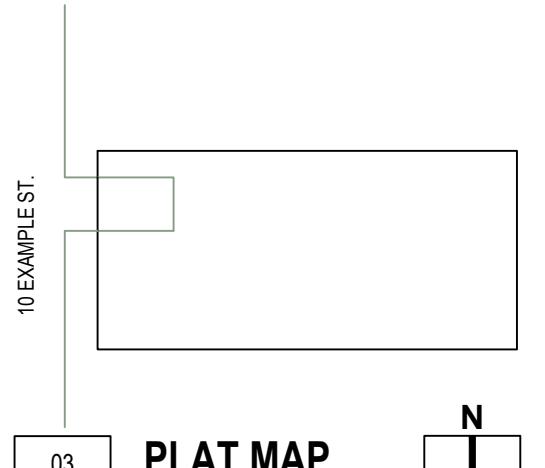


A	B	C	D	E	F	G	H				
<u>PROJECT MANAGER</u>	<u>OWNER</u>										
NAME:	NAME: EXAMPLE										
PHONE:											
<u>CONTRACTOR</u>	<u>DESIGN SPECIFICATIONS</u>										
NAME:	OCCUPANCY: II										
PHONE:	CONSTRUCTION: SINGLE-FAMILY										
<u>AUTHORITIES HAVING JURISDICTION</u>	<u>ZONING: RESIDENTIAL</u>										
BUILDING: TOWN OF HEMPSTEAD	ROOF SNOW LOAD: 25 PSF										
ZONING: TOWN OF HEMPSTEAD	WIND EXPOSURE: C										
UTILITY: PSEG LI	WIND SPEED: 125 MPH										
<u>APPLICABLE CODES & STANDARDS</u>											
BUILDING: NYSBC 2013											
ELECTRICAL: NEC 2011											
FIRE: NYSFC 2013											
NEW PV SYSTEM: 9.88 kWp											
EXAMPLE RESIDENCE											
10 EXAMPLE ST. EXAMPLE, NY 11111 ASSESSOR'S #: 46442 00240											
											
<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>01</td> <td>AERIAL PHOTO</td> </tr> <tr> <td>T-001</td> <td>SCALE: NTS</td> </tr> </table>		01	AERIAL PHOTO	T-001	SCALE: NTS	 <p>10 EXAMPLE ST.</p> <p>PLAT MAP</p> <p>03 T-001 SCALE: NTS</p> <p>N W S E</p>					
01	AERIAL PHOTO										
T-001	SCALE: NTS										
<p>1.1.1 PROJECT NOTES</p> <p>THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.</p> <p>GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE INVERTER IN ACCORDANCE WITH [NEC 690.5(A)]</p> <p>THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION</p> <p>LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 690.64 (B)]</p> <p>ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY [NEC 690.4] & [NEC 690.60]</p> <p>PV MODULES:UL 1703 CERTIFIED, NFPA 70 CLASS C FIRE</p> <p>INVERTER(S):UL 1741 CERTIFIED, IEEE 1547, 929, 519</p> <p>COMBINER BOX(S):UL 1703 OR UL 1741 ACCESSORY</p>											
<p>1.2.1 SCOPE OF WORK</p> <p>PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.</p> <p>1.2.2 WORK INCLUDES:</p> <ul style="list-style-type: none"> 1.2.3 PV ROOF ATTACHMENTS 1.2.4 PV RACKING SYSTEM INSTALLATION 1.2.5 PV MODULE AND INVERTER INSTALLATION 1.2.6 PV EQUIPMENT GROUNDING 1.2.7 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX 1.2.8 PV INSTALLING SYSTEM MONITORING EQUIPMENT 1.2.9 PV LOAD CENTERS (IF NEC.) 1.2.10 PV METERING (IF NEC.) 1.2.11 PV DISCONNECTS 1.2.12 PV GROUNDING ELECTRODE & BONDING TO (E) GEC 1.2.13 PV FINAL COMMISSIONING 1.2.14 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV 											
SHEET LIST											
				SHEET NUMBER	SHEET TITLE						
T-001				COVER PAGE							
G-001				NOTES							
A-101				SITE PLAN							
A-102				PROJECT PLAN							
E-601				THREE LINE DIAGRAM							
E-602				PLACARDS							
S-501				STRUCTURAL SHEET							
R-001				MODULE DATASHEET							
R-002				INVERTER DATASHEET							
R-003				RACKING DATASHEET							
R-004				RACKING MOUNT DATASHEET							



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HERE**

CONTRACTOR

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FILE NO.:

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DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 9.88 kWp
EXAMPLE
RESIDENCE
10 EXAMPLE ST.
EXAMPLE, NY 11111
APN# 000000 00000

ENGINEER OF RECORD

COVER PAGE

(SHEET 1 OF 11)

DATE: 4-15-2016

DESIGN BY: K N

CHECKED BY: M.M.

REVISIONS

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T 001 00

F-001.00

A	B	C	D	E	F	G	
1	<p>2.1.1 SITE NOTES 2.1.2 A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.</p> <p>2.1.3 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.</p> <p>2.1.4 THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.</p> <p>2.1.5 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26]</p> <p>2.1.6 ALTERNATE POWER SOURCE PLACARD SHALL BE PLASTIC, ENGRAVED IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTACHED USING AN APPROVED METHOD. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC.</p> <p>2.1.7 THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER [NEC 250.64C.]</p> <p>2.1.8 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.</p> <p>2.1.9 RIGID CONDUIT (AND/OR NIPPLES) MUST HAVE A PULL BUSHING TO PROTECT WIRES.</p> <p>2.1.10 BOLTED CONNECTION REQUIRED IN DC DISCONNECTS ON THE WHITE GROUNDED CONDUCTOR (USE POLARIS BLOCK OR NEUTRAL BAR)</p> <p>2.1.11 ANY CONNECTION ABOVE LIVE PARTS MUST BE WATERTIGHT. REDUCING WASHERS DISALLOWED ABOVE LIVE PARTS, MEYERS HUBS RECOMMENDED</p>	<p>2.4.1 WIRING & CONDUIT NOTES 2.4.2 ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS 2.4.3 ALL PV CABLES AND HOMERUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED 2.4.4 ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [NEC 690.8 (A)(1) & (B)(1)], [NEC 240] [NEC 690.7] FOR MULTIPLE CONDUCTORS 2.4.5 ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [NEC TABLE 310.15 (B)(2)(C)] BLACK ONLY** 2.4.6 EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES 2.4.7 PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V PER NEC 2011 2.4.8 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS 2.4.9 ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION 2.4.10 VOLTAGE DROP LIMITED TO 2% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS 2.4.11 NEGATIVE GROUNDED SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: DC POSITIVE- RED (OR MARKED RED) DC NEGATIVE- GREY (OR MARKED GREY) 2.4.12 POSITIVE GROUNDED SYSTEMS DC CONDUCTORS COLOR CODED: DC POSITIVE- GREY (OR MARKED GREY) DC NEGATIVE- BLACK (OR MARKED BLACK) 2.4.13 AC CONDUCTORS >4AWG COLOR CODED OR MARKED: PHASE A OR L1-BLACK PHASE B OR L2-RED PHASE C OR L3-BLUE NEUTRAL-WHITE/GREY *USE-2 IS NOT INDOOR RATED BUT PV CABLE IS RATED THWN/THWN-2 AND MAY BE USED INSIDE ** USE-2 IS AVAILABLE AS UV WHITE</p>	<p>2.6.4 NO GREATER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM. PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE TO [NEC 250.21], [NEC TABLE 250.122], AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO [NEC 690.43].</p> <p>2.6.5 MODULE SOURCE CIRCUITS SHALL BE GROUNDED IN ACCORDANCE TO [NEC 690.42].</p> <p>2.6.6 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER MODULE.</p> <p>2.6.7 EACH MODULE WILL BE GROUNDED USING THE SUPPLIED CONNECTIONS POINTS IDENTIFIED IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.</p> <p>2.6.8 ENCLOSURES SHALL BE PROPERLY PREPARED WITH REMOVAL OF PAINT/FINISH AS APPROPRIATE WHEN GROUNDING EQUIPMENT WITH TERMINATION GROUNDING LUGS.</p> <p>2.6.9 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR DIRECT BURIAL.</p> <p>2.6.10 GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER, SOLID OR STRANDED, AND BARE WHEN EXPOSED.</p> <p>2.6.11 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZE ACCORDING TO [NEC 690.45] AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE (#6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE).</p> <p>2.6.12 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN (OR MARKED GREEN IF #4 AWG OR LARGER)</p> <p>2.6.13 ALL CONDUIT BETWEEN THE UTILITY AC DISCONNECT AND THE POINT OF CONNECTION SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS.</p> <p>2.6.14 AC SYSTEM GEC SIZED ACCORDING TO [NEC 690.47], [NEC TABLE 250.66], DC SYSTEM GEC SIZED ACCORDING TO [NEC 250.166], MINIMUM #8AWG WHEN INSULATED, #6AWG WHEN EXPOSED TO DAMAGE.</p> <p>2.6.15 EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENTS, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE.</p>	<p>2.7.1 INTERCONNECTION NOTES PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN SERVICE BREAKER OR TRANSFORMER INPUT FEEDER IN ACCORDANCE WITH [NEC 690.64(B)(7)]</p> <p>2.7.2 SUM OF BREAKER RATINGS SUPPLYING THE BUS MAY NOT EXCEED 120% OF THE THE BUSBAR RATING PER [NEC 690.64(B)(2)] AND/OR [NEC 705.12(D)(1)].</p> <p>2.7.3 GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9] & [NEC 230.95]</p> <p>2.7.4 ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.</p> <p>2.7.5 SUPPLY SIDE INTERCONNECTION ACCORDING TO [NEC 690.64(A)] AND/OR [NEC 705.12(A)] WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH [NEC 230.42(B)]</p> <p>2.7.6 MICROINVERTER BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OCPD IN ACCORDANCE WITH [NEC 110.3(B)].</p>	<p>2.8.1 DISCONNECT NOTES DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)</p> <p>2.8.2 AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH</p> <p>2.8.3 DC CURRENT CONDUCTORS ARE TO REMAIN OUTSIDE OF BUILDING PRIOR TO EITHER A FUSEABLE SOURCE CIRCUIT COMBINER BOX OR A LOAD-BREAK DISCONNECTING DEVICE</p>		
2							
3	<p>2.2.1 SOLAR CONTRACTOR 2.2.2 MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730.</p> <p>2.2.3 IF APPLICABLE, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE MARKED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.</p> <p>2.2.4 AS INDICATED BY DESIGN, OTHER NRTL LISTED MODULE GROUNDING DEVICES MAY BE USED IN PLACE OF STANDARD GROUNDING LUGS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.</p> <p>2.2.5 CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.</p> <p>2.2.6 CONDUIT POINT OF PENETRATION FROM EXTERIOR TO INTERIOR TO BE INSTALLED AND SEALED WITH A SUITABLE SEALING COMPOUND.</p> <p>2.2.7 DC WIRING LIMITED TO MODULE FOOTPRINT W/ ENPHASE AC SYSTEM.</p> <p>2.2.8 ENPHASE WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.</p> <p>2.2.9 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC UNLESS NOT AVAILABLE.</p> <p>2.2.10 ALL INVERTERS, MOTOR GENERATORS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AC PHOTOVOLTAIC MODULES, SOURCE CIRCUIT COMBINERS, AND CHARGE CONTROLLERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D).</p> <p>2.2.11 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE.</p>	<p>2.5.1 STRUCTURAL NOTES: RACKING SYSTEM & PV ARRAY SHALL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL.</p> <p>2.5.2 ROOFMOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.</p> <p>2.5.3 ARRAY SHALL BE A MIN. HEIGHT OF 3" ABOVE THE COMPOSITION ROOF.</p> <p>2.5.4 JUNCTION BOX SHALL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.</p> <p>2.5.5 ROOFTOP PENETRATIONS PERTAINING TO SOLAR RACKING WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.</p> <p>2.5.6 ALL PV RELATED RACKING ATTACHMENTS WILL BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER. O.C. FINAL ATTACHMENT LOCATIONS MAY BE ADJUSTED IN THE FIELD AS NECESSARY.</p> <p>2.5.7 ALL PV RELATED RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW AMONGST THE ROOF FRAMING MEMBERS.</p>	<p>2.6.1 GROUNDING NOTES A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH [NEC 690-47] AND [NEC 250-50] THROUGH [NEC 60 250-166] SHALL BE PROVIDED. PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP.</p> <p>2.6.2 GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND</p>				
4	<p>2.3.1 EQUIPMENT LOCATIONS ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY [NEC 110.26].</p> <p>2.3.2 EQUIPMENT INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY [NEC 690.31 (A)-(B)] AND [NEC TABLE 310.15 (B)(2)(C)].</p> <p>2.3.3 ADDITIONAL AC DISCONNECTS SHALL BE PROVIDED WHERE THE INVERTER IS NOT ADJACENT TO THE UTILITY AC DISCONNECT, OR NOT WITHIN SIGHT OF THE UTILITY AC DISCONNECT.</p> <p>2.3.4 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.</p> <p>2.3.5 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.</p>						
5							
6							



CONTRACTOR

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DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 9.88 kWp
EXAMPLE
RESIDENCE
10 EXAMPLE ST.
EXAMPLE, NY 11111
APN# 000000 00000

ENGINEER OF RECORD

NOTES

(SHEET 2 OF 11)

DATE: 4.15.2

DESIGN BY: K.N.

RECD BY: M.M.

REVIEWS

REVISIONS

REVISIONS

REVISIONS

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APN# 000000 00000

ENGINEER OF RECORD**SITE PLAN**

(SHEET 3 OF 11)

DATE: 4.15.2016

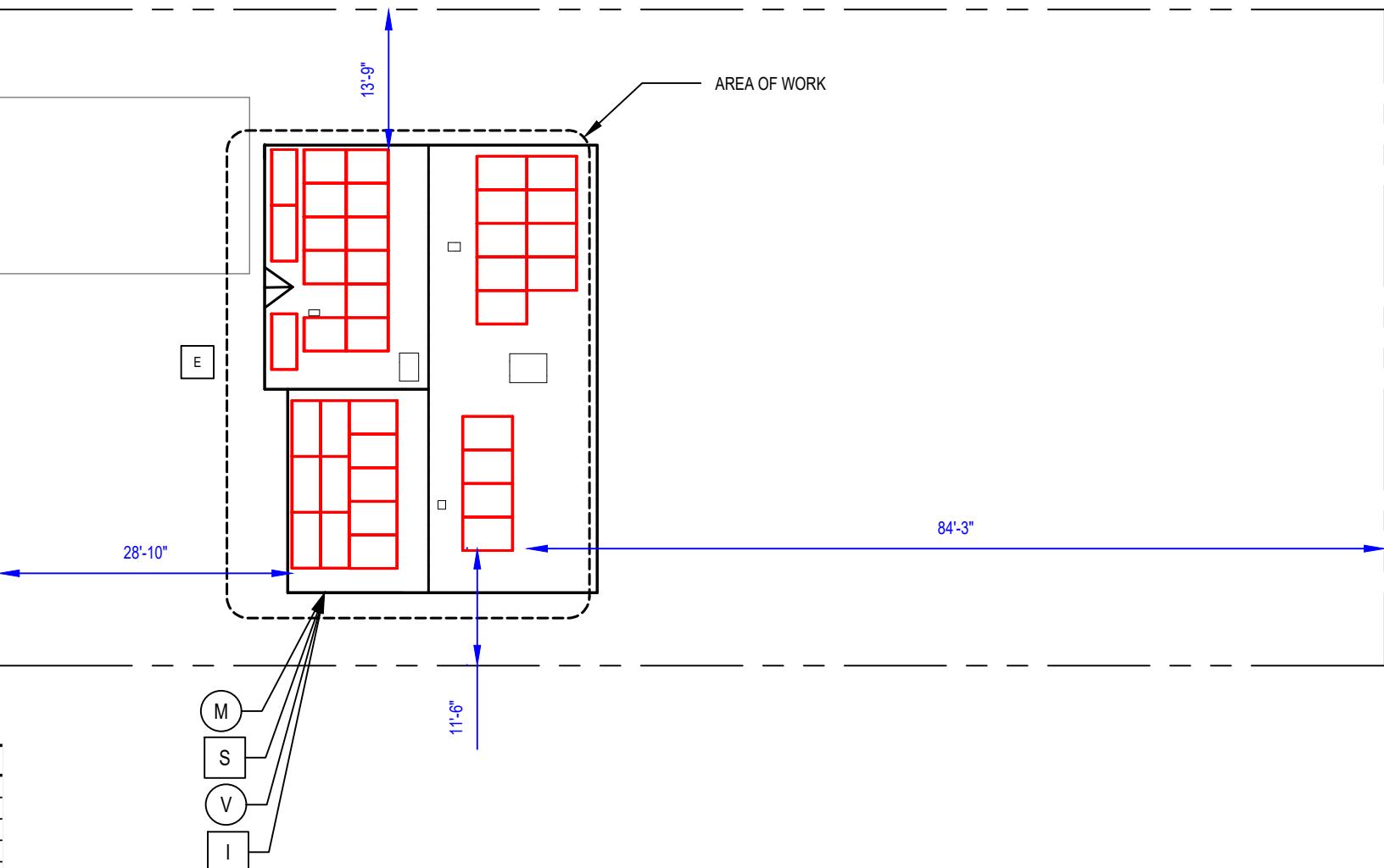
DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

LEGEND	
(M)	(E) UTILITY METER
(S)	AC DISCONNECT
(I)	DC/AC INVERTER
(V)	PV REVENUE METER
(E)	MAIN ENTRANCE DOOR
	PROPERTY LINE
	SOLAR MODULE

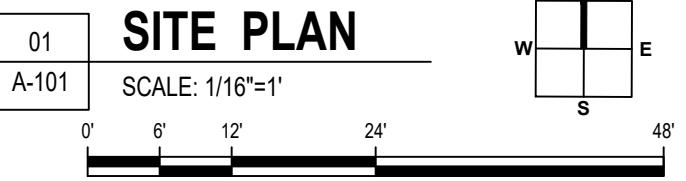
10 EXAMPLE ST.

**LOCATION INFO**

LOCATION	LEVITTOWN, NY 11756 UNITED STATES
LATITUDE	40° 44'N
LONGITUDE	73° 30'W
DESIGNLOWTEMPERATURE	10°F (-12°C)
DESIGHIGHTEMPERATURE	95°F (35°C)

ELECTRICAL CHARACTERISTICS

SUMMARY	
INVERTER	PRIMO 8.2-1 208/240
MODULE	JINKO JKMS260P M-SERIES (260W)
NUMBER OF MODULES	38
ARRAY CIRCUITS	1 STRING OF 13, 1 STRING OF 11, 2 STRINGS OF 7
STC POWER OF ARRAY	9.880W
PTC POWER OF ARRAY	9,060W (1)
ARRAY VMP	384V, 325V, 206V
ARRAY VOC	471V, 398V, 253V
ARRAY VMP AT DESIGN HIGH TEMP.	298V, 270V, 172V
ARRAY VOC AT DESIGN LOW TEMP.	523V, 443V, 282V
ARRAY MAX. POWER CURRENT	17.62A, 17.62A
ARRAY SHORT CIRCUIT CURRENT	18.9A, 18.9A
CEC POWER OUTPUT	8,743W (1)
MAX AC OUTPUT CURRENT	34.2A

**SITE PLAN**

SCALE: 1/16"=1'

01
A-101

0' 6' 12' 24' 48'

A-101.00

YOUR
LOGO
HERE

CONTRACTOR

PHONE:

LIC. No.:

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DRAWING SET WITHOUT WRITTEN
PERMISSION FROM CONTRACTOR IS IN
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NEW PV SYSTEM: 9.88 kW_p
EXAMPLE RESIDENCE
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EXAMPLE, NY 11111
APN# 00000 00000

ENGINEER OF RECORD

PROJECT PLAN

(SHEET 4 OF 11)

DATE: 4.15.2016

DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

A-102.00

A

B

C

D

E

F

G

H

LEGEND

(E) UTILITY METER

MEP MAIN ELECTRICAL PANEL

JB JUNCTION BOX

S AC DISCONNECT

I DC/AC INVERTER

DCSW DC DISCONNECT

PV REVENUE METER

MODULE STRING A

MODULE STRING B

MODULE STRING C

MODULE STRING D

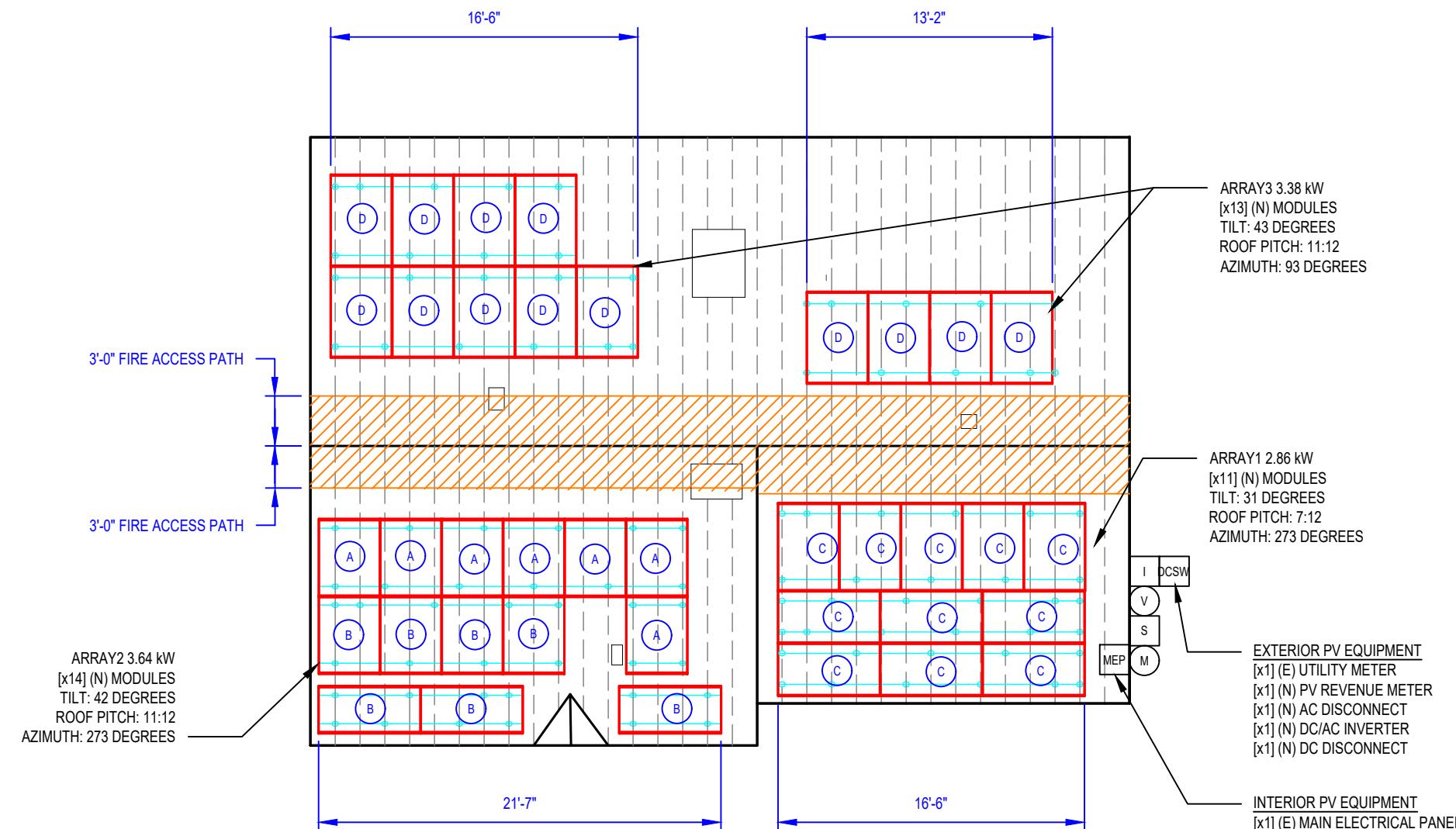
ROOF RAFTERS

FIRE CLEARANCE

MODULE:
JINKOSOLAR
JKMS260P
260 WATTS

RAIL

ATTACHMENT

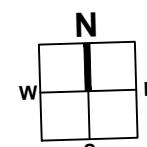


01
A-102

PROJECT PLAN

SCALE: 1"=10'

0 2' 6' 10' 20'



A

B

C

D

E

F

G

H

YOUR
LOGO
HERE

CONTRACTOR

PHONE:

LIC. No.:

NEW PV SYSTEM: 9.88 kW_p
EXAMPLE RESIDENCE
10 EXAMPLE ST.
EXAMPLE, NY 11111
APN# 00000 00000

ENGINEER OF RECORD

THREE LINE DIAGRAM

(SHEET 5 OF 11)

DATE: 4.15.2016

DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

E-601.00

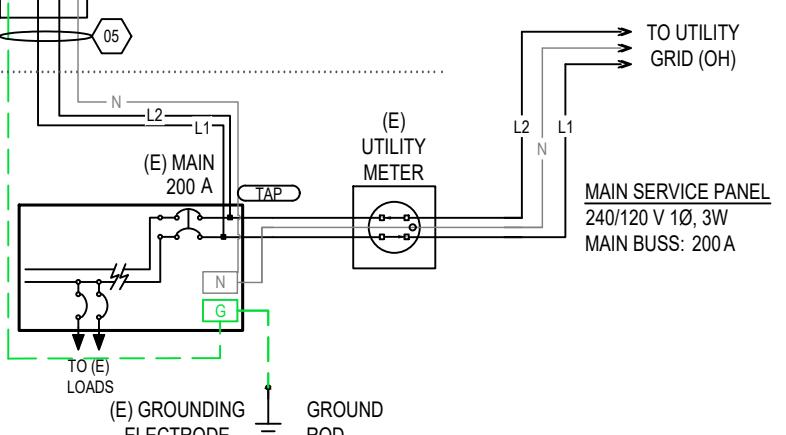
NEC ELECTRICAL CALCULATIONS FOR CONDUCTORS

ID	TYPICAL	DESCRIPTION	CONDUCTOR	CONDUIT	NO. OF CONDUCTORS IN CONDUIT	CONDUIT FILL PERCENT	RATED AMPS	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)
1	4	PV SOURCE CIRCUIT : SERIES STRING OUTPUT TO JUNCTION BOX	10 AWG PV WIRE, COPPER	FREE AIR	N/A	N/A	9.5A	N/A	6 AWG BARE, COPPER	0.71 (57°C)	1.0	11.81A	14.77A
2	4	PV SOURCE CIRCUIT: JUNCTION BOX TO INVERTER	10 AWG THWN-2, COPPER	1" DIA. EMT	8	36.5%	9.5A	N/A	8 AWG THWN-2, COPPER	0.71 (57°C)	0.7	11.81A	14.77A
3	1	INVERTER OUTPUT: INVERTER TO PRODUCTION METER	8 AWG THWN-2, COPPER	0.5" DIA. EMT	3	38.0%	34.2A	N/A	8 AWG THWN-2, COPPER	0.96 (35°C)	1.0	34.2A	42.75A
4	1	PRODUCTION METER OUTPUT: PRODUCTION METER TO UTILITY DISCONNECT	8 AWG THWN-2, COPPER	0.75" DIA. EMT	3	24.6%	34.2A	N/A	8 AWG THWN-2, COPPER	0.96 (35°C)	1.0	34.2A	42.75A
5	1	UTILITY DISCONNECT OUTPUT: UTILITY DISCONNECT TO POINT OF CONNECTION	6 AWG THWN-2, COPPER	0.75" DIA. EMT	3	35.4%	34.2A	45A	6 AWG THWN-2, COPPER	0.96 (35°C)	1.0	34.2A	42.75A

BILL OF MATERIALS

CATEGORY	MANUFACTURER	MODEL NUMBER	COMPONENT REF	QUANTITY	UNIT	QUANTITY PER UNIT	DESCRIPTION
MODULE	JINKO	JKMS260P M-SERIES	PM1-38	38	PIECES	1	JINKO JKMS260P M-SERIES 260W, 60 CELLS, POLYCRYSTALLINE SILICON
INVERTER	FRONIUS	PRIMO 8.2-1 208/240	I1	1	PIECE	1	FRONIUS PRIMO 8.2-1 208/240 8200W INVERTER
DISCONNECT	SQUARE D	D222NRB	SW1	1	PIECE	1	SQUARE D D222NRB DISCONNECT SWITCH, 2-POLE, 60A, 240VAC, OR EQUIVALENT
MISC ELECTRICAL EQUIPMENT		GEN-METER-80A	M1	1	PIECE	1	ELECTRICAL METER, OWNER APPROVED
WIRING		GEN-10-AWG-PV-WIRE-CU	WR1	120	FEET	1	10 AWG PV WIRE, COPPER (POSITIVE AND NEGATIVE)
WIRING		GEN-6-AWG-BARE-CU	WR1	60	FEET	1	6 AWG BARE, COPPER (GROUND)
WIRING		GEN-10-AWG-THWN-2-CU-BLK	WR2	260	FEET	1	10 AWG THWN-2, COPPER, BLACK (NEGATIVE)
WIRING		GEN-10-AWG-THWN-2-CU-RD	WR2	260	FEET	1	10 AWG THWN-2, COPPER, RED (POSITIVE)
WIRING		GEN-8-AWG-THWN-2-CU-GR	WR3-4	270	FEET	1	8 AWG THWN-2, COPPER, GREEN (GROUND)
WIRING		GEN-8-AWG-THWN-2-CU-BLK	WR3-4	10	FEET	1	8 AWG THWN-2, COPPER, BLACK (LINE 1)
WIRING		GEN-8-AWG-THWN-2-CU-RD	WR3-4	10	FEET	1	8 AWG THWN-2, COPPER, RED (LINE 2)
WIRING		GEN-10-AWG-THWN-2-CU-WH	WR3-4	10	FEET	1	8 AWG THWN-2, COPPER, WHITE (NEUTRAL)
WIRING		GEN-6-AWG-THWN-2-CU-BLK	WR5	10	FEET	1	6 AWG THWN-2, COPPER, BLACK (LINE 1)
WIRING		GEN-6-AWG-THWN-2-CU-WH	WR5	10	FEET	1	6 AWG THWN-2, COPPER, WHITE (NEUTRAL)
WIRING		GEN-6-AWG-THWN-2-CU-RD	WR5	10	FEET	1	6 AWG THWN-2, COPPER, RED (LINE 2)
WIREWAY		GEN-JBOX	JB1	1	PIECE	1	JUNCTION BOX
WIREWAY		GEN-EMT-1DIA	WW2	65	FEET	1	EMT CONDUIT, 1 DIA.
WIREWAY		GEN-EMT-0_5DIA	WW3	5	FEET	1	EMT CONDUIT, 0.5 DIA.
WIREWAY		GEN-EMT-0_75DIA	WW4-5	15	FEET	1	EMT CONDUIT, 0.75 DIA.
OCPD	GENERIC MANUFACTURER	GEN-FU-45A-240VAC	F1-2	2	PIECES	1	FUSE, 45A, 240VAC

EQUIPMENT ABOVE LINE IS (N) NEW
EQUIPMENT BELOW LINE IS (E) EXISTING UNLESS OTHERWISE NOTED.



(N) ELECTRICAL PLAN

01
E-601

SCALE: NOT TO SCALE

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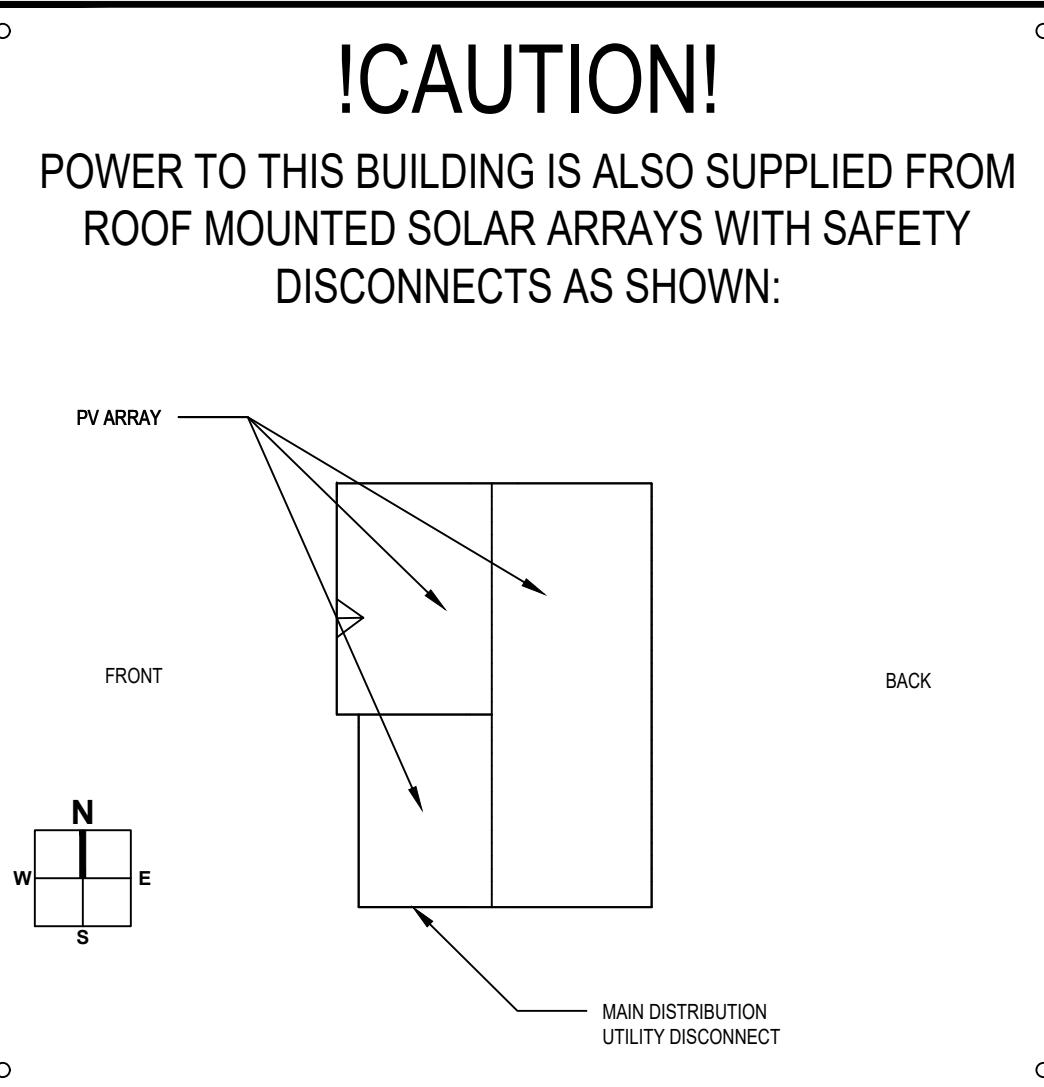
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LOGO
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A	B	C	D	E	F	G	H																						
<p style="text-align: center;">INVERTERS</p> <table border="1"> <thead> <tr> <th>REF.</th><th>QTY.</th><th>MAKE AND MODEL</th><th>AC VOLTAGE</th><th>GROUND</th><th>MAX OCPD RATING</th><th>RATED POWER</th><th>MAX OUTPUT CURRENT</th><th>MAX INPUT CURRENT</th><th>MAX INPUT VOLTAGE</th><th>CEC WEIGHTED EFFICIENCY</th></tr> </thead> <tbody> <tr> <td>I1</td><td>1</td><td>FRONIUS PRIMO 8.2-1 @ 240 VAC</td><td>240V</td><td>UNGROUNDED</td><td>45A</td><td>8,200W</td><td>34A</td><td>36A</td><td>600V</td><td>96.5%</td></tr> </tbody> </table>								REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	MAX OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY	I1	1	FRONIUS PRIMO 8.2-1 @ 240 VAC	240V	UNGROUNDED	45A	8,200W	34A	36A	600V	96.5%
REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	MAX OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY																			
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<p style="text-align: center;">MODULES</p> <table border="1"> <thead> <tr> <th>REF.</th><th>QTY.</th><th>MAKE AND MODEL</th><th>PMAX</th><th>PTC</th><th>ISC</th><th>IMP</th><th>VOC</th><th>VMP</th><th>TEMP. COEFF. OF VOC</th><th>FUSE RATING</th></tr> </thead> <tbody> <tr> <td>PM1-38</td><td>38</td><td>JINKO JKMS260P M-SERIES</td><td>260W</td><td>238W</td><td>9.45A</td><td>8.81A</td><td>36.2V</td><td>29.5V</td><td>-0.109V/°C (-0.3%/°C)</td><td>12A</td></tr> </tbody> </table>								REF.	QTY.	MAKE AND MODEL	PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING	PM1-38	38	JINKO JKMS260P M-SERIES	260W	238W	9.45A	8.81A	36.2V	29.5V	-0.109V/°C (-0.3%/°C)	12A
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SW1	1	SQUARE D D222NRB OR EQUIV.	60A	240VAC	F1-2	2	45A	240VAC																					
<p>! WARNING ! ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED.</p> <p>LABEL 1 AT EACH JUNCTION, COMBINER, DISCONNECT AND DEVICE WHERE ENERGIZED UNGROUNDED CONDUCTORS MAY BE EXPOSED DURING SERVICE [NEC 690.35(F)]</p> <p>PHOTOVOLTAIC AC DISCONNECT OPERATING CURRENT: 34.2 A AC OPERATING VOLTAGE: 240 V AC</p> <p>LABEL 2 AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT [NEC 690.17]</p> <p>! WARNING ! DUAL POWER SOURCES. SECOND SOURCE IS PV SYSTEM</p> <p>LABEL 3 AT EACH DC DISCONNECTING MEANS [NEC 690.53]</p> <p>! CAUTION ! PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED</p> <p>LABEL 4 AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS [NEC 690.54]</p> <p>LABEL 5 AT POINT OF INTERCONNECTION; LABEL, SUCH AS LABEL 5 OR LABEL 6 MUST IDENTIFY PHOTOVOLTAIC SYSTEM [NEC 705.12(D)(4)]</p> <p>LABEL 6 INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED SOUTH SIDE OF THE HOUSE</p> <p>LABEL 7 AT UTILITY METER [NEC 690.56(B)]</p> <p>WARNING: PHOTOVOLTAIC POWER SOURCE</p> <p>LABEL 8 AT EACH DC DISCONNECTING MEANS [NEC 690.14(C)(2)]</p> <p>PHOTOVOLTAIC DC DISCONNECT</p> <p>LABEL 9 AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS. [NEC 690.31(E)] LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND; REFLECTIVE [IFC 605.11.1.1]</p> <p>LABEL 10 AT EACH AC DISCONNECTING MEANS [NEC 690.14(C)(2)]</p> <p>PHOTOVOLTAIC AC DISCONNECT</p> <p>LABEL 11 AT POINT OF INTERCONNECTION OVERCURRENT DEVICE [NEC 705.12(D)(7)]</p> <p>! WARNING ! INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE</p>																													
<p>DIRECTORY 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)]</p> <p>LABELING NOTES:</p> <ul style="list-style-type: none"> 1.1 LABELING REQUIREMENTS BASED ON THE 2011 NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535. 1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. 1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. 1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED. 																													
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NEW PV SYSTEM: 9.88 kW_p
EXAMPLE RESIDENCE
10 EXAMPLE ST.
EXAMPLE, NY 11111
APN# 00000 00000

ENGINEER OF RECORD

PLACARDS

(SHEET 6 OF 11)

DATE: 4.15.2016

DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

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STRUCTURAL SHEET

(SHEET 7 OF 11)

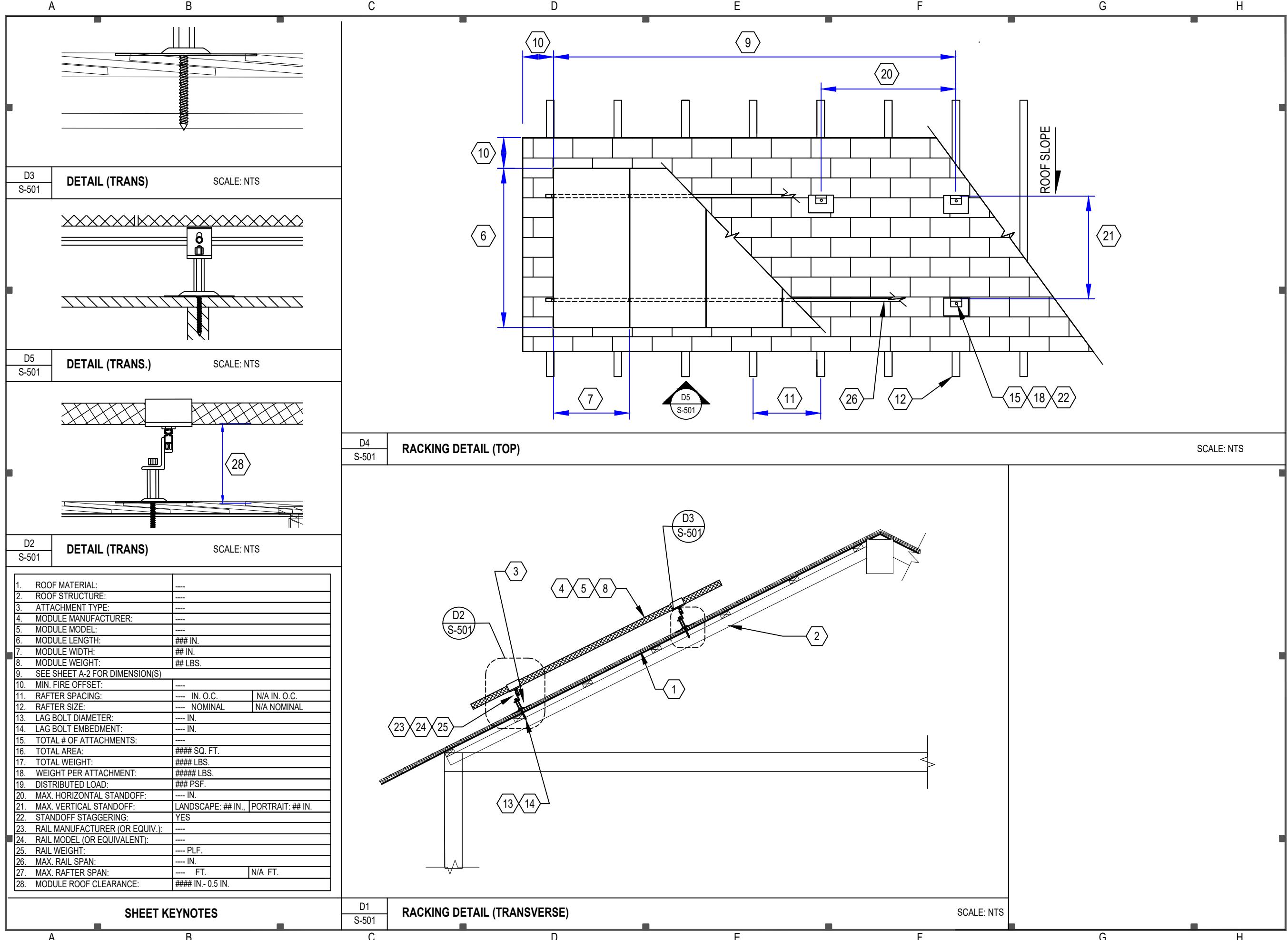
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NEW PV SYSTEM: 9.88 kWp
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APN# 00000 00000

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MODULE DATASHEET

(SHEET 8 OF 11)

DATE: 4.15.2016

DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

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www.jinkosolar.com

Jinko Solar

JKMS260P-60
POLYCRYSTALLINE MODULE
240-260 Watt

JinkoSolar introduces a new line of high performance modules for wide applications.



KEY FEATURES

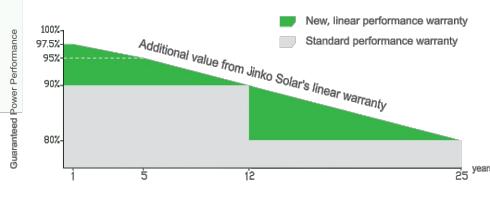
- High module conversion efficiency (up to 16.05%) through superior manufacturing technology and optimized design
- Entire module certified to withstand high wind loads (2400 Pascal) and snow loads (5400 Pascal)
- Low nominal operating cell temperature (NOCT) delivers higher power and performance over time
- Thinner and lighter for use with advanced installation methods (engineered clamping)



QUALITY & SAFETY

- Positive power tolerance of 0/+3% *
- 10 year warranty on material & workmanship *
- Industry leading power output warranty (12 years/90%, 25 years/80%)
- Premium linear performance warranty *

Premium Performance Warranty



ISO9001:2008, ISO14001:2004, OHSAS18001 certified factory
IEC61215, IEC61730 certified products

APPLICATIONS



On-grid residential
roof-tops



On-grid commercial/
industrial roof-tops

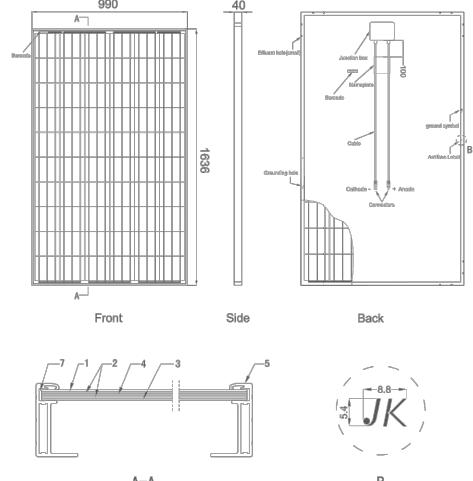


Solar power plants

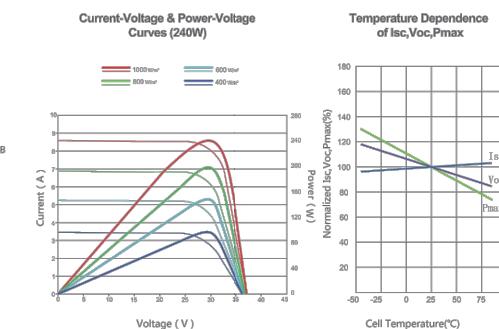


Off-grid systems

Engineering Drawings



Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	Poly-crystalline 156x156 mm (6 inch)
No. of Cells	60 (6x10)
Dimensions	1636x990x40mm (64.41x38.98x1.58 inch)
Weight	18.0kg (39.7 lbs)
Front Glass	3.2mm, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	TÜV 1x4.0mm ² , Length: 900mm

SPECIFICATIONS

Module Type	JKMS240P	JKMS245P	JKMS250P	JKMS255P	JKMS260P					
	STC NOCT	STC NOCT	STC NOCT	STC NOCT	STC NOCT					
Maximum Power (Pmax)	240Wp	176Wp	245Wp	179Wp	250Wp	183Wp	255Wp	187Wp	260Wp	191Wp
Maximum Power Voltage (Vmpp)	30.0V	27.3V	30.2V	27.5V	30.4V	27.7V	30.6V	27.9V	30.7V	28.0V
Maximum Power Current (Imp)	8.01A	6.45A	8.12A	6.51A	8.23A	6.61A	8.34A	6.70A	8.47A	6.82A
Open-circuit Voltage (Voc)	37.2V	34.1V	37.4V	34.3V	37.6V	34.5V	37.7V	34.6V	37.8V	34.7V
Short-circuit Current (Isc)	8.56A	6.89A	8.69A	7.01A	8.81A	7.10A	8.95A	7.21A	9.11A	7.34A
Module Efficiency STC (%)	14.82%	15.13%	15.44%	15.74%	16.05%					
Operating Temperature(°C)			-40°C~+85°C							
Maximum System Voltage			1000VDC (IEC)							
Maximum Series Fuse Rating			15A							
Power Tolerance			±3% / 0~+3% (Based on customer requirements and contract terms)							
Temperature Coefficients of Pmax			-0.43%/°C							
Temperature Coefficients of Voc			-0.32%/°C							
Temperature Coefficients of Isc			0.06%/°C							
Nominal Operating Cell Temperature (NOCT)			45±2°C							

STC: ☀ Irradiance 1000W/m²

Module Temperature 25°C

AM=1.5

NOCT: ☀ Irradiance 800W/m²

Module Temperature 20°C

AM=1.5

Wind Speed 1m/s

* Power measurement tolerance: ± 3%

The company reserves the final right for explanation on any of the information presented hereby. EN-JKMS-260P_v2.0_rev2012

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ENGINEER OF RECORD

INVERTER DATASHEET

(SHEET 9 OF 11)

DATE: 4.15.2016

DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

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/ Perfect Welding / Solar Energy / Perfect Charging

fronius
SHIFTING THE LIMITS

FRONIUS PRIMO

/ The future of residential solar is here - Introducing the new Fronius Primo.



/ With power categories ranging from 3.8 kW to 8.2 kW, the transformerless Fronius Primo is the ideal compact single-phase inverter for residential applications. The sleek design is equipped with the SnapInverter hinge mounting system which allows for lightweight, secure and convenient installation and service.

/ The Fronius Primo has several integrated features that set it apart from competitors including dual powerpoint trackers, high system voltage, a wide input voltage range and unrestricted use indoors and outdoors. Other standard features include a Wi-Fi* and SunSpec Modbus interface for seamless monitoring and datalogging, Arc Fault Circuit Interruption (AFCI), and Fronius's superb online and mobile platform Fronius Solarweb. The Fronius Primo is NEC 2014 ready and designed to adjust to future standards, offering a complete solution to code restrictions and technical innovations of tomorrow.

TECHNICAL DATA FRONIUS PRIMO

GENERAL DATA		STANDARD WITH ALL PRIMO MODELS	
Dimensions (width x height x depth)	16.9 x 24.7 x 8.1 in.		
Weight	47.29 lb.		
Degree of protection	NEMA 4X		
Night time consumption	< 1 W		
Inverter topology	Transformerless		
Cooling	Variable speed fan		
Installation	Indoor and outdoor installation		
Ambient operating temperature range	-40 ... 131°F (-40 ... +55°C)		
Permitted humidity	0 ... 100 %		
DC connection terminals	4x DC+ and 4x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)		
AC connection terminals	Screw terminals 12-6 AWG		
Certificates and compliance with standards	UL 1741-2010, UL1998 (for functions: AFCI and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC Article 690, C22.2 No. 107.1-01 (September 2001), UL1699B Issue 2-2013, CSA TIL M-07 Issue 1-2013		

PROTECTIVE DEVICES		STANDARD WITH ALL PRIMO MODELS	
AFCI & 2014 NEC Ready	Yes		
Ground Fault Protection with Isolation Monitor	Yes		
Interrupter	Yes		
DC disconnect	Yes		
DC reverse polarity protection	Yes		

INTERFACES		STANDARD WITH ALL PRIMO MODELS	
Wi-Fi*/Ethernet/Serial	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU		
6 inputs or 4 digital inputs/outputs	External relay controls		
USB (A socket)	Datalogging and/or updating via USB		
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol		
Datalogger and Webserver	Included		

*The term Wi-Fi® is a registered trademark of the Wi-Fi Alliance.

TECHNICAL DATA FRONIUS PRIMO

INPUT DATA	PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Recommended PV power (kWp)	3.0 - 6.0 kW	4.0 - 7.8 kW	4.8 - 9.3 kW	6.1 - 11.7 kW	6.6 - 12.7 kW
Max. usable input current (MPPT 1/MPPT 2)	18 A / 18 A	18 A / 18 A	18 A / 18 A	18 A / 18 A	18 A / 18 A
Operating voltage range			80° - 600 V		
Max. input voltage			600 V		
Nominal input voltage	410 V	420 V	420 V	420 V	420 V
Admissible conductor size DC			AWG 14 ... AWG 6		
MPP Voltage Range	200 - 480 V	240 - 480 V	240 - 480 V	250 - 480 V	270 - 480 V
Number of MPPT			2		

* Current value 150 V until late March 2015

OUTPUT DATA	PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Max. output power	208	3800 W	5000 W	6000 W	7600 W
	240	3800 W	5000 W	6000 W	8200 W
Max. continuous output current	208	18.3 A	24.0 A	28.8 A	36.5 A
	240	15.8 A	20.8 A	25.0 A	34.2 A
Recommended OCPD/AC breaker size	208	25 A	30 A	40 A	50 A
	240	20 A	30 A	35 A	45 A
Max. Efficiency		96.7 %	96.9 %	96.9 %	97.0 %
CEC Efficiency	240	95.0 %	95.5 %	96.0 %	96.0 %
Admissible conductor size AC			AWG 14 - AWG 6		
Grid connection			208 / 240		
Frequency			60 Hz		
Total harmonic distortion			< 5.0 %		
Power factor ($\cos \phi_{ac,r}$)			0.85-1 ind./cap		

/ Perfect Welding / Solar Energy / Perfect Charging

WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS OF POSSIBILITY.

/ Whether welding technology, photovoltaics or battery charging technology – our goal is clearly defined: to be the innovation leader. With around 3,000 employees worldwide, we shift the limits of what's possible - our record of over 1,000 granted patents is testimony to this. While others progress step by step, we innovate in leaps and bounds. Just as we've always done. The responsible use of our resources forms the basis of our corporate policy.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

Rev. 2.20.15 USA

Fronius USA LLC
6797 Fronius Drive
Portage, IN 46368
USA
pv-support-usa@fronius.com
www.fronius-usa.com

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EXAMPLE, NY 11111
APN# 00000 00000

ENGINEER OF RECORD

RACKING DATASHEET

(SHEET 10 OF 11)

DATE: 4.15.2016

DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

R-003.00

SM SOLAR
MOUNT



UNIRAC
A HILTI GROUP COMPANY

SOLARMOUNT defined the standard in solar racking. New enhancements are designed to get installers off the roof faster than ever before. Components are pre-assembled and optimized to reduce installation steps and save labor time. Our new grounding & bonding process eliminates copper wire and grounding straps to reduce costs. Utilize the microinverter mount with a wire management clip for an easier installation.

ELIMINATE THE GROUNDWIRE FROM YOUR SOLARMOUNT ARRAY
LOSE THE COPPER & LUGS
INTEGRATED GROUNDING ENPHASE ENERGY



UL2703
LISTED

BONDING & GROUNDING
MECHANICAL LOADING
SYSTEM FIRE CLASSIFICATION
CLASS A - TYPE 1, 2, 3 & 10 MODULES



SM SOLAR
MOUNT



UNIRAC
A HILTI GROUP COMPANY

OPTIMIZED COMPONENTS

INTEGRATED BONDING & PRE-ASSEMBLED PARTS

Components are pre-assembled and optimized to reduce installation steps and save labor time. Our new grounding & bonding process eliminates copper wire and grounding straps or bonding jumpers to reduce costs. Utilize the microinverter mount with a wire management clip for an easier installation.

VERSATILITY

ONE PRODUCT - MANY APPLICATIONS

Quickly set modules flush to the roof or at a desired tilt angle. Change module orientation to portrait or landscape while securing a large variety of framed modules on flat, low sloped or steep pitched roofs. Available in mill, clear and dark anodized finishes to outperform your projects financial and aesthetic aspirations.

AVAILABILITY

NATIONWIDE NETWORK

Unirac maintains the largest network of stocking distributors for our racking solutions. Our partners have distinguished their level of customer support, availability, and overall value, thereby providing the highest level of service to users of Unirac products. Count on our partners for fast and accurate delivery to meet your project objectives. Visit Unirac.com for a list of distributors.

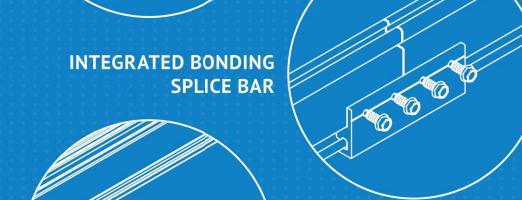
AUTOMATED DESIGN TOOL

DESIGN PLATFORM AT YOUR SERVICE

Creating a bill of materials is just a few clicks away with U-Builder, a powerful online tool that streamlines the process of designing a code compliant solar mounting system. Save time by creating a user profile, and recall preferences and projects automatically when you log in. You will enjoy the ability to share projects with customers; there's no need to print results and send to a distributor, just click and share.



INTEGRATED BONDING
MIDLCLAMP



INTEGRATED BONDING
SPLICE BAR



INTEGRATED BONDING
L-FOOT w/ T-BOLT



INTEGRATED BONDING
MICROINVERTER MOUNT
w/ WIRE MANAGEMENT

UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT



UNMATCHED
EXPERIENCE



CERTIFIED
QUALITY



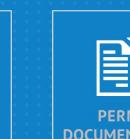
ENGINEERING
EXCELLENCE



BANKABLE
WARRANTY



DESIGN
TOOLS



PERMIT
DOCUMENTATION

TECHNICAL SUPPORT

Unirac's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

Unirac is the only PV mounting vendor with ISO certifications for 9001:2008, 14001:2004 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

As a Hilti Group Company, Unirac has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are receiving products of exceptional quality. SOLARMOUNT is covered by a 10-year limited product warranty and a 5-year limited finish warranty.

PROTECT YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

© PUB - 150101 - DIGITAL UPDATES

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YOUR
LOGO
HERE

CONTRACTOR

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.

NEW PV SYSTEM: 9.88 kWp
EXAMPLE RESIDENCE
10 EXAMPLE ST.
EXAMPLE, NY 11111
APN# 00000 00000

ENGINEER OF RECORD

RACKING MOUNT DATASHEET

(SHEET 11 OF 11)

DATE: 4.15.2016

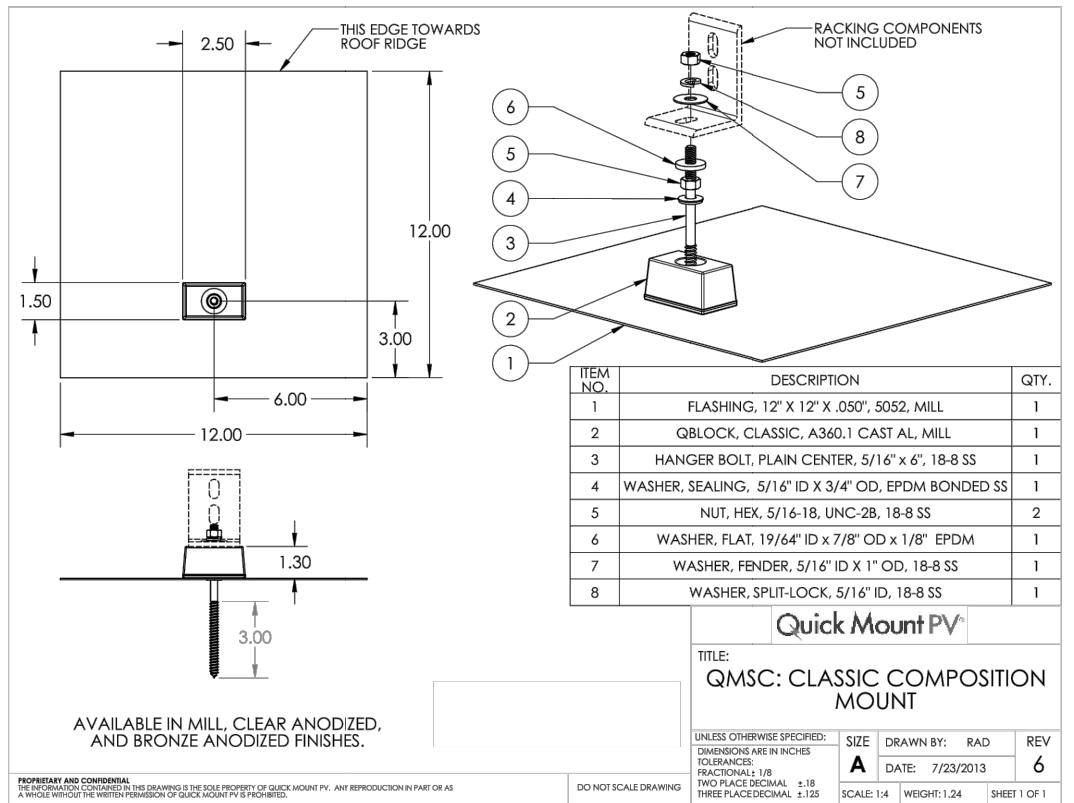
DESIGN BY: K.N.

CHECKED BY: M.M.

REVISIONS

R-004.00

Classic Composition Mount | QMSC



Lag pull-out (withdrawal) capacities (lbs) in typical lumber:

	Lag Bolt Specifications		
	Specific Gravity	5/16" shaft per 3" thread depth	5/16" shaft per 1" thread depth
Douglas Fir, Larch	.50	798	266
Douglas Fir, South	.46	705	235
Engelmann Spruce, Lodgepole Pine (MSR 1650 f & higher)	.46	705	235
Hem, Fir	.43	636	212
Hem, Fir (North)	.46	705	235
Southern Pine	.55	921	307
Spruce, Pine, Fir	.42	615	205
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	.50	798	266

Sources: American Wood Council, NDS 2005, Table 11.2 A, 11.3.2 A

Notes:

- 1) Thread must be embedded in a rafter or other structural roof member.
- 2) See NDS Table 11.5.1C for required edge distances.

Quick Mount PV®
RESPECT THE ROOF

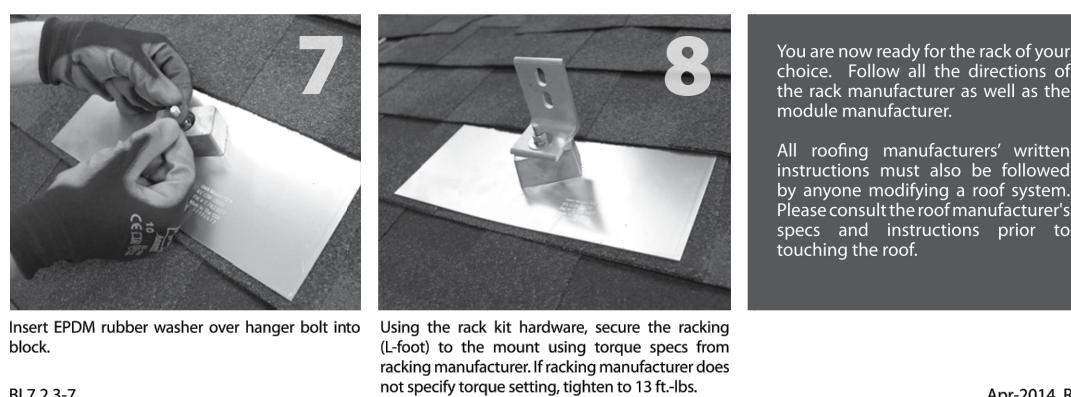
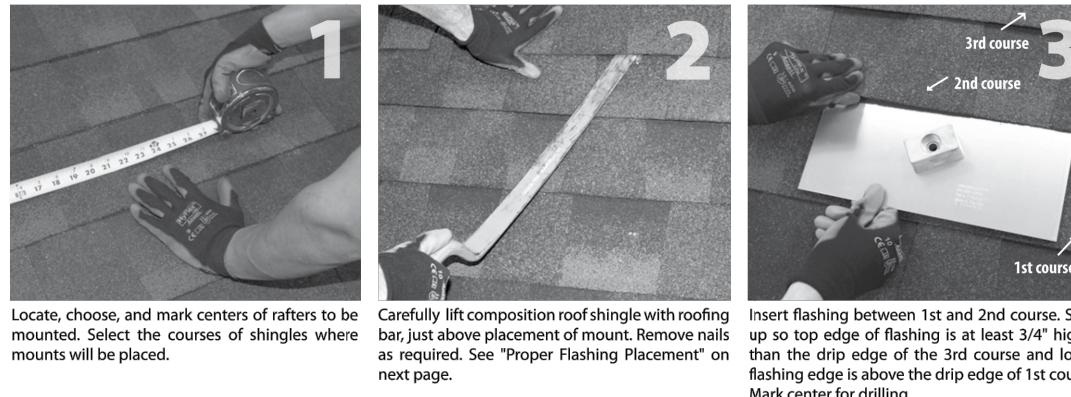
Apr-2014, Rev 6

BI 7.2.3-7

Classic Composition Mounting Instructions

Installation Tools Required: tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" long-style bit, drill or impact gun with 1/2" deep socket.

WARNING: Quick Mount PV products are NOT designed for and should NOT be used to anchor fall protection equipment.



Apr-2014, Rev 6

BI 7.2.3-7