

### **PV Grid-Connected Inverters**

TBEA XI 'AN ELECTRIC TECHNOLOGY CO.,LTD.

# **TBEA**

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Secure Reliable Efficient  Striving for excellence		String
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	eCloud	Smart eCloud
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# **Company Profile**

### **Excellent Green and Smart Energy Service Provider**

TBEA Xi'an Electric Technology Co, Ltd. was founded in 2010. The company is a high-tech enterprise affiliated toTBEA Group that specializes in R&D of core equipments and provision of core technical solutions in smart PV power generation, power quality management and smart micro-grid field etc. The company mainly produces PV inverters, high-voltage SVGs, energy routers and energy storage systems. With the support of power electronic technology, the company is dedicated to the technology exploration of clean energy power generation, smart power distribution and management of comprehensive energy and smart micro-grid, which lead technology advancement of the energy industry and drive innovation in energy technologies.



The inverter has been applied in more than 1000 PV power stations, with a global operating performance of over 32GW.



9Gvar+

performance of over 9Gvar.

TSVG products have the application

Founded in 2000, the company is one of the earliest enterprises engaged in inverter R&D and manufacturing in China.



The company has a 50000m<sup>2</sup> key PV power production base, with annual production capacity of more than 10 GW.



300+

The R&D team consists of more than 300 overseas scientists, doctors and senior experts in the industry.

### 400+

It has strong independent research and development ability and has obtained more than 400 patents worldwide.



National high-tech enterprise National postdoctoral research station National patent and innovative pilot enterprises

TBEA











# **String Inverter**

TBEA string inverter can be applied to villages, industrial and commercial rooftops, water-floating, complex mountain and other PV scenes, etc. As the core of the grid-connected power generation system, 50kW~250kW inverter series with its high efficiency, super reliability, perfect anti-PID, reliable anti-islanding protection, excellent power quality, and smooth grid access, provides users with the best green energy.



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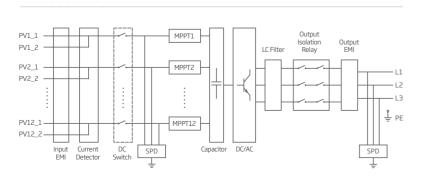




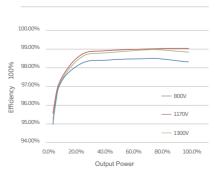
### TS228KTL-HV / TS250KTL-HV

- 12 MPPT, Y+1 wiring, maximum 36 inputs
- Non-fuse design, higher safety and reliability
- PV-array anti-PID function & PID repair
- Night SVG function with DC side isolated
- Protection level IP 66, anti-corrosion C5, minimum operating temperature -25℃, adapts to extreme environment with salty-mist, corrosion,humidity,low temperature
- Refined string detection achieves no blind zone, intelligent IV diagnosis-optional
- Flexible communication with RS485/PLC/Wifi

#### Schematic Drawing



#### ☑ Efficiency Curve





Model	TS228KTL-HV TS250KTL-H	
Input (DC)		
Max. DC Voltage	1500V	
Max. DC Current per MPPT	40A	
Max. Short Circuit Current per MPPT	50A	
MPPT Voltage Range	550V~1500V	
Full Power MPPT Range	880V~1300V	
Independent MPPT Number	12	
Max. Input Number of PV Strings per MPPT	3	
Output (AC)		
AC Output Power	250kVA@30℃ 228kVA@40℃ 208kVA@50℃	
Nominal Output Current	165A	
Max. AC Current	180A	
Nominal AC Voltage	800Vac, 3W+PE	
Grid Voltage Range	680~920Vac	
Rated AC Frequency	50/60Hz	
AC Frequency Range	45Hz~55Hz/55Hz~65Hz	
DC Current Injection	45HZ~55HZ/55HZ~65HZ <0.5%* pn	
Power Factor Range	0.8 (leading) ~ 0.8 (lagging), adjustable	
Max. THDi	<3%	
Grid Type		
nventerEfficiency	11	
Max. Efficiency	≥99%	
-		
European Efficiency Solation Method	≥98.75%  Transfomerless	
P Protection	I ransiomeness	
Night Power Consumption	<3W	
	\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Environment Parameters Operating Ambient Temperature Pange	2E% 60%	
Operating Ambient Temperature Range	−25°C~60°C	
Ambient Humidity	0%~100%	
Max.Operating Altitude @Full Load	5000m (>4000m derating)	
Cooling Method	Smart forced air cooling	
Display and Communication	LED Indicators MEET ADD	
Display	LED Indicators , WiFi + APP	
Communication Interfaces	RS485 / PLC(optional)	
Protection Function		
Anti-Islanding Protection	Yes	
Low-Voltage Ride-Through (LVRT)	Yes	
DC Input Reverse Polarity Protection	Yes	
AC Short-circuit Protection	Yes	
Leakage Current Protection	Yes	
Grid Voltage Frequency Protection	Yes	
RCD Detection	Yes	
Lightning Protection	DC Type II / AC Type II	
nsulation Resistance Detection	Yes	
Mechanical Data		
Dimensions (W×H×D)	1100mm*700mm*360mm	
Weight	110kg	
DC Connector	Amphenol UTX/ Staubli MC4 EVO2	
AC Connector	Waterproof Connector + DT Terminal	
nstallment Method	Wall Mounted Type	

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### **TS3200KT**

#### Smart detection

- Real-time detection of LV panel, transformer and RMU operation information.
- On-line detection of power data, the detection accuracy of current and voltage is 0.5.
- Remote control of main circuit breaker in LV panel and remote inquiry of operation information of the transformer.

#### Quick assembly

- Greatly decrease site construction time through factory prefabrication and installation of internal equipment.
- Compact 20 ft container, easy for transportation and installation.
- Quick deployment, only LV and MV wiring is needed to complete the total installation .

#### **⊘** Reliable protection

- High strength structural design to achieve durability and stability.
- Leading technology of anti-corrosion, maximum C5M.
- Protection degree of LV cabinet and MV cabinet is IP54.



1odel	TS3200KT	
ieneral Parameter		
ated Input Voltage	0.8kV(AC)	
requency	50Hz/60Hz	
C Power	3200kVA@40°C	
ated Output Voltage	30kV/33kV/34.5kV	
imensions (W*H*D)	6058mm×2438mm×2896mm	
Veight	<16t	
perating Temperature Range	-35°C∼+60°C	
Illowable Relative Humidity Range (non-condensing)	0%~95%	
perating Altitude	2000m, customizable	
ommunication	RS485/Ethernet/PLC	
nti-Corrosion Grade	C5M	
MU/ LV Cabinet Protection Degree	IP54	
urge Arrester	Type II /Type I + II	
ransformer	25 26	
ated Input Voltage	0.8kV(AC)	
ated Output Voltage	30kV/33kV/34.5kV	
hase Number	3	
ap Range	±2×2.5%	
lesign	Oil-immersed	
ooling Type	ONAN	
il type	Mineral oil	
/ectoring Group	Dy11	
rotection Degree	IP54	
oil Tank	Optional	
V panel		
CB	3200A/800V/3P, 1PCS	
ICCB	250A/800V/3P, 14PCS	
V Panel Number	1	
imensions (W*H*D)	1100mm×655mm×2010mm	
uxiliary Transformer	5kVA, Dyn11, 800V/400V	
auxiliary Transformer- Optional	50kVA, Dyn11, customizable ratio and capacity	
1V Switchgear		
nsulator Type	Sf6	
ated voltage MV	34.5 kV	
ated Current	630A	
requency	50Hz/60Hz	
ated Power-frequency Withstand Voltage(1 min)	70 kV	
ated Lightning Impulse Withstand Voltage	75kV	
ated Operating Pressure(at 20°C,gauge)	0.03 MPa	
	0.02 MPa	
linimum Operating Pressure(at 20°C.gauge)		
finimum Operating Pressure(at 20°C,gauge)		
dinimum Operating Pressure(at 20°C,gauge) abinet Protection Degree das Tank Protection Degree	IP2XD IPX8	

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### TS6400KT / TS6800KT

#### Smart detection

- Real-time detection of LV panel, transformer and RMU operation information.
- On-line detection of power data, the detection accuracy of current and voltage is 0.5.
- Remote control of main circuit breaker in LV panel and remote inquiry of operation information of the transformer.

#### Quick assembly

- Greatly decrease site construction time through factory prefabrication and installation of internal equipment.
- Compact 20 ft container, easy for transportation and installation.
- Quick deployment, only LV and MV wiring is needed to complete the total installation .

#### **⊘** Reliable protection

- High strength structural design to achieve durability and stability.
- Leading technology of anti-corrosion, maximum C5M.
- Protection degree of LV cabinet and MV cabinet is IP54.



Model	TS6400KT	TS6800KT
General Parameter		
Rated Input Voltage	0.8kV(AC)	
Frequency	50Hz/60Hz	
AC Power	6400kVA@40°C	6800kVA@40°C
Rated Output Voltage	30kV/33kV/34.5kV	
Dimensions (W*H*D)	6058mm×2438mm×2896mm	
Weight	<22t	
Operating Temperature Range	-35℃~+60℃	
Allowable Relative Humidity Range (non-condensing)	0%~95%	
Operating Altitude	2000m, cust	omizable
Communication	RS485/Ethe	rnet/PLC
Anti-Corrosion Grade	C5M	1
RMU/ LV Cabinet Protection Degree	IP54	ŀ
Surge Arrester	Type II /Тур	pe I + II
Transformer		
Rated Input Voltage	0.8kV(AC)	
Rated Output Voltage	30kV/33kV	/34.5kV
Phase Number	3	
Tap Range	±2×2.5%	
Design	Oil-immersed	
Cooling Type	ONAN	
Oil type	Mineral oil	
Vectoring Group	Dy11	
Protection Degree	IP54	
Oil Tank	Option	nal
LV panel		
ACB	3200A/800V/3P, 2×1PCS	
MCCB	250A/800V/3P, 2×14PCS	
LV Panel Number	2	
Dimensions (W*H*D)	1100mm×6	
Auxiliary Transformer	5kVA, Dyn11, 800V/400V	
Auxiliary Transformer- Optional	50kVA, Dyn11, customiza	ble ratio and capacity
MV Switchgear		
Insulator Type	Sf6	
Rated voltage MV	34.5 l	⟨V
Rated Current	630A	
Frequency	50Hz/60Hz	
Rated Power-frequency Withstand Voltage(1 min)	70 kV	
Rated Lightning Impulse Withstand Voltage	75kV	
Rated Operating Pressure(at 20°C,gauge)	0.03 MPa	
Minimum Operating Pressure(at 20°C,gauge)	0.02 MPa	
Cabinet Protection Degree	IP2X	D
Gas Tank Protection Degree	IPX8	3
Gas Leak Rate per Day	≤0.1% /year	



# Centralized Photovoltaic Inverter

TBEA central inverters have been widely used in hundreds of large-scale ground and water surface PV power plants globally. The product power covers 500kW~6800kW With advanced topology, excellent output filter design, efficient MPPT strategy. DPWM technology with minimum switching loss, reliable heat dissipation design, and perfect protection functions, TBEA central inverters can bring long-term stable benefits to PV power plants.



TC2475KF

Power: 2475kW

TC3125KF/TC3400KF

Power: 3125kW/3400kW

TC2500KFT

Power: 2500kW

TC6250KFT/TC6800KFT

Power: 6250kW/6800kW

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### 1500V TC2500KF / TC3750KF / TC5000KF

#### **Efficient power generation**

I-type three-level power topology, Inverter maximum efficiency greater than 99%, European efficiency greater than 98.7%

#### © Environmental adaptation

Outdoor inverter, Whole machine IP65, , Strong environmental adaptability

#### Flexible plan

Parallel modularized design, Convenient for selection of different power arrays, Compatible with multiple power distribution schemes on DC side and AC side



Model	TC2500KF	TC3750KF	TC5000KF	
Input (DC)				
Max. DC Voltage		1500V		
Max. DC Current	3118A	4677A	6236A	
MPPT Voltage Range		900V~1300V		
Independent MPPT Number	2	3	4	
Max. Number of Inputs	16*400A/20*250A	24*400A/30*250A	32*400A/40*250A	
Output (AC)				
Rated AC Power	2500kW	3750kW	5000kW	
Max. AC Power	2750kVA@40°C	4125kVA@40°C	5500kVA@40°C	
Rated AC Current	2291A	3437A	4582A	
Max. AC Current	2520A	3780A	5040A	
Rated Output Voltage		630V		
AC Frequency Range		50Hz		
Power Factor Range	0.8	(leading) ~0.8 (lagging) , adjust	table	
Max. THD		<3%		
Inventer Efficiency				
Max. Efficiency		99%		
European Weighted Efficiency		98.7%		
Environment Parameters				
Ambient Temperature	-25°C~60°C (>50°C derating)			
Ambient Humidity		5%~95% (no condensation)		
Max.Operating Altitude @Full Load		3000m		
Cooling Method	Smart forced air cooling			
IP Protection	IP65			
Communication				
Communication Interfaces	RS485/Ethernet			
Protection Function				
Anti-Islanding Protection	Yes			
Low-Voltage Ride-Through ( LVRT )	Yes			
Dc Input Reverse Polarity Protection	Yes			
Leakage Current Protection	Yes			
Grid Voltage Frequency Protection	Yes			
Lightning Protection	Yes			
Insulation Resistance Detection	Yes			
Mechanical Data				
Dimensions ( W*H*D )	2091mm*2294mm*1680mm	3136mm*2294mm*1678mm	4182mm*2294mm*1680mm	
Weight	3000kg	4500kg	6000kg	
Product Certification				
Get zero/low voltage ride through, hig	h voltage rid through, TUV		TUV	

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### 1500V TC3125KF/TC3400KF

- Brand-new 1500V high power outdoor centralized inverter
- Qualified with anti-PID and repair function
- Reserving energy storage interface for PV storage integration
- Max. efficiency >99.05%, Euro. efficiency >98.7%
- Ingress protection IP65, adapting to various Harsh environment



odel	TC3125KF	TC3400KF
nput (DC)		
lax. input voltage	1500V	
IPP voltage range	900V~1500V	
1PP voltage range at nominal power	900V~1300V	
lo. of MPP trackers	2	
lo. of DC inputs	16~20	
lax. input current	4075A@30°	C
utput (AC)		
lominal AC output power	3125kVA	3400kVA
lax. AC output power	3594kVA@30	D.C.
lax AC current	3294A@30°	C
lominal grid voltage	630V	
rid frequency	50Hz / 60H.	Z
HD	< 3%(at nominal	power)
C current injection	≤0.5%	
ower factor at nominal power	> 0.99	
djustable power factor	0.8(leading)~0.8(lagging) continuously adjustable	
fficiency		
lax. efficiency	>99.05%	
uropean effeciency	>98.7%	
unction		
C input protection	Yes	
nsulation monitoring	Yes	
irid monitoring	Yes	
round fault monitoring	Yes	
Verheat protection	Yes	
nti-PID	Optional	
ID repair	Optional	
light SVG	Optional	
nergy storage interface	Optional	
EC61850 communication adapter	Optional	
IFCI	Optional	
eneral Data		
imension (W*H*D)	2230mm*2300mm*1155mm	
Veight	2500kg	
legree of protection (inverter)	IP65	
perating ambient temperature range	-35°C~60°C	
Illowable relative humidity range	4%~100% no condensing	
lax. operating altitude	3000m(standard) / > 3000m(derating)	
ommunication	RS485/Etherr	net
ompliance	L/HVRT, L/HFRT, active & reactive power control, TUV	

Note: The product is constantly innovating and the performance continues to improve. This technical parameters are for reference only.

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### 1500V TC2500KFT

#### Efficient power generation

With I-type three-level topology, maximum efficiency is greater than 99%, European efficiency is greater than 98.7%

#### Investment saving

Standard 20-foot container, reducing transportation and construction costs

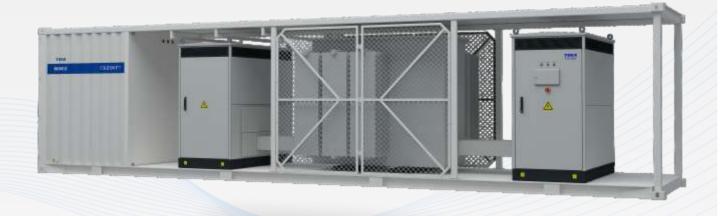
#### Highly integrated

"Inverter", "Boost", "Distribution", "Communication" and other functions are highly integrated. Unifying communication interface of all devices in the PV array



Model	TC2500KFT	
Input (DC)		
Max. input voltage	1500V	
MPP voltage range	900V~1500V	
MPP voltage range at nominal power	900V ~ 1300V	
No. of MPP trackers	2	
No. of DC inputs	16~20	
Max. input current	3118A@40℃	
Output (AC)		
Nominal AC output power	2500kVA	
Max. AC output power	2750kVA@40°C	
Max AC current	45.4A@40℃	
Nominal grid voltage	35 kV , customizable	
Grid frequency	50 (45 ~ 55) Hz	
THD	< 3% (at nominal power)	
DC current injection	< 0.5% In	
Power factor at nominal power	>0.99	
Adjustable power factor	0.8 (leading) ~ 0.8 (lagging)	
Efficiency		
Max. efficiency	>99%	
European effeciency	> 98.7%	
Function		
DC input protection	Yes	
Insulation monitoring	Yes	
Grid monitoring	Yes	
Ground fault monitoring	Yes	
Overheat protection	Yes	
Anti-PID protection	Optional	
SVG function	Optional	
General Data		
Dimension (W*H*D)	2438mm*2591mm*6058mm	
Weight	15000kg	
Degree of protection (inverter)	IP65	
Operating ambient temperature range	-30°C ~ 60 °C , (>50°C derating)	
Allowable relative humidity range	5% ~ 95% , (no condensing)	
Max. operating altitude	2000 m	
Communication	RS485/Ethernet	
Compliance	CE, IEC62109, IEC62116, IEC61727, IEC62910, IEC61000, IEC61683, IEC60529, IEC60068	

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### 1500V TC6250KFT / TC6800KFT

Max.40 Inputs,4 MPPTs

Max.40 Inputs,4 MPPTs, I-type three-level power topology, Inverter maximum efficiency greater than 99%, European efficiency greater than 98.7%

Environmental adaptation

Large array, Saving upfront investment,

Copper bar connection reducing the difficulty and cost of construction on site

Continuous power generation

DC side maximum 1.8 times over-matching access,
AC side 50 °C long-term full-load operation without derating, ensuring power generation



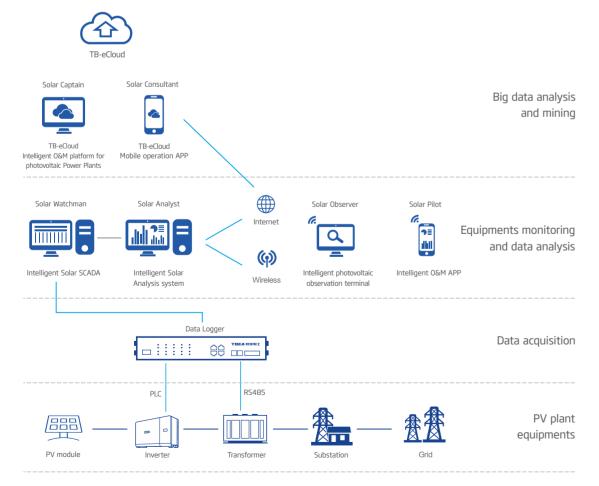
Model	TC6250KFT	TC6800KFT
Input (DC)		
Max. input voltage	150	00V
MPP voltage range	900V~1500V	
MPP voltage range at nominal power	900V ~ 1300V	
No. of MPP trackers	4	
No. of DC inputs	32~40	
Max. input current	8150A	@30°C
Output (AC)		
Nominal AC output power	6250kVA	6800kVA
Max. AC output power	7188kV	
Nominal AC current	130A	112A
Nominal grid voltage	35 kV , cus	stomizable
Grid frequency	50 (45 ~ 55) Hz /	/ 60 (55 ~ 65) Hz
THD	< 3% (at nominal power)	
DC current injection	< 0.5% In	
Power factor at nominal power	> 0.99	
Adjustable power factor	0.8 (leading) ~ 0.8 (lagging)	
Efficiency		
Max. efficiency	>99%	
European effeciency	> 98	3.7%
Function		
DC input protection	Ye	es
Insulation monitoring	Yes	
Grid monitoring	Yes	
Ground fault monitoring	Ye	es
Overheat protection	Ye	es
Anti-PID protection	Opti	onal
SVG function	Optional	
General Data		
Dimension (W*H*D)	2438mm*2896mm*12192mm	
Weight	27000kg	
Degree of protection (inverter)	IP65	
Operating ambient temperature range	-30°C ~ 60°C	
Allowable relative humidity range	5% ~ 95% , (no condensing)	
Max. operating altitude	1000m , customizable	
Communication	RS485/Ethernet	
Compliance	CE, IEC62109, IEC62116, IEC61727, IEC62910, IEC61000, IEC61683, IEC60529, IEC60068	



# **Smart Energy eCloud Platform**

# Smart energy eCloud platform Increase power generation by 3% and increase revenue by 1%

TB-eCloud intelligent energy management platform can carry out all-round real-time collection, efficient transmission, accurate calculation, intelligent processing and multi-dimensional display of massive data generated by power stations. As the result, the monitoring, production management, operation and maintenance management and investment analysis of the power station become simple and convenient, and the power station is more intelligent and friendly.



"Solar .Partner" Data service integration solutions











# **Project References**

#### 100MW Photovoltaic Project in Punjab, Pakistan



CGN White City 160MW Photovoltaic Front Runner Project



Hami Southeast Mountain Pass 150MW Desert Power Station



#### SPIC Haixing County 115MW Photovoltaic Front Runner Project



SPIC Weinan 100MW Photovoltaic Front Runner Project



Jiangxi Poyang Lake 120MW fishery solar hybrid photovoltaic power station





### **TBEA Service**



### Consulting service

Telephone answering, E-mail asking, Fax informing, on-site promoting, scheme communicating

No matter where you are, you can call the service hotline 400-606-6029 to know about our products and services at any time. We have professional engineers answering the phone 24 hours.



On-site teaching, company teaching, production line observing, brand displaying, case introducing

No matter what product knowledge users want to know, we will develop professional training programs to help you.



#### Service

Installation guiding, wiring guiding, grid-connected debugging, operation and maintenance, troubleshooting

No matter what product problems the users encounter, the after-sales service engineer of TBEA will be on standby 24 hours for you. After receiving your feedback, he will respond quickly in 2 hours and arrive at the project site in 24 hours to solve the problem for you. Reliable service means that whenever, day and night, regardless of the wind, frost, rain and snow, we will always meet the needs of users and safeguard their interests.



- Founded in 2000, one of the earliest enterprises devoted to clean energy
- The total amount of photovoltaic EPC construction exceeding 10GW,
   Top one in the world for three consecutive years
- Equipment digital production base with annual capacity exceeding 10GW
- 32GW inverter global shipment







Company website

Facebook QR Code

LinkedIn OR Code

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