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# Power Optimizer

## For Residential Installations

S440 / S500 / S500B / S650B



POWER OPTIMIZER

### Enabling PV power optimization at the module level

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

\* Functionality subject to inverter model and firmware version

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### S440 / S500 / S500B / S650B

	S440	S500	S500B	S650B	UNIT
<b>INPUT</b>					
Rated Input DC Power <sup>(1)</sup>	440 <sup>(2)</sup>	500 <sup>(3)</sup>		650	W
Absolute Maximum Input Voltage (Voc)	60		125	85	Vdc
MPPT Operating Range	8 – 60		12.5 – 105	12.5 – 85	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5 <sup>(2)</sup>	15			Adc
Maximum Efficiency			99.5		%
Weighted Efficiency			98.6		%
Overvoltage Category			II		
<b>OUTPUT DURING OPERATION</b>					
Maximum Output Current			15		Adc
Maximum Output Voltage	60		80		Vdc
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)</b>					
Safety Output Voltage per Power Optimizer			1 ± 0.1		Vdc
<b>STANDARD COMPLIANCE<sup>(4)</sup></b>					
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011				
Safety	IEC62109-1 (class II safety), UL1741				
Material	UL94 V-0, UV Resistant				
RoHS	Yes				
Fire Safety	VDE-AR-E 2100-712:2018-12				
<b>INSTALLATION SPECIFICATIONS</b>					
Maximum Allowed System Voltage			1000		Vdc
Dimensions (W x L x H)	129 x 155 x 30		129 x 165 x 45		mm
Weight	720		790		gr
Input Connector	MC4 <sup>(5)</sup>				
Input Wire Length	0.1				m
Output Connector	MC4				
Output Wire Length	(+) 2.3, (-) 0.10				m
Operating Temperature Range <sup>(6)</sup>	-40 to +85				°C
Protection Rating	IP68				
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) For installations after April 1<sup>st</sup>, 2024, the Rated Input DC Power for S440 is 490W, and the Maximum Isc of Connected PV Module is 15A.

(3) For installations after April 1<sup>st</sup>, 2024, the Rated Input DC Power for S500 and S500B is 550W.

(4) For details about CE compliance, see [Declaration of Conformity – CE](#).

(5) For other connector types please contact SolarEdge.

(6) Power derating is applied for ambient temperatures above +85°C for S440 and S500, and for ambient temperatures above +75°C for S500B. Refer to the [Power Optimizers Temperature Derating](#) technical note for details.

PV System Design Using a SolarEdge Inverter <sup>(7)</sup>	SolarEdge Home Wave Inverter Single Phase	SolarEdge Home Short String Inverter Three Phase	Three Phase for 230/400V Grid	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440, S500	8	9	16	18
	S500B, S650B	6	8	14	
Maximum String Length (Power Optimizers)	25	20	50		
Maximum Continuous Power per String	5700	5625	11,250	12,750	W
Maximum Allowed Connected Power per String <sup>(8)</sup> (In multiple string designs, the maximum is permitted only when the difference in connected power between strings is 2,000W or less)	6800 <sup>(9)</sup>	See <sup>(8)</sup>	13,500	15,000	W
Parallel Strings of Different Lengths or Orientations	Yes				

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

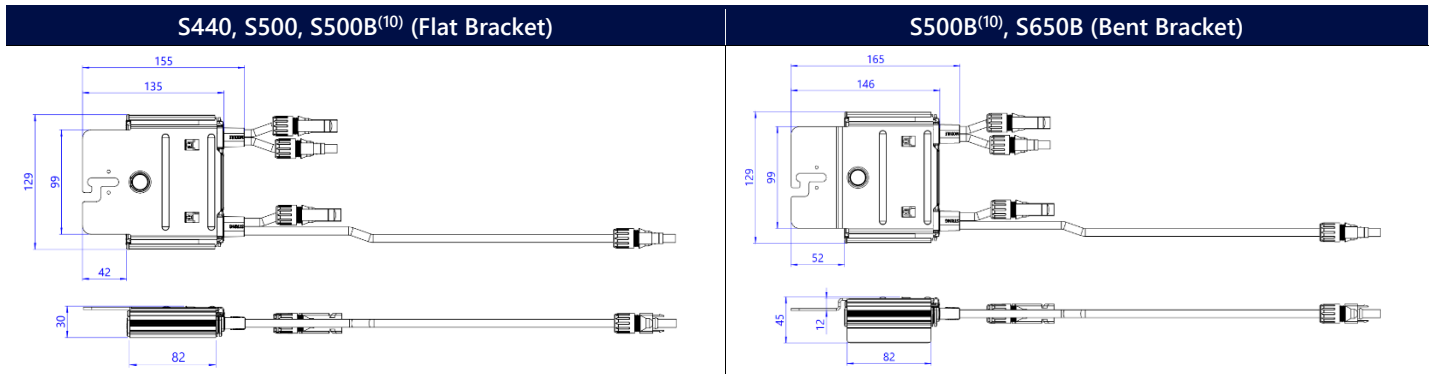
(8) If the inverter's rated AC power ≤ the maximum continuous power per string, then the maximum connected power per string will be able to reach up to the inverter's maximum input DC power. Refer to the [Single String Design Guidelines](#) application note for details.

(9) For inverters with a rated AC power ≥ 8000W that are connected to at least two strings.

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(10) S500B has either a flat bracket or a bent bracket. S500B-1GM4MRM has a flat bracket, and S500B-1GM4MBM has a bent bracket.