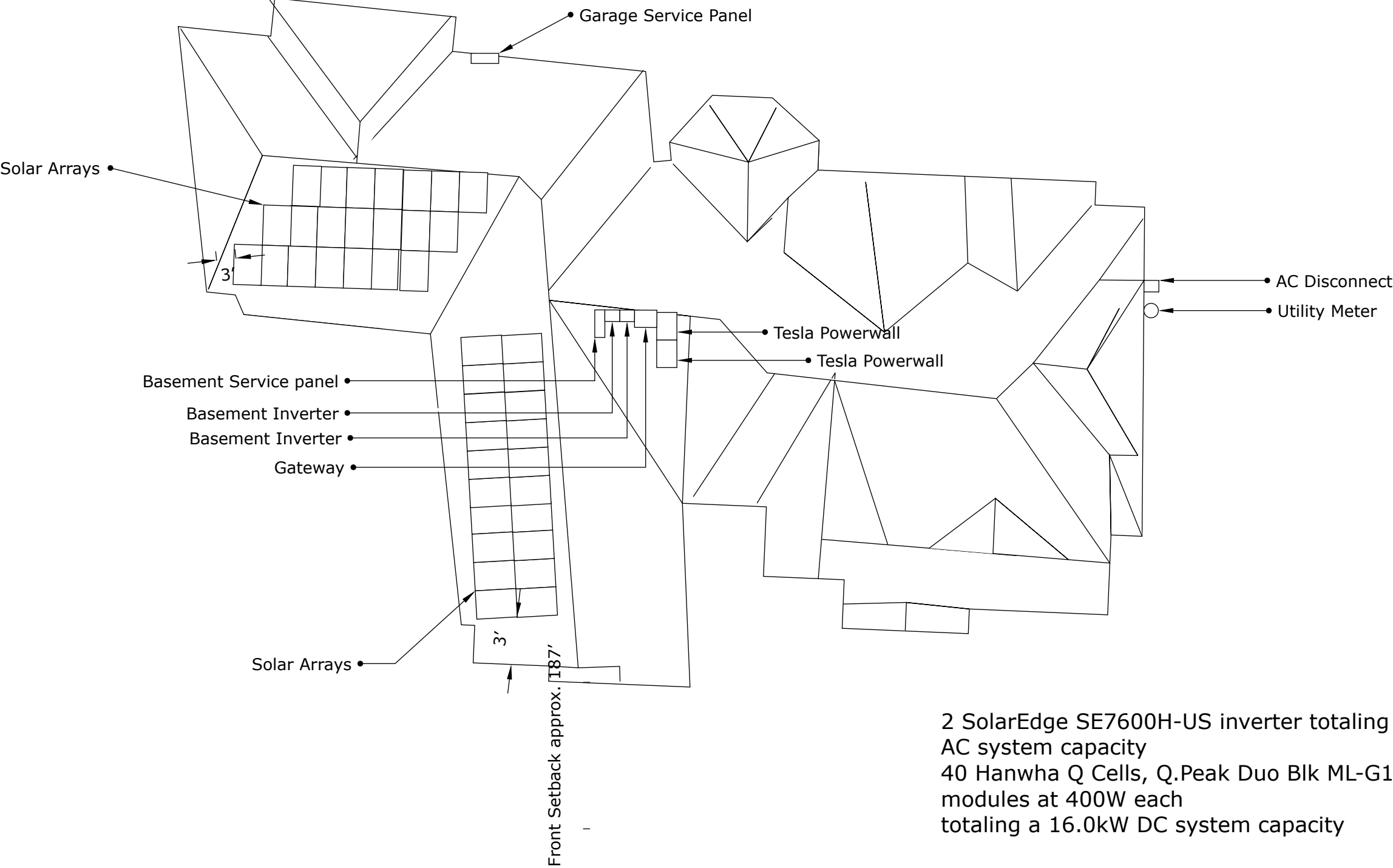
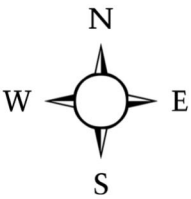


Kendra A & John Meyer  
6684 Cardinal Dr.  
McCordsville, IN. 46055



2 SolarEdge SE7600H-US inverter totaling a 15.2kW  
AC system capacity  
40 Hanwha Q Cells, Q.Peak Duo Blk ML-G10 + 400  
modules at 400W each  
totaling a 16.0kW DC system capacity

Cardinal Drive

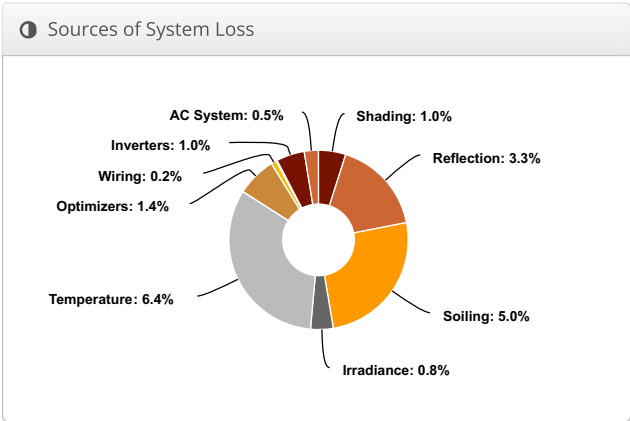
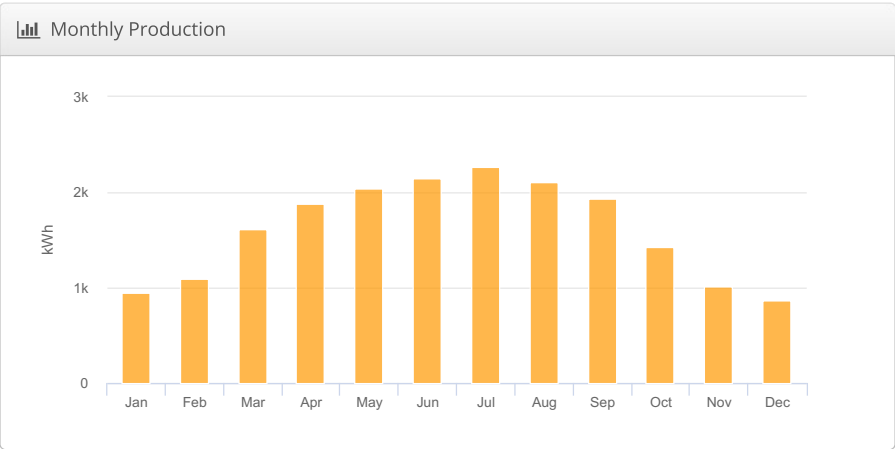


# Design 3 - 400w John Meyer, 6684 Cardinal, McCordsville IN

Report	
Project Name	John Meyer
Project Address	6684 Cardinal, McCordsville IN
Prepared By	Max Kennerk max@jeffersonelectricllc.com

System Metrics	
Design	Design 3 - 400w
Module DC Nameplate	16.0 kW
Inverter AC Nameplate	15.2 kW Load Ratio: 1.05
Annual Production	19.34 MWh
Performance Ratio	81.8%
kWh/kWp	1,208.6
Weather Dataset	TMY, 10km grid (39.95,-85.95), NREL (prospector)
Simulator Version	ae2cd59c3d-fe0c825ce1-d4bd475312-d4d673187a

Project Location



⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,457.9	
	POA Irradiance	1,478.0	1.4%
	Shaded Irradiance	1,463.7	-1.0%
	Irradiance after Reflection	1,414.8	-3.3%
	Irradiance after Soiling	1,344.1	-5.0%
	Total Collector Irradiance	1,343.9	0.0%
Energy (kWh)	Nameplate	21,494.3	
	Output at Irradiance Levels	21,322.2	-0.8%
	Output at Cell Temperature Derate	19,955.1	-6.4%
	Output After Mismatch	19,955.1	0.0%
	Optimizer Output	19,675.7	-1.4%
	Optimal DC Output	19,639.6	-0.2%
	Constrained DC Output	19,631.0	0.0%
	Inverter Output	19,434.7	-1.0%
	Energy to Grid	19,337.5	-0.5%
Temperature Metrics			
Avg. Operating Ambient Temp		13.4 °C	
Avg. Operating Cell Temp		27.5 °C	
Simulation Metrics			
Operating Hours		4666	
Solved Hours		4666	



☁ Condition Set													
Description	Condition Set 1												
Weather Dataset	TMY, 10km grid (39.95,-85.95), NREL (prospector)												
Solar Angle Location	Meteo Lat/Lng												
Transposition Model	Perez Model												
Temperature Model	Sandia Model												
Temperature Model Parameters	Rack Type				a		b		Temperature Delta				
	Fixed Tilt				-3.56		-0.075		3°C				
	Flush Mount				-2.81		-0.0455		0°C				
	East-West				-3.56		-0.075		3°C				
	Carport				-3.56		-0.075		3°C				
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D	
	5	5	5	5	5	5	5	5	5	5	5	5	
Irradiation Variance	5%												
Cell Temperature Spread	4° C												
Module Binning Range	-2.5% to 2.5%												
AC System Derate	0.50%												
Module Characterizations	Module						Uploaded By		Characterization				
	EVPV370 (Panasonic Corporation of North America)						HelioScope		EVPV370.pan, PAN				
	Q.PEAK DUO BLK ML-G10+ 400 (Hanwha Q Cells)						HelioScope		Spec Sheet Characterization, PAN				
Component Characterizations	Device			Uploaded By					Characterization				

📦 Components		
Component	Name	Count
Inverters	SE7600H-US (SolarEdge)	2 (15.2 kW)
Strings	10 AWG (Copper)	4 (779.8 ft)
Optimizers	P401 (SolarEdge)	40 (16.0 kW)
Module	Hanwha Q Cells, Q.PEAK DUO BLK ML-G10+ 400 (400W)	40 (16.0 kW)

🔌 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	8-13	Along Racking

🏠 Field Segments										
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power	
Field Segment 1	Flush Mount	Portrait (Vertical)	33.442036°	191.27664°	0.0 ft	1x1			0	
Field Segment 2	Flush Mount	Portrait (Vertical)	33.442036°	191.27664°	0.0 ft	1x1	20	20	8.00 kW	
Field Segment 3	Flush Mount	Portrait (Vertical)	33.442036°	191.27664°	0.0 ft	1x1			0	
Field Segment 4	Flush Mount	Portrait (Vertical)	33.442036°	280.7052°	0.0 ft	1x1	20	20	8.00 kW	
Field Segment 5	Flush Mount	Portrait (Vertical)	33.442036°	100.48581°	0.0 ft	1x1			0	



Detailed Layout



Project Details			
Name	John Meyer	Date	05/09/2022
Location	6684 Cardinal Drive, McCordsville, IN 46055	Total modules	40
Module	Hanwha Q.Cells: Q.PEAK DUO BLK ML-G10 400 (32mm)	Total watts	16,000
Dimensions	Dimensions: 73.98" x 41.14" x 1.26" (1879.0mm x 1045.0mm x 32.0mm)	Attachments	76
ASCE	7-10	Rails per row	2

System Weight	
Total system weight	2,274.4 lbs
Weight/attachment	29.9 lbs
Racking weight	334.4 lbs
Distributed weight	2.6 psf

Load Assumptions	
Wind exposure	B
Wind speed	120 mph
Ground snow load	20 psf
Attachment spacing portrait	4.0'

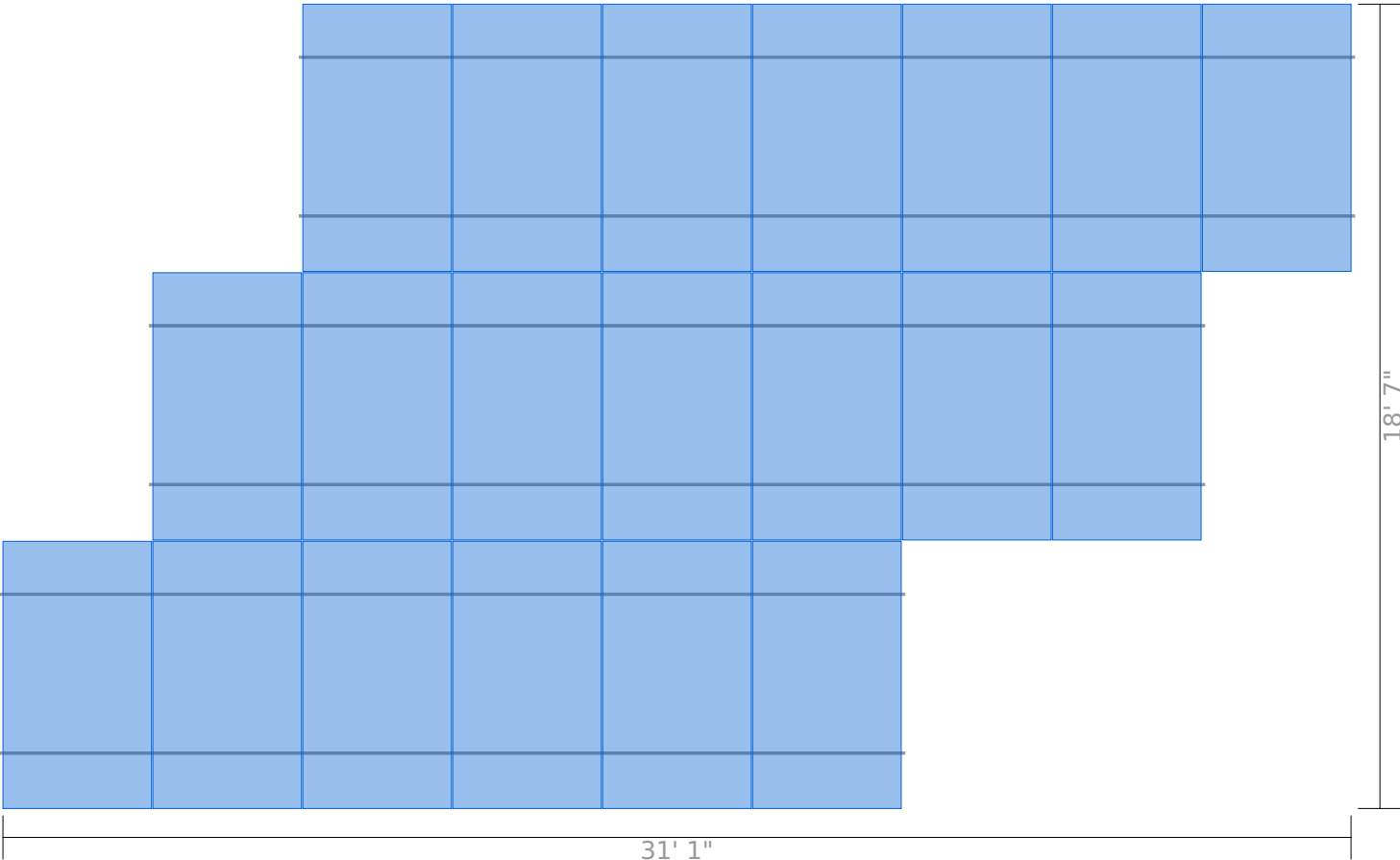
Roof Information			
Roof Material Family	Comp Shingle	Roof material	Comp Shingle
Building height	25 ft	Roof attachment	Flashfoot2
Roof slope	33 °	Attachment hardware	Square
Risk category	II		

Span Details XR100 - Portrait		
Zone	Max span	Max cantilever
1	7' 6"	3'
2	7' 6"	3'
3	7' 6"	3'

Reaction Forces XR100 - Portrait			
Zone	Down (lbs)	Uplift (lbs)	Lateral (lbs)
1	216	141	85
2	216	173	85
3	216	173	85

Roof Section 1		
Details		Weights
Panels: 20	Provided rail: 168' [12 x 14']	Total weight: 1,139.1 lbs
Rail orientation: East-West	Attachments: 40	Weight/attachment: 28.5 lbs
Panel orientation: Portrait	Splices: 6	Total Area: 429.8 sq ft
Entry type: Graphical	Clamps: 46	Distributed weight: 2.7 psf

Diagram

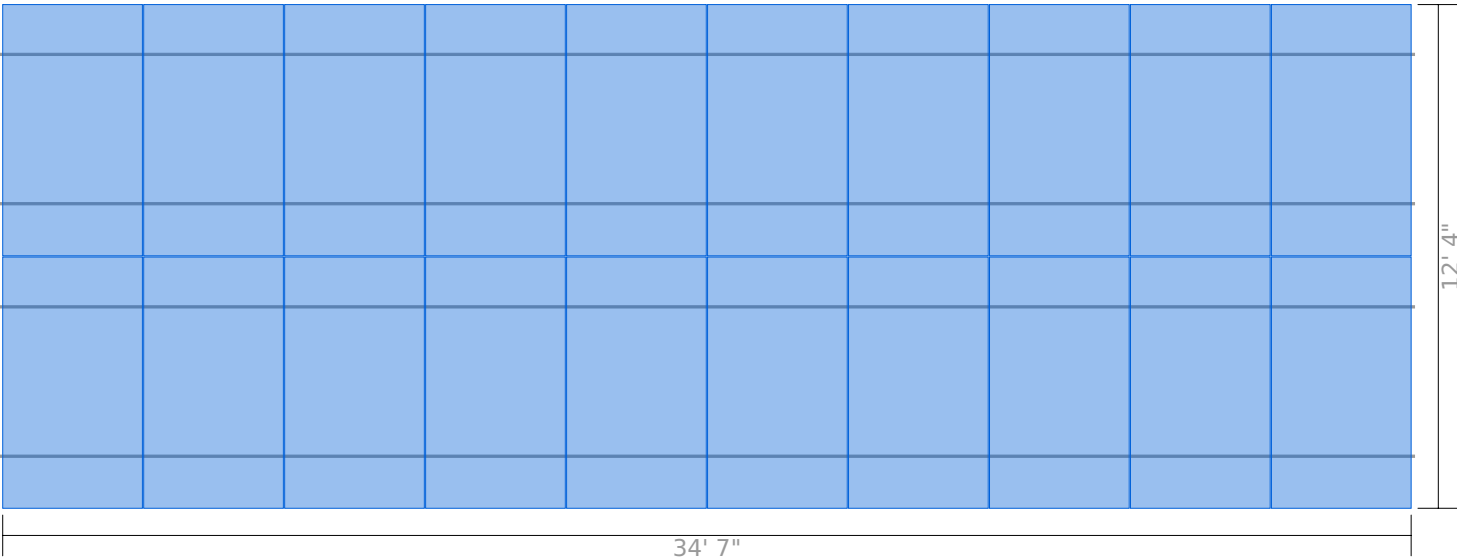


Segments									
Identifier	Columns	Row length	Rail length	Cantilever	Cantilever Violations	Rail	Attachments	Splices	Clamps
A	7	24' 4"	24' 4"	2"	None	56' [4 x 14']	14	2	16
Row segment totals (x 2) →					112' [8 x 14']	28	4	32	
B	6	20' 11"	20' 11"	5"	None	56' [4 x 14']	12	2	14

Contour Plan - Trim Cut List				
Identifier	Scrap from	Length	Scraps Created	Discard

Roof Section 2		
Details		Weights
Panels: 20	Provided rail: 168' [12 x 14']	Total weight: 1,135.4 lbs
Rail orientation: East-West	Attachments: 36	Weight/attachment: 31.5 lbs
Panel orientation: Portrait	Splices: 8	Total Area: 429.3 sq ft
Entry type: Graphical	Clamps: 44	Distributed weight: 2.6 psf

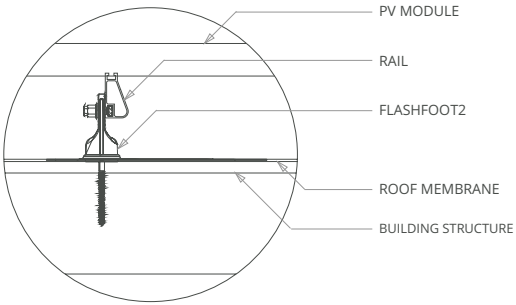
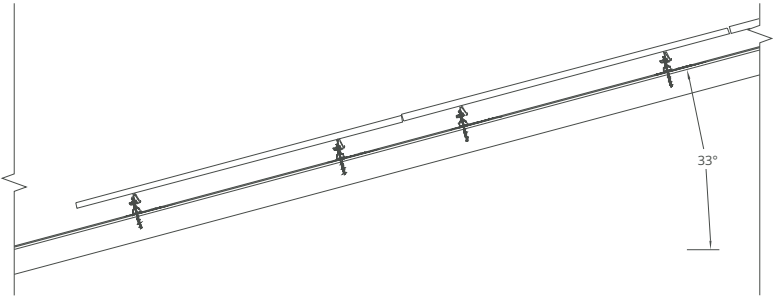
Diagram



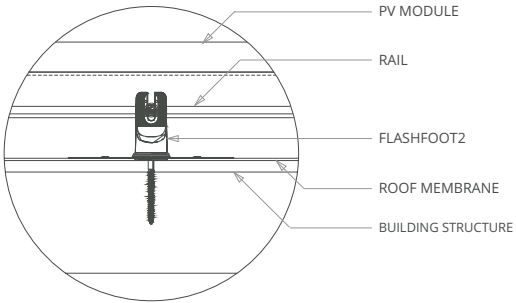
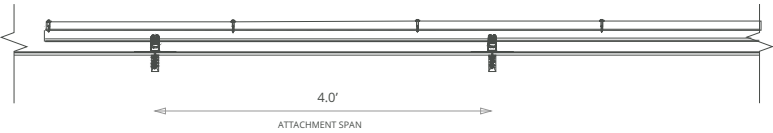
Segments									
Identifier	Columns	Row length	Rail length	Cantilever	Cantilever Violations	Rail	Attachments	Splices	Clamps
A	10	34' 9"	34' 9"	1' 4"	None	84' [6 x 14']	18	4	22
Row segment totals (x 2) →					168' [12 x 14']	36	8	44	

Contour Plan - Trim Cut List				
Identifier	Scrap from	Length	Scraps Created	Discard

Side View (portrait)

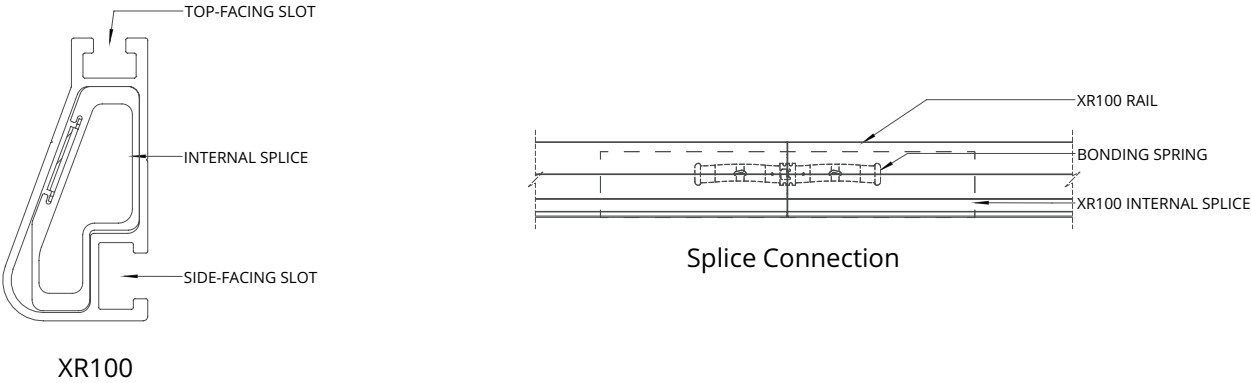


Front View (portrait)

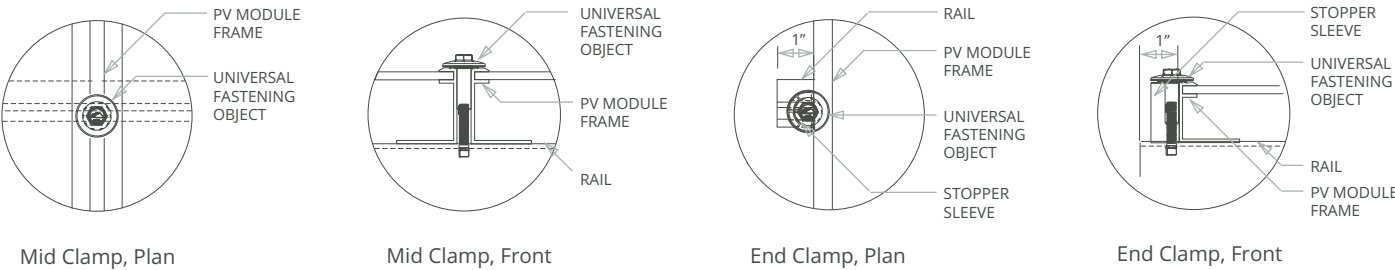




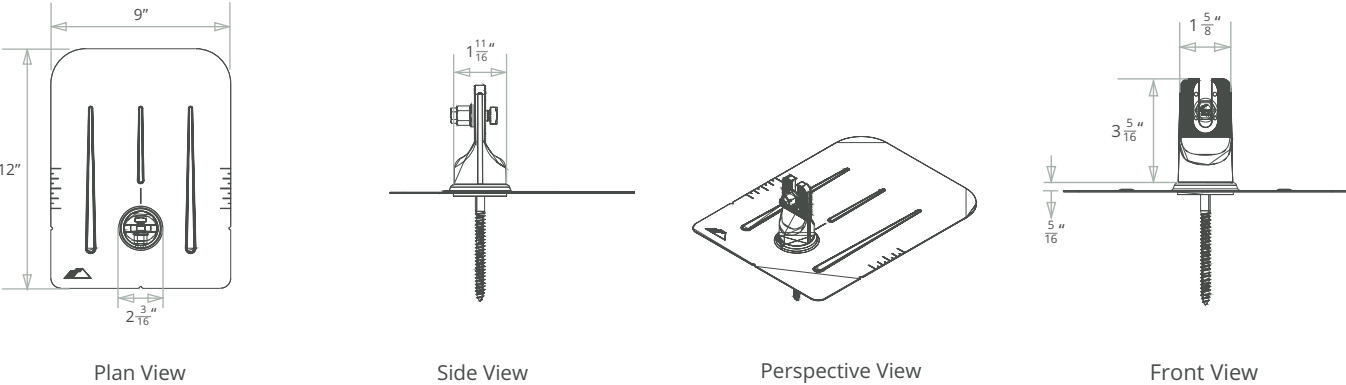
Splice Details



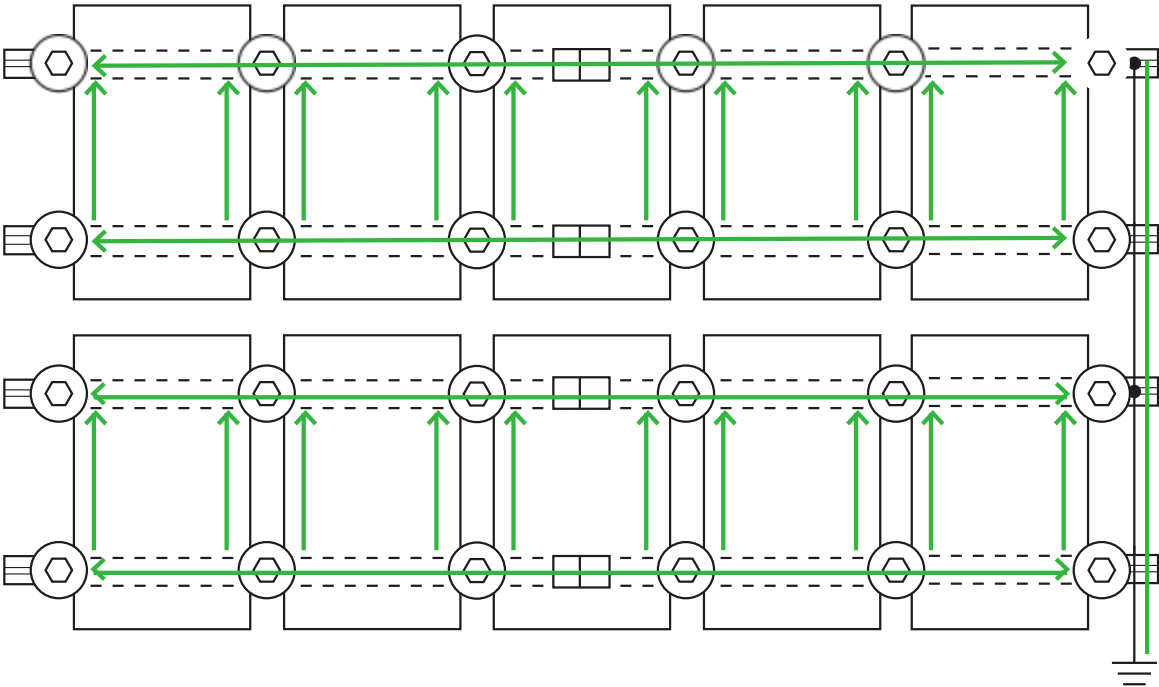
Clamp Detail



FlashFoot2 Detail



Grounding Diagram



- UFO Clamp
- Fault Current Ground Path
- Grounding Lug \*
- Min 10 AWG Copper Wire \*
- Bonded Splice (Rail Connection)

\* Grounding Lugs and Wire are not required in systems using Enphase microinverters.

Bill of Materials		
Part	Spares	Total Qty
Rails & Splices		
XR-100-168B XR100, Rail 168" (14 Feet) Black	0	24
XR100-BOSS-01-M1 Bonded Splice, XR100	0	14
Clamps & Grounding		
UFO-CL-01-B1 Universal Module Clamp, Black	0	90
UFO-STP-32MM-B1 Stopper Sleeve, 32MM, Black	0	20
XR-LUG-03-A1 Grounding Lug, Low Profile	0	5
Attachments		
FF2-01-B2 FlashFoot2, Black	0	76
BHW-SQ-02-A1 Square-Bolt Bonding Hardware	0	76
Accessories		
29-4000-077 Wire Clips, Molded PVC Black, Polybag 20	0	4
XR-100-CAP Kit, End Cap XR100 (10 sets per bag)	0	1
BHW-MI-01-A1 Microinverter/MLPE Bonding Hardware, T-Bolt	0	40

## 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

- Specifically designed to work with power optimizers
- 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
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- 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	SEXXXH-XXXXBXX4							
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 Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5 <sup>(1)</sup>							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	380				400			Vdc
Maximum Input Current @240V <sup>(2)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V <sup>(2)</sup>	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600k $\Omega$ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

(1) For other regional settings please contact SolarEdge support

(2) 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

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

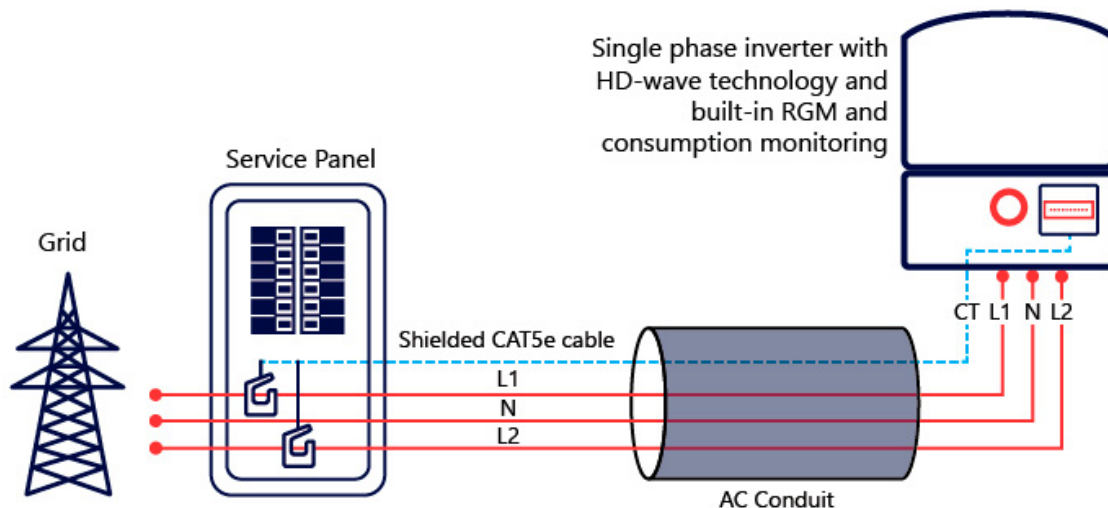
MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
ADDITIONAL FEATURES							
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)						
Revenue Grade Metering, ANSI C12.20	Optional <sup>(3)</sup>						
Consumption metering							
Inverter Commissioning	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection						
Rapid Shutdown - NEC 2014, NEC 2017 and NEC 2020, 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect						
STANDARD COMPLIANCE							
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCEI according to T.I.L. M-07						
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)						
Emissions	FCC Part 15 Class B						
INSTALLATION SPECIFICATIONS							
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG				1" Maximum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG				1" Maximum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	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		in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25				<50		dBA
Cooling	Natural Convection						
Operating Temperature Range	-40 to +140 / -40 to +60 <sup>(4)</sup>						°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)						

(3) Inverter with Revenue Grade Meter P/N: SExxxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxxH-US000BNI4. For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20. 20 units per box

(4) Full power up to at least 50°C / 122°F; for power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

## 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



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Herzeliya 4673335

**Country:** Israel  
**Contact:** Mr. Oren Bachar or  
Mr. Meir Adest

**Phone:** +972 9 957 6620 #293 or  
+972 9 957 6620 #131

**FAX:** 972 9 957 6591

**Email:** OREB.B@SOLAREEDGE.COM  
MEIR.A@SOLAREEDGE.COM

**Manufacturer:** Jabil Circuit (Guangzhou) LTD  
**Address:** DEV EAST DISTRICT  
128 JUN CHENG RD  
GUANGZHOU, GUANGDONG 510530

**Country:** China  
**Contact:** Elaine Ouyang

**Phone:** 020-2805-4025/  
135-7023-5852

**FAX:** N/A

**Email:** Elaine.ouyang@jabil.com

**Party Authorized To Apply Mark:** Same as Manufacturer  
**Report Issuing Office:** Cortland NY 13045

**Control Number:** 4004590

**Authorized by:**

  
Ulla-Pia Johansson-Nilsson  
for Dean Davidson, Certification Manager



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Intertek Testing Services NA Inc.  
545 East Algonquin Road, Arlington Heights, IL 60005  
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

<b>Standard(s):</b>	Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources [UL 1741:2010 Ed.2(Supplement SA)+R:07Sep2016]  Power Conversion Equipment [CSA C22.2#107.1:2016 Ed.4].  UL SUBJECT 1699B Issued: 2013/01/14 Ed: 2 Outline of Investigation for Photovoltaic (PV) DC ARC-Fault Circuit Protection
<b>Product:</b>	Grid support Utility Interactive Inverter - Non Isolated Photovoltaic Inverter with MPPT function and Rapid
<b>Brand Name:</b>	SolarEdge
<b>Models:</b>	SE3000H-US, SE3800H-US, SE5000H-US, SE6000H-US, SE7600H-US, SE10000H-US and SE11400H-US



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**Applicant:** SolarEdge Technologies Ltd  
**Address:** 1 HaMada Street  
Herzeliya 4673335

**Manufacturer:** Celestica Romania  
**Address:** 88 Soseaua Borsului, Bors, Bihor county,  
417075

**Country:** Israel  
**Contact:** Mr. Oren Bachar or  
Mr. Meir Adest

**Country:** Romania  
**Contact:** Renata Bodan

**Phone:** +972 9 957 6620 #293 or  
+972 9 957 6620 #131

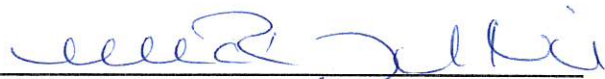
**Phone:** +40-359-403-661

**FAX:** 972 9 957 6591  
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MEIR.A@SOLAREEDGE.COM

**FAX:** +40-722-964-215  
**Email:** rbodan@celestica.com

**Party Authorized To Apply Mark:** Same as Manufacturer  
**Report Issuing Office:** Cortland NY 13045

**Control Number:** 4004590

**Authorized by:**   
Ulla-Pia Johansson-Nilsson  
for Dean Davidson, Certification Manager



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Intertek Testing Services NA Inc.  
545 East Algonquin Road, Arlington Heights, IL 60005  
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

<b>Standard(s):</b>	Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources [UL 1741:2010 Ed.2(Supplement SA)+R:07Sep2016]  Power Conversion Equipment [CSA C22.2#107.1:2016 Ed.4].  UL SUBJECT 1699B Issued: 2013/01/14 Ed: 2 Outline of Investigation for Photovoltaic (PV) DC ARC-Fault Circuit Protection
<b>Product:</b>	Grid support Utility Interactive Inverter - Non Isolated Photovoltaic Inverter with MPPT function and Rapid
<b>Brand Name:</b>	SolarEdge
<b>Models:</b>	SE3000H-US, SE3800H-US, SE5000H-US, SE6000H-US, SE7600H-US, SE10000H-US and SE11400H-US

HEG



# Q.PEAK DUO BLK ML-G10+ 385-405

ENDURING HIGH  
PERFORMANCE



Quality  
Controlled PV

www.tuv.com  
ID 1111232615



## BREAKING THE 20% EFFICIENCY BARRIER

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



## THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

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



## INNOVATIVE ALL-WEATHER TECHNOLOGY

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



## ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



## EXTREME WEATHER RATING

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



## A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>2</sup>.

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

<sup>2</sup> See data sheet on rear for further information.



6 BUSBAR  
CELL TECHNOLOGY

12 BUSBAR  
CELL TECHNOLOGY

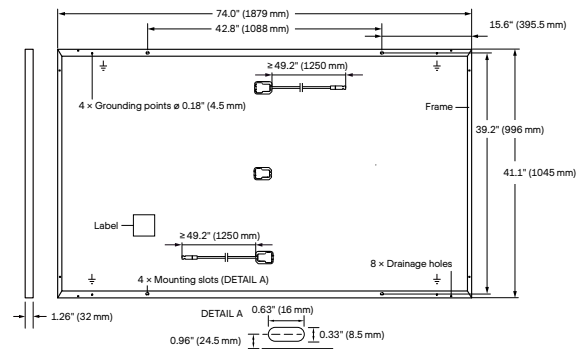
## THE IDEAL SOLUTION FOR:



Rooftop arrays on  
residential buildings

## MECHANICAL SPECIFICATION

Format	74.0in × 41.1in × 1.26in (including frame) (1879mm × 1045mm × 32mm)
Weight	48.5lbs (22.0kg)
Front Cover	0.13in (3.2mm) 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	2.09-3.98in × 1.26-2.36in × 0.59-0.71in (53-101mm × 32-60mm × 15-18mm), IP67, with bypass diodes
Cable	4mm <sup>2</sup> Solar cable; (+) ≥ 49.2in (1250mm), (-) ≥ 49.2in (1250mm)
Connector	Stäubli MC4; IP68



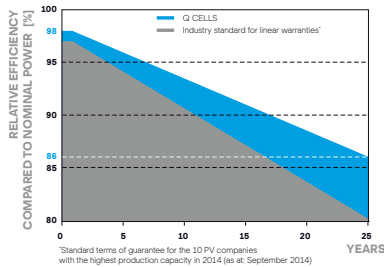
## ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> (POWER TOLERANCE +5W / -0W)							
Minimum	Power at MPP <sup>1</sup>	P <sub>MPP</sub> [W]	385	390	395	400	405
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub> [A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub> [V]	45.19	45.23	45.27	45.30	45.34
	Current at MPP	I <sub>MPP</sub> [A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V <sub>MPP</sub> [V]	36.36	36.62	36.88	37.13	37.39
	Efficiency <sup>1</sup>	η [%]	≥ 19.6	≥ 19.9	≥ 20.1	≥ 20.4	≥ 20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>							
Minimum	Power at MPP	P <sub>MPP</sub> [W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I <sub>SC</sub> [A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V <sub>OC</sub> [V]	42.62	42.65	42.69	42.72	42.76
	Current at MPP	I <sub>MPP</sub> [A]	8.35	8.41	8.46	8.51	8.57
	Voltage at MPP	V <sub>MPP</sub> [V]	34.59	34.81	35.03	35.25	35.46

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

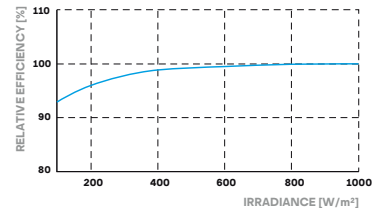
### Q CELLS PERFORMANCE WARRANTY

### PERFORMANCE AT LOW IRRADIANCE



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.



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

### TEMPERATURE COEFFICIENTS

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

## PROPERTIES FOR SYSTEM DESIGN

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

<sup>3</sup> See Installation Manual

## QUALIFICATIONS AND CERTIFICATES

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



## PACKAGING INFORMATION

Horizontal packaging	76.4in 1940mm	43.3in 1100mm	48.0in 1220mm	1656lbs 751kg	24 pallets	24 pallets	32 modules

**Note:** Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

**Hanwha Q CELLS America Inc.**

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# POWERWALL

## Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall provides energy management and monitoring for solar self-consumption, time-based control, and backup.

The Backup Gateway 2 controls connection to the grid, automatically detecting outages and providing a seamless transition to backup power. When equipped with a main circuit breaker, the Backup Gateway 2 can be installed at the service entrance. When the optional internal panelboard is installed, the Backup Gateway 2 can also function as a load center.

The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage backup energy reserves from any mobile device with the Tesla app.



### PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Current Rating	200 A
Maximum Input Short Circuit Current	10 kA <sup>1</sup>
Overcurrent Protection Device	100-200A; Service Entrance Rated <sup>1</sup>
Overvoltage Category	Category IV
AC Meter	Revenue accurate (+/- 0.2 %)
Primary Connectivity	Ethernet, Wi-Fi
Secondary Connectivity	Cellular (3G, LTE/4G) <sup>2</sup>
User Interface	Tesla App
Operating Modes	Support for solar self-consumption, time-based control, and backup
Backup Transition	Automatic disconnect for seamless backup
Modularity	Supports up to 10 AC-coupled Powerwalls
Optional Internal Panelboard	200A 6-space / 12 circuit Eaton BR Circuit Breakers
Warranty	10 years

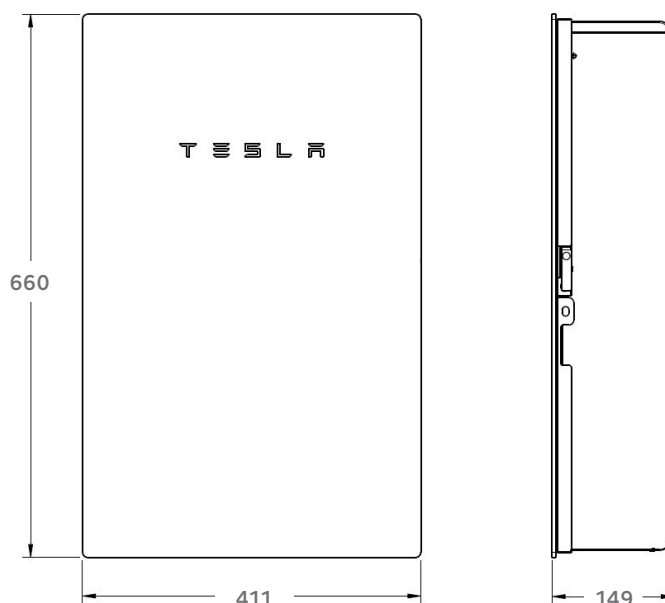
<sup>1</sup>When protected by Class J fuses, Backup Gateway 2 is suitable for use in circuits capable of delivering not more than 22kA symmetrical amperes.  
<sup>2</sup>The customer is expected to provide internet connectivity for Backup Gateway 2; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

### COMPLIANCE INFORMATION

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
Emissions	FCC Part 15, ICES 003

### MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 149 mm (26 in x 16 in x 6 in)
Weight	20.4 kg (45 lb)
Mounting options	Wall mount, Semi-flush mount



### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

# POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.



## PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Total Energy	14 kWh
Usable Energy	13.5 kWh
Real Power, max continuous	5 kW (charge and discharge)
Real Power, peak (10 s, off-grid/backup)	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10 s, off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Supply Fault Current	10 kA
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	+/- 1.0 adjustable
Power Factor Range (full-rated power)	+/- 0.85
Internal Battery DC Voltage	50 V
Round Trip Efficiency <sup>1,3</sup>	90%
Warranty	10 years

<sup>1</sup>Values provided for 25°C (77°F), 3.3 kW charge/discharge power.

<sup>2</sup>In Backup mode, grid charge power is limited to 3.3 kW.

<sup>3</sup>AC to battery to AC, at beginning of life.

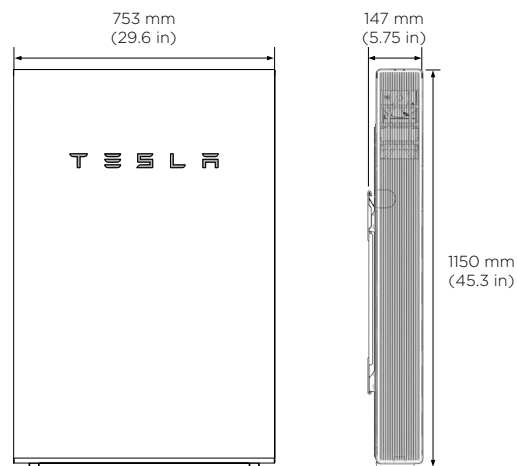
## COMPLIANCE INFORMATION

Certifications	UL 1642, UL 1741, UL 1973, UL 9540, IEEE 1547, UN 38.3
Grid Connection	Worldwide Compatibility
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)

## MECHANICAL SPECIFICATIONS

Dimensions <sup>1</sup>	1150 mm x 755 mm x 147 mm (45.3 in x 29.6 in x 5.75 in)
Weight <sup>1</sup>	114 kg (251.3 lbs)
Mounting options	Floor or wall mount

<sup>1</sup>Dimensions and weight differ slightly if manufactured before March 2019. Contact Tesla for additional information.

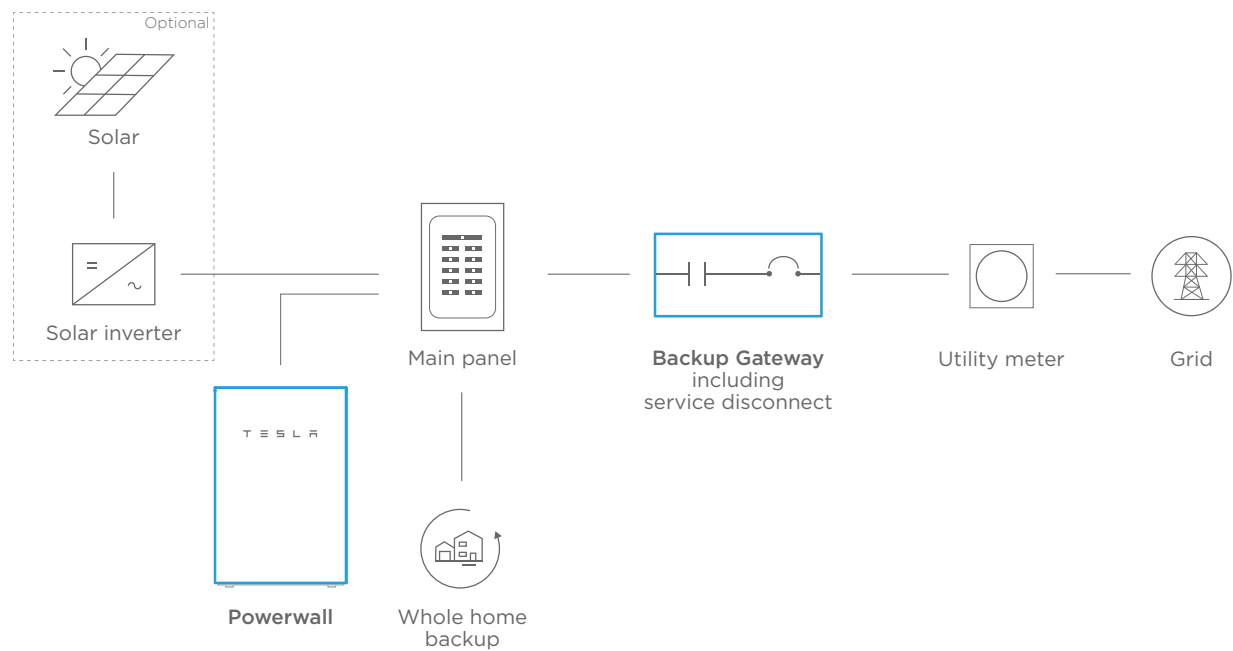


## ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Recommended Temperature	0°C to 30°C (32°F to 86°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP56 (Wiring Compartment)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 30°C (86°F)

TYPICAL SYSTEM LAYOUTS

WHOLE HOME BACKUP



PARTIAL HOME BACKUP

