

## Battery Storage

# PGEM

- Quick installation
- Remote monitoring
- Flexible remote upgrade
- Auto-addressing for master/slaves set up
- Parallel up to 32 modules
- Wide range inverter compatibility
- 1C rate continuous charge/discharge
- Multi protection to avoid over discharge
- Smart BMS management for longer lifespan
- Active balancing charging, low self consumption



# Specifications

Model	PGEM
Cell Type	LFP
Rated Power	5.12kWh
Rated Capacity	100Ah
Rated Voltage	51.2V
Charge Voltage	56.5V
Max. Charge/Discharge Current	100A
Discharge Peak Current	105A / 15s, 150A / 0.5s
Parallel	Up to 32 units parallelable w/o extra device needed, slave battery drops offline or come back alive does not affect system running
IP Level	IP20
Dimension(W*D*H mm)	428*640*166mm
Weight	58kg/127.9lbs
Communication	CAN/RS485
Compatible Inverter	Victron, Luxpower, Deye, Voltronic, SMA Goodwe, Growatt, Sofar, Solark, SRNE, Must
Humidity	5%~85% RH (No condensation)
Work Temperature	-20 ~ +55 °C
Storage Temperature	-10 ~ +35 °C
Remote Maintenance	Flexible remote upgrade, remote monitoring Original firmware backup to prevent upgrade failure
Warranty *	10 years, 6000 cycles
Certification	CE UN38.3; IEC62619
Protection	Overcharge/discharge/current/voltage/temperature protection Short circuit protection, Reverse connection protection Stronger active balance, Low SOC protection

# ECO HYBRID

Single-Phase

# SNA 12K

- 2 MPPTs with 4 strings, Max. 24kW PV input
- Max. charging and discharging current: 250A
- Off-grid application for high demand with 12kW output power
- Dual AC output ports for multiple load connections
- Separate GEN port
  - Up to 19.2kW Gen/AC coupling input
  - Auto generator start and stop control
- Integrated Design with Load and Battery Breaker
- PV or AC or Generator wake up battery



# Specification

INPUT (PV DC)		SNA 12K
Max. PV array power (W)		24000 (12000/12000)
Rated PV input voltage (V)		320
Number of independent MPPT inputs		2/(2:2)
PV input voltage range (V)		100-480
MPPT voltage range (V)		120-385
Start-up voltage (V)		100
Max. PV input current per MPPT (A)		35/35
Max. PV short-circuit current input per MPPT (A)		44/44
Battery		
Compatible battery type		Lithium-ion/Lead-Acid
Rated battery voltage (V)		48/51.2
Battery voltage range (V)		46.4-60/38.4-60
Max. charging / discharging current (A)		250
Max. charging / discharging power (W)		12000
Force wake up battery from PV and Grid function		YES
Grid		
Rated AC voltage (V)		230
Acceptable Input Voltage Range (V)		90~280
Rated AC frequency (Hz)		60/50
Rated AC input current (A)		100
Rated AC input power (W)		24000
PF		0.99
THDI		<5%
Max. continuous AC passthrough current(A)		100
UPS		
Rated output power (W)		12000
Rated output voltage (V)		230
Rated output current (A)		50
Rated output frequency (Hz)		50/60
Surge power, duration		2Pn, 5s
Switching time (UPS)		<10ms@Single and Parallel
Wave form		Sine wave
THDV		3%
GEN		
Acceptable input voltage range		230
Max. AC input voltage (V)		280
Max. AC input current (A)		63
Rated input frequency		50Hz/60Hz (Auto detection)
Transfer time		<10ms@Single; <20ms@Parallel
THDV		<3%
Overload protection		5s@≥150% load /10s@110%~150% load
Efficiency		
Max. efficiency		93.5%
Max. charging / discharging efficiency		93.0%
Max. MPPT efficiency		99.0%
Protection		
PV reverse polarity protection(Y/N)		YES
Over current / voltage protection(Y/N)		YES
AC Short-circuit current protection(Y/N)		YES
Grid monitoring(Y/N)		YES
DC switch(Y/N)		YES
DC / AC Surge protection Type III		YES
Battery reverse polarity protection(Y/N)		YES
General		
Dimensions ( W*H*D mm )		530*830*150mm(17.72*25.59*5.9inch)
Weight		40kg/88.2lbs
Ingress protection rating		IP20
Operating environment temperature range(°C)		0~45
Storage temperature range(°C)		-15~60
Relative humidity		5% ~ 95%
Display & Communication interface		LCD+RGB, RS485 / Wifi / CAN
Warranty		2 years
Cooling method		Smart cooling
Topology on AC / Battery side		Transformer-less / Transformer
Altitude (m)		<2000
Noise emission (typical)		<50dB
Standard & Certification		
CE		



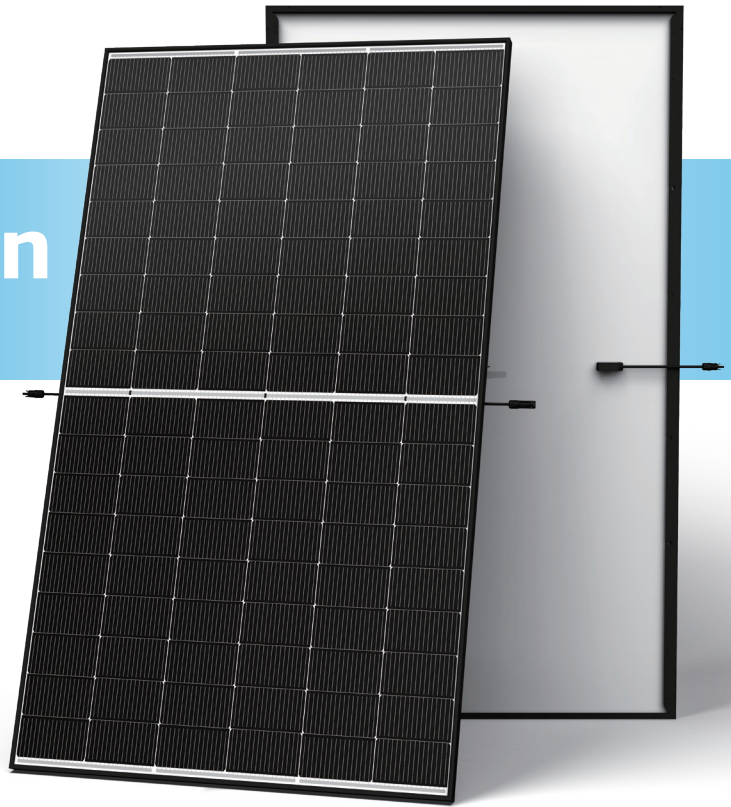
# N-type i-TOPCon

MONOFACIAL DUAL GLASS MODULE

TSM-NEG18R.28 485-510W

**510<sub>W</sub>** / MAXIMUM POWER OUTPUT

**22.9%** / MAXIMUM EFFICIENCY



## High customer value

- Lower LCOE (levelized cost of energy), reduced BOS (balance of system) cost, shorter payback time
- Designed for compatibility with existing mainstream system components
- High module power, high string power and low voltage design
- Easy to handle and install on roofs with excellent size and light weight



## High power up to 510W

- Up to 22.9% module efficiency, on T10 innovation platform
- Patented i-TOPCon technology with continuous efficiency improvement, including contact resistance reduction, rear reflection enhancement and edge quality repairment



## Dual-glass design, high reliability

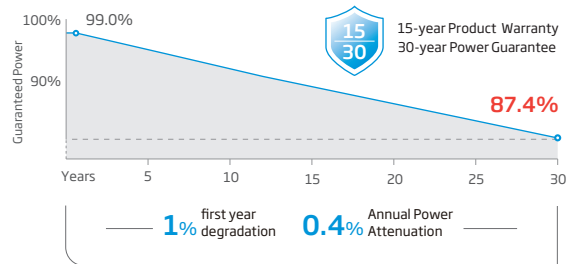
- Less prone to micro-cracks and scratches on the back during installation
- Applicable in harsh environments such as salt, ammonia, sand, high temperature and high humidity areas with excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



## High energy yield

- Excellent low irradiation performance, validated by 3rd party
- Lower temperature coefficient (-0.29%/°C) and operating temperature

## Performance Warranty



\* Please refer to product warranty for details

## Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716

ISO 9001: Quality Management System

ISO 14001: Environmental Management System

ISO14064: Greenhouse Gases Emissions Verification

ISO45001: Occupational Health and Safety Management System



**ELECTRICAL DATA (STC)**

Peak Power Watts- $P_{MAX}(W_p)^*$	485	490	495	500	505	510
Power Selection (W)**	0 ~ +5					
Maximum Power Voltage- $V_{MPP}(V)$	32.7	32.9	33.1	33.3	33.5	33.7
Maximum Power Current- $I_{MPP}(A)$	14.84	14.91	14.97	15.03	15.09	15.14
Open Circuit Voltage- $V_{oc}(V)$	39.4	39.6	39.8	40.1	40.3	40.6
Short Circuit Current- $I_{sc}(A)$	15.76	15.80	15.83	15.86	15.89	15.93
Module Efficiency $\eta_m(\%)$	21.8	22.0	22.3	22.5	22.7	22.9

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5. \*Measuring tolerance: ±3%. \*\*Power selection up to: +3%.

**ELECTRICAL DATA (NOCT)**

Peak Power Watts- $P_{MAX}(W_p)^*$	371	375	378	382	386	390
Maximum Power Voltage- $V_{MPP}(V)$	30.8	31.0	31.3	31.5	31.8	31.9
Maximum Power Current- $I_{MPP}(A)$	12.02	12.06	12.08	12.11	12.15	12.21
Open Circuit Voltage- $V_{oc}(V)$	37.4	37.6	37.7	38.0	38.3	38.5
Short Circuit Current- $I_{sc}(A)$	12.70	12.74	12.76	12.78	12.81	12.84

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

**TEMPERATURE RATINGS**

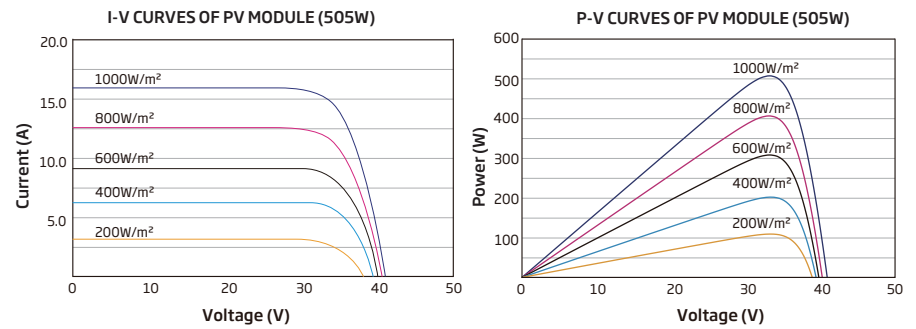
NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of $P_{MAX}$	-0.29% /°C
Temperature Coefficient of $V_{oc}$	-0.24% /°C
Temperature Coefficient of $I_{sc}$	0.04% /°C

Due to different testing methods, the actual performances might differ from the declared specifications.

**MAXIMUM RATINGS**

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

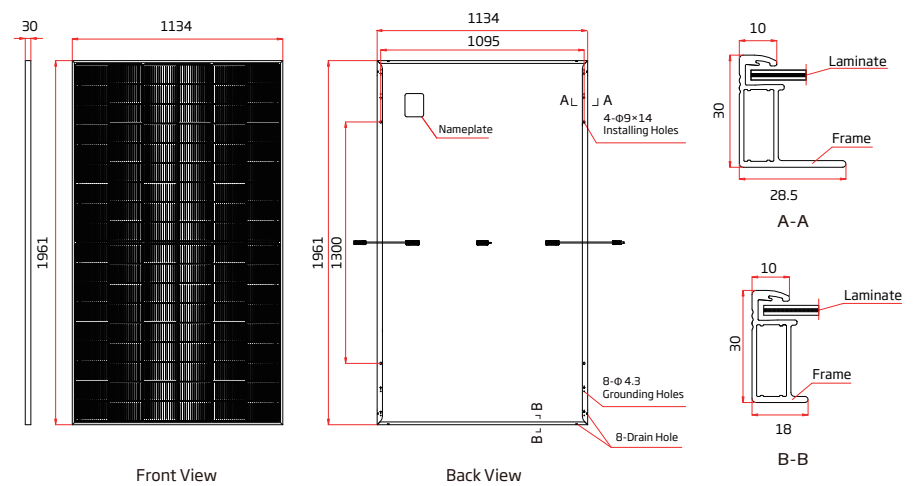
**CURVES OF PV MODULE**



**MECHANICAL DATA**

Solar Cells	N-type i-TOPCon Monocrystalline
No. of cells	108 cells
Module Dimensions	1961×1134×30 mm (77.20×44.65×1.18 inches)
Weight	23.5 kg (51.8 lb)
Front Glass	1.6mm (0.06inches), AR Coating Heat Strengthened Glass
Back Glass	1.6mm (0.06inches), Heat Strengthened Glass
Frame	30mm (1.18inches) Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006inches <sup>2</sup> ) Portrait: 350/280 mm (13.78/11.02 inches) Length can be customized
Connector	MC4 EV02 / TS4 Plus / TS4*
Packaging	Modules per box: 36 pieces Modules per 40' container: 864 pieces

\*Please refer to regional datasheet for specified connector.



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.  
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