PROJECT DESCRIPTION:

(28 QCELLS Q.PEAK DUO BLK-G10+ (365W)ROOF (MOUNTED SOLAR PHOTOVOLTAIC MODULES

SYSTEM SIZE: 10.22KWDC STC SYSTEM SIZE: 8.12KWAC

SYSTEM SUMMARY

QCELLS Q.PEAK DUO BLK-G10+ (365W) MODULES ENPHASE IQ8PLUS-72-2-US INVERTER (240V)

DESIGN CRITERIA						
WIND SPEED	107					
EXPOSURE CATEGORY	В					
RISK CATEGORY	II					
MOUNTING METHOD	ROOF MOUNT					
GROUND SNOW LOAD	0					

CODE COMPLIANCE

ALL WORK SHALL COMPLY WITH ALL STATE AND LOCAL CODES, ORDINANCES AND ANY OTHER REGULATING AUTHORITIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK.

AHJ CODES

2019 CALIFORNIA BUILDING CODE

2019 CALIFORNIA MECHANICAL CODE

2019 CALIFORNIA PLUMBING CODE

2019 CALIFORNIA ELECTRICAL CODE

2019 CALIFORNIA FIRE CODE

2019 CALIFORNIA ENERGY CODE

2019 CALIFORNIA RESIDENTIAL BUILDING CODE

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

GENERAL INSTALLATION NOTES

- 1. INSTALLER SHALL ASSUME FULL RESPONSIBILITY AND LIABILITY FOR COMPLIANCE WITH REGULATIONS PER FEDERAL OSHA AND LOCAL REGULATIONS PERTAINING TO WORK PRACTICES, PROTECTION OF WORKERS AND VISITORS TO THE SITE.
- 2. INSTALLER SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AT SITE BEFORE COMMENCING WORK.
- CONTRACTOR SHALL FURNISH ALL MATERIAL EXCEPT AS SPECIFIED IN THE CONTRACT AND/OR THESE DRAWINGS.
- 4. ALL MATERIALS SHALL BE IN NEW AND UNUSED CONDITION.
- 5. MANUFACTURER'S MATERIAL EQUIPMENT, ETC. SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
- THE INSTALLER SHALL BECOME FAMILIAR WITH ALL UTILITY AS-BUILT PLANS AND THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES, PAVEMENT OR IMPROVEMENTS.
- 7. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND NOTIFY THE OWNER OF DISCREPANCIES REQUIRING FURTHER CLARI FICATION BEFORE PROCEEDING WITH THE WORKS.
- 8. INSTALL ALL ASPECTS OF THIS PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS AND AS NOTED ON DRAWINGS ISSUED FOR CONSTRUCTION.
- 9. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER 310.0(D)
- 10. WORKING CLEARANCES AROUND THE EXISTING AND NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26
- 11. EXACT CONDUIT RUN LOCATIONS SUBJECT TO CHANGE
- ROOF PENETRATIONS ARE SEALED.
- 13. INVERTER IS LISTED TO UL-1741 "UTILITY INTERACTIVE"

SHEET INDEX

PV-0 COVER SHEET PV-1 PLOT PLAN ARRAY PLAN PV-2 ATTACHMENT DETAIL PV-3 PV-4 **ELECTRICAL LINE DIAGRAM** PV-4.1 WIRE CALCULATIONS PV-5 LABELS & PLACARD **EQUIPMENT SPECIFICATION-1** PV-6.1 PV-6.2 **EQUIPMENT SPECIFICATION-2** PV-6.3 **EQUIPMENT SPECIFICATION-3**





VICINITY MAP



Signature with Seal

CUSTOMER INFORMATION

.. USA COUNTY OF

4142 SANTA RITA RD., EL SOBRANTE, CA 94803 USA JURISDICTION: CONTRA COSTA, COU

BELL

APRIL

SHEET NAME

COVER SHEET

SHEET SIZE

ANSI B

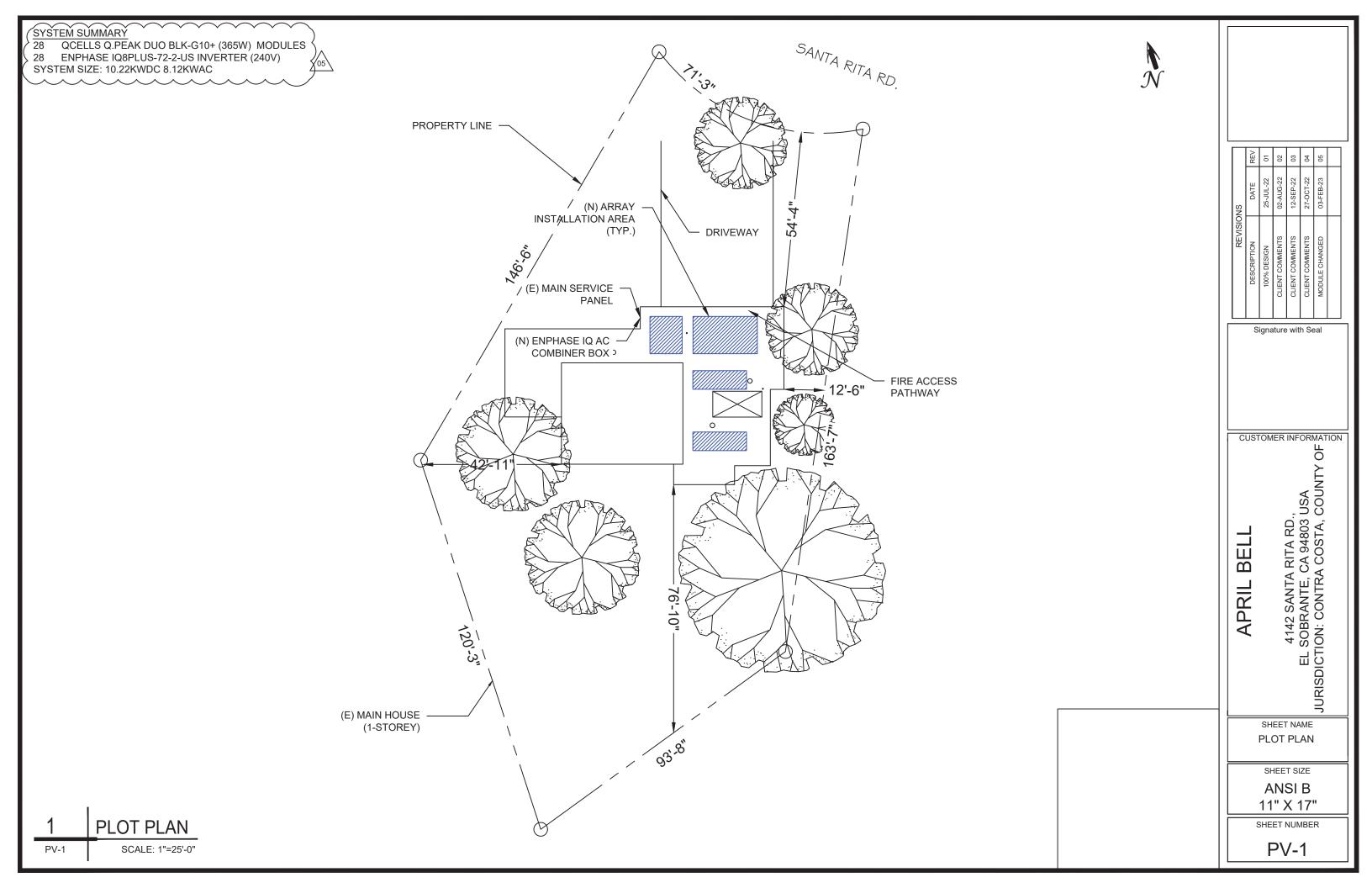
11" X 17"

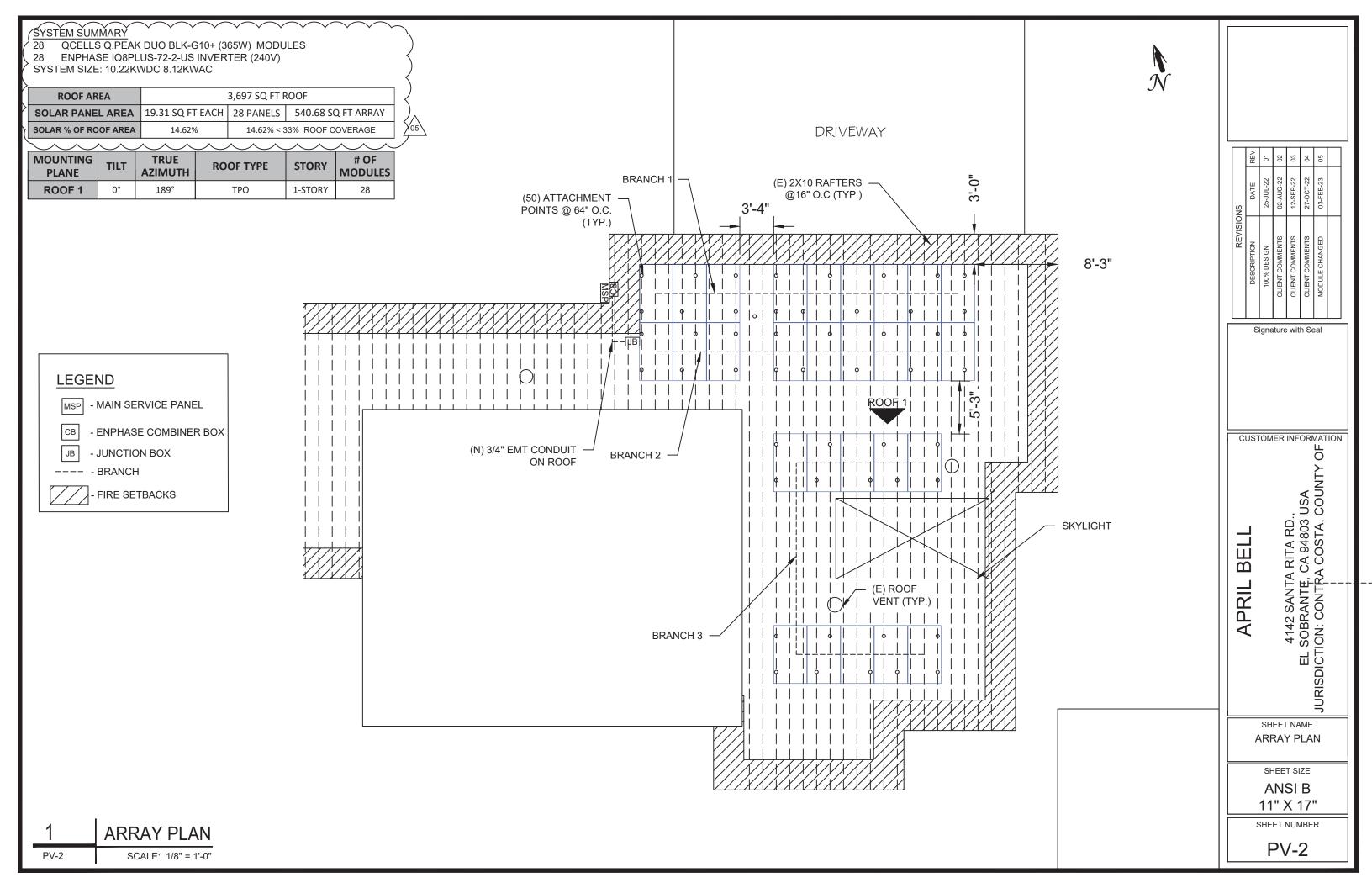
PV-0

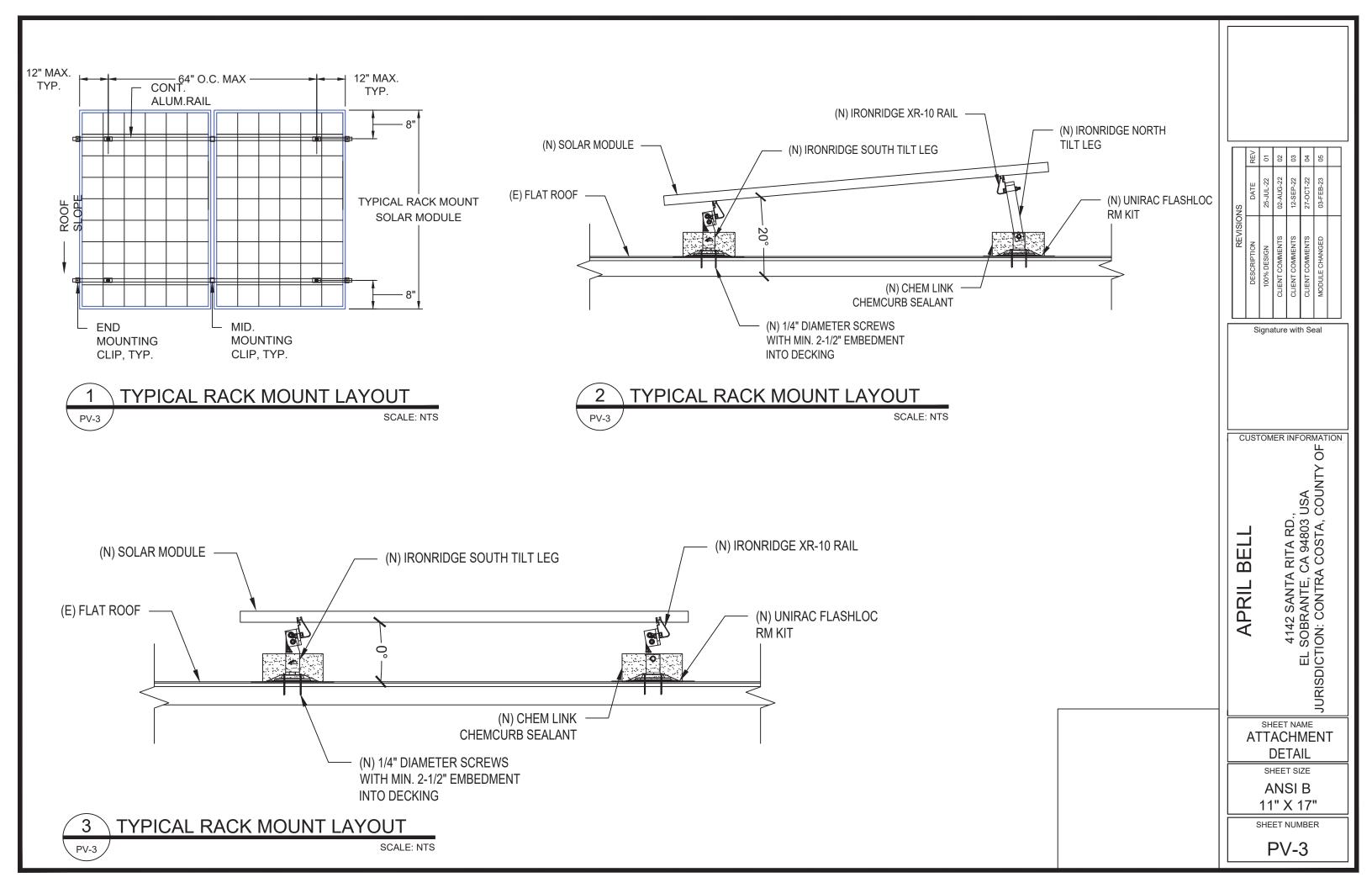
SCALE: NTS

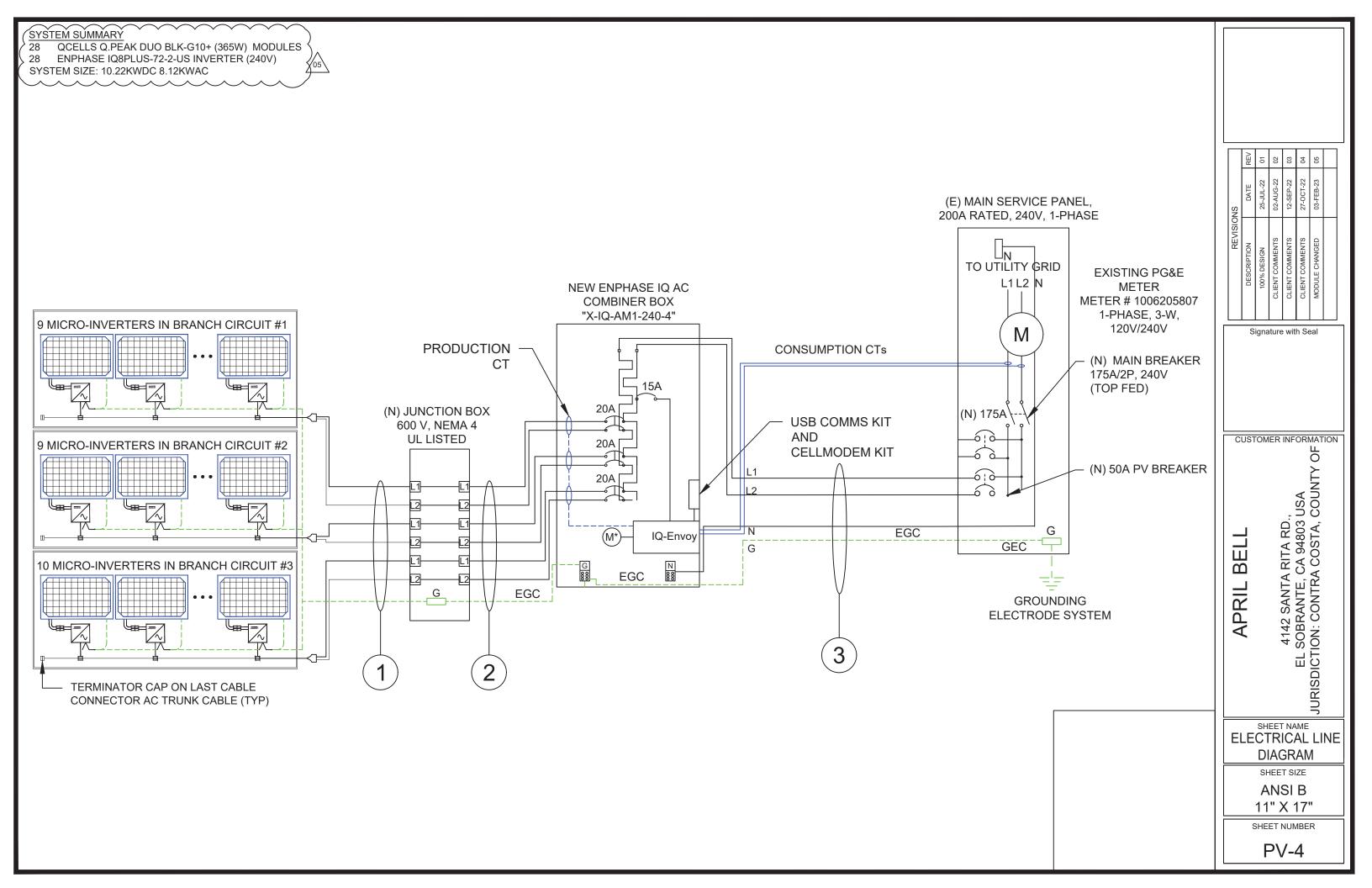


PV-0









ENPHASE TRUNK CABLE TO BE ATTACHED TO RAIL MIN. 3-1/2" ABOVE ROOF SURFACE

CONDUIT TO BE MIN. 7/8" ABOVE ROOF SURFACE

PV BREAKER TO BE INSTALLED AT THE END OF THE BUS

WIRE TAG#	WIRE FROM	CONDUIT	WIRE QTY	WIRE GAUGE:	WIRE TYPE ENPHASE TRUNK CABLE INCLUDES #12 GROUND		WIRE AMP	TEMP DE-RATE:	CONDUIT FILL:	WIRE OCP:	TERMINAL 75°C RATING:	INVERTER QTY:	NOC:	NEC:	STRING AMPS		GRND WIRE TYPE
1	ARRAY TO JUNCTION BOX	PV WIRE	2	#12	TRUNK CABLE	90°C	30A ×	1.00	K NA	= 30.00A	25A	10	x 1.21A	x 1.25 :	= 15.13A	#6	BARE COPPER
2	JUNCTION BOX TO COMBINER PANEL	3/4" EMT	7	#10	THWN-2	90°C	40A ×	0.96	x 0.8	= 30.72A	35A	10	x 1.21A	x 1.25 :	= 15.13A	#10	THWN-2
3	COMBINER PANEL TO MSP	3/4" EMT	4	#8	THWN-2	90°C	55A x	0.96	x 1.00	= 52.8A	50A	28	x 1.21A	x 1.25 :	= 42.35A	#10	THWN-2

Rooftop conductor ampacities designed in compliance with art. 690.8, Tables 310.15(B)(2)(a), 310.15(B)(3)(a), 310.15(B)(3)(c), 310.15(B)(16), Chapter 9 Table 4, 5, & 9. Location specific temperature obtained from ASHRAE data tables

•	
RECORD LOW TEMP	1°C
AMBIENT TEMP (HIGH TEMP 2%)	25°C
CONDUIT HEIGHT	7/8" MIN.
CONDUCTOR TEMPERATURE RATE	90°C

|--|

BUS BAR RATING X 120%) - MAIN BREAKER RATING = MAX. PV OCPD

(200A x 120%) - 175 = 65A

WIRE TAG#	CONDUIT FILL	OCPD
1	N/A	N/A
2	70%	20A
3	60%	50A

REVISIONS	ION DATE REV	sN 25-JUL-22 01	ENTS 02-AUG-22 02	ENTS 12-SEP-22 03	ENTS 27-OCT-22 04	1GED 03-FEB-23 05	
RE	DESCRIPTION	100% DESIGN	CLIENT COMMENTS	CLIENT COMMENTS	CLIENT COMMENTS	MODULE CHANGED	

Signature with Seal

APRIL BELL

4142 SANTA RITA RD.,

EL SOBRANTE, CA 94803 USA
JURISDICTION: CONTRA COSTA, COUNTY OF WORLD AND A CONTRA COSTA, COUNTY OF WORLD AND A COSTA, COUNTY O

SHEET NAME WIRE CALCULATIONS

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER

PV-4.1

WARNING INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

POINT OF INTERCONNECTION

(PER CODE: CEC 705.12(B)[Not required if panelboard is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

SOLAR DISCONNECT

DISCONNECT, POINT OF INTERCONNECTION (PER CODE: CEC690.13(B))

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

LABEL LOCATION:

WEATHER RESISTANT MATERIAL, DURABLE ADHESIVE, UL969 AS STANDARD TO WEATHER RATING (UL LISTING OF MARKINGS NOT REQUIRED), MIN 3/4" LETTER HEIGHT ARIAL OR SIMILAR FONT NON-BOLD, PLACED WITHIN THE MAIN SERVICE DISCONNECT, PLACED ON THE OUTSIDE OF THE COVER WHEN DISCONNECT IS OPERABLE WITH SERVICE PANEL CLOSED. (PER CODE: CEC690.15, 690.13(B))

CAUTION: SOLAR CIRCUIT

MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC/AC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT. AT TURNS AND ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUCTION BOXES

WARNING DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION: POINT OF INTERCONNECTION (PER CODE: CEC 705.12(D)(4))

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: CEC 690.17(B))



ELECTRIC SHOCK HAZARD

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

LABEL LOCATION: AC DISCONNECT, POINT OF INTERCONNECTION

PHOTOVOLTAIC SYSTEM AC DISCONNECT RATED AC OPERATING CURRENT 33.88 AMPS AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION: AC DISCONNECT, INVERTER (PER CODE: CEC690.53)

A CAUTION **DUAL POWER SOURCE**

SECOND SOURCE IS PV SYSTEM

CEC 705.12(D)(4) - AT MAIN SERVICE PANEL

AC SYSTEM DISCONNECT FOR UTILITY OPERATION

LABEL LOCATION:

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:

INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT (PER CODE: CEC690.13 & CEC 690.13)

WARNING - Electric Shock Hazard No user serviceable parts inside ct authorized service provider for assis

INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT (PER CODE: CEC690.13 & CEC 690.13)

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. INVERTER (PER CODE: CEC 690.17(B)) [To be used when inverter is ungrounded]

PHOTOVOLTAIC SYSTEM **EQUIPPED WITH RAPID SHUTDOWN**

LABEL LOCATION:

DC DISCONNECT, INVERTER

[To be used when inverter is ungrounded]

(PER CODE: CEC 690.15)

WARNING

ELECTRIC SHOCK HAZARD

IF A GROUND FAULT IS INDICATED

NORMALLY GROUNDED CONDUCTORS

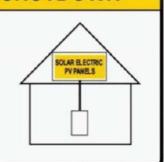
MAY BE UNGROUNDED AND ENERGIZED

WEATHER RESISTANT MATERIAL, DURABLE PLAQUE, UL969 AS STANDARD TO WEATHER RATING (UL LISTING OF MARKINGS NOT REQUIRED), MIN 3/8" LETTER HEIGHT ARIAL OR SIMILAR FONT NON-BOLD, PLACED WITHIN THE MAIN SERVICE DISCONNECT, PLACED ON THE OUTSIDE OF THE COVER WHEN DISCONNECT IS OPERABLE WITH SERVICE PANEL CLOSED. (PER CODE: CEC690.12, 690.56(C))

NEC 690.56(C) - MAIN SERVICE PANEL/AC DISCONNECT

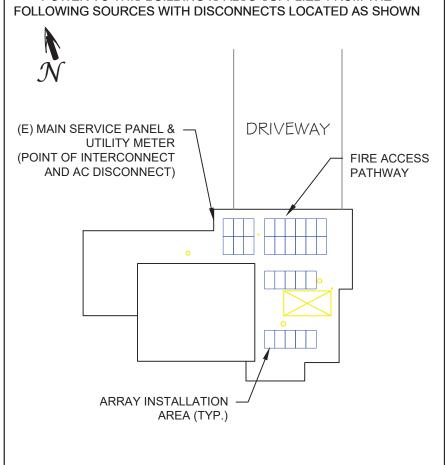
SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY



CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE



4142 SANTA RITA RD., EL SOBRANTE, CA 94803 USA

BELL APRIL

4142 SANTA F SOBRANTE, C EL SOBRANTE, C JURISDICTION: CONTRA

Signature with Seal

CUSTOMER INFORMATION

SHEET NAME LABELS & **PLACARD**

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER

PV-5



POWER CLASS PROPERTIES FOR SYSTEM DESIGN -40°C-+85°C QUALIFICATIONS AND CERTIFICATES **≜** (€

QCELLS Engineered in Germany

IQ8 and IQ8+ Microinverters

INPUT DATA (SCI		108-60-Z-WS	108PLUS-72-2-US				
Commonly used module pairings!	w	235 - 350	235 - 440				
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell and 72-cell/144 half-cell				
MPPT voltage range	٧	27 - 37	29 - 45				
Operating range	٧	25 - 48	25 - 58				
Min/max start voltage	٧	30 / 48	30/58				
Max input DC voltage	V	50	60				
Max DC current ^a [module lsc]	A		15				
Overvoltage class DC port			t.				
DC port backfeed current	mA		0				
PV array configuration		1x1 Ungrounded array; No additional DC side protection rec	quired; AC side protection requires max 20A per branch circui				
OUTPUT DATA (ACI		108-60-2-05	108PLUS-72-2-US				
Peak output power	VA	245	300				
Max continuous output power	VA.	240	290				
Nominal (L-L) voltage/range ³	٧	240 /	211 - 264				
Max continuous output current	A	10	1.21				
Nominal frequency	Hz.		60				
Extended frequency range	Wa	50	0 - 68				
Max units per 20 A (L-L) branch circu	it*	16	13				
Total harmonic distortion			<5%				
Overvoltage class AC port							
AC port backfeed current	mA		30				
Power factor setting			10				
Grid-tied power factor (adjustable)		0.85 leading	g - 0.85 tagging				
Peak efficiency	%	97.5	97.6				
CEC weighted efficiency	%	97	97				
Night-time power consumption	mW		60				
MECHANICAL BATA							
Ambient temperature range		-40°C to +60°C	C (-40°F to +140°F)				
Relative humidity range		4% to 1009	% (condensing)				
DC Connector type			MC4				
Dimensions (HxWxD)		212 mm (8.3°) x 175 m	nm (6.9°) x 30.2 mm (1.2°)				
Weight		1.08 kg	g (2.38 lbs)				
Cooling		Natural conv	vection - no fans				
Approved for wet locations			Yes				
Acoustic noise at 1 m		46	60 dBA				
Pollution degree			PD3				
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure					
Environ, category / UV exposure ratin	g	NEMA Type 6 / outdoor					
COMPLIANCE							
		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Par	rt 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-				
Certifications		This product is UL Listed as PV Rapid Shut Down Equipment at 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Sys					

IO85P-DS-0002-01-EN-US-2021-10-19

Data Sheet Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4 X-IQ-AM1-240-4C



re about Enphase offerings, visit enphase.com

The Enphase IQ Combiner 4/4C with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IO microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
 Includes Enphase Mobile Connect cellular modern (CELLMODEN-M1-06-SP-05), included only with IQ
- Combiner 4C Includes solar shield to match Enphase IQ Battery
- aesthetics and deflect heat
- Flexible networking supports Wi-Fi,
 Ethernet, or cellular
 Optional AC receptacle available for PLC bridge
 Provides production metering and consumption

Simple

- stud mounting Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included) 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
 Two years labor reimbursem
- included for both the IO Combiner SKU's







IQ8 and IQ8+ 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 power to AC power emciently. 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 55mm 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.







IQ8SP-DS-0002-01-EN-US-2021-10-19

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 highpowered PV modules

Microgrid-forming

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

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circut board for integrated revenue grade PV production metering (ANS CT2.29 + 6.5%) and consumption monitoring (+/ 2.5%), includes a silver solar shield to match the IQ Battery system an OS System Controller 2 and to defect heat.
IQ Combiner 4C (X-Q-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANGI C12 20 + 0 5%) and consumption monitoring in 2.5%), includes Exphase Mobile Convence ctribliar motions (PCELLMOCIMAN IN-05-95%), a fluy and salay inclustrating agency decisionders more parties up to 40 microinventers. (Available in the US, Carvada, Mexico, Puerto Rico, and the US Virgin Malanda, where there is adoptive cludiar services in establishments on Encludes a service and selection feet to 10 states; and 10 system Controllers and offered their institution are spirated controllers and selection of the 10 states; and 10 system Controllers and offered their
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-MT-06 CELLMODEM-MT-06-SP-05 CELLMODEM-MT-06-AT-05	- Includes COMMS_KT-01 and CELLMODEM M1-06SP-05 with 5-year Sprint data plan for Ensemble size. 40 based LTE-M1 cellular modem with 5-year Sprint data plan. 40 based LTE-M1 cellular modem with 5-year ATG data plan.
Circuit Breakers BRK-15A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-20A-2P-240V-B BRK-20A-2P-240V-B	Supports store BIZ 10, BIZTS, BIZZSD, BIZZSD, BIZZSD, BIZZSD, and BIZZSD circuit breakers. Circuit breaker, Zopic, 13A, Easne BIZZSD. Circuit breaker, Zopic, 13A, Easne BIZZSD. Circuit breaker, Zopic, 13A, Easne BIZZSD. Circuit breaker, Zopic, 13A, Easne BIZZSD with hold down kit support Circuit breaker, Zopic, 13A, Easne BIZZSD with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCE) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eston circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gatevay
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WaHsD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	20 in 16 0A breaker injust: 14 to 4 AVIO copper Conductors 50 A breaker branch injust: 4 to 10 AVIO copper Conductors Main lug combined output: 10 to 270 AVIO copper conductors Neurola and ground: 14 to 170 Copper conductors Neurola and ground: 14 to 170 Copper conductors Analyst fallow conductor developments for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	MONTHS:
Integrated Wi-Fi	802.11b/g/n
	CELLMODEWAY, N. SD. OS CELLMODEMAY, N. A. D. A. D. A. D. A. D. A. D. A. D. D. A. D.

UL 1741, CAN/CSA C22.2 No. 1071, 47 CFR, Part 11, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class (.5 (PV production)

To learn more about Enphase offerings, visit enphase.com
© 2021 Enphase Energy All rights reserved. Emphase, the Enphase logs, IQ Combine
Enchase Energy, Inc., Data subject to change: 10-21-0021.



REVISIONS	NS	
DESCRIPTION	DATE	REV
100% DESIGN	25-JUL-22	10
CLIENT COMMENTS	02-AUG-22	02
CLIENT COMMENTS	12-SEP-22	03
CLIENT COMMENTS	27-OCT-22	04
MODULE CHANGED	03-FEB-23	90

Signature with Seal

CUSTOMER INFORMATION OF

USA COUNTY A RITA RD., CA 94803 L A COSTA, C 4142 SANTA R EL SOBRANTE, CA JURISDICTION: CONTRA C

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APRIL

SHEET NAME **EQUIPMENT** SPECIFICATION-1

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER

PV-6.1

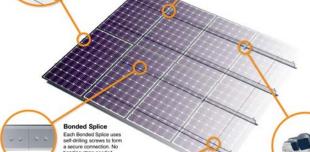
Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount-are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more



Universal Fastening Object (UFO)





Tilt Legs 🐵

Tilt assembly to desired angle, up to 30 degrees. Kits include South and North Tilt Leg and all hardware.

· Available in multiple lengths for a wide angle range

Bond modules to rails while

· Universal end-cam clamp

Ends Caps & Wire Clips

Provide a finished look and

· UV-stabilized polymer

Earn free continuing education credits,

while learning more about our systems

NABCEP Certified Training

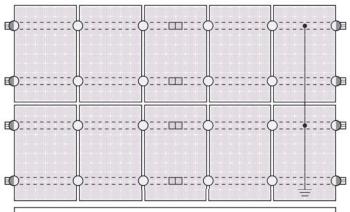
Simple snap-in installations

Clips hold up to ten 5mm wires

· Fully assembled

· Assembled South Tilt Legs include angle indicators

Legs are electrically bonded to rails



UL Certification

System Diagram

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments

Go to IronRidge.com/UFO

	Cross-System	Compatibility	
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	~	~	XR1000 Only
UFO/Stopper	~	~	~
Bonded Splice	~	~	N/A
rounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Darfon - M	0-72, M250-60, M IG240, MIG300, C P320, P400, P405	
Fire Rating	Class A	Class A	N/A
Modules		ted with over 400 lation manuals for	

XR Rail Family

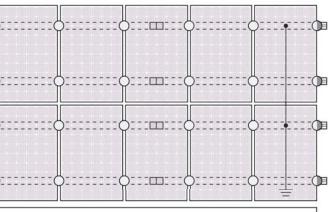
// IRONRIDGE

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

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







Q Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

Roof Friendly

Strength Tested

structural performance.

Trust your system at every angle.

// IRONRIDGE

Lightweight and compatible with industry-standard attachments.

aluminum and stainless steel materials to resist corrosion

extreme wind and snow forces experienced over a building's lifetime.

PE Certified

Pre-stamped engineering letters available in most states.

Tilt Mount System



The IronRidge Tilt Mount System supports a wide range of solar module tilting angles, while also resisting the

Every component has been carefully engineered and rigorously tested, and the entire system uses only

Design Assistant

Online software makes it simple to create, share, and price projects.



Meets newest effective UL 2703



Products guaranteed to be free of impairing defects.

XR Rail Family

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



Rail Selection

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

	ad			Rail 9	Span		
Snow (PSF)	Wind (MPH)	4'	5' 5"	6"	81	10'	12'
	100						
None	120						
None	140	XR10		XR100		XR1000	
	160						
	100						
10-20	120						
10-20	140						
	160						
-00	100						
30	160						
40	100						
40	160						
50-70	160						
80-90	160						

Signature with Seal

CUSTOMER INFORMATION

COUNTY

USA A RITA RD., CA 94803 L A COSTA, C

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 \Box

APRIL

4142 SANTA R EL SOBRANTE, CA JURISDICTION: CONTRA C

SHEET NAME **EQUIPMENT** SPECIFICATION-2

SHEET SIZE

ANSI B 11" X 17"

SHEET NUMBER PV-6.2

Snap onto the UFO to transform

· Bonds modules to rails

· Clear and black finish

Grounding Lugs @

Low profile

· Sized to match modules

Connects Tilt Mount system to

Single tool installation

· Mounts in any direction

Bonded Structural Splices connect

and bond XR Rails togethe Integrated bonding

· Self-centering stop tab

XR Rails & Tilt Legs

Unique curved profile

UFOs 🛞

Spanning capabilities up to 12"

Universal Fastening Objects secure and bond modules to rails.

· Fully assembled and lubricated

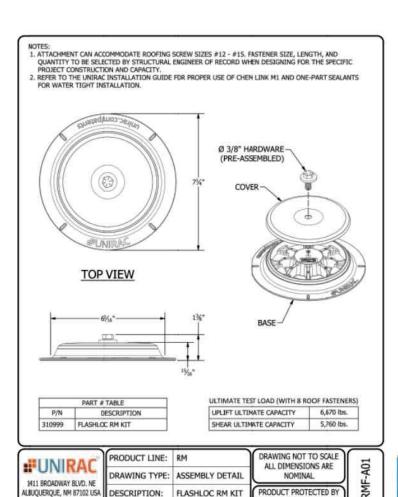
Single, universal size

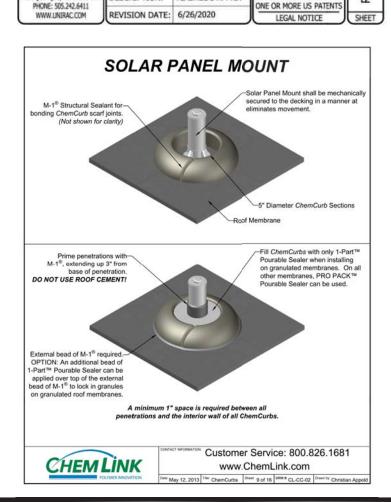
· Clear and black finish

Attach directly to Tilt Legs. Available in three targeted

sizes to support specific wind and snow loads.

Go from rough layout to fully ered system. For free





FLASHLOC™ RM THE STRONGEST ATTACHMENT FOR EVERY FLAT BOOF



Unirac's FLASHLOC™ RM is a lightweight, durable, powder-coated cast aluminum roof attachment solution that provides fast, easy installation and helps save laborcost. 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.

FLASHLOCTM 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 (offimate)
- 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	PACK SIZE
310999	FLASHLOC RM KIT	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





STEP ONE CLEAN SURFACE AND MARK LOCATION

-IMPORTANT: Thoroughly clean roof surface with isopropyl alcohol or denatured alcohol. Bending serfaces 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 root. NOTE: We recommend locating Flashloc RM fter your equipment has been installed or layout is confirmed.



STEP TWO APPLY MI SEALANT

-Apply a 5/16" bead of Chemlink M1 sealant to the entire bottom perimeter AND to the bottom of each bolt logation 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 MT sealant expands beyond the outer

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



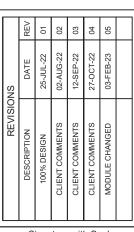
-Completely fill base with Chemilink 1-Part sealant. Sealant must completely cover all screw heads. Do NOT overfill.

- Place cap on base and secure racking to mount with Unirac provided 3/8*hardware or other 3/8*-16 threafed 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 attackment kit strut and the top surface of the flat roof attackment is 1/16".

FASTER INSTALLATION. 25-YEAR WARRANTY.

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



Signature with Seal

CUSTOMER INFORMATION

COUNTY A RITA RD., CA 94803 L A COSTA, C 4142 SANTA RI EL SOBRANTE, CA JURISDICTION: CONTRA C

BELL

APRIL

SHEET NAME **EQUIPMENT** SPECIFICATION-3

> SHEET SIZE ANSI B

11" X 17" SHEET NUMBER

PV-6.3