Building Codes: 2017 NEC, 2018 IBC, 2018 IFC, 2018 IRC and AHJ Amendments

ROARK, KYLE PV SYSTEM 147 RIVER BIRCH RUN . COATS, NC, 27521 APN: JURISDICTION: HARNETT COUNTY (NC) GENERAL INFORMATION

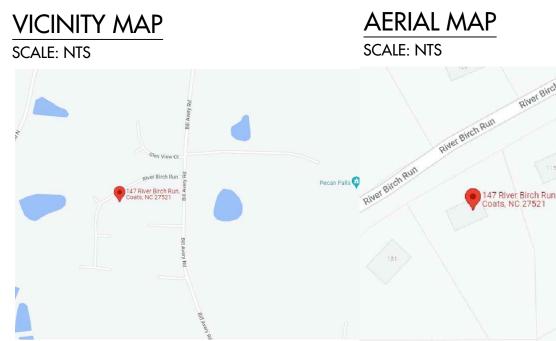
SYSTEM SIZE:

ROOF PITCHED:

INVERTER: MODULES: STRINGS: ELECTRICAL SERVICE RATING: PV SYSTEM OVERCURRENT RATING: PV SYSTEM DISCONNECT SWITCH: ROOF TYPE: ROOF FRAMING: RACKING: ATTACHMENT METHOD: 4.800 kW-DC-STC 3.800 kW-AC 34 DEGREES (1) SOLAREDGE SE3800H-US W/ P401 OPTIMIZERS (12) Q PEAK DUO BLK ML G10+ 400W (1) x 12 MODULE SERIES STRING 200A 20A EATON DG221URB (30A / 2P) COMP SHINGLE MANUFACTURED/ENGINEERED TRUSS K2 SYSTEMS MIN. 5/16" x 3 ½ LAG SCREWS EA. STANDOFF

TABLE OF CONTENTS

REQUIRED INFORMATION	SHEET NAME	SHEET NUMBER
SITE INFORMATION	COVER PAGE	PV 1
MODULE AND EQUIPMENT LAYOUT	SITE PLAN	PV 2
LOCATION & QUANTITY OF PACKING & STANDOFFS	PV LAYOUT	PV 3
RACKING LOAD & UPLIFT CALCULATIONS	PV LAYOUT	PV 3
ROOF ATTACHMENT DETAILS	DETAILS	PV 4
ELECTRICAL 1 LINE DIAGRAM	ONE LINE	PV 5
ELECTRICAL 3 LINE DIAGRAM	THREE LINE	PV 6
OCP & WIRE SIZING CALCULATIONS	1 & 3 LINE	PV 5 & 6
ARRAY & INVERTER ELECTRICAL SPECIFICATIONS	1 & 3 LINE	PV 5 & 6
EQUIPMENT SPECIFICATIONS	1 & 3 LINE	PV 5 & 6
LABEL NOTES	LABELS	PV 7
PV EQUIPMENT LABELING DETAIL	LABELS	PV 7
DIRECTORY LABEL	PLACARD	PV 8
JOB SAFETY PLAN	SAFETY PLAN	PV 9
PV EQUIPMENT SPECIFICATIONS	EQUIPMENT SPEC.	PV 10 - 16
DATA SHEETS & ADDITIONAL INFORMATION	SUPPLEMENTAL MATERIAL	



NOTES

EC	QUIPMENT LOCATION	GE	ENE
1.	ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.	1.	МО
2.	WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR		STA
	EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC690.31(A),(C) AND	2.	INV
	NEC TABLES 310.15(B)(2)(A) AND 310.15(B)(3)(C).		STA
3.	JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES	3.	DRA
	ACCORDING TO NEC 690.34.		ARF
4.	ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS		MIC
	NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.	4.	WC
5.	ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL		WIL
	ACCORDING TO NEC APPLICABLE CODES.	5.	ALL
6.	ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR		GRO
	USAGE WHEN APPROPRIATE.	6.	ALL
W	IRING & CONDUIT NOTES		OTH
1.	ALL CONDUITS AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE.	7.	WH
	CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE		CO
	REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.	8.	THE
2.	CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.		UN
3.	DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING	9.	ROO
	SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE		REG
	WIRING CLIPS.		SUC
4.	AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK,		WI
	PHASE B OR L-2 RED, OR OTHER CONVENTION IF THREE PHASE, PHASE C OR	10.	PV /
	L3-BLUE, YELLOW, ORANGE, OR OTHER CONVENTION NEUTRAL- WHITE OR		ARF
	GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH THE HIGHER		

VOLTAGE TO BE MARKED ORANGE NEC 110.15.

TITAN 525 W BASELINE RD., MESA AZ, 85210 CONTRACTOR LIC# U.34445

ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN , COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885



IERAL NOTES

ODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE TANDARDS.

IVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE TANDARDS.

RAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL

RRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION IGHT VARY.

ORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT /ILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

LL GROUND WIRING CONNECTED TO THE MAIN SERVICE

ROUNDING IN MAIN SERVICE PANEL/SERVICE COMPONENT.

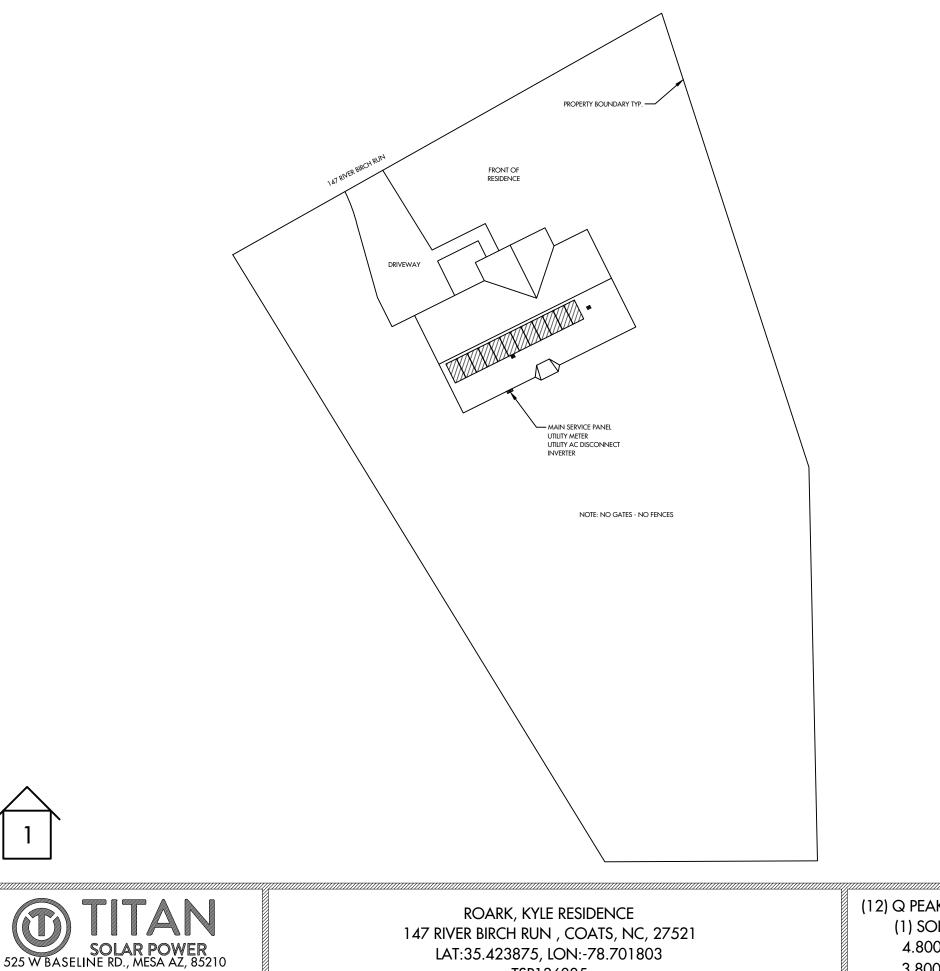
LL CONDUCTORS SHALL BE 600V, 75° C STANDARD COPPER UNLESS THERWISE NOTED.

/HEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN OMPLIANCE WITH OSHA REGULATIONS.

HE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR NTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY. DOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT EQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS JCH AS WINDOWS WHERE THE ACCESS POINT DOES NOT CONFLICT /ITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS. / ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM RRAY WIRING TO CONDUIT WIRING.

					F
DATE: 8/24/2022				COVER PAGE	
REV:A				D\/ 1	
DRAWN BY: JS		SEAL:		FV I	
	2	JLAL.	8		k





TSP136885

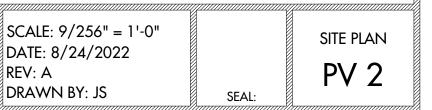
CONTRACTOR LIC# U.34445

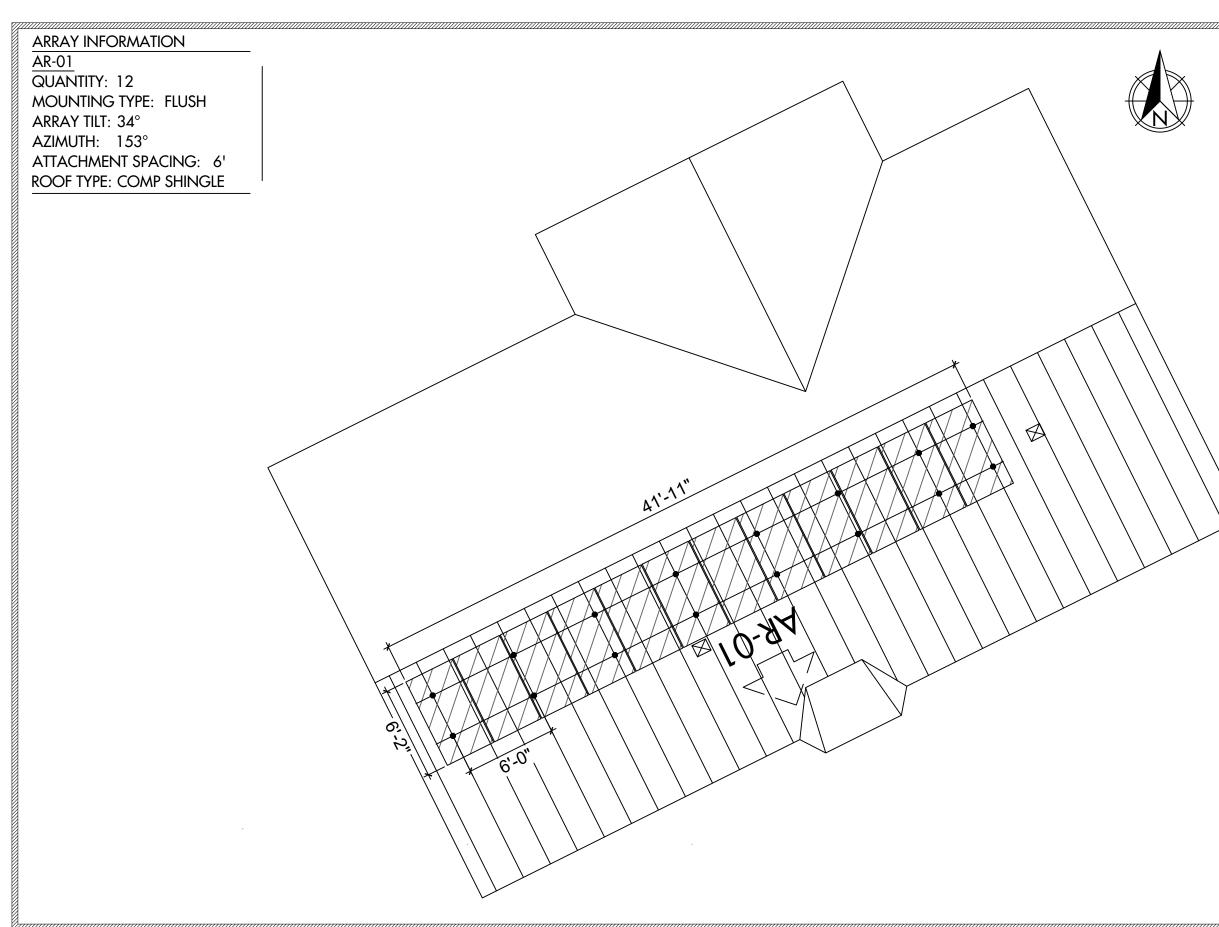
(12) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREDGE SE3800H-US
4.800 kW DC SYSTEM SIZE
3.800 kW AC SYSTEM SIZE



PROJECT NOTES

- 1. UTILITY SHALL HAVE 24HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC COMPONENTS LOCATED AT SES EQUIPMENT
- 2. NO LOCKED GATES, DOGS, ETC SHALL IMPEDE ACCESS TO SES EQUIPMENT
- 3. WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH DUKE ENERGY (NC) AND NEC REQUIREMENTS.







ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN , COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885 (12) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREDGE SE3800H-US
4.800 kW DC SYSTEM SIZE
3.800 kW AC SYSTEM SIZE

NOTES • ROOF VENTS, SKYLIGHTS, WILL NOT

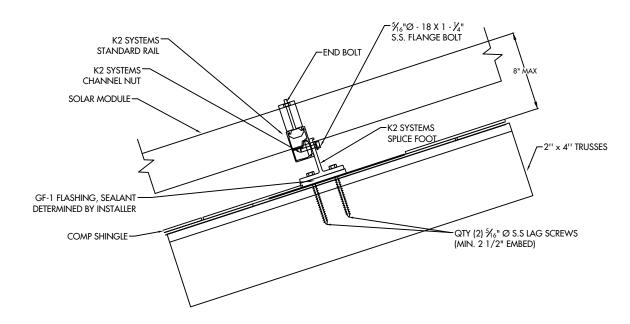
- BE COVERED UPON PV INSTALLATION
- TOTAL ROOF AREA = 2328.9 SQ-FT
- TOTAL ARRAY AREA = 253.45 SQ-FT
- ARRAY COVERAGE = 10.88%

SCALE: 5/32" = 1'-0" DATE: 8/24/2022 REV:A DRAWN BY: JS SEAL: PV LAYOUT PV 3

MODULE & RACKING INFORMATION

MODULE: Q PEAK DUO BLK ML G10+ 400W MODULE WEIGHT: 48.50 LBS MODULE DIMENSIONS: 74''x 41.1'' x 1.5" RACKING/RAIL: K2 SYSTEMS / K2 SYSTEMS

ROOF & FRAMING INFORMATION MATERIAL: COMP SHINGLE RAFTER/TRUSS SIZE: 2'' × 4'' RAFTER/TRUSS SPACING: 2'



ARRAY 01: 12 MODULES

<u>UPLIFT = 7603.50 LBS.</u>

POINT LOAD = 39.00 LBS. PER MOUNTING POINT

PULLOUT STRENGTH = 8400.00 LBS.

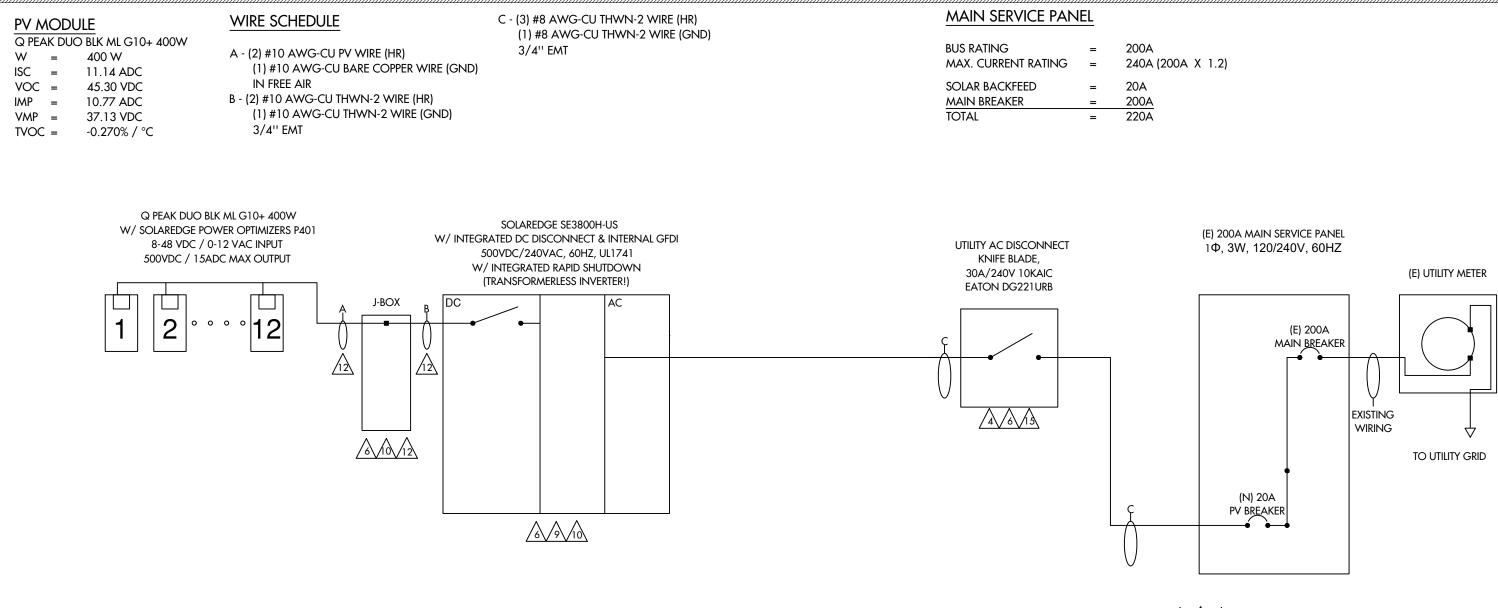
DISTRIBUTED LOAD = 2.46 PSF

MODULE & RACKING WEIGHT = 624.00 LBS



ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN , COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

ATE: 8/24/2022		DETAILS
:V:A RAWN BY: JS	CEAL	PV 4
	SEAL:	



WIRE SIZE CALCULATIONS

TEMP CORRECTION FACTOR: 0.87 (43° AMBIENT) ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED) (2" ABOVE ROOFTOP / 0° TEMP ADDERS - AS OCCURS) (TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING CONDUIT FILL FACTOR OPTIMIZER MAX. CURRENT = #10- AWG CU. AMPACITY = FREE AIR

#10 - AWG CU. AMPACITY = **ROOFTOP CONDUIT**

1.00 18.75A DC (15.00A X 1 X 1.25) 47.85A (55A X 0.87) 34.80A (40A X 0.87 X 1.00)

AC WIRING CONDUIT FILL FACTOR MAX. INVERTER CURRENT = MIN. INVERTER OCP

INVERTER OCP #8 - AWG CU AMPACITY

- 1 (3) CONDUCTORS
 - 16A (PER INVERTER SPECS)
- 20A (16A X 1.25)

=

=

- 20A
- 47.85A (55A X 1 X 0.87)



ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

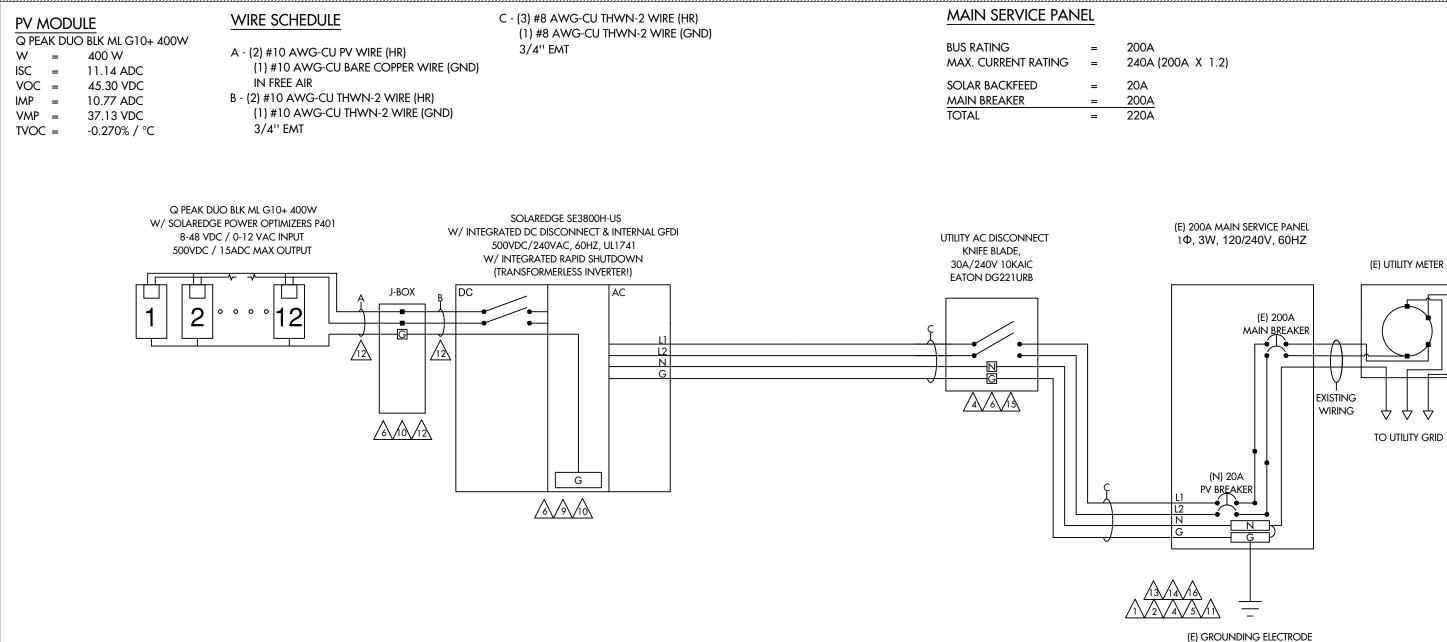
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(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

DA RE DR

ATE: 8/24/2022		ONE LINE	
ATE: 8/24/2022 V:A 2AWN BY: JS		one line PV 5	





WIRE SIZE CALCULATIONS

TEMP CORRECTION FACTOR: 0.87 (43° AMBIENT) ROOFTOP TEMP CORRECTION FACTOR: 1.00 (43° ADJUSTED) (2" ABOVE ROOFTOP / 0° TEMP ADDERS - AS OCCURS) (TEMP DATA TAKEN FROM ASHRAE 2% AVG HIGH TEMP)

DC WIRING CONDUIT FILL FACTOR = OPTIMIZER MAX. CURRENT = #10- AWG CU. AMPACITY = FREE AIR #10 - AWG CU. AMPACITY = **ROOFTOP CONDUIT**

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MIN. INVERTER OCP INVERTER OCP #8 - AWG CU AMPACITY

- 1 (3) CONDUCTORS
 - 16A (PER INVERTER SPECS)
- 20A (16A X 1.25)

=

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- 47.85A (55A X 1 X 0.87)

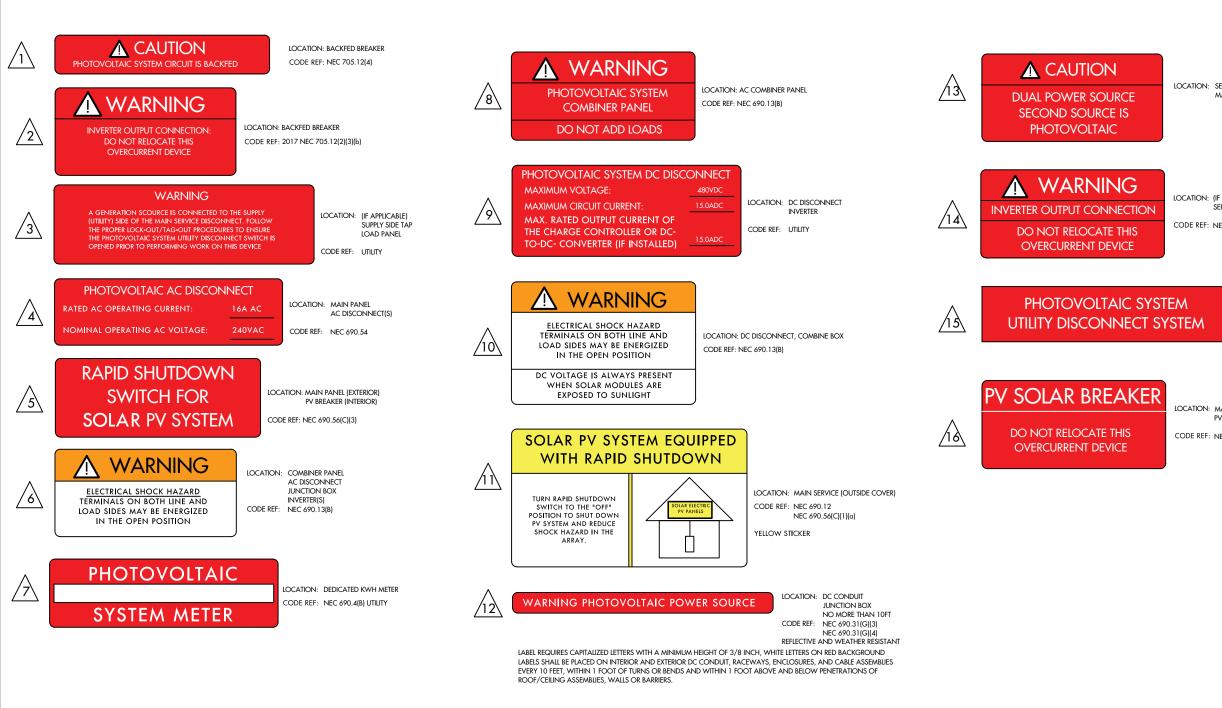


ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

DA RE DR

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	THREE LINE
SEA	PV 6
	SEA





ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

LOCATION: SERVICE METER MAIN PANEL

LOCATION: (IF APPLICABLE) SERVICE PANEL

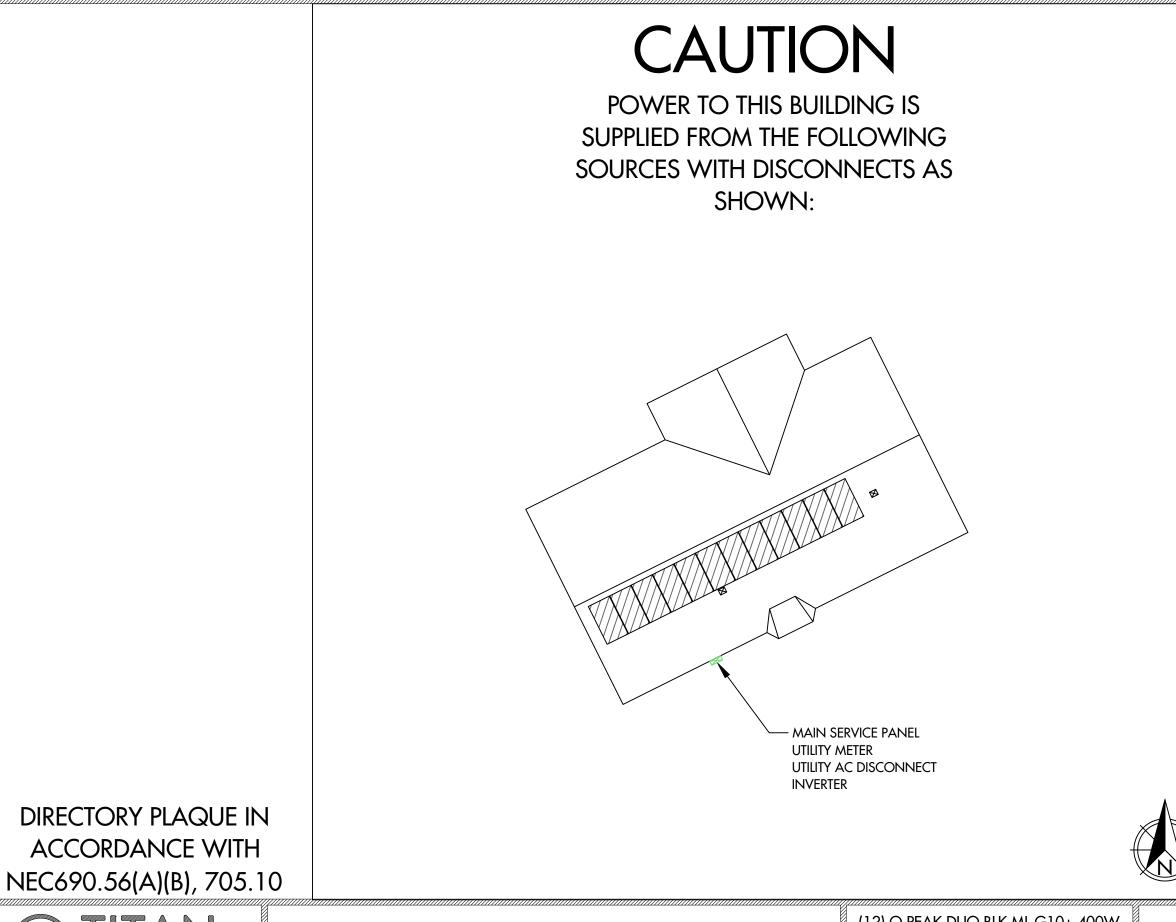
CODE REF: NEC 705.12(7)

LOCATION: AC DISCONNECT CODE REF: UTILITY

LOCATION: MAIN PANEL:(EXTERIOR) PV BREAKER: (INTERIOR)

CODE REF: NEC 705.12(B)(2)(3)(B)

DATE: 8/24/2022			LABELS
REV: A DRAWN BY: JS		SEAL	PV 7
	R	SEAL:	

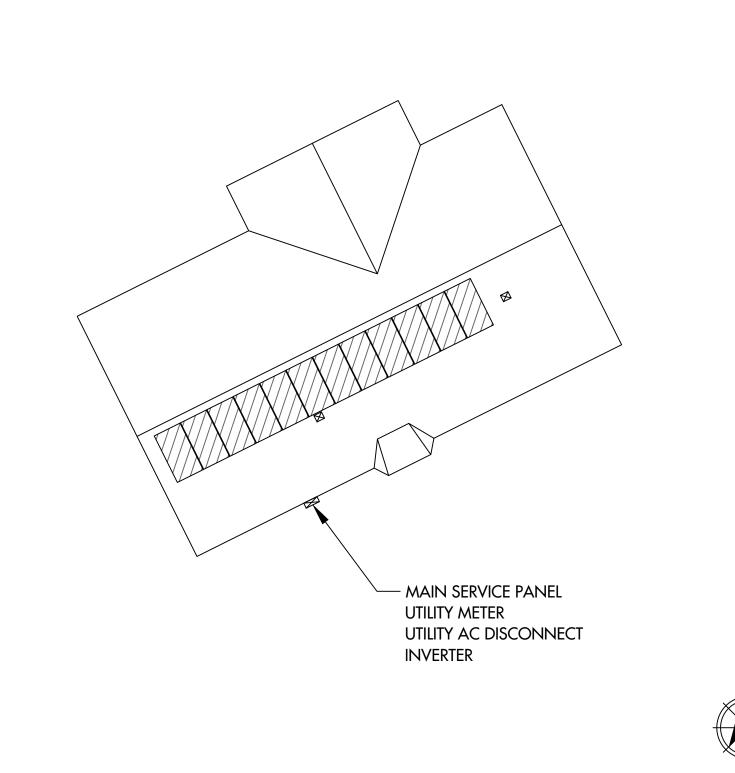




ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN , COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885 (12) Q PEAK DUO BLK ML G10+ 400W
(1) SOLAREDGE SE3800H-US
4.800 kW DC SYSTEM SIZE
3.800 kW AC SYSTEM SIZE

DATE: 8/2 REV: A DRAWN B	4/2022	SEAL:	placard PV 8

JOB SAFETY PLAN





ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN , COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

NAME: ADDRESS:

NOTES:

•

•

PHONE NUMBER:

HOME

LOCATION OF NEAREST URGENT CARE FACILITY

INSTALLER SHALL DRAW IN DESIGNATED SAFETY AREA AROUND

INSTALLER SHALL UPDATE NAME, ADDRESS, AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE JOB SITE BEFORE STARTING WORK.

PRINT NAME	INITIAL	YES	NO

DATE: 8/24/2022
REV: A
DRAWN BY: JS

SAFETY PLAN

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



Optimized installation with HD-Wave technology

- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- / Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020 per article 690.11 and 690.12

solaredge.com



INVERTERS

Small, lightweight, and easy to install both outdoors or indoors

- / Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)



/ Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER			SE	ххххн-ххххх	BXX4			
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage MinNomMax. (211 - 240 - 264)	~	~	~	~	1	√	~	Vac
AC Output Voltage MinNomMax. (183 - 208 - 229)	-	4	-	4	-	-	~	Vac
AC Frequency (Nominal)				59.3 - 60 - 60.5				Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor			1	, Adjustable - 0.85 to	0.85			
GFDI Threshold				1				A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds				Yes				
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded				Yes				
Maximum Input Voltage				480				Vdc
Nominal DC Input Voltage		3	380			400		Vdc
Maximum Input Current @240V ⁽²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V ⁽²⁾	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current				45				Adc
Reverse-Polarity Protection				Yes				
Ground-Fault Isolation Detection				600ka Sensitivity				
Maximum Inverter Efficiency	99			9	9.2			%
CEC Weighted Efficiency				99			99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption				< 2.5				W

For other regional settings please contact SolarEdge support
 A higher current source may be used; the inverter will limit its input current to the values stated

/ Single Phase Inverter with HD-Wave Technology for North America

ADDITIONAL FEATURES	
Supported Communication Interfaces	
Revenue Grade Metering, ANSI C12.20	Г
Consumption metering]
Inverter Commissioning	Γ
Rapid Shutdown - NEC 2014, NEC 2017 and NEC 2020, 690.12	
STANDARD COMPLIANCE	
Safety	Γ
Grid Connection Standards	Γ
Emissions	
INSTALLATION SPECIFICAT	пc
AC Output Conduit Size / AWG Range	Г
DC Input Conduit Size / # of Strings / AWG Range	Γ
Dimensions with Safety Switch (HxWxD)	Γ
Weight with Safety Switch	Г
Noise	
Cooling	Γ
Operating Temperature Range	





ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

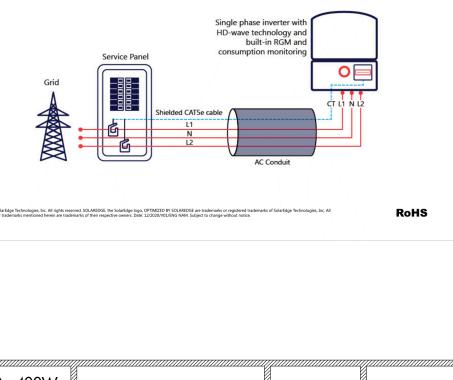
SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

00H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
		RS485, Ethernet,	ZigBee (optional), C	ellular (optional)			
			Optional ⁽³⁾				
	With the SetA	op mobile application	n using Built-in Wi-Fi	Access Point for Lo	cal Connection		
		Automatic Rapid	Shutdown upon AC	Grid Disconnect			
	UL1741, U	L1741 SA, UL1699B, 0	SA C22.2, Canadian	AFCI according to	T.I.L. M-07		
		IEEE1	1547, Rule 21, Rule 14	. (HI)			
			FCC Part 15 Class B				
	1''	Maximum / 14-6 AV	VG		1" Maximum	/14-4 AWG	
	1" Maxir	num / 1-2 strings / 14	4-6 AWG		1" Maximum / 1-3	strings / 14-6 AWG	
	17.7 x 14.6 x 6.8 / 450 x 370 x 174 21.3 x 14.6 x 7.3 / 540 x 370 x 185				′ 540 x 370 x 185	in / mm	
22	/ 10	25.1 / 11.4	26.2	/ 11.9	38.8 ,	/ 17.6	lb / kg
	< 25 <50					dBA	
			Natural Convection				
		-40) to +140 / -40 to +6	0(4)			°F / °C
		NEMA 4>	(Inverter with Safet	y Switch)			

5000BNC4; Inverter with Rev 0 or SEACT0750-400NA-20. 20 units per box rating information refer to: https://www.solare

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



DATE: 8/24/2022 REV: A DRAWN BY: JS

EQUIPMENT **SPECIFICATIONS** PV 10

intertek Total Quality. Assured.

Intertek 3933 US Route 11 Cortland, NY 13045 Telephone: 607-753-7311 www.intertek.com

Subject: ETL Evaluation of SolarEdge Products to Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

- The testing done has verified that controlled conductors are limited to:
 - Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
 - Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or - if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

Applicable products:

- (1) Power optimizers:
- PB followed by 001 to 350; followed by -AOB or -TFI.
- OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
- P followed by 001 to 1100. SP followed by 001 to 350.

When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019, modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs. Also meeting NEC 2020 rapid shutdown requirement.

(2) 1 -PH Inverters

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:

Inverter part number may be followed by a suffix.

(3) 3 -PH Inverters

intertek

Intertek 3933 US Route 11 Cortland, NY 13045 Telephone: 607-753-7311 www.intertek.cor

SE9KUS / SE10KUS / SE14.4KUS/ SE16.7kUS / SE17.3kUS / SE20KUS/ SE24KUS / SE30KUS / SE33.3KUS / SE40KUS / SE43.2KUS / SE50KUS / SE66.6KUS / SE80KUS / SE85KUS / SE100KUS / SE120KUS; when the following label is labeled on the side of the inverter:

Please note, this Letter Report does not represent authorization for the use of any Intertek certification marks.

Brand Name(s)	SolarEdge
Relevant Standard(s)	UL 1741, UL 1741 CRD for rapid shutdown
	National Electric Code, 2020, Section 690.12 requirement for rapid shutdown
Verification Issuing Office	3933 US Route 11, Cortland, NY 13045

NRTL Disclaimer, Different for each NRTL – Example: "This Verification is for the exclusive use of NRTL's Client and is provided pursuant to the agreement between NRTL and its Client. NRTL's responsibility and liability are limited to the terms and conditions of the agreement. NRTL assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Any the Client is authorized to copy or distribute this Verification. Any use of the NRTL name or one of its marks for the asie or advertisement of the tested material, product or service must first be agroved in writing by NRTL. The observations and test results referenced from this Verification are relevant only to the sample tested. This Verification by itself does not imply that the material, product, or service is or has ever been under an NRTL certification program."

Signature:

Name: Mukund Rana Position: Staff Engineer Date:5/17/2021



Date 5/17/2021 G104683664CR

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE



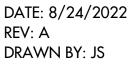
SOLAR POWER 525 W BASELINE RD., MESA AZ, 85210 CONTRACTOR LIC# U.34445

ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

3.800 kW AC SYSTEM SIZE

Intertek 3933 US Route 11 Cortland, NY 13045 Telephone: 607-753-7311 www.intertek.com

	Engineer / Reviewer	Description
RΤ	Dishant Patel	Added New 3-PH Inverter model SE50KUS, SE80KUS, SE85KUS and SE120KUS.
	Mukund Rana	Updated Power optimizers from "P followed by 001 to 960" to "P followed by 001 to 1100"
		Updated NEC standard from "National Electric Code, 2017, Section 690.12 requirement for rapid shutdown" To "National Electric Code, 2020, Section 690.12 requirement for rapid shutdown"





Power Optimizer

For North America P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505



PV power optimization at the module-level

- I Specifically designed to work with SolarEdge inverters
- / Up to 25% more energy
- Superior efficiency (99.5%)

solaredge.com

- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- / Flexible system design for maximum space utilization

- Fast installation with a single bolt
- I Next generation maintenance with modulelevel monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- / Module-level voltage shutdown for installer and firefighter safety



POWER

OPTIMIZE

ア

/ Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high- power 60-cell modules)	P370 (for higher- power 60 and 72- cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P405 (for high- voltage modules)	P485 (for high- voltage modules)	P505 (for higher current modules)	
INPUT					0				
Rated nput DC Power ⁽¹⁾	320	340	370	4	00	405	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	4	18	60	80	60	12	5(2)	83@	Vdc
MPPT Operating Range	8 -	48	8 - 60	8 - 80	8-60	12.5	- 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)		11		10.1	11.75	1	11	14	Adc
Maximum Efficiency				99.	5				%
Weighted Efficiency				98.8				98.6	%
Overvoltage Category				1					
OUTPUT DURING OPER	ATION (POV	VER OPTIMI	ZER CONNEC	TED TO OPE	RATING SOI	LAREDGE IN	VERTER)		
Maximum Output Current				15	i				Adc
Maximum Output Voitage			60				85		Vdc
OUTPUT DURING STAND	DBY (POWER	OPTIMIZER	DISCONNECT	ED FROM SC	DLAREDGE IN	VERTER OR	SOLAREDG	E INVERTER (OFF)
Safety Output Voltage per Power Optimizer				1±	0.1				Vdc
STANDARD COMPLIAN	CE								
EMC			FCC Pa	rt15 Class 3, IEC6	1000-6-2, IEC6100	0-6-3			
Safety		IEC62109-1 (class safety), U_1741							
Material		UL94 V-0 , UV Resistant							
RoHS		Yes							
INSTALLATION SPECIFIC	CATIONS								
Maximum Allowed System Voltage				100	ю				Vdc
Compatible inverters			All SolarE	dge Single Phase	and Three Phase i	inverters			
Dimensions (W x L x H)	129	x 153 x 27.5 / 5.1 >	6 x 1.1	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 /5.1 x 6 x 1.16	129 x 159 x 49.5	5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm /in
Weight (including cables)		630 / 1.4		750 / 1.7	655 / 1.5	845	/ 1.9	1064 / 2.3	gr/lb
Input Connector			MC	4(3)			Single or dua MC4 ⁽³⁾⁽⁴⁾	MC4 ^(B)	
Input Wire Length				0.16 /	0.52				m/ft
Output Wire Type / Connector				Double Insul	ated / MC4				
Output: Wire Length	0.9 /	2.95			1.2 /	3.9			m / ft
Operating Temperature Range®				-40 - +85 /	1578 3 280-04				*C / *=
Protection Rating				IP68 / N					
Relative Humidity				C - 1	00				%

Rated power of the module at STC will not exceed the optimizer 'Rated Input DC Power'. Modules with up to +5% power lolerance are allowed
 Ref. 2017 requires maxinput voltage be not more than 80%
 For other connector types places contract SolarEdge
 For other connector types places contract SolarEdge
 For other connecting as neglementing as ingle modules and the unused input connector with the supplied pair of seels.
 For other contracting as neglementing as neglement of a papeling and places and the unused input connector with the supplied pair of seels.
 For ambient temperature above +85°C / +183°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

PV System Design Using a SolarEdge Inverter ⁽⁶⁾⁽⁷⁾		Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length	P320, P340, P370, P400, P401	8		10	18	
(Power Optimizers) P405, P485, P505		6	6 8		14	
Maximum String Length (Power Optimizers)		25		25	50(8)	
Maximum Power per String		5700 (6000 with SE7600-US - SE11400- US)	5250	6000 ⁽⁹⁾	1275C ⁽¹⁰⁾	W
Parallel Strings of Different Leng	ths or Orientations		,	Yes		

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/iles/string_sizing_na.pdf (7) It is not allowed to mk 255/P485/P505 with P320/F320/P370/P420/P370/P420/P420/It in one string (8) A string with more than 30 opermizers does not meet NEC rapid shutdown requirements safety voltage will se above the 30V requirement (9) For 23/V40V grid. It is allowed to install up to 7,230W per string when the maximum power difference between each string is 1,000W (0) For 27/V40V grid. It is allowed to install up to 7,230W per string when the maximum power difference between each string is 2,000W

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SOLAR POWER 525 W BASELINE RD., MESA AZ, 85210 CONTRACTOR LIC# U.34445

ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE



arks of SolarEdge Techn



EQUIPMENT DATE: 8/24/2022 **SPECIFICATIONS** REV: A PV 12 DRAWN BY: JS SEAL:

MECHANICAL SPECIFICATION

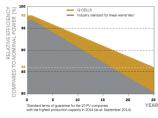


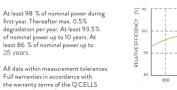
Q PEAK DUO BLK ML-G10+

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 anodized aluminum
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 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
CONNECTOR	Stäubli MC4; IP68

ELECTRICAL CHARACTERISTICS POWER CLASS 385 MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ' (POWER TOLERANCE +5 W / -0 W) POWER AT MPP Рмее 385 [W] SHORT CIRCUIT CURRENT 11.04 [A] OPEN CIRCUIT VOLTAGE [V] 45.19 CURRENT AT MPP 10.59 [A] VOLTAGE AT MPR VMADD [V] 36.36 EFFICIENCY [%] ≥19.6 MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT POWER AT MPP 288.8 [W] SHORT CIRCUIT CURREN 8.90 OPEN CIRCUIT VOLTAGE 42.62 [V] CURRENT AT MPP 8.35 [A] VOLTAGE AT MPP V_{MPP} 34.59 34.81 [V] ¹Measurement tolerances Pure ±3%; lec; Voc ±5% at STC; 1000 W/m², 25 ± 2 °C, AM 1.5 acc

Q CELLS PERFORMANCE WARRANTY





TEMPERATURE COEFFICIENTS TEMPERATURE COEFFICIENT OF Isc α [%/K] +0.04 TEMPERATURE COEFFIC TEMPERATURE COEFFICIENT OF PMP γ [%/K] -0.34 NOMINAL MODULE OPER

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25 years.

sales orga

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V SYS	[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 ³	[lbs/ft2]	75 (3600 Pa)/55 (2660 Pa)	Permitted Module Temperature	-40°F up to +185°F
Max. Test Load, Push / Pull ³	[lbs/ft2]	113 (5400 Pa) / 84 (4000 Pa)	on Continuous Duty	(-40 °C up to +85 °C)
³ See Installation Manual				

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliar Quality Controlled PV - TÜV Rheinlan IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells), QCPV Certification ongoing.

A CE
 Horizontal
 76.4 in
 43.3 in
 48.0 in
 1656 lbs
 24
 24
 32

 packaging
 1940 mm
 1100 mm
 1220 mm
 751 kg
 pallets
 pallets
 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service departme this product

400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA TEL: +1 949 748 5996 EMAIL: sales@q-cells.co





395-400

ROARK, KYLE RESIDENCE 147 RIVER BIRCH RUN, COATS, NC, 27521 LAT:35.423875, LON:-78.701803 TSP136885

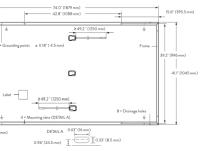
THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

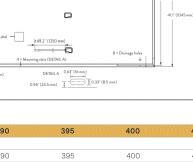


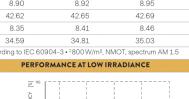
for further information on ap	proved installation and use of 525 W Baseline Rd., Mesa, AZ, 85210 TEL: 855.SAY.SOLAR EMAIL: info@titansolarpower.com		
ATE: 8/24/2 EV: A RAWN BY: J		SEAL:	EQUIPMENT SPECIFICATIONS PV 13













Typical module performance under low irradiance conditions comparison to STC conditions (25 °C, 1000 W/m²)

PACKAGING INFORMATION

5 Z

	β	[%/K]	-0.27
ATING TEMPERATURE	NMOT	[°F]	109±5.4 (43±3°C)



53'









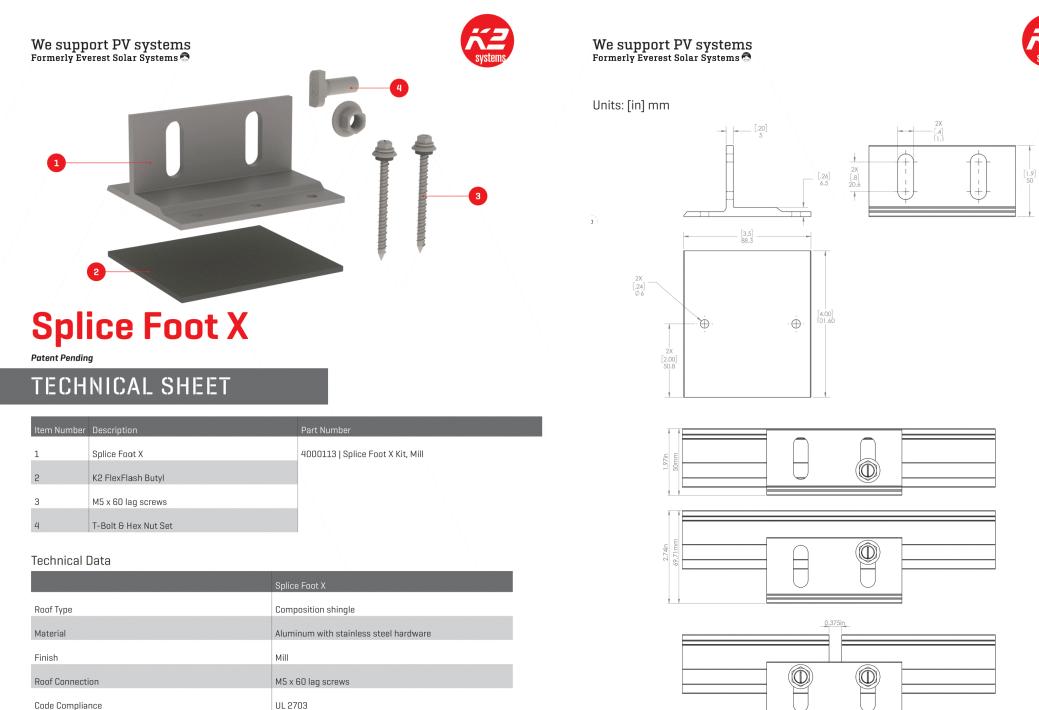
40'HC











k2-systems.com

CrossRail 44-X, 48-X, 48-XL, 80



Code Compliance

Compatibility

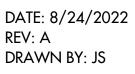
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(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE



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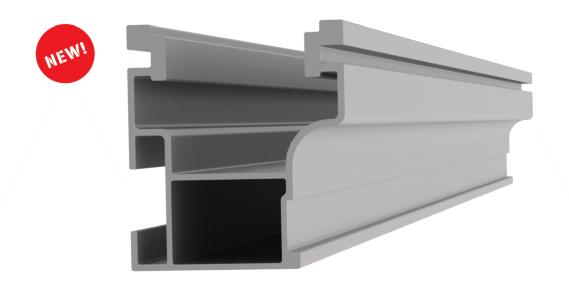
k2-systems.com





Mounting systems for solar technology





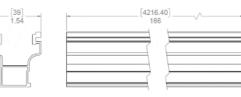
NEW PRODUCT

CrossRail 44-X

- Optimized rail profile
- One rail for all markets
- Built-in wire management
- Maintains same structural integrity as 48-X
- Tested up to 200 mph winds
- Tested up to 100 PSF snow loads



Part Number	Description
4000019	CrossRail 44-X 166'', Mill
4000020	CrossRail 44-X 166'', Dark
4000021	CrossRail 44-X 180", Mill
4000022	CrossRail 44-X 180", Dark
4000051	RailConn Set, CR 44-X, Mill
4000052	RailConn Set, CR 44-X, Dark
4000067	End Cap, Black, CR 44-X



www.everest-solarsystems.com

CrossRail 44-X Product Sheet US01 | 0520 · Subject to change · Product illustrations are exemplary and may differ from the original.



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(12) Q PEAK DUO BLK ML G10+ 400W (1) SOLAREDGE SE3800H-US 4.800 kW DC SYSTEM SIZE 3.800 kW AC SYSTEM SIZE

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ATE: 8/24/2022			
EV: A			
rawn by: JS			



solaredge

Recommended OCPD Size per Grid

Inverter	Maximum Output Current (A)	Minimum Fuse Rating (A)	Maximum Fuse Rating (A)
SE3000H-US	12.5	20	50
SE3800H-US	16	20	50
SE5000H-US	24 @ 208V	30	50
	21 @ 240V		50
SE6000H-US	24 @ 208V	30 @ 208V	50
	25 @ 240V	35 @ 240V	
SE7600H-US	32	40	50
SE10000H-US	42	60	80
SE11400H-US	48.5 @ 208V	70 @ 208V	80
	47.5 @ 240V	60 @ 240V	

SolarEdge Single Phase Inverter with HD-Wave Technology Installation MAN-01-00541-1.1



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DATE: 8/24/2022 REV: A DRAWN BY: JS

