

TYN-M Series

Multi-mode Modular Hybrid Solar Inverter



Product Overview:

TYN-M series modular multi-mode hybrid solar inverter is an intelligent multi-functional power supply ,which is specially designed for new energy requirements by Aerospace Baykee(Guangdong)Technology Co.,ltd. It is internally composed of solar MPPT controller, charger, rectifier, inverter, static switch, main control circuit and display alarm circuit. According to different working modes, it can work in different application environments, such as grid-connected solar power generation, off-grid solar power supply, solar energy storage, off-peak energy storage, UPS power supply and backup.

During the day, the inverter use solar energy to supply power to the load . At the same time, it charges the battery and stores electric energy. The remaining energy is fed back to the power grid through the grid-connected inverter. When the solar energy is insufficient, the solar energy and the municipal electricity or the battery pack share the power to the load; When solar power is not available, it is powered by mains electricity; When there is no power supply or solar energy, it will be converted to battery backup inverter power supply. When the battery is running out of energy, it will send a generator start signal to start the generator and then turn it into generator power supply. Internal circuit of this hybrid inverter use microprocessor control automatic detection management, the 6th generation of ultra-low loss IGBT inverter, which is very high efficiency, low distortion, large screen LCD display, more user-friendly and more intuitive. Solar MPPT makes the best use of solar and the Intelligent battery management extends the battery life.

In order to adapt to different power supply environment, the inverter adopts multi-mode design and can be applied to single-phase or three-phase. The user can realize three-phase input and three-phase output ,three-phase input and single-phase output; or single-phase input and single-phase output, or single-phase input and three-phase output.

Application environment:

It is widely used in remote mountainous areas, no power areas, islands, as well as communication, transportation, factories, schools, hotels, commercial and household applications such as grid-connected solar power generation, off-grid power generation, energy storage systems and so on.

Main Performance Characteristics

- On-line working mode , high-speed static switch switching.
- Adopting multi-mode design, meeting the needs of different system power supply.
- Using multi-feed type converter circuit structure, the energy of solar energy, power supply and battery can be distributed freely.
- Suitable for wide range input of mains power, the input rectifier circuit adopts bidirectional converter. The power can be fed into the rectifier to supply power to the inverter, or the residual energy of the solar energy can be fed back to the grid.

- Using a two-line conversion circuit of charging and discharging . it will be not only reasonable controlling charge and discharge, but also can absorb the instantaneous load energy reverse irrigation. The input end of the battery is added with a current-limiting soft start circuit to reduce the inrush current when the battery is powered on.
- MPPT bus control technology, improving efficiency of solar energy, with preventing anti reverse connection and anti reverse designing.
- Hybrid load design, suitable for computers, instruments, equipment and household electrical equipment, etc.
- Large screen humanized touch screen LCD+LED status indicator. Flow chart operation status intuitive display, intelligent icon touch button, tabular data, event record display, Chinese and English optional menu operation.
- Modular design, convenient expansion, redundancy improve system reliability. You can also invest in stages. Reduce the maintenance time on site (if there is a fault, only need to replace the module on site).
- Intelligent digital control technology: using high-speed DSP microcontroller and programmable logic devices to achieve circuit control, parameter setting, operation management, advanced self-inspection and self-detection functions, all the independent circuit connections on the circuit board for self-inspection and fault analysis. After digital transformation of sine wave voltage, and perfect operation of the new scheme, to meet your practical needs.
- The sixth generation high - speed low - loss IGBT and three - level converter technology are adopted ,which is highly working efficiently and highly improving the reliability.
- Superior load characteristics: fully meet the jump from 0 to 100% load without switching to bypass, and protect stable and reliable output.
- Perfect protection functions: input and output over-voltage protection, input surge protection, phase sequence protection, battery overcharge and over-discharge protection, output overload short circuit protection, over-temperature protection and other system protection and alarm functions.
- High performance dynamic characteristics: instantaneous controlling mode and effective value feedback controlling are adopted to achieve high dynamic regulation and reduce output voltage distortion.

- Optional battery inspection module: single parameter can be measured and displayed on the display board. If there is any battery failure, please inform the administrator immediately.

- Intelligent detection function:

When the microprocessor of this system detects all the power supply state, circuit breaker state, fuse state and all the working state of the circuit online. If there is any fault, protect it immediately and alert the administrator.

- Intelligent communication:

RS232 and RS485 communication ports truly realize multi-purpose communication and remote monitoring.

Optional cloud monitoring card and SNMP card for remote monitoring and network management.

Optional dry contact interface, using passive contact to achieve the inverter state monitoring.

Technical parameters

TYN-M Technical parameters

Model	TYN-M-20K-M20	TYN-M-60K-M20	TYN-M-120K-M20	TYN-M-200K-M20
Rated output capacity	20kW	60kW	120kW	200kW
Working mode	solar, AC Hybrid storage inverter			
Working turn	Solar—Mains—Battery			
Isolation type	Non-isolated high frequency			
Power module model	TYN-M-20K-PM			
Number of power modules can be configured	1pcs	1~3pcs	1~6pcs	1~10pcs
Solar				
Max input capacity	10kW×2	10kW×6	10kW×12	10kW×20
Rated operating voltage	500V			
Max input voltage	800V			
MPPT range	400~800V			
Max input current	25A×2			
Input line	2	6	12	20

Grid (Converter)				
Rated operating voltage	L-L:380/400/415 Vac, L-N:220/230/240 Vac, M-3Phase 4Wire (or single phase 2 wire) + PE			
Rated operating frequency	50/60Hz			
input voltage range	±25%, -40% (half load)			
input frequency range	±10%			
Input power factor	≥0.95 (20~50% load) ≥0.99 (100%load)			
Current harmonic (2~39times)	≤5% (50%load) ≤3% (100%load)			
Max input capacity	30kW	90kW	180kW	300kW
Max output capacity	20kW	60kW	120kW	200kW
Max input current	45A	135A	270A	450A
Grid current DC component	≤0.5% current rated value			
Island protection time	2s			
Generator mode	Yes			
Output (inverter)				
Rated working voltage	L-L:380/400/415 VAC, L-N:220/230/240 VAC 3Phase 4Wire (or single phase 2 wire) + PE			
Rated working frequency	50/60Hz±0.5Hz			
Output voltage stabilization accuracy	≤±1%			
Frequency tracking rate	0.2Hz/s~2Hz/s			
Waveform distortion	Sine wave, distortion: ≤3% (liner load) ≤5% (non-liner load)			
Output DC component	≤1%			
Three-phase voltage phase deviation	2°			
Dynamic transient characteristics	The dynamic transient range of inverter output is less than 10%, and the transient recovery time is <20mS			
Crest factor	3:1			
Overload capacity	105% overload delay 10 minutes protection, 125% overload delay 1 minute, more than 150% protection immediately			
Working system	Three in and three out, three in and three out, single in and single out, single in and three out (optional)			
Working mode	On and off grid, off grid (optional)			
No-load circulation in parallel	≤5%			
Current imbalance in parallel	≤5%			
Self aging function	25%, 50%, 75%, 100% (optional)			
Battery				
Rated voltage	240V (192V~288V Can be adjusted)			
Max current	120A	360A	720A	1200A

Battery type	Lead-acid batteries, lithium batteries (or similar batteries)			
Battery capacity	configurable			
Charging mode	Temperature compensated constant current, constant pressure (Three-stage @ lead-acid battery)			
Float charging voltage	2.25V±1% /cell (@25°C, lead-acid battery)			
equal charging voltage	2.34V±1% /cell (@25°C, lead-acid battery)			
Temperature compensation	-3mV/°C/cell (@ lead-acid battery)			
Maximum charging capacity	≤50% (can be set), Expandable external isolation charger			
System parameters				
Switching time	0ms			
Inverter efficiency	≥95%			
Protection function	Battery reverse connection protection, PV reverse connection protection, output short circuit, overload, over voltage, phase sequence, over temperature, fan fault, etc			
cooling way	Temperature controlled air cooling			
Protection grade	IP20			
Running environment	temperature-20~50°C			
Relative humidity	30%~95% (No condensation)			
Running height (maximum)	<1000 meters (1% drop in capacity per 100 meters, up to 4000 meters)			
Installation method	Based on customer's requirements and the project site condition			
Size W*D*H (mm)	800*200*1000	600*800*1200	600*800*1800	600*800*2200

TYN-M-20K-PM Power module technical parameters:

Model	TYN-M-20K-PM
Rated output capacity	20kW
Main functional unit	Solar MPPT controller, Mains double rectifier, Inverter double converter, Battery double converter
Isolation type	Non-isolated high frequency
Type of double conversion converter	IGBT Three level converter
Solar	
Maximum input capacity	10kW×2
Rated operating voltage	500V
Maximum input voltage	800V
MPPT range	400~800V
Maximum input current	25A×2
Input line	2 input lines
Grid (converter)	
Rated operating voltage	220/380Vac
Rated operating frequency	50/60Hz
Input voltage range	±25%, -40% (half load)
Input frequency range	±10%
Maximum input power capacity	30kW
Maximum output power capacity	20kW
Output (inverter)	
Rated operating voltage	220/380Vac(Optional)
Rated operating frequency	50/60Hz±0.5Hz
Output voltage stabilization accuracy	≤±1%
Battery	
Rated voltage	240V (192V~288V Can be adjusted)
Maximum current	120A
System parameters	
cooling way	Temperature controlled air cooling
Protection grade	IP20
Running environment	temperature-20~50°C

Relative humidity	30%~95% (No condensation)
Running height (maximum)	<1000 meters (1% drop in capacity per 100 meters, up to 4000 meters)
Installation method	Plug-in
Size W*D*H	482*133*600

TYN-M series bypass module technical parameters:

Model	TYN-M-60K-BY	TYN-M-120K-BY	TYN-M-200K-BY
Rated output capacity	60kW	120kW	200kW
Switch type	SCR static switch		
Rated operating voltage	220/380Vac		
Rated operating frequency	50/60Hz		
Input maximum voltage range	±25%		
Input frequency range	±10%		
Output voltage range	±10~25% (can be set)		
cooling way	Temperature controlled air cooling		
Protection grade	IP20		
Running environment	temperature-20~50°C		
Relative humidity	30%~95% (No condensation)		
Running height (maximum)	<1000 meters (1% drop in capacity per 100 meters, up to 4000 meters)		
Installation method	Plug-in		
Size W*D*H	482*133*600		

* The above data is reference data, if any changes are subject to the actual product.