REQUIRED IN THE CONCRETE DEPENDANT ON THE FINAL LOCATION OF THE XCEL REQUIRED COMMUNICATION EQUIPMENT.
2. CONDUIT RUNS SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. ACTUAL RUNS WILL VARY WITH SITE CONDITIONS AND EQUIPMENT LAYOUT.
3. MV TRANSFORMER LOCATION TO BE DETERMINED BY XCEL.



1 EQUIPMENT PAD PLAN VIEW

Scale: 1" = 2'-6"

SHEET

EQUIPMENT PAD LAYOUT

1

PRODUCTION/BILLING METER

8

DO NOT DISCONNECT UNDER LOAD

14

CAUTION

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY YELLOW BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

NOMINAL OPERATING AC VOLTAGE	600 V
NOMINAL OPERATING AC FREQUENCY	60 Hz
MAXIMUM AC POWER	1.0 MW
MAXIMUM AC CURRENT	1203 A
OVERCURRENT PROTECTION RATING	1600 A

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY ORANGE BACKGROUND

3

WARNING

ELECTRIC SHOCK HAZARD

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

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

9

MAIN AC DISCONNECT

15

CAUTION

480V SECONDARY FAULT CURRENT = 22,609 AMPS

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY YELLOW BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

10

UTILITY AC DISCONNECT

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY ORANGE BACKGROUND

4

WARNING

ELECTRIC SHOCK HAZARD

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

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

11

CAUTION

PHOTOVOLTAIC GENERATION SYSTEM CONNECTED

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY YELLOW BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

12

WARNING

DUAL POWER SOURCE. SECOND SOURCE IS A PV SYSTEM

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY YELLOW BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

5

WARNING

ELECTRIC SHOCK HAZARD

WHEN A *GROUND FAULT* IS ACTIVE CONDUCTORS THAT ARE NORMALLY GROUNDED MAY BE UNGROUNDED AND ENERGIZED

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY ORANGE BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

13

CAUTION

MAXIMUM OPERATING CURRENT	1203 A
MAXIMUM OPERATING VOLTAGE	480 V

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY YELLOW BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

6

CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY YELLOW BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

7

WARNING

TURN OFF DISCONNECT PRIOR TO WORKING INSIDE PANEL

3/8" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY ORANGE BACKGROUND

0.12" MIN TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON WHITE BACKGROUND

2

PHOTOVOLTAIC POWER SOURCE

LABEL NOTES:

1. PLACARDS SHALL BE PROVIDED TO CLEARLY SHOW THE MAIN SERVICE METER AND PRODUCTION METER PAIRS
2. ALL LABELS TO BE WEATHERPROOF, DURABLE AND PERMANENTLY MOUNTED
3. ALL LABELS TO BE NEC COMPLIANT

LABEL LOCATIONS/DETAILS

1	PRODUCTION / BILLING METER
2	PV SYSTEM UTILITY AC DISCONNECT, MSD
3	DC DISCONNECTS, INVERTERS
4	PV SYSTEM UTILITY AC DISCONNECT, MAIN SERVICE DISCONNECT (MSD)
5	DC DISCONNECTS, INVERTERS
6	PV SYSTEM UTILITY AC DISCONNECT LOAD SIDE AND LINE SIDE
7	LV SWITCHGEAR, 1600A STANDALONE SWITCHBOARD
8	PV SYSTEM UTILITY AC DISCONNECT, MAIN SERVICE DISCONNECT
9	MAIN AC DISCONNECT
10	PV SYSTEM UTILITY AC DISCONNECT
11	LV SWITCHGEARS, PRODUCTION / BILLING METER
12	LV SWITCHGEARS, PRODUCTION / BILLING METER
13	PV SYSTEM UTILITY AC DISCONNECT, LV SWITCHGEAR, PRODUCTION METER & MSD
14	1600A STANDALONE SWITCHBOARD (8 INVERTER INPUTS)
15	LV SWITCHGEAR

SHEET

XCEL LABELS & SIGNS

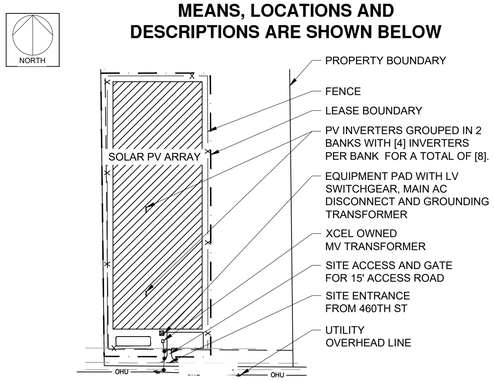
16

1'

1'

CAUTION

SITE HAS A SINGLE DISCONNECTING MEANS, LOCATIONS AND DESCRIPTIONS ARE SHOWN BELOW



SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY YELLOW BACKGROUND

SANS SERIFF BOLD SAFETY BLACK LETTERING

17

STR 1-1 +

STRING NAMING NOTES:

1. STRING NAME: STR 1-1 + (INVERTER # (1-8); INPUT # (1-20); STRING POLARITY (+ / -))
2. SEE SHEET E-302-01 FOR MODULE STRING WIRING DETAILS.

22

SERVICE DISCONNECT

20

INV 1

21

DAS

18

$7\frac{1}{2}$"

$4\frac{1}{2}$"

PV SYSTEM
DC DISCONNECT

DC COMBINER BOX OUTPUT POWER SOURCE INFORMATION:	
MAXIMUM POWER-POINT CURRENT	167.4A
MAXIMUM POWER-POINT VOLTAGE	1074.6V
MAXIMUM SYSTEM VOLTAGE	1461.6V
MAXIMUM CIRCUIT CURRENT	225.5A

1/2" TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY ORANGE BACKGROUND

1/4" TEXT HEIGHT, SANS SERIFF SAFETY BLACK LETTERING ON SAFETY WHITE BACKGROUND

19

$7\frac{1}{2}$"

$4\frac{1}{2}$"

PV SYSTEM
DC DISCONNECT

DC COMBINER BOX OUTPUT POWER SOURCE INFORMATION:	
MAXIMUM POWER-POINT CURRENT	168.5A
MAXIMUM POWER-POINT VOLTAGE	1082.7V
MAXIMUM SYSTEM VOLTAGE	1474.0V
MAXIMUM CIRCUIT CURRENT	225.9A

1/2" TEXT HEIGHT, SANS SERIFF BOLD SAFETY BLACK LETTERING ON SAFETY ORANGE BACKGROUND

1/4" TEXT HEIGHT, SANS SERIFF SAFETY BLACK LETTERING ON SAFETY WHITE BACKGROUND

24

20"

14"

3"

1.5"

COMMUNITY SOLAR

EMERGENCY CONTACT INFO:

23

DANGER

HIGH VOLTAGE
NO TRESPASSING

SmartSign.com • 800-952-1457 • S-2196

NOTES:

1. AT A MINIMUM, SIGNS SHALL BE 10 INCHES WIDE BY 7 INCHES HIGH.
2. TOP OF SIGN SHALL BE PLACED AT 5 FEET HIGH.
3. SIGNS SHALL BE SPACED AT NO MORE THAN 100 FOOT INTERVALS ON THE PERIMETER.
4. SIGNS SHALL BE MOUNTED TO FENCE THROUGH PRE-PUNCHED HOLES USING FENCE TIES.

LABEL LOCATIONS/DETAILS

16	SITE ENTRANCE, [1] TOTAL
17	ALL STRINGS TO BE MARKED WITH STRING IDENTIFICATION LABELS WITHIN 6" OF HOME RUN WIRE TERMINATIONS. THIS INCLUDES ONE LABEL AT HOME RUN TERMINATION IN DC COMBINER/INVERTER AND ONE IDENTIFICATION LABEL LOCATED WHERE HOME RUN CONNECTS TO FIRST MODULE LEAD.
18	INVERTER WITH INTEGRATED COMBINER BOX,[18 STRINGS] [6] TOTAL
19	INVERTER WITH INTEGRATED COMBINER BOX,[18 STRINGS] [3] TOTAL
20	INVERTER IDENTIFIER LABELS [8] TOTAL
21	DATA ACQUISITION SYSTEM IDENTIFIER LABEL, [1] TOTAL
22	SERVICE DISCONNECT
23	DANGER SIGN: ONE TO BE PLACED ON EACH GATE AND ONE ON THE NORTH, SOUTH, EAST AND WEST FACING FENCE SECTIONS
24	EMERGENCY CONTACT SIGN: ONE TO BE PLACED ON ENTRANCE GATE

LABEL NOTES:

1. [2017 NEC 110.16(A)] ELECTRICAL EQUIPMENT, SUCH AS SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS, THAT IS IN OTHER THAN DWELLING UNITS, AND IS LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED, SHALL BE FIELD OR FACTORY MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. THE MARKING SHALL MEET THE REQUIREMENTS IN 110.21(B) AND SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.
2. [2017 NEC 110.21(B)] WHERE CAUTION, WARNING, OR DANGER SIGNS OR LABELS ARE REQUIRED BY THIS (NEC 2017) CODE, THE LABELS SHALL MEET THE FOLLOWING REQUIREMENTS:
   1) THE MARKING SHALL WARN OF THE HAZARDS USING EFFECTIVE WORDS, COLORS, SYMBOLS OR ANY COMBINATION THEREOF
   2) THE LABEL SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
      *EXCEPTION TO (2): PORTIONS OF LABELS OR MARKINGS THAT ARE VARIABLE, OR THAT COULD BE SUBJECT TO CHANGES, SHALL BE PERMITTED TO BE HAND WRITTEN AND SHALL BE LEGIBLE.
   3) THE LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
      *INFORMATION NOTE; ANSI Z535.4-2011, *PRODUCT SAFETY SIGNS AND LABELS*, PROVIDES GUIDELINES FOR SUITABLE FONT SIZES, WORDS, COLORS, SYMBOLS, AND LOCATION REQUIREMENTS FOR LABELS AS WELL AS GUIDELINES FOR THE DESIGN AND DURABILITY OF SAFETY SIGNS AND LABELS FOR APPLICATION TO ELECTRICAL EQUIPMENT.
3. [2017 NEC 690.13(B)] EACH PV SYSTEM DISCONNECTING MEANS SHALL PLAINLY INDICATE WHETHER IN THE OPEN (OFF) OR CLOSED (ON) POSITION AND BE PERMANENTLY MARKED "PV SYSTEM DISCONNECT" OR EQUIVALENT. ADDITIONAL MARKINGS SHALL BE PERMITTED BASED UPON THE SPECIFIC SYSTEM CONFIGURATION. FOR PV SYSTEM DISCONNECTING MEANS WHERE THE LINE AND LOAD TERMINALS MAY BE ENERGIZED IN THE OPEN POSITION, THE DEVICE SHALL BE MARKED WITH THE FOLLOWING WORDS OR EQUIVALENT:

   WARNING
   ELECTRIC SHOCK HAZARD
   TERMINAL ON THE LINE AND LOAD SIDES
   MAY BE ENERGIZED IN THE OPEN POSITION

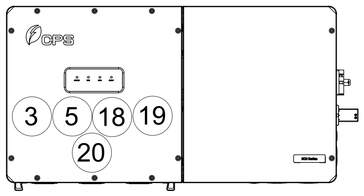
   THE WARNING SIGN(S) OR LABEL(S) SHALL COMPLY WITH 110.21(B).
4. [2017 NEC 690.53] A PERMANENT LABEL FOR THE DC PV POWER SOURCE INDICATING THE INFORMATION SPECIFIED IN (1) THROUGH (3) SHALL BE PROVIDED BY THE INSTALLER AT DC PV SYSTEM DISCONNECTION MEANS AND AT EACH DC EQUIPMENT DISCONNECTING MEANS REQUIRED BY 690.15. WHERE A DISCONNECTING MEANS HAS MORE THAN ONE DC PV POWER SOURCE, THE VALUES IN 690.53(1) THROUGH (3) SHALL BE SPECIFIED FOR EACH SOURCE.
   (1) MAXIMUM VOLTAGE
   *INFORMATION NOTE TO (1): SEE 690.7 FOR VOLTAGE.
   (2) MAXIMUM CIRCUIT CURRENT
   *INFORMATION NOTE TO (2): SEE 690.8(A) FOR CALCULATION OF MAXIMUM CIRCUIT CURRENT.
   (3) MAXIMUM RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED)
5. [2017 NEC 690.54] ALL INTERACTIVE SYSTEM(S) POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTING MEANS AS A POWER SOURCE AND WITH THE RATED AC OUTPUT CURRENT AND THE NOMINAL OPERATING AC VOLTAGE.
6. [2017 NEC 690.56(B)] PLAQUES AND DIRECTORIES SHALL BE INSTALLED IN ACCORDANCE WITH 705.10.
7. [2017 NEC 705.10] A PERMANENT PLAQUE OR DIRECTORY DENOTING THE LOCATION OF ALL ELECTRIC POWER SOURCE DISCONNECTING MEANS ON OR IN THE PREMISES SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT THE LOCATIONS(S) OF THE SYSTEM DISCONNECT(S) FOR ALL ELECTRIC POWER PRODUCTION SOURCES CAPABLE OF BEING INTERCONNECTED. THE MARKING SHALL COMPLY WITH 110.21(B).
   *EXCEPTION: INSTALLATION WITH LARGE NUMBERS OF POWER PRODUCTION SOURCES SHALL BE PERMITTED TO BE DESIGNATED BY GROUPS.
8. [2017 NEC 705.12(B)(2)(3)(C)] THE SUM OF THE AMPERE RATINGS OF ALL OVERCURRENT DEVICES ON PANELBOARDS, BOTH LOAD AND SUPPLY DEVICES, EXCLUDING THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR, SHALL NOT EXCEED THE AMPACITY OF THE BUSBAR. THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED THE RATING OF THE BUSBAR. PERMANENT WARNING LABELS SHALL BE APPLIED TO DISTRIBUTION EQUIPMENT DISPLAYING THE FOLLOWING OR EQUIVALENT WORDING:

   WARNING:
   THIS EQUIPMENT FED BY MULTIPLE SOURCES.
   TOTAL RATING OF ALL OVERCURRENT DEVICES
   EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE
   SHALL NOT EXCEED AMPACITY OF BUSBAR.

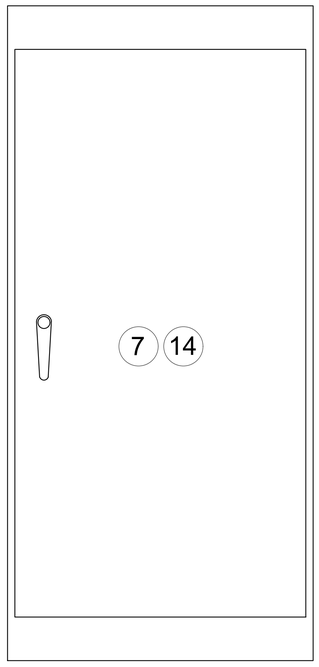
   THE WARNING SIGN(S) OR LABELS(S) SHALL COMPLY WITH 110.21(B).
9. [2017 NEC 705.12(B)(3)] EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES.
10. SAFETY SIGNS SHALL BE UV RESISTANT.
11. IDENTIFIER LABELS SHALL BE AFFIXED TO INVERTERS, COMBINER BOXES, STEP-UP TRANSFORMERS, AND DEAD BREAK JUNCTION BOXES, AS PER NUMBERS INDICATED ON THE PLANS USING THE SIGNS ON THIS PAGE AS REFERENCE.

SHEET
NEC 2017 LABELS & SIGNS

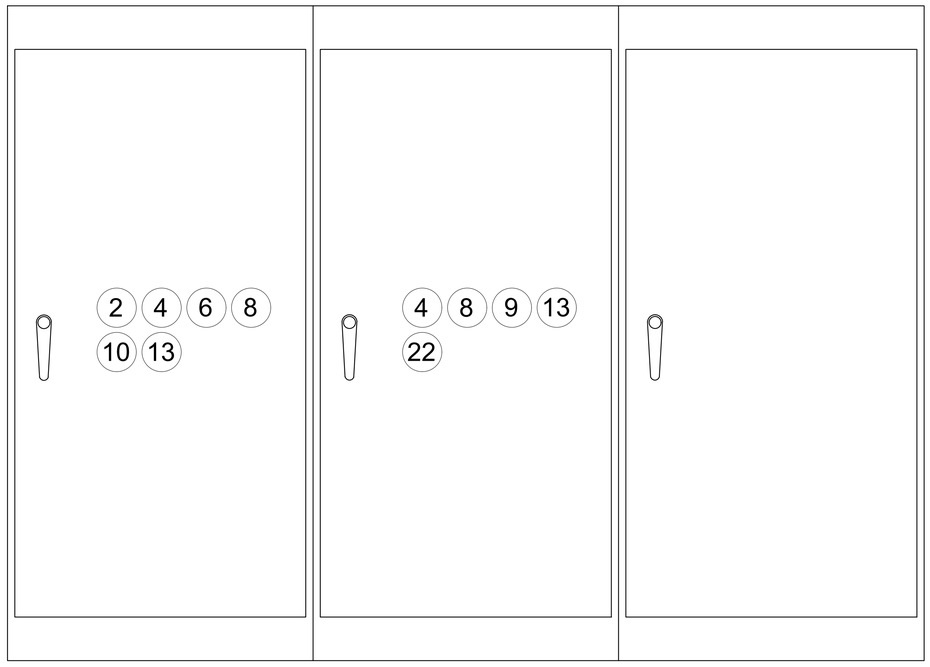
CPS 125kW
INVERTER



1600A
STANDALONE
SWITCHBOARD



LV SWITCHGEAR
7 11 12 13 15



SHEET
LABELS & SIGNS LOCATIONS

CPS

Datasheet

100/125kW, 1500Vdc String Inverters for North America

CPS SCH100/125KTL-DO/US-600

The 100 & 125kW high power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.1% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box inlcudes touch safe fusing for up to 20 strings. The CPS Flex Gateway enables communication, controls and remote product upgrades.

Key Features

- NFPA 70, NEC 2014 and 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.5 DC/AC Inverter Load Ratio
- Separable wire-box design for fast service
- Standard 5 year warranty with extensions to 20 years

100/125KTL Standard Wire-box

100/125KTL Centralized Wire-box

SELECTED WIRE-BOX

Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

CPS

Technical Data

Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV Power	150kW	187.5kW
Max. DC Input Voltage	1500V	
Operating DC Input Voltage Range	860-1450Vdc	
Start-up DC Input Voltage / Power	900V / 250W	
Number of MPP Trackers	1	
MPPT Voltage Range[1]	870-1300Vdc	
Max. PV Input Current (Isc x1.25)	220A	275A
Number of DC Inputs	20 PV source circuits, pos. & neg. fused (Standard Wire-box) 1 PV output circuit, 1-2 terminations per pole, non-fused (Centralized Wire-box)	
DC Disconnection Type	Load-break rated DC switch	
DC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
AC Output		
Rated AC Output Power	100kW	125kW
Max. AC Output Power[2]	100kVA (111KVA @ PF>0.9)	125kVA (132KVA @ PF>0.95)
Rated Output Voltage	600Vac	
Output Voltage Range[3]	528-660Vac	
Grid Connection Type[4]	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @600Vac	96.2/106.8A	120.3/127.2A
Rated Output Frequency	60Hz	
Output Frequency Range[3]	57-63Hz	
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. Fault Current Contribution (1-cycle RMS)	41.47A	
Max. OCPD Rating	150A	175A
AC Disconnection Type	AC Maintenance switch	
AC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
System		
Topology	Transformerless	
Max. Efficiency	99.1%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<4W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +113°F / +45°C)	
Non-Operating Temperature Range[5]	-40°F to +158°F / -40°C to +70°C maximum	
Operating Humidity	0-100%	
Operating Altitude	8202ft / 2500m (no derating)	
Audible Noise	<65dBA@1m and 25°C	
Display and Communication		
User Interface and Display	LED Indicators, WiFi + APP	
Inverter Monitoring	Modbus RS485	
Site Level Monitoring	CPS Flex Gateway (1 per 32 inverters)	
Modbus Data Mapping	SunSpec/CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)	
Mechanical		
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box	
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box); 33lbs / 15kg (Centralized Wire-box)	
Mounting / Installation Angle	15 - 90 degrees from horizontal (vertical or angled)	
AC Termination	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL, Lugs not supplied)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar, M8 PEMserts (Wire range: #1AWG - 250kcmil CU/AL, Lugs not supplied) - Centralized Wire-box	
Fused String Inputs	15A fuses provided (Fuse values of 15 or 20A allowed)	
Safety		
Safety and EMC Standard	UL1741-SA-2016, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt	
Warranty		
Standard[6]	5 years	
Extended Terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF
2) "Max. AC Apparent Power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100KW PF ≥0.9 and 125KW PF ≥0.95
3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) Wye neutral-grounded, Delta may not be corner-grounded.
5) See user manual for further requirements regarding non-operating conditions.
6) 5 year warranty effective for units purchased after October 1st, 2019.

SHEET
INVERTER DATASHEET

Intertek

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:	SHANGHAI CHINT POWER SYSTEMS CO., LTD	**Manufacturer:**	SHANGHAI CHINT POWER SYSTEMS CO., LTD
Address:	No. 3255 Si Xian Rd, Songjiang District, Shanghai, 201614	**Address:**	No. 3857 Si Xian Rd, Songjiang District, Shanghai, 201614
Country:	P.R.China	**Country:**	P.R.China
Contact:	Danson Chen	**Contact:**	Sherry Wu
Phone:	(86)21 3779 1222 ext:6303	**Phone:**	(86)21 3779 1222 ext:6206
FAX:	(86)21 3779 1222 ext:6001	**FAX:**	(86)21 3779 1222 ext:6210
Email:	Danson.chen@chint.com	**Email:**	wuyp@chint.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Intertek Testing Services Shanghai Limited

Control Number: *4004522* **Authorized by:** Thomas J. Patterson, Certification Manager

C ETL LISTED US
Intertek

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

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):	UL Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, UL 1741, Second Edition, January 28, 2010 & General Use Power Supplies, CSA C22.2 No.107.1-01 dated September, 2001, Reaffirmed 2006 with Interim Certification Requirements for Utility-Interconnected Inverters - Technical Information Letter (T.I.L.) No. I-43, dated January 21, 2011
Product:	Grid-Tie PV Inverter
Brand Name:	CHINT POWER or CPS
Models:	CPS SC14KTL-DO/US-208, CPS SC14KTL-DO/CA-208

CPS AMERICA

Table 4-3 Protection Parameters (IEEE1547 and Rule21) cont'd

Grid Recovery		IEEE1547	Rule21
Parameter name	Description	Setting Range (Min, **Default**, Max)	Setting Range (Min, **Default**, Max)
VolMax (V)	Recovery Max threshold of grid voltage protection	{80.00%, **107.92%**, 135.00%}	{80.00%, **107.99%**, 135.00%}
VolMin (V)	Recovery Min threshold of grid voltage protection	{20.00%, **90.08%**, 100.00%}	{20.00%, **90.00%**, 100.00%}
VolRecoveryT(S)	Recovery time of grid voltage protection	{0, **300**, 655}	{0, **300**, 655}
FrqMax (Hz)	Recovery Max threshold of grid Frequency protection	{54, **60.3**, 66}	{54, **60.4**, 65}
FrqMin (Hz)	Recovery Min threshold of grid Frequency protection	{54, **59.8**, 60}	{48, **58.6**, 60}
FrqRecoveryT (S)	Recovery time of grid frequency protection	{0, **300**, 655}	{0, **300**, 655}
Grid Voltage Balance		**IEEE1547**	**Rule21**
Parameter name	Description	Setting Range (Min, **Default**, Max)	Setting Range (Min, **Default**, Max)
GridVolBalance	Threshold value of grid voltage imbalance	(0.01%,**10%**,10%)	(0.01%,**10%**,10%)

CPS AMERICA

Table 4-3 Protection Parameters (IEEE1547 and Rule21)

Grid Voltage Protection		IEEE1547	Rule21
Parameter name	Description	Setting Range (Min, **Default**, Max)	Setting Range (Min, **Default**, Max)
GridVoltMax1	Threshold value of Level 1 Max. grid voltage	{100.00%, **110.00%**, 135.00%}	{100.00%, **110.00%**, 135.00%}
VoltMaxTripTime1(S)	Threshold value of Level 1 Max. grid trip voltage	{0, **1.00**, 655}	{0, **12.50**, 655}
GridVoltMax2	Threshold value of Level 2 Max. grid voltage	{100.00%, **120.00%**, 135.00%}	{100.00%, **120.00%**, 135.00%}
VoltMaxTripTime2(S)	Threshold value of Level 2 Max. grid trip voltage	{0, **0.16**, 655}	{0, **0.16**, 655}
GridVoltMax3	Threshold value of Level 3 Max. grid voltage	{100.00%, **120.00%**, 135.00%}	{100.00%, **120.00%**, 135.00%}
VoltMaxTripTime3(S)	Threshold value of Level 3 Max. grid trip voltage	{0, **0.16**, 655}	{0, **0.16**, 655}
GridVoltMin1	Threshold value of Level 1 Min. grid voltage	{30.00%, **88.00%**, 100.00%}	{30.00%, **88.00%**, 100.00%}
VoltMinTripTime1(S)	Threshold value of Level 1 Min. grid trip voltage	{0, **2.0**, 655}	{0, **20.50**, 655}
GridVoltMin2	Threshold value of Level 2 Min. grid voltage	{30.00%, **60.00%**, 100.00%}	{30.00%,**70.00%**, 100.00%}
VoltMinTripTime2(S)	Threshold value of Level 2 Min. grid trip voltage	{0, **1.00**, 655}	{0, **10.50**, 655}
GridVoltMin3	Threshold value of Level 3 Min. grid voltage	{30.00%, **45.00%**, 100.00%}	{30.00%, **50.00%**, 100.00%}
VoltMinTripTime3(S)	Threshold value of Level 3 Min. grid trip voltage	{0, **0.16**, 655}	{0, **1.5**, 655}

CPS AMERICA

Table 4-3 Protection Parameters (IEEE1547 and Rule21) cont'd

Grid Frequency Protection		IEEE1547	Rule21
Parameter name	Description	Setting Range (Min, **Default**, Max)	Setting Range (Min, **Default**, Max)
GridFrqMin1	Protection threshold value of Level 1 Min. grid frequency	{54, **59.5**, 60}	{45, **58.5**, 60}
FrqMinTripT1 (S)	Trip time of Level 1 Min. grid frequency	{0, **2**, 655}	{0, **299.50**, 655.00}
GridFrqMin2	Protection threshold value of Level 2 Min. grid frequency	{54, **57**, 60}	{45, **57**, 60}
FrqMinTripT2 (S)	Trip time of Level 2 Min. grid frequency	{0, **0.16**, 655}	{0, **0.16**, 655}
GridFrqMin3	Protection threshold value of Level 3 Min. grid frequency	{54, **57**, 60}	{54, **57**, 60}
FrqMinTripT3 (S)	Trip time of Level 3 Min. grid frequency	{0, **0.16**, 655}	{0, **0.16**, 655}
GridFrqMax1	Protection threshold value of Level 1 Max. grid frequency	{60, **60.5**, 65}	{50, **60.5**, 65}
FrqMaxTripT1(S)	Trip time of Level 1 Max. grid frequency	{0, **2**, 655}	{0, **299.50**, 655}
GridFrqMax2	Protection threshold value of Level 2 Max. grid frequency	{50, **62**, 65}	{50, **62**, 65}
FrqMaxTripT2(S)	Trip time of Level 2 Max. grid frequency	{0, **0.16**, 655}	{0, **0.16**, 655}
GridFrqMax3	Protection threshold value of Level 3 Max. grid frequency	{60, **62**, 65}	{50, **62**, 65}
FrqMaxTripT3(S)	Trip time of Level 3 Max. grid frequency	{0, **0.16**, 655}	{0, **0.16**, 655}

CSA Group

Certificate of Compliance

Certificate: 2706862 **Master Contract:** 260407
Project: 70192962 **Date Issued:** 2018-07-30
Issued to: **REC Solar PTE. LTD.**
20 Tuas South Avenue 14
Singapore, Singapore 637312
SINGAPORE

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

C SP US

Issued by: Sean Jiang
Sean Jiang

PRODUCTS
CLASS - C531110 - POWER SUPPLIES-Photovoltaic Modules and Panels
CLASS - C531190 - POWER SUPPLIES-Photovoltaic Modules and Panels - Certified to US Standards

Photovoltaic Modules with maximum system voltage of 600 V dc or 1000 V dc or 1500 V dc, and Type 1 or Type 2 module fire performance. Model series as below:
RECxxx (xxx = 214 to 285 W), followed by PE, PE BLK or PE Z-LINK;
RECxxx (xxx = 245 to 260 W), followed by PE BLK2;
RECxxx (xxx = 245 to 270 W), followed by PE Z-LINK-S;
RECxxx (xxx = 285 to 325 W), followed by PE 72, PE 72 BLK, PE 72 BLK2, PE 72 XV;
RECxxx (xxx = 260 to 300 W), followed by TP, TP BLK, TP IQ, TP BLK IQ;
RECxxx (xxx = 260 to 330 W), followed by TP2, TP2 BLK, TP2 IQ, TP2 BLK IQ, TP2S, TP2S BLK, TP2S IQ, TP2S BLK IQ;
RECxxx (xxx = 265 to 290 W), followed by TP2 BLK2, TP BLK2, TP2S BLK2;
RECxxx (xxx = 280 to 295 W), followed by TP2L, TP2L BLK, TP2L BLK2, TP2SL, TP2SL BLK, TP2SL BLK2;
RECxxx (xxx = 275 to 320 W), followed by TP2M, TP2M BLK, TP2SM, TP2SM BLK;
RECxxx (xxx = 270 to 320 W), followed by TP2M BLK2, TP2SM BLK2;
RECxxx (xxx = 320 to 370 W), followed by PEM 72, PEM 72 BLK;
RECxxx (xxx = 310 to 370 W), followed by TP 72, TP 72 BLK, TP 72 BLK2, TP2S 72, TP2S 72 BLK, TP2S 72 BLK2;
RECxxx (xxx = 260 to 295 W), followed by PEM, PEM BLK, PE Z-Link-M;
RECxxx (xxx = 260 to 290 W), followed by PEM BLK2;
RECxxx (xxx = 350 to 380 W), followed by TP2M 72, TP2M 72 BLK, TP2M 72 BLK2, TP2SM 72, TP2SM 72 BLK, TP2SM 72 BLK2;
RECxxx (xxx = 315 to 340 W), followed by TP2SB 72 XV;
RECxxxNP (where xxx is the power output from 295 W to 330 W)

Note: 1. Model numbers may be followed by suffixes US, ECO, EVO, BLK, BLK2, Q2, Q3, XV, Z-LINK, Z-LINK-M, IQ, 2, S and 2L or a combination of these.
2. Details such as ratings, size, configuration, etc. reference should be made to the Certification Record or the Descriptive Report.

APPLICABLE REQUIREMENTS
ULC/ORD- C1703-01 - Flat-Plate Photovoltaic Modules and Panels
UL 1703-3rd Edition - Flat-Plate Photovoltaic Modules and Panels