REDSOLAR

G12R-MBB TOPCon Mono Ultralight module

96 Half Cells



12 years Product warranty

25 years Linear power warranty

Integrated Solar Manufacturing & Technology Since 1964

435-455W /Output power

22.8% /Maximum efficiency

0~+5W /Power tolerance

Ultra-light weight

Compared with conventional modules, it can reduce the weight by 40%, and the weight per unit area is 6.5kg/m2,

High quality

Strict selection of packaging materials, resistance to PID hot spot anomaly, mechanical strength meets the conventional component hail test, 5400PA /2400PA snow load, wind load test through IEC61215, IEC61730 and other reliability certification tests

Better Performance

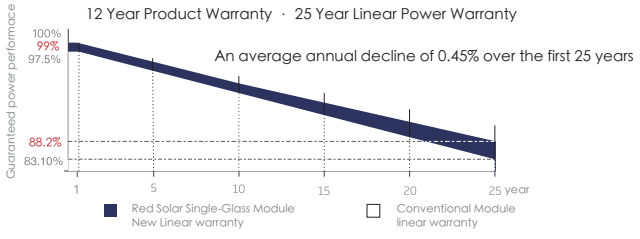
25-year linear warranty, 1% decline in the first year an average annual decline of 0.45% over the first 25 years, increased returnon investment
No Boron-oxygen LID (Light Induced Degradation).

High Returns

The n-type module has lower annual attenuation, better photoelectric conversion efficiency and temperature coefficient benefit

· IEC TS 62941 （PV quality Management System）
· ISO9001： 2015 （Quality Management System）
· ISO14001 （Environmental Management System）
· OHSAS18001 （Occupational Health and Safety Management System）

Excellent Power Guarantee



Hunan Red Solar New Energy Science and Technology Co.,Ltd
www.red-solar.com

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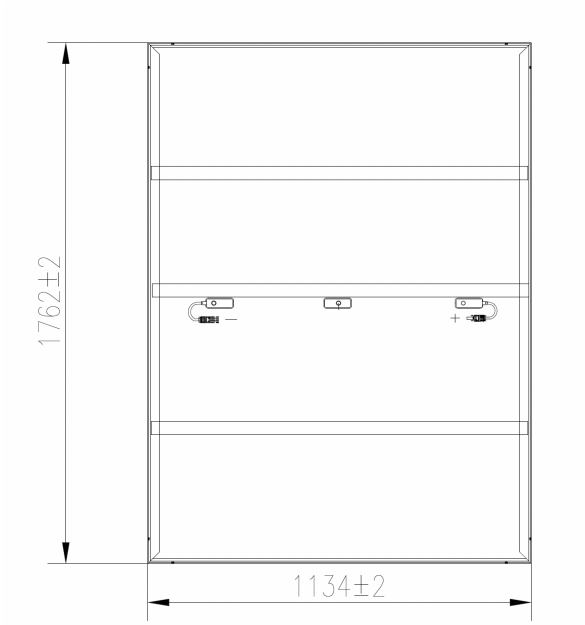
Model of PV Module

CETC-xxxTR(L)/96

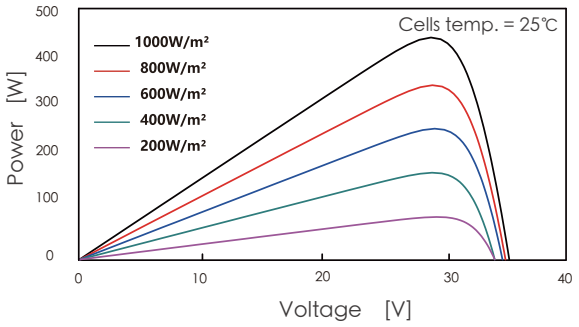
Power Range

435-455W

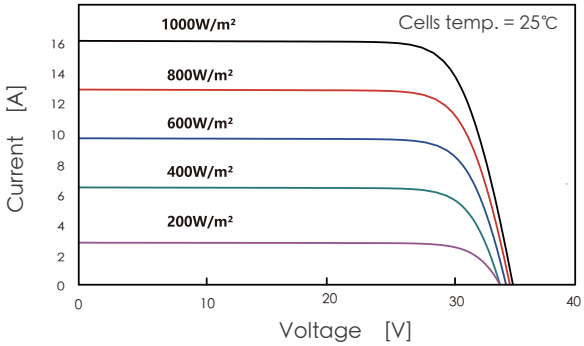
PV module dimensions (mm)



P-V Curves of PV Module



I-V Curves of PV Module



Electrical Parameter(STC)

Model	435TR	440TR	445TR	450TR	455TR
Maximum power (W)	435	440	445	450	455
Working point voltage (V)	28.60	28.81	29.03	29.24	29.45
Working point current (A)	15.21	15.27	15.33	15.39	15.45
Open circuit voltage (V)	34.54	34.60	34.67	34.73	34.80
Short circuit current (A)	16.05	16.11	16.17	16.23	16.29
PV module efficiency	21.77%	22.02%	22.27%	22.52%	22.77%
Standard test conditions	Atmospheric quality Am1.5, Irradiance 1000w/㎡, Cell Temperature 25℃				

Electrical Parameter(NMOT)

Model	435TR	440TR	445TR	450TR	455TR
Maximum power (W)	327	331	335	338	342
Working point voltage (V)	26.63	26.83	27.03	27.23	27.42
Working point current (A)	12.28	12.33	12.38	12.43	12.48
Open circuit voltage (V)	32.20	32.45	32.69	32.87	33.18
Short circuit current (A)	12.94	12.99	13.04	13.09	13.14
NMOT conditions	The irradiance is 800w/㎡, the ambient temperature is 20 degrees, and the wind speed is 1m/s				

Mechanical Parameters

Module size	1762*1134*30mm
Number of solar cells	96Cells (2*6*8)
Weight	16.6kg/13.6kg/12.9Kg ±5%
Junction Box	IP68, 3 diodes
Cables	4mm², 300mm, (Customizable)
Front glass	Ultra light toughened glass
Static load on the front	5400Pa
Static load on the back	2400Pa

Packaging&Transport

40'HQ container transport	36 Pcs/box × 26 box = 936Pcs

Note: Packing tray requires additional customization

Temperature Parameter

NMOT	42±2℃
Temperature coefficient of maximum power(Pmax)	-0.30%/℃
Temperature coefficient of open circuit voltage(Voc)	-0.25%/℃
Temperature coefficient of short circuit current(Isc)	+0.045%/℃

Maximum Ratings

Working temperature	-40~+85℃
Maximum system voltage	1500VDC
Maximum fuse rated current	25A

All data contained in this specification are subject to change without prior notice. The final interpretation rights belong to Hunan Red Solar New Energy Science and Technology Co.,Ltd (202404V01)