

RUNERGY

Preliminary Version

TIER 1 HY-DH120N9

495-515W

22.8%

Max. Efficiency

N-Type

Bifacial & Dual Glass

120 Pieces

Half-Cell



High Conversion Efficiency

Module efficiency up to 22.8% based on N-Type wafer and advanced N-Type cell technology



Excellent Energy Yield

More power output in field operation due to better thermal behaviors, weak-light performance and bifaciality



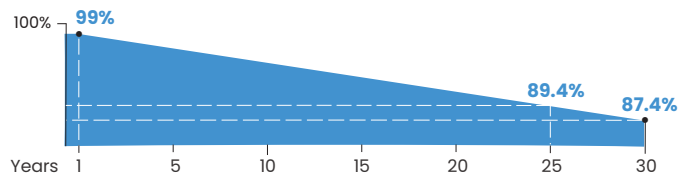
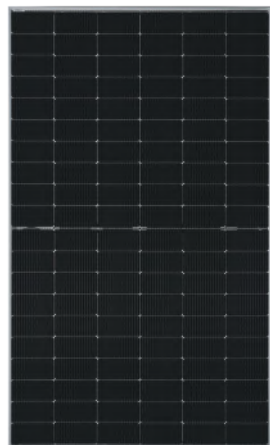
Outstanding Anti-degradation

Unsusceptible to LID, LeTID and less annual degradation due to special characteristics of N-Type



Quality Guarantee

High module quality ensures long-term reliability



Runergy N-Type Dual Glass Product Performance Warranty

- **12 Years** warranty for materials and workmanship
- **30 Years** warranty for extra linear power output
- 1st year < **1%**, annual degradation < **0.4%**

IEC61215 / IEC61730 / UL61730 / IEC61701 / IEC62716 / IEC60068 / ISO9001 / ISO14001 / ISO45001



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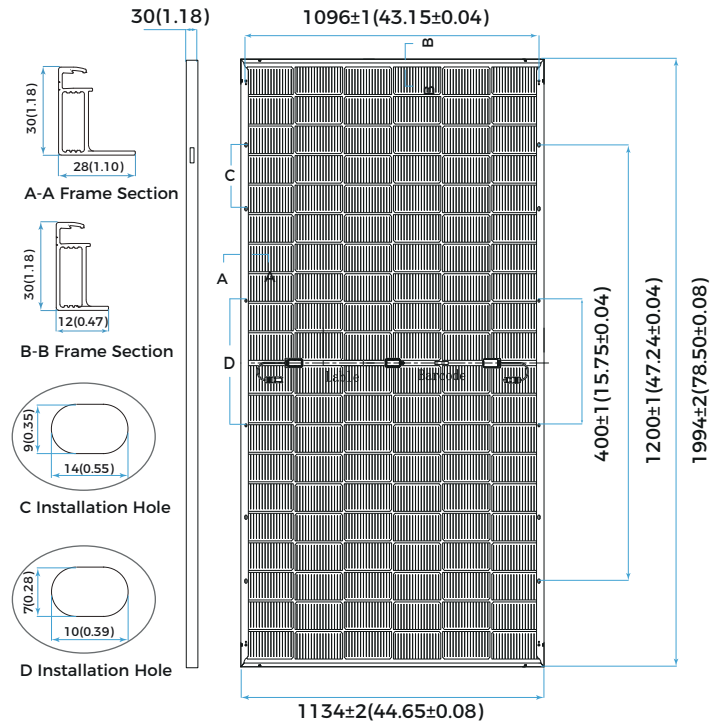
Unit: mm(inch)

Mechanical Parameters

Solar Cell	Mono N-Type 182.2×191.6mm
No. of Cells	120 (6 × 20)
Dimensions	1994 × 1134 × 30mm(78.40× 44.65 × 1.18in.)
Weight	28.4 kg (62.6 lbs)
Junction Box	IP68 rated (3 bypass diodes)
Output Cable	4mm ² (IEC), 12 AWG(UL) +400/-200mm (+15.75/-7.87in.) or customized
Connector	RY01/EVO2 or similar
Front Cover	2.0mm (0.079in.)semi-tempered AR glass
Back Cover	2.0mm (0.079in.)semi-tempered glass
Container	36 pcs/Pallet, 792 pcs/40' HQ

Operating Parameters

Max. System Voltage	DC 1500V (IEC/UL)
Operating Temperature	-40°C ~ +85°C(-40°F ~ +185°F)
Max. Fuse Rating	30A
Frontside Max. Loading	5400Pa(112lb/ft ²)
Backside Max. Loading	2400Pa(50lb/ft ²)
Bifaciality	80%±10%
Fire Resistance	IEC Class A



Electrical Characteristics - STC

Irradiance 1000 W/m², cell temperature 25 °C, AM1.5, Test uncertainty for Pmax: ±3%

	515	510	505	500	495
Maximum Power at STC (Pmax/W)	515	510	505	500	495
Power Tolerance (W)	0 ~ +5				
Optimum Operating Voltage (Vmp/V)	37.06	36.96	36.87	36.77	36.67
Optimum Operating Current (Imp/A)	13.90	13.80	13.70	13.60	13.50
Open Circuit Voltage (Voc/V)	43.81	43.71	43.62	43.52	43.42
Short Circuit Current (Isc/A)	14.79	14.69	14.59	14.49	14.39
Module Efficiency	22.8%	22.6%	22.3%	22.1%	21.9%

Electrical Characteristics - NMOT

Irradiance 800 W/m², ambient temperature 20 °C, AM1.5, wind speed 1 m/s.

Maximum Power at NMOT (Pmax/W)	394.5	390.6	386.9	383.0	379.1
Optimum Operating Voltage (Vmp/V)	35.48	35.39	35.30	35.21	35.11
Optimum Operating Current (Imp/A)	11.12	11.04	10.96	10.88	10.80
Open Circuit Voltage (Voc/V)	41.95	41.85	41.77	41.67	41.57
Short Circuit Current (Isc/A)	11.92	11.84	11.76	11.68	11.60

Rearside Power Gain (Reference to 515W Front)

Rearside Power Gain	5%	15%	25%
Maximum Power (Pmax/W)	541	592	644
Optimum Operating Voltage (Vmp/V)	37.06	37.16	37.16
Optimum Operating Current (Imp/A)	14.59	15.94	17.32
Open Circuit Voltage (Voc/V)	43.81	43.91	43.91
Short Circuit Current (Isc/A)	15.53	16.97	18.44
Module Efficiency	23.9%	26.2%	28.5%

Temperature Characteristics

Nominal Module Operating Temperature	42 ± 2 °C
Nominal Cell Operating Temperature	45 ± 2 °C
Temperature Coefficient of Pmax	-0.29%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Isc	0.045%/°C

