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# Residential Power Optimizer For North America

S440 / S500B / S650B



**POWER OPTIMIZER**

## PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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## For North America

S440 / S500B / S650B

	S440	S500B	S650B	
<b>INPUT</b>				
Rated Input DC Power <sup>(1)</sup>	440	500	650	W
Absolute Maximum Input Voltage (Voc)	60	125	85	Vdc
MPPT Operating Range	8 – 60	12.5 – 105	12.5 – 85	Vdc
Maximum Input Current (Maximum Isc of Connected PV Module)	14.5	15		Adc
Maximum Input Short Circuit Current <sup>(2)</sup>	18.75			Adc
Maximum Efficiency	99.5			%
Weighted Efficiency	98.6			%
Overvoltage Category	II			
<b>OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)</b>				
Maximum Output Current	15			Adc
Maximum Output Voltage	60	80		Vdc
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR INVERTER OFF)</b>				
Safety Output Voltage per Power Optimizer	1 ± 0.1			Vdc
<b>STANDARD COMPLIANCE</b>				
Photovoltaic Rapid Shutdown System	NEC 2014 – 2023			
EMC	FCC Part 15 Class B, IEC 61000-6-2, IEC 61000-6-3			
Safety	IEC 62109-1 (class II safety), UL 1741			
Material	UL 94 V-0, UV Resistant			
RoHS	Yes			
Fire Safety	VDE-AR-E 2100-712:2013-05			
<b>INSTALLATION SPECIFICATIONS</b>				
Maximum Allowed System Voltage	1000			Vdc
Dimensions (W x L x H)	129 x 155 x 30 / 5.07 x 6.10 x 1.18	129 x 165 x 45 / 5.07 x 6.49 x 1.77		mm / in
Weight	720 / 1.6	790 / 1.74		gr / lb
Input Connector	MC4			
Input Wire Length	0.1 / 0.32			m / ft
Output Connector	MC4			
Output Wire Length	(+) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32			m / ft
Operating Temperature Range <sup>(3)</sup>	-40 to +85			°C
Protection Rating	IP68 / NEMA6P			
Relative Humidity	0 – 100			%

(1) Rated power of the module at STC will not exceed the power optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.

(2) The Maximum Input Short Circuit Current is adjusted for worst case conditions of ambient temperature, irradiance, bifacial gain, and so on, in accordance with NEC and CSA.

(3) Power derating is applied for ambient temperatures above +85°C / +185°F for S440, and for ambient temperatures above +75°C / 167°F for S500B. Refer to the [Power Optimizers Temperature Derating](#) technical note for more details.

PV System Design Using a SolarEdge Inverter <sup>(4)</sup>		SolarEdge Home Wave/Hub Single Phase	Three Phase for 208V Grid	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440	8	10	18	
	S500B, S650B	6	8	14	
Maximum String Length (Power Optimizers)	25			50 <sup>(5)</sup>	
Maximum Usable Power Delivered per String	5700		6000	12,750	W
Maximum Allowed Connected Power per String <sup>(7)(8)</sup>	Inverters with Rated AC Power ≤ 5700W	Per the inverter's maximum input DC power <sup>(6)</sup>		15,000	W
	Inverters with Rated AC Power of 6000W	5700			
	Inverters with Rated AC Power ≥ 7600W	6800, only when connected to at least two strings			
Parallel Strings of Different Lengths or Orientations	Yes				

(4) It is not allowed to mix S-series and P-series Power Optimizers in new installations in the same string.

(5) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30 V requirement.

(6) Refer to the [Single String Design Guidelines](#) application note for more details.

(7) For the 208 V grid, the maximum is permitted only when the difference in connected power between strings is 1,000 W or less.

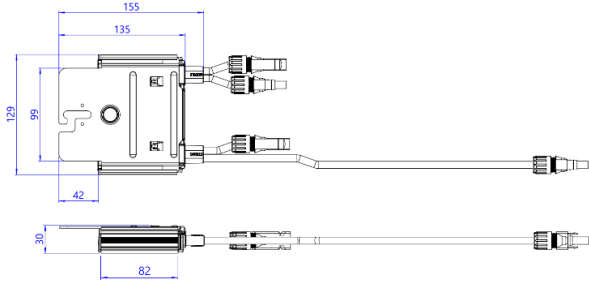
(8) For the 240 V or 277/480 V grids, the maximum is permitted only when the difference in connected power between strings 2,000 W or less.

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S440 (Flat Bracket)



S500B, S650B (Bent Bracket)

