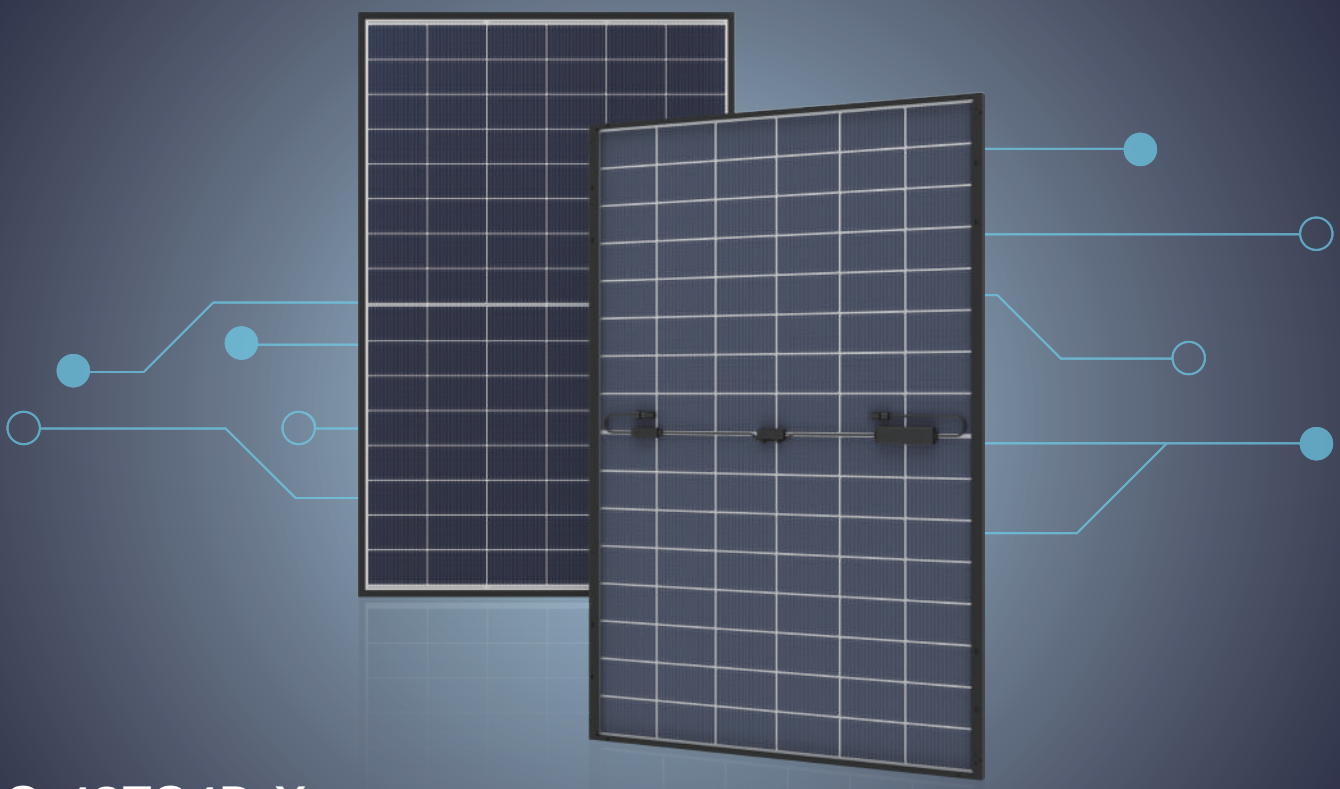
Smart Module

SUNGROW



SG-48TG4D-X

455-480W

Maximum Efficiency 24.0%

Smart Functions

Module-Level Monitoring
iSolarCloud Storage & Data Visualization

Smart Pathfinding
Fault Localization & Precision Bypass

System-Level Response
Anomaly Detection & Shutdown Time ≤ 25s

Digital Lifecycle Records
Full Lifecycle Data Transparency

Self-cleaning
More Power Generation

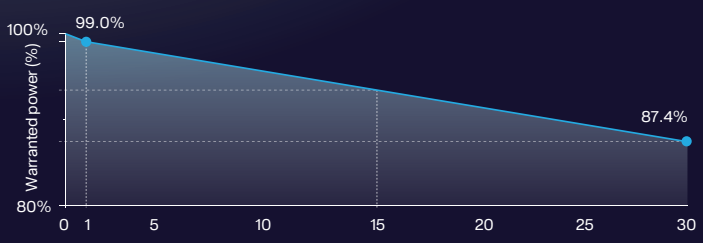
Product Warranty

25 Year
Warranty for Materials and Processing

30 Year
Warranty for Extra Linear Power Output

First Year Power Degradation **<1%**

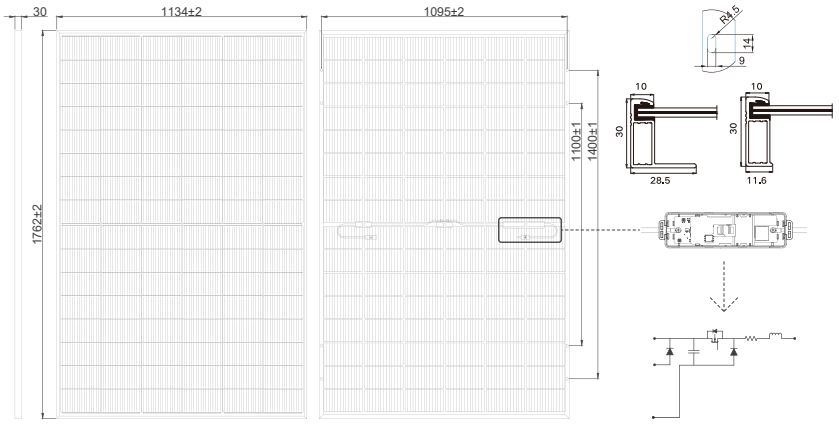
Year 2-30 Power Degradation **<0.4%**



Quality Certification

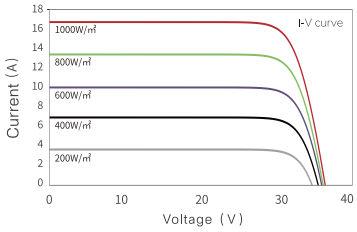
- IEC61215:2021 / IEC61730:2023
- IEC62109-3:2020
- IEC61701 / IEC62716 / IEC60068 / IEC62804
- ISO9001:2015: Quality Management System
- ISO14001:2015: Environment Management System
- ISO45001:2018: Occupational health and safety management systems

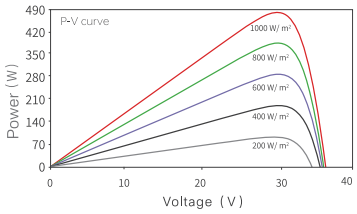
Engineerring Drawings



Unit: mm

I-V and P-V Curves





Specifications (STC)

Maximum Power Pmax (W)	455	460	465	470	475	480
Voltage at Maximum Power (Vmp/V)	30.40	30.67	30.94	31.21	31.48	31.75
Current at Maximum Power (Imp/A)	14.97	15.00	15.03	15.06	15.09	15.12
Open Circuit Voltage (Voc/V)	35.98	36.15	36.32	36.49	36.66	36.83
Short Circuit Current (Isc/A)	15.87	15.90	15.93	15.96	15.99	16.02
Module Efficiency (%)	22.8	23.0	23.3	23.5	23.8	24.0
Power Tolerance	0~+3%	Maximum System Voltage			DC1500V	
Maximum Series Fuse Rating	30A	Operating Temperature			-40°C~+70°C	
Bifacial Factor	80±5%					

STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5

Specifications (BNPI)

Maximum Power Pmax (W)	501	506	512	517	523	528
Voltage at Maximum Power (Vmp/V)	30.40	30.67	30.94	31.21	31.48	31.75
Current at Maximum Power (Imp/A)	16.47	16.50	16.53	16.57	16.60	16.63
Open Circuit Voltage (Voc/V)	35.98	36.15	36.32	36.49	36.66	36.83
Short Circuit Current (Isc/A)	17.46	17.49	17.52	17.56	17.59	17.62

BNPI: Irradiance Front 1000W/m², Rear 135W/m²,Cell Temperature 25°C, AM=1.5

Mechanical Characteristics

Cell Type	N-type mono-crystaline
Cell Orientation	96 (2×48)
Dimension	1762×1134×30mm
Weight	24.0kg
Front Glass	2.0mm, Anti-reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Anodized aluminum alloy
Junction Box	IP68 rated
Output Cables	4mm², (+) : 1200mm, (-) : 1200mm or customize length
Connector Type	MC4-EVO2A/others
Mechanical Load	5400Pa (Front side) /2400Pa (Rear side)

Temperature Characteristics

Temperature Coefficients of Pmax	-0.29%/°C
Temperature Coefficients of Voc	-0.25%/°C
Temperature Coefficients of Isc	0.045%/°C

Packaging Configuration

Packing Detail	36 pcs/pallets, 72 pcs/stack, 936 pcs/ 40'HQ container

RSD Parameters

Shutdown Output Voltage	1±0.1V
Output Bypass	Yes
Rapid Shutdown Time	≤25s
Maximum Input Voltage	60V
Maximum System Voltage	1500V
Communication Method	PLC
Maximum Communication Distance	≤450m

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*Specifications included in this datasheet are subject to change without notice. Sungrow Renewables reserves the right of final interpretation.