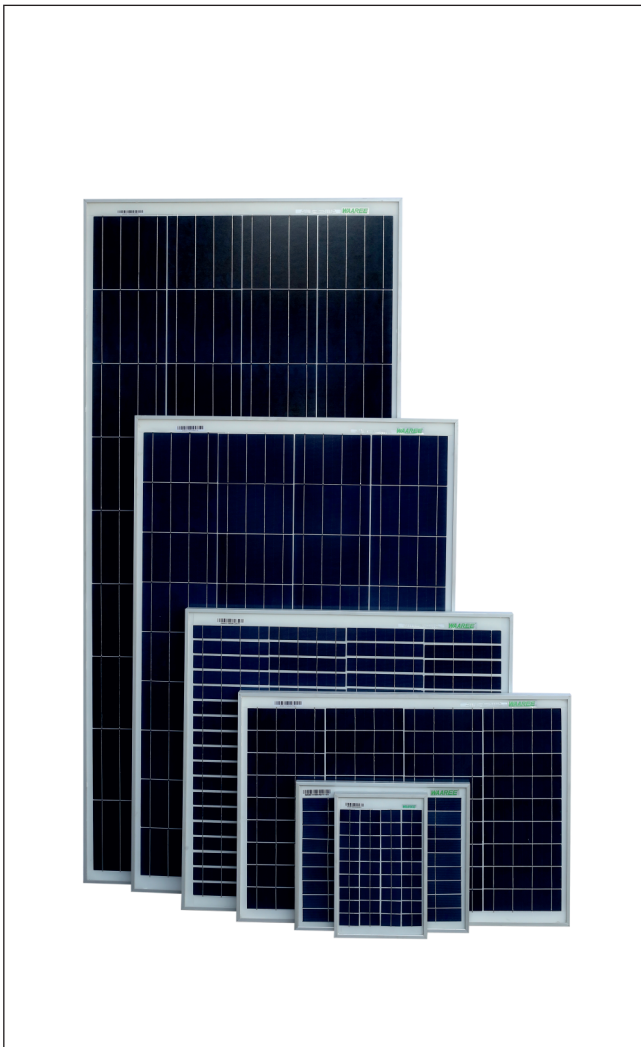
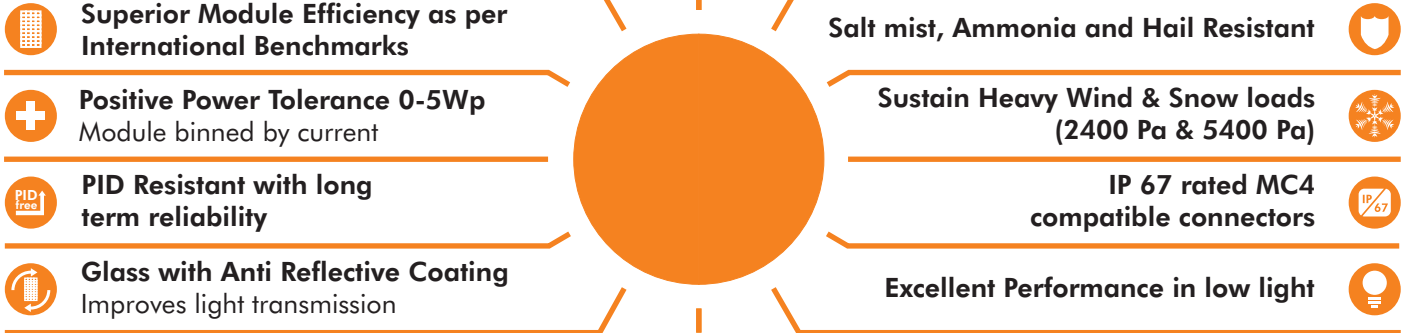


WS-100 to WS-235

ARUN SERIES

WAAREE[®]

One with the Sun



Temperature Coefficients And Operating Conditions

Temperature coefficient of Current α (%/°C)	0.0051
Temperature coefficient of Voltage β (%/°C)	-0.2775
Temperature coefficient of Power γ (%/°C)	-0.3859
NOCT (°C)	46 ± 2
Operating Temperature Range (°C)	-40 to 85
Maximum System Voltage (IEC & UL)	1500VDC

Warranty

5 years Limited Product Warranty**

25 years Limited Power Output Warranty**

- ♦ Minimum 90% at the end of 10 years
- ♦ Minimum 80% at the end of 25 years

INTERNATIONAL & NATIONAL CERTIFICATIONS

IS 14286 | IEC 61215 | IEC 61730 | IEC 61701 | IEC 62804
IEC 62716 | IEC 60068-2-68 | UL1703
ROHS Compliance | REACH Compliance



R-72002038



R-72002020



ISO 9001:2015 | ISO 14001:2015 | OHSAS 18001:2007 / ISO 45001:2018
Independent assessment of factories by BLACK & VEATCH

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WS-100 to WS-235

ARUN SERIES



One with the Sun

ELECTRICAL CHARACTERISTICS

Model	WS-100	WS-105	WS-110	WS-110	WS-110	WS-115	WS-120	WS-125	WS-125	WS-130	WS-135	WS-140	WS-140	WS-140	WS-145	WS-150	WS-150	WS-155	WS-160	WS-165
	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 12V / 24V	/ 24V	/ 24V	/ 24V
Nominal Maximum Power, Pm (W)*	100	100	105	110	110	115	120	125	125	130	135	140	140	140	145	150	150	155	160	165
Power Tolerance	Positive Tolerance Only																			
Open Circuit Voltage, Voc (V)*	21.97	44	22.02	22.07	44.1	22.12	22.17	22.22	44.15	22.27	44.1	22.32	22.37	44.2	23.37	23.42	44.3	44.40	44.50	44.60
Short Circuit Current, Isc (A)*	6.07	3.03	6.36	6.65	3.33	6.93	7.22	7.50	3.78	7.78	3.93	8.06	8.34	4.22	8.35	8.62	4.51	4.60	4.8	4.92
Voltage at Maximum Power, Vmp (V)*	17.46	36.60	17.49	17.51	35.65	17.54	17.56	17.59	35.73	17.61	35.75	17.64	17.66	35.8	18.25	18.32	36.10	36.20	36.30	36.40
Current at Maximum Power, Imp (A)*	5.73	2.81	6.01	6.29	3.09	6.56	6.84	7.11	3.50	7.39	3.64	7.66	7.93	3.92	7.95	8.20	4.16	4.30	4.42	4.54
Maximum System Voltage (V)	1000																			
Module Efficiency (%)	14.31%	14.31%	13.53%	12.93%	12.93%	13.52%	14.11%	14.70%	14.70%	12.93%	13.42%	13.92%	13.92%	13.92%	14.42%	14.91%	13.10%	13.52%	13.95%	
Maximum Series Fuse Rating (A)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Limiting Reverse Current (A)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Rated Voltage (V dc)	17.46	36.60	17.49	17.51	35.65	17.54	17.56	17.59	35.73	17.61	35.75	17.64	17.66	35.8	18.25	18.32	36.10	36.20	36.30	36.40
Rated Current (A dc)	5.73	2.81	6.01	6.29	3.09	6.56	6.84	7.11	3.50	7.39	3.64	7.66	7.93	3.92	7.95	8.20	4.16	4.30	4.42	4.54

MECHANICAL CHARACTERISTICS

Model	WS-100	WS-105	WS-110	WS-110	WS-110	WS-115	WS-120	WS-125	WS-125	WS-130	WS-135	WS-140	WS-140	WS-140	WS-145	WS-150	WS-150	WS-155	WS-160	WS-165
Length x Width x Thickness (LxWxT) - mm	1035x 675x 35	1150x 675x 35	1260x 675x 35	1260x 675x 35	1260x 675x 35	1260x 675x 35	1260x 675x 35	1260x 675x 35	1260x 675x 35	1490x 675x 35	1490x 675x 35	1490x 675x 35	1490x 675x 35	1490x 675x 35	1490x 675x 35	1490x 675x 35	1490x 675x 35	1195x 990x 35	1195x 990x 35	1195x 990x 35
Mounting holes pitch (Y)-mm	545	545	645	645	645	645	645	645	645	915	915	915	915	915	915	915	915	915	915	915
Mounting holes pitch (X)-mm	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	950	950
Weight (kg)	10.15	10.15	10.15	11.30	11.30	11.5	13	13	13	13	13	13	13	13	13	13	13	14.45	14.45	14.45
Cells per module (Units)/ Arrangement	36 / (9x4)	36 / (9x4)	36 / (9x4)	36 / (9x4)	36 / (9x4)	36 / (9x4)	36 / (9x4)	36 / (9x4)	36 / (9x4)	72 / (18x4)	72 / (9x4)	72 / (9x4)	72 / (9x4)	72 / (9x4)	72 / (9x4)	72 / (9x4)	72 / (9x4)	72 / (12x6)	72 / (12x6)	72 / (12x6)
Cell Type	Polycrystalline Silicon																			
Front Cover (Material/ Thickness)	Tempered & Low Iron Glass, 3.2 / 4.0 mm																			
Encapsulate	Ethylene Vinyl Acetate																			
Frame Material	Anodized Aluminium Alloy																			
Junction Box (Protection degree/ Material)	Ip65 rated/ Weatherproof PPO enclosure with bypass diodes																			
Connector	Optional																			
Cable	Optional																			
Fire Safety Class	C																			
Application Class	A																			
Safety Class	II																			

* Mentioned electrical data are reference values which was derived at STC condition - Temp: 25°, Irradiance: 1000W/m2 and Am: 1.5Am with cleaned modules

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WS-100 to WS-235

ARUN SERIES



One with the Sun

ELECTRICAL CHARACTERISTICS

Model	WS-170	WS-175	WS-180	WS-185	WS-190	WS-195	WS-200	WS-205	WS-210	WS-215	WS-220	WS-220	WS-225	WS-230	WS-235
	/12V	/24V	/24V	/24V	/24V	/24V	/12V	/24V	/12V	/24V	/12V	/24V	/24V	/230.00	/235.00
Nominal Maximum Power, Pm (W)*	170.00	175.00	180.00	185.00	190.00	195.00	200.00	200.00	210.00	215.00	220.00	220.00	225.00	230.00	235.00
Positive Tolerance Only															
Power Tolerance															
Open Circuit Voltage, Voc (V)*	23.70	44.8	45.05	45.10	45.25	45.30	33.00	22.97	43.50	33.10	23.07	43.60	33.30	33.40	33.70
Short Circuit Current, Isc (A)*	9.30	5.06	5.30	5.42	5.55	5.70	8.08	11.61	6.12	8.25	12.14	6.42	8.61	8.78	9.30
Voltage at Maximum Power, Vmp (V)*	19.00	36.7	37.10	37.30	37.50	37.70	27.00	17.97	35.05	27.10	18.02	35.15	27.30	27.40	27.70
Current at Maximum Power, Imp (A)*	8.95	4.64	4.86	4.97	5.08	5.19	7.41	11.13	5.71	7.57	11.66	5.98	7.88	8.03	8.49
Maximum System Voltage (V)	1000														
Module Efficiency (%)	14.64%	15.47%	15.90%	16.33%	16.76%	17.19%	17.62%	18.05%	18.48%	18.91%	19.34%	19.77%	20.20%	20.63%	21.06%
Maximum Series Fuse Rating (A)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Limiting Reverse Current (A)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Rated Voltage (V dc)	19.00	36.7	37.10	37.30	37.50	37.70	27.00	17.97	35.05	27.10	18.02	35.15	27.30	27.40	27.70
Rated Current (A dc)	8.95	4.64	4.86	4.97	5.08	5.19	7.41	11.13	5.71	7.57	11.66	5.98	7.88	8.03	8.49

MECHANICAL CHARACTERISTICS

Model	WS-170	WS-175	WS-180	WS-185	WS-190	WS-195	WS-200	WS-205	WS-210	WS-215	WS-220	WS-220	WS-225	WS-230	WS-235
Length x Width x Thickness (LxWxT) - mm	1175x990x35	1175x990x35	1175x990x35	1175x990x35	1175x990x35	1175x990x35	1360x990x35	1490x990x35	1360x990x35	1490x990x35	1360x990x35	1360x990x35	1490x990x35	1490x990x35	1490x990x35
Mounting holes pitch (Y)-mm	595	595	595	595	595	595	900	900	595	900	595	595	900	900	900
Mounting holes pitch (X)-mm	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950
Weight (kg)	13	13	13	13	13	13	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50
Cells per module (Units)/ Arrangement	36/ (9x4)	72/ (12x6)	72/ (12x6)	72/ (12x6)	72/ (12x6)	72/ (12x6)	54/ (9x6)	54/ (9x6)	72/ (12x6)	54/ (9x6)	72/ (12x6)	72/ (12x6)	54/ (9x6)	54/ (9x6)	54/ (9x6)
Cell Type	Polycrystalline Silicon														
Front Cover (Material/ Thickness)	Tempered & Low Iron Glass, 3.2mm / 4.0 mm														
Encapsulate	Ethylene Vinyl Acetate														
Frame Material	Anodized Aluminium Alloy														
Junction Box (Protection degree/ Material)	Ip65 rated/ Weatherproof PPO enclosure with bypass diodes														
Connector	Optional														
Cable	Optional														
Fire Safety Class	C														
Application Class	A														
Safety Class	II														

* Mentioned electrical data are reference values which was derived at STC condition - Temp: 25°, Irradiance: 1000w/m2 and Am: 1.5Am with cleaned modules

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