2.1.1	SITE NOTES: A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA	
2.1.3	REGULATIONS. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A	2.6.5
2.1.4	UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES. THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR	2.6.6
2.1.5	BUILDING ROOF VENTS. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED	267
2.1.6	ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26. ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE	2.6.8
	BUILDING OR STRUCTURE.	2.6.9
2.2.1 2.2.2 2.2.3	EQUIPMENT LOCATIONS ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26. WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).	2.7.1 2.7.2
2.2.4 2.2.5	RACKING, MID CLIPS, END CLIPS, AND MODULES 2703 LISTED ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.	2.7.3
2.2.5	ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.	2.1.4
2.2.6	ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.	275
2.3.1 2.3.2	STRUCTURAL NOTES: RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.	2.7.6 2.7.7 2.7.8
2.3.3	JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.	
2.3.4	ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.	
2.3.5	ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.	
2.3.6	WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.	
2.4.1 2.4.2	GROUNDING NOTES: GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.	
2.4.3	AS IN CONVENTIONAL PV SYSTEMS, UNGROUNDED PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO GROUND, IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDED.	
2.4.4	PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.	
2.4.5 2.4.7	METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A). THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT	
0.4.0	THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.	
2.4.8	GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119] THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 250 50 THROUGH 250 106	
2.7.5	IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, AND AHJ.	
2.4.11	IN UNGROUNDED INVERTERS, GROUND FAULT PROTECTION IS PROVIDED BY "ISOLATION MONITOR INTERRUPTOR," AND GROUND FAULT DETECTION PERFORMED BY "RESIDUAL-CURRENT DETECTOR."	
2.5.1	INTERCONNECTION NOTES:	
2.5.5	EXCEED 120% OF BUSBAR RATING [NEC 705.12(D)(2)(3)]. WHEN SUM OF THE PV SOURCES EQUALS >100% OF BUSBAR RATING, PV	
055	DEDICATED BACKFFED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(D)(2)(3)].	
2.5.5	AT MULTIPLE INVERTERS OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705 12 (D)(2)(3)(C)	
2.5.6	FEEDER TAP INTERCONECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (D)(2)(1)	
2.5.7	SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH	
2.5.8	BACKFEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (D)(5)].	
2.6.1 2.6.2	DISCONNECTION AND OVER-CURRENT PROTECTION NOTES: DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO	
2.6.3	THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS). DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE	
2.6.4	BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED.	

### THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO NEC 690.13. DC DISCONNECT INTEGRATED INTO ROOFTOP DC COMBINER OR INSTALLED

WITHIN 6 FT, ACCORDING TO NEC 690.15 (C). RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS ≤30V AND ≤240VA [NEC 690.12]. LOCATION OF LABEL ACCORDING TO AHJ. ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9,

AND 240. BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED, THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION, ACCORDING TO NEC 240.21. (SEE EXCEPTION IN NEC 690.9)

IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

### WIRING & CONDUIT NOTES:

ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOS
CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE
REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
ALL CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
EXPOSED UNGROUNDED PV SOURCE AND OUTPUT CIRCUITS SHALL USE WI
LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE [690.35 (D)].
MODULES WIRE LEADS SHALL BE LISTED FOR USE WITH UNGROUND
SYSTEMS, ACCORDING TO NEC 690.35 (D)(3).
PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE [NEC 200.6 (A)(6)].
MODULE WIRING SHALL BE LOCATED AND SECURED UNDER THE ARRAY.
RACKING, MID CLIPS, END CLIPS, AND MODULES 2703 LISTED
AC CONDUCTORS COLORED OR MARKED AS FOLLOWS:
PHASE A OR L1- BLACK

PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE\*, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY

\* IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].

SYMBOL	LEGEND

ALC AC LOAD CENTER

PVM PV METER



DISCLAIMER: PLEASE NOTE THAT THE ABBREVIATIONS, ANNOTATIONS, AND SYMBOLS LISTED ARE INTENDED TO ILLUSTRATE THOSE THAT ARE COMMONLY USED; NOT ALL ARE NECESSARILY UTILIZED WITHIN THIS SET OF DRAWINGS.



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GENERAL NOTES

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 SEE SHEET T-001 FOR LEGEND OF SYMBOLS

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	3-C	) <u>3-C</u>	3-D	3-D	(3-D)	3-D	3-D	(3-D)	3-D	(3-D)	3-D	3-D	(3-D)	(3-D)	(3-D)	(3-D)	(3-D)	(3-D)	3-D	3-D	3-E	3-E	3-E	3-E	3-E	(3-E)	3-E	3-E	(3-E)	3-E
 	JB 3-F	3-F	3-F	3-F	3-F			0		3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-F	3-E	3-E	3-E	3-E	3-E	3-E	(3-E)	3-E

└── (N) 1.5" DIA CONDUIT RUN (TYP.)

![](_page_2_Picture_3.jpeg)

J

ARRAY 2 - 66.00 kW [176] (N) MODULES TILT: 5 DEGREES ROOF PITCH: 1:12 AZIMUTH: 230 DEGREES

# GENERAL NOTES

FIELD VERIFY ALL MEASUREMENTS
 SEE SHEET T-001 FOR LEGEND OF SYMBOLS

D

![](_page_2_Figure_10.jpeg)

ATTACHMENT TYPE: S5! PROTEA BRACKET MOUNT

![](_page_2_Figure_11.jpeg)

Í					
РНС	DNE:		JMPANY NAME		
LIC. UNA DRA PERI VIOL AND DAM	NO.: WING SET WI MISSION FRO ATION OF U.S WILL BE SUB AGES AND PP	USE OF THIS THOUT WRITTEN M CONTRACTOR IS S. COPYRIGHT LAW JECT TO CIVIL ROSECUTIONS.	S IN S		
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NO.	DESCI	REVISION RIPTION PR W PV SYST OWNE	N / RELEAS	E Vp D	DATE
NO.	DESCI	REVISION RIPTION PR W PV SYST OWNE	N / RELEAS	E Vp D	DATE
NO.	NE	REVISION RIPTION PR W PV SYST OWNE	OJECT EM: 133.50 kV	E Vp D	DATE
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NO.	DESCI	REVISION RIPTION PR W PV SYST OWNE FULL /	N / RELEAS	E Vp D E	
NO.	DESCI	REVISION RIPTION PR PR W PV SYST OWNE FULL / FULL / ENGINEEF	N / RELEAS	E Vp D E	
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![](_page_3_Figure_0.jpeg)

![](_page_3_Picture_5.jpeg)

![](_page_4_Figure_0.jpeg)

Λ1 UΙ

THREE LINE DIAGRAM

NOT TO SCALE

CONTRACTOR YOUR COMPANY NAME PHONE:
LIC. NO.:
VIOLATION OF U.S. COPYRIGHT LAWS AND WILL BE SUBJECT TO CIVIL DAMAGES AND PROSECUTIONS.
REVISION / RELEASE
NO. DESCRIPTION DATE
OWNER NAME
FULL ADDRESS
ENGINEER OF RECORD
PAPER SIZE: 36" x 24" (ARCH D)
SHEET TITLE: THREE LINE DIAGRAM
(SHEET 5)
CHECKED BY: SHEET NUMBER:
E-601.00

POWERBOX MAX OUTPUT CURRENT OPTIMIZERS IN SERIES NOMINAL STRING VOLTAGE ARRAY OPERATING CURRENT ARRAY STC POWER ARRAY PTC POWER MAX AC CURRENT MAX AC POWER DERATED (CEC) AC POWER ARRAY STC POWER ARRAY PTC POWER MAX AC CURRENT MAX AC CURRENT MAX AC POWER DERATED (CEC) AC POWER	STRING #1 18A 18 400V 16.88A	STRING #2 18A 18 400V 16.88A	STRING #3 18A 18 400V 16.88A	INVERTER #1 STRING #4 18A 18 400V 16.88A 46,500W 42,873W 120A	STRING #5 ST 18A 18 18 400V 16.88A 7	RING #6 18A 18 400V 16.88A	STRING #7 18A 16 400V 15A	STRING # 18A 18 400V 16.88A	1 STRING 18A 18 400V 16.88A	#2 STI	I RING #3 18A 18 400V 6.88A	NVERTER # STRING #4 18A 18 400V 16.88A 46,500W	#2   STF 
POWERBOX MAX OUTPUT CURRENT OPTIMIZERS IN SERIES NOMINAL STRING VOLTAGE ARRAY OPERATING CURRENT ARRAY STC POWER ARRAY PTC POWER MAX AC CURRENT MAX AC POWER DERATED (CEC) AC POWER ARRAY STC POWER ARRAY PTC POWER MAX AC CURRENT MAX AC POWER DERATED (CEC) AC POWER	18A 18 400V 16.88A	18A       18       400V       16.88A	18A 18 400V 16.88A	18A 18 400V 16.88A 46,500W 42,873W	18A     18       18     400V       16.88A     7	18A 18 400V 16.88A	18A 16 400V 15A	18A 18 400V 16.88A	18A 18 400V 16.88A	π2 311 	18A           18           400V           6.88A	18A 18 400V 16.88A 46,500W	
OPTIMIZERS IN SERIES NOMINAL STRING VOLTAGE ARRAY OPERATING CURRENT ARRAY STC POWER ARRAY PTC POWER MAX AC CURRENT MAX AC POWER DERATED (CEC) AC POWER ARRAY STC POWER ARRAY PTC POWER MAX AC CURRENT MAX AC POWER DERATED (CEC) AC POWER	18 400V 16.88A	18 400V 16.88A	18 400V 16.88A	18 400V 16.88A 46,500W 42,873W	18 400V 16.88A	18 400V 16.88A	16 400V 15A	18 400V 16.88A	18 400V 16.88A	A 1	18 400V 6.88A	18 400V 16.88A 46,500W	
ARRAY OPERATING CURRENT ARRAY STC POWER ARRAY PTC POWER AX AC CURRENT AX AC CURRENT AX AC POWER ARAY STC POWER ARAY STC POWER ARAY PTC POWER AX AC CURRENT AX AC CURRENT AX AC POWER ERATED (CEC) AC POWER	16.88A	16.88A	16.88A	16.88A 46,500W 42,873W	16.88A	16.88A	15A	16.88A	16.88/	1	6.88A	16.88A 46,500W	
RAY STC POWER RAY PTC POWER X AC CURRENT X AC POWER RATED (CEC) AC POWER RAY STC POWER RAY PTC POWER CAC CURRENT CAC POWER RATED (CEC) AC POWER				46,500W 42,873W								46,500W	
AC CURRENT AC POWER ATED (CEC) AC POWER AY STC POWER AY PTC POWER AC CURRENT AC POWER ATED (CEC) AC POWER				1204								42.873\//	
AC POWER         ATED (CEC) AC POWER         AY STC POWER         AY PTC POWER         AC CURRENT         AC POWER         ATED (CEC) AC POWER				IZUA								12,07011 120A	
RAY STC POWER RAY STC POWER RAY PTC POWER X AC CURRENT X AC POWER RATED (CEC) AC POWER				43,200W								43,200W	
RRAY PTC POWER AX AC CURRENT AX AC POWER RATED (CEC) AC POWER				41,00500							133,50	21,005W	
X AC CURRENT X AC POWER RATED (CEC) AC POWER											123,08	87W	
ERATED (CEC) AC POWER											360	A NO	
											117,72	24W	
ASHRAE EXTREME LOW	DESIGN TE -16.9°C (1.6°F 33.8°C (92.8°I	EMPERATU F), SOURCE: SC F), SOURCE: SC	JRES DUTH JERSE DUTH JERSE	EY RGNL (39.94 EY RGNL (39.94	°; -74.84°) 1°; -74.84°)	RE PM1-	F. QTY. -356 356	TRINA	MAKI SOLAR TSM	E AND MC 1-375DE14	DDEL 4A(II) PER(	C MONO	PM 375
						REF	QTY.	MO SOLAR E	DEL	F	RATED INF		2
								SOLAR E					I
						REF.		MAK		=L	A	J VOLTAGE	GROL
						11-3	3	SOLAR E	DGE SE43.2	(208V)		208V	FLOAT
										DIS	SCONN	ECTS	
						REF. 0	ΩTY. 1					RATED	
							· 1				1		
		I	1		C	ONDUC	TOR AND	CONDUI	T SCHED	ULE W	//ELECT	RICAL C	ALCL
) TYPICAL CONDUCTC	DR	CONDUIT	CUF   CONDI	RENT-CARRYI	ING NDUIT OCPD		EGC	Т	EMP. CORR	FACTOR		UIT FILL FAC	CTOR
20 10 AWG PV WIRE,	COPPER	1.5" DIA PVC-	40	2	N/A	6 AW	/G BARE, COP	PER	0.71 (55.	8°C)		1	
2 3 6 AWG THWN-2, C		1.5" DIA PVC-	40	14	N/A	6 AWC			0.71 (55.	8°C)		0.5	
4 1 (2) 4/0 AWG THWN-2	2, COPPER	3.0" DIA PVC-	40 3+N (2	COND. IN PARA	ALLEL) 450A	2 AWC	G THWN-2, CO	PPER	0.96 (33.	8°C)		1	
1 (2) 4/0 AWG THWN-2	2, COPPER	3.0" DIA PVC-	40 3+N (2	COND. IN PARA	ALLEL) N/A	2 AWC	G THWN-2, CO	PPER	0.96 (33.	8°C)		1	
								В	ILL OF M	ATERI	ALS	1	
			MAKE	R	T.SM-37	MODEL NI	) PERC MONO		REF	<b>QTY</b>		QTY/UNI 1	T קד
NVERTER			SOLAR EDG	E		SE43.2 (	208V)		11-3	3	PIECES	1	SC
				E		P85			PO1-178	178		1	SC
RODUCTION METER			SOLAR EDG	E		PROD-M	ETER		M1	1	PIECE		RE
					GEN	-10-AWG-F	PV-WIRE-CU		WR1	3600	FEET	1	10
IKING					GE GEN-(	<u>-</u> IN-6-AWG- 6-AWG-TH	WN-2-CU-RD		WR1 WR2	1800 3780	FEET	1   1	6 / 6 /
/IRING					GEN-6	S-AWG-TH	WN-2-CU-BLK		WR2	3780	FEET	1	6 /
/iking/IRING					GEN-6 GEN-1	b-AWG-TH /0-AWG-TH	WN-2-CU-GR		WR2 WR3	3780 45	FEET FEFT	1   1	6 A
/IRING					GEN-1/	0-AWG-TH	IWN-2-CU-BLK		WR3	45	FEET	1	1/0
/iring Viring					GEN-1	/U-AWG-Tŀ /0-AWG-T⊦	HWN-2-CU-BL		WR3	45 45	FEET FEFT	1   1	1/0 1/0
/IRING					GEN-	6-AWG-TH	WN-2-CU-GR		WR3	45	FEET	1	6 /
IRING					GEN-4/0		/G-THWN-2-RE	)	WR4-5	20	FEET	1	4/C
VIRING					GEN-4/0	0-AWG-AW	G-THWN-2-BL	·	WR4-5	20	FEET	1	4/0
/IRING					GEN-4/0	)-AWG-AW	G-THWN-2-WH	1	WR4-5	20	FEET	1	4/0
IREWAY					GEN-2 G	Z-AVVG-TH EN-PVC-40	vviv-2-CU-GR )-1.5" DIA		www.4-5 WW1-3	1800	FEET	1	PV
/IREWAY					G	EN-PVC-40	)-3.0" DIA		WW4-5	20	FEET	1	PV
UPD CPD		GENER			GE GE	N-CB-150	A-240VAC		CB1-3 F1-3	3	PIECES	1	CII
RANSITION BOX		GENER	IC MANUFA	CTURER	(	GEN-AWB-	TB-4-4X		JB9	9	PIECES		TF
<b>! WARNING !</b> ELECTRIC SHOCK HAZARD		!		NG !		PERATING C	CURRENT: 6 OLTAGE: 4	7.52 A DC 00 V DC		P	HOTO C DISC		IC CT
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNI AND MAY BE ENERGIZED.	DED	DO I TERMINALS ON BE ENERC	NOT TOUCH TE N BOTH LINE A GIZED IN THE (	ERMINALS. ND LOAD SIDES M OPEN POSITION.			CURRENT: 1: E: 6	26 A DC 00 V DC		PERATING	CURRENT: VOLTAGE:	259.5 A AC 208 V AC	;
EACH JUNCTION, COMBINER, DI D DEVICE WHERE ENERGIZED U	SCONNECT NGROUNDED URING	AT EACH DISC PHOTOVOLTA [NEC 690.17]	CONNECTIN AIC EQUIPM	NG MEANS FO ENT	DR AT EA	CH DC DI 690.53]	SCONNECTIN	IG MEANS	LA AT DIS [NE	BEL 4 POINT C CONNE C 690.54	DF INTER( CTING ME 1]	CONNECTIO	on, ma
NDUCTORS MAY BE EXPOSED D RVICE	-				NA								
NDUCTORS MAY BE EXPOSED D RVICE C 690.35(F)]		PHOTO\ <u>EQUIP</u>	VOLTAI P <u>ED WI</u>	C SYSTE TH RAPIC		WA	RNING:	PHOT(		VIC.	0		
NDUCTORS MAY BE EXPOSED D RVICE C 690.35(F)] PHOTOVOLTAIC DC DISCONNECT	0	PHOTO EQUIPI S	VOLTAI PED WI SHUTDC	C SYSTE TH RAPIE WN		WA	ARNING: Powe	PHOT( R SOU	JVOLTA RCE	AIC	0		

									l	NVER	FER #3					•	
F	RING #5	STRIN	IG #6	STRING #	‡7 ST	RING #1	STF	RING #2	STRIN	G #3	STRIN	G #4	STR	RING #5	STRING #6	•	
	18A	18	A	18A		18A		18A	18/	۹	18A	\		18A	18A		
	18	18	3	16		18		18	18		18			18	18	•	
4	400V	400	)V	400V		400V	4	400V	400	V	400	V	4	00V	400V		
(	6.88A	16.8	88A	15A		16.88A	1	6.88A	16.88	BA 🛛	16.88	BA	16	6.88A	16.88A		
										40,50	W00					_	
										37,34	41W						
										120	)A						
										43,20	W0C						
										35,7	14W					_	
		MO	DUL	ES												•	
1	IAX P	TC	ISC	IMP	VOC	VMP		-	TEMP. CO	OF VOC			FUS	E RATING			
,	5W 345	.75W 9	9.88A	9.37A	48.5V	40V			-0.141V/°C (-0.29%/°C)						20A		
																-	
	PO	WER	OPTI	IMIZERS												_	
	MAX	K OUTPL	JT CUF	RRENT	M	IAX INPUT	ISC	1	MAX DC VOLTAGE				WEIGHTED EFFICIENCY				
		18	8A			12.5A			120				98.6%		-		
				-RS												•	
					MA		-	ΜΔΧ						CEC W	FIGHTED	•	
ι	JND   RA	ATING	RATED	POWER	C	URRENT		CUF	RRENT	MAX INPUT VOLTA			GE EFFICIENCY				
		504	13	200\\/		1204		1	1/Δ		600\	/		٥	7.0%		
TING 150A 45200W						1207					0001	/		5	1.070	-	
										0	CPDS						
	NT	MAX	RATE		-	RFF	0	ΓY.	RATE					MAX VC	I TAGE		
			600	VAC		F1-3		3		450A				600	VAC		
						CB1-3		3		150A				240	VAC		
						CB4		1		20A				240VAC			
							1										
l	JLATIC	DNS														•	
	CONT			MAX. CURF	RENT												
	CONT.	UKKEľ		(125%)			VIT.	DERAIE			vi. i ⊏iviP	. RAIII	10				
	1	18A		22.5A		55A		39.0	)5A		75°C	)		50A			
18A 22.5A						75A		26.6	63A	75°C				65A			

	120A	150A	170A	163.2A	75°C	150A
	360A	450A	520A	499.2A	75°C	460A
	360A	450A	520A	499.2A	75°C	460A
						1
			DE	SCRIPTION		
	RINA SOLAR TSM-37	5DE14A(II) PERC MON	IO 375W 72 CE	ELLS, MONOCRYS	TALLINE SILICON	
	DLAR EDGE SE43.2 (	208V) 43200W INVER	TER			
	DLAR EDGE P850 OP	TIMIZER (REQUIRED	PART OF INVI	ERTER'S DISTRIBL	JTED DC ARCHITECTURE	Ξ)
-	QUARE D H366NR, 3-	POLE, 600A, 600VAC	OR EQUIVALE	ENT		
	VENUE GRADE MET	TER SE-RWND-3D-208	B-MB			
)	AWG PV WIRE, COF	PPER (POSITIVE AND	NEGATIVE)			
	AWG BARE, COPPER	R (GROUND)				
	AWG THWN-2, COPP	PER, RED (POSITIVE)				
	AWG THWN-2, COPP	PER, BLACK (NEGATIV	′E)			
	AWG THWN-2, COPP	PER, GREEN (GROUNI	D)			
	AWG THWN-2, COF	PPER, RED (LINE 1)				
	AWG THWN-2, COF	PPER, BLACK (LINE 2)				
	AWG THWN-2, COF	PPER, BLUE (LINE 3)				
	AWG THWN-2, COF	PPER, WHITE (NEUTR	AL)			
	AWG THWN-2, COPP	PER, GREEN (GROUNI	D)			
(	) AWG THWN-2, COF	PPER, RED (LINE 1)				
(	) AWG THWN-2, COF	PPER, BLACK (LINE 2)				
r						

Н

![](_page_5_Picture_4.jpeg)

PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION [NEC 690.56(B)]

WHERE THE INVERTERS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE INSTALLED AT EACH DC PV SYSTEM DISCONNECTING MEANS, AT EACH AC DISCONNECTING MEANS, AND AT THE MAIN SERVICE DISCONNECTING MEANS SHOWING THE LOCATION OF ALL AC AND DC PV SYSTEM DISCONNECTING MEANS IN THE BUILDING. [NEC 690.4(H)]

![](_page_5_Figure_7.jpeg)

J

PV ARRAY

![](_page_5_Picture_10.jpeg)

![](_page_5_Figure_11.jpeg)

E-602.00

SHEET NUMBER:

![](_page_6_Picture_0.jpeg)

ELECTRICAL DATA (STC)

Solar Cells

Cell Orientation

25 year Linear Power Warranty

Power Output Tolerance-P<sub>MAX</sub> (W)

# TALLMAX<sup>®</sup>plus\*

![](_page_6_Figure_2.jpeg)

### laximum Power Current-Imp (A) 8.90 8.96 9.04 9.14 9.24 9.30 9.33 9.37 Open Circuit Voltage-V∞ (V) 46.2 46.7 47.0 47.4 47.7 48.0 48.3 48.5 hort Circuit Current-Isc (A) Module Efficiency ŋ๓ (%) 17.5 17.7 18.0 18.3 18.5 18.8 19.0 19.3 TC: Irradiance 1000W/m², Cell T Measuring tolerance: ±3%. ELECTRICAL DATA (NOCT) Maximum Power-PMAX (Wp) 253 257 261 264 268 272 276 279 Maximum Power Voltage-V#P (V) 35.4 35.7 35.9 36.0 36.2 36.4 36.8 37.1 Maximum Power Current-Imp (A) 7.15 7.20 7.26 7.34 7.42 7.47 7.50 7.55 Open Circuit Voltage-Voc (V) Short Circuit Current-Isc (A) 7.67 7.71 7.75 7.79 7.83 7.89 7.94 7.98 NOCT: Irradiance at 800W mperature 20°C, Wind Speed : **MECHANICAL DATA** Monocrystalline 156.75 × 156.75 mm (6 inches) 72 cells (6 × 12) Module Dimensions 1960 × 992 × 40 mm (77.2 × 39.1 × 1.57 inches) 26.0 kg (57.3 lb) with 4.0 mm glass; 22.5 kg (49.6 lb) with 3.2 mm glass 4.0 mm (0.16 inches) for PERC Mono; 3.2 mm (0.13 inches) for Std Mono, High Transmission, AR Coated Tempered Glass

 Peak Power Watts-PMAX (Wp)\*
 340
 345
 350
 355
 360
 365
 370
 375

 Maximum Power Voltage-VMPP (V)
 38.2
 38.5
 38.7
 38.8
 39.0
 39.3
 39.7
 40.0

0~+5

FRAMED 72-CELL MODULE(1500V)

ame	Silver Anodized A	lum	iinium Alloy			
Зох	IP 67 or IP 68 rate	۶d				
bles	Photovoltaic Tech	nno	logy Cable 4.0mm° (0.006 inche	25°),		
	1200 mm (47.2 in	che	25)			
nnector	Trina TS4					
е Туре	Type 1 or Type 2					
MPERATURE RATINGS			MAXIMUM RATINGS			
OCT (Nominal Operating Cell Temperature)	44°C (±2°C)		Operational Temperature	-40~+85°C		
emperature Coefficient of P <sub>MAX</sub>	- 0.39%/°C		Maximum System Voltage	1500V DC (IEC)		
emperature Coefficient of Voc	- 0.29%/°C			1500V DC (UL)		
emperature Coefficient of lsc	0.05%/°C		Max Series Fuse Rating	15A (Power ≤350W)		
				20A (Power ≥355W)		
			(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)			
RRANTY			PACKAGING CONFIGURATIO	N		
year Product Workmanship Warra	anty		Modules per box: 27 pieces			

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT. © 2017 Trina Solar Limited. All rights reserved. Specifications included in this datasheet are subject to change without notice. Version number: TSM\_EN\_2018\_B www.trinasolar.com

Modules per 40' container: 648 pieces

# **Three Phase Inverter** with Synergy Technology

for the 208V Grid for North America SE43.2KUS

![](_page_6_Picture_8.jpeg)

Specifically designed to work with power optimizers

- Easy two-person installation each unit mounted separately, equipped with cables for simple connection between units
- Balance of System and labor reduction compared to using multiple smaller string inverters
- Independent operation of each unit enables higher uptime and easy serviceability
- I No wasted ground area: wall/rail mounted, or horizontally mounted under the modules (10° inclination)
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Fixed voltage inverter for superior efficiency (97%) and longer strings
- Integrated DC Safety Switch
- Built-in RS485 Surge Protection, to better withstand lightning events
- I Built-in module-level monitoring with Ethernet or cellular GSM

![](_page_6_Picture_19.jpeg)

INVERTERS

# **Power Optimizer** For North America

P730/P850/P800p

![](_page_6_Picture_22.jpeg)

# PV power optimization at the module-level The most cost effective solution for commercial and large field installations

- I Specifically designed to work with SolarEdge
- inverters / Up to 25% more energy
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less
- cables, fuses and combiner boxes, over 2x longer string lengths possible
- Fast installation with a single bolt

solaredge.com

# / Three Phase Inverter with Synergy Technology for the 208V Grid for North America

SE43.2KUS

solaredge.com

	SE43.2KUS			
OUTPUT				
Rated AC Power Output	43200	VA		
Maximum AC Power Output	43200	VA		
AC Output Line Connections	4-wire WYE (L1-L2-L3-N) plus PE or 3 wire Delta			
AC Output Voltage Minimum-Nominal-Maximum <sup>(1)</sup> (L-N)	105-120-132.5	Vac		
AC Output Voltage Minimum-Nominal-Maximum <sup>(1)</sup> (L-L)	183-208-229	Vac		
AC Frequency Min-Nom-Max <sup>(1)</sup>	59.3 - 60 - 60.5	Hz		
Maximum Continuous Output Current (per Phase) @208V	120	A		
GFDI Threshold	1	A		
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes			
INPUT				
Maximum DC Power (Module STC), Inverter / Unit	58200 / 19400	W		
Transformer-less, Ungrounded	Yes			
Maximum Input Voltage DC to Gnd	300	Vdc		
Maximum Input Voltage DC+ to DC-	600	Vdc		
Nominal Input Voltage DC to Gnd	200	Vdc		
Nominal Input Voltage DC+ to DC-	400	Vdc		
Maximum Input Current	114	Adc		
Maximum Input Short Circuit Current	135	Adc		
Reverse-Polarity Protection	Yes			
Ground-Fault Isolation Detection	350kΩ Sensitivity per Unit			
CEC Weighted Efficiency	97	%		
Nighttime Power Consumption	< 12	W		
ADDITIONAL FEATURES				
Supported Communication Interfaces	RS485, Ethernet, Cellular GSM (optional)			
Rapid Shutdown	NEC2014 and NEC2017 compliant/certified, upon AC Grid Disconnect			
RS485 Surge Protection	Built-in			
DC SAFETY SWITCH				
DC Disconnect	1000V / 3 x 40A			
Safaty				
Grid Connection Standards	IEEE 1547 Pulo 21 Pulo 14 (UI)			
	3			
DC Output Conduit Size / Terminal Block AWG Range /	2 / 4/0 / 4 2 x 1.25" / 6-14 / 9 strings			
Dimensions (H x W x D)	Primary Unit: 37 x 12.5 x 10.5 / 940 x 315 x 260; Secondary Unit: 21 x 12 5 x 10 5 / 540 x 315 x 260	in / mm		
Weight	Primary   Init: 105.8 / /8: Secondary   Init 00.2 / /5	lb / ka		
Onerating Temperature Range	$-40$ to $\pm 140$ / $-40$ to $\pm 60^{(3)}$	°E / °C		
	Fan (liser ronlaceable)	1/0		
Noice		dBA		
Protection Pating		UDA		
notection nating				
Mounting	Bracket provided			

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# **/ Power Optimizer** For North America P730 / P850 / P800p

Optimizer Mod (Typical Module Compa	el tibility)	P730 (for 2 x high power 72-cell PV modules)	P850* (for 2x high power or bi-facial modules)	P800p (for 2x 96-cell 5″ PV modules)			
INPUT							
Rated Input DC Power <sup>(1)</sup>		730	850	800	W		
Connection Method		Single input for serie	s connected modules	Dual input for independently connected modules <sup>(2)</sup>	k		
Absolute Maximum Input Voltage (Voc at lowest temperature)		12	25	87	Vdc		
MPPT Operating Range		12.5	- 105	12.5 - 87	Vdc		
Maximum Short Circuit Current pe	r input (lsc)	11	12.5	7	Adc		
Maximum DC Input Current per inp	put	13.75	15.63	8.75	Adc		
Maximum Efficiency			99.5		%		
Weighted Efficiency			98.6		%		
Overvoltage Category			Ш				
OUTPUT DURING OPERA	TION (POV	VER OPTIMIZER CONNECTED	TO OPERATING SOLAREDGE I	NVERTER)			
Maximum Output Current		15		18	Adc		
Maximum Output Voltage			85		Vdc		
OUTPUT DURING STAND	BY (POWE	R OPTIMIZER DISCONNECTED	FROM SOLAREDGE INVERTER	R OR SOLAREDGE INVERTER OFF	-)		
Safety Output Voltage per Power C	Optimizer		1 ± 0.1		Vdc		
STANDARD COMPLIANC	E						
Photovoltaic Rapid Shutdown Syste	em	NEC	2014	NEC 2014 & 2017(3)			
EMC		F		000-6-3			
Safety			IEC62109-1 (class II safety), UL174	1			
Material			UL94 V-0, UV Resistant				
RoHS			Yes				
INSTALLATION SPECIFIC	ATIONS				-		
Compatible SolarEdge Inverters			Three phase inverters				
Maximum Allowed System Voltage			1000		Vdc		
Dimensions (W x L x H)		129 x 153 x 49.5 / 5.1 x 6 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	129 x 168 x 59 / 5.1 x 6.6 x 2.3	mm / ir		
Weight		933 / 2.05	10	64 / 2.34	gr / lb		
Input Connector			MC4 <sup>(4)</sup>				
Input Wire Length		0.16 / 0.52	0.16 / 0.52 , 1.3 / 4.26 <sup>(5)</sup> , 1.6 / 5.24 <sup>(5)</sup>	0.16 / 0.52	m / ft		
Output Wire Type / Connector			Double Insulated / MC4				
Output Wire Length			2.1 / 6.9(6)		m / ft		
Operating Temperature Range <sup>(7)</sup>			-40 - +85 / -40 - +185		°C / °F		
Protection Rating			IP68 / NEMA6P				
Relative Humidity			0 - 100				
<ul> <li>Rated power of the module at SIC wi</li> <li>In a case of odd number of PV modu the P800p seal the unused input conr</li> <li>NEC 2017 requires max combined ing</li> <li>For other connector types please refailed</li> <li>Longer inputs wire length are available</li> <li>When using the P850 with longer inpoint</li> <li>For ambient temperature above +70°</li> </ul>	II not exceed the iles in one string i nectors with the s put voltage be no er to: https://www le for use with spl ut option (1.3m/4 'C / +158°F powe	optimizer "Rated Input DC Power". Modules its allowed to install one P730/P850/P800p r upplied pair of seals. t more than 80%. isolaredge.com/sites/default/files/optimizer- it junction box modules. (For 1.3m/4.26ft or A.26ft or 1.6m/5.24ft), the output wire length r de-rating is applied. Reference to Power Optimi	with up to +5% power tolerance are allowed power optimizer connected to one PV module input-connector-compatibility.pdf. Ier P850-xxxXxxY. For 1.6m/5.24ft order P850- is 2.2m /7.2ft zers Temperature De-Rating Technical Note fo	e. When connecting a single module to xxxYxxY). or more details.			
PV System Design Using a S	olaredge Inv	verter <sup>(8)</sup> Three P	hase for 208V Grid T	hree Phase for 480V/277V Grid			
Compatible Power Optimizers		P730 <sup>(9)</sup>	P850/P800p <sup>(9)</sup>	P730 P850/P800p			
Minimum String Longth	Power	Optimizers	8	14			
Winimum String Length	PV	Modules	16	27			
Maximum String Length	Power	Optimizers	30	30			
maximani saning tengan	PV	Modules	60	60			
Maximum Power per String		6000(10)	7200	12750(11) 15300	W		
Parallel Strings of Different Lengths	or Orientation	S	Yes				
Improvement P850 can be mixed in the P730/P850/P800p design with three p F730/P850/P800p design with three p For SE14.4KU5/SE43.2KUS.1: is allowed strings is up to 1,000W. For SE30KU5/SE65.6KUS/ maximum power difference between the P850 replaced the P800s; they can be	same string. It is i ohase 208V inverted to install up to SE100KUS: It is allo the strings is up to used interchange	not allowed to mix P730 with P850/P800p in ters is limited. Use the SolarEdge Designer fc 6,500W per string when 3 strings are connec owed to install up to 15,000W per string whe o 2,000W. eably and can be connected in the same strir	one string or to mix P730/P850/P800p with P r verification. tted to the inverter (3 strings per unit for SE43 n 3 strings are connected to the inverter (3 str 19.	320/P340/P370/P400/P405/P505 in one string. 3.2KUS) and when the maximum power difference ings per unit for SE66.6KUS/SE100KUS) and when	e between the n the		

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CE RoHS

![](_page_6_Picture_37.jpeg)

# Τ OWE R 0 Τ TIMIZE ア

- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- / Use with two PV modules connected in series or in parallel

![](_page_6_Picture_43.jpeg)

CE RoHS

<b></b>	
CONTRACTOR YOUR COMPANY NAME	
PHONE:            LIC. NO.:	
UNAUTHORIZED USE OF THIS DRAWING SET WITHOUT WRITTEN PERMISSION FROM CONTRACTOR IS IN VIOLATION OF U.S. COPYRIGHT LAWS	
AND WILL BE SUBJECT TO CIVIL DAMAGES AND PROSECUTIONS.	
REVISION / RELEASE	DATE
	<u> </u>
OWNER NAME	v
FULL ADDRESS	
ENGINEER OF RECORD	
PAPER SIZE: 36" x 24" (ARCH D) SHEET TITLE:	
RESOURCE DOCUMENTS	
(SHEET 7) DATE:	
DESIGN BY: CHECKED BY:	
SHEET NUMBER:	
R-001.00	

![](_page_7_Picture_0.jpeg)

## Solar Is Not Always Sunny

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

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

![](_page_7_Picture_5.jpeg)

Compatible with Flat & Pitched Roofs

XR Rails are

compatible with FlashFoot and

attachments.

other pitched roof

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

> **Corrosion-Resistant Materials** All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

**Tech Brief** 

XR Rail Family

### Tech Brie

///

### XR Rail Family

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

IronRidge offers

a range of tilt leg

options for flat roof mounting

applications.

![](_page_7_Picture_12.jpeg)

![](_page_7_Picture_13.jpeg)

- rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.
- 6' spanning capability Moderate load capability
- Clear anodized finish Internal splices available

![](_page_7_Picture_17.jpeg)

XR100

- XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.
- 8' spanning capability Heavy load capability
- Clear & black anodized finish Internal splices available

![](_page_7_Picture_22.jpeg)

## XR1000

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

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

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

Lo	ad	Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
	100						
Nono	120						
NOTE	140	XR10		XR100		XR1000	
	160						
	100						
10.20	120						
10-20	140						
	160						
30	100						
	160						
40	100						
40	160						
50-70	160						
80-90	160						

![](_page_7_Picture_28.jpeg)

# 

![](_page_7_Figure_30.jpeg)

![](_page_7_Picture_31.jpeg)

1				
PHO	)NE:			
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VIOL AND DAM	ATION OF U.S. CO WILL BE SUBJECT AGES AND PROSE	PYRIGHT LAWS TO CIVIL CUTIONS.		
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NO.	DESCRIP	TION		DATE
	<u> </u>		IECT	
1	NFW	r kuj		
		PV SYSTEN	l: 133.50 kWp	DC
	C	PV SYSTEM	I: 133.50 kWp R NAME	DC
	<u><u>C</u></u>	PV SYSTEN )WNEF	I: 133.50 kWp R NAME	DC
	<u><u>C</u></u>	PV SYSTEN )WNEF	I: 133.50 kWp R NAME	DC
	<u>C</u>	PV SYSTEN DWNEF	I: 133.50 kWp R NAME	DC
	APN:	PV SYSTEM	I: 133.50 kWp <b>R NAME</b> ODRESS	DC
	APN:	PV SYSTEN DWNEF FULL AD	I: 133.50 kWp R NAME ODRESS	DC 
	APN:	PV SYSTEM DWNEF FULL AD	I: 133.50 kWp R NAME DDRESS	DC D
	APN:	PV SYSTEM	I: 133.50 kWp R NAME	DC D
	APN:	PV SYSTEM	I: 133.50 kWp R NAME	DC D
	APN:	PV SYSTEM DWNEF FULL AD GINEER C	I: 133.50 kWp <b>X NAME</b> DDRESS DF RECORI X 24° (ARCH D)	DC D
SHEE	APN: EN(	PV SYSTEM DWNEF FULL AD GINEER C	I: 133.50 kWp <b>R NAME</b> ODRESS OF RECORI x 24* (ARCH D)	DC D
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SHEE	APN: EN( TTITLE: RE DATE: IGN BY: KED BY:	PV SYSTEM DWNEF FULL AD GINEER C GINEER C PAPER SIZE: 36" SOURCE (SHEET 	I: 133.50 kWp <b>X NAME</b> ODRESS OF RECORI x 24* (ARCH D) DOCUMEN 8)	DC D