PAHAL SOLAR

AI Powered Solar PV Module Manufacturer

N-TYPE TOPCon

G12R GLASS TO GLASS

605Wp - 650Wp



12 12-year Warranty for Materials and Processing

30 30-year Warranty for Extra Linear Power Output

Management System Certificates

ISO 9001:2015/Quality Management System

ISO 14001:2015/ Standards for environmental management

ISO 45001:2018/International standards for occupational health & safety

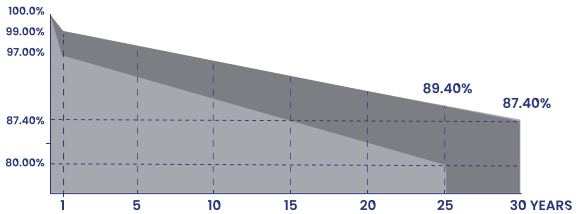
Product Certificates

IS 14286/IEC 61215 - Design Qualifications & Type Approval

IS/IEC 61730/1 - Requirement for Construction

IS/IEC 61730/2 - Requirement for Testing

LINEAR PERFORMANCE WARRANTY*

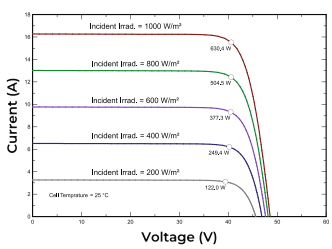


1% 1st Year Degradation 0.4% Annual Degradation Over 30 Years

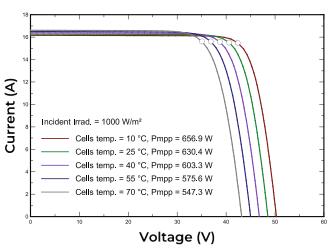
Standard Linear Power Guarantee Pahal Solar Linear Power Guarantee

I-V CURVE

IV Curve Variation with Irradiance(630W)



IV Curve Variation with Temperature(630W)



The Graphs Are For Reference Purposes Only

SMBB Technology

IP68 High Quality Junction Box

Better Low Light Performance

Higher Module Efficiency

1500v System Support

PID Resistance

High Salt Mist & Ammonia Resistance.

Pre & Post El Checking To Ensure Defect Free Modules.

Enhanced Mechanical Load Snow & Wind Loads (5400pa & 2400pa)

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N-TYPE TOPCon G12R GLASS TO GLASS

605Wp - 650Wp

ELECTRICAL PARAMETERS*

PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)

(Standard Test Environment: irradiance 1000w/m², Cell Temperature 25°c, Spectrum AM 1.5 Test Condition is Based On The Front Side)

MODEL NUMBER	PSN_GRC605	PSN_GRC610	PSN_GRC615	PSN_GRC620	PSN_GRC625	PSN_GRC630	PSN_GRC635	PSN_GRC640	PSN_GRC645	PSN_GRC650
Max. Power - Pmax (Wp)	605	610	615	620	625	630	635	640	645	650
+ve Power Tolerance(w)	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5
Max Power Voltage-Vmp (V)	40.10	40.24	40.38	40.52	40.66	40.80	40.94	41.08	41.22	41.36
Max. Power Current-Imp (A)	15.10	15.17	15.24	15.31	15.38	15.45	15.52	15.59	15.66	15.73
Open-circuit Voltage-Voc (V)	47.54	47.74	47.94	48.14	48.34	48.54	48.74	48.94	49.14	49.34
Short-circuit Current-Isc (A)	15.98	16.04	16.10	16.16	16.22	16.28	16.34	16.40	16.43	16.52
Module Efficiency STC (%)	22.40	22.58	22.77	22.95	23.14	23.32	23.51	23.69	23.88	24.06
Fill Factor (FF)	79.69	79.70	79.72	79.73	79.74	79.76	79.77	79.78	79.79	79.80

*Power Output Tolerance 0~+3%

PERFORMANCE UNDER NOMINAL OPERATING CELL TEMPERATURE (NOCT)

(Standard Test Environment: Irradiance 800w/m², Ambient Temperature 20°c, Spectrum AM 1.5, Wind Speed 1 m/s Tast Condition is Based On The Front Side)
Average power reduction of 4.5% at 200w/m² as per IEC 60904-1. Measuring Uncertainty±3%

MODEL NUMBER	PSN_GRC605	PSN_GRC610	PSN_GRC615	PSN_GRC620	PSN_GRC625	PSN_GRC630	PSN_GRC635	PSN_GRC640	PSN_GRC645	PSN_GRC650
Max. Power - Pmax (Wp)	459	462	446	470	474	447	481	485	489	493
Max Power Voltage-Vmp (V)	38.15	38.29	38.42	38.55	38.69	38.82	38.91	39.09	39.22	39.35
Max. Power Current-Imp (A)	12.02	12.07	12.13	12.19	12.24	12.30	12.35	12.41	12.46	12.52
Open-circuit Voltage-Voc (V)	45.23	45.42	45.61	45.80	45.99	46.18	46.37	46.56	46.75	46.94
Short-circuit Current-Isc (A)	12.72	12.77	12.82	12.87	12.91	12.96	13.01	13.06	13.11	13.15
Module Efficiency (%)	16.98	17.12	17.25	17.39	17.53	17.67	17.81	17.96	18.10	18.24
Fill Factor (FF)	79.69	79.70	79.72	79.73	79.74	79.76	79.77	79.78	79.79	79.80

BI-FACIAL: PMAX WITH REARSIDE POWER GAIN*

Additional power gain from rear side compared to power of front side at STC depend on mounting structure (height, tilt angle, etc) and reflectivity of ground.
The Bifacial Gains Are Dependent On The Power Plant Design And Location

	MODEL NUMBER	PSN_GRC605	PSN_GRC610	PSN_GRC615	PSN_GRC620	PSN_GRC625	PSN_GRC630	PSN_GRC635	PSN_GRC640	PSN_GRC645	PSN_GRC650
5%	Power Output (W)	635	641	646	651	656	662	667	672	677	683
	Module Efficiency (%)	23.52	23.71	23.91	24.10	24.29	24.49	24.68	24.88	25.07	25.27
10%	Power Output (W)	666	671	677	682	688	693	699	704	710	715
	Module Efficiency (%)	24.64	24.84	25.04	25.25	25.45	25.66	25.86	26.06	26.27	26.47
15%	Power Output (W)	696	702	707	713	719	725	730	736	742	748
	Module Efficiency (%)	25.76	25.97	26.18	26.40	26.61	26.82	27.03	27.25	27.46	27.67
20%	Power Output (W)	726	732	738	744	750	756	762	768	774	780
	Module Efficiency (%)	26.88	27.10	27.32	27.54	27.77	27.99	28.21	28.43	28.65	28.88
25%	Power Output (W)	756	763	769	775	781	788	794	800	806	813
	Module Efficiency (%)	28.00	28.23	28.46	28.69	28.92	29.15	29.39	29.62	29.85	30.08
30%	Power Output (W)	787	793	800	806	813	819	826	832	839	845
	Module Efficiency (%)	29.12	29.36	29.60	29.84	30.08	30.32	30.56	30.80	31.04	31.28

[Bi-Faciality factor: 80% ± 10%]

MECHANICAL SPECIFICATIONS

Matrix/No. of Cells	2* (11*6)/132 Half-Cut Cells
Cell Type	N-type Topcon Bifacial Solar Cell
Module Size (LXWXH) mm	2382 X 1134 X 40
Module Weight (KG)	34.6Kg±3%
Frame	Anodized Aluminium Alloy (6005,Temper T6, Silver Colour)
Front Glass (Material / Thickness)	2 mm Low Iron HTAR/AR semi-tempered glass
Back Glass (Material / Thickness)	2 mm Low Iron Printed semi-tempered glass(white coating)
Encapsulant	EPE(PID free and UV Resistant)
Junction Box/Connector	Split JB – IP68 (3 bypass diodes) , MC4 Compatible
Cables	400mm length including connectors(4 mm²)
Application Class Rating	Class A (Safety class II)
Fire safety class	Class C (IEC 61730)
Mechanical Load Test	5400 Pa (Front) / 2400 Pa (Back)
X-Pitch (mm)	1092mm
Y-Pitch (mm)	A) 400 (B)790 (C)1100 (D)1400

TEMPERATURE CO-EFFICIENTS

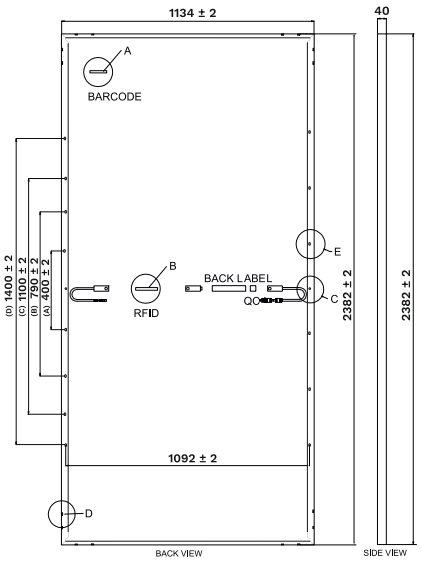
Temperature Coefficients of Pmax (γ_Pmp)	-0.2925%/°C
Temperature Coefficients of Voc(β_Voc)	-0.2492%/°C
Temperature Coefficients of Isc(α_Isc)	0.0450%/°C

OPERATING CONDITIONS

Operating Temperature (°C)	-40 °C to +85 °C
Max. System Voltage (V)	1500 VDC
Max. Series Fuse Rating (A)	30/35 A
NOCT Temperature (°C)	45 ± 2 °C

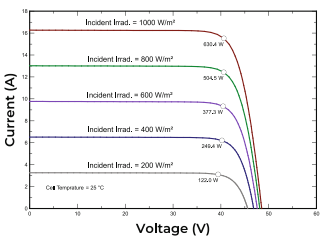
PACKING STANDARD

FRAME SIZE	40mm	
Vehicle	22ft	40ft
No. of Modules	250	550
No. of Pallets	10	22
Module per Pallet / Weight	25/920	

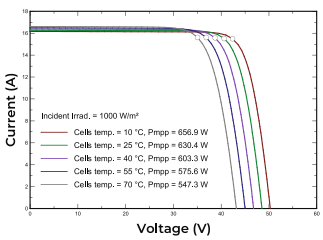


I-V CURVE

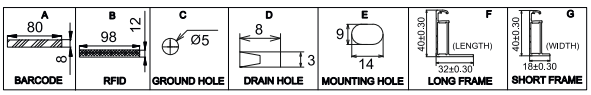
IV Curve Variation with Irradiance(630W)



IV Curve Variation with Temperature(630W)



The Graphs Are For Reference Purposes Only



*All Dimensions Are In mm

Caution: Please read safety and installation instructions before using the product.The electrical data given here is for reference purpose only. *Warranty: Linear performance warranty for 30 years, with degradation up to 1% in 1st year and 0.4 %/year from year 2 to year 30. Please read Pahal Solar warranty documents thoroughly. Disclaimer: Specifications included in the datasheet are subject to change without prior notice owing to continuous innovation in the Product Development and R&D Activities. PAHAL SOLAR PVT. LTD. reserves the right to make any adjustments to the information described here. Dataset contained in this specification do not form a representative of a single module data. @T&C Apply.