Full Size or Largest Size
(site plan, landscape, elevations)

SCOPE OF WORK

- **SYSTEM SIZE:** 7930W DC, 7600W AC
- **MODULES:** (26) LONGI GREEN ENERGY TECHNOLOGY CO LTD: LR6-60PE-305M
- **INVERTER(S):**
  (1) NINGBO GINLONG TECHNOLOGIES: SOLIS-1P7.6K-4G-US
- **RACKING:**
  SNAPNRACK SERIES 100 UL; FLUSH MOUNT STANDOFF. SEE PEN D04.

- (1) GINLONG SOLIS RSD-1G 2:2 RAPID SHUTDOWN
- **MAIN PANEL REPLACEMENT:** EXISTING 200 AMP MAIN PANEL WITH 200 AMP MAIN BREAKER TO BE REPLACED WITH NEW 200 AMP MAIN PANEL WITH 200 AMP MAIN BREAKER (EATON - BR4040N200R).

VICINITY MAP

GENERAL NOTES

- ALL WORK SHALL COMPLY WITH NEC 2014, 2015 IBC, MUNICIPAL CODE, AND ALL MANUFACTURERS' LISTINGS AND INSTALLATION INSTRUCTIONS.
- PHOTOVOLTAIC SYSTEM WILL COMPLY WITH NEC 2014.
- ELECTRICAL SYSTEM GROUNDING WILL COMPLY WITH NEC 2014.
- PHOTOVOLTAIC SYSTEM IS UNGROUNDED. NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER. SYSTEM COMPLIES WITH 690.35.
- MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- INVERTER CONFORMS TO AND IS LISTED UNDER UL 1741.
- RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
- SNAPNRACK RACKING SYSTEMS, IN COMBINATION WITH TYPE I, OR TYPE II MODULES, ARE CLASS A FIRE RATED.
- RAPID SHUTDOWN REQUIREMENTS MET WHEN INVERTERS AND ALL CONDUCTORS ARE WITHIN ARRAY BOUNDARIES PER NEC 690.12(1).
- CONSTRUCTION FOREMAN TO PLACE CONDUIT RUN PER 690.31(G).
- ARRAY DC CONDUCTORS ARE SIZED FOR DERATED CURRENT.
- 9.94 AMPS MODULE SHORT CIRCUIT CURRENT.
- 15.53 AMPS DERATED SHORT CIRCUIT CURRENT [690.8 (a) & 690.8 (b)].

CONDUIT NOTE:
CONDUIT RUN ON ROOF MUST BE SUPPORTED A MINIMUM OF 1/2" ABOVE ROOF SURFACE.

Parcel Boundary (1)	
APN	173-30-287
Site Address	7813 E COOLIDGE ST
Zip Code	85251
QS Number	18-46
Subdivision Name	VILLA MONTEREY UNIT FIVE
MCR Number	107-44
Lot Number	-
Tract Name	-
Zoning	R-5 HP
Fema	X
ESL Type	-

LEGEND AND ABBREVIATIONS

- SE — SERVICE ENTRANCE
- MP — MAIN PANEL
- SP — SUB-PANEL
- LC — PV LOAD CENTER
- SM — SUNRUN METER
- PM — DEDICATED PV METER
- INV — INVERTER(S) WITH INTEGRATED DC DISCONNECT AND AFCI
- AC — AC DISCONNECT(S)
- DC
- CB — COMBINER BOX
- INTERIOR EQUIPMENT SHOWN AS DASHED
- SOLAR MODULES
- RAIL
- STANDOFFS & FOOTINGS
- CHIMNEY
- ATTIC VENT
- FLUSH ATTIC VENT
- PVC PIPE VENT
- METAL PIPE VENT
- T-VENT
- SATELLITE DISH
- FIRE SETBACKS
- HARDSCAPE
- — PL — PROPERTY LINE

SCALE: NTS

A	AMPERE
AC	ALTERNATING CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AZIM	AZIMUTH
COMP	COMPOSITION
DC	DIRECT CURRENT
(E)	EXISTING
EXT	EXTERIOR
FRM	FRAMING
INT	INTERIOR
LBW	LOAD BEARING WALL
MAG	MAGNETIC
MSP	MAIN SERVICE PANEL
(N)	NEW
NTS	NOT TO SCALE
OC	ON CENTER
PRE-FAB	PRE-FABRICATED
PSF	POUNDS PER SQUARE FOOT
PV	PHOTOVOLTAIC
TL	TRANSFORMERLESS
TYP	TYPICAL
V	VOLTS
W	WATTS

REV	NAME	DATE	COMMENTS

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PV-2.0	SITE PLAN
PV-3.0	LAYOUT
PV-4.0	ELECTRICAL
PV-5.0	SIGNAGE

sunrun

R-11 ELECTRICAL LICENSE #ROC294836
4219 EAST BROADWAY SUITE 102, PHOENIX, AZ 85040
PHONE 602.245.8751
FAX 602.431.2269

CUSTOMER RESIDENCE:
ROBERT GRANDESTAFF
7813 EAST COOLIDGE STREET
SCOTTSDALE AZ USA 85251

TEL. (480) 483-1288
APN #: 17330287

PROJECT NUMBER:
301R-813GRAN

DESIGNER: (720) 475-7990
JAMES KOEHLER

COVER SHEET

REV: A 8/13/2018

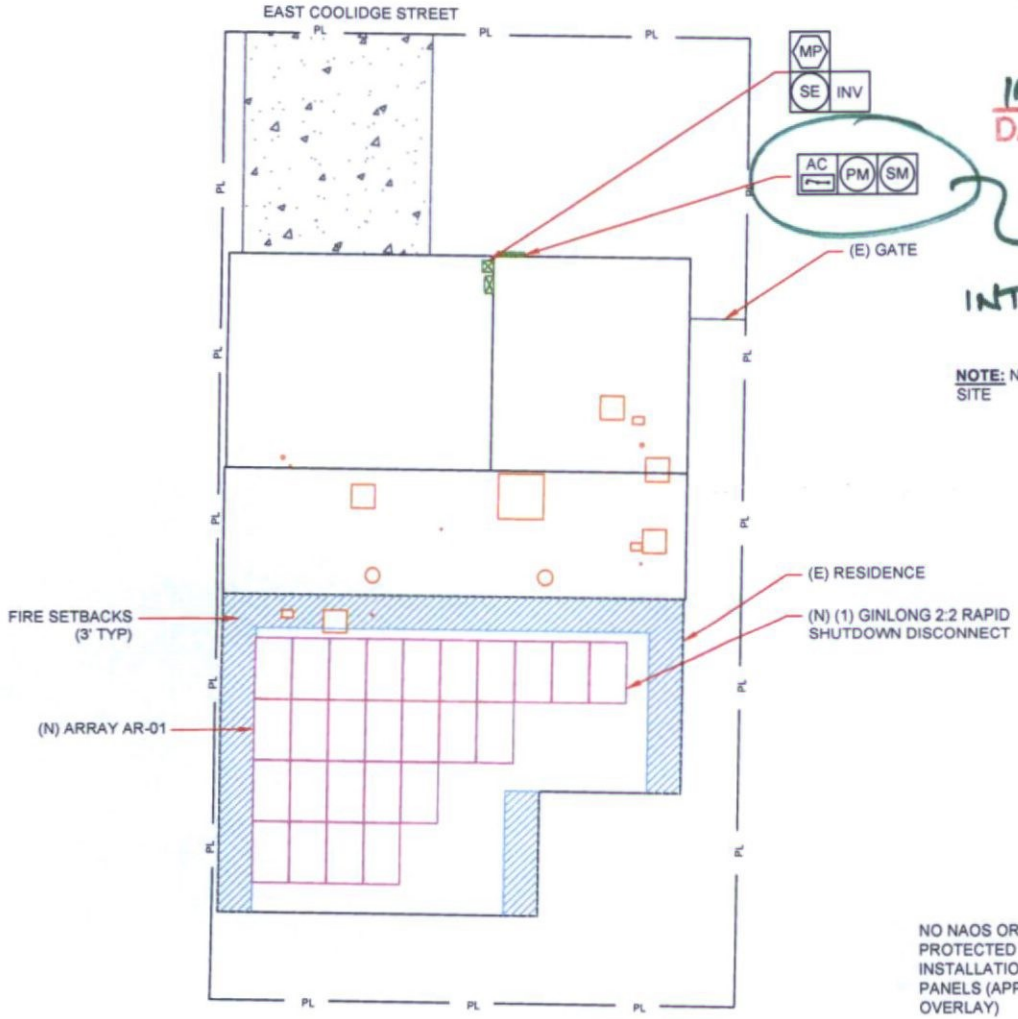
PAGE PV-1.0

SITE PLAN - SCALE = 3/32" = 1'-0"

	ARRAY PITCH	TRUE AZIM	MAG AZIM	PV AREA (SQFT)
AR-01	6°	181°	170°	457.7

STIPULATION SET
RETAIN FOR RECORDS
APPROVED
10/8/18
DATE
INITIALS

MAX POINT LOAD: 40.21 LBS
PV SYSTEM WEIGHT: 1260.2 LBS



NOTE: NO NAOS SETBACKS ON SITE

NO NAOS OR
PROTECTED NATIVE PLANTS SHALL BE AFFECTED BY INSTALLATION OF SOLAR
PANELS (APPLICABLE TO ZONING DISTRICTS WITH ESL OVERLAY)

NOTES:
1. ANYTHING VISIBLE (OUTSIDE OF ARRAY) MUST BE NEUTRAL COLORED
2. CONDUIT MUST BE PAINTED
3. FLASHING MUST NOT BE VISIBLE

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JAMES KOEHLER

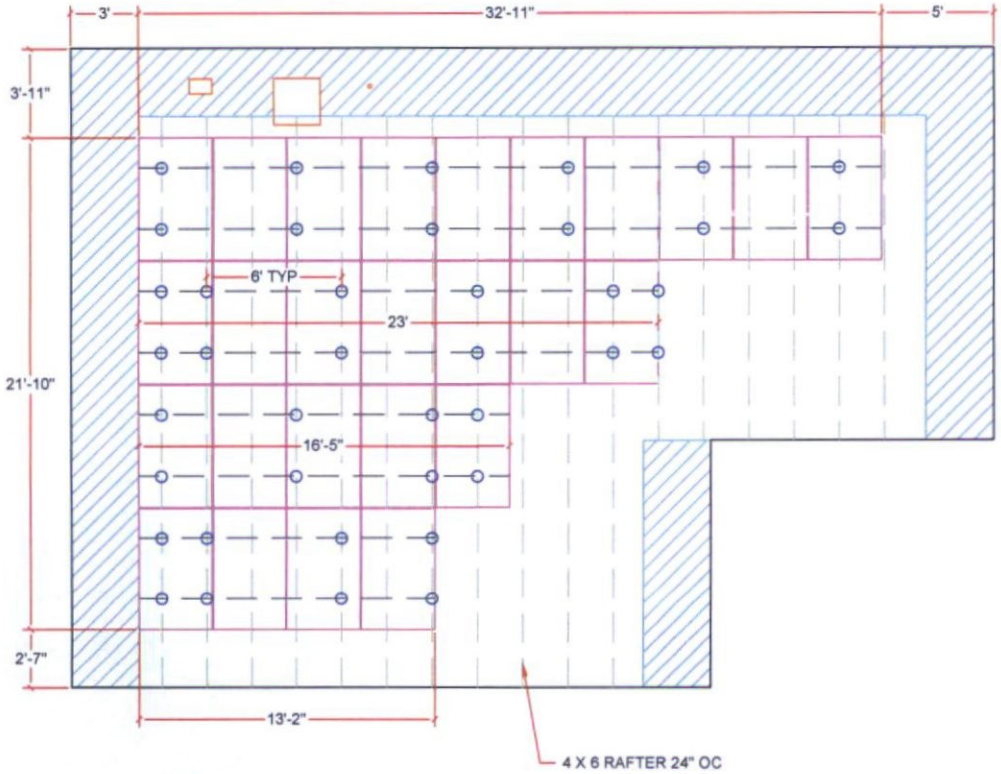
SHEET
SITE PLAN

REV: A 8/13/2018

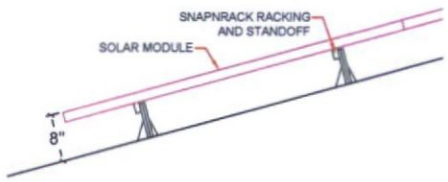
PAGE PV-2.0

	ROOF TYPE	MOUNTING DETAIL	ROOF HEIGHT	ROOF EXPOSURE	FRAME MATERIAL	FRAME TYPE	FRAME SIZE	MAX FRAME SPAN	OC SPACING	ROOF EDGE ZONE	MAX PEN SPACING	MAX MOD. OVERHANG
AR-01	FLAT, MEMBRANE	FLUSH MOUNT STANDOFF. SEE PEN D04.	1 STORY	EXPOSED	WOOD	RAFTER	4 X 6	12' - 0"	24"	3.2'	6'-0'	2'-0'

D1 - AR-01 - SCALE: 3/16" = 1'-0"
PITCH: 6°
AZIM: 181°



D2 - MODULE ELEVATION DETAIL - SCALE: NTS



DESIGN CRITERIA

MODULES:
LONGI GREEN ENERGY TECHNOLOGY CO LTD:
LR6-60PE-305M
MODULE DIMS:
64.96" x 39.02" x 1.57" (40mm)
MODULE CLAMPS:
Portrait: 8.2" - 16.4"
Landscape: 4.9" - 9.8"
MAX DIST. LOAD: 2.81 PSF
SNOW LOAD: 0 PSF
WIND SPEED:
115 MPH 3-SEC GUST.
LAG SCREWS:
5/16"x4.0": 2.5" MIN EMBEDMENT
NOTE:
INSTALLERS TO VERIFY RAFTER SIZE, SPACING AND SLOPED SPANS, AND NOTIFY E.O.R. OF ANY DISCREPANCIES BEFORE PROCEEDING.
PENETRATION SPACING:
STAGGERED

MAX POINT LOAD: 40.21 LBS
PV SYSTEM WEIGHT: 1260.2 LBS

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JAMES KOEHLER

SHEET
LAYOUT

REV: A 8/13/2018

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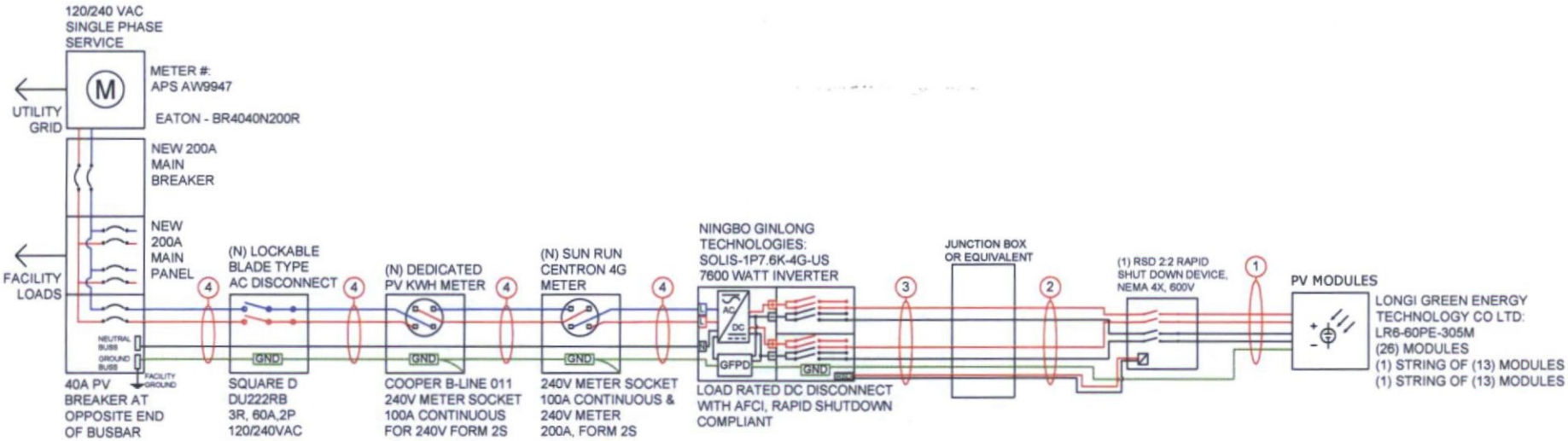

CONDUIT SCHEDULE

#	CONDUIT	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(4) 10 AWG PV WIRE	NONE	(1) 10 AWG BARE COPPER
2	NONE	(4) 10 AWG PV WIRE (2) 18 AWG SIGNAL CIRCUIT WITHIN TC-ER	NONE	(1) 10 AWG BARE COPPER
3	3/4" EMT OR EQUIV.	(4) 10 AWG THHN/THWN-2 (2) 14 AWG THHN/THWN-2 SIGNAL CIRCUIT	NONE	(1) 10 AWG THHN/THWN-2
4	3/4" EMT OR EQUIV.	(2) 8 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2

NOTES TO INSTALLER:

1. 523 VDC EXPECTED OPEN CIRCUIT STRING VOLTAGE.
2. ADD 40 AMP PV BREAKER TO MAIN PANEL.
3. CONNECT THE RAPID SHUTDOWN SIGNAL CIRCUIT CONNECTORS PER MANUFACTURER SPECIFICATION.
4. **MAIN PANEL REPLACEMENT:** EXISTING 200 AMP MAIN PANEL WITH 200 AMP MAIN BREAKER TO BE REPLACED WITH NEW 200 AMP MAIN PANEL WITH 200 AMP MAIN BREAKER (EATON - BR4040N200R).

MODULE CHARACTERISTICS

LONGI GREEN ENERGY
TECHNOLOGY CO LTD:

LR6-60PE-305M:	305 W
OPEN CIRCUIT VOLTAGE:	40.2 V
MAX POWER VOLTAGE:	33 V
SHORT CIRCUIT CURRENT:	9.94 A

SYSTEM CHARACTERISTICS - INVERTER 1

SYSTEM SIZE:	7930 W
SYSTEM OPEN CIRCUIT VOLTAGE:	564 V
SYSTEM OPERATING VOLTAGE:	429 V
MAX ALLOWABLE DC VOLTAGE:	600 V
SYSTEM OPERATING CURRENT:	18.48 A
SYSTEM SHORT CIRCUIT CURRENT:	24.85 A

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JAMES KOEHLER

SHEET
ELECTRICAL

REV: A 8/13/2018

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WARNING
INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

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

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC 690.5(C))
[Normally already present on listed inverters]

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

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC 690.35(F))
[To be used when inverter is ungrounded]

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
AC CONDUIT, AC JUNCTION BOXES
(PER CODE: NEC690.31(G)(3)(4) & NEC 690.13(G)(4))
[Marked on junction/combiner boxes and conduit every 10']

WARNING - Electric Shock Hazard
DO NOT TOUCH TERMINALS
Terminals on both Line and Load sides may be energized in the Open Position

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.17(E), CB
[Normally already present on listed inverters]

DC Disconnect
WARNING-ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
Terminals on both Line and Load sides may be energized in the Open Position
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION:
DC DISCONNECT
(PER CODE: NEC 690.17(E))

WARNING - Electric Shock Hazard
No user serviceable parts inside
Contact authorized service provider for assistance

LABEL LOCATION:
INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT
(PER CODE: NEC690.13.G.3 & NEC 690.13.G.4)

PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT SWITCH

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION

PHOTOVOLTAIC SYSTEM
DEDICATED KWH METER

LABEL LOCATION:
UTILITY PV METER

PV 01

LABEL LOCATION:
INVERTER (1)

PHOTOVOLTAIC POWER SOURCE BREAKERS ARE BACKFEEDING
240 VOLTS
39.58 AMPS

LABEL LOCATION:
AC BREAKER AND AC DISCONNECT
[Inside or front of panel]

PHOTOVOLTAIC POWER SOURCE BREAKERS ARE BACKFEEDING

LABEL LOCATION:
POINT OF INTERCONNECTION
(BREAKER CONNECTION ONLY)

PHOTOVOLTAIC SYSTEM DC DISCONNECT
RATED MAX POWER-POINT CURRENT 18.48 ADC
RATED MAX POWER-POINT VOLTAGE 429 VDC
SHORT CIRCUIT CURRENT 24.85 ADC
MAXIMUM SYSTEM VOLTAGE 564 VDC

LABEL LOCATION:
DC DISCONNECT, INVERTER

ADHESIVE FASTENED SIGNS:
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

INVERTER 1

RATED MAXIMUM POWER-POINT CURRENT (Imp)	18.48	A
RATED MAXIMUM POWER-POINT VOLTAGE (Vmp)	429	V
MAXIMUM SYSTEM VOLTAGE (VOC)	564	V
MAXIMUM CIRCUIT CURRENT (Isc)	24.85	A

SYSTEM CHARACTERISTICS - INVERTER 1

SYSTEM SIZE:	7930 W
SYSTEM OPEN CIRCUIT VOLTAGE:	564 V
SYSTEM OPERATING VOLTAGE:	429 V
MAX ALLOWABLE DC VOLTAGE:	600 V
SYSTEM OPERATING CURRENT:	18.48 A
SYSTEM SHORT CIRCUIT CURRENT:	24.85 A

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL LOCATION:
UTILITY SERVICE ENTRANCE/METER, INVERTER/DC DISCONNECT IF REQUIRED BY LOCAL AHJ, OR OTHER LOCATIONS AS REQUIRED BY LOCAL AHJ.
PER CODE(S): CEC 2016: 690.12, NEC 2014: 690.12, NEC 690.56, IFC 2012: 605.11.1

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SHEET
SIGNAGE

REV: A 8/13/2018

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