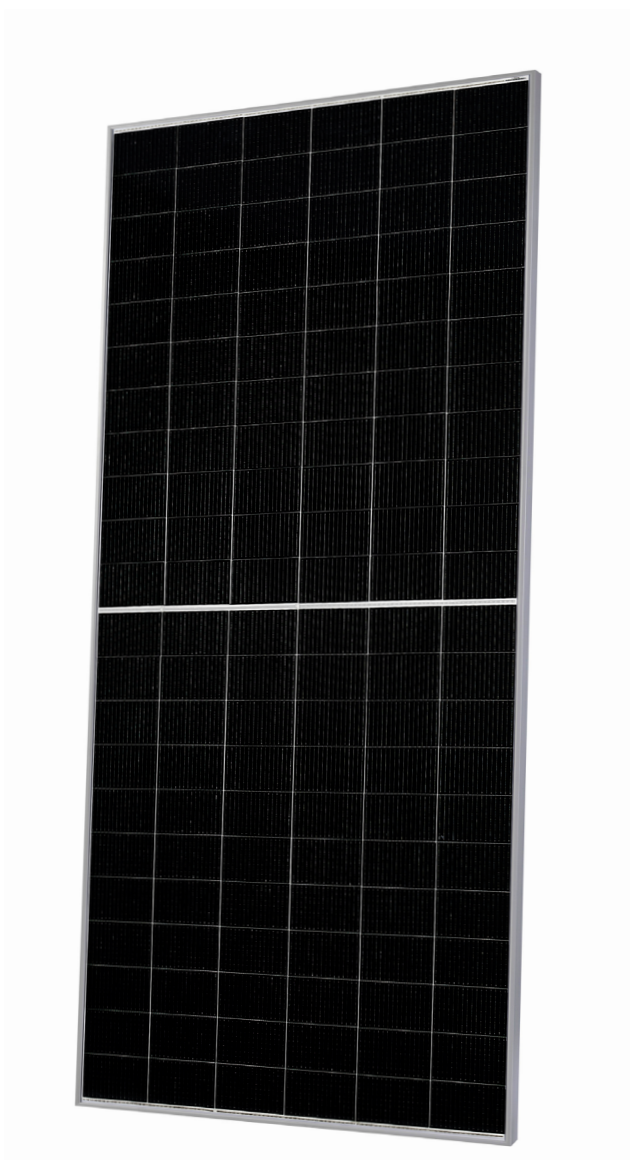


# Q.PEAK DUO ML-G12S SERIES



**660 - 680 Wp | 132 Cells**  
**21.9 % Maximum Module Efficiency**

**MODEL** Q.PEAK DUO ML-G12S.3/BFG Q.PEAK DUO ML-G12S.7/BFG  
Q.PEAK DUO ML-G12S.d/BFG



## Highest Power Class Module

With the new G12, Qcells heralds the next generation of solar modules' enabling more power generation than ever before.



## Bifacial energy yield gain of up to 20%

Bifacial Q.ANTUM solar cells make efficient use of light shining on the module rear-side for radically improved LCOE.



## Low electricity generation costs

Q.ANTUM DUO technology with optimized module layout to boost module power and improve LCOE.



## A reliable investment

Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty<sup>1</sup>.



## Enduring high performance

Long-term yield security with Anti LID and Anti PID Technology<sup>2</sup>, Hot-Spot Protect.



## Frame for versatile mounting options

High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (2600 Pa)<sup>3</sup>.



## Innovative all-weather technology

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

<sup>1</sup> See data sheet on rear for further information.

<sup>2</sup> APT test conditions according to IEC/TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)

<sup>3</sup> See Installation Manual for instructions

### The ideal solution for:



Ground-mounted  
solar power plants



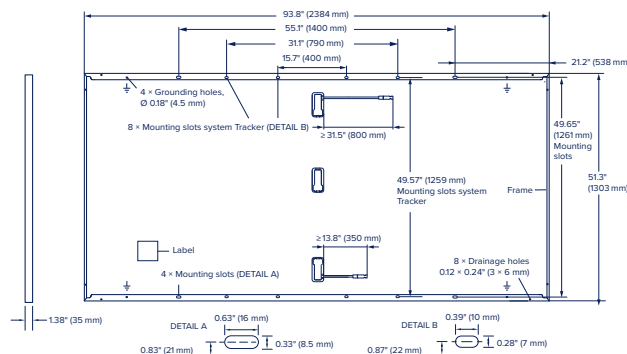
Solar power plants  
with tracker



# Q.PEAK DUO ML-G12S SERIES

## Mechanical Specification

Format	93.8 in × 51.3 in × 1.38 in (including frame) (2384 mm × 1303 mm × 35 mm)
Weight	84.2 lbs (38.2kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP68, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 31.5 in (800 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4; Stäubli MC4-Evo2; - IP68



## Electrical Characteristics

POWER CLASS	660	665	670	675	680
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MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC<sup>1</sup> (POWER TOLERANCE +5 W/-0 W)

Minimum			BSTC*		BSTC*		BSTC*		BSTC*	
	Power at MPP <sup>1</sup>	P <sub>MPP</sub> [W]	660	721.9	665	727.4	670	732.9	675	738.4
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub> [A]	18.36	20.10	18.39	20.13	18.42	20.16	18.45	20.20
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub> [V]	45.68	45.84	45.70	45.86	45.72	45.88	45.74	45.90
	Current at MPP	I <sub>MPP</sub> [A]	17.39	19.03	17.45	19.09	17.51	19.16	17.56	19.22
	Voltage at MPP	V <sub>MPP</sub> [V]	37.94	37.94	38.11	38.10	38.27	38.26	38.43	38.42
	Efficiency <sup>1</sup>	η [%]	≥ 21.2		≥ 21.4		≥ 21.6		≥ 21.7	≥ 21.9

Bifaciality of P<sub>MPP</sub> and I<sub>SC</sub> 70% ± 5% • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

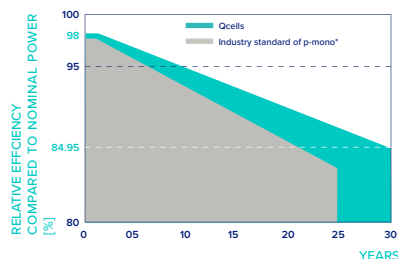
<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>, V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>; \*at BSTC: 1000 W/m<sup>2</sup> + φ × 135 W/m<sup>2</sup>, φ = 72%, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup>

Minimum	Power at MPP	P <sub>MPP</sub> [W]	496.9	500.7	504.4	508.2	512.0
	Short Circuit Current	I <sub>SC</sub> [A]	14.79	14.81	14.84	14.86	14.89
	Open Circuit Voltage	V <sub>OC</sub> [V]	43.20	43.22	43.24	43.26	43.28
	Current at MPP	I <sub>MPP</sub> [A]	13.67	13.73	13.78	13.83	13.88
	Voltage at MPP	V <sub>MPP</sub> [V]	36.34	36.48	36.62	36.75	36.89

<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 • <sup>2</sup> 800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

## Qcells PERFORMANCE WARRANTY

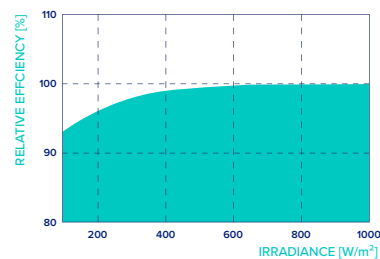


At least 98% of nominal power during first year. Thereafter max. 0.45% degradation per year. At least 93.95% of nominal power up to 10 years. At least 84.95% of nominal power up to 30 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Qcells sales organization of your respective country.

\*Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

## PERFORMANCE AT LOW IRRADIANCE



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]	108 ± 5.4 (42 ± 3 °C)

## Properties for System Design

Maximum System Voltage	V <sub>sys</sub>	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating		[A DC]	35	Fire Rating based on ANSI/UL 61730	TYPE 29 <sup>4</sup>
Max. Push Load <sup>3</sup> , Test/Design		[lbs/ft <sup>2</sup> ]	113 (5400 Pa)/75 (3600 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Pull Load <sup>3</sup> , Test/Design		[lbs/ft <sup>2</sup> ]	54 (2600 Pa)/36 (1730 Pa)		

<sup>3</sup> See Installation Manual for instructions

<sup>4</sup> New Type is similar to Type 3 but with metallic frame

## Qualifications and Certificates

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



Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product.  
\*Contact your Qcells Sales Representative for details regarding the module's eligibility to be Buy American Act (BAA) compliant.

Hanwha Q CELLS USA Corp. 300 Spectrum Center Drive, Suite 500, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL na.support@qcells.com | WEB www.qcells.com/us

qcells

# Q.TRON XL-G2 SERIES



**610 - 635 Wp | 156 Cells**  
**22.7 % Maximum Module Efficiency**

**MODEL** Q.TRON XL-G2.3/BFG



## High performance Qcells N-type solar cells

Q. ANTUM NEO Technology with optimized module layout boosts module efficiency up to 22.7%.



## Bifacial energy yield gain of up to 21%

Bifacial Q. ANTUM NEO solar cells make efficient use of light shining on the module rear-side for radically improved LCOE.



## A reliable investment

Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty<sup>1</sup>.



## Enduring high performance

Long-term yield security with Anti LeTID and Anti PID Technology<sup>2</sup>, Hot-Spot Protect.



## Frame for versatile mounting options

High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (3750 Pa)<sup>3</sup>.



## Innovative all-weather technology

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

<sup>1</sup> See data sheet on rear for further information.

<sup>2</sup> APT test conditions according to IEC/TS 62804-1:2015 method B (~1500 V, 168 h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)

<sup>3</sup> See Installation Manual for instructions

**The ideal solution for:**



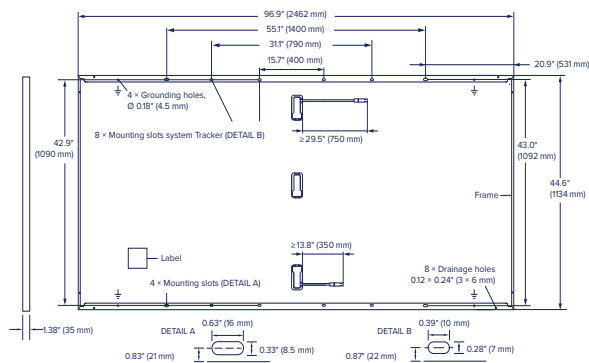
Ground mounted solar panels



# Q.TRON XL-G2 SERIES

## Mechanical Specification

Format	96.9 in × 44.6 in × 1.38 in (including frame) (2462 mm × 1134 mm × 35 mm)
Weight	78.0 lbs (35.4 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodised aluminium
Cell	6 × 26 monocrystalline Q.ANTUM NEO solar half cells
Junction box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 29.5 in (750 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Stäubli MC4 ; IP68



## Electrical Characteristics

POWER CLASS	610	615	620	625	630	635
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MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC<sup>1</sup> (POWER TOLERANCE +5 W/-0 W)

Minimum			BSC*		BSC*		BSC*		BSC*		BSC*		BSC*		
	Power at MPP <sup>1</sup>	P <sub>MPP</sub>	[W]	610	675.4	615	681.0	620	686.5	625	692.0	630	697.6	635	703.1
	Short Circuit Current <sup>1</sup>	I <sub>SC</sub>	[A]	13.65	15.13	13.71	15.19	13.76	15.25	13.82	15.31	13.88	15.38	13.93	15.44
	Open Circuit Voltage <sup>1</sup>	V <sub>OC</sub>	[V]	56.11	56.34	56.39	56.62	56.67	56.90	56.95	57.18	57.23	57.46	57.51	57.74
	Current at MPP	I <sub>MPP</sub>	[A]	12.95	14.34	13.00	14.40	13.05	14.46	13.10	14.51	13.15	14.57	13.21	14.62
	Voltage at MPP	V <sub>MPP</sub>	[V]	47.10	47.09	47.30	47.29	47.50	47.49	47.70	47.69	47.89	47.88	48.09	48.08
	Efficiency <sup>1</sup>	η	[%]	≥21.8		≥22.0		≥22.2		≥22.4		≥22.6		≥22.7	

Bifaciality of P<sub>MPP</sub> and I<sub>SC</sub> 80% ± 5% • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

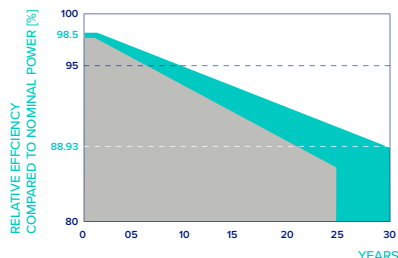
<sup>1</sup>Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>, V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>; \*at BSC: 1000 W/m<sup>2</sup> + φ × 135 W/m<sup>2</sup>, φ = 80%, 25 ± 2°C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup>w

Minimum	Power at MPP	P <sub>MPP</sub> [W]	461.1	464.9	468.7	472.5	476.2	480.0
	Short Circuit Current	I <sub>SC</sub> [A]	11.00	11.05	11.09	11.14	11.18	11.23
	Open Circuit Voltage	V <sub>OC</sub> [V]	53.24	53.51	53.77	54.04	54.31	54.58
	Current at MPP	I <sub>MPP</sub> [A]	10.18	10.22	10.26	10.30	10.34	10.38
	Voltage at MPP	V <sub>MPP</sub> [V]	45.28	45.48	45.67	45.86	46.05	46.24

<sup>2</sup>800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

### Qcells PERFORMANCE WARRANTY

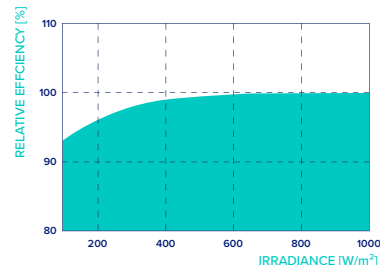


At least 98.5% of nominal power during first year. Thereafter max. 0.33% degradation per year. At least 95.53% of nominal power up to 10 years. At least 88.93% of nominal power up to 30 years.

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

\*Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

### PERFORMANCE AT LOW IRRADIANCE



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]	-0.24
Temperature Coefficient of P <sub>MPP</sub>	γ	[%/K]	-0.30	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3°C)

## Properties for System Design

Maximum System Voltage	V <sub>sys</sub>	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating		[A DC]	30	Fire Rating based on ANSI/UL 61730	TYPE 29 <sup>4</sup>
Max. Push Load <sup>3</sup> , Test/Design		[lbs./ft <sup>2</sup> ]	113 (5400 Pa)/75 (3600 Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Pull Load <sup>3</sup> , Test/Design		[lbs./ft <sup>2</sup> ]	78 (3750 Pa)/ 52 (2500 Pa)		

<sup>3</sup> See Installation Manual for instructions

<sup>4</sup> New Type is similar to Type 3 but with metallic frame

## Qualifications and Certificates

UL 61730-1 & UL 61730-2, CE-compliant,  
Quality Controlled PV - TÜV Rheinland,  
IEC 61215:2016, IEC 61730:2016,  
U.S. Patent No. 9,893,215(solar cells)



\* Contact your Qcells Sales Representative for details regarding the module's eligibility to be Buy American Act (BAA) compliant.

Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product.

Harwha Q CELLS America Inc. 400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL hqc-inquiry@qcells.com | WEB www.qcells.com

qcells



# SOLECTRIA® XGI 1500-166 SERIES

## PREMIUM 3-PHASE TRANSFORMERLESS UTILITY-SCALE INVERTERS

### FEATURES

- Made in the USA with global components
- Buy American Act (BAA) compliant
- Four models:
  - 125kW/125kVA,
  - 125kW/150kVA,
  - 150kW/166kVA,
  - 166kW/166kVA
- Additional models available certified to UL1699b, Photovoltaic DC Arc-Fault Circuit Protection
- 99.0% peak efficiency
- Flexible solution for distributed and centralized system architecture
- Advanced grid-support functionality Rule 21/UL1741SB
- Robust, dependable, & built to last
- Lowest O&M and installation costs
- Access all inverters on site via WiFi from one location
- Remote diagnostics and firmware upgrades
- SunSpec Modbus Certified

### OPTIONS

- String combiners for distributed and centralized systems
- Web-based monitoring
- Extended warranty



Yaskawa Solectria Solar's XGI 1500 utility-scale string inverters are designed for high reliability and built of the highest quality components that were selected, tested and proven to last beyond their warranty.

XGI 1500 inverters provide advanced grid-support functionality and meet the latest IEEE 1547 and UL1741SB standards for safety. They are the most powerful 1500 VDC string inverters in the PV market and have been engineered for both distributed and centralized system architecture.

Designed and engineered in Lawrence, MA, XGI inverters are assembled and tested at Yaskawa America's facilities in Buffalo Grove, IL. They are Made in the USA with global components and are compliant with the Buy American Act.



# SOLECTRIA® XGI 1500-166 SERIES TECHNICAL DATA

## SPECIFICATIONS

Product Specification		XGI 1500 Inverter Model			
		XGI 1500-125/125-UL XGI 1500-125/125-UL-A	XGI 1500-125/150-UL XGI 1500-125/150-UL-A	XGI 1500-150/166-UL XGI 1500-150/166-UL-A	XGI 1500-166/166-UL XGI 1500-166/166-UL-A
DC Input	Absolute Max Input Voltage	1500 VDC	1500 VDC	1500 VDC	1500 VDC
	Max Power Input Voltage Range (MPPT)	860-1250 VDC	860-1250 VDC	860-1250 VDC	860-1250 VDC
	Operating Voltage Range (MPPT)	860-1450 VDC	860-1450 VDC	860-1450 VDC	860-1450 VDC
	Number of MPP Trackers	1 MPPT	1 MPPT	1 MPPT	1 MPPT
	Max Operating Input Current	148.3 A	148.3 A	178.0 A	197.7 A
	Max Operating PV Power	128 kW	128 kW	153 kW	170 kW
	Max DC/AC Ratio   Max Rated PV Power	2.6   332 kW	2.6   332 kW	2.2   332 kW	2.0   332 kW
	Max Rated PV Short-Circuit Current (ΣIsc x 1.25)	500 A	500 A	500 A	500 A
AC Output	Nominal Output Voltage	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph
	AC Voltage Range	-12% to +10%	-12% to +10%	-12% to +10%	-12% to +10%
	Continuous Real Output Power	125 kW	125 kW	150 kW	166 kW
	Continuous Apparent Output Power	125 kVA	150 kVA	166 kVA	166 kVA
	Max Output Current	120 A	144 A	160 A	160 A
	Nominal Output Frequency	60 Hz	60 Hz	60 Hz	60 Hz
	Power Factor (Unity default)	+/- 0.80 Adjustable	+/- 0.80 Adjustable	+/- 0.80 Adjustable	+/- 0.80 Adjustable
	Total Harmonic Distortion (THD) @ Rated Load	<3%	<3%	<3%	<3%
	Grid Connection Type	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND
	Fault Current Contribution (1 cycle RMS)	144 A	173 A	192 A	192 A
Efficiency	Peak Efficiency	98.9%	98.9%	99.0%	99.0%
	CEC Average Efficiency	98.5%	98.5%	98.5%	98.5%
	Tare Loss	2.75 W	2.75 W	2.75 W	2.75 W
Temperature	Ambient Temp Range	-40°F to 140°F (-40C to 60C)		-40°F to 140°F (-40C to 60C)	
	De-Rating Temperature	122°F (50C)		113°F (45C)	
	Storage Temperature Range	-40°F to 167°F (-40C to 75C)		-40°F to 167°F (-40C to 75C)	
	Relative Humidity (non-condensing)	0 - 95%		0 - 95%	
	Operating Altitude	Full Power up to 9,840 ft (3.0 km); De-Rate to 70% of Full Power at 13,123 ft (4.0 km)			
Communications	Advanced Graphical User Interface	WiFi			
	Communication Interface	Ethernet			
	Third-Party Monitoring Protocol	SunSpec Modbus TCP/IP			
	Web-Based Monitoring	Optional			
	Firmware Updates	Remote and Local			
Testing & Certifications	Safety Listings & Certifications	UL1741SB, IEEE 1547, UL 1998 (All models) UL 1699b Photovoltaic Arc-Fault Circuit Protection Certified (-A models)			
	Advanced Grid Support Functionality	Rule 21, UL 1741SB			
	Testing Agency	ETL			
	FCC Compliance	FCC Part 15 (Subpart B, Class A)			
Warranty	Standard and Options	5 Years Standard; Option for 10 Years			
Enclosure	Acoustic Noise Rating	73 dBA @ 1 m ; 67dBA @ 3 m			
	DC Disconnect	Integrated 2-Pole 250 A DC Disconnect			
	Mounting Angle	Vertical only			
	Dimensions	Height: 29.5 in. (750 mm)   Width: 39.4 in. (1000 mm)   Depth: 15.1 in. (380 mm)			
	Weight	270 lbs (122 kg)			
	Enclosure Rating and Finish	Type 4X, Polyester Powder-Coated Aluminum			

