ZNSHINESOLAR

ZXM7-SHLDD144 Series

10BB HALF-CELL Bifacial Double Glass Monocrystalline PERC PV Module

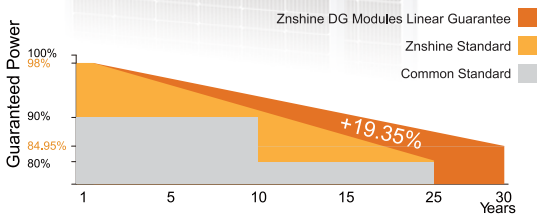
525-550W
POWER RANGE

21.23%
MAXIMUM EFFICIENCY

0.45%
YEARLY DEGRADATION

12 YEARS PRODUCT WARRANTY

30 YEARS OUTPUT GUARANTEE



*Please check the valid version of Limited Product Warranty which is officially released by ZNSHINE PV-TECH Co.,Ltd.

IEC 61215/IEC 61730/IEC 61701/IEC 62716/UL6 1730

ISO 14001: Environmental Management System

ISO 9001: Quality Management System

ISO45001: Occupational Health and Safety Management System

*As there are different certification requirements in different markets,please contact your local znshine sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

Key Features

Excellent Cells Efficiency
MBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.

Better Weak Illumination Response
More power output in weak light condition, such as haze, cloudy, and early morning.

Anti PID
Ensured PID resistance through the quality control of cell manufacturing process and raw materials.

Adapt To Harsh Outdoor Environment
Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.

TIER 1
Global,Tier 1 bankable brand,with independently certified advanced automated manufacturing.

Excellent Quality Managerment System
Warranted reliability and stringent quality assurances well beyond certified requirements.

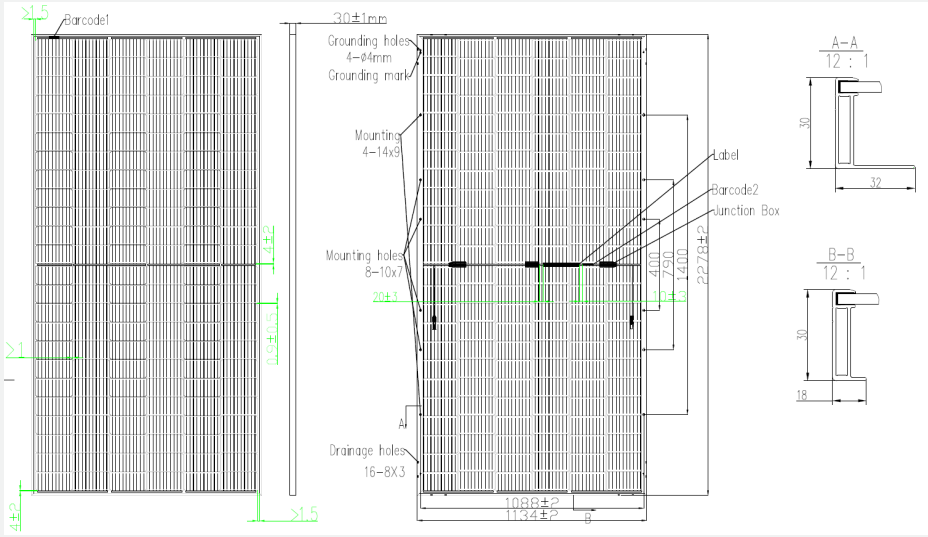
Bifacial Technology
Up to 25% additional power gain from back side depending on albedo.

Founded in 1988, ZNShine solar is a world's leading high-tech PV module manufacturer.With the advanced production lines, the company boasts module capacity of 6GW. Bloomberg has listed ZNShine as a global Tier 1 PV module maker. Today Znshine has distributed its sales to more than 60 countries around the globe.

ZXM7-SHLDD144 Series | Znshinesolar 10BB HALF-CELL Bifacial Double Glass Monocrystalline PERC PV Module

ZNSHINESOLAR

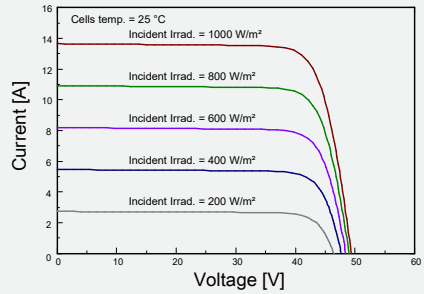
DIMENSIONS OF PV MODULE(mm)



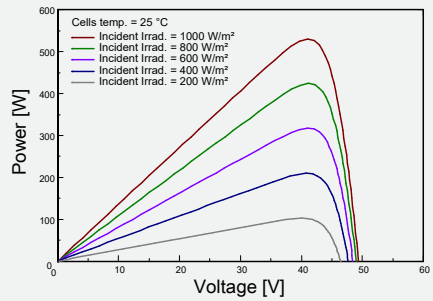
Front View Back View

*Remark: customized frame color and cable length available upon request

I-V CURVES OF PV MODULE(530W)



P-V CURVES OF PV MODULE(530W)



ELECTRICAL CHARACTERISTICS | STC*

Nominal Power Watt Pmax(W)*	525	530	535	540	545	550
Power Output Tolerance Pmax(%)	0~+3	0~+3	0~+3	0~+3	0~+3	0~+3
Maximum Power Voltage Vmp(V)	40.90	41.10	41.30	41.50	41.70	41.90
Maximum Power Current Imp(A)	12.85	12.91	12.96	13.02	13.07	13.13
Open Circuit Voltage Voc(V)	49.20	49.40	49.60	49.80	50.00	50.20
Short Circuit Current Isc(A)	13.59	13.65	13.71	13.77	13.83	13.89
Module Efficiency (%)	20.32	20.52	20.71	20.90	21.10	21.29

*The data above is for reference only and the actual data is in accordance with the pratical testing
*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25℃, AM 1.5
*Measuring tolerance: ±3%

MECHANICAL DATA

Solar cells	Mono PERC
Cells orientation	144 (6×24)
Module dimension	2278×1134×30 mm (With Frame)
Weight	32±1 kg
Glass	2.0 mm+2.0mm, High Transmission, AR Coated Heat Strengthened Glass
Junction box	IP 68, 3 diodes
Cables	4 mm² ,350 mm (With Connectors)
Connectors	MC4-compatible

*Please refer to regional datasheet for specified connector

ELECTRICAL CHARACTERISTICS | NMOT*

Maximum Power Pmax(Wp)	392.70	396.40	399.90	403.60	406.80	410.80
Maximum Power Voltage Vmpp(V)	38.00	38.20	38.40	38.50	38.80	38.90
Maximum Power Current Impp(A)	10.33	10.38	10.42	10.47	10.49	10.56
Open Circuit Voltage Voc(V)	46.00	46.20	46.30	46.50	46.70	46.90
Short Circuit Current Isc(A)	10.98	11.02	11.07	11.12	11.17	11.22

*NMOT:Irradiance 800W/m²,Ambient Temperature 20℃,AM 1.5,Wind Speed 1m/s

TEMPERATURE RATINGS

NMOT	44℃ ±2℃
Temperature coefficient of Pmax	-0.35%/℃
Temperature coefficient of Voc	-0.29%/℃
Temperature coefficient of Isc	0.05%/℃
Refer.Bifacial Factor	70±5%

WORKING CONDITIONS

Maximum system voltage	1500 V DC
Operating temperature	-40℃~+85℃
Maximum series fuse	30 A
Front Side Maximum Static Loading	Up to 5400Pa
Rear Side Maximum Static Loading	Up to 2400Pa

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

ELECTRICAL CHARACTERISTICS WITH 25% REAR SIDE POWER GAIN*

Front power Pmax/W	525	530	535	540	545	550
Total power Pmax/W	656	663	669	675	681	688
Vmp/V(Total)	41.00	41.20	41.40	41.60	41.80	42.00
Imp/A(Total)	16.01	16.08	16.15	16.23	16.30	16.37
Voc/V(Total)	49.30	49.50	49.70	49.90	50.10	50.30
Isc/A(Total)	16.95	17.02	17.10	17.17	17.25	17.32

*Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

PACKAGING CONFIGURATION**

Piece/Box	36
Piece/Container(40'HQ)	720

*Remark:Electrical data in this catalog do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.

**Customized packaging is available upon request.

Caution:Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

Add : 1#, Zhixi Industrial Zone, JintanJiangsu 213251, P.R. China Tel: +86 519 6822 0233

ALL TERRAIN TRACKER

BECAUSE THE WORLD IS NOT FLAT

Nevados is the premier solar tracker company for PV power plants built on sloped and rolling terrain. We offer innovative all-terrain trackers paired with a comprehensive software suite in an integrated technology platform that optimizes solar performance, improves plant reliability and respects the natural landscape.

SLOPE CHANGE AT EVERY PILE

BEARING TYPE	SLOPE CHANGE (%)
Straight-Through	± 4.4
Single Articulating	± 13
Double Articulating	± 26

1 FOLLOW THE LAND

- Industry's first and most capable terrain following tracker
- Eliminates civil grading & eases permitting
- Reduced pile length saves steel

2 INCREASE SITE OPTIONS

- Convert sites from fixed tilt to tracker
- Revisit sites previously disqualified due to grading
- Build on sites with differential settlement risk
- Fastest installation, zero custom tools or jigs

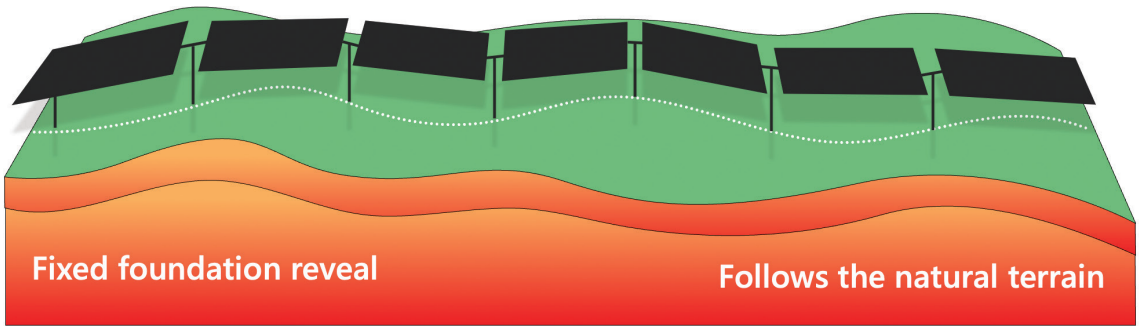
3 MANAGE EXTREME WEATHER RISK

- Extensive wind tunnel studies on variable terrain
- 75° hail stow
- Integrated friction dampers for unparalleled wind performance

4 OPTIMIZE SITE DESIGN AND PERFORMANCE

- Proprietary TRACE Terrain-Aware Backtracking schedules for zero shading & increased energy yield
- Unique software for site design optimization
- Off-azimuth, variable GCR, variable tilt schedules

Nevados All Terrain Tracker (ATT)



NEVADOS
ALL TERRAIN TRACKER

BECAUSE THE WORLD IS NOT FLAT

ROW CONFIGURATION	• Up to 96 modules per row • 5 to 8 modules per bay
TRACKING ANGLE CAPABILITIES	• ± 60° tracking expandable to ± 75° tracking • Single row actuation with 24VDC slew drive
TERRAIN FOLLOWING	• Straight Through bearing: ±3.5% slope change at each foundation • Single Articulating bearing: ±13% slope change at each foundation • Double Articulating bearing: ±26% slope change at each foundation • 37% max N-S and E-W slope
FOUNDATION	• I-Beam or ground screw foundations installed at consistent reveal throughout site
GROUND COVERAGE RATIO	• Configurable, typically greater than or equal to 28%
DESIGN LOADS	• Designed to applicable ASCE • Configurable to 135+ MPH • Configurable to 50+ PSF snow load • Loads studied in wind tunnels for variable terrain; no external dampers required for wind dynamics
INCLUDED SERVICES	• Preliminary layouts and site design optimization • Structural calculations, IFC package and foundation design • TRACE Terrain-Aware Backtracking or True Tracking
OPERATING TEMPERATURE	• -20°C – 55°C
MODULE CONNECTION/GROUNDING:	• Self-grounding module brackets • UL2703 and UL3703
TOLERANCES	• Reveal height: +4” / -0”, N-S: ±1.5” (expandable), 2° vertical plumb, 9° twist • Flat-land: ±12” vertical & E-W at each pile, may change based on neighboring foundations
CONTROLS	• Web-based dashboard for monitoring & operation with row-level control • SCADA integration via Modbus TCP/IP for monitoring & operation with row-level control • Wireless, self-powered row controllers and weather stations • AC-powered Zone Controllers
WARRANTY	• 10-year structural, 5-year drive & controls warranty

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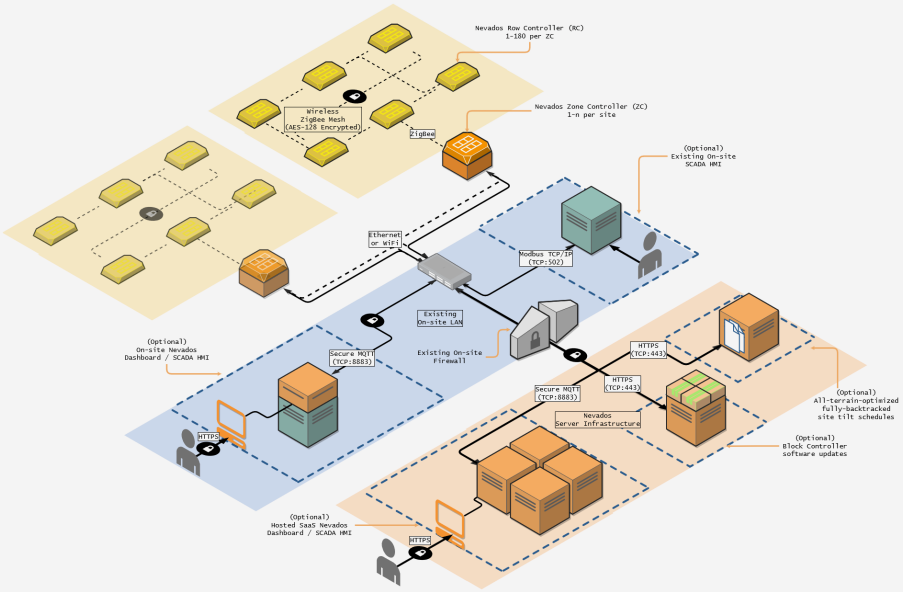
NEVADOS

SOLAR TRACKER CONTROLS

FOR ALL TERRAIN ENVIRONMENTS



The Nevados control system is designed to optimize power generation from your project site and account for variable shadow fall on flat, sloped, and rolling terrain. Each row of up to 96 modules is monitored by a single row controller. Row controllers are connected and optimized through zone controllers, each of which can manage up to 180 row controllers. The system provides detailed operational information from each row, which can be utilized to increase row-to-row efficiency and maximize output. String-level current sensing can be added to identify any inter-row shadowing, blown fuses, poor performing strings, and bad electrical connectors.

1 CURRENT SENSOR

- Enables continuous commissioning
- Identifies poor performing strings
- Assembled with the wiring harness at the factory, or installs in minutes in the field
- IP65

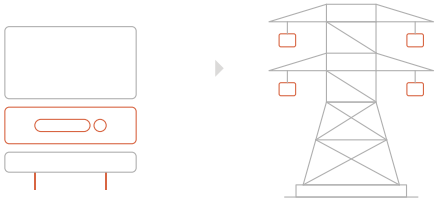
2 ROW CONTROLLER

- Configurable for most environments
- Retrofits to existing install
- Wireless and self-powered
- IP65

3 ZONE CONTROLLER

- Active optimization
- Choose either cloud-hosted or fully on-premises monitoring and control
- Failure prediction
- O&M reporting
- IP65

MODULES | CURRENT SENSOR | ROW CONTROLLER | ZONE CONTROLLER | CLOUD SERVER | DASHBOARD



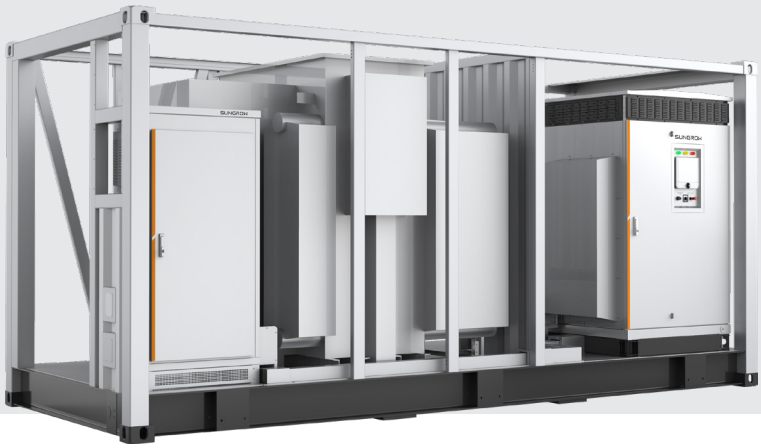
NEVADOS
ALL TERRAIN TRACKER

BECAUSE THE WORLD IS NOT FLAT

COMMUNICATIONS	ROW CONTROLLER	ZONE CONTROLLER
WIRELESS	• ZigBee (with external antenna) between RC and ZC	• ZigBee communication to manage RC
WIRED	• Cat5/6 between ZC and SCADA • RS485 between RC and string current sensor	• Manage with SCADA over Modbus • Reporting to on-premises or cloud-hosted monitoring and control dashboard • Integrated web portal for simple management
ENCLOSURE		
SIZE (LxWxD)	• 10” x 12” x 3.5” – max external dimension of enclosure (not including mounting tabs)	• 13” x 15” x 5”
DESIGN	• IP67, Plastic (injection molded), Membrane vent (Amphenol BJ001, Gore Vent, or similar)	• Compression molded fiberglass reinforced polyesterCompression molded fiberglass reinforced polyester
SERVICE/ACCESS	• Access panel for battery only	
MOUNTING	• Direct mount RC to auxiliary solar module • Mount aux module to torque tube using standard module clips	• IP65 rated • Mounted near or on inverter skid, or other ethernet and power access point. • Integrated web portal for simple management
POWER	• Auxiliary solar module, 40W and 36V, approx 645mm x 345mm x 25mm	• 120V AC wired to enclosure
BATTERY	• 3-6Ah LiFEPO4 battery with optional cold weather package	
INPUTS	• RS485 port w. Weather cap • E-Stop • Status LED (optional) • Auxiliary module power cables	• 120V AC • Ethernet
OUTPUTS	• Motor Cable with screw-on connector to motor • External ZigBee Co-ax connector for antenna wire	• External ZigBee co-ax connector for antenna wire
BOARD COMPONENTS	• XBee X2C or XBee3 • PTC (resettable fuse) • Motor over-current monitoring and protection • 16bit Microcontroller @ >8MHz • Accelerometer	• Xbee S2C, S2C Pro or 3 • Optional wind sensor

SG3425UD-MV/ SG3600UD-MV

Turnkey Station for North America 1500 Vdc System - MV Transformer Integrated



HIGH YIELD

- Advanced three-level technology, max. efficiency 98.9%
- Inverter full power operation up to 45 ℃(113 ˚F)
- Effective cooling, wide operation temperature
- Max. DC/AC ratio up to 2.0

EASY O&M

- Integrated current, voltage and MV parameters monitoring function for onlione analysis and trouble shooting
- Modular design, easy for maintenance

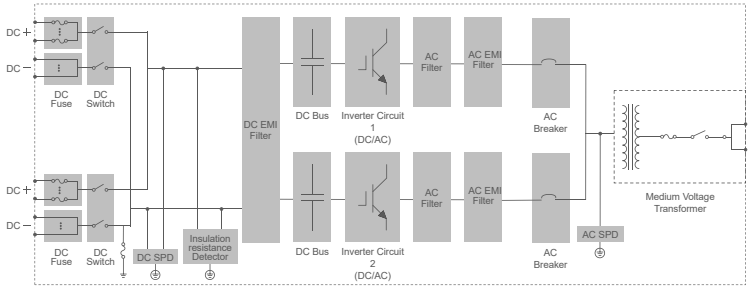
SAVED INVESTMENT

- Low transportation and installation cost due to 20-foot container size design
- DC 1500V system, low system cost
- Integrated MV transformer and LV auxiliary power supply
- Q at night optional

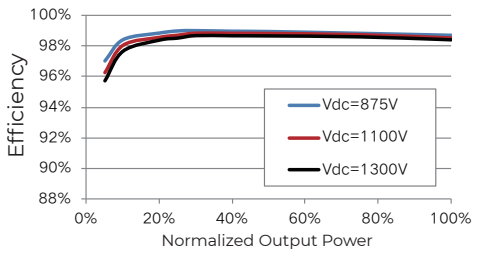
GRID SUPPORT

- Compliance with standards:UL 1741,UL 1741 SA, IEEE 1547, Rule 21 and NEC code
- Low / High voltage ride through (L / HVRT, L / HFRT, soft start / stop
- Active & reactive power control and power ramp rate control

CIRCUIT DIAGRAM



EFFICIENCY CURVE (SG3425UD)



SUNGROW
Clean power for all

Type designation	SG3425UD-MV	SG3600UD-MV
Input (DC)		
Max. PV input voltage	1500 V	
Min. PV input voltage / Start-up input voltage	875 V / 915 V	915 V / 955 V
Available DC fuse sizes	250 A - 630 A	
MPP Voltage Range	875 V - 1500 V	915 V - 1500 V
Full power MPP voltage range @ 45 ℃	875 V - 1300 V *	915 V - 1300 V *
No. of DC inputs	24 (optional: 28)	
Max. DC short-circuit current	10000 A	
PV array configuration	Negative grounding or floating	
Output (AC)		
AC output power	3425 kVA @ 45 ℃(113 ℉), 3083 kVA @ 50 ℃(122 ℉) **	3600 kVA @ 45℃(113 ℉), 3240 kVA @ 50℃(122 ℉) **
Max. AC output current	165 A	173 A
AC voltage	12 kV - 34.5 kV	
Nominal grid frequency / Grid frequency range	60 Hz / 57 Hz – 63 Hz	
THD	< 3 % (at nominal power)	
Power factor at nominal power / Ajustable power factor	> 0.99 / 0.8 leading - 0.8 lagging	
Efficiency		
Inverter max. efficiency	98.9 %	
Inverter CEC efficiency	98.5 %	
Transformer		
Transformer rated power	3425 kVA	3600 kVA
Transformer max. power	3425 kVA	3600 kVA
LV / MV voltage	0.6 kV / (12 – 35) kV	0.63 kV / (12 – 35) kV
Transformer vector	Dy1 (Optional: Dy11, Yny0)	
Transformer cooling type	KNAN (Optional: ONAN)	
Protection		
DC input protection	Load switch + fuse	
Inverter output protection	Circuit breaker	
AC MV output protection	Load switch + fuse	
Overvoltage protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
General data		
Dimensions (W*H*D)	6058 mm * 2896 mm * 2438 mm 238.5'' * 114.0'' * 96.0''	
Weight	18000 kg 39683.2 lbs	
Degree of protection	NEMA 4X (Electronic for Inverter) /NEMA 3R (Others)	
Auxiliary power supply	5 kVA, 120 Vac; Optional: 30 KVA 480 Vac + 5 KVA 120 Vac	
Operating ambient temperature range(it refers to the ambient temperature of 1m around the inverter.)	-35 ℃ to 60 ℃ (> 45 ℃ derating) / optional: -40 ℃ to 60 ℃ (> 45 ℃ derating) -31 ℉ to 140 ℉ (> 113 ℉ derating) / optional: -40 ℉ to 140 ℉ (> 113 ℉ derating)	
Allowable relative humidity range	0 % - 100 %	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	1000 m (Standard) / > 1000 m (Customized) (3280.8 ft (standard) / > 3280.8 ft (Customized))	
DC-Coupled storage interface	Optional	
Night reactive power function	Optional	
Charging power from the grid	Optional	
Communication	Standard: RS485, Ethernet	
Compliance	UL 1741, IEEE 1547, UL 1741 SA, NEC 2017, CSA C22.2 No.107.1-01	
Grid support	Q at night function (optional), L/HVRT, L/HFRT, Active & reactive power control and power ramp rate control, Volt-var, Frequency-watt	

* Full power MPP range is temperature dependent, check the characteristic curve of the inverter for more information
** For sustained operation above 40°C, an optional 60 °C temperature rise transformer is recommended