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
- 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



^{*} Functionality subject to inverter model and firmware version

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	S440	S500	S500B	S650B	UNIT
INPUT			"		
Rated Input DC Power ⁽¹⁾	440(2)	50	00(3)	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 ⁽²⁾ 15		Adc		
Maximum Efficiency	99.5				
Weighted Efficiency	98.6				
Overvoltage Category	II				
OUTPUT DURING OPERATION					
Maximum Output Current	15		Adc		
Maximum Output Voltage	60)		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZE	R DISCONNECTED	FROM INVERTER	OR INVERTER OF	F)	
Safety Output Voltage per Power Optimizer	1 ± 0.1				
STANDARD COMPLIANCE ⁽⁴⁾					
EMC	FCC Part 15 Class B; IEC 61000-6-2; IEC 61000-6-3; CISPR 11; EN 55011				
Safety	IEC 62109-1 (class II safety); UL 1741				
Material	UL 94 V-0, UV Resistant				
RoHS	Yes				
Fire Safety	VDE-AR-E 2100-712:2018-12				
INSTALLATION SPECIFICATIONS					
Maximum Allowed System Voltage		1000		Vdc	
Dimensions (W x L x H)	129 x 15	5 x 30	129 x	165 x 45	mm
Weight	72	0	7	790	gr
Input Connector	MC4 ⁽⁵⁾				
Input Wire Length	0.1				
Output Connector	MC4				
Output Wire Length	(+) 2.3, (-) 0.10				m
Operating Temperature Range ⁽⁶⁾	-40 to +85				
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 1¹⁵, 2024, the Rated Input DC Power for S440 is 490 W, and the Maximum Isc of Connected PV Module is 15 A.

 (3) For installations after April 1¹⁵, 2024, the Rated Input DC Power for S500 and S500B is 550 W.
- (4) For details about CE compliance, see <u>Declaration of Conformity CE</u>.
- (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 ⁽⁷⁾		SolarEdge Home Wave/Hub 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	S440, S500	8	9	16	18	
(Power Optimizers)	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 ⁽⁸⁾ (In multiple string designs, the maximum is permitted only when the difference in connected power between strings is 2000 W or less)	Inverter's Rated AC Power ≤ Maximum Continuous Power per String	Per the inverter's maximum input DC power	Per the inverter's maximum	Per the inverter's maximum input DC power	Per the inverter's maximum input DC power	W
	Inverter's Rated AC Power > Maximum Continuous Power per String	6000 ⁽⁹⁾ 6800 for inverters with Rated AC Power ≥ 8000 W that are connected to two or more strings	input DC power	13,500	15,000	
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.

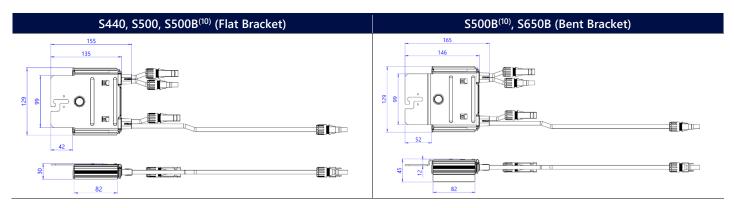
⁽⁸⁾ Refer to the Single String Design Guidelines application note for further details.

⁽⁹⁾ Valid only for installations performed after January 1s, 2025. For earlier installations, the Maximum Allowed Connected Power per String is 5700 W.

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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.