

Qudra-S132/M12H- xxx

650-670W

210mm cells half cut cell technology

Product Advantages



High customer value

Lower LCOE, reduce BOS cost, higher return in investment
Lower guaranteed first year and annual degradation
Designed for compatibility with existing mainstream system components



High power up to 670W

Larger area 210mm silicon wafers and laser cutting technology up to 21.6% module efficiency; Ga doped mono perc cell reduce LID/LeTID.



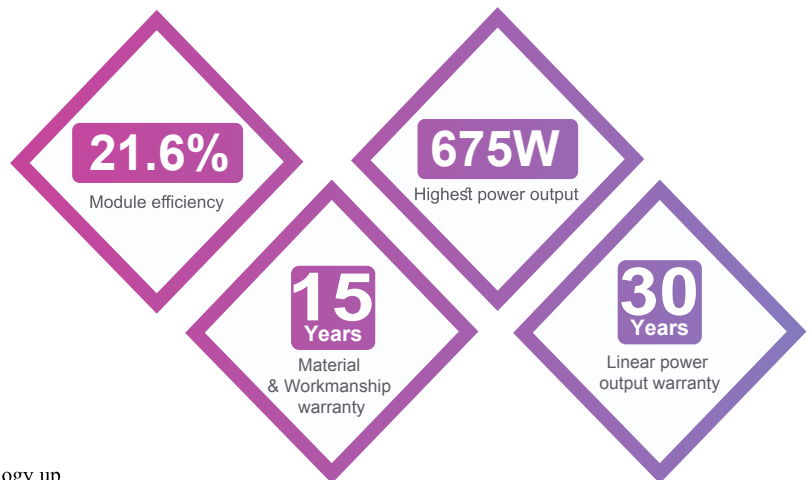
High reliability

Non-destructive cell cutting to avoid invisible micro-cracks in cells.
Passes two different types of industry PID tests (IEC62804 Control Resistant to harsh environments such as salt (IEC61701), ammonia (IEC 62716), sand, high temperature and humidity tests (IEC 61215)

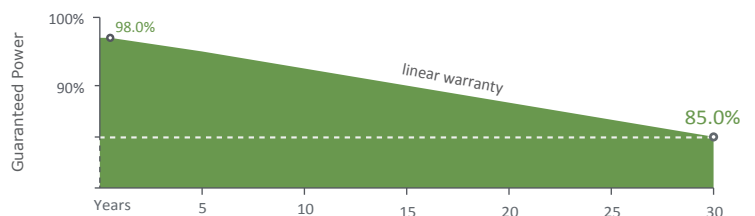


High energy yield

Excellent IAM(incident Angle Modifier) and low irradiation performance, validated by TUV SUD.
Special circuit design with much lower hot spot temperature.
Circular ribbons to reduce shading and greater light trapping.



Product Guarantee



Product Certification

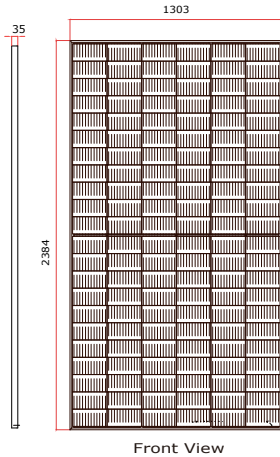


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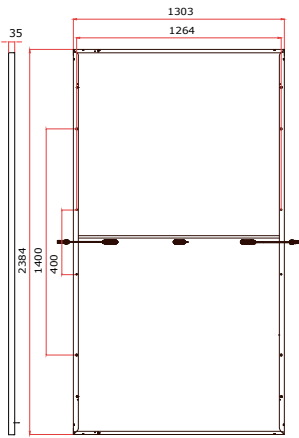
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Qudra-S132/M12H-xxx

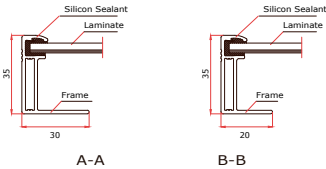
DIMENSIONS OF PV MODULE(mm)



Front View



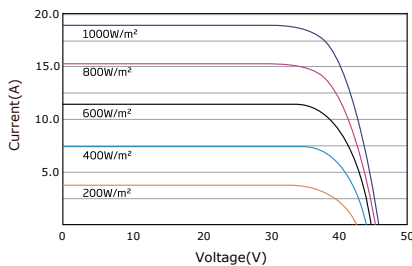
Back View



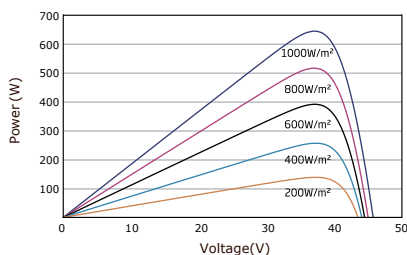
A-A

B-B

I-V CURVES OF PV MODULE(650W)



P-V CURVES OF PV MODULE(650W)



ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}(W_p)^*$	650	655	660	665	670
Power Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	37.4	37.6	37.8	38.0	38.2
Maximum Power Current- I_{MPP} (A)	17.39	17.43	17.47	17.51	17.55
Open Circuit Voltage- V_{OC} (V)	45.3	45.5	45.7	45.9	46.1
Short Circuit Current- I_{SC} (A)	18.44	18.48	18.53	18.57	18.62
Module Efficiency η_m (%)	20.9	21.1	21.2	21.4	21.6

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	492	496	500	504	508
Maximum Power Voltage- V_{MPP} (V)	34.9	35.1	35.3	35.4	35.6
Maximum Power Current- I_{MPP} (A)	14.09	14.13	14.17	14.22	14.26
Open Circuit Voltage- V_{OC} (V)	42.7	42.9	43.0	43.2	43.4
Short Circuit Current- I_{SC} (A)	14.86	14.89	14.93	14.96	15.01

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	132 cells
Module Dimensions	2384x1303x35mm
Weight	33.9 kg
Glass	2.0 mm, High Transmission, Anti-reflection coating
Encapsulant Material	enhanced EVA
Backsheet	White
Frame	35 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Cable length 350mm or customized length
Connector	MC4 Compatible

TEMPERATURE RATINGS

NOCT(Nominal Operating Cell Temperature)	43°C (± 2°C)
Temperature Coefficient of P_{MAX}	- 0.34%/ °C
Temperature Coefficient of V_{OC}	- 0.25%/ °C
Temperature Coefficient of I_{SC}	0.04%/ °C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40~+85 °C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	30A

MECHANICAL LOADING

Snow Load: 5400 Pa
Wind Load: 2400 Pa

WARRANTY

15 year Product Workmanship Warranty	2% first year degradation
30 year Power Warranty	0.5% Annual Power Attenuation

(Please refer to product warranty for details)

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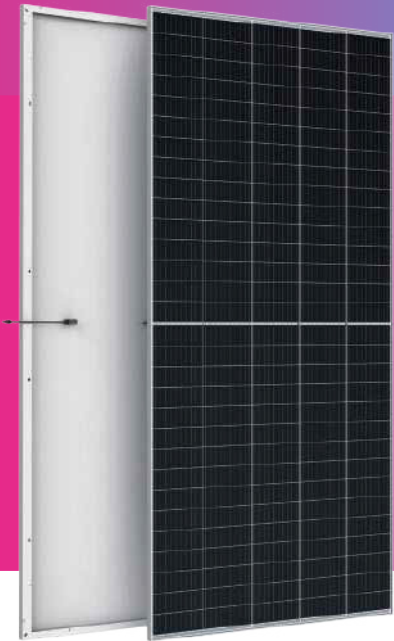
QudraPs



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Qudra

Renewable Energy Solutions



Qudra-S150/M12H-xxx

485-510W

210mm cells 1/3 cut cell technology

Product Advantages



High customer value

Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
Lower guaranteed first year and annual degradation
Designed for compatibility with existing mainstream system components
Higher return on Investment



High power up to 510W

Large area cells based on 210mm silicon wafers and 1/3-cut cell technology
Up to 21.2% module efficiency with high density interconnect technology
Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



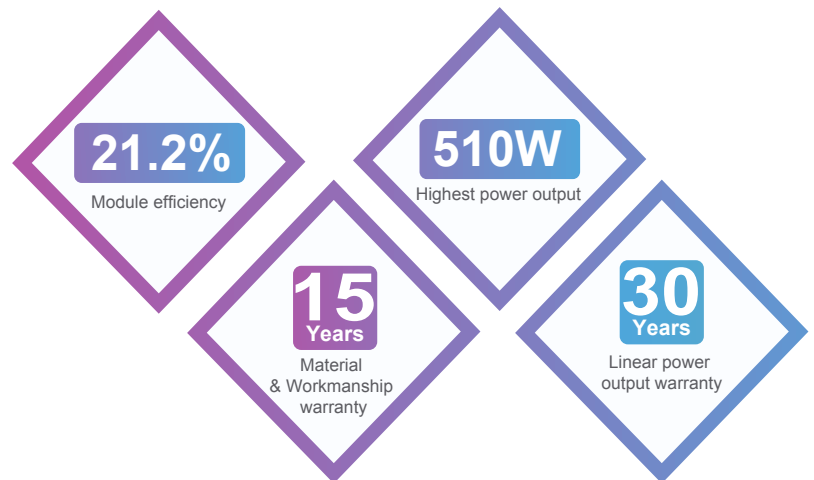
High reliability

Minimized micro-cracks with innovative non-destructive cutting technology Ensured PID resistance through cell process and module material control Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas. Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

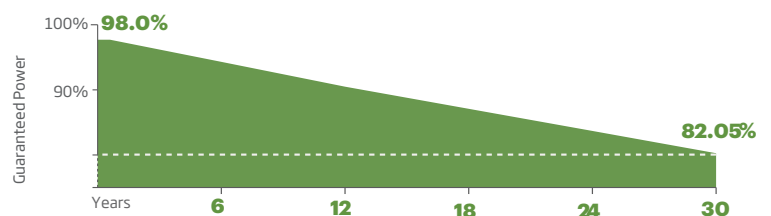


High energy yield

Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
The unique design provides optimized energy production under in-row shading conditions



Product Guarantee



Product Certification

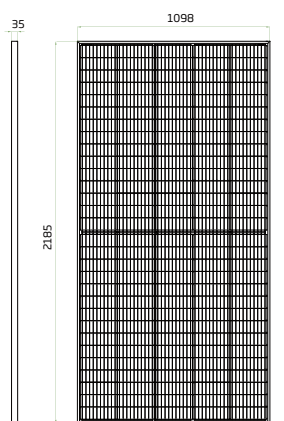


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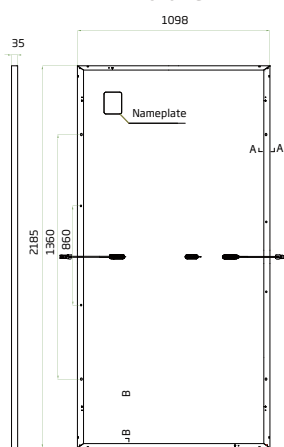
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Qudra-S150/M12H-xxx

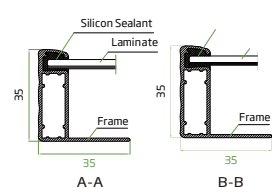
DIMENSIONS OF PV MODULE(mm)



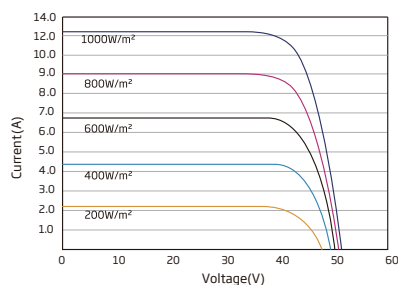
Front View



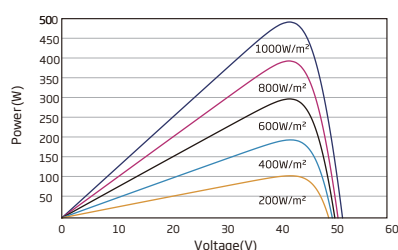
Back View



I-V CURVES OF PV MODULE(495 W)



P-V CURVES OF PV MODULE(495W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)*	485	490	495	500	505	510
Power Tolerance- P_{MAX} (W)	0 ~ +5					
Maximum Power Voltage- V_{MPP} (V)	42.2	42.4	42.6	42.8	43.0	43.2
Maximum Power Current- I_{MPP} (A)	11.49	11.56	11.63	11.69	11.75	11.81
Open Circuit Voltage- V_{OC} (V)	51.1	51.3	51.5	51.7	51.9	52.1
Short Circuit Current- I_{SC} (A)	12.07	12.14	12.21	12.28	12.35	12.42
Module Efficiency η_m (%)	20.1	20.3	20.5	20.7	21.0	21.2

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.

*Measuring tolerance: $\pm 3\%$.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	365	369	373	377	381	385
Maximum Power Voltage- V_{MPP} (V)	39.9	40.0	40.2	40.4	40.6	40.8
Maximum Power Current- I_{MPP} (A)	9.17	9.22	9.28	9.33	9.38	9.50
Open Circuit Voltage- V_{OC} (V)	48.1	48.2	48.4	48.6	48.8	49.0
Short Circuit Current- I_{SC} (A)	9.73	9.78	9.84	9.90	9.95	10.01

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	150 cells
Module Dimensions	2185x1098x35mm
Weight	26.5 kg
Glass	3.2 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White
Frame	35 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Cable length 350mm or customized length
Connector	MC4 Compatible

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C ($\pm 2^\circ\text{C}$)
Temperature Coefficient of P_{MAX}	- 0.34%/ °C
Temperature Coefficient of V_{OC}	- 0.25%/ °C
Temperature Coefficient of I_{SC}	0.04%/ °C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

12 year Product Workmanship Warranty
25 year Power Warranty
2% first year degradation
0.55% Annual Power Attenuation

(Please refer to product warranty for details)

MAXIMUM RATINGS

Operational Temperature	-40 ~ +85 °C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	20A

PACKAGING CONFIGURATION

Modules per box: 31 pieces
Modules per 40' container: 660 pieces



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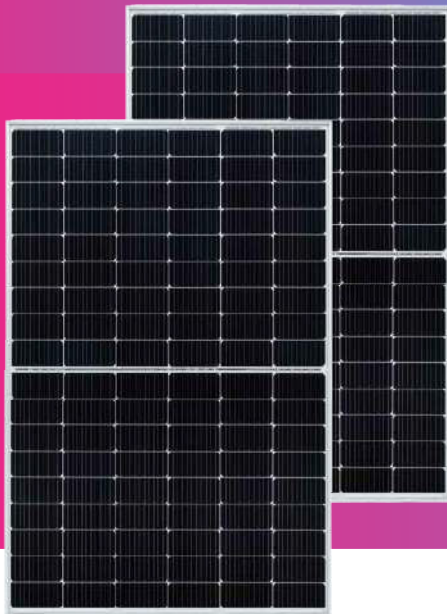
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Qudra-S108/M10H 182mm Half Cell Series 390-410W

108-CELL HALF CUT MONOCRYSTALLINE SOLAR MODULE

Product Advantages



10BB half-cut cell technology

New circuit design, lower internal current, lower Rs loss
Ga doped wafer, attenuation < 2% (1st year) / ≤ 0.55% (Linear)



Significantly lower the risk of hot spot

Special circuit design with much lower hot spot temperature



Lower LCOE

2% more power generation, lower LCOE



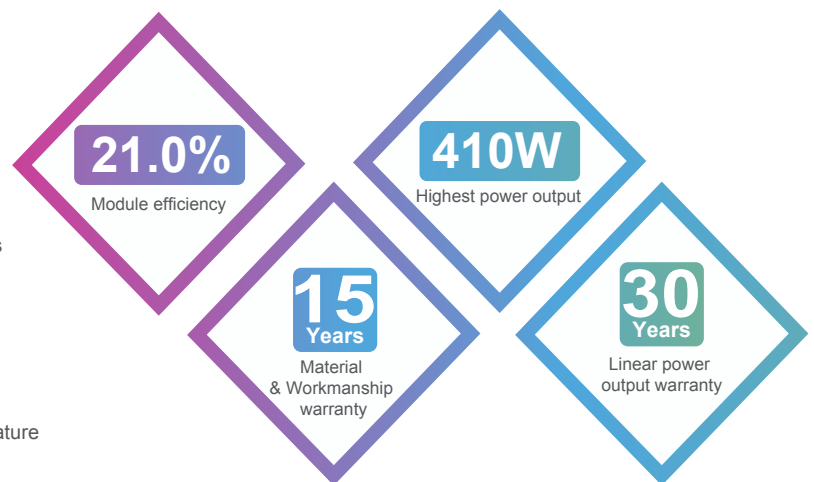
Excellent Anti-PID performance

2 times of industry standard Anti-PID test by TÜV SÜD

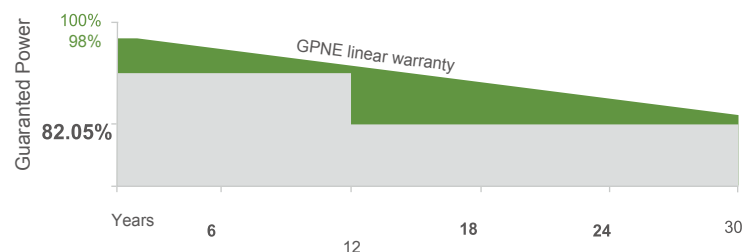


IP68 junction box

High waterproof level



Product Guarantee



Product Certification

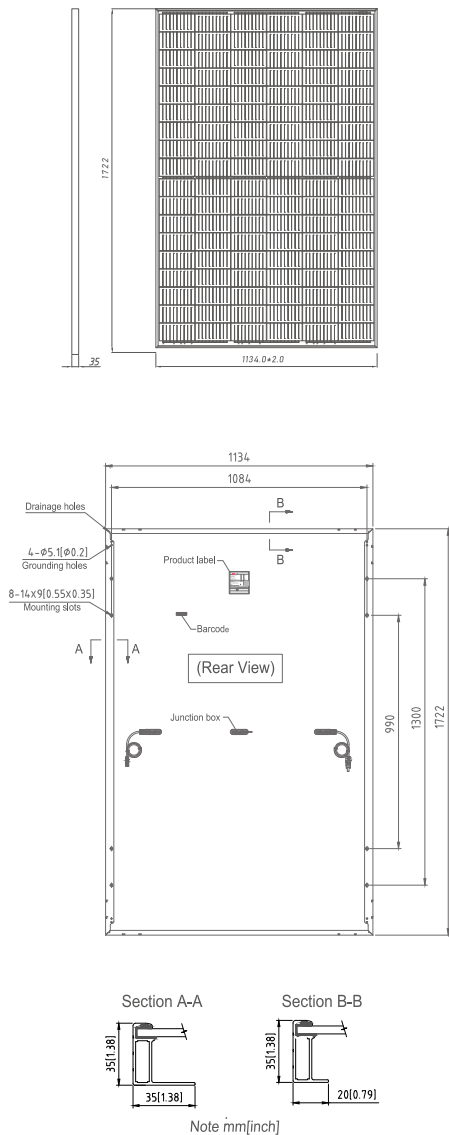


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Qudra-S108/M10H

TECHNICAL DRAWINGS



ELECTRICAL PARAMETERS

Performance at STC (Power Tolerance 0 ~ +3%)

Maximum Power (Pmax/W)	410	405	400	395	390
Operating Voltage (Vmpp/V)	31.59	31.38	31.18	30.98	30.76
Operating Current (Impp/A)	12.98	12.91	12.83	12.76	12.69
Open-Circuit Voltage (Voc/V)	37.45	37.24	37.04	36.84	36.62
Short-Circuit Current (Isc/A)	13.88	13.81	13.73	13.66	13.59
Module Efficiency η m(%)	21.0	20.7	20.5	20.2	19.9

Performance at NMOT

Maximum Power (Pmax/W)	309.6	306.0	302.3	298.6	294.9
Operating Voltage (Vmpp/V)	29.2	29.0	28.8	28.6	28.4
Operating Current (Impp/A)	10.62	10.56	10.50	10.44	10.38
Open-Circuit Voltage (Voc/V)	35.2	35.0	34.8	34.6	34.4
Short-Circuit Current (Isc/A)	11.16	11.10	11.04	10.98	10.93

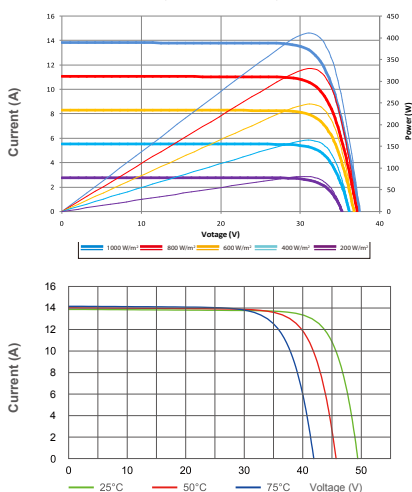
STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182*182mm
Cell Arrangement	108 (6*18)
Weight	22.1kg
Module Dimensions	1724*1134*30mm
Cable Length	Cable length 350mm or customized length
Cable Cross Section Size	TÜV: 4mm ²
Front Glass	3.2mm AR Coating Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration	36 pcs/Carton, 936 pcs/40HQ
Frame	Anodized Aluminium Alloy
Junction Box	IP68

I-V CURVE

Current-Voltage & Power-Voltage Curve (410)



OPERATING CONDITIONS

Maximum System Voltage	1500V/DC(IEC)
Operating Temperature	-40°C ~ +85°C
Maximum Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1Ω
Safety Class	II
Resistance	≥100MΩ
Connector	MC4 compatible

TEMPERATURE COEFFICIENT

Temperature Coefficient Pmax	-0.36%/°C
Temperature Coefficient Voc	-0.304%/°C
Temperature Coefficient Isc	+0.050%/°C
NMOT	42±2°C



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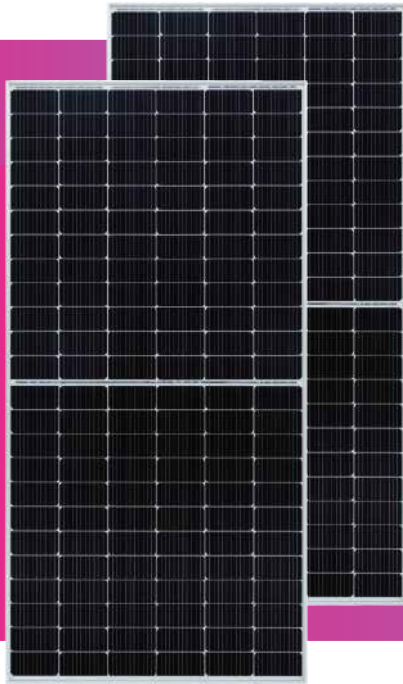
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QudraPs

Qudra

Renewable Energy Solutions



Qudra-S144/M10H 182mm Half Cell Series 530-550W

144-CELL HALF CUT MONOCRYSTALLINE SOLAR MODULE

Product Advantages



10BB half-cut cell technology

New circuit design, lower internal current, lower R_s loss, Ga doped wafer, attenuation $< 2\%$ (1st year) / $\leq 0.4\%$ per year (30 years linear)



Much lower risk of hot spots

Special circuit design to prevent hot spots.



Lower LCOE

2% more power generated, lower LCOE for whole system.



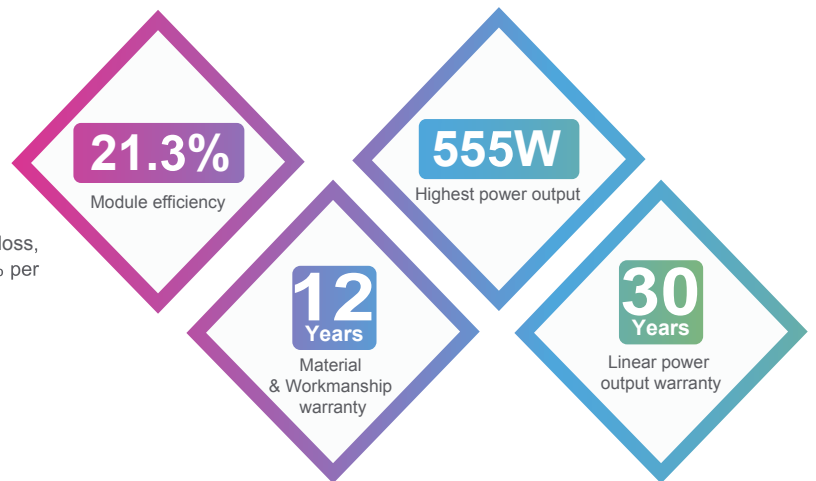
Excellent Anti-PID performance

2 types of industry standard Anti-PID tests.



IP68 junction box

High waterproof level.



Product Guarantee



Product Certification

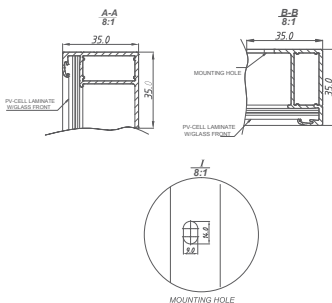
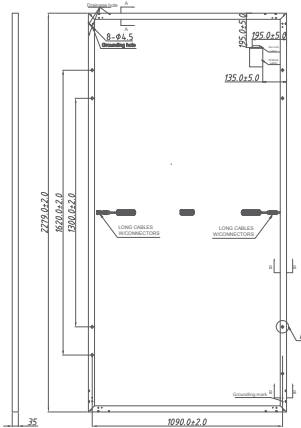
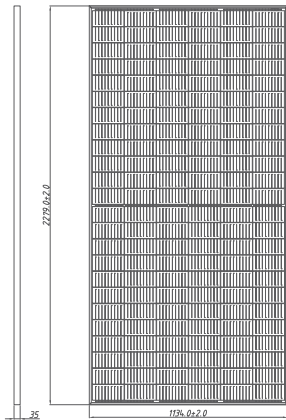


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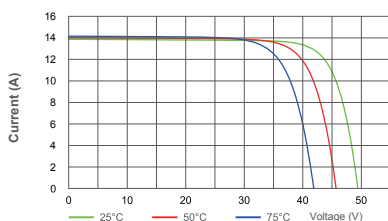
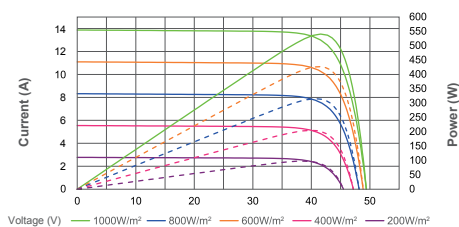
Qudra-S144/M10H

TECHNICAL DRAWINGS



I-V CURVE

VDS-S144/M10H-540



ELECTRICAL PARAMETERS

Performance at STC (Power Tolerance 0 ~ +3%)

Maximum Power (Pmax/W)	530	535	540	545	550
Operating Voltage (Vmpp/V)	40.8	41.0	41.2	41.4	41.6
Operating Current (Impp/A)	13.00	13.05	13.11	13.17	13.23
Open-Circuit Voltage (Voc/V)	49.0	49.2	49.4	49.6	49.8
Short-Circuit Current (Isc/A)	13.76	13.81	13.87	13.93	13.99
Module Efficiency η (%)	20.4	20.6	20.8	21.0	21.3

Performance at NMOT

Maximum Power (Pmax/W)	395	398	402	406	410
Operating Voltage (Vmpp/V)	38.0	38.2	38.4	38.6	38.8
Operating Current (Impp/A)	10.40	10.44	10.49	10.54	10.58
Open-Circuit Voltage (Voc/V)	45.9	46.1	46.3	46.4	46.6
Short-Circuit Current (Isc/A)	11.09	11.13	11.18	11.23	11.28

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182*182mm
Cell Arrangement	144 (6*24)
Weight	29kg
Module Dimensions	2279*1134*35mm
Cable Length	Portrait 350mm/Customized
Cable Cross Section Size	TÜV: 4mm ²
Front Glass	3.2mm AR Coating Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration	31pcs/Carton, 620pcs/40HQ
Frame	Anodized Aluminium Alloy
Split Junction Box	IP68

OPERATING CONDITIONS

Maximun System Voltage	1000V/1500V/DC(IEC)
Operating Temperature	-40°C ~ +85°C
Maximun Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1Ω
Safety Class	II
Resistance	≥100MΩ
Connector	MC4 compatible

TEMPERATURE COEFFICIENT

Temperature Coefficient Pmax	-0.36%/°C
Temperature Coefficient Voc	-0.26%/°C
Temperature Coefficient Isc	+0.043%/°C
NMOT	43±2°C



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