












PV modules comparison

2023

Manufacturer	Series	Product / performance guarantee (a)	Annual power loss (% / a)	Max. Power (Wp)	Power Output Tolerance	Efficiency (%)	Temp. coefficient (% / °C)	Cell type	Cell technology	Bifacial	Half-cut	Optimizers	Backsheet	Glass/Glass	Snow load (Pa)	Wind load (Pa)	Module dimensions (L x B x H)	Weight (kg)		
AIKO 	Black Hole	15 / 30	0.35	450	+ 3 %	23.0	- 0.29	n-Type	ABC	-	Halfcut	-	Black	-	5,400	2,400	1722 x 1134 x 30	20.5		
	Black Hole Dual Glass			445		22.8							✓	21.0						
EGING PV 	Star Series	12 / 25	0.53	390 - 410	+ 3 %	19.97 - 20.99	- 0.35	p-Type	PERC	-	Half-cut	-	White	-	5,400	2,400	1722 x 1134 x 30	20.2		
Jinko Solar 	Tiger Neo N-Type 54HL4	15 / 30	0.40	415 - 425	+ 3 %	21.25 - 21.76	- 0.30	n-Type	TopCon	-	Half-cut	-	White	-	5,400	2,400	1722 x 1134 x 30	22.0		
	Tiger Neo N-Type 54HL4R			435 - 440		21.77 - 22.02							Black							
	Tiger Neo N-Type 54HL4R Black	25 / 30	425 - 435	21.27 - 21.77	Black															
	Tiger N-Type 60TR	15 / 30		370 - 380		21.25 - 21.54	- 0.34		Tailing Ribbon				White		5,400	2,400	1692 x 1029 x 30	19.0		
中來股份 	Niwa Black Series	15 / 30*	0.40	400 - 420	+ 5 W	20.48 - 21.51	- 0.30	n-Type	TopCon	✓	Half-cut	-	Black	✓	5,400	2,400	1722 x 1134 x 30	24.5		
	Niwa Pro Series			410 - 430		21.00 - 22.02							Transparent / Hatched white				24.5			
	JW-HD-120N			380 - 390		20.83 - 21.38							- 0.31				1756 x 1039 x 30	23.0		
LONGI 	Hi-MO 5m LR5-54 HIH	12 / 25	0.55	400 - 420	+ 3 %	20.50 - 21.50	- 0.34	p-Type	PERC	-	Half-cut	-	White	-	5,400	2,400	1722 x 1134 x 30	20.8		
MEYER BURGER 	Meyer Burger Black	30 / 30	0.20	375 - 395	+ 5 W	20.40 - 21.50	- 0.259	n-Type	HJT	-	Half-cut	-	Black	-	5,400	2,400	1767 x 1041 x 35	19.7		
	Meyer Burger Glass	25 / 25	0.25	370 - 390		20.60 - 21.80							✓				Transparent	✓	1722 x 1041 x 35	24.4
	Meyer Burger White			380 - 400		20.70 - 21.70							-				White	-	1767 x 1041 x 35	19.7
solar edge 	Smart Module	25 / 25	-	370 - 375	+ 5 W	19.80 - 20.07	- 0.364	n-Type	PERC	-	Halfcut	✓	White	-	5,400	2,400	1755 x 1038 x 40	22.0		
	Smart Module Black			360 - 370		19.27 - 20.31							Black							
solar fabrik 	Mono S4 Halfcut	15 / 25	-	405 - 415	+ 3 %	20.19 - 21.43	- 0.33	p-Type	PERC	-	Half-cut	-	White	-	5,400	2,400	1722 x 1134 x 30	21.2		
	Mono S4 Halfcut Black			405 - 410		20.74 - 21.00							Black				21.4			
	Mono S4 - Innovation Powerline N	30 / 30	-	415 - 425		21.30 - 21.80	- 0.30	n-Type	-	✓		✓	Transparent	✓	1722 x 1134 x 30	23.4				
SUNPOWER 	Maxeon 3	25 / 25**	0.25	415 - 430	+ 5 %	21.90 - 22.70	- 0.27	n-Type	Maxeon	-	-	-	White	-	5,400	2,400	1767 x 1041 x 35	19.7		
	Maxeon 3 Black			410 - 420		21.60 - 22.20							Black							
Trinasolar 	Vertex S	15 / 25	0.55	390 - 405	+ 5 W	20.30 - 21.10	- 0.34	p-Type	PERC	-	1/3-cut cells	-	White	-	6,000	4,000	1754 x 1096 x 30	21.0		
	Vertex S Black			Black																
	Vertex S (R)	25 / 30	0.40	415 - 435		20.80 - 21.80							White				1762 x 1134 x 30	21.8		
	Vertex S (R) Black			Black																
	Vertex S +	25 / 30	0.40	400 - 425		20.60 - 21.90							White	✓	5,400		1770 x 1096 x 30	21.5		
	Vertex S + (R)			425 - 445	21.30 - 22.30	n-Type	TopCon			White	✓	5,400		1762 x 1134 x 30	21.1					

* Product guarantee depending on installation site: 15a for PV installations on open areas, 25a for PV roof installations
 ** Extendable to 40 years each

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