

ENERGY **UB**



P1 All-In-One

8kW

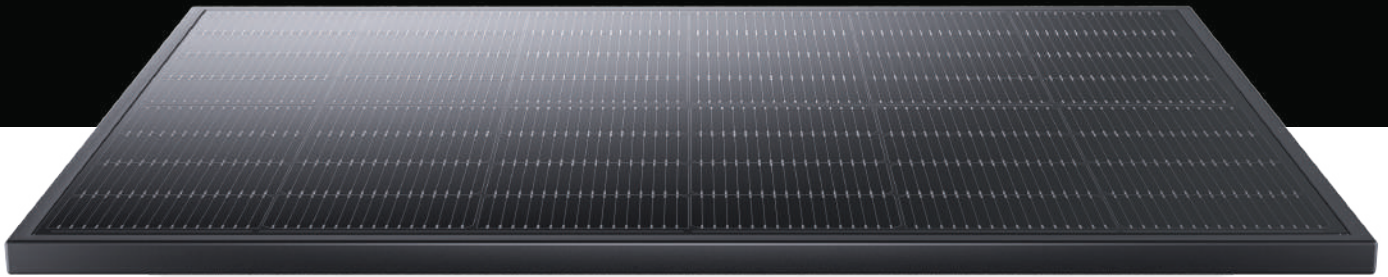
15kW

 Call Center **02-070-7888**

BLACK MAGIC

SOLAR PANEL

SINGLE CRYSTAL DOUBLE-SIDED DOUBLE GLASS



560W TOPCon monocrystalline technology with high efficiency and low light-induced degradation, half-cell technology



Better anti-PID performance



Outstanding wind load and snow load is 5400Pa under specific installation method



Excellent low irradiance performance



12-year product quality guarantee



Positive guaranteed power tolerance (0~+5W)



Lower current, higher power generation, lower hot spot risk

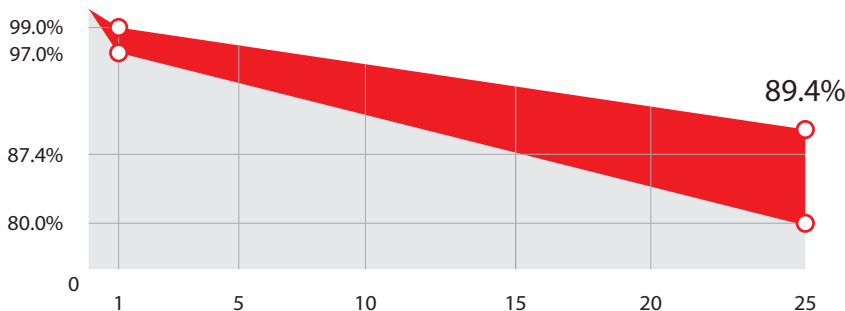


Higher module conversion efficiency (up to 22.64%)



25-year linear output power guarantee

Linear power guarantee



1.00%

Initial year degradation rate

0.40%

Power degradation rate per year

Standard linear power guarantee

N-Type double-sided double-glass module linear power guarantee

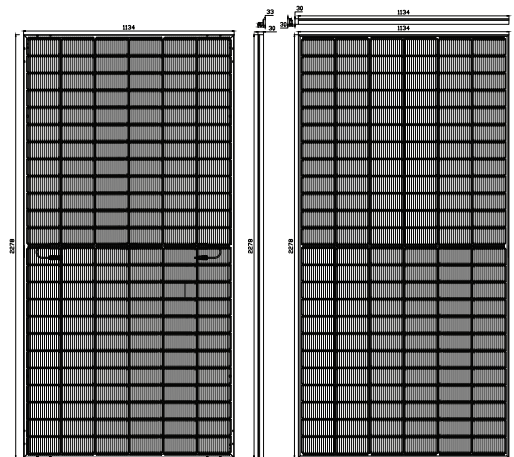
BLACK MAGIC - SOLAR PANEL

Front Electrical Performance Parameter Maximum Power Test Tolerance: $\pm 3\%$

Module Model	BLACK MAGIC (560W)	
Test Environment	STC	NOCT
Maximum Power (Pmax/W)	560	421
Maximum Power Voltage (Vmp/V)	41.77	39.25
Maximum Power Current (Imp/A)	13.41	10.73
Open Circuit Voltage (Voc/V)	50.47	47.94
Short Circuit Current (Isc/A)	14.15	11.42
Module Efficiency (%)	21.68	

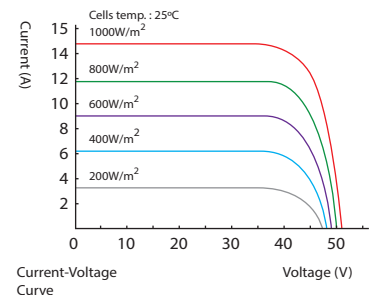
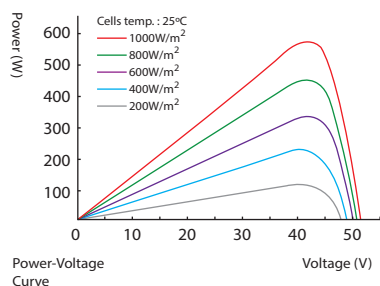
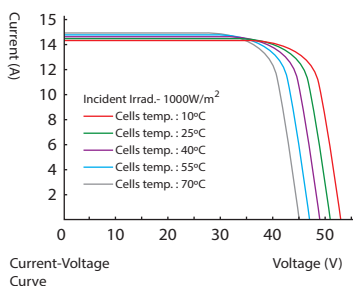
Standard Test Conditions (STC): Irradiance 1,000W/m², Air Mass AM1.5, Module Temperature 25°C
 Nominal Operation Cell Temperature (NOCT): Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s.

Number Of Solar Cells	144(6x24)
Junction Box	IP68, Three Diodes
Output Cable	4mm ² Length 400mm
Glass	2.0mm Single-Layer Coated Tempered Glass Anodized
Frame	Aluminum Alloy Frame
Weight	32kg \pm 3%
Dimensions	2278x1134x30mm
Packaging	36 Pieces Per Tray
Operating Temperature	-40°C ~ + 85°C
Power Tolerance	0 ~ + 5W
Current-Voltage Tolerance	$\pm 4\%/\pm 3\%$
Maximum System Voltage	DC1500V
Maximum Fuse Rating Current Nominal	(IEC)25A
Operating Cell Temperature (NOCT)	45 \pm 2°C
Safety Rating	Class II
Fire Rating	Class A



Temperature Coefficient (STC)		Mechanical Load	
Short Circuit Current Temperature Coefficient	+0.048%/°C	Maximum Static Load On The Front Side	5400Pa
Open Circuit Voltage Temperature Coefficient	-0.270%/°C	Maximum Static Load On The Back Side	2400Pa
Maximum Power Temperature Coefficient	-0.350%/°C	Hail Test	25mm Hail, Impact at 23 meters/second

I-V Curve (BLACK MAGIC 560W)



Model	P1 All-In-One 8 kW	P1 All-In-One 15 kW
PV String DC Input Data		
Max input voltage(V)	600	1100
Start-up voltage(V)/ Min input DC operation voltage(V)	40/30	50/40
MPPT voltage range(V)	80-580	100-1000
Max input current(A)	18/36	20/20/40
Max short circuit current(A)	22/44	30/30/60
MPPT number	2	3
Strings number per MPPT	1/2	1/1/2
AC Output Data(On-Grid Side)		
Rated output power(kW)	8	15
Rated/Max apparent output power(KVA)	8/8	15/15
Rated grid output current(A)	34.8	21.7
Max output current(A)	34.8	21.7
Operation phase	1P	3P
Rated grid voltage(range(V))	220/230/240 (180-300) (L/N/PE)	220/380, 230/400, 240/415, 312-520 (3P/N/PE)
Rated grid frequency(Hz)	50/60	50/60
Power Factor	>0.99, (-0.8 to +0.8 adjustable)	>0.99, (-0.8 to +0.8 adjustable)
THDi	< 3%	< 3%
AC Output Data(Back-Up/UPS Side)		
Rated output power(kW)	8	15
Peak apparent output power(kW) for 60s	9.6	30
Back-Up/UPS switch time(ms)	< 10	< 10
Rated output voltage(range(V))	220/230/240, 180-300 (L/N/PE)	220/380, 230/400, 240/415, 312-520 (3P/N/PE)
Rated frequency(Hz)	50/60	50/60
Rated output current(A)	34.8	21.7
THDv(@linear load)	< 2%	< 2%
Efficiency		
Max efficiency	98.6%	98.8%
EU efficiency	98.1%	98.3%
Protection		
Ground fault monitoring	Yes	Yes
Output over voltage protection	Yes	Yes
Anti-islanding protection	Yes	Yes
Integrated AFCI	Optional	Optional
DC reverse-polarity protection	Yes	Yes
AC short-circuit protection	Yes	Yes
Leakage current protection	Yes	Yes
Surge protection	Yes	Yes
DC switch(solar)	Yes	Yes
Battery input reverse polarity protection	Yes	Yes
Over voltage category	AC ClassIII/PV ClassII	AC ClassIII/PV ClassII
Protection General Data		
Dimensions(mm) (W*H*D)	640x1423x240 mm ± 3 mm	640x1433x240 mm ± 3 mm
Weight(Kg)	132.9 (Kg)	137.9 (Kg)
Ingress Protection	IP 66 (Inverter) IP 65 (Battery)	IP 66 (Inverter) IP 65 (Battery)
Max operation altitude(m)	3000	3000
Grid connection standard	<small>AS/NZS4777:2020, EN50549-10:2022, G98:2021, G99:2021, NC RFG, ABNT NBR 16150, VDE-AR-N 4105, CEI0-21, CEI0-16, RD1699, NA/IEA, C10-2019, PPDS-2021, Ter+R25, IEC61883, IEC61727&62161</small>	<small>AS/NZS4777:2020, EN50549-10:2022, G98:2021, G99:2021, NC RFG, ABNT NBR 16150, VDE-AR-N 4105, CEI0-21, CEI0-16, RD1699, NA/IEA, C10-2019, PPDS-2021, Ter+R25, IEC61883, IEC61727&62161</small>
Safety/EMC standard	IEC-62109-1/-2, IEC-61000-6-1/-2/-3, NB/T32004	IEC-62109-1/-2, IEC-61000-6-1/-2/-3, NB/T32004
DC connection	MC4/D4	MC4/D4
Communications	Wifi, 4G, GPRS, Bluetooth, RS485, CAN	Wifi, 4G, GPRS, Bluetooth, RS485, CAN

Model	P1 All-In-One 8 kW	P1 All-In-One 15 kW
Battery		
Rated energy (kWh)	10.24	10.24
Number of battery modules	2	2
Cell Type	LFP	LFP
Cell Configuration	1P32S	1P32S
Nominal voltage range (V)	102.4	102.4
Operating voltage range (V)	86.4 - 115.2	86.4 - 115.2
Rated charge / discharge current (A)	50	50
Rated charge / discharge power (kW)	5.12	5.12
Battery external communication method	CAN	CAN
Installation	Land	Land
Standard and certification	UN 38.3	UN 38.3