

# PHOTOVOLTAIC ROOF MOUNT SYSTEM

56 MODULES-ROOF MOUNTED - 22.40 kWDC, 16.24 kWAC

5936 E QUARTZ MOUNTAIN RD, PARADISE VALLEY, AZ 85253, USA

## SYSTEM SUMMARY:

- (N) 56 - HANWHA SOLAR Q.PEAK DUO BLK ML-G10+ (400W) MODULES
- (N) 56 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
- (N) (02) JUNCTION BOX
- (E) 400A MAIN SERVICE PANEL WITH (E) 100A MAIN BREAKER AND 175A SECOND SLOT MAIN BREAKER
- (N) 100A NON-FUSED VISIBLE LOCKABLE LABELED UTILITY DISCONNECT, 240VAC (EATON DG222URB)
- (N) UNI DIRECTIONAL METER (100A MILBANK U5929-XL-INS OR125A MILBANK U7490-RL-INS,FORM 2S 120/240V)
- (N) 100A SOLAR LOAD CENTER
- (E) 200A SUB-PANEL

## DESIGN CRITERIA:

ROOF TYPE: - TPO/PVC  
STORY: - TWO STORY  
SNOW LOAD : - 0 PSF  
WIND SPEED :- 90 MPH  
WIND EXPOSURE:- C  
RISK CATEGORY:- II

INTERCONNECTION METHOD : BACKFEED BREAKER

## GOVERNING CODES:

2012 INTERNATIONAL BUILDING CODE  
2012 INTERNATIONAL RESIDENTIAL CODE  
2012 INTERNATIONAL MECHANICAL CODE  
2012 INTERNATIONAL PLUMBING CODE.  
2011 NATIONAL ELECTRICAL CODE  
2012 INTERNATIONAL FUEL GAS CODE  
2012 INTERNATIONAL FIRE CODE  
2012 INTERNATIONAL PROPERTY MAINTENANCE CODE  
2012 ENERGY CODE

## SHEET INDEX

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## GENERAL NOTES

- UTILITY SHALL HAVE 24HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC COMPONENTS LOCATED AT SES EQUIPMENT.
- NO LOCKED GATES, DOGS, ETC SHALL IMPEDE ACCESS TO SES EQUIPMENT.
- WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH APS AND NEC REQUIREMENTS. FOR APS REQUIREMENTS,REFERENCE SECTION 300 OF THE APS ESRM 102.20, 301.1, 301.3 AND SECTION 8.2 OF THE APS INTERCONNECTION REQUIREMENTS.
- REFERENCE SECTION 301.15 OF THE APS ESRM FOR ELECTRIC METER SEPARATION BETWEEN WATER AND GAS.
- PROJECT SHALL COMPLY WITH 2012 IFC, 2011 NEC, 2012 IBC, 2012 IRC.

## ELECTRICAL NOTES

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 & 75 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH CEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER E.G.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE



## 1 AERIAL PHOTO

PV-0 SCALE: NTS



## 2 VICINITY MAP

PV-0 SCALE: NTS



DEL MAR, CA 92014, USA

## VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08/23/2022	UR
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REVISION	03/25/2023	E

## PROJECT NAME

LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY,AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

## SHEET NAME














COVER SHEET

## SHEET SIZE

ANSI B  
11" X 17"

## SHEET NUMBER

PV-0

LEGEND	
	UTILITY METER
	MAIN SERVICE PANEL
	UTILITY DISCONNECT
	JUNCTION BOX
	SOLAR LOAD CENTER
	UNI-DIRECTIONAL METER
	SUB PANEL
	PROPERTY
	CONDUIT
	GATE
	FENCE
	POOL
	TREES



● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

- NOTES:
- UTILITY SHALL HAVE 24HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC COMPONENTS LOCATED AT SES EQUIPMENT.
  - NO LOCKED GATES, DOGS, ETC SHALL IMPEDE ACCESS TO SES EQUIPMENT.
  - WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH APS AND NEC REQUIREMENTS. FOR APS REQUIREMENTS,REFERENCE SECTION 300 OF THE APS ESRM 102.20, 301.1, 301.3 AND SECTION 8.2 OF THE APS INTERCONNECTION REQUIREMENTS.
  - REFERENCE SECTION 301.15 OF THE APS ESRM FOR ELECTRIC METER SEPARATION BETWEEN WATER AND GAS.
  - ALL WORK MUST COMPLY WITH 2012 IRC, 2011 NEC.

**NOTE:**  
ALL ELECTRICAL EQUIPMENT, SOLAR LOAD CENTER, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.



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85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

SHEET NAME

SITE PLAN WITH  
ROOF PLAN

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

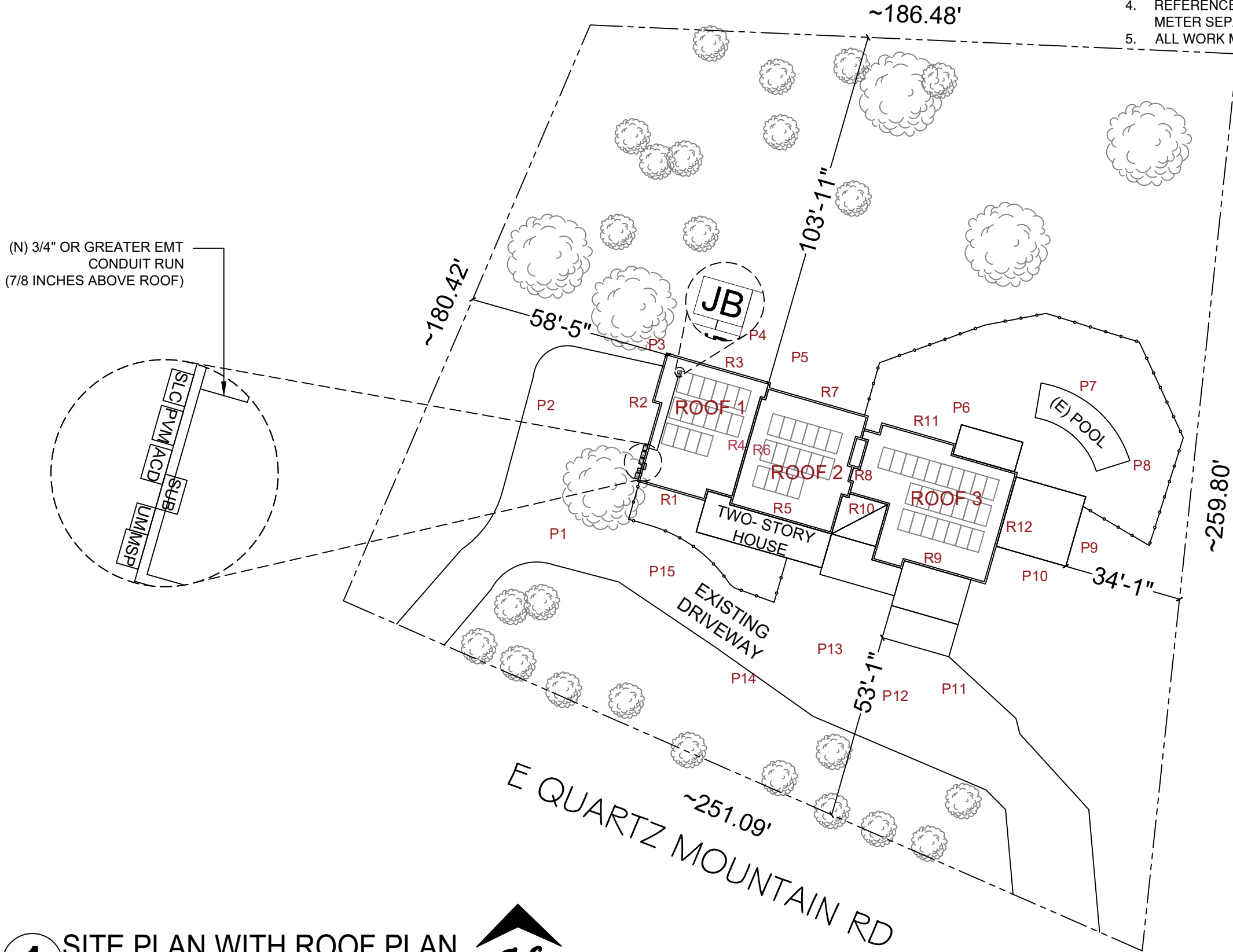
PV-1

PARAPET HEIGHT

ROOF 1 R1	21"
ROOF 1 R2	27"
ROOF 1 R3	28"
ROOF 1 R4	26"
ROOF 2 R5	63"
ROOF 2 R6	74"
ROOF 2 R7	29"
ROOF 2 R8	220"
ROOF 3 R9	24"
ROOF 3 R10	27"
ROOF 3 R11	32"
ROOF 3 R12	29"

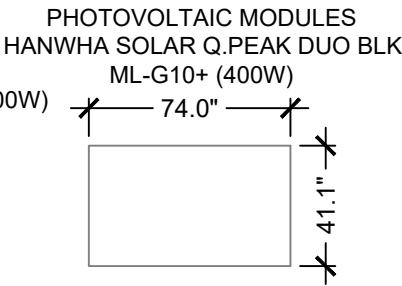
LEGEND

UM	UTILITY METER
MSP	MAIN SERVICE PANEL
ACD	UTILITY DISCONNECT
JB	JUNCTION BOX
SLC	SOLAR LOAD CENTER
PVM	UNI-DIRECTIONAL METER
SUB	SUB PANEL
-----	PROPERTY
-----	CONDUIT
-x-x-	GATE
-----	FENCE
-----	POOL
	TREES



MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 56 MODULES  
MODULE TYPE = HANWHA SOLAR Q.PEAK DUO BLK ML-G10+ (400W) MODULES  
MODULE WEIGHT = 48.5 LBS / 22.0 KG.  
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF  
UNIT WEIGHT OF ARRAY = 2.30 PSF



ARRAY AREA & ROOF AREA CALC'S

AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF(PLAN VIEW) (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
1182.77	5401.69	22%
22% ROOF AREA (ARRAY <33% OF ROOF AREA)		

ROOF DESCRIPTION

ROOF TYPE TPO/PVC					
ROOF	# OF MODULES	ROOF SLOPE	AZIMUTH	RACKING TILT TO ROOF	ARRAY TILT TO HORIZON
#1	24	05°	196°	10°	05°
#2	16	05°	196°	10°	05°
#3	16	05°	196°	10°	05°

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
RAIL	28	UNIRAC STANDARD RAIL 168" DRK
SPLICE	16	BND SPLICE BAR PRO SERIES DRK
MID CLAMP	94	UNIVERSAL AF SERIES MID CLAMP
END CLAMP	36	UNIVERSAL AF SERIES END CLAMP
ATTACHMENT	113	UNIRAC FLASHLOC RM W/TILT LEG
GROUNDING LUG	09	GROUND LUG

**NOTE**  
ALL INSTALLATION EQUIPMENT (RACKING AND MOUNTING) NEEDS TO BE BLACK OR PAINTED A DESERT COLOR (LRV 38% OR LESS). LRV: LIGHT REFLECTIVE VALUES



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MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

LEGEND

UM	UTILITY METER
MSP	MAIN SERVICE PANEL
ACD	UTILITY DISCONNECT
JB	JUNCTION BOX
SLC	SOLAR LOAD CENTER
PVM	UNI-DIRECTIONAL METER
SUB	SUB PANEL
—	RAIL
—	CONDUIT
■	MICRO-INVERTER
●	ROOF ATTACHMENT @ 48" O.C.
○ □	VENT, ATTIC FAN (ROOF OBSTRUCTION)
⊗	CHIMNEY

PARAPET HEIGHT  
~4'-0" TYP.

- PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

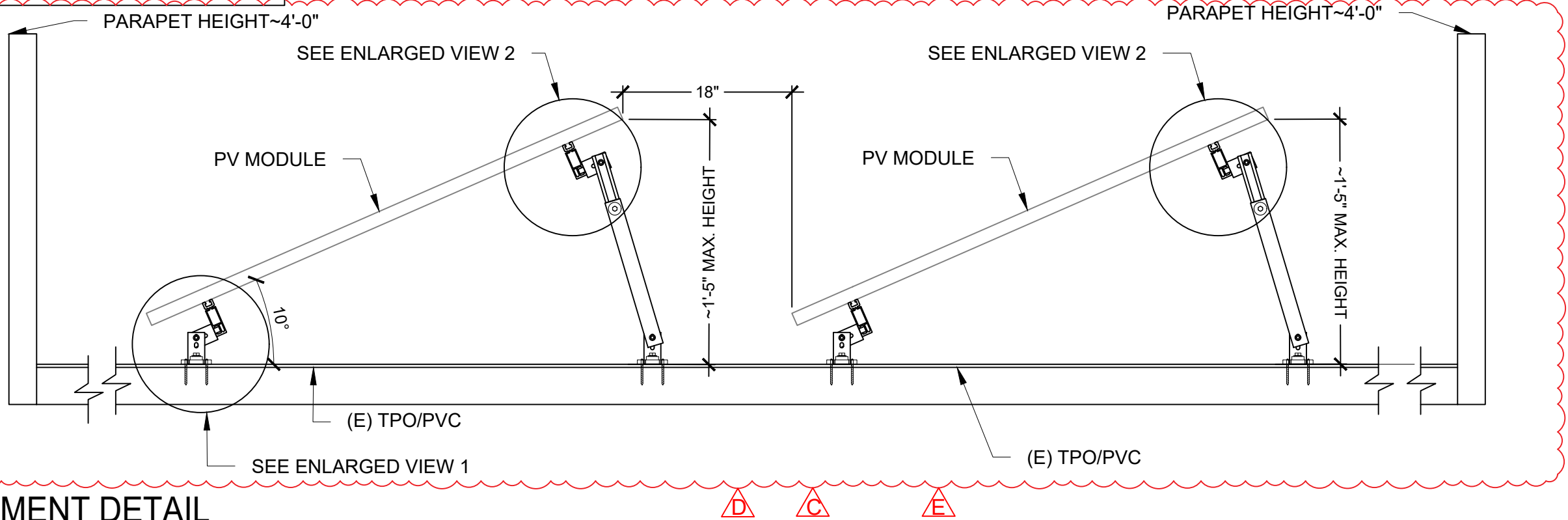
**NOTE:** ACTUAL ROOF CONDITIONS AND TRUSS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

**NOTE**  
THE MODULES ARE TILTED TO 10° @ 18" INTER-ROW SPACING WITH REFERENCE TO ROOF ATTAINING 5° TILT WITH REFERENCE TO HORIZON

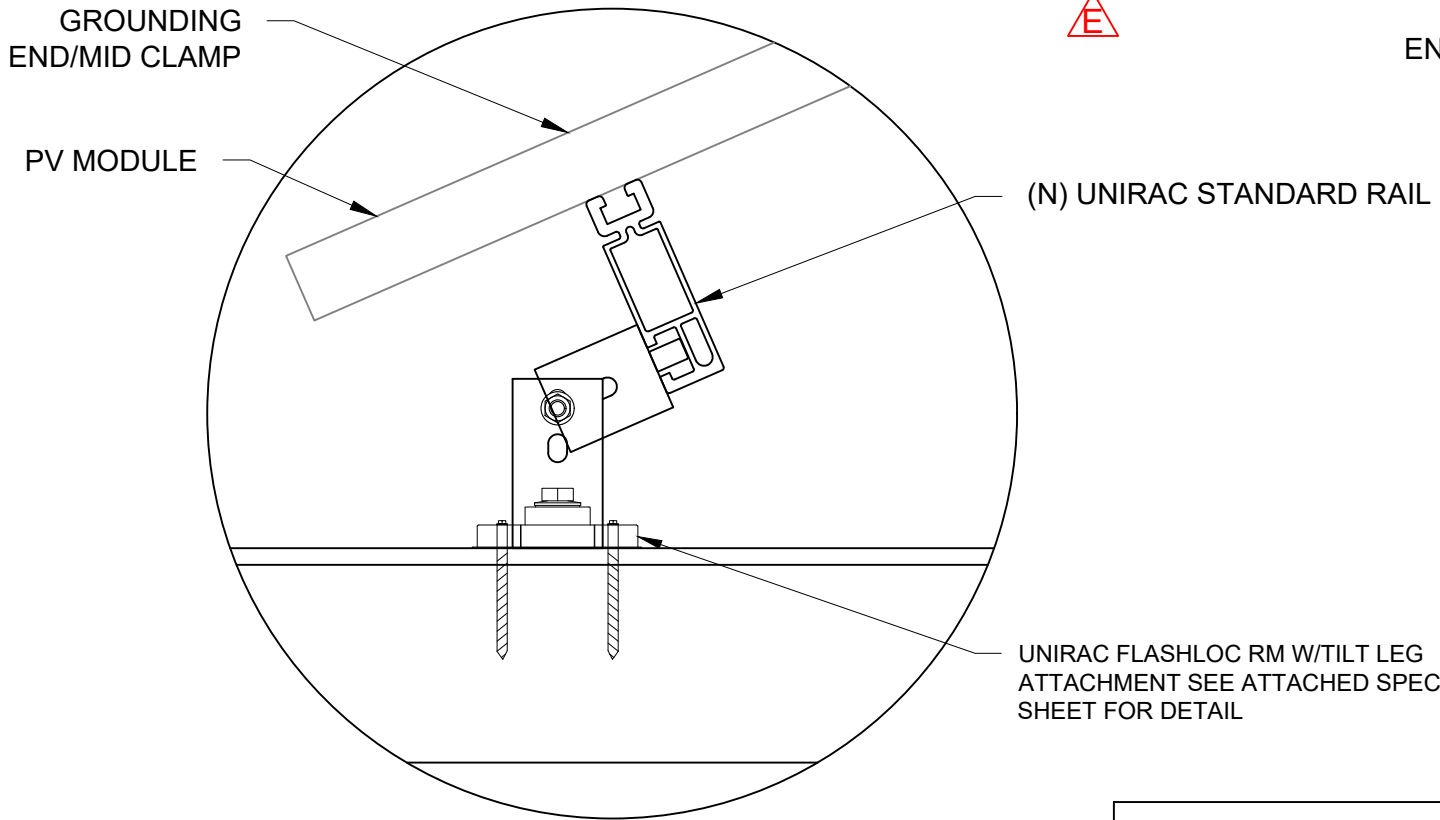
1 ROOF PLAN WITH MODULES  
SCALE: 3/32" = 1'-0"



**NOTE:** ACTUAL ROOF CONDITIONS AND TRUSS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

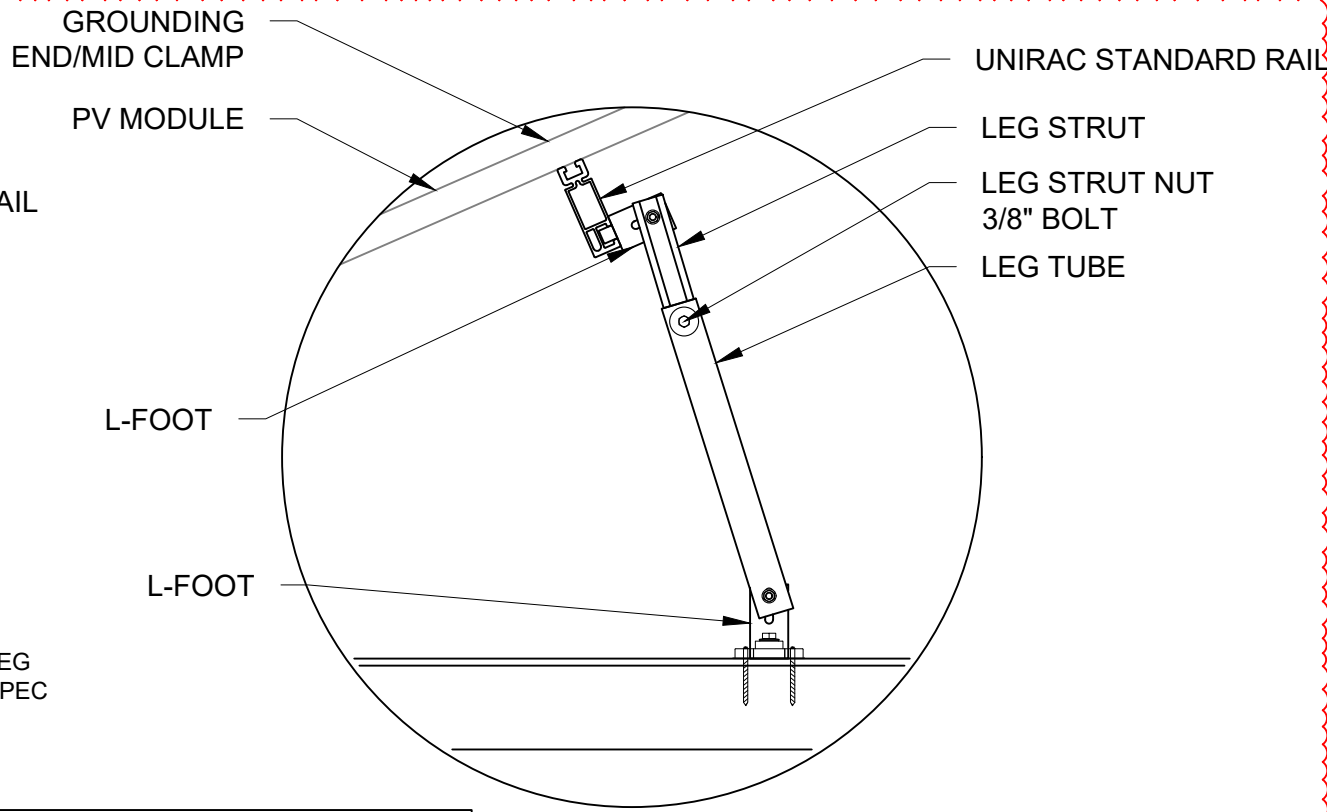


**1 ATTACHMENT DETAIL**  
SCALE: NTS



**2 ATTACHMENT DETAIL (ENLARGED VIEW)**  
SCALE: NTS

**NOTE**  
ALL INSTALLATION EQUIPMENT (RACKING AND MOUNTING) NEEDS TO BE BLACK OR PAINTED A DESERT COLOR (LRV 38% OR LESS). LRV: LIGHT REFLECTIVE VALUES



**NOTE**  
THE MODULES ARE TILTED TO 10° @ 18" INTER-ROW SPACING WITH REFERENCE TO ROOF ATTAINING 5° TILT WITH REFERENCE TO HORIZON

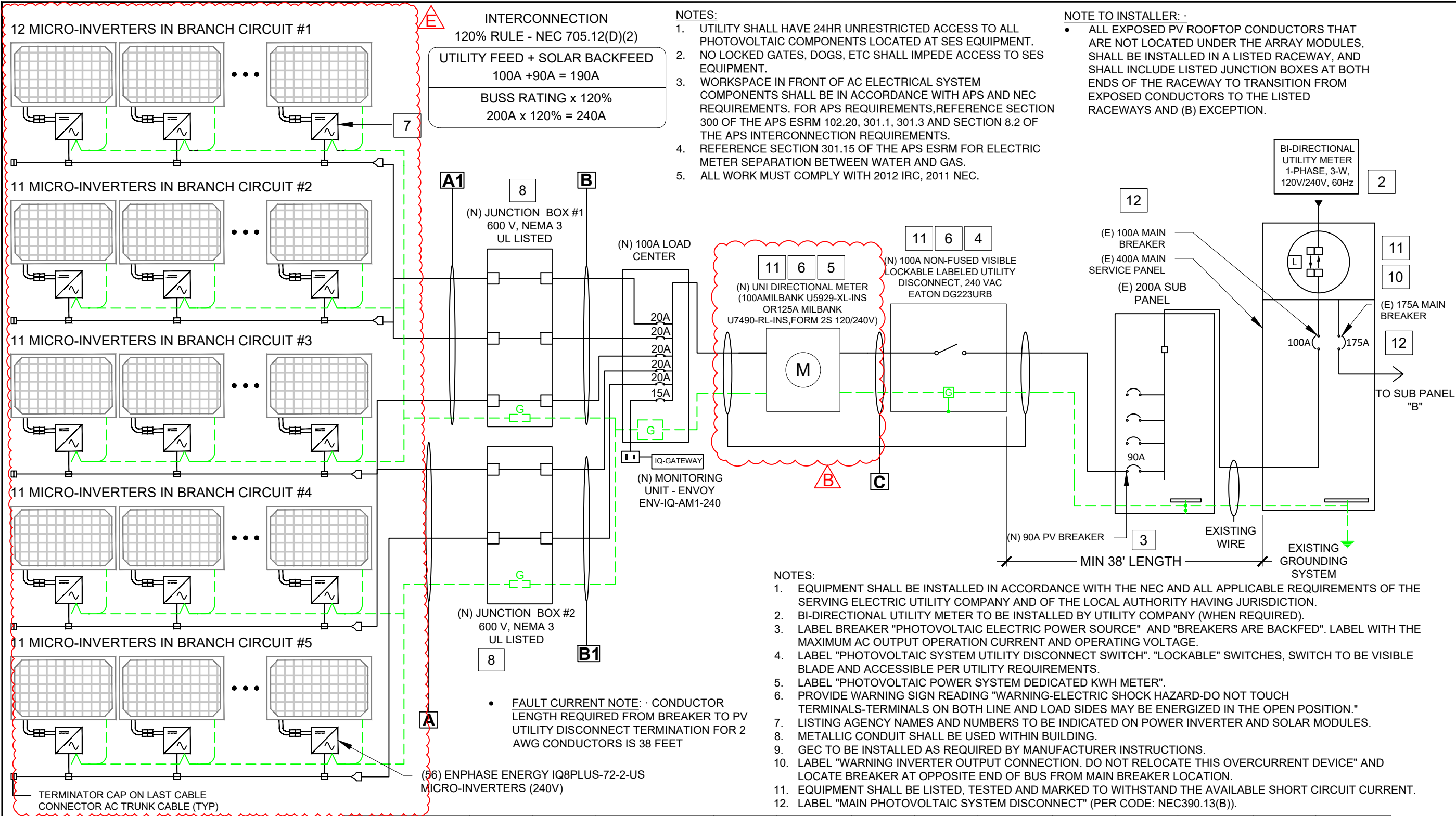


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**5936 E QUARTZ**  
**MOUNTAIN RD,**  
**PARADISE VALLEY,AZ**  
**85253 USA**  
**UTILITY: APS**  
**AHJ: PARADISE VALLEY**

SHEET NAME
ATTACHMENT DETAIL
SHEET SIZE
ANSI B 11" X 17"
SHEET NUMBER
PV-3





SYSTEM SIZE:- 56 x 400W = 22.40 kWDC  
SYSTEM SIZE:- 56 X 290 = 16.24 kW AC

Wire Tag	Conduit	Wire Qty	Wire Gauge	Wire Type	Temp. Rating	Wire Ampacity (A)	Temp. Derate	Conduit Fill Derate	Derated Ampacity (A)	Inverter Qty	NOC (A)	Design Current (A)	Ground Size	Ground Wire Type
A	OPEN AIR	2	12 AWG	Q Cable	90°C	30	0.87	1.0	26.10	12	1.21	14.52	06 AWG	BARE CU
A1	OPEN AIR	3	12 AWG	Q Cable	90°C	30	0.87	1.0	26.10	12	1.21	14.52	06 AWG	BARE CU
B1	3/4" EMT	4/2	10 OR 12 AWG	THWN-2 OR #12 NM-B CABLES WHERE RUN INDOOR	90°C	40	0.87	0.80	27.84	12	1.21	14.52	10 AWG	THWN-2
B	3/4" EMT	6/3	10 OR 12 AWG	THWN-2 OR #12 NM-B CABLES WHERE RUN INDOOR	90°C	40	0.87	0.80	27.84	12	1.21	14.52	10 AWG	THWN-2
C	1-1/4" EMT	3	2 AWG	THWN-2	75°C	115	0.82	1.0	94.30	56	1.21	67.76	8 AWG	THWN-2

# 1 ELECTRICAL SINGLE LINE DIAGRAM WITH CALCULATION

SCALE: NTS



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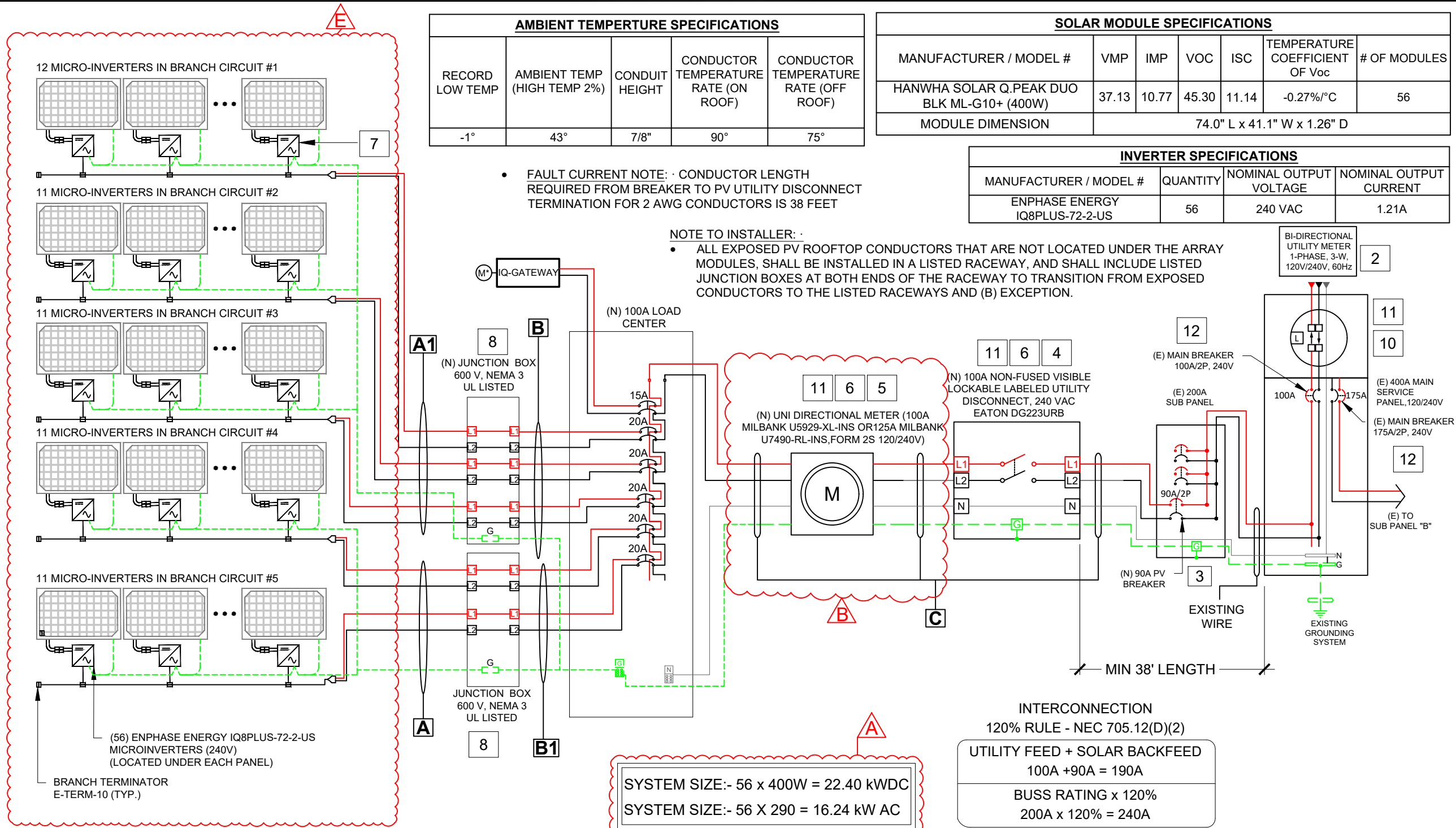
PROJECT NAME

LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

SHEET NAME  
ELECTRICAL SINGLE  
LINE DIAGRAM WITH  
CALCULATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-4



VERSION		
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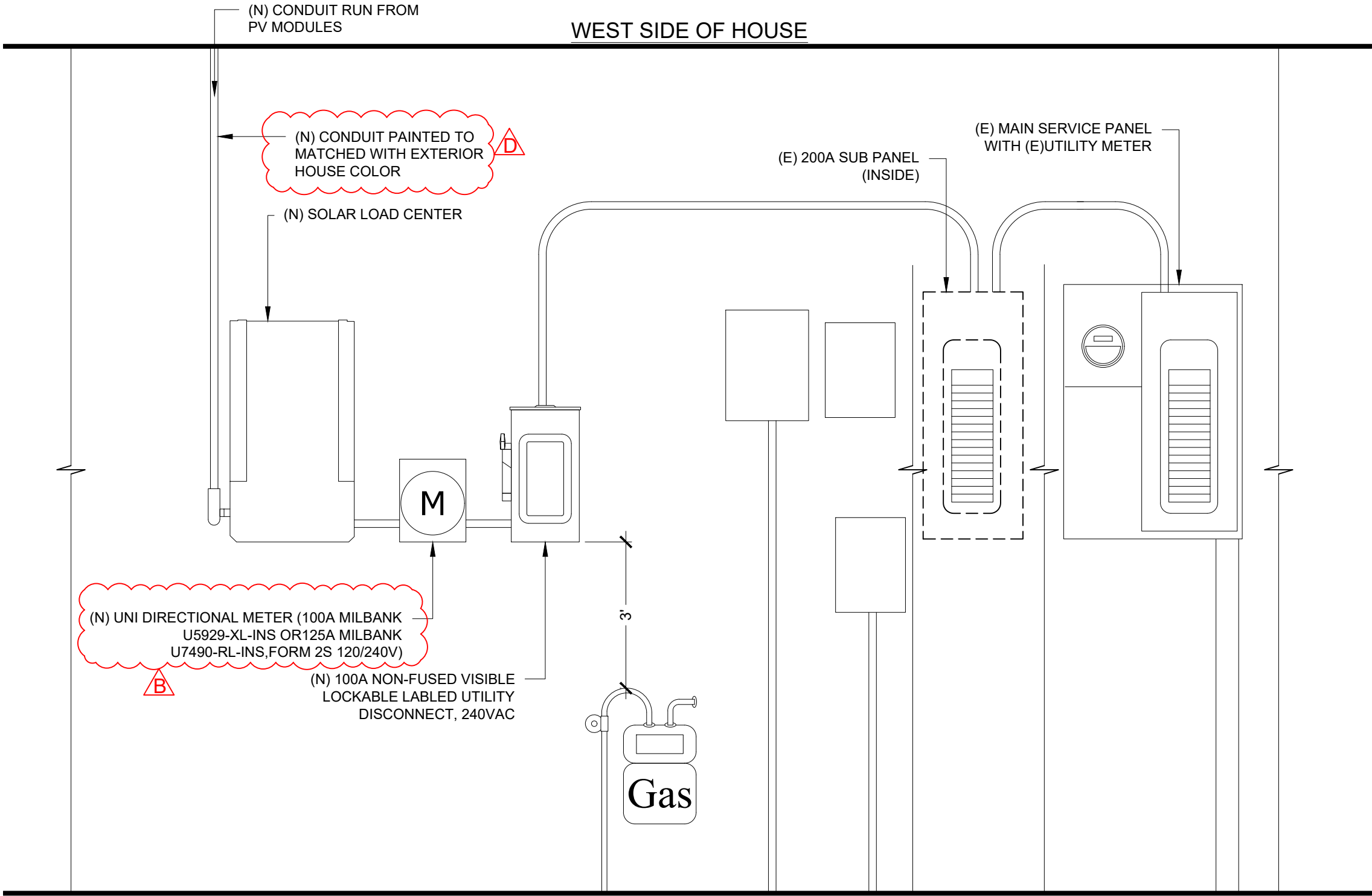
PROJECT NAME

LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

SHEET NAME  
ELECTRICAL LINE  
DIAGRAM WITH  
CALCULATION

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-5



DEL MAR, CA 92014, USA

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REVISION	01/07/2023	<span style="color: red;">⚠️ C</span>
REVISION	03/14/2023	<span style="color: red;">⚠️ D</span>
REVISION	03/25/2023	<span style="color: red;">⚠️ E</span>

PROJECT NAME

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5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
⚠️ E  
AHJ: PARADISE VALLEY

SHEET NAME

EQUIPMENT  
ELEVATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-5.1

1

# ELECTRICAL EQUIPMENT ELEVATION

SCALE: NTS



UNI-DIRECTIONAL  
METER

LABEL LOCATION: DEDICATED kWh METER

UTILITY DISCONNECT

LABEL LOCATION: UTILITY DISCONNECT

PHOTOVOLTAIC SYSTEM METER  
(UTILITY SIDE VOLTAGE ON TOP LUGS)

LABEL LOCATION: DEDICATED KWH METER

PHOTOVOLTAIC POWER SOURCE  
BREAKERS  
ARE BACKFEEDING

LABEL LOCATION: BACKFED BREAKER  
NEC 705.12(B)(4)

BREAKER HAS BEEN  
DE-RATED PER  
NEC 705.12(B)(2)

MAX 175 AMPS

LABEL LOCATION: MAIN BREAKER  
DE-RATE

OPEN ALL ISOLATION DEVICES [UNI-DIRECTION/NORTH]  
TO ISOLATE THIS METERING ENCLOSURE FROM ALL  
KNOWN SOURCES OF POWER. ENSURE ISOLATION  
DEVIGES ARE LOCKED IN THE OPEN POSITION IN  
ACCORDANCE WITH OSHA LOCK OUT / TAG OUT  
REQUIREMENTS PRIOR TO PERFORMING ANY WORK  
WITHIN THIS METERING ENCLOSURE

LABEL LOCATION: DEDICATED kWh METER  
PERMANENT PLAQUE OR DIRECTORY

PHOTOVOLTAIC ELECTRIC  
POWER SOURCE

MAXIMUM AC OPERATING CURRENT: 67.76 AMPS  
NOMINAL OPERATING AC VOLTAGE: 240 VAC

LABEL LOCATION: AC PANEL  
NEC 690.54

WARNING

ELECTRICAL SHOCK HAZARD  
DO NOT TOUCH TERMINALS  
TERMINALS ON BOTH LINE AND LOAD  
SIDES MAY BE ENERGIZED IN THE OPEN  
POSITION

LABEL LOCATION:  
UTILITY DISCONNECT  
& DEDICATED KWH METER  
NEC 690.13(B), 690.15(D)

NOTICE

DEDICATED DER SYSTEM  
COMBINER PANEL  
DO NOT ADD LOADS TO THIS  
PANEL

LABEL LOCATION: COMBINER BOX/PANEL

WARNING

POWER SOURCE OUTPUT  
CONNECTION  
DO NOT RELOCATE THIS  
OVERCURRENT DEVICE

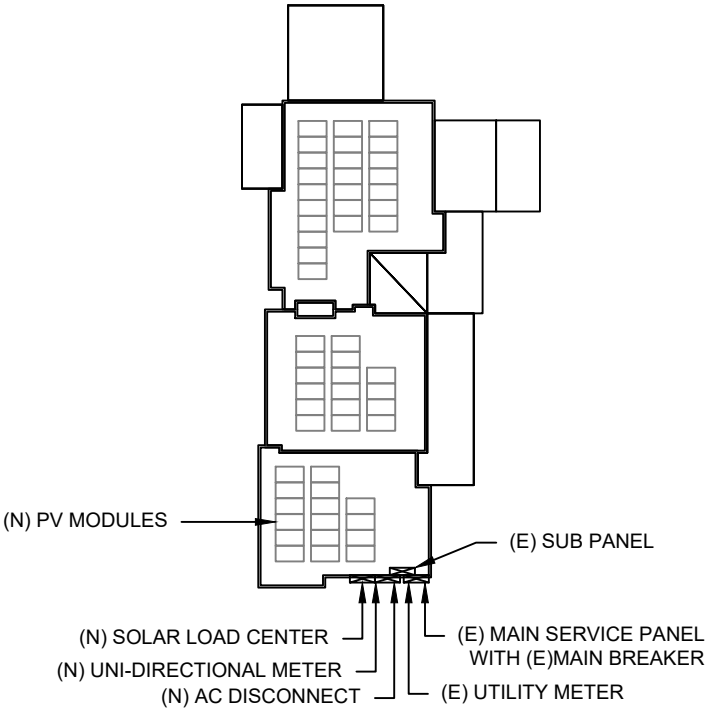
LABEL LOCATION:  
BACKFED BREAKER  
NEC 705.12(B)(2)(3)(b)

DUAL POWER SOURCES SECOND SOURCE  
IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION: PANEL BOARD  
NEC 705.12(B)(3)

CAUTION !

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



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85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

SHEET NAME  
WARNING LABELS &  
PLACARD

SHEET SIZE  
ANSI B  
11" X 17"

SHEET NUMBER  
PV-6

Q.PEAK DUO BLK ML-G10+ SERIES



385 - 410 Wp | 132 Cells  
20.9% Maximum Module Efficiency

MODEL Q.PEAK DUO BLK ML-G10+



Breaking the 20% efficiency barrier

Q. ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.



A reliable investment

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>1</sup>.



Enduring high performance

Long-term yield security with Anti LeTID Technology, Anti PID Technology<sup>2</sup> and Hot-Spot Protect.



Extreme weather rating

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



Innovative all-weather technology

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



The most thorough testing programme in the industry

Qcells is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

<sup>1</sup> See data sheet on rear for further information.

<sup>2</sup> APT test conditions according to IEC/TS 62804-1:2015, method A (-1500V, 96h)

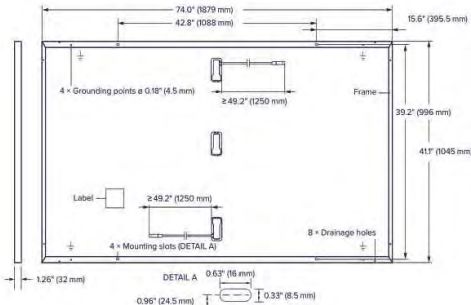
The ideal solution for:



Q.PEAK DUO BLK ML-G10+ SERIES

Mechanical Specification

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 22 monocrystalline Q. ANTUM solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68



Electrical Characteristics

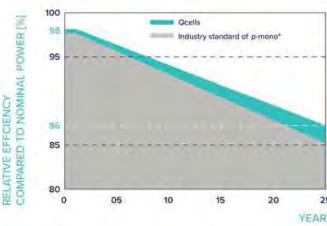
POWER CLASS			385	390	395	400	405	410
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5 W/-0 W)								
Minimum	Power at MPP <sup>1</sup>	P <sub>MPP</sub> [W]	385	390	395	400	405	410
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub> [A]	11.04	11.07	11.10	11.14	11.17	11.20
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub> [V]	45.19	45.23	45.27	45.30	45.34	45.37
	Current at MPP	I <sub>MPP</sub> [A]	10.59	10.65	10.71	10.77	10.83	10.89
	Voltage at MPP	V <sub>MPP</sub> [V]	36.36	36.62	36.88	37.13	37.39	37.64
	Efficiency <sup>1</sup>	η [%]	≥ 19.6	≥ 19.9	≥ 20.1	≥ 20.4	≥ 20.6	≥ 20.9

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup>

Minimum	Power at MPP	P <sub>MPP</sub>	[W]	288.8	292.6	296.3	300.1	303.8	307.6
	Short Circuit Current	I <sub>SC</sub>	[A]	8.90	8.92	8.95	8.97	9.00	9.03
	Open Circuit Voltage	V <sub>OC</sub>	[V]	42.62	42.65	42.69	42.72	42.76	42.79
	Current at MPP	I <sub>MPP</sub>	[A]	8.35	8.41	8.46	8.51	8.57	8.62
	Voltage at MPP	V <sub>MPP</sub>	[V]	34.59	34.81	35.03	35.25	35.46	35.68

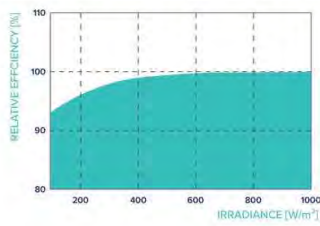
<sup>1</sup>Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>; V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>, 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • <sup>2</sup>800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

Qcells PERFORMANCE WARRANTY



\*Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I <sub>SC</sub>	α	[%/K]	+0.04	Temperature Coefficient of V <sub>OC</sub>	β	[%/K]	-0.27
Temperature Coefficient of P <sub>MPP</sub>	γ	[%/K]	-0.34	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3 °C)

Properties for System Design

Maximum System Voltage	V <sub>sys</sub>	[V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating		[A DC]	20	Fire Rating based on ANSI/UL 61730	TYPE 2
Max. Design Load, Push/Pull <sup>3</sup>		[lbs/ft <sup>2</sup> ]	75 (3600 Pa)/55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push/Pull <sup>3</sup>		[lbs/ft <sup>2</sup> ]	113 (5400 Pa)/84 (4000 Pa)		

<sup>3</sup> See Installation Manual

Qualifications and Certificates

UL 61730, CE-compliant,  
Quality Controlled PV - TÜV Rheinland,  
IEC 61215:2016, IEC 61730:2016,  
U.S. Patent No. 9,893,215 (solar cells),



Specifications subject to technical changes © Qcells Q.PEAK DUO BLK ML-G10+ series, 385-410, 2023-01, Rev03, NA



DEL MAR, CA 92014, USA

VERSION

DESCRIPTION	DATE	REV
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REVISION	03/14/2023	D
REVISION	03/25/2023	E

PROJECT NAME

LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-7





DATA SHEET



# IQ8 Series Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

## Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

## High productivity and reliability

- Produce power even when the grid is down\*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

## Microgrid-forming

- Complies with the latest advanced grid support\*\*
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

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IQ8SE-DS-0001-01-EN-US-2022-03-17

\* Only when installed with IQ System Controller 2, meets UL 1741. IQ8H-208V operates only in grid-tied mode.  
\*\* IQ8 Series Microinverters supports split phase, 240V. IQ8H-208 supports split phase, 208V only.

# IQ8 Series Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US <sup>1</sup>
Commonly used module pairings <sup>2</sup>	W	235 – 350	235 – 440	260 – 460	295 – 500	320 – 540+	295 – 500+
Module compatibility		60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell					
MPPT voltage range	V	27 – 37	29 – 45	33 – 45	36 – 45	38 – 45	38 – 45
Operating range	V	25 – 48			25 – 58		
Min/max start voltage	V	30 / 48			30 / 58		
Max input DC voltage	V	50			60		
Max DC current <sup>3</sup> [module Isc]	A			15			
Overtoltage class DC port				II			
DC port backfeed current	mA			0			
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit					
OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US	IQ8M-72-2-US	IQ8A-72-2-US	IQ8H-240-72-2-US	IQ8H-208-72-2-US <sup>1</sup>
Peak output power	VA	245	300	330	366	384	366
Max continuous output power	VA	240	290	325	349	380	360
Nominal (L-L) voltage/range <sup>4</sup>	V			240 / 211 – 264			208 / 183 – 250
Max continuous output current	A	1.0	1.21	1.35	1.45	1.58	1.73
Nominal frequency	Hz			60			
Extended frequency range	Hz			50 – 68			
AC short circuit fault current over 3 cycles	Arms			2			4.4
Max units per 20 A (L-L) branch circuit <sup>5</sup>		16	13	11	11	10	9
Total harmonic distortion				<5%			
Overtoltage class AC port				III			
AC port backfeed current	mA			30			
Power factor setting				1.0			
Grid-tied power factor (adjustable)				0.85 leading – 0.85 lagging			
Peak efficiency	%	97.5	97.6	97.6	97.6	97.6	97.4
CEC weighted efficiency	%	97	97	97	97.5	97	97
Night-time power consumption	mW			60			
MECHANICAL DATA							
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)					
Relative humidity range		4% to 100% (condensing)					
DC Connector type		MC4					
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")					
Weight		1.08 kg (2.38 lbs)					
Cooling		Natural convection – no fans					
Approved for wet locations		Yes					
Pollution degree		PD3					
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure					
Environ. category / UV exposure rating		NEMA Type 6 / outdoor					
COMPLIANCE							
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01					
		This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.					

(1) The IQ8H-208 variant will be operating in grid-tied mode only at 208V AC. (2) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility> (3) Maximum continuous input DC current is 10.6A (4) Nominal voltage range can be extended beyond nominal if required by the utility. (5) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SE-DS-0001-01-EN-US-2022-03-17



DEL MAR, CA 92014, USA

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REVISION	03/14/2023	D
REVISION	03/25/2023	E

## PROJECT NAME

LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

## SHEET NAME

SPEC SHEETS

## SHEET SIZE

ANSI B  
11" X 17"

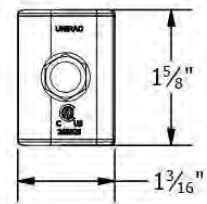
## SHEET NUMBER

PV-8

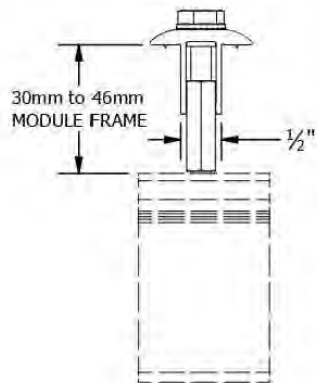
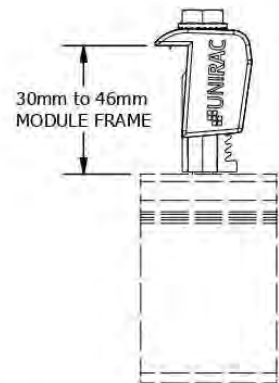
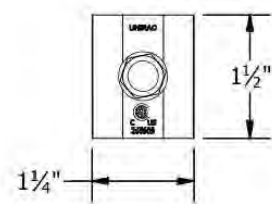


PART # TABLE	
P/N	DESCRIPTION
302045M	UNIVERSAL AF MID CLAMP - MILL
302045D	UNIVERSAL AF MID CLAMP - DRK
302050M	UNIVERSAL AF END CLAMP - MILL
302050D	UNIVERSAL AF END CLAMP - DRK

UNIVERSAL AF  
END CLAMP

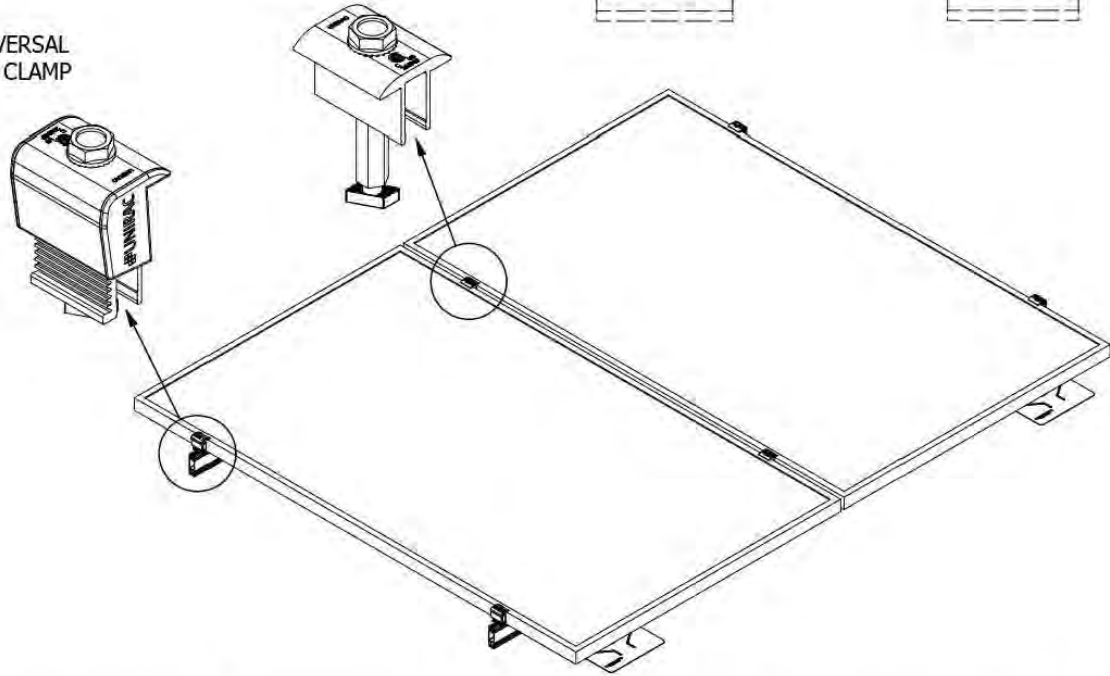


UNIVERSAL AF  
MID CLAMP



UNIVERSAL  
MID CLAMP

UNIVERSAL  
END CLAMP



**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

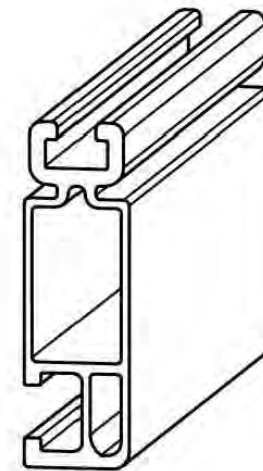
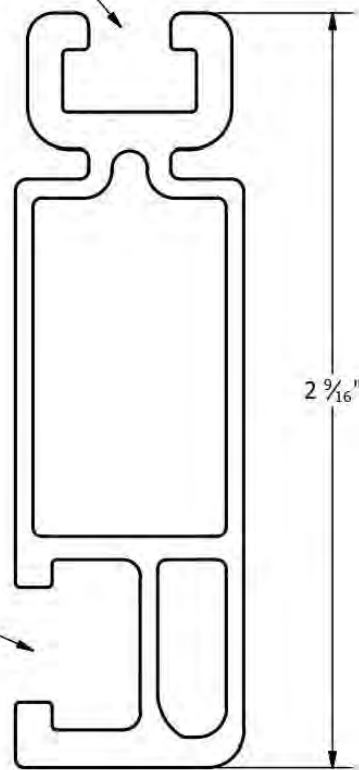
PRODUCT LINE: SOLARMOUNT  
DRAWING TYPE: PART & ASSEMBLY  
DESCRIPTION: UNIVERSAL AF CLAMPS  
REVISION DATE: 9/28/2020

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL  
PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A01B  
SHEET

1/4" BOLT LOCATION

3/8" BOLT LOCATION



PART # TABLE		
P/N	DESCRIPTION	LENGTH
320132M	SM RAIL 132" MILL	132"
310132C	SM RAIL 132" CLR	132"
320168M	SM RAIL 168" MILL	168"
310168C	SM RAIL 168" CLR	168"
320168D	SM RAIL 168" DRK	168"
320208M	SM RAIL 208" MILL	208"
310208C	SM RAIL 208" CLR	208"
320240M	SM RAIL 240" MILL	240"
310240C	SM RAIL 240" CLR	240"
310240D	SM RAIL 240" DRK	240"

**NOTE**  
ALL INSTALLATION EQUIPMENT (RACKING AND MOUNTING) NEEDS TO BE BLACK OR PAINTED A DESERT COLOR (LRV 38% OR LESS). LRV: LIGHT REFLECTIVE VALUES

**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE: SOLARMOUNT  
DRAWING TYPE: PART DETAIL  
DESCRIPTION: STANDARD RAIL  
REVISION DATE: 9/11/2017

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL  
PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-P01  
SHEET



DEL MAR, CA 92014, USA

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REVISION	03/25/2023	E

PROJECT NAME

LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
PARADISE VALLEY, AZ  
85253 USA  
UTILITY: APS  
AHJ: PARADISE VALLEY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-9



# FLASHLOC™ RM

THE STRONGEST ATTACHMENT FOR EVERY FLAT ROOF



Unirac's **FLASHLOC™ RM** is a lightweight, durable, powder-coated cast aluminum roof attachment solution that provides fast, easy installation and helps save labor cost. **FLASHLOC™ RM** is compatible with most roofing materials and is applicable for almost all solar racking form factors. Rigorous mechanical, sealing, and ease-of-install testing has been successfully completed for assurance of long-term reliability.

### FEATURES

**FLASHLOC™** Technology – no more membrane SKUs or heat welding

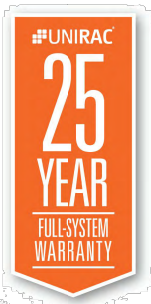
- Works for all roof types – see Chemlink M-1's compatibility for details
- Labor and attachment savings
- Industry-leading install time
- 6,600-lb. uplift offset (ultimate)
- Includes 8 fastener holes
- Attachment can accommodate roofing screw sizes #12 - #15
- 25-year warranty

### PRODUCT SPECIFICATIONS

- 7.5" diameter X 0.94" height
- Included hardware: 1 preassembled bolt and washer
- Chemlink M-1 and 1-Part included in kit

PART NUMBER	DESCRIPTION	LIST PRICE	PACK SIZE
310999	FLASHLOC RM KIT	\$44.00 ea.	10

\*Check with your local distributor for finalized pricing.

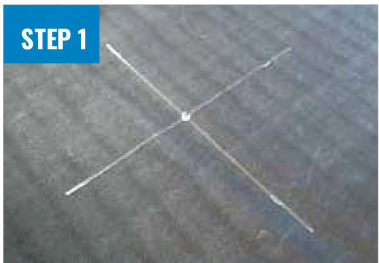


FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

# FLASHLOC™ RM

INSTALLATION GUIDE



CLEAN SURFACE & MARK LOCATION



APPLY CHEMLINK M1 SEALANT



SECURE ATTACHMENT



FILL WITH CHEMLINK 1-PART & PLACE CAP

### STEP ONE CLEAN SURFACE AND MARK LOCATION

-**IMPORTANT:** Thoroughly clean roof surface with isopropyl alcohol or denatured alcohol. Bonding surfaces should be clean, dry and free of dirt or contamination. Remove all previously applied caulk, mastic or other contaminants with a wire brush. Brush away all gravel or loose granules.

-Mark center point locations on the roof. **NOTE:** We recommend locating Flashloc RM after your equipment has been installed or layout is confirmed.

### STEP TWO APPLY M1 SEALANT

-Apply a 5/16" bead of Chemlink M1 sealant to the entire bottom perimeter AND to the bottom of each bolt location to be used. Tool M1 sealant bead to form a smooth surface along the entire bottom perimeter. Refer to Chemlinks application guidelines with temperatures below 40 degrees F.

-**IMPORTANT:** CHEMLINK TPO PRIMER MUST BE USED ON TPO SINGLE-PLY ROOF SUBSTRATES MEMBRANES PRIOR TO INSTALLATION.

### STEP THREE SECURE ATTACHMENT

- Align mount using alignment marks on roof and base. Using fasteners specified by your P.E. of record, securely fasten attachment to the roof. Drive screws down until the base is firmly attached to the roof and the M1 sealant expands beyond the outer perimeter of the base.

- Tool M1 sealant bead around entire perimeter to form a smooth fillet. **TIP:** Use caution to avoid over-torquing the screws.

### STEP FOUR FILL BASE WITH CHEMLINK 1-PART

-Completely fill base with Chemlink 1-Part sealant. Sealant must completely cover all screw heads. Do NOT overfill.

- Place cap on base and secure racking to mount with Unirac provided 3/8" hardware or other 3/8"-16 threaded hardware as specified by the P.E. of record.

-**IMPORTANT:** To ensure robust sealing over the life of the product, the maximum allowed gap between attachment kit strut and the top surface of the flat roof attachment is 1/16".

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702



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LUCY HUEREQUE  
5936 E QUARTZ  
MOUNTAIN RD,  
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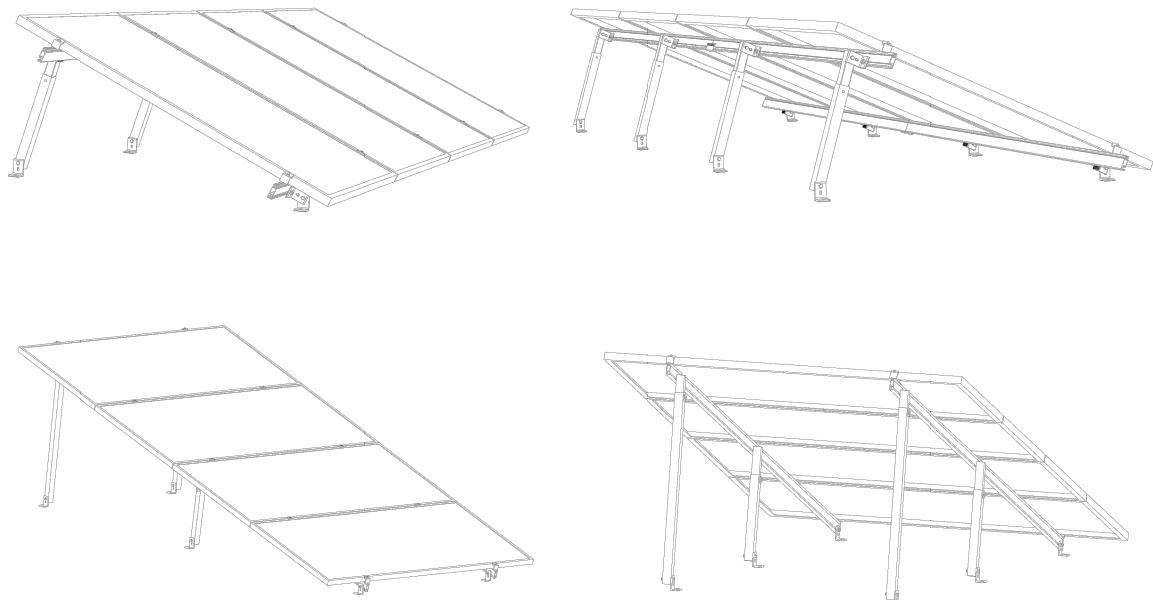
SHEET NAME
SPEC SHEETS
SHEET SIZE
ANSI B 11" X 17"
SHEET NUMBER
PV-10





SOLARMOUNT TILT LEG  
LOW & HIGH PROFILE

# INSTALLATION GUIDE



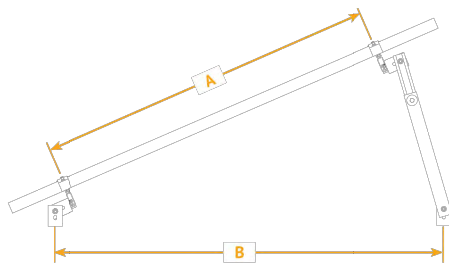
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SOLARMOUNT TILT LEG  
LOW & HIGH PROFILE

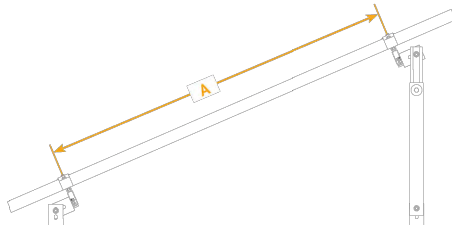
## ACCEPTABLE APPLICATIONS

B  
INSTALLATION GUIDE PAGE



PREFERRED TILT LEG ORIENTATION

A vertical leg orientation is acceptable. but DO NOT allow the bottom of the tilt legs for any application to be angled inboard towards the front of the array.

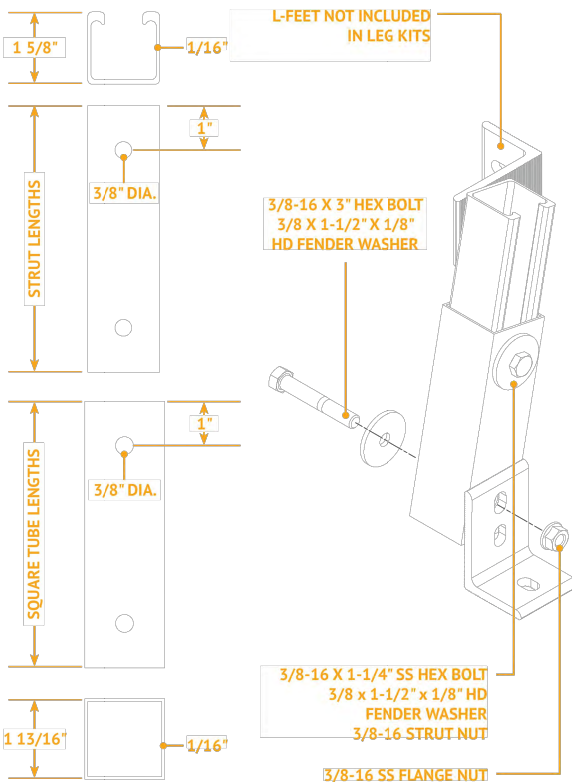


ACCEPTABLE TILT LEG ORIENTATION

For more information on module placement please refer to the SOLARMOUNT installation guide.  
Remember to comply with module manufacturer clamping requirements



SOLARMOUNT TILT LEG  
LOW & HIGH PROFILE



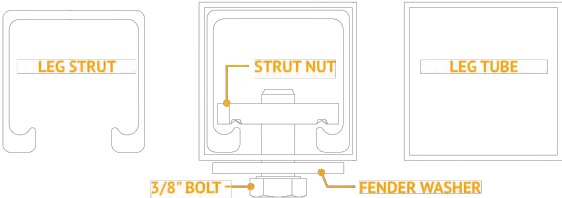
## TILT LEG COMPONENTS

A  
INSTALLATION GUIDE PAGE

TILT LEG LENGTHS		
Total Adjustable Lengths	Square Tube	Strut
8" to 12"	8"	8"
18" to 30"	18"	18"
26" to 44"	26"	26"
40" to 72"	40"	40"

Properties	Tilt Leg Strut Channel	Square Tilt Leg Tube	Units
Area	0.515	0.4884	in <sup>2</sup>
Weight	0.57	0.56	plf
Width	1.625	1.82	in
Height	1.625	1.82	in
Section Modulus (X-axis)	0.236	0.275	in <sup>3</sup>
Section Modulus (Y-axis)	0.261	0.275	in <sup>3</sup>
Moment of Inertia (X-axis)	0.201	0.2498	in <sup>4</sup>
Moment of Inertia (Y-axis)	0.213	0.2498	in <sup>4</sup>
Radius of Gyration (X-axis)	0.625	0.7152	in

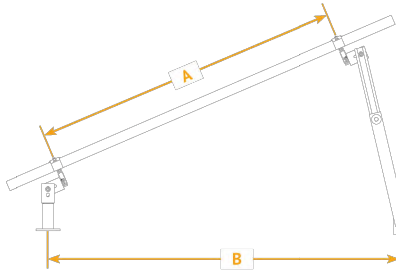
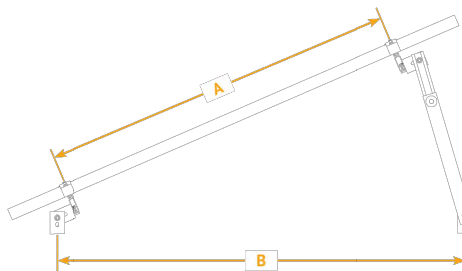
Wrenches and Torque	Wrench Size	Recommended Torque (ft-lbs)
3/8" Hardware	9/16"	*30 w/Anti-Seize



SOLARMOUNT TILT LEG  
LOW PROFILE

## TILT LEG GEOMETRY / ANGLE

C  
INSTALLATION GUIDE PAGE



North/south distance along the attachment surface (B) can be obtained using Unirac's U-Builder design & layout tool:  
[http://design.unirac.com/tool/project\\_info/solarmount\\_2/](http://design.unirac.com/tool/project_info/solarmount_2/)  
It is approximately equal to the distance up the module from bottom to the upper rail (A).

NOTE: If you need to install the lower rail further above the bottom edge of the module, add a standoff under the front attachment to increase the height off the surface.

NOTE: Experienced installers have been very successful with SOLARMOUNT Tilt by utilizing an easily made brace during installation. The brace is comprised of a beam (supplied by others such as a piece of strut, but could also be a piece of SOLARMOUNT rail) and four (4) L-feet. The purpose of the brace is to temporarily, but firmly, position rails perpendicular to module frame and parallel to each other at the desired tilt angle. Once modules have been properly fastened to the SOLARMOUNT rail top slot, the braces can be removed. This saves time by keeping rails positioned correctly as module installation begins.

For more information on module placement please refer to the SOLARMOUNT installation guide.  
Remember to comply with module manufacturer clamping requirements



DEL MAR, CA 92014, USA

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SPEC SHEETS

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-11





Descriptive Report  
and Test Results

MASTER CONTRACT: 266909  
REPORT: 70131735  
PROJECT: 80128750

- Edition 1:

September 20, 2017; Project 70131735– Albuquerque  
Issued by Michael Hoffnagle
- Edition 17:

April 22, 2022; Project 80116723 - Irvine  
Prepared By: Michael Hoffnagle  
Authorized By: Michael Hoffnagle
- Edition 18:

June 8, 2022; Project 80128750 - Irvine  
Prepared By: Michael Hoffnagle  
Authorized By: Michael Hoffnagle

Report pages reissued

- Contents:
- Certificate of Compliance - Pages 1 to 6

Supplement to Certificate of Compliance - Pages 1 to 3

Description and Tests - Pages 1 to 27

Att1 Installation Manual SM– Pages 1 to 36

Att2 Schematics SM/ULA– Pages 1 to 72

Att3 Installation Manual ULA– Pages 1 to 22

Att4 RM5 Installation Guide - 1 to 19

Att5 RMDT Installation Guide - 1 to 20

Att6 RM series schematics – 1 to 32

Att7 Installation Manual, GFT Shared Rail – Pages 1 to 40

Att8 Installation Manual, GFT 4-Rail – Pages 1 to 39

Att9 GFT Schematics – Pages 1 to 42

Att10 NXT Horizon Installation Manual – Pages 1 to 22

Att11 Schematics NXT Horizon – Pages 1 to 13

PRODUCTS

- CLASS - C531302 - POWER SUPPLIES

- PHOTOVOLTAICS-PV Racking and clamping systems
- CLASS - C531382 - POWER SUPPLIES

- PHOTOVOLTAICS-PV Racking and clamping systems -  
Certified to US Standards

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APPENDIX A | C  
System Certification | PAGE

Electrical Bonding and Grounding Test Modules

The list below is not exhaustive of compliant modules but shows those that have been evaluated and found to be electrically compatible with the SOLARMOUNT system.

Manufacture	Module Model / Series	Manufacture	Module Model / Series	Manufacture	Module Model / Series
LG Electronics (cont.)	LGxxxN2T-J5 LGxxx(N1K/N1W/N2T/N2W)-L5 LGxxx(M1C/N1C/Q1C/Q1K)-N5 LGxxx(N1C/N1K/N2W/Q1C/Q1K)-V5 LGxxxN3K-V6	Phono Solar	PSxxxM1-20/U PSxxxM1H-20/U PSxxxM1-20UH PSxxxM1H-20UH	Q.Cells (cont.)	Q.PEAK DUO XL-(G10/G10.2/G10.3/G10.c/ G10.d) Q.PEAK DUO XL-G10.3/BFG Q.PEAK DUO XL-G10.d/BFG Q.PEAK DUO XL-(G11.2/G11.3) Q.PEAK DUO XL-G11.3/BFG
	LONGI		LR4-60(HPB/HPH) LR4-72(HPH) LR6-60 LR6-60(BK/HPB/HPH/HV/PB/PE/PH) LR6-72 LR6-72(BK/HV/PB/PE/PH) RealBlack LR4-60HPB RealBlack LR6-60HPB		PSxxxM1-20/UH PSxxxM1H-20/UH PSxxxM- 24/T PSxxxMH-24/T PSxxxM- 24/TH PSxxxMH-24/TH
Meyer Burger		Meyer Burger Black, Meyer Burger White	Prism Solar	P72 Series	Renesola
Mission Solar Energy	MSE Mono, MSE Perc	Q.Cells	Plus, Pro, Peak, G3, G4, Peak GS(SC) , G6(+)(SQ)(AC), G7, G8(+), Plus, Pro, Peak L-G2, L-G4, L-G5 Peak L-G5, L-G6, L-G7, L-G8(BFF) Q.PEAK DUO( BLK)-G6+ Q.PEAK DUO BLK-G6+/TS Q.PEAK DUO (BLK)-G7 Q.PEAK DUO L-(G7/G7.1/G7.2/G7.3/G7.7) Q.PEAK DUO (BLK) G8(+) Q.PEAK DUO L-(G8/G8.1/G8.2/G8.3) Q.PEAK DUO L-G8.3 (BFF/BFG/BGT) Q.PEAK DUO (BLK) ML-G9(+) Q.PEAK DUO XL-(G9/G9.2/G9.3) Q.PEAK DUO XL-G9.3/BFG Q.PEAK DUO-G10+ Q.PEAK DUO BLK G10(+) Q.PEAK DUO BLK G10+ /AC Q.PEAK DUO (BLK) ML-G10(a)(+)	Risen	RSM Series
Mitsubishi	MIE & MLE Series			S-Energy	SN72 & SN60 Series
Neo Solar Power Co.	D6M Series			SEG Solar	SEG-xxx-BMD-HV
Panasonic	VBHNxxxSA06/SA06B/SA11/SA11B VBHNxxxSA15/SA15B/SA16/SA16B, VBHNxxxKA, VBHNxxxKA03/O4, VBHNxxxSA17/SA17G/SA17E/SA18/SA18E, VBHNxxxZA01/ZA02/ZA03/VBHNxxxZA04 EVPVxxx EVPVxxx(H/K/PK)			Seraphim	SEG-(6PA/6PB/6MA/6MA-HV/6MB/E01/E11) SRP-(6QA/6QB) SRP-xxx-6MB-HV, SRP-320-375-BMB-HV, SRP-xxx-BMC-HV, SRP-390-450-BMA-HV, SRP-xxx-BMZ-HV, SRP-390-405-BMD-HV
	Peimar		SGxxxM (FB/BF) SMxxxM	Sharp	NU-SA & NU-SC Series
				Silfab	SLA-M, SLA-P, SLG-M, SLG-P & BC Series SILxxx(BL/NL/NT/HL/ML/BK/NX/NU/HQ)

- Unless otherwise noted, all modules listed above include all wattages and specific models within that series. Variable wattages are represented as "xxx"
- Items in parenthesis are those that may or may not be present in a compatible module's model ID
- Slashes "/" between one or more items indicates that either of those items may be the one that is present in a module's model ID
- The frame profile must not have any feature that might interfere with the bonding devices that are integrated into the racking system
- Use with a maximum over current protection device OCPD of 30A
- Listed models can be used to achieve a Class A fire system rating for steep slope applications. See Appendix A, page A



DEL MAR, CA 92014, USA

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08/23/2022	UR
REVISION	09/02/2022	A
REVISION	09/17/2022	B
REVISION	01/07/2023	C
REVISION	03/14/2023	D
REVISION	03/25/2023	E

LUCY HUEREQUE

5936 E QUARTZ

MOUNTAIN RD,

PARADISE VALLEY,AZ

85253 USA

UTILITY: APS

AHJ: PARADISE VALLEY

SHEET NAME
SPEC SHEETS
SHEET SIZE
ANSI B 11" X 17"
SHEET NUMBER
PV-12





# Certificate of Compliance

**Certificate:** 70131735                      **Master Contract:** 266909  
**Project:** 80128750                      **Date Issued:** 2022-06-08  
**Issued To:** Unirac  
1411 Broadway NE  
Albuquerque, New Mexico, 87102  
United States  
  
**Attention:** Rob D'Anastasio

*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.*

**Issued by:** Michael Hoffnagle  
Michael Hoffnagle



**PRODUCTS**

- CLASS - C531302 - POWER SUPPLIES
- CLASS - C531382 - POWER SUPPLIES
- PHOTOVOLTAICS-PV Racking and clamping systems
- PHOTOVOLTAICS-PV Racking and clamping systems - Certified to US Standards



**Certificate:** 70131735                      **Master Contract:** 266909  
**Project:** 80128750                      **Date Issued:** 2022-06-08

Models:	SM	-	SOLARMOUNT Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.
	ULA	-	Unirac Large Array is a ground mount system using the SolarMount (SM) platform for the bonding and grounding of PV modules.

**Solarmount**

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with stainless steel or aluminum mid clamps and Aluminum end clamps. The modules are bonded to the racking system with the stainless-steel bonding mid clamps with piercing points. The system is grounded with 10 AWG copper wire to bonding/grounding lugs. Fire ratings of Class A with Type 1, 2, 3 (with metallic frame), 4 (with trim), 5 (with trim), 10(with metallic frame), 19, 22, 25, 29, or 30 for steep slope. Tested at 5” interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

The system may employ optimizers/micro-inverters and used for grounding when installed per installation instructions.

UL 2703 Mechanical Load ratings:

Downward Design Load (lb/ft²)	113.5
Upward Design Load (lb/ft²)	50.7
Down-Slope Load (lb/ft²)	16.13

Test Loads:

Downward Load (lb/ft²)	170.20
Upward Load (lb/ft²)	76.07
Down-Slope Load (lb/ft²)	24.2



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PV-13