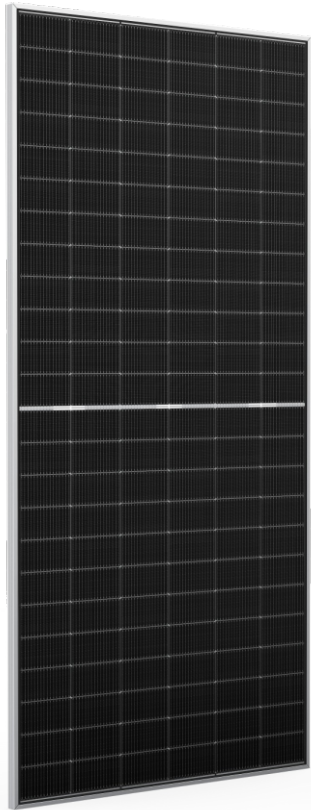


n-type TOPCon

HIGH PERFORMANCE BIFACIAL MODULE

TSM156-9-620-645BNDG



The module picture is for reference only

620-645 _{Wp}

Power Output Range

23.1 %

Maximum Efficiency






0~+3 %

Positive power tolerance

1500 _{VDC}

Maximum System Voltage

KEY FEATURES

-  Excellent power generation
-  Excellent anti-LID & anti-PID performance
-  Excellent temperature coefficient (Pmax): -0.29%/°C
-  Excellent weak-light performance
-  Excellent warranty assurance

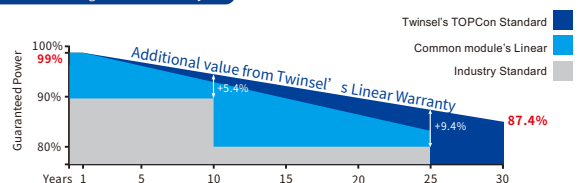


* As there are different certification requirements in different markets, please contact your local Twinsel sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

LINEAR PERFORMANCE WARRANTY

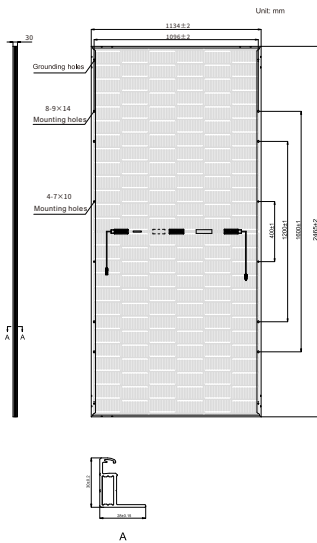
15 years Product Warranty / 30 years Linear Power Warranty

0.4% Annual Degradation over 30 years



* Please check the valid version of Limited Product Warranty which is officially released by Twinsel.

Dimensions of PV Module



ELECTRICAL DATA (STC)

Model Type	TSM156-9-620-645BNDG					
Rated Power in Watts-Pmax(Wp)	620	625	630	635	640	645
Open Circuit Voltage-Voc(V)	55.82	56.01	56.20	56.40	56.60	56.79
Short Circuit Current-Isc(A)	14.16	14.22	14.28	14.33	14.38	14.44
Maximum Power Voltage-Vmpp(V)	46.67	46.82	46.98	47.15	47.31	47.47
Maximum Power Current-Impp(A)	13.30	13.36	13.42	13.48	13.54	13.60
Module Efficiency (%) *	22.2	22.4	22.5	22.7	22.9	23.1

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5 according to EN 60904-3.
Bifacial factor: 80 ± 10(%) * Module Efficiency (%): Rounding to the nearest number

Electrical characteristics with 10% rear side power gain

Total Equivalent power - Pmax (Wp)	682	688	693	699	704	710
Open Circuit Voltage-Voc(V)	55.82	56.01	56.20	56.40	56.60	56.79
Short Circuit Current-Isc(A)	15.58	15.65	15.71	15.76	15.82	15.88
Maximum Power Voltage-Vmpp(V)	46.67	46.82	46.98	47.15	46.31	47.47
Maximum Power Current-Impp(A)	14.63	14.70	14.77	14.83	14.89	14.96

Rear side power gain: The additional gain from the rear side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

ELECTRICAL DATA (NMOT)

Model Type	TSM156-9-620-645BNDG					
Maximum Power-Pmax (Wp)	469.9	473.9	477.6	481.3	484.9	488.9
Open Circuit Voltage-Voc (V)	51.91	52.09	52.27	52.45	52.64	52.81
Short Circuit Current-Isc (A)	11.61	11.66	11.71	11.75	11.79	11.84
Maximum Power Voltage-Vmpp (V)	43.31	43.45	43.60	43.76	43.90	44.05
Maximum Power Current-Impp (A)	10.85	10.91	10.95	11.00	11.04	11.10

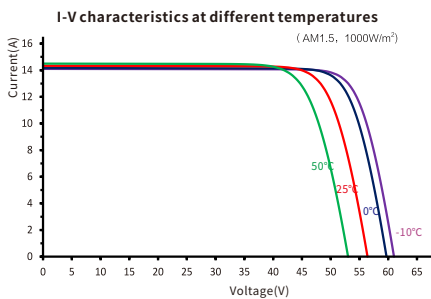
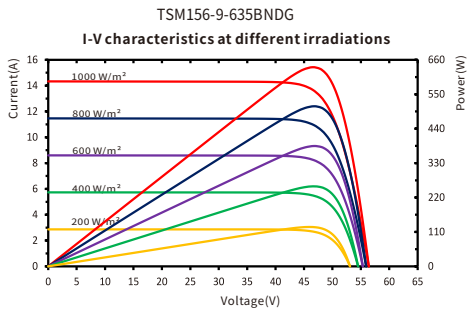
NMOT: Irradiance at 800 W/m², Ambient Temperature 20°C, Wind Speed 1 m/s.

MECHANICAL DATA

Solar cells	n-type TOPCon
Cell configuration	156 cells (6 × 13+6 × 13)
Module dimensions	2465 × 1134 × 30mm
Weight	33.5kg
Superstrate	High Transmission, AR Coated Heat Strengthened Glass
Substrate	Heat Strengthened Glass
Frame	Anodized Aluminium Alloy, Silver Color
J-Box	Potted, IP68, 1500VDC, 3 Schottky by pass diodes
Cables	4.0mm ² , Positive(+)350mm, Negative(-)230mm (Connector Included), or customized length
Connector	Risen Twinsel PV-SY02, IP68

TEMPERATURE & MAXIMUM RATINGS

Nominal Module Operating Temperature (NMOT)	44°C ± 2°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Isc	0.046%/°C
Temperature Coefficient of Pmax	-0.29%/°C
Operational Temperature	-40°C ~ +85°C
Maximum System Voltage	1500VDC
Max Series Fuse Rating	30A
Limiting Reverse Current	30A



PACKAGING CONFIGURATION

	40ft(HQ)	20ft
Number of modules per container	576	144
Number of modules per pallet	36	36
Number of pallets per container	16	4
Packaging box dimensions (LxWxH) in mm	2485 × 1110 × 1260	
Box gross weight[kg]	1270	



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CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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THE POWER OF RISING VALUE