VECTOR ENGINEERS

JOB NO.: U3340.0239.201
SUBJECT: WIND PRESSURE

PROJECT: Avery, Terry- Residence

Components and Cladding Wind Calculations

Label: Solar Panel Array

Note: Calculations per ASCE 7-10

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	119
Exposure Category:	C
Risk Category:	II

Notes:

ADDITIONAL INPUT & CALCULATIONS:

Height of Roof, h [ft]:	25	(Approximate)	Hip?
Comp/Cladding Location:	Gable/Hip Roofs 7° < θ ≤ 27°		No
Enclosure Classification:	Enclosed Buildings		
Zone 1 GC_p:	0.9	Figure 30.4-2B (enter negative pressure coefficients)	
Zone 2 GC_p:	1.7		
Zone 3 GC_p:	2.6		
α:	9.5	Table 26.9-1	
z_g [ft]:	900	Table 26.9-1	
K_h:	0.95	Table 30.3-1	
K_{zt}:	1	Equation 26.8-1	
K_d:	0.85	Table 26.6-1	
Velocity Pressure, q_h [psf]:	29.1	Equation 30.3-1	
GC_{pi}:	0	Table 26.11-1	

PRESSURES:

$$p = q_h\left[(GC_p) - (GC_{pi})\right]$$ Equation 30.9-1

Zone 1, p [psf]:	26.2	psf (1.0 W, Interior Zones, beyond 'a' from roof edge)
Zone 2, p [psf]:	49.5	psf (1.0 W, End Zones, within 'a' from roof edge)
Zone 3, p [psf]:	75.7	psf (1.0 W, Corner Zones, within 'a' from roof corner) (a= 3 ft)

VECTOR ENGINEERS

JOB NO.: U3340.0239.201
SUBJECT: CONNECTION

PROJECT: Avery, Terry- Residence

Calculate Uplift Forces on Connection

	Pressure (0.6 Wind) (psf)	Max Connection Spacing[1] (ft)	Max Trib. Area[2] (ft^2)	Max Uplift Force (lbs)
Zone 1	15.7	4.0	11.2	176
Zone 2	29.7	4.0	11.2	332
Zone 3	45.4	4.0	11.2	507

Calculate Connection Capacity

Lag Screw Size [in]:	5/16	
C_d:	1.6	NDS Table 2.3.2
Embedment[3] [in]:	2.5	
Grade:	SPF (G = 0.42)	
Nominal Capacity [lbs/in]:	205	NDS Table 12.2A
Number of Screws:	1	
Prying Coefficient:	1.4	
Total Capacity [lbs]:	586	

Determine Result

Maximum Demand [lbs]:	507
Lag Screw Capacity [lbs]:	586

Result: **Capacity > Demand, Connection is adequate.**

Notes

1. 'Max Connection Spacing' is the spacing between connections along the rails.
2. 'Max Trib Area' is the product of the 'Max Connection Spacing' and 1/2 the panel width/height perpendicular to the rails. (2) rails per row of panels. Length or panels perpindicular to the rails shall not
3. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.

VECTOR ENGINEERS

JOB NO.: U3340.0239.201
SUBJECT: GRAVITY LOADS

PROJECT: Avery, Terry- Residence

CALCULATE ESTIMATED GRAVITY LOADS

Roof Pitch: 3.9 :12

ROOF DEAD LOAD (D)	Design material weight [psf]	Increase due to pitch	Material weight [psf]
Composite Shingles	2.1	1.05	2.0
1/2" Plywood	1.1	1.05	1.0
Framing	3.0		3.0
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.1	1.05	2.0
M, E & Misc	1.5		1.5
Total Original Roof DL	10.3		
PV Array DL	3.2	1.05	3

ROOF LIVE LOAD (Lr)

Existing Design Roof Live Load [psf]	20	ASCE 7-10, Table 4-1
Roof Live Load With PV Array [psf]	0	2018 NCBC, Section 1607.12.5

SNOW LOAD (S):	Existing	w/ Solar Array	
Roof Slope [x:12]:	3.9	3.9	
Roof Slope [°]:	18	18	
Snow Ground Load, p_g [psf]:	10	10	ASCE 7-10, Section 7.2
Terrain Category:	C	C	ASCE 7-10, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-10, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-10, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-10, Table 7-3
Risk Category:	II	II	ASCE 7-10, Table 1.5-1
Importance Factor, I_s:	1.0	1.0	ASCE 7-10, Table 1.5-2
Flat Roof Snow Load, p_f [psf]:	7	7	ASCE 7-10, Equation 7.3
Minimum Roof Snow Load, p_m [psf]:	0	0	ASCE 7-10, Section 7.3.4
Unobstructed Slippery Surface?	No	Yes	ASCE 7-10, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-10, Section 7.4
Roof Slope Factor, C_s:	1.00	0.87	ASCE 7-10, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	7	6	ASCE 7-10, Equation 7.4
Design Snow Load, S [psf]:	7	6	

VECTOR ENGINEERS

JOB NO.: U3340.0239.201
SUBJECT: LOAD COMPARISON

PROJECT: Avery, Terry- Residence

Summary of Loads

	Existing	With PV Array
D [psf]	10	13
Lr [psf]	20	0
S [psf]	7	6

Maximum Gravity Loads:

	Existing	With PV Array	
(D + Lr) / Cd [psf]	24	15	ASCE 7-10, Section 2.4.1
(D + S) / Cd [psf]	15	17	ASCE 7-10, Section 2.4.1

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

Maximum Gravity Load [psf]:	24	17

Ratio Proposed Loading to Current Loading: **70%** **OK**

The gravity loads and; thus, the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 807.4 of the 2018 NCEBC (2015 IEBC) are met and the structure is permitted to remain unaltered.

PROJECT NAME: TERRY AVERY

DESIGN SUMMARY	
SIZE:	10.720 KW PV SOLAR SYSTEM (32 MODULES)
STYLE:	RESIDENTIAL, ASPHALT SHINGLE, FLUSH MOUNT, GRID TIED, NET-METERED
LOCATION:	EAST AND WEST FACINGS ROOFS OF HOME
ORIENTATION:	PORTRAIT,18° PITCH ROOFS, 100° AND 280° AZIMUTHS
MODULE:	Q-CELLS Q.PEAK DUO BLK-G6 335, 68.5" X 40.6", 32MM THICK, 43.87LBS
RACKING:	IRONRIDGE FLASHFOOT + XR100
INVERTER:	MICROINVERTERS
VOLTAGE:	120/240V, 1Ø
MONITORING:	ENPHASE ENVOY ONLINE MONITORING
ADDITIONAL WORK:	
NOTE	

PV SOLAR ARRAY WITH MICROINVERTERS
ROOF OF HOME

CB — AC COMBINER BOX
HOME EXTERIOR

D — AC SOLAR DISCONNECT
HOME EXTERIOR

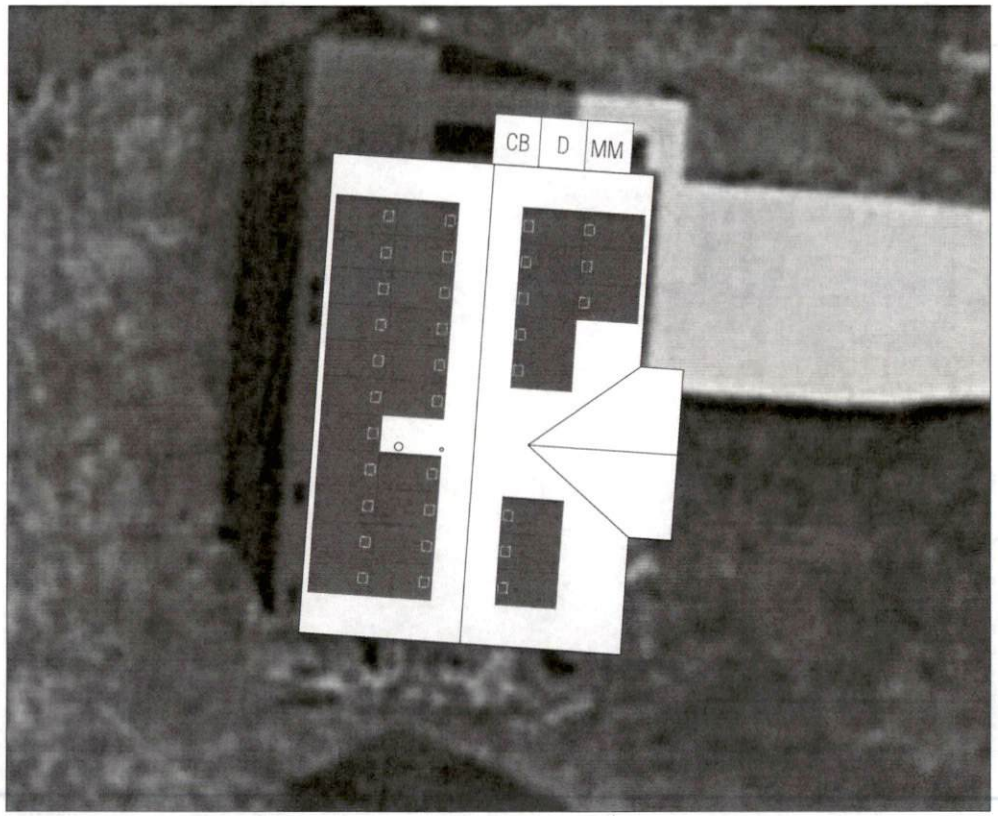
MM — UTILITY METER AND MAIN ELECTRICAL PANEL
HOME EXTERIOR

VECTOR engineering

NORTH CAROLINA PROFESSIONAL SEAL 044374 ENGINEER TREVOR P HAWKES

09/04/2020

Firm License Number: COA #P-0742
VSE Project Number: 123340-0239-201



1/01 SITE MAP
NO SCALE

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DUKE PROGRESS NC
(800) 452-2777

REVISIONS

DESIGN SUMMARY

01

PROJECT NAME: TERRY AVERY

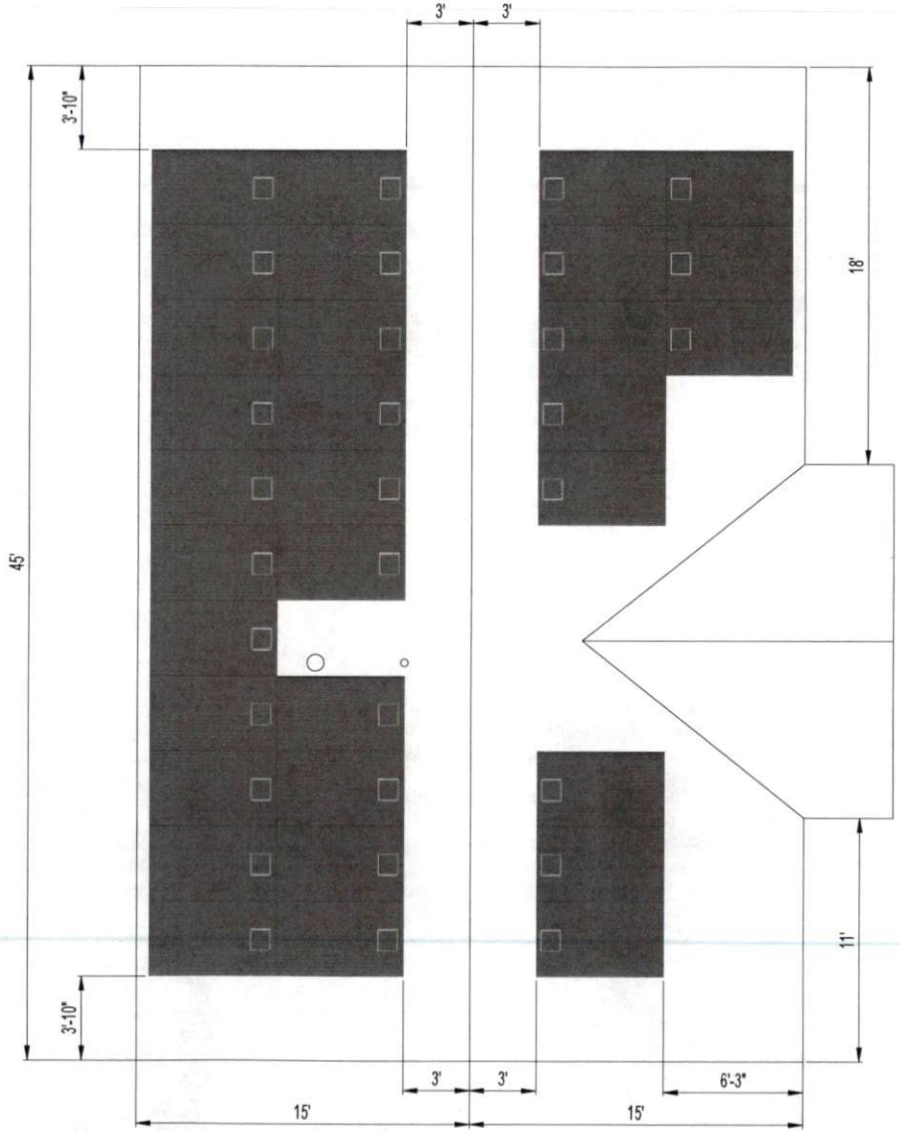
BUILD SUMMARY	
MODULE:	QTY(32) Q-CELLS Q.PEAK DUO BLK-G6 335, 68.5" X 40.6", 32MM THICK, 43.87LBS
STRUCTURE:	TRUSS 2X6", 24" OC.
RACKING:	IRONRIDGE FLASHFOOT, RUN RAILS NORTH-SOUTH ACROSS TRUSSES. STAGGER THE PENETRATIONS PER RAIL SO ALL ROOF MEMBERS ARE ENGAGED. PENETRATEEVERY 4FT OR LESS INTO RAFTERS. INSTALLER MUST VERIFY ALL PENETRATIONS ARE SECURE AND CENTERED IN WOOD MEMBERS. ANY DAMAGED WOOD MEMBERS MUST BE REPAIRED IMMEDIATELY BY SCAB, SISTER, OR FULL REPLACEMENT. MAX RAIL OVERHANG = 19" FROM LAST ATTACHMENT POINT. MODULE OVERHANG = 18".
ACCESS:	P2-STORY BUILDING LADDER NEEDED
INVERTER:	MOUNT INVERTER BEHIND SOLAR PANEL
MONITORING:	HARDLINE TO ROUTER INSIDE IN HOME
NOTE:	

VECTOR ENGINEERING

NORTH CAROLINA PROFESSIONAL SEAL 044374 ENGINEER TREVOR P. HAWKES

09/04/2020

Firm License Number: COA #P-0743
VSE Project Number: 173349-0239-201



1/02 ARRAY LAYOUT
NO SCALE

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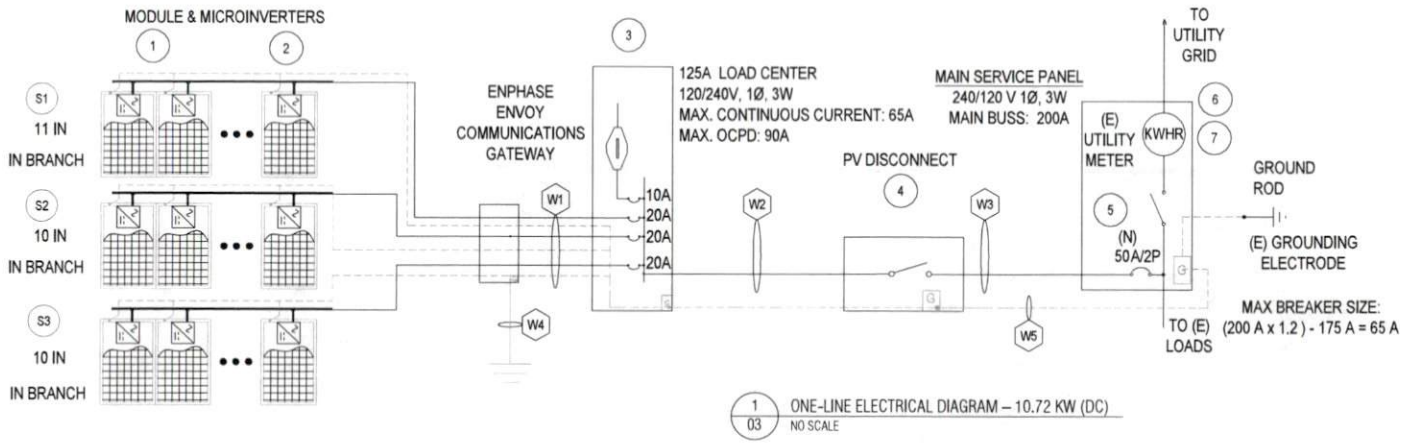
REVISIONS

BUILD SUMMARY

02

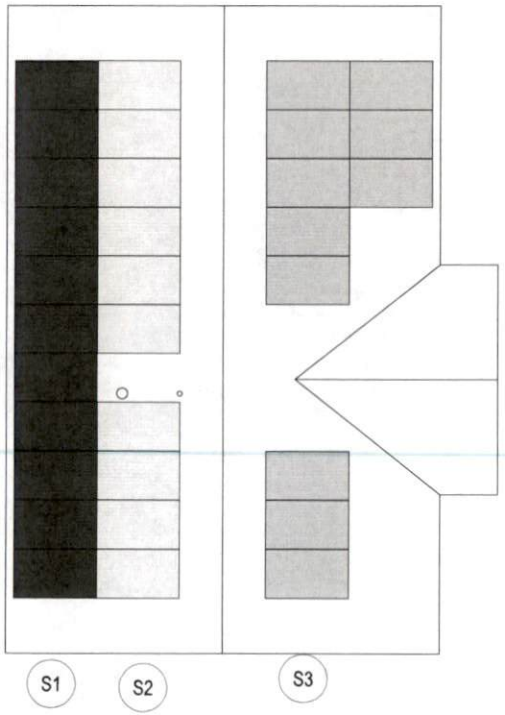
PROJECT NAME: TERRY AVERY



1/03 ONE-LINE ELECTRICAL DIAGRAM – 10.72 KW (DC)
NO SCALE

EQUIPMENT SCHEDULE						
TAG	ITEM	MAKE	MODEL	VOLTAGE	QTY	LOCATION
1	MODULE	Q-CELLS	Q.PEAK DUO BLK-G6 335W	DC	32	ROOF OF HOME
2	INVERTER	ENPHASE	ENPHASE IQ7PLUS-72-2-US	120/240V, 1Ø	32	ROOF OF HOME
3	AC COMBINER PANEL	ENPHASE	ENPHASE-IQ3-PANEL 3X20A, 2P, 1X10A, 2P		1	HOME EXTERIOR
4	PV DISCONNECT	EATON	60A ENCLOSURE NON FUSED		1	HOME EXTERIOR
5	BACK-FED BREAKER	EATON	50A, 2P		1	MAIN PANEL
6	MAIN ELECTRICAL PANEL	EATON	200A MAIN (N)EW MAIN BREAKER DERATING: 175A		1	HOME EXTERIOR
7	UTILITY METER	ITRON	FORM 2S		1	

WIRE SCHEDULE					
TAG	RUN	CONDUCTOR TYPE	GAUGE	CONDUIT	RUN LENGHT
W1	PV HOMERUNS	THWN-2, CU	#10	3/4"	~150 FT
W2	COMBINER BOX TO DISCONNECT	THWN-2, CU	#8	3/4"	~10 FT
W3	BACK-FED BREAKER	THWN-2, CU	#8	3/4"	~10 FT
W4	GROUNDING ELECTRODE	BARE, CU	#6	-	-
W5	EQUIPMENT GROUND	THWN-2, CU	#6 (MIN)	-	~70 FT



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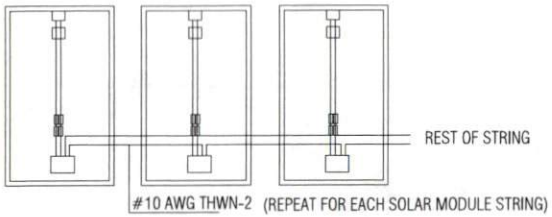
REVISIONS

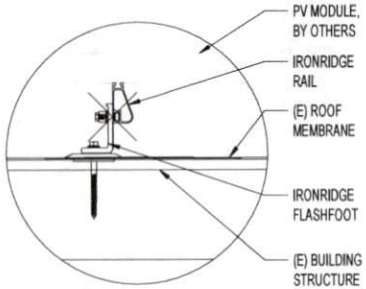
ELECTRICAL

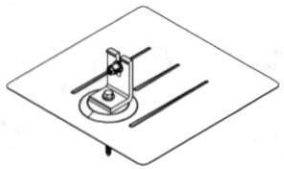
03

PROJECT NAME: TERRY AVERY



1/04 MODULE AND MOCROINVERTER CONNECTION DETAIL
NO SCALE





2/04 IRONRIDGE FLASHFOOT ASPHALT SHINGLE ROOF FLASHING DETAIL
NO SCALE

ENPHASE IQ7PLUS-72-2-US INVERTERS	
PHOTOVOLTAIC SYSTEM DC DISCONNECT	
OPERATING CURRENT:	1.21 AMPS
MAXIMUM SYSTEM VOLTAGE:	240 VDC
SHORT CIRCUIT CURRENT:	15 AMPS

SYSTEM AC DISCONNECT AT SERVICE	
PHOTOVOLTAIC SYSTEM AC DISCONNECT	
MAXIMUM AC OPERATING CURRENT:	38.72 AMPS
NOMINAL OPERATING AC VOLTAGE:	120/240 VAC

3/04 PHOTOVOLTAIC MARKING AND LABLING
NO SCALE

CODE REVIEW & CALCULATIONS	
SOLAR PHOTOVOLTAIC (PV) SYSTEM WITH MICROINVERTERS	
INVERTER TYPE:	ENPHASE IQ7PLUS-72-2-US
MAXIMUM STRING LENGTH:	13 MODULES
NOMINAL STRING VOLTAGE:	@ 240V (AC)
Q-CELLS Q.PEAK DUO BLK-G6 335	
NEC 690.7 MAXIMUM VOLTAGE	
690.7(A): MAXIMUM PHOTOVOLTAIC SYSTEM VOLTAGE	
Q-CELLS Q.PEAK DUO BLK-G6 335W MODULE VOC = 40.41V	
CORRECTION FACTOR AT (-32°C - 25°C) X -0.1091V/C + 40.41V = 46.629V	
NEC 690.8 CIRCUIT SIZING AND CURRENT	
690.8(A)(3): INVERTER OUTPUT CIRCUIT CURRENT.	
INVERTER I1 MAX CONTINUOUS OUTPUT CURRENT: 1.21 AMPS (AC)	
690.8(A)(5): DC-TO-DC CONVERTER OUTPUT CURRENT.	
INVERTER I1 MAXIMUM INPUT CURRENT: 15 AMPS (DC)	
higher current source may be used, the inverter will limit its input current to the value stated above.	
NEC 690.9 OVERCURRENT PROTECTION	
690.9(B): OVERCURRENT DEVICE RATINGS	
FUSE SIZE: 38.72A X 125% = 48.4A <= 50 AMP OCPD	
NEC 690.12 RAPID SHUTDOWN OF PV SYSTEMS ON BUILDINGS	
PLAN: ENPHASE IQ7PLUS-72-2-US WITH RAPID SHUTDOWN ENABLED DISCONNECT SHALL BE LOCATED NEXT TO THE SERVICE AND BE LABELED IN ACCORDANCE WITH 690.56(B) AND (C).	

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REVISIONS

DETAILS & CALCULATIONS

04

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell/120 half-cell and 72-cell/144 half-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell/144 half-cell modules.

CERTIFIED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US		IQ7PLUS-72-2-US	
Commonly used module pairings[1]	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell/120 half-cell PV modules only		60-cell/120 half-cell and 72-cell/144 half-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	**IQ 7 Microinverter**		**IQ 7+ Microinverter**	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range[2]	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit[3]	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	18 mA		18 mA	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	**@240 V**	**@208 V**	**@240 V**	**@208 V**
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Dimensions (HxWxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
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			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	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 C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-us/support/module-compatibility.
2. Nominal voltage range can be extended beyond nominal if required by the utility.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

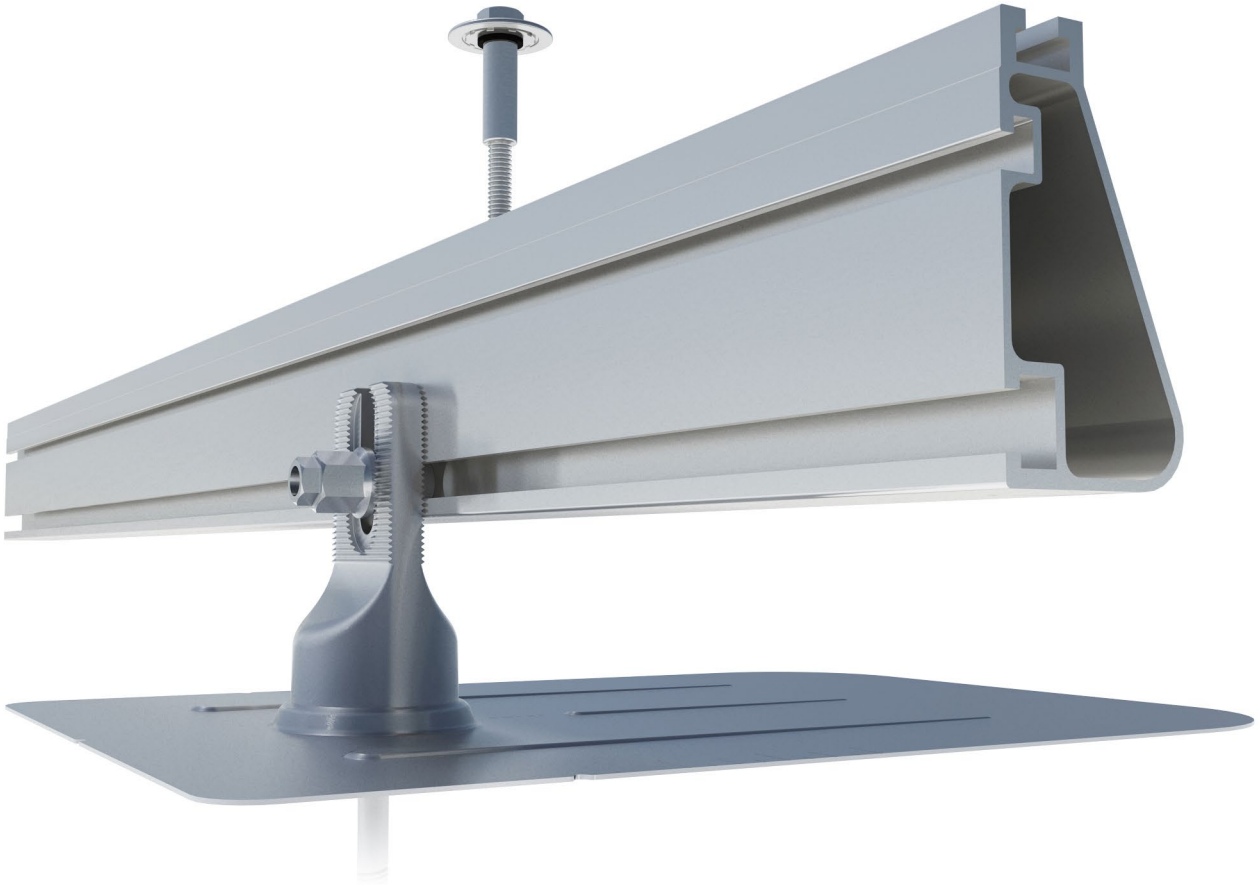
To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Datasheet

IRONRIDGE

Flush Mount System



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Our components have been tested to the limit and proven in extreme environments, including Florida's high-velocity hurricane zones.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.

Strength Tested

All components evaluated for superior structural performance.

PE Certified

Pre-stamped engineering letters available in most states.

Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.

Design Assistant

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

UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.

25-Year Warranty

Products guaranteed to be free of impairing defects.

XR Rails

XR10 Rail

A low-profile mounting rail for regions with light snow.

- 6’ spanning capability
- Moderate load capability
- Clear and black finish

XR100 Rail

The ultimate residential solar mounting rail.

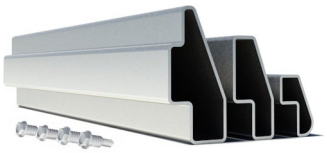
- 8’ spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail

A heavyweight mounting rail for commercial projects.

- 12’ spanning capability
- Extreme load capability
- Clear anodized finish

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding

UFOs

Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves

Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO

Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Bonding Hardware

Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16” socket
- Assembled and lubricated

Attachments

FlashFoot2

Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Conduit Mount

Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures ¾” or 1” conduit

Knockout Tile

Replace tiles and ensure superior waterproofing.

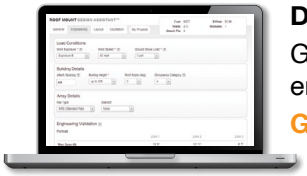
- Flat, S, & W tile profiles
- Form-fit compression seal
- Single-lag universal base

All Tile Hook

Mount on tile roofs with a simple, adjustable hook.

- Works on flat, S, & W tiles
- Single-socket installation
- Optional deck flashing

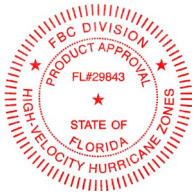
Resources



Design Assistant

Go from rough layout to fully engineered system. For free.

Go to IronRidge.com/design



Endorsed by FL Building Commission

Flush Mount is the first mounting system to receive Florida Product approval for 2017 Florida Building Code compliance.

Learn More at bit.ly/floridacert

Enphase IQ Envoy

The **Enphase IQ Envoy**™ communications gateway delivers solar production and energy consumption data to Enphase Enlighten™ monitoring and analysis software for comprehensive, remote maintenance and management of the Enphase IQ System.

With integrated revenue grade production metering and optional consumption monitoring, the Envoy IQ is the platform for total energy management and integrates with the Enphase IQ Battery™.

Smart

- Enables web-based monitoring and control
- Bidirectional communications for remote upgrades
- Supports power export limiting and zero-export applications

Simple

- Easy system configuration using Enphase Installer Toolkit™ mobile app
- Flexible networking with Wi-Fi, Ethernet, or cellular

Reliable

- Designed for installation indoors or outdoors
- Five-year warranty

UL LISTED

To learn more about Enphase offerings, visit **enphase.com**

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Enphase IQ Envoy

MODEL NUMBERS	
Enphase IQ Envoy™ ENV-IQ-AM1-240	Enphase IQ Envoy communications gateway with integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%). Includes one 200A continuous rated **production** CT.
ACCESSORIES (order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan) CELLMODEM-M1 (4G based LTE-M / 5-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.)
Consumption Monitoring CT CT-200-SPLIT	Split-core current transformers enable whole home metering.
POWER REQUIREMENTS	
Power requirements	120/240 VAC split-phase. Max 20 A overcurrent protection required.
CAPACITY	
Number of microinverters polled	Up to 600
MECHANICAL DATA	
Dimensions (WxHxD)	21.3 x 12.6 x 4.5 cm (8.4” x 5” x 1.8”)
Weight	17.6 oz (498 g)
Ambient temperature range	-40° to 65° C (-40° to 149° F) -40° to 46° C (-40° to 115° F) if installed in an enclosure
Environmental rating	IP30. For installation indoors or in an NRTL-certified, NEMA type 3R enclosure.
Altitude	To 2000 meters (6,560 feet)
Production CT	- Is limited to 200A of continuous current / 250A OCPD – 72kW AC - Internal aperture measures 19.36mm to support 250MCM THWN conductors (max)
Consumption CT	- For electrical services to 250A with parallel runs up to 500A - Internal aperture measures 0.84” x 0.96” (21.33mm x 24.38mm) to support 3/0 THWN conductor - CT wire insulation rating of 600V
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	802.3, Cat5E (or Cat 6) UTP Ethernet cable, not included
Mobile	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G), not included
COMPLIANCE	
Compliance	UL 916 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2010, EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2 Metering: ANSI C12.20 accuracy class 0.5

To learn more about Enphase offerings, visit **enphase.com**

2018-12-10

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