

Commercial Power Optimizer

USA Domestic Content Eligible*

C651U



POWER OPTIMIZER



SolarEdge's USA-manufactured offering for C&I rooftops, for power optimization at the module level

Eligible for Domestic Content*

- SolarEdge USA-manufactured power optimizers, when paired with certain SolarEdge USA-manufactured inverters, are intended to be eligible for the enhanced federal income tax credit for domestic content

Higher Energy Yields

- Generates maximum power from each PV module
- High efficiency (99.5%)
- Supports high power and bifacial PV modules, including G12 modules

Enhanced Monitoring and Visibility

- Maximum system visibility up to the individual module level
- Pinpointed fault detection and remote troubleshooting

Maximum Protection with Built-in Safety

- Designed to automatically reduce high DC voltage to touch-safe levels, upon grid/inverter shutdown, with SafeDC™
- Includes SolarEdge Sense Connect, designed to prevent arcs by monitoring Power Optimizer connectors for overheating
- Certified to Photovoltaic Rapid Shutdown, according to NEC 2014 – 2023

* Manufactured by SolarEdge with the intent to be eligible for inclusion under the elective safe harbor in calculating the Domestic Cost Percentage under the "Rooftop (MLPE)" category (under IRS Notice 2024-41). The PCBA, Electrical Parts, and Enclosure are domestically manufactured to meet the requirements of eligibility to be considered for the ITC domestic content bonus adder. SolarEdge does not provide tax and/or legal advice. You should consult with your own legal and/or tax advisor(s) regarding the eligibility of your project for the ITC or PTC, including the 10% domestic content bonus, to determine how the applicable rules apply to your particular project. The forward-looking statements in this datasheet are accurate as of the date herein and are subject to change. For more information, please contact your local SolarEdge sales representative.

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Power Optimizer Model	C651U	
INPUT		
Rated Input DC Power ⁽¹⁾	650	W
Absolute Maximum Input Voltage (Voc)	80	Vdc
MPPT Operating Range	12.5 – 80	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module ⁽²⁾	20	Adc
Maximum Adjusted Short Circuit Current (with Safety Factor) ⁽³⁾	25	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.8	%
Overvoltage Category	II	
OUTPUT DURING OPERATION		
Maximum Output Power	650	Wdc
Maximum Output Current	24	Adc
Maximum Output Voltage	60	Vdc
SAFETY FEATURES		
SafeDC™	Yes	
Safety Output Voltage per Power Optimizer	0.5 ± 0.075	Vdc
Sense Connect	Yes	
Photovoltaic Rapid Shutdown System	Yes, NEC 2014 – 2023	
STANDARD COMPLIANCE		
EMC	FCC Part 15; IEC 61000-6-2; IEC 61000-6-3	
Safety	IEC62109-1 (class II safety); UL 1741; UL 3741; CSA C22.2#107.1	
Material	UL94 V-0, UV Resistant	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2013-05	
INSTALLATION SPECIFICATIONS		
Compatible SolarEdge Inverters ⁽⁴⁾	Commercial Three Phase Inverters with one of the following part number structures: USE-SIN-USxxlxxxx SE-DBL-USxxlxxxx SE-TRI-USxxlxxxx	
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	128 x 155 x 52 / 5.03 x 6.10 x 2.05	mm / in
Weight	1080 / 2.38	gr / lb
Input Connector	MC4 ⁽⁵⁾	
Input Wire Length	(+) 1.4, (-) 1.4 / (+) 4.59, (-) 4.59 ⁽⁶⁾	m / ft
Output Connector	MC4	
Output Wire Length	(+) 3.0 (-) 0.10 / (+) 9.84, (-) 0.32	m / ft
Operating Temperature Range ⁽⁷⁾	-40 to +85 / -40 to +185	°C / °F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 – 100	%

(1) Modules with a front side maximum power of up to 715W at STC are allowed. Up to +5% power tolerance is allowed.

(2) When using bifacial modules, consider only the front side Isc at STC (0% back side gain). For details, see [here](#).

(3) Adjusted for ambient temperature, irradiance, bifacial gain, safety factor, and so on, in accordance with NEC and CSA.

(4) For detailed inverter compatibility information, see [here](#).

(5) For other connector types please contact SolarEdge.

(6) The Sense Connect feature is only enabled on the output wire connectors. For details, see [here](#).

(7) For ambient temperatures above +65°C / +149°F, power derating is applied. For details, see [here](#).

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PV System Design Using a SolarEdge Inverter ⁽⁸⁾		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE30K, SE33.3K*	277/480V Grid SE40K*	
Compatible Power Optimizers		C651				
Minimum String Length	Power Optimizers	13	13	18	18	
	PV Modules	13	13	18	18	
Maximum String Length	Power Optimizers	57	57	57	57	
	PV Modules	57	57	57	57	
Maximum Continuous Power per String		10,000	9600	20,400	20,400	W
Maximum Allowed Connected Power per String ⁽⁹⁾		1 string or more – 15,000	1 string – 11,400	1 string – 22,650	1 string – 22,650	W
			2 strings or more – 15,600	2 strings or more – 30,400	2 strings or more – 30,400	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

*The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.

(8) C651U cannot be mixed with any other Power Optimizer models in the same string.

(9) To connect more STC power per string, design your project using [SolarEdge Designer](#).

