Smart Module

Monocrystalline PERC Module with Half-Cut Cell Technology and Integrated Power Optimizer

SPV410-R54JWML / SPV415-R54JWML

SMART MODULE

PV to grid solution including full service from SolarEdge

- 25-year module warranty and performance warranty
- Easy installation with the Power Optimizer pre-assembled on the PV module
- Optimized energy output by constantly tracking the maximum power point (MPPT) of each module individually
- Built-in SafeDC™ enabling module-level voltage shutdown whenever inverter or AC power is turned off, for maximum installer and firefighter safety
- Specifically designed to work with SolarEdge inverters
- Full visibility of system performance from module to grid
- Excellent mechanical loading and shock resistance performance
- Detects abnormal PV connector behavior, reducing potential safety issues
- Faster installations with simplified cable management

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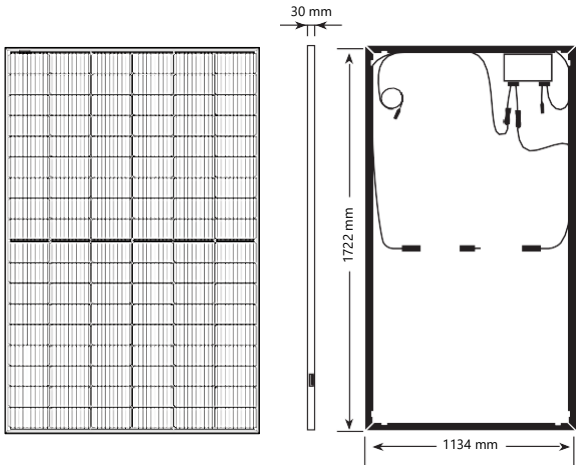
MODULE ELECTRICAL PROPERTIES	SPV410-R54JWML	SPV415-R54JWML	UNITS
STC(1)			
Module Power	410	415	W
Max. Power Voltage (Vmp)	31.62	31.92	V
Max. Power Current (Imp)	12.97	13.00	A
Open Circuit Voltage (Voc)	37.21	37.56	V
Short Circuit Current (Isc)	13.79	13.83	A
Maximum System Voltage	1000		Vdc
Maximum Series Fuse Rating	25		A
Module Efficiency	20.99	21.25	%
NMOT(2)			
Module Power	310.2	313.4	W
Max. Power Voltage (Vmp)	29.89	30.14	V
Max. Power Current (Imp)	10.38	10.40	A
Open Circuit Voltage (Voc)	35.13	35.46	V
Short Circuit Current (Isc)	11.10	11.13	A

* Measurement tolerance: Pmax: ±3%, Voc: ±3%, Isc: ±5%

MODULE MECHANICAL PROPERTIES		
Cells	108 (6 x 18)	
Cell Type	Monocrystalline PERC	
Cell Dimensions	182 x 91	mm
Dimensions (L x W x H)	1722 x 1134 x 30	mm
Front Side Maximum Load (Snow)	5400	Pa
Rear Side Maximum Load (Wind)	2400	Pa
Weight (with Power Optimizer)	21.4	kg
Front Glass	3.2mm, coated tempered glass	
Frame	Anodized aluminum	
Junction Box	IP68, three diodes	
Connector Type	MC4	
Operating Temperature	-40 to +85	°C
Packaging Information (units per pallet)	36	



CERTIFICATIONS & WARRANTY		
Module Certifications	IEC61215:2016, IEC61730:2016	
Product Warranty	Power Optimizer – 25-year warranty, Module – 25-year warranty	
Output Warranty of Pmax	25-year linear module warranty(3)	

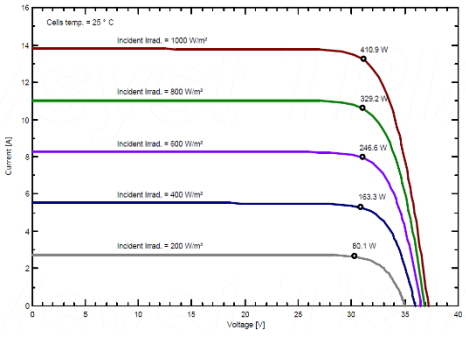
TEMPERATURE CHARACTERISTICS		
Temperature Coefficient Power (Pm)	-0.34	% / °C
Temperature Coefficient Voltage (Voc)	-0.29	% / °C
Temperature Coefficient Current (Isc)	0.04	% / °C
Operating Cell Temperature (NMOT)	43 ± 2	°C

(1) STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5.
(2) NMOT: Irradiance at 800 W/m², Ambient Temperature 20°C, Wind Speed 1 m/s.
(3) 1st year: 98%, 84.8% power output over 25 years.

Linear Warranty

25-Year Product Warranty
+25-Year Linear Power Warranty

Panel I-V Curve (SPV41x-R54JWML)



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	S440	UNITS
INPUT		
Rated Input DC Power[1]	440	W
Absolute Maximum Input Voltage (Voc)	60	Vdc
MPPT Operating Range	8 - 60	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.6	%
Overvoltage Category	II	
OUTPUT DURING OPERATION		
Maximum Output Current	15	Adc
Maximum Output Voltage	60	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1 ± 0.1	Vdc
STANDARD COMPLIANCE[2]		
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	
INSTALLATION SPECIFICATIONS		
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	129 x 155 x 30	mm
Weight (including cables)	655	gr
Input Connector	MC4[3]	
Input Wire Length	0.1	m
Output Connector	MC4	
Output Wire Length	(+) 2.3, (-) 0.10	m
Operating Temperature Range[4]	-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 details about CE compliance, see Declaration of Conformity – CE.
(3) For other connector types please contact SolarEdge.
(4) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

PV System Design Using a SolarEdge Inverter	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)	8	9	16	18	
Maximum String Length (Power Optimizers)	25	20	50		
Maximum Continuous Power per String	5700	5625	11250	12750	W
Maximum Allowed Connected Power per String (Permitted only when the power difference between strings is less than 2,000W)	See[5]	See[5]	13500	15000	W
Parallel Strings of Different Lengths or Orientations	Yes				

(5) If the inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power. Refer to the Single String Design Guidelines Application Note.

SolarEdge is a global leader in smart energy technology. By leveraging world-class engineering capabilities and with a relentless focus on innovation, SolarEdge creates smart energy solutions that power our lives and drive future progress.

SolarEdge developed an intelligent inverter solution that changed the way power is harvested and managed in photovoltaic (PV) systems. The SolarEdge DC optimized inverter maximizes power generation while lowering the cost of energy produced by the PV system.

Continuing to advance smart energy, SolarEdge addresses a broad range of energy market segments through its PV, storage, EV charging, UPS, and grid services solutions.

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CE

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