CRRC Intelligence - Green Energy

PHOTOVOLTAIC INVERTER PRODUCTS AND SYSTEM SOLUTIONS

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Zhuzhou CRRC Times Electric Co., Ltd.

Zhuzhou CRRC Times Electric Co., Ltd. is a joint-stock enterprise of China CRRC Co., Ltd. It was established in September 2005. Its predecessor and parent company, CRRC Zhuzhou Electric Locomotive Research Institute Co., Ltd. was founded in 1959. CRRC Times Electric was successfully listed on the Hong Kong Stock Exchange in 2006 and won the second China Quality Award in 2015, with operating revenue of more than 16 billion yuan in 2020. In 2021, it was successfully listed on the Science and Technology Innovation Board of the Shanghai Stock Exchange, becoming the second "A+H" listed company under China CRRC.

The company, which focuses on transportation and energy, is a national key high-tech enterprise integrating research and development, production, sales, and service. Its business involves high-speed rails, locomotives, urban rails, rail construction machinery, communication signals, high-power semiconductors, sensors, offshore equipment, new energy vehicles, general inverters, and other fields covering more than 20 countries and regions around the world. It is the pioneer and leader of China's electrified railway equipment and the core power support of the "Gold Brand" of China's high-speed railway.

Listed on "Science and Technology Innovation Board",
opened a new situation of A+H, and won the
"Light Energy Cup" most influential photovoltaic inverter enterprise

200+
PV Power Plants

22
Projects coverage of provinces,
cities, and autonomous regions

10Gwp+
Cumulative
installed capacity

Continuous high-level R&D investment
in science and technology to achieve
the photovoltaic industry

6
National-level technology
innovation platforms

7
Provincial technology
innovation platforms

2
Postdoctoral workstations

21
Partner colleges
and universities

8
Research institutes
with R&D cooperation

DEVELOPMENT COURSE

2005
Times Electric founded

2006
Listed on Hong Kong Stock Exchange (03898.HK)

2009
Completed the development of the first 250KW photovoltaic inverter, officially entered the photovoltaic industry

2010
Obtained 250KW, 500KW "Golden Sun" certification and "TüV" certification

2014
The first eight-inch IGBT chip line in China

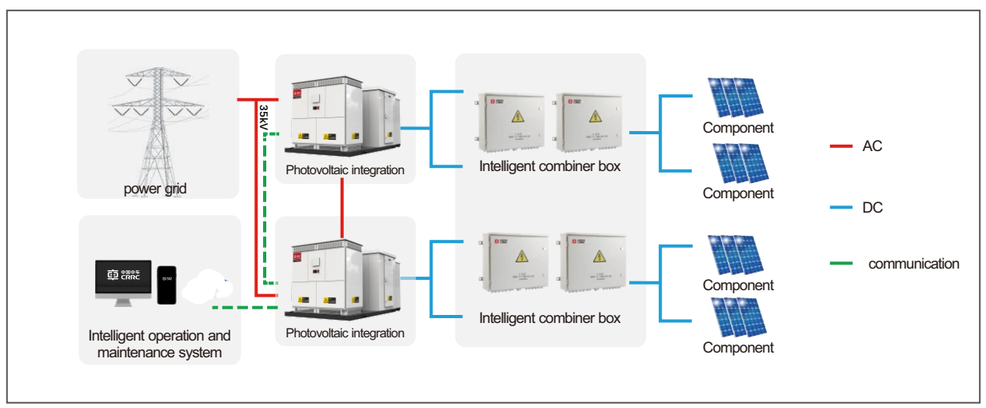
2016
Won China Quality Award

2017
photovoltaic inverter "Mi Cabinet" won the most artisanal in the field of photovoltaic

2018
Ten thousands (Ten thousand) of autonomous urban rail traction systems rolled off the line

2021
Listed on "Science and Technology Innovation Board", opened a new situation of A+H, and won the "Light Energy Cup" most influential photovoltaic inverter enterprise

Centralized Solutions for Large Power Plants »



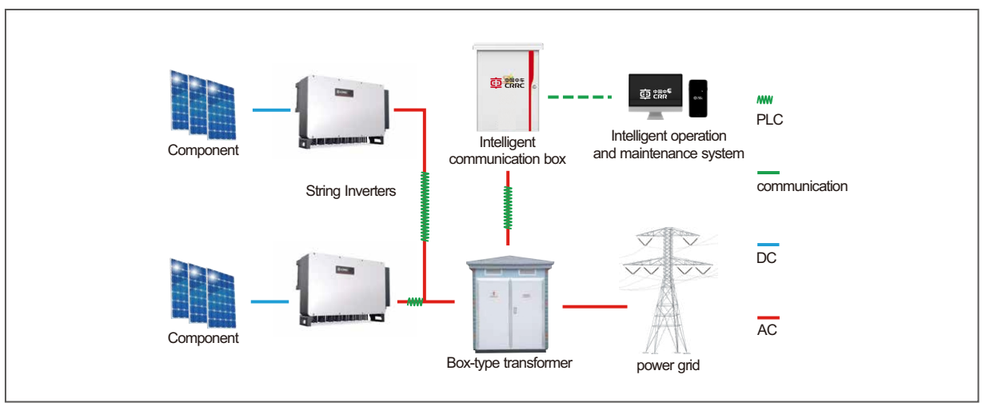
◉ **Scenes**

Large-scale ground/ floating PV power plant

◉ **Recommend**

CRRC TEC centralized grid-connected inverter tPOWER-NM 1500V series products range from 1250KW to 3125KW

String Solution for Large-scale Power Plants »



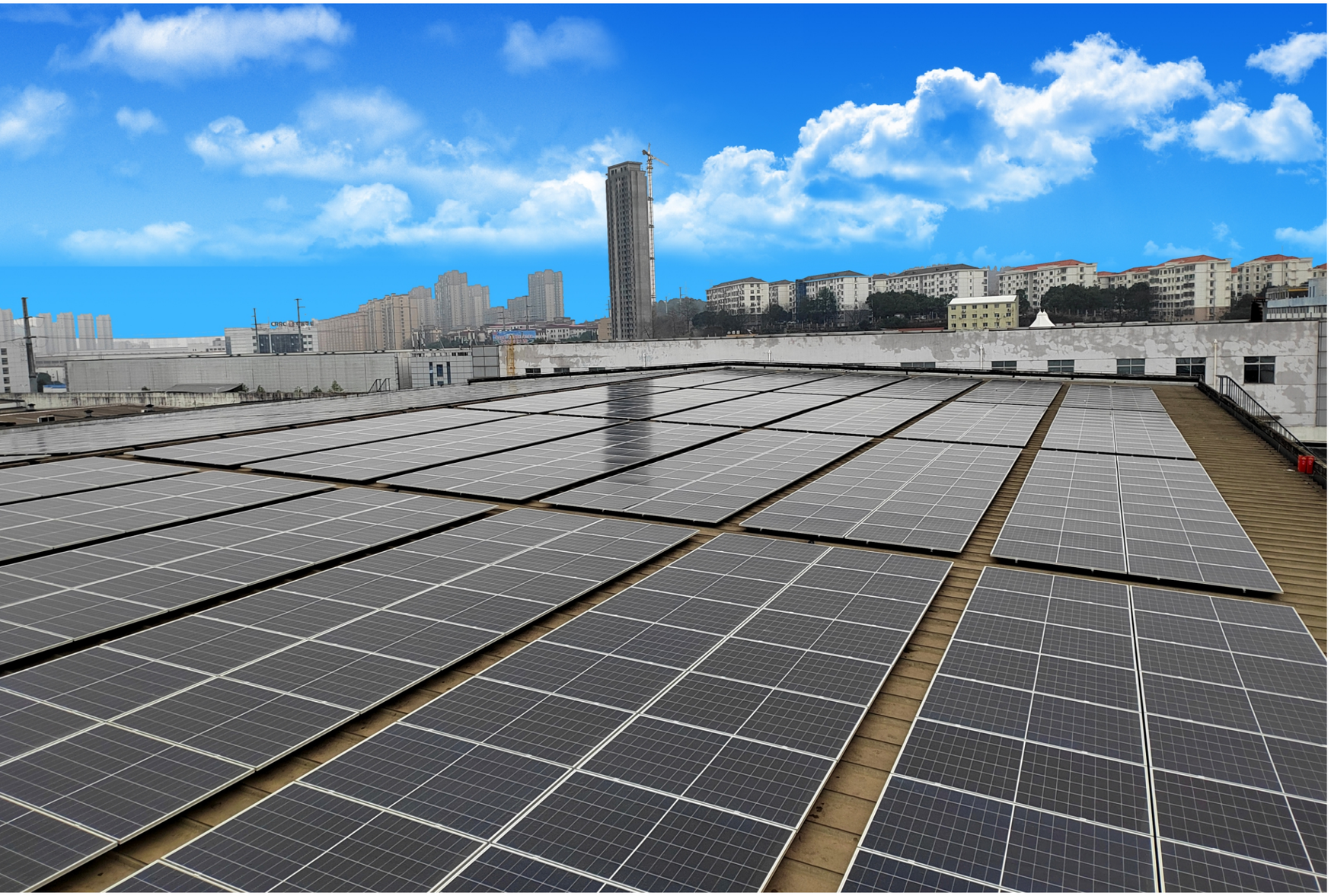
◉ **Scenes**

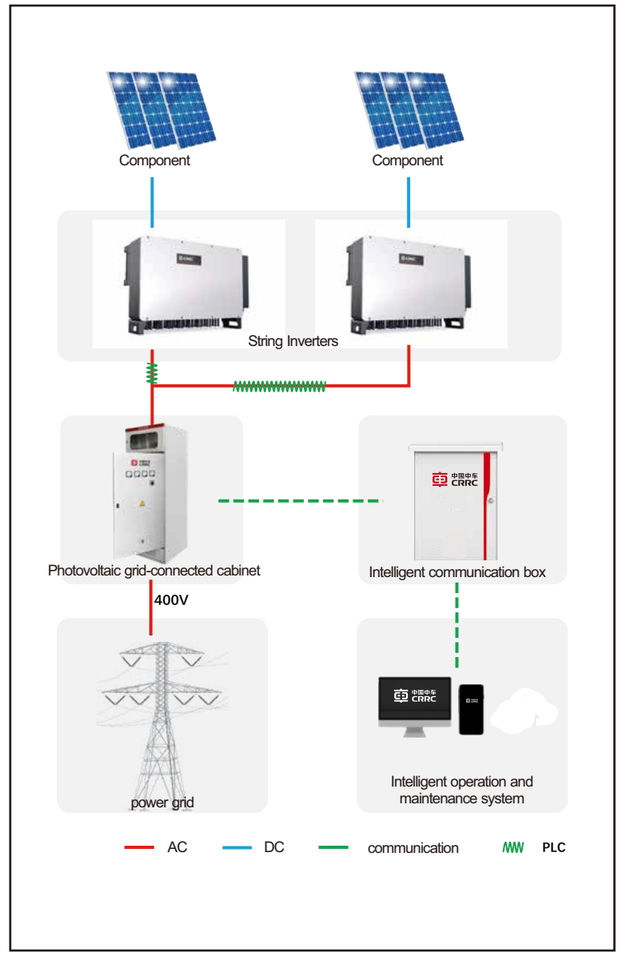
Suitable for complex mountainous and hilly PV power plants

◉ **Recommend**

CRRC TEC cluster grid-connected inverter tPOWER-NM 1500V series products ranged from 225KW to 320KW

String Solution for Distributed Power Plants »





◉ Scenes

Commercial and industrial rooftop PV power plants

◉ Recommend

CRRC TEC centralized grid-connected inverter tPOWER-NM 1000V series products ranged from 100KW to 136KW

1500V

Centralized Photovoltaic Inverters

Product features

Technical Parameter

Product model	tPower-NM2-1250K	tPower-NM2-1562K
DC-side parameters		
Max. open circuit voltage	1500VDC	
Max. DC current	2×1718A	2×2090A
Number of input channels	16/18/20/24	16/18/20/24
Number of MPPT	2	2
Full load MPPT voltage range	800V~1300V	875V~1300V
MPPT voltage tracking range	800V~1450V	875V~1450V
Start Voltage	840V	915V
MPPT efficiency	99.9%	99.9%
AC-side parameters		
Rated Power	2500kW	3125kW
Maximum Power	2750kW	3437kW
Maximum Output Current	2886A	3308A
Rated power grid voltage	550VAC	600VAC
Grid frequency range	45~50Hz/55~60Hz	
Rated Power Grid Frequency	50Hz/60Hz	
Power factor	>0.99 (full power)	
Power factor adjustment range	0.8 (leading) ~0.8 (lagging)	
Overall current waveform distortion ratio	<3% (rated power)	
System parameters		
Maximum efficiency (inverter)	99.07%	99.07%
China efficiency (Inverter)	95.55%	98.55%
High/low voltage ride through	Equipped	
AC side parallel	Equipped	
PID fix	Optional	
SVG	Optional	
Fault recording diagnosis	Equipped	
Online upgrade	Equipped	
Basic parameters		
Dimension (L×D×H)	2200×1200×2200mm	
Weight	2700kg	
Protection degree	IP55	
Transformer form	＜200W	
Cooling method	Intelligent air cooling	
Maximum working altitude	5000m (3000m derating)	
Working environment temperature	-35℃~60℃	
Working environment humidity	0~95%, no condensation	
Display	LED	
Communication	RS485, Ethernet (optional)	

1500V

Centralized Photovoltaic Inverter

Technical Parameter

Product model	TGN1500-2500ME	TGN1500-3000ME
DC-side parameters		
Max. open circuit voltage	1500VDC	
Max. DC current	2×1718A	2×2090A
Number of input channels	16/18/20/24	16/18/20/24
Number of MPPT	2	2
Full load MPPT voltage range	800V~1300V	875V~1300V
MPPT voltage tracking range	800V~1450V	875V~1450V
Start Voltage	840V	915V
MPPT efficiency	99.9%	99.9%
AC-side parameters		
Rated Power	2500kW	3125kW
Maximum Power	2750kW	3437kW
Rated power grid voltage	10~37kVAC	
Grid frequency range	45~50Hz/55~60Hz	
Rated Power Grid Frequency	50Hz/60Hz	
Power factor	>0.99 (full power)	
Power factor adjustment range	0・8 (leading) ~0.8 (lagging)	
Overall current waveform distortion ratio	<3% (rated power)	

Product features

System parameters		
Maximum efficiency (inverter)	99.07%	99.07%
China efficiency (Inverter)	95.55%	98.56%
High/low voltage ride through	Equipped	
AC side parallel	Equipped	
PID fix	Optional	
SVG	Optional	
Fault recording diagnosis	Equipped	
Online upgrade	Equipped	
Basic parameters		
Dimension (L×D×H)	4300×2600×2500mm	
Weight	12T	
Protection degree	IP55	
Transformer form	American / European forms	
Cooling method	Intelligent air cooling	
Maximum working altitude	5000m (>3000m derating)	
Working environment temperature	-35°C~60°C	
Working environment humidity	0~95%, no condensation	
Display	LED	
Communication	RS485, Ethernet, fiber optic ring network (optional)	

110KW String PV Inverter

Product features

Technical Parameter

Product model	tPower-NM5-110K
AC-side parameters	
Max. open circuit voltage	1100VDC
Rated input voltage	600V
Start Voltage	200V
MPPT voltage range	200V~1000V
Full load MPPT voltage range	550V~850V
Number of MPPT	10
Maximum number of input strings per MPPT	2
Max. input current	10×30A

Technical Parameter

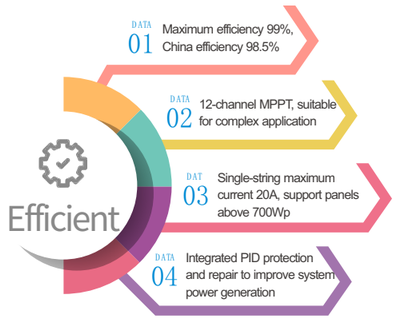
Product model	tPower-NM5-110kW
AC-side parameters	
Rated output power	110kW
Maximum Output Power:	121kW
Max. output apparent power	121KVA
Maximum Output Current	167A@380V
Rated power grid voltage	3/N/PE, 220V/380V
Voltage range of power net （power grid)	340V~400V
Rated output frequency	50Hz/60Hz
Power factor	＞0.99
Power factor adjustment range	±0.8
Overall current waveform distortion ratio	＜3%
System parameters	
Maximum efficiency	98.7%
China efficiency	98.2%
Island protection	**Equipped**
Surge protection	**DC secondary/AC secondary**
reverse DC protection	**Equipped**
DC input switch	**Equipped**
AC overcurrent protection	**Equipped**
Low voltage ride through	**Equipped**
Intelligent string detection	**Equipped**
DC arc pull detection	**Optional**
PID protection and repair	**Optional**
Nighttime reactive power compensation	**Optional**
Basic parameters	
Dimension (W×D×L)	1010×338×706mm
Weight (with hangers)	83kg
topology	**Transformerless**
Protection degree	IP66/ C5
Night-time loss	＜5W
Cooling method	**Intelligent air cooling**
Maximum working altitude	5000m (＞4000m)
Working environment temperature	-30°C~60°C
Working environment humidity	0~100%
Display	LED, Bluetooth+APP
Communication	**RS485/PLC (optional)**
DC side terminal	**MC4 terminal**
AC side terminal	**OT terminal (max. 185mm2,support aluminum wire access)**
Grid Connection Standard	NB/T 32004-2018, GB/T 37408-2019
Safety/EMC standards	IEC 62109-1/-2, IEC 61000-6-2/-4, NB/T 32004-2018, GB/T 37408-2019

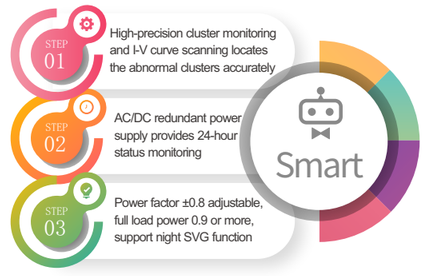
225KW String PV Inverter

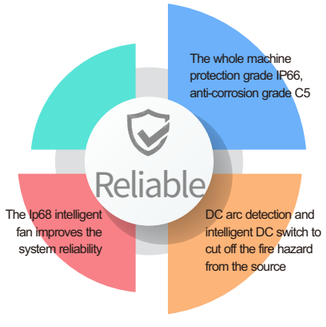
Technical Parameter

Product model	tPower-NM5-225K
AC-side parameters	
Max. open circuit voltage	1500VDC
Rated input voltage	1080V
Start Voltage	500V
MPPT voltage range	500V~1500V
Full load MPPT voltage range	850V~1300V
Number of MPPT	12
Maximum number of input strings per MPPT	2
Max. input current	12×30A
System parameters	
Rated output power	225kW
Maximum Output Power:	247.5kW
Max. output apparent power	247.5kVA
Maximum Output Current	178.7A
Rated power grid voltage	3 / PE, 800V
Voltage range of power grid	640~920V
Grid frequency range	50Hz/60 Hz
Power factor	＞0.99
Power factor adjustment range	±0.8
Overall current waveform distortion ratio	＜3%

Product features



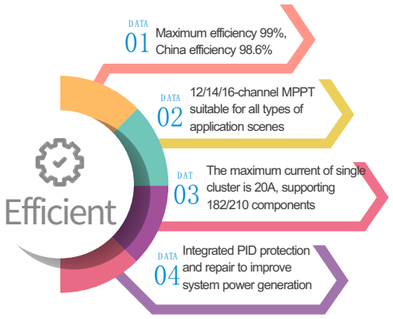


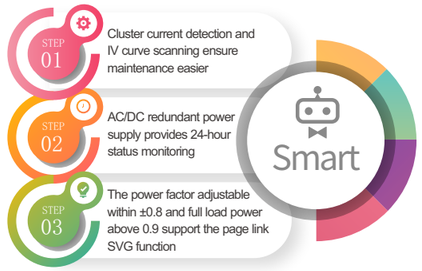


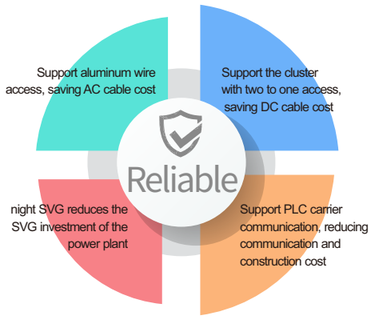
System parameters	
Maximum efficiency	99%
China efficiency	98.5%
Island protection	Equipped
Surge protection	DC secondary/AC secondary
reverse DC protection	Equipped
DC input switch	Equipped
AC overcurrent protection	Equipped
High/low voltage ride through	Equipped
Intelligent string detection	Equipped
DC arc pull detection	Optional
PID protection and repair	Optional
Night-time reactive power compensation	Optional
Basic parameters	
Dimensions (W X D X L)	1070X370X720mm
Weight (with hangers)	105kg
topology	Transformer
Protection degree	IP66
Night-time loss	<5W
Cooling method	Intelligent air cooling
Maximum working altitude	5000m (>4000m)
Working environment temperature	-30°C~60°C
Working environment humidity	0~100%
Display	LED, Bluetooth+APP
Communication	RS485/PLC (optional)
DC side terminal	MC4 terminal
AC side terminal	0T terminal (maximum 300mm2,supports aluminium wire access)
Grid Connection Standard	N B/T 32004-2018, GB/T 37408-2019
Safety/EMC standards	IEC 62109-1/-2, IEC 61000-6-2/-4, NB/T 32004-2018, GB/T 37408-2019

320KW
String PV Inverter

Product features







Technical Parameter

Product model	tPower-NM5-320K
AC-side parameters	
Max. open circuit voltage	1500VDC
Rated input voltage	1080V
Start Voltage	500V
MPPT voltage range	500V~1500V
Full load MPPT voltage range	850V~1300V
Number of MPPT	12 (optional 14/16 channel)
Maximum number of input strings per MPPT	12*40 A(optional 14*30 A/16*30 A)
Max. input current	12*60 A(optional 14*60 A/16*60 A)

Technical Parameter

Product model	tPower-NM6-225kW
AC-side parameters	
Rated output power	320kW
Maximum Output Power	352kW
Max. output apparent power	352KVA
Maximum Output Current	254 A
Rated power grid voltage	3 / PE, 800 V
Voltage range of power grid	640-920 V
Rated output frequency	50Hz/60 Hz
Power factor	＞0.99
Power factor adjustment range	±0.8
Overall current waveform distortion ratio	＜3%
System parameters	
Maximum efficiency	99%
China efficiency	98.6%
Island protection	Equipped
Surge protection	DC secondary/AC secondary
reverse DC protection	Equipped
DC input switch	Equipped
AC overcurrent protection	Equipped
High/low voltage ride through	Equipped
Intelligent string detection	Equipped
DC arc pull detection	Optional
PID protection and repair	Optional
Nighttime reactive power compensation	Optional
Basic parameters	
Dimension (W×D×L)	1150X370X800mm
Weight (with hangers)	110kg
topology	Transformerless
Protection degree	IP66/C5
Nighttime loss	<5W
Cooling method	Intelligent air cooling
Maximum working altitude	5000m (>4000m)
Working environment temperature	-30°C~60°C
Working environment humidity	0~100%
Display	LED, Bluetooth+APP
Communication	RS485/PLC (optional)
DC side terminal	MC4 terminal
AC side terminal	0T terminal (maximum 400mm2,support aluminium wire access)
Grid Connection Standard	NB/T 32004-2018, GB/T 37408-2019
Safety/EMC standards	IEC 62109-1/-2, IEC 61000-6-2/-4, NB/T 32004-2018, GB/T 37408-2019

CSTP-2000 photovoltaic power plant monitoring system

The CSTP-2000 system can be configured flexibly according to the characteristics of different PV and power plants, and has the advantages of real, time Monitoring, intelligent early warning, five anti-lock operation, SOE sequence record, accident recall, Telecontrol service, power dispatch and energy management, historical data management, data statistics analysis, equipment management, protection and failure, information Management and other functions. The system has a user-friendly user interface, powerful analysis functions, and a complete fault alarm system to ensure the reliable and stable operation of the photovoltaics power system, large-scale ground photovoltaic power plants, distributed rooftop photovoltaic power plants, power plants, agricultural and solar complementary power plants, fishing and solar complementary power plants, and other monitoring requirements of different photovoltaic power plants.

Performance characteristics

- Modular multi-standard compatibility, expandable configuration, intelligent monitoring terminal
- It can monitor and control bus box, inverter unit, AC and DC power distribution unit, grid-connected transformer, meteorology instrument, sun tracking control system and other equipment in real time
- Support users to query real-time/history data and alarm, Browse real-time/history data curve, bar chart, pie chart, accident recollection, event record
- Support the user"Remote control", "Remote control" operation, using"Two seats" control mode
- Support Kenbu, Golden Sun Data Center remote interface access
- Sun Data Center remote interface access to support different levels of users with different permissions to log on to
- support energy-saving emission reduction displays, such as CO2, SO2 emission reduction, etc.

Technical Parameter

Product model	TP-SCADA
entry	
working voltage	220VAC
DC output voltage	DC12V/DC24V
communication interface	RS232, RS485, RS422, Ethernet cable, Fiber Ethernet
letter of agreement	Supports conventional communication protocols such as IEC 60870-5-101/102/103/104, DNP3.0, CDT, MODBUS RTU, SC1801
real-time	Scanning period: digital 50ms, analog 100ms
precision	AI error: ±0.1%F.S. AO error: ±0.15%F.S. Time sequence recording (SOE) time resolution: 1ms
reliability	MTBF: ⩾100000h MTTR: ⩽10min System availability: ⩾99.95%
working temperature	-20~55℃
Working humidity	5~95%

CSTP-Cloud photovoltaic power station intelligent operation and maintenance platform

CSTP-Cloud is an intelligent operation and maintenance operation platform for photovoltaic power plants. It has functions such as power station monitoring, fault diagnosis, operation and maintenance management, and performance management. It uses cloud platform big data analysis and advanced intelligent control technology to realize intelligent management of power stations. Help users discover potential defects of power plants in time, reduce power generation losses, improve operation and maintenance efficiency, and enhance the value of power plants.

Technical Parameter

Product model	CSTP-Cloud
Cloud monitoring	
Access method	GPRS, 4G, 5G, Wifi, wired broadband
access method	Computer Client, Web Browser, Mobile APP
Cloud monitoring	
Alarm mode	Email, SMS, Mobile APP
Recording analysis	CSR_Drive expert online diagnosis
fault location	String-level fault intelligent location
Deficiency processing	Automatically push multiple sets of defect elimination solutions
Maintenance guidance	Three-dimensional dynamic operation model, all-round guidance for equipment troubleshooting
performance management	
Indicator management	Multi-dimensional comparative analysis of key indicators such as the planned completion rate of each power station, the equivalent time of online electricity, comprehensive efficiency and resource distribution
Strategic analysis	Power station index scientific evaluation system, multi-latitude decision analysis model
Statistical Analysis	
Power analysis	Radiation-power generation analysis, power generation and online power analysis, operation and maintenance cost and benefit analysis, power indicator analysis, etc.
Power station analysis	Load curve analysis, power station performance analysis, power generation loss analysis, fault statistical analysis, etc.
Equipment Analysis	Inverter and module efficiency analysis, string current analysis, inverter comparison analysis, environmental monitoring analysis, equipment performance analysis, etc.
cleaning analysis	Component dust accumulation model analysis, weather forecast model analysis, cleaning cost and cleaning benefit analysis
System parameters	
data storage	>30 years
Power station capacity	>100GW
data refresh	<1min
System reliability	>99.99%

24

7×24H service

Service network covers the whole country

The technical housekeeper provides on-site training

One-stop business support

AWARD-WINNING

Brand

Quality

Contribution

China Quality Award

"Golden Sun" Certification

"TUV" Certification

China Patent Award Again

Silver Medal at the International Invention Exhibition in Nuremberg, Germany

CASE SHOWS