

**DIRECTORY OF PAGES**

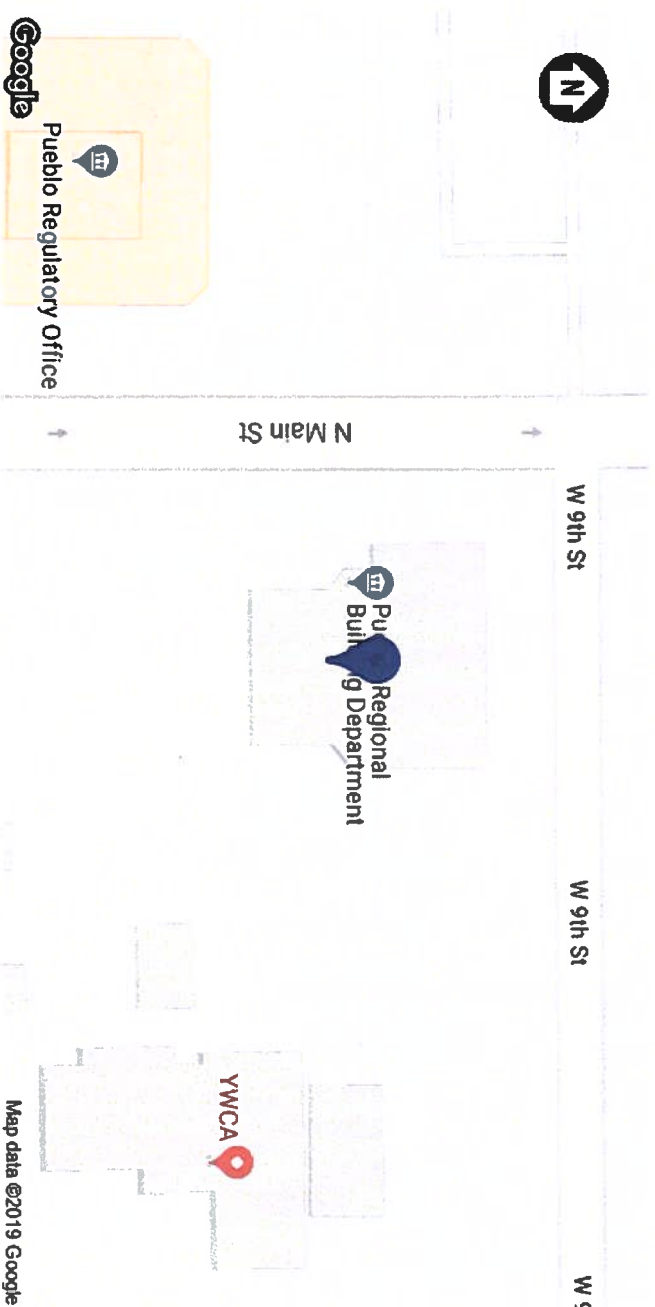
PV-1	PROJECT SUMMARY
PV-2	SITE PLAN
PV-3	SINGLE-LINE DIAGRAM
PV-4	SAFETY LABELS
APPENDIX	MODULE DATASHEET
	ARRAY WIRING BOX DATASHEET
	INVERTER DATASHEET

**PROJECT DETAILS**

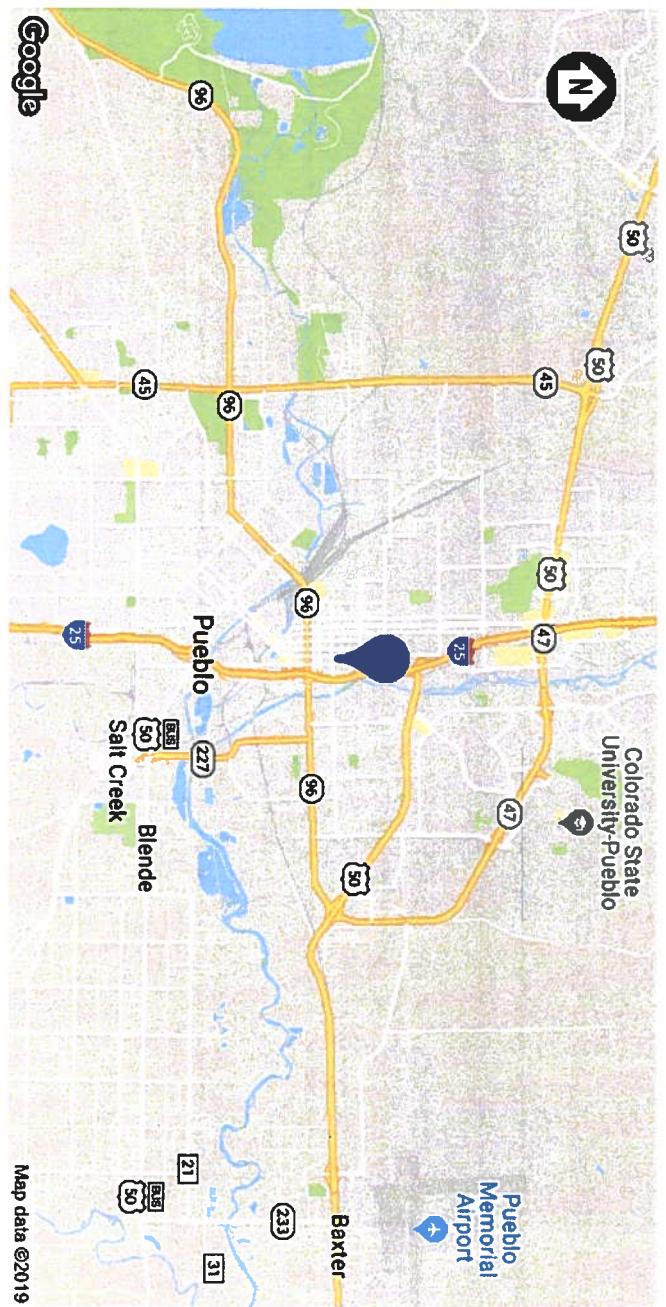
PROPERTY OWNER	PUEBLO REGIONAL
PROPERTY ADDRESS	830 N MAIN ST, PUEBLO, CO 81003 US
APN	
ZONING	RESIDENTIAL
USE AND OCCUPANCY CLASSIFICATION	BUSINESS GROUP (GROUP B)
AHU	COUNTY OF PUEBLO
UTILITY COMPANY	BLACK HILLS/COLORADO ELEC.UTIL
ELECTRICAL CODE	2017 NEC (NFPA 70)
FIRE CODE	2018 IFC

**CONTRACTOR INFORMATION**

COMPANY	
LICENSE NUMBER	
ADDRESS	
PHONE NUMBER	
CONTRACTOR SIGNATURE	



**1 PLOT**  
PV-1 SCALE: NTS



**2 LOCALE**  
PV-1 SCALE: NTS

**SCOPE OF WORK**

THIS PROJECT INVOLVES THE INSTALLATION OF A PHOTOVOLTAIC POWER SYSTEM. SOLAR PANELS WILL BE RACKED USING A PREENGINEERED RACKING SYSTEM. THE RACKED MODULES WILL BE ELECTRICALLY CONNECTED WITH DC TO AC POWER INVERTERS AND INTERCONNECTED TO THE LOCAL UTILITY USING MEANS AND METHODS CONSISTENT WITH THE RULES ENFORCED BY THE LOCAL UTILITY AND PERMITTING JURISDICTION.

THIS DOCUMENT HAS BEEN PREPARED FOR THE PURPOSE OF DESCRIBING THE DESIGN OF A PROPOSED PV SYSTEM WITH ENOUGH DETAIL TO DEMONSTRATE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS. THE DOCUMENT SHALL NOT BE RELIED UPON AS A SUBSTITUTE FOR FOLLOWING MANUFACTURER INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL COMPLY WITH ALL MANUFACTURERS LISTING AND INSTALLATION INSTRUCTIONS, AS WELL AS ALL APPLICABLE CODES. NOTHING IN THIS DOCUMENT SHALL BE INTERPRETED IN A WAY THAT OVERRIDES THEM. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL CONDITIONS, DIMENSIONS, AND DETAILS IN THIS DOCUMENT.

**SYSTEM DETAILS**

DESCRIPTION	NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM WITH NO BATTERY STORAGE
DC RATING OF SYSTEM	15,000W
AC RATING OF SYSTEM	12,500W
AC OUTPUT CURRENT	50.0A
INVERTER(S)	Example Inverter xyz555
MODULE	Example module xyz123
ARRAY WIRING	(2) BRANCH OF 10 M250-60-21L-S22-IG MICROINVERTERS (2) BRANCH OF 15 M250-60-21L-S22-IG MICROINVERTERS

**INTERCONNECTION DETAILS**

POINT OF CONNECTION	NEW LOAD-SIDE AC CONNECTION PER NEC 705.12(B) AT MSP
UTILITY SERVICE	120/240V 1Φ
ELECTRICAL PANEL	MAIN SERVICE PANEL W/BOTTOM-FED 400A BUSBAR 400A MCB

**SITE DETAILS**

ASHRAE EXTREME LOW	-24°C (-11°F)
ASHRAE 2% HIGH	36°C (97°F)
CLIMATE DATA SOURCE	PUEBLO MEMORIAL AIRPORT (KPUB)
WIND SPEED	120 MPH (ASCET-10)
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	B
GROUND SNOW LOAD	20 PSF

**P-124190**

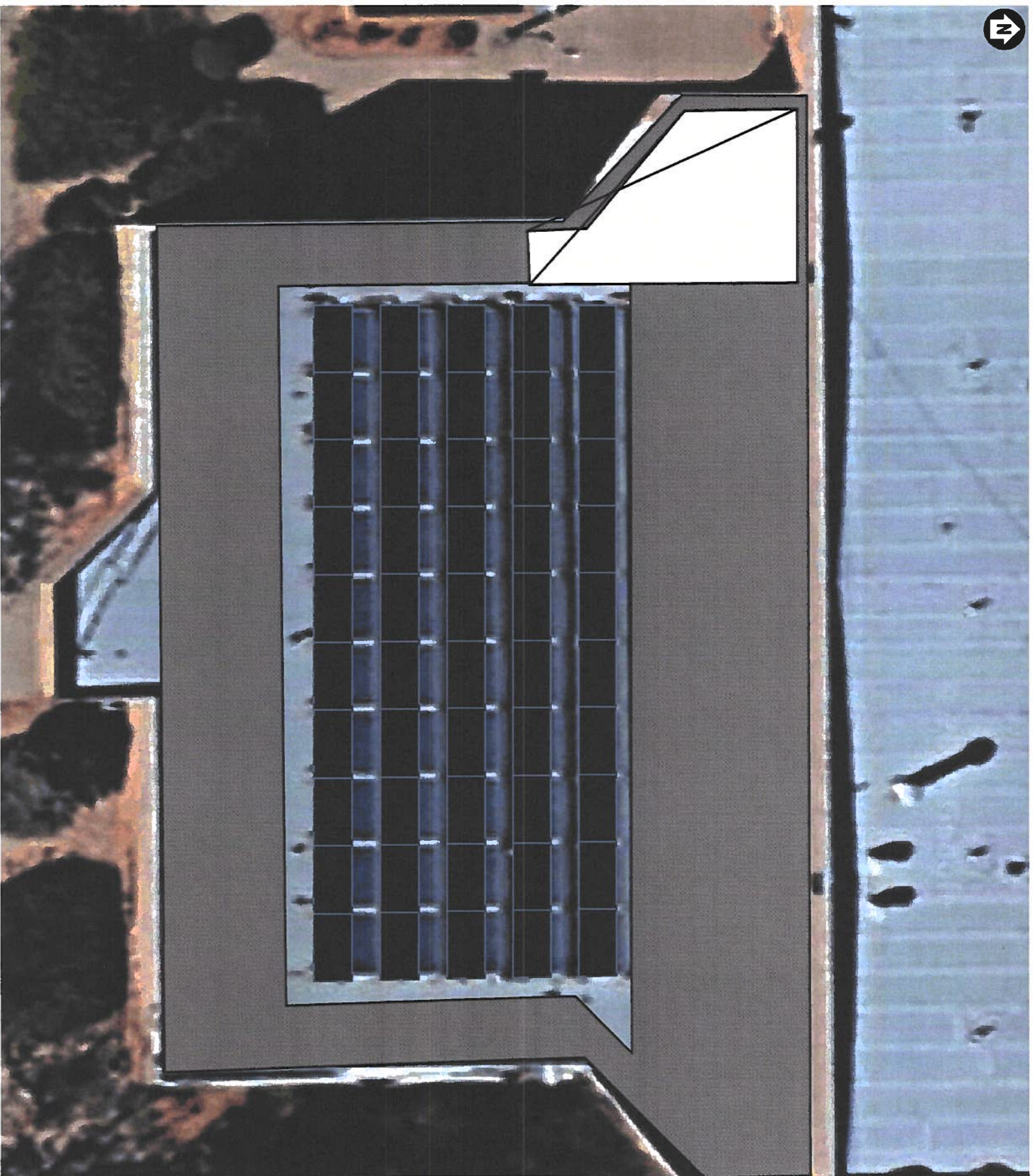
**GRID-TIED SOLAR POWER SYSTEM**

**830 N MAIN ST  
PUEBLO, CO 81003**

**PROJECT SUMMARY**

DOC ID:	124190-154894-1
DATE:	9/30/19
CREATOR:	J.B.
REVIEWER:	
REVISIONS	

**PV-1**



**GENERAL NOTES**

<b>1</b>	EQUIPMENT LIKELY TO BE WORKED UPON WHILE ENERGIZED SHALL BE INSTALLED IN LOCATIONS THAT SATISFY MINIMUM WORKING CLEARANCES PER NEC 110.26.
<b>2</b>	CONTRACTOR SHALL USE ONLY COMPONENTS LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY FOR THE INTENDED USE.
<b>3</b>	CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL EQUIPMENT, CABLES, ADDITIONAL CONDUITS, RACEWAYS, AND OTHER ACCESSORIES NECESSARY FOR A COMPLETE AND OPERATIONAL PV SYSTEM.
<b>4</b>	ALL EMT CONDUIT FITTINGS SHALL BE LISTED AS WEATHERPROOF FITTINGS AND INSTALLED TO ENSURE A RAINIGHT FIT. PER NEC 358.42.

**P-124190**

**GRID-TIED SOLAR POWER SYSTEM**

830 N MAIN ST  
PUEBLO, CO 81003

**SITE PLAN**

DOC ID: 124190-154894-1  
DATE: 9/30/19  
CREATOR: J.B.  
REVIEWER:

**REVISIONS**


**PV-2**

**1** SITE PLAN  
PV-2 SCALE: 1" = 10'

GRID-TIED SOLAR POWER SYSTEM

GENERAL ELECTRICAL NOTES

- UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
- MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6 (C) (1) AND ARTICLE 310.8 (D).
- CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.8 (C).

GROUNDING NOTES

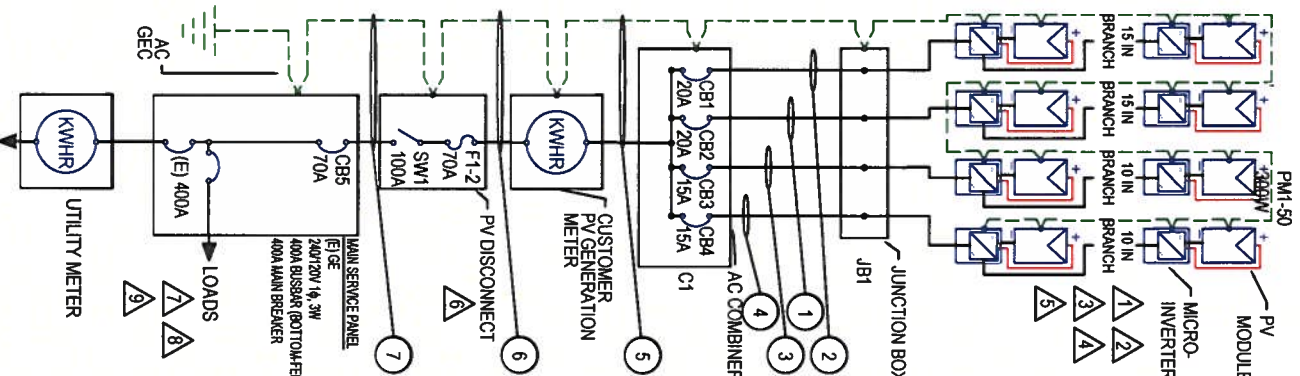
- ALL EQUIPMENT SHALL BE PROPERLY GROUNDED PER THE REQUIREMENTS OF NEC ARTICLES 250 & 690
- PV MODULES SHALL BE GROUNDED TO MOUNTING RAILS USING MODULE LUGS OR RACKING INTEGRATED
- GROUNDING CLAMPS AS ALLOWED BY LOCAL JURISDICTION. ALL OTHER EXPOSED METAL PARTS SHALL BE GROUNDED USING UL-LISTED LAY-IN LUGS.
- INSTALLER SHALL CONFIRM THAT MOUNTING SYSTEM HAS BEEN EVALUATED FOR COMPLIANCE WITH UL 2703
- "GROUNDING AND BONDING" WHEN USED WITH PROPOSED PV MODULE.
- ALL GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE
- IF THE EXISTING MAIN SERVICE PANEL DOES NOT HAVE A VERIFIABLE GROUNDING ELECTRODE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
- AC SYSTEM GROUNDING ELECTRODE CONDUCTOR (GEC) SHALL BE A MINIMUM SIZE #8AWG WHEN INSULATED, #6AWG IF BARE WIRE.
- EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC ARTICLE 690.45, AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE, AND #6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE
- GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN, OR MARKED GREEN IF #4AWG OR LARGER

REF.		QTY.		MAKE AND MODEL		MODULES		MAXIMUM		TEMP. COEFF. OF VOC		FUSE RATING	
PHI-50	50	Example company model xyz123		300W	275W	9.77A	9.28A	39.8V	32.4V	0.111V/°C (-0.285°C)	20A		
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			
PHI-50	50	Example model xyz755	240V	NOT SOLIDLY GROUNDED	20A	230W	1.0A	13.0A	48V	96.5%			
REF.	QTY.	MAKE AND MODEL	PASS-THRU BOXES AND COMBINERS										
JB1	1		GENERIC GEN-AMP-TB-4AX OR EQUIV.										
C1	1		EMPHASE ID COMBINER 3 OR EQUIV.										
REF.	QTY.	MAKE AND MODEL	DISCONNECTS		OCPDS		MAX RATED VOLTAGE						
SW1	1	SQUARE D D23MRB OR EQUIV	RATED CURRENT	MAX RATED VOLTAGE	REF.	QTY.	RATED CURRENT	MAX VOLTAGE					
			100A	240VAC	CB1-2	2	20A	240VAC					
					CB3-4	2	15A	240VAC					
					F1-2	2	70A	240VAC					
					CBS	1	70A	240VAC					

NOTES

- THE DC AND AC CONNECTORS OF THE LISTED EMPHASE M250-80-2L-S22-G CONFORM TO NEC 690.17(E) REQUIREMENT THAT INVERTERS INCLUDE DISCONNECTS FROM ALL SOURCES OF POWER.
- DC PV CONDUCTORS ARE NOT SOLIDLY GROUNDED. NO DC PV CONDUCTOR SHALL BE WHITE OR GRAY-COLORED
- ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NONCURRENT-CARRYING METAL PARTS OF EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.4(B) AND PART III OF NEC ARTICLE 250 AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45. THE GROUNDING ELECTRODE SYSTEM SHALL ADHERE TO 690.47(A) AND 250.169. THE DC GROUNDING ELECTRODE SHALL BE SIZED ACCORDING TO 250.166
- AN AUXILIARY GROUNDING ELECTRODE MAY BE INSTALLED IN COMPLIANCE WITH NEC SECTION 690.47(B)
- MAX DC VOLTAGE OF PV MODULE IS EXPECTED TO BE 45.2V AT -24°C (-25°C) X 0.111V/°C + 39.76V = 45.2V.
- PV SYSTEM DISCONNECT SHALL BE A VISIBLE KNIFE-BLADE TYPE DISCONNECT THAT IS ACCESSIBLE AND LOCKABLE BY THE UTILITY. THE DISCONNECT SHALL BE LOCATED WITHIN 10 FT OF UTILITY METER.
- POINT-OF-CONNECTION IS ON LOAD SIDE OF SERVICE DISCONNECT, IN COMPLIANCE WITH NEC 705.12(B). OUTPUT IS BACKFEED THROUGH BREAKER IN MAIN PANEL.
- THE PV BREAKER SHALL NOT BE MARKED FOR "LINE" AND "LOAD".
- THE PV BREAKER SHALL BE LOCATED AT THE OPPOSITE END OF THE BUSBAR FROM THE MAIN BREAKER.

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS														
ID	TYPICAL	CONDUCTOR	CONDUIT / CABLE	CURRENT-CARRYING CONDUCTORS IN CONDUIT / CABLE	OCPD	EGC	TEMP. CORR. FACTOR	FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERMAL RATING	AMP @ TERMAL RATING
1	1	10 AWG THHN-2 COPPER	1" DIA. EMT	6	20A	10 AWG THHN-2 COPPER	0.91 (35°C)	0.8	15A	18.75A	40A	29.12A	90°C	40A
2	1	10 AWG THHN-2 COPPER	1" DIA. EMT	6	20A	10 AWG THHN-2 COPPER	0.91 (35°C)	0.8	15A	18.75A	40A	29.12A	90°C	40A
3	1	10 AWG THHN-2 COPPER	1" DIA. EMT	6	15A	10 AWG THHN-2 COPPER	0.91 (35°C)	0.8	10A	12.5A	40A	29.12A	90°C	40A
4	1	10 AWG THHN-2 COPPER	0.5" DIA. EMT	2	15A	10 AWG THHN-2 COPPER	0.91 (35°C)	1.0	10A	12.5A	40A	36.4A	90°C	40A
5	1	2 AWG THHN-2 COPPER	1.25" DIA. EMT	2	N/A	3 AWG THHN-2 COPPER	0.91 (35°C)	1.0	50A	62.5A	130A	118.3A	75°C	115A
6	1	2 AWG THHN-2 COPPER	1.25" DIA. EMT	2	70A	3 AWG THHN-2 COPPER	0.91 (35°C)	1.0	50A	62.5A	130A	118.3A	75°C	115A
7	1	2 AWG THHN-2 COPPER	1.25" DIA. EMT	2	70A	3 AWG THHN-2 COPPER	0.91 (35°C)	1.0	50A	62.5A	130A	118.3A	75°C	115A



1 SINGLE-LINE DIAGRAM  
PV-3 SCALE: NTS

THIS DOCUMENT HAS BEEN CREATED FOR THE PURPOSE OF DESCRIBING THE DESIGN OF A PROPOSED PHOTOVOLTAIC POWER SYSTEM WITH ENOUGH DETAIL TO DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE CODES AND REGULATIONS. THE DOCUMENT SHOULD NOT BE RELIED UPON AS A SUBSTITUTE FOR FOLLOWING MANUFACTURER INSTALLATION MANUALS. INSTALLER SHALL INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER INSTALLATION MANUALS. NOTHING IN THIS DOCUMENT SHOULD BE INTERPRETED IN A WAY THAT OVERRIDES THE INSTRUCTIONS IN MANUFACTURER INSTALLATION MANUALS.

SINGLE-LINE DIAGRAM

PROJECT ID: 124190

DATE: 09/30/19

CREATED BY: J.B.

CHECKED BY:

REVISIONS

PV-3

MSP - MAIN SERVICE PANEL  
(GE)

- 1 2 3 4 5
- 6

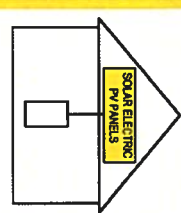
SW1 - DISCONNECT  
(SQUARE D D223NRB)

- 3 4

1 SEE NOTE NO. 5 (MSP)

**PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY.



NEC 690.56(C)(1)

3 AC SOLAR DISCONNECT (SW1, CB5 IN MSP)

**PV SYSTEM DISCONNECT**

NEC 690.13(B)

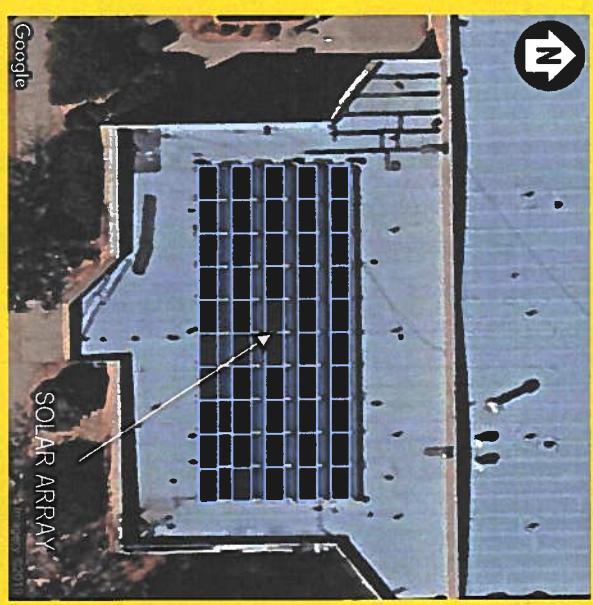
4 AC DISCONNECT (SW1, CB5 IN MSP)

**MAXIMUM AC OPERATING CURRENT: 50.0A  
MAXIMUM AC OPERATING VOLTAGE: 240V**

NEC 690.54

2 POINT-OF-INTERCONNECTION OR AT MAIN SERVICE DISCONNECT (MSP)

**CAUTION!**  
POWER TO THIS BUILDING IS ALSO FROM ROOF MOUNTED SOLAR ARRAY WITH SAFETY DISCONNECTS AS SHOWN



NEC 690.56(B)

5 ANY AC ELECTRICAL PANEL THAT IS FED BY BOTH THE UTILITY AND THE PHOTOVOLTAIC SYSTEM (MSP)

**! WARNING !**  
DUAL POWER SOURCE. SECOND SOURCE IS PHOTOVOLTAIC SYSTEM.

NEC 705.12(B)(3)

6 SOLAR BREAKER (MSP)

**! WARNING !**  
INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

NEC 705.12(B)(2)(3)(B)

**LABELING NOTES**

1	ALL PLAQUES AND SIGNAGE REQUIRED BY 2017 NEC AND 2018 IFC WILL BE INSTALLED AS REQUIRED.
2	THE MATERIALS USED FOR MARKING MUST BE WEATHER RESISTANT, IN COMPLIANCE WITH CBC 511.3.1. IT IS RECOMMENDED THAT UL 699 BE USED AS STANDARD TO DETERMINE WEATHER RATING.
3	LABELS, WARNING(S) AND MARKING SHALL COMPLY WITH ANSI Z35.4, WHICH REQUIRES THAT DANGER, WARNING, AND CAUTION SIGNS USED THE STANDARD HEADER COLORS, HEADER TEXT, AND SAFETY ALERT SYMBOL ON EACH LABEL. THE ANSI STANDARD REQUIRES A HEADING THAT IS AT LEAST 50% TALLER THAN THE BODY TEXT, IN ACCORDANCE WITH NEC 110.21(B).
4	A PERMANENT PLAQUE OR DIRECTORY SHALL BE INSTALLED PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION IN ACCORDANCE WITH NEC 690.56(B).
5	LABEL(S) WITH MARKING, "TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY," SHALL BE LOCATED WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. THE TITLE SHALL UTILIZE CAPITALIZED LETTERS WITH A MINIMUM HEIGHT OF 3/8" IN BLACK ON A YELLOW BACKGROUND, AND REMAINING TEXT SHALL BE CAPITALIZED WITH A MINIMUM HEIGHT OF 3/16" IN BLACK ON WHITE BACKGROUND

**P-124190**

**GRID-TIED SOLAR POWER SYSTEM**

830 N MAIN ST  
PUEBLO, CO 81003

**SAFETY LABELS**

DOC ID: 124190-154894-1  
DATE: 9/30/19  
CREATOR: J.B.  
REVIEWER:

**REVISIONS**


**PV-4**





The [REDACTED] with Ephrase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV 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

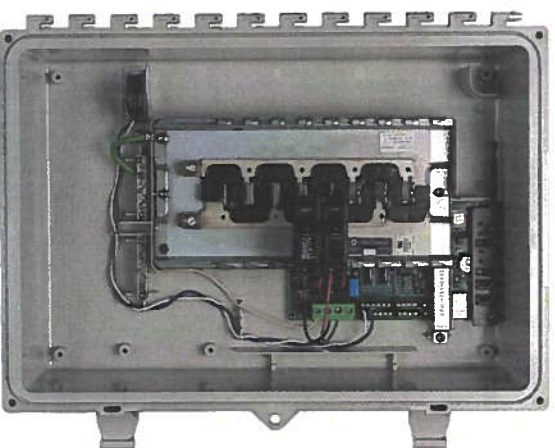
- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

#### Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV or storage branch circuits

#### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty
- UL listed



**MODEL NUMBER**  
[REDACTED]

**ACCESSORIES and REPLACEMENT PARTS** (not included, order separately)

CELLMODEM-03 (4G / 4-year data plan)	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
CELLMODEM-01 (3G / 5-year data plan)	
CELLMODEM-M1 (4G based LTE-M / 5-year data plan)	
Consumption Monitoring* CT	Split core current transformers enable whole home consumption metering (+/- 2.5%).
CT-200-SP-LIT	
Circuit Breakers	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers.
BRK-10A-2-240	Circuit breaker, 2 pole, 10A, Eaton BR210
BRK-15A-2-240	Circuit breaker, 2 pole, 15A, Eaton BR215
BRK-20A-2P-240	Circuit breaker, 2 pole, 20A, Eaton BR220
EPLC-01	Power line carrier (communication bridge pair), quantity 2
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3

#### ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 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. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80A of distributed generation / 90A with IQ Envoy breaker included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy

#### MECHANICAL DATA

Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" 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	<ul style="list-style-type: none"> <li>• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors</li> <li>• 60 A breaker branch input: 4 to 1/0 AWG copper conductors</li> <li>• Main lug combined output: 10 to 2/0 AWG copper conductors</li> <li>• Neutral and ground: 14 to 1/0 copper conductors</li> </ul> Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

#### INTERNET CONNECTION OPTIONS

Integrated Wi-Fi	802.11b/g/n
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included)

#### COMPLIANCE

Compliance, Combiner	UL 1741 CAN/CSA C22.2 No. 107.1 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI CT12.20 accuracy class 0.5 (PV production)
Compliance, IQ Envoy	UL 60601-1-CAN/CSA 22.2 No. 61010-1

\* Consumption monitoring is required for Ephrase Storage Systems.



To learn more about [REDACTED]



The versatile [REDACTED] performs in both residential and commercial solar PV installations and is compatible with both 60-cell and 72-cell modules. With its all-AC approach and integrated grounding, the [REDACTED] delivers increased energy harvest and reduces design and installation complexity.

The [REDACTED] Microinverter integrates seamlessly with the [REDACTED] communications gateway, and [REDACTED] monitoring and analysis software.

#### Productive

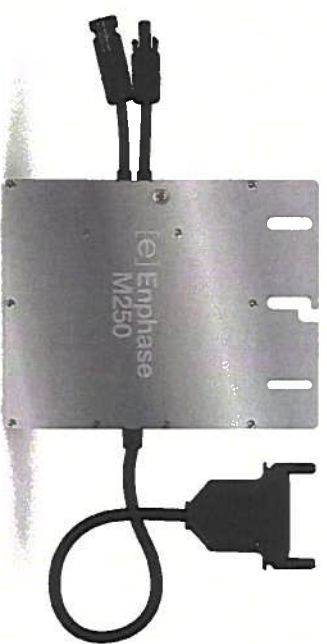
- Designed for a wide range of modules
- Maximizes energy production
- Minimizes impact of shading, dust, and debris

#### Simple

- No DC design or string calculation required
- No GEC needed for microinverter
- Easy installation with Engage Cable

#### Reliable

- 4th-generation product
- More than 1 million hours of testing and millions of units shipped
- Industry-leading warranty, up to 25 years



## [REDACTED] Microinverter

#### INPUT DATA (DC)

Commonly used module pairings <sup>1</sup>	210 - 350+ W 60-cell PV modules	210 - 350+ W 60-cell and 72-cell PV modules
Compatibility	60-cell PV modules	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	62 V
Peak power tracking voltage	27 V - 39 V	27 V - 48 V
Operating range	16 V - 48 V	16 V - 60 V
Min/Max start voltage	22 V / 48 V	22 V / 48 V
Max DC short circuit current	15 A	15 A

#### MODEL S:

#### MODEL S:

#### OUTPUT DATA (AC)

Peak output power	250 W
Maximum continuous output power	240 W
Nominal output current	1.15 A @ 208 VAC 1.0 A @ 240 VAC
Nominal voltage/range	208 V / 183-229 V @ 208 VAC 240 V / 211-264 V @ 240 VAC
Nominal frequency/range	60.0 / 57-61 Hz
Extended frequency range <sup>2</sup>	57-62.5 Hz
Power factor	>0.95
Maximum units per 20 A branch circuit	24 (three-phase 208 VAC) 16 (single phase 240 VAC)
Maximum output fault current	850 mA rms for 6 cycles

#### EFFICIENCY

CEC weighted efficiency	96.5%
Peak inverter efficiency	96.5%
Static MPPT efficiency (weighted, reference ENS0530)	99.4%
Night time power consumption	65 mW max

#### MECHANICAL DATA

Ambient temperature range	-40°C to +65°C
Dimensions (WxHxD)	171 mm x 173 mm x 30 mm (without mounting bracket)
Weight	1.6 kg (3.4 lbs)
Cooling	Natural convection - No fans
Enclosure environmental rating	Outdoor - NEMA 6
Connector type	MC4: M250-60-2LL-S22 and M250-72-2LL-S22 Amphenol H4: M250-60-2LL-S25 and M250-72-2LL-S25

#### FEATURES

Communication	Power line
Integrated ground	The DC circuit meets the requirements for ungrounded PV arrays in NEC 690.35. Equipment ground is provided in the Engage Cable. No additional GEC or ground is required. Ground fault protection (GFP) is integrated into the microinverter.
Monitoring	Enlighten Manager and MyEnlighten monitoring options
Transformer design	High frequency transformers, galvanically isolated
Compliance	UL 2703 recognized, UL1741/IEEE1547, FCC Part 15 Class B, CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 1071-01

1. No enforced DC/AC ratio. See the compatibility calculator at [enphase.com/en-us/support/module-compatibility](http://enphase.com/en-us/support/module-compatibility).  
2. Frequency ranges can be extended beyond nominal if required by the utility.