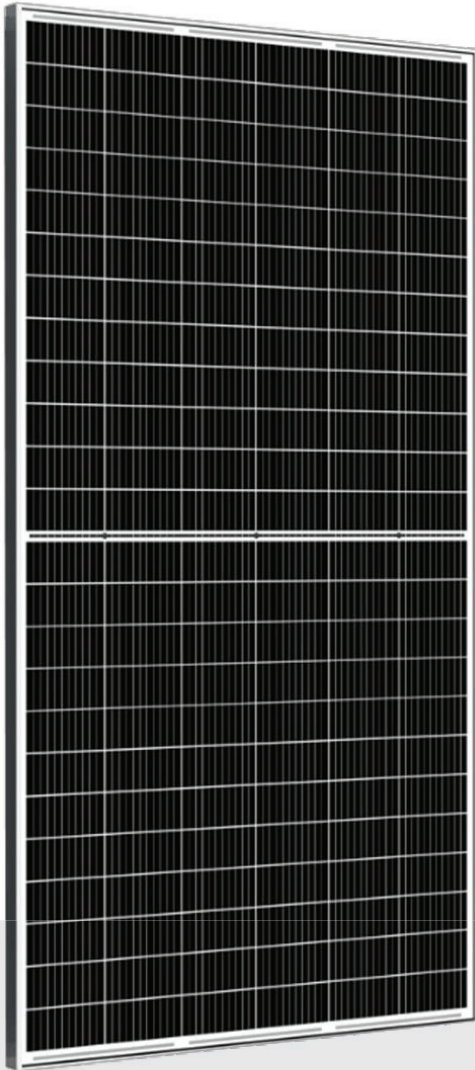









SOLAR MODULES

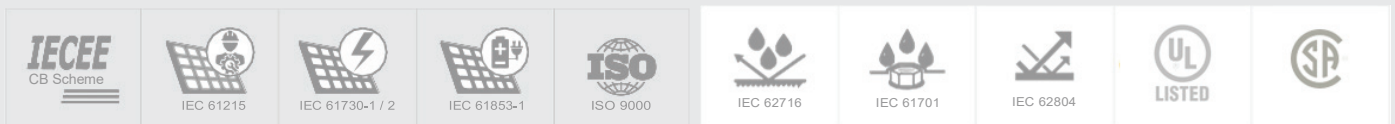
KNR -R 450 – 460 Wp – MONO PERC 10BB
MONOFACIAL (120 CELLS)



Key Features

-  AR Coated Tempered Glass Anti-Reflective Module Surface
-  Excellent Module Efficiency with Mono PERC cells through 100% Automation
-  Positive Power Tolerance with Current Binning to Prevent Mismatch Losses
-  Pre- and Post- EL Checking With High Resolution Camera
-  IP68 Junction Box for Long Term Endurance
-  100% High Voltage Testing to Ensure Safety
-  MBB Half-Cell Technology provides Better Performance under Partial Shading

PRODUCT CERTIFICATES



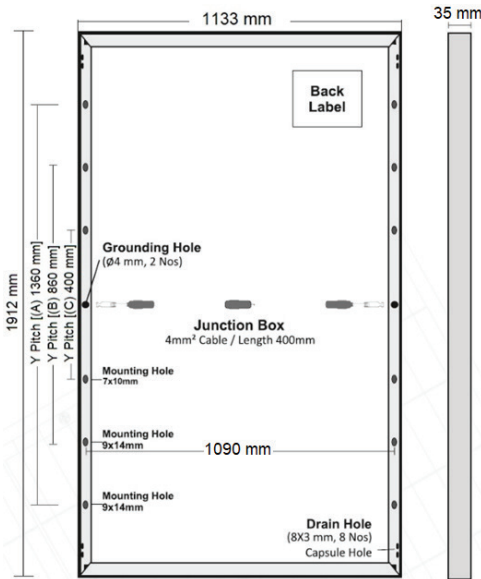
MADE IN INDIA

30 YearS Linear Performance Warranty*

12 YearS Product warranty on materials and workmanship

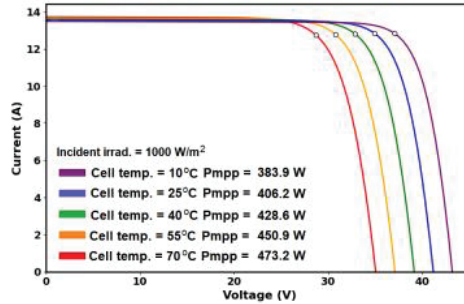
BACK VIEW

SIDE VIEW

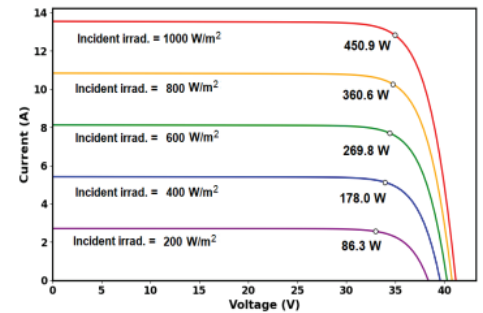


All dimensions are in mm with ±2 mm tolerance

IV Curve Variation with Temperature



IV Curve Variation with Irradiance



*I-V curves shown for front-side illumination of 450 Wp panel

ELECTRICAL DATA PERFORMANCE

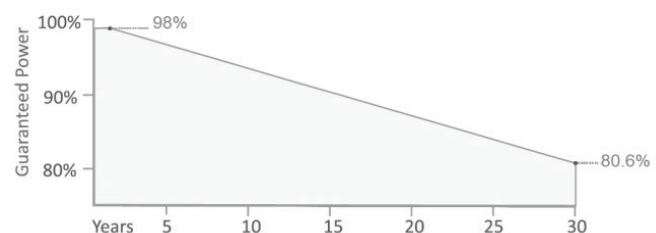
Conditions	Unit	STC		NOCT		STC		NOCT	
		STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Model number		KNR450WC		KNR455WC		KNR460WC			
Peak Power P _{max} (0 ~ + 4.99)	W _p	450 W	334 W	455 W	337 W	460 W	341 W		
Maximum voltage	V _{mp}	35.06 V	32.28 V	35.36 V	32.56 V	35.67 V	32.84 V		
Maximum current	I _{mp}	12.86 A	10.33 A	12.88 A	10.35 A	12.92 A	10.38 A		
Open circuit voltage,	V _{oc}	41.18 V	38.73 V	41.43 V	38.97 V	41.66 V	39.18 V		
Short circuit current,	I _{sc}	13.54 A	10.97 A	13.57 A	10.99 A	13.61 A	11.03 A		
Module Efficiency(%)		20.81 %		21.02 %		21.27 %			
Fill Factor		80.86 %		80.99 %		81.29 %			
Operating Temperature(°C)		-40°C to +85°C		STACKING STANDARD		20FT	40FT		
Maximum system voltage		1500V		No. of Modules per Container:		155	682		
Maximum series fuse rating		25A		No. of Pallets per Container:		5	22		
Temperature coefficients of P _{max}		-0.3303 %/°C		Modules per Pallet/Weight:		31 Nos/ 790 Kg	31 Nos/ 790 Kg		
Temperature coefficients of V _{oc}		-0.2470 %/°C		Pallet Dimensions:		1950*1130*1275	1950*1130*1275		
Temperature coefficients of I _{sc}		+0.0297 %/°C							

**STC: Irradiance 1000 W/m² module temperature 25° C, Am=15; NOCT : Irradiance 800 W/m², ambient temperature 20°C, Am=1.5, Wind speed 1m/s. Average power reduction of 4.5% at 200 W/m² as per IEC 60904-1. Measuring Uncertainty +/- 3%
 **Power gain from rear side depends upon the ground reflectance (Albedo) & Bifaciality factor

MODULE MECHANICAL DATA

SPECIFICATION	DATA
Dimensions (L x W x H in mm)	1912 x 1133 x 35
Weight (kg)	23.96
No. of Cells	120 Half-cut solar cells
Frame	Anodized Aluminum Alloy (6063, Temper T5, silver colour)
Front Cover	ARC coated Low Iron Tempered Glass (3.2 mm thick)
Back Cover	Corona treated PVDF Fluoro-polymer Backsheet (white colour)
Junction Box	Split Junction Box (3 nos. with individual Bypass Diode) – Weatherproof (IP68)
Cables	4 sq. mm, 400 mm length (1200 mm available on request)
Connectors	MC4 compatible (MC4 original available on request)
Application Class Rating	Class A
Safety Class Rating	Class II
Mechanical Load Test (as per IEC & UL)	5400 Pa-Front; 2400 Pa-Back

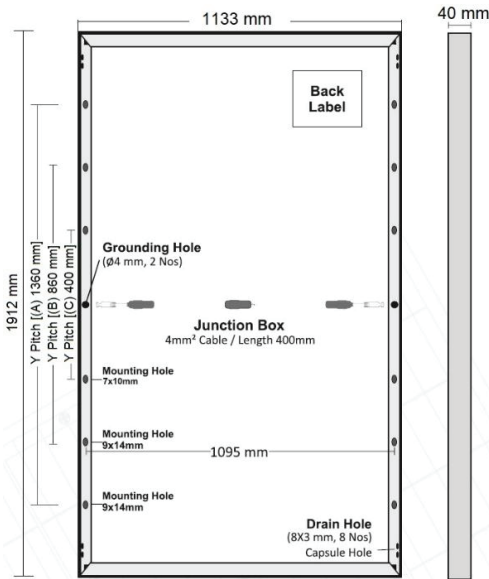
PERFORMANCE WARRANTY



*Graphics shown herein above are for reference purpose only

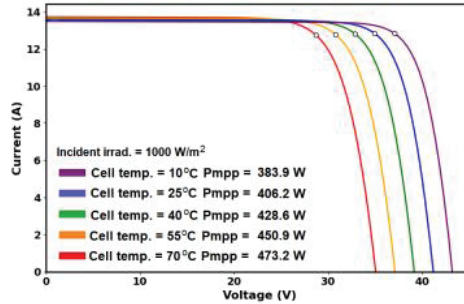
BACK VIEW

SIDE VIEW

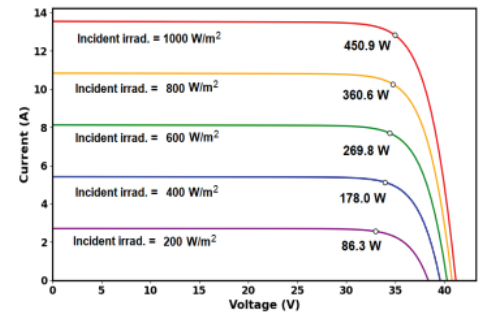


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IV Curve Variation with Irradiance



*I-V curves shown for front-side illumination of 450 Wp panel

ELECTRICAL DATA PERFORMANCE

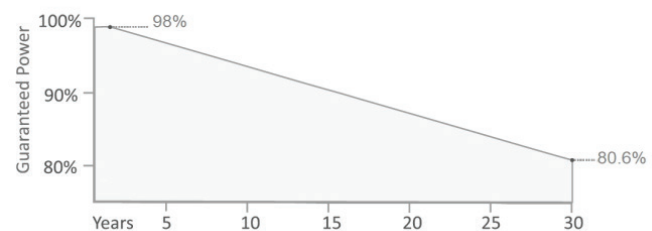
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Operating Temperature(C)		-40°C to +85°C		STACKING STANDARD		20FT	40FT		
Maximum system voltage		1500V		No. of Modules per Container:		135	594		
Maximum series fuse rating		25A		No. of Pallets per Container:		5	22		
Temperature coefficients of Pmax		-0.3303 %/°C		Modules per Pallet/Weight:		27 Nos/ 700 Kg	27 Nos/ 700 Kg		
Temperature coefficients of Voc		-0.2470 %/°C		Pallet Dimensions:		1950*1130*1275	1950*1130*1275		
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