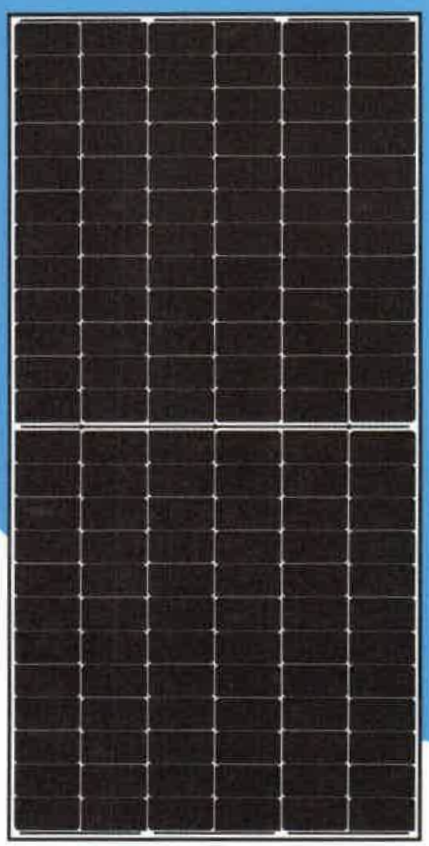
DAH Solar

Mono Perc

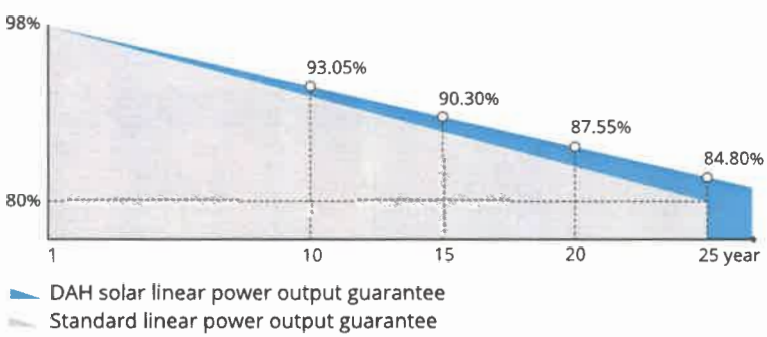
DHM-72L9

Half-Cell High Efficiency **Black Frame** PV Module



Quality Guarantee

12-year Material & technology warranty
25-year Linear power output warranty



430~460W

0 ~ +5W

Max Module Efficiency

21.16%

Optimal Process Design
166mm+9BB+Half-cut, higher power output

Select Grade A Crystalline Silicon Solar Cells
Grade A crystalline silicon solar cells make high-power output with cost-effective

Stable Generation Performance
Guaranteed 0~+5W positive tolerance and slower power attenuation: first year ≤2%, 0.55% per year from 2-25

Process Upgraded
Lower risk of hot spot and stronger anti-PID ablity

Higher Power Gains and Lower Losses
Excellent low irradiance performance and low shadow loss

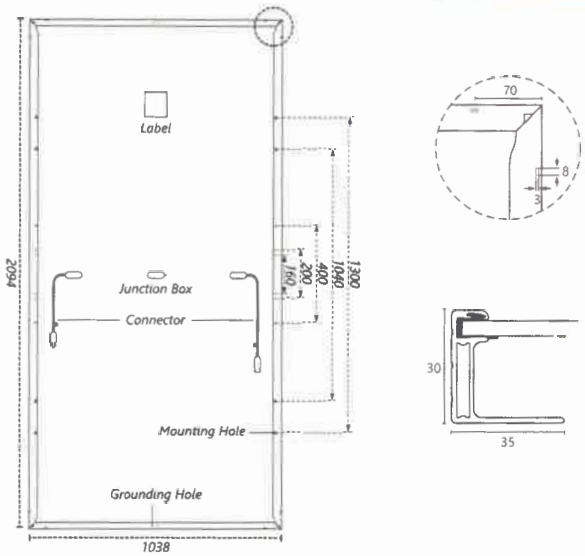
Strong Environmental Adaptability and Great Durability
Certified by Dust-Sand, Salt-Mist, Ammonia etc. weather resistance tests and enhanced mechanical load: wind load (2400 Pascal) and snow load (5400 Pascal)

Comprehensive Products and System Certificates

IEC 61215 / IEC 61730 / CE / INMETRO
ISO 9001-
2015/Quality management system
ISO 14001-
2015/Standards for environmental management system
OHSAS 18001-
2007/International standards for occupational health & safety

DHM-72L9 **430~460W**

Design



Mechanical Specification

Cells Type	Dimension (L×W×T)
Mono 166×83mm	**2094×1038×30mm**
Weight	Packing
23.5kg	**36pcs/pallet, 792pcs/40HQ**
Cable	4.0mm², Portrait: 300mm(+)/400mm(-)
(Including connector)	Landscape: 1400mm(+)/1400mm(-)
No.of Cells	144 (6×24)
Glass	3.2mm High Transmission, Antireflection Coating
Junction box	IP68, 3 Bypass Diodes
Connector	MC4 Compatible

Operating Parameters

Maximum system voltage	1000V/1500V DC
Operating Temperature	-40 ~ +85°C
Maximum series fuse rating	20A
Snow load, frontside	5400Pa
Wind load, backside	2400Pa
Nominal operating cell temperature	45°C±2°C
Application level	Class A

STC-Electrical Characteristics

Module Type	DHM-72L9						
Maximum Power (Pmax)	430W	435W	440W	445W	450W	455W	460W
Open-circuit Voltage (Voc)	48.70V	48.85V	49.00V	49.15V	49.30V	49.45V	49.60V
Maximum Power Voltage (Vmp)	41.51V	41.66V	41.81V	41.96V	42.11V	42.26V	42.41V
Short-circuit Current (Isc)	11.23A	11.26A	11.29A	11.32A	11.35A	11.38A	11.41A
Maximum Power Current (Imp)	10.36A	10.44A	10.52A	10.61A	10.69A	10.77A	10.85A
Module Efficiency (%)	19.78%	20.01%	20.24%	20.47%	20.70%	20.93%	21.16%
Temperature Coefficient of Isc				0.05%/°C			
Temperature Coefficient of Voc				-0.31%/°C			
Temperature Coefficient of Pmax				-0.35%/°C			

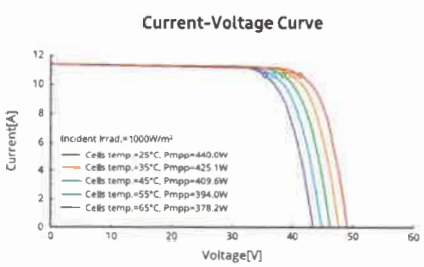
Standard Test Environment : Irradiance 1000W/m², Cell temperature 25°C, Spectrum AM1.5

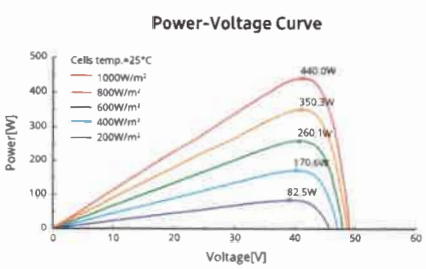
NOCT-Electrical Characteristics

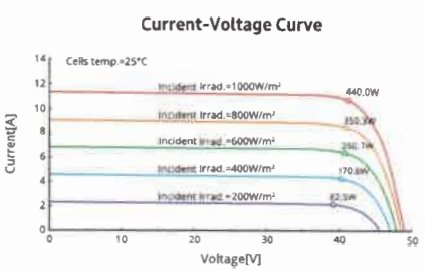
Maximum Power (Pmax)	323W	327W	331W	334W	338W	342W	346W
Open-circuit Voltage (Voc)	46.09V	46.23V	46.37V	46.51V	46.66V	46.80V	46.94V
Maximum Power Voltage (Vmp)	39.28V	39.43V	39.57V	39.71V	39.85V	39.99V	40.14V
Short-circuit Current (Isc)	9.06A	9.09A	9.11A	9.13A	9.16A	9.18A	9.21A
Maximum Power Current (Imp)	8.23A	8.29A	8.36A	8.42A	8.49A	8.55A	8.61A

Standard Test Environment : Irradiance 800W/m², Ambient temperature 20°C, Spectrum AM1.5, Wind speed 1m/s

I-V Curve (DHM-72L9-440W)







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GOODWE
YOUR SOLAR ENGINE

ET PLUS+ Series

5-10kW I Three-phase Hybrid Inverter (HV)

The brand ET PLUS+ from GoodWe is a three-phase, high-voltage energy storage inverter that brings enhanced energy independence and maximizes self-consumption through smart control of loads and higher charging & discharging power. Covering a power range of 5 kW, 6.5kW, 8 kW and 10 kW, the ET PLUS+ allows 100% unbalanced output to maximize power output and features UPS-level switching time at 8 ms to inductive loads. In addition, the default SOC value and one-click battery charge further enhance safety.

- Smart Control of Loads
- 150% DC Oversizing
- Battery Ready
- 100% Unbalanced Output
- 8 ms UPS-level Switching

ET PLUS+ Series

GOODWE
YOUR SOLAR ENGINE

Technical Data	GW5K-ET	GW6.5K-ET	GW8K-ET	GW10K-ET
Battery Input Data				
Battery Type	Li-Ion			
Battery Voltage Range (V)	180~600			
Max. Charging / Discharging Current (A)	25			
Charging Strategy for Li-Ion Battery	Self-adaption to BMS			
PV String Input Data				
Max. DC Input Power (W)	6500	8450	9600	13000
Max. DC Input Voltage (V)*1	1000			
MPPT Range (V)	200~850			
Start-up Voltage (V)	180			
Min. Feed-in Voltage (V)*7	210			
MPPT Range for Full Load (V)	240~850	310~850	380~850	460~850
Nominal DC Input Voltage (V)	620			
Max. Input Current (A)	12.5 / 12.5	12.5 / 12.5	12.5 / 12.5	12.5 / 12.5
Max. Short Current (A)	15.2 / 15.2			
Number of MPPTs	2			
Number of Strings per MPPT	1 / 1			
AC Output Data (On-grid)				
Nominal Apparent Power Output to Utility Grid (VA)	5000	6500	8000	10000
Max. Apparent Power Output to Utility Grid (VA)*2*5	5500	7150	8800	11000
Nominal Apparent Power from Utility Grid (VA)	10000	13000	15000	15000
Max. Apparent Power from Utility Grid (VA)	10000	13000	15000	15000
Nominal Output Voltage (V)	400 / 380, 3L / N / PE			
Nominal Output Freqency (Hz)	50 / 60			
Max. AC Current Output to Utility Grid (A)	8.5	10.8	13.5	16.5
Max. AC Current From Utility Grid (A)	15.2	19.7	22.7	22.7
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal Output)	<3%			
AC Output Data (Back-up)				
Back-up Nominal apparent power (VA)	5000	6500	8000	10000
Max. Output Apparent Power (VA)	5000	6500	8000	10000
Peak Output Apparent Power (VA)*3	10000, 60sec	13000, 60sec	16000, 60sec	16500, 60sec
Max. Output Current (A)	8.5	10.8	13.5	16.5
Nominal Output Voltage (V)	400 / 380			
Nominal Output Frequency (Hz)	50 / 60			
Output THDv (@Linear Load)	<3%			
Efficiency				
Max. Efficiency	98.00%	98.00%	98.20%	98.20%
Max. Battery to Load Efficiency	97.50%	97.50%	97.50%	97.50%
Europe Efficiency	97.20%	97.20%	97.50%	97.50%
MPPT Efficiency	99.90%	99.90%	99.90%	99.90%
Protection				
Anti-islanding Protection	Integrated			
PV String Input Reverse Polarity Protection	Integrated			
Insulation Resistor Detection	Integrated			
Residual Current Monitoring Unit	Integrated			
Output Over Current Protection	Integrated			
Output Short Protection	Integrated			
Battery Input Reverse Polarity Protection	Integrated			
Output Over Voltage Protection	Integrated			
General Data				
Operating Temperature Range (°C)	-35~60			
Relative Humidity	0~95%			
Operating Altitude (m)	≤4000			
Cooling	Nature Convection			
Noise (dB)	<30			
User Interface	LED & APP			
Communication with BMS*4	RS485; CAN			
Communication with Meter	RS485			
Communication with EMS	RS485 (Insulated)			
Communication with Portal	Wi-Fi			
Weight (Kg)	24			
Size (Width × Height × Depth mm)	516 × 415 × 180			
Mounting	Wall Bracket			
Protection Degree	IP66			
Standby Self Consumption (W)*8	<15			
Topology	Battery Non-Isolation			

* For 1000V system, Maximum operating voltage is 950V.
For Australia, safty, there will be a warning if PV voltage > 600V.
*2 According to the local grid regulation.
*3 Can be reached only if PV and battery power is enough.
*4 CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.
*5 No Back-up Output.
*6 For Belgium Max. Output Apparent Power (VA): GW5K-ET is 5000, GW6.5K-ET is 6500, GW8K-ET is 8000, GW10K-ET is 10000.
*7 When there is no battery connected, inverter starts feeding in only if string voltage is higher than 400V.
*8 Please visit GoodWe website for the latest certificates.

DYNESS
ENERGY STORAGE SYSTEM

Dyness Tower

Safe and Reliable • IP65 Protection • Flexible Size • Quick Installation

Features and advantages

- Maximum safety performance with LFP technologies
- Built-in aluminum heat sink, optional heating solutions
- Compact design with flexible size options
- IP54 protection for indoor and outdoor use
- Compatible with leading inverter brands
- Black start function available, quick installation

SPECIFICATION

Model	Tower T7	Tower T10	Tower T14	Tower T17	Tower T21
Usable Energy	7.10KWh	10.66KWh	14.20KWh	17.76KWh	21.31KWh
Nominal Capacity	37Ah	37Ah	37Ah	37Ah	37Ah
Nominal Voltage	192V	288V	384V	480V	576V
Maximum Continuous Discharge Power [2]	4.26KW	6.39KW	8.52KW	10.65KW	12.78KW
Maximum Continuous Charge Power[2]	4.26KW	6.39KW	8.52KW	10.65KW	12.78KW
Net Weight	105Kg	146Kg	187Kg	228Kg	269Kg
Dimension[W*D*H]	700*504*380mm	900*504*380mm	1100*504*380mm	1300*504*380mm	1500*504*380mm
Protection Level	IP54	IP54	IP54	IP54	IP54
Calendar Life [1]	6000 Cycles	6000 Cycles	6000 Cycles	6000 Cycles	6000 Cycles
Charging Temperature Range	0~50℃	0~50℃	0~50℃	0~50℃	0~50℃
Discharging Temperature Range	-10~50℃	-10~50℃	-10~50℃	-10~50℃	-10~50℃
Internal Battery Module	HV9637	HV9637	HV9637	HV9637	HV9637
Module Connection	series	series	series	series	series
Module Number	2	3	4	5	6
Communication	CAN	CAN	CAN	CAN	CAN
Warranty	10 Years	10 Years	10 Years	10 Years	10 Years
Compatible Inverter	Goodwe, Luxpower, more brands are under testing				
Certification	TUV/CE/IEC62619/IEC62040/UN38.3				

[1] Test conditions: 0.2C Charging/Discharging, @25℃, 80%, DoD

[2] Maximum Continuous Discharge/Charge Power when communicate with inverter is 0.6C

Dyness