Energy Storage Inverter

Sermatec

About US

Shanghai Sermatec Energy Technology Co., Ltd. is the professional ESS solution provider, with the core technology on integrating LFP battery, power system and energy management system , dedicating to ESS products supply and ESS plant operation & investment.

With the rich experience in PV industrial, Sermatec is supplying different hybrid inverter and power converting systems worldwide to make contribution to clean enenrgy with smart products. Among these, the single phase 5KW and three-phase 10kw perform in high efficiency for residential and small commerical ESS, the power coverting system works from 30KW, 50KW, 100KW to 500KW with widely compatible interoperation with other partners.

5KW Single-Phase Hybrid Inverter

With the development of energy storage market, the traditional grid-connected inverter can no longer meet the needs of customers. According to different applications, some customers need grid-connected, someone requires off-grid. Especially for home energy storage markets. Both on-grid and off-grid states require inverters to provide electricity power to the loads.
Therefore, the demand of on/off-grid inverter (two-way energy storage inverter) is growing rapidly. It allows users to generate their own power, to get certain economic benefits. When the PV energy is sufficient, the inverter draws power from the PV station to power the loads, and the rest power will charge the battery and be on to the grid. When the PV energy is insufficient, but the battery energy is enough, the inverter automatically supply power to the load from the battery. When the battery energy exhausted, the Inverter takes power from the grid, supplies the load and recharges the battery. This on-off grid inverter could be installed in/outdoor.

Features

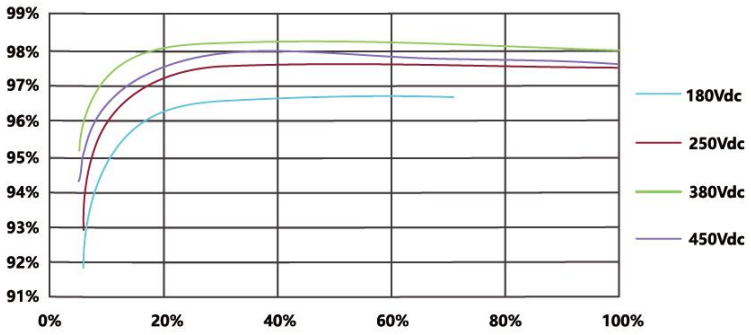
- **One-Key Setting**
  1.APP setting
  2.Automatic matching
  3.Multi-languages
  4.Self-diagnosis, maintenance-free
- **Simple Installation**
  1.Operation manual&installation video
  2.Modularization Installation
  3.International standard cables
- **Variety**
  1.Solar&High voltage battery compatible, various input sources
  2.Compatiable Life po4&Lead-acid Battery
  3.Solar,grid and generator accessed
  4.Multiple inverters in parallel
  5.On&off-grid mode switching time less than 10ms, can be used as UPS
  6.Single phase&three phase output for residential and commerical application
- **Efficiency**
  1.High efficiency at 99%
  2.Advanced tracking tech to improve effiency of PV station
  3.High-precision MPPT control algorithm and INV algorithm enabling grid connection with high efficiency and energy converting by itself.
- **Safety**
  1.Self-protection Technology

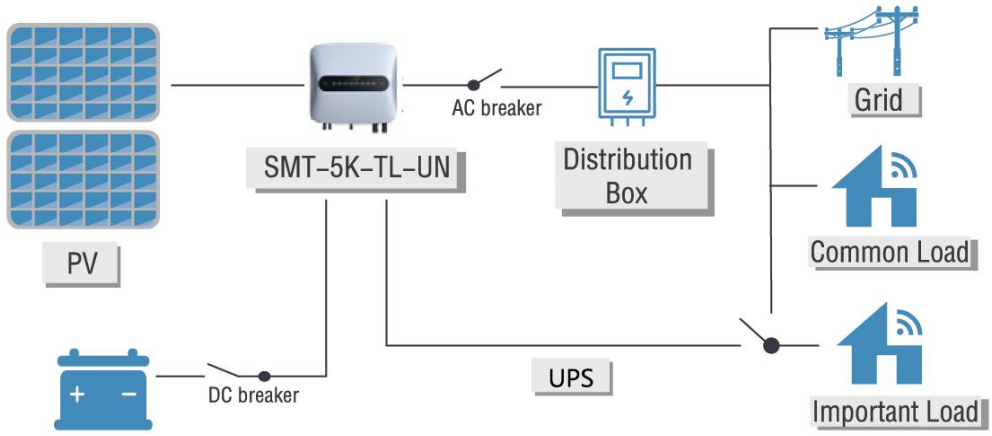
2.Wide voltage and frequency input
3.IP65 Protection
4.Automatically air cooling
5.Stable operation in high altitude, high temperature, high humidity environment

- **Intelligence**

1.Smart Management System enforces self-operation
2.WIFI, CAN, RS485, USB (optional), GPRS (optional) Multiple monitoring modes

5KW conversion efficiency





Technical Parameter

Model	SMT-5K-TL-UN
PV INPUT(DC)	
Rated DC power (W)	5000
Max.DC voltage (V)	580
MPPT voltage range (V)	125-550
Starting voltage (V)	125
Max.input current (A)	11
Max.overcurrent protection (A)	15
Number of MPPT trackers	2
OUTPUT DC (BATTERY)	

Battery Type	Li-Ion
Nominal Battery Voltage (V)	48
Battery voltage range (V)	40-58
Battery capacity (Ah)	programmable based on requirements
Max. Charging Voltage (V)	60
Overcurrent protection (A)	100
Max. charging power (W)	4600 settable
Max. charging efficiency (%)	95
Max. discharging current (A)	100
Max. discharging power (W)	4600
Max. discharging efficiency (%)	96
INPUT (AC)	
Grid voltage range (V)	170V~280V AC
Grid frequency (HZ)	50Hz/60Hz
Grid input power (W)	6000
Max. input current (A)	22.8
OUTPUT (AC)	
Rated grid power (W)	5000
Peak power (off-grid)	110% load:30mins 120% load:5mins 150% load:5S
Rated output	50/60Hz; 230Vac
Max. output current (A)	22.8
Overcurrent protection (A)	32
Total harmonic distortion (THD, rated power) (%)	<3
Displacement power factor	-0.9-0.9
BACKUP OUTPUT (WITH BATTERY)	
Rated backup power (W)	4600
Rated output	50/60Hz; 230Vac
Output range	45~55Hz/55~65Hz; 180~270Vac
Max. output current (A)	15
Overcurrent protection (A)	27.2
Peak power output (W)	4800W 5Mins 6000W 5S
Total harmonic distortion (THD, rated power) (%)	<3
Displacement power factor	-0.9-0.9
Instant recovery time	<=20ms
Crest factor	3:1
UPS Switching time (MS)	< 10 ms

Efficiency	
MPPT efficiency (%)	99.9
Europe efficiency (%)	97
Max.efficiency	97.6
Battery charge/discharge efficiency (%)	>95
Protection	
Anti-islanding protection	Integrated
DC switch (PV)	Integrated
Output overcurrent protection	Integrated
Output short circuit protection	Integrated
Output over voltage protection	Integrated
Certifications & Standards	
Grid Regulation	VDE 0126/VDE-AR-N4105/G83-2/ AS 4777.2/EN50438/CEI 0-21
Safety Regulation	IEC/EN 62109-1, IEC/EN 62109-2
EMC	IEC/EN 61000-6-2, IEC/EN 61000-6-3
General Data	
Size (Width*Height*Depth mm)	495*516*152
Weight (kg)	25
Mounting	Wall Bracket
Environment temperature range	-25~60°C
Relative humidity	0~95%
Max.operation Altitude (m)	4000 (>3000m derating)
Protection degree	IP65
Environment Category	Outdoor & indoor
Environment pollution degree	Degree 1, 2, 3
Topology	Transformerless
cooling	Natural Convection
Noise (db)	<25
Display	LED & APP
Communication style	Wi-Fi、RS485、CAN
Standard warranty (years)	5 years / Extension to 8 years (optional)

10KW Three-Phase Hybrid Inverter

With the development of energy storage market, the traditional grid-connected inverter can no longer meet the needs of customers. According to different applications, some customers need grid-connected, someone requires off-grid. Especially for home energy storage markets. Both on-grid and off-grid states require inverters to provide electricity power to the loads.
Therefore, the demand of on/off-grid inverter (two-way energy storage inverter) is growing rapidly. It allows users to generate their own power, to get certain economic benefits. When the PV energy is sufficient, the inverter draws power from the PV station to power the loads, and the rest power will charge the battery and be on to the grid. When the PV energy is insufficient, but the battery energy is enough, the inverter automatically supply power to the load from the battery. When the battery energy exhausted, the Inverter takes power from the grid, supplies the load and recharges the battery. This on-off grid inverter could be installed in/outdoor, and the power is 10KW, larger than the normal household energy storage inverter.

Features

- **One-Key Setting**
  1.APP setting
  2.Automatic matching
  3.Multi-languages
  4.Self-diagnosis, maintenance-free
- **Simple Installation**
  1.Operationa manual&installation video
  2.Modularization Installation
  3.International standard cables
- **Variety**
  1.Solar&High voltage battery compatible, various input souces
  2.Compatiable Lifepo4&Lead-acid Battery
  3.Solar,grid and generator accessed
  4.Multiple inverters in parallel
  5.On&off-grid mode switching time less than 10 ms, can be used as UPS
  6.Single phase&three phases output for residential and commerical application
  7.Flexiable to add/retrofit more inverters or battery system.
- **Efficiency**
  1.High efficiency at 99%
  2.Advanced tracking tech to improve effiency of PV station
  3.High-precision MPPT control algorithm and INV algorithm enabling grid connection with high efficiency and energy converting by itself.

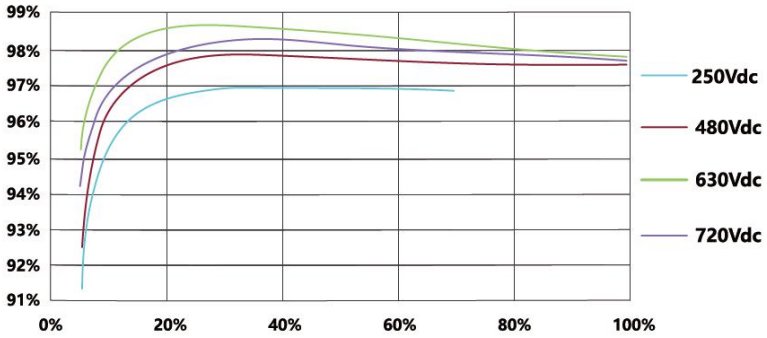
- **Safety**

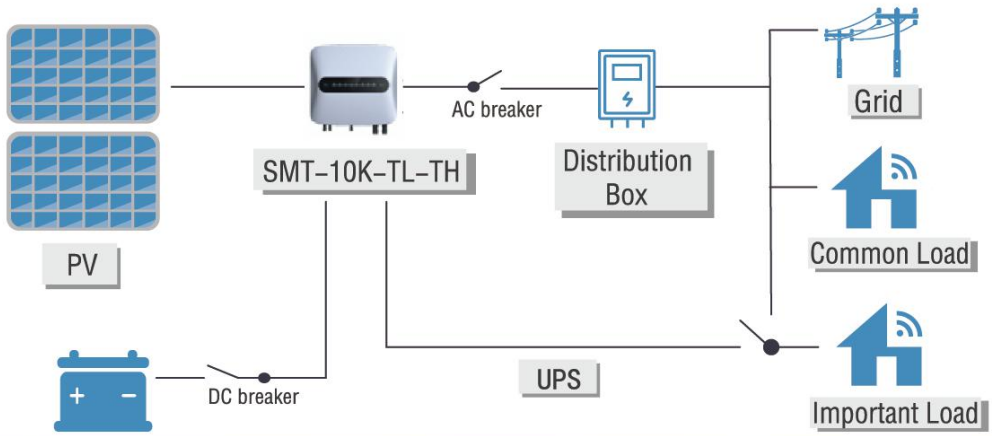
  1.Self-protection Technology
  2.Wide voltage range and frequency input
  3.IP65 Protection
  4.Automatical air cooling
  5.Stable operation in high altitude, high temperature, high humidity environment
  6.Overload capacity

- **Intelligence**

  1.Smart Management System enforces self-operation
  2.WIFI, CAN, RS485, USB (optional), GPRS (optional) Multiple monitoring modes

10KW conversion efficiency





Technical Parameter

Model	SMT-10K-TL-TH
PV INPUT(DC)	
Rated DC power(U)	10000
Max.DC voltage (V)	1000
Nominal DC operating voltage (V)	720
Max.input current (A)	11
Max.over current (A)	15
MPPT voltage range (V)	200-900

Number of MPPT trackers	2
OUTPUT DC (BATTERY)	
Battery voltage range (V)	200-800
Recommended battery voltage (V)	500
Max. charging/discharging power (W)	12000
Max. charging/discharging current (A)	25
Communication interfaces	CAN/RS485
Reverse connect protection	YES
OUTPUT (AC)	
Nominal AC power (VA)	10000
Max. AC power (VA)	Support off-grid mode, 110% load 30 min, 130% load 5min, 150% load 5S, at 25℃
Rated grid voltage (AC voltage range) (V)	400/230 ; 380/220
Rated grid frequency (Hz)	50/60
Nominal AC current (A)	15.2
Over current protection	22.8
Displacement power factor	-0.8-0.8
Total harmonic distortion (THD, rated power) (%)	<3
Parallel operation	YES
BACK UP OUTPUT (WITH BATTERY)	
Rated power (VA)	10000
Rated voltage (V)	400/380
Rated frequency (Hz)	50/60
Rated current (A)	15.2
Peak power (W), duration (S)	Support off-grid mode, 110% load 30 min, 130% load 5min, 150% load 5S, at 25℃
UPS Switching time (MS)	<10 ms
Total harmonic distortion(THD, linear load) (%)	<3
Parallel operation	YES
EFFICIENCY	
MPPT efficiency (%)	99.9
Europe efficiency (%)	97
Max. efficiency	97.8
Battery charge/discharge efficiency (%)	>95
Power consumption	
Internal consumption(night) (W)	<7

Idle mode	YES
Standard	
Safety	IEC/EN 62109-1, IEC/EN 62109-2
EMC	IEC/EN 61000-6-2, IEC/EN 61000-6-3
Certification	VDE 0126/VDE-AR-N4105/G83-2/ AS 4777.2/EN50438/CEI 0-21
Environment limit	
Protection class	IP 65
Operating temperature range (℃)	-20 to+60 (derating at+45)
Altitude (m)	<2000
Storage temperature (℃)	-20 to +60
Noise emission (typical) (dB)	<30
Over voltage category	III (electric supply side) , II (PV side)
Dimensions Weight	
Dimensions(WxHxD) (mm)	535*548*188
Weight (KG)	40
Cooling concept	Natural-cooling
Topology	Transformerless
Communication	CAN, RS485 WIFI, GPRS (optical, module reserves communication interface for external GPRS)
LED display	Yes
Standard warranty (years)	5 years / Extension to 8 years (optional)

30KW Three-Phase Hybrid Inverter

With the development of smart home and factory, the electricity consumption of them becomes huge which also makes the grid bear cumulative increased difference of electricity consumption at the time of peak and off-peak. According to this situation, the state grid divides the whole day into four stages: off-peak time, normal time, peak time and high-peak time, different time has different price. The storage system charges at off-peak time, discharges at peak time to supply the family and industry. At the same time, the storage system can save money for customer through transferring the energy. Besides, the storage system can work independently without grid which substitutes UPS and guarantees stable electricity for customer.

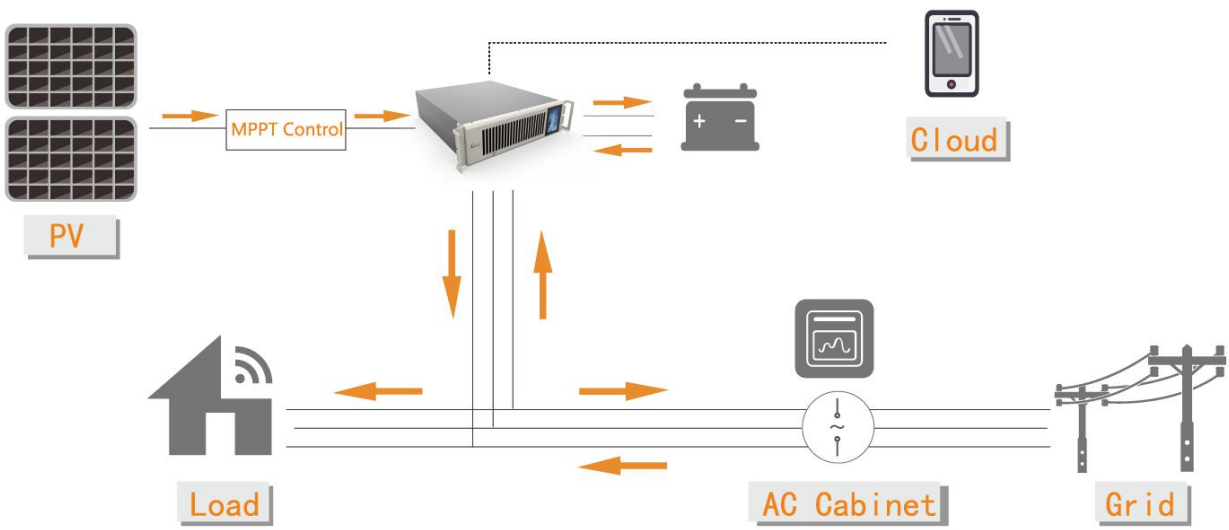
Distributed PV system has been developing for many years. Currently, some countries in Australia and Europe encourage people self-generate and self-consume but forbid the PV system connect on the state grid.

Therefore, the demand of on-grid inverter (two-way energy storage inverter) is growing .

This on-grid inverter could be installed in/outdoor, and the rated power is 30KW which has more applications and supplies more loads.

Features

- Intelligent on-grid, low harmonic
- Support intelligent reactive compensation and harmonic compensation, improve grid quality
- Intelligent forward and reverse operation, switch time with full-load 3.5ms
- Ultra-wide DC range, 50DC-820VDC, storage battery and voltage range configure flexibly
- Efficiency 98.5%, low-consumption
- Support half-wave load, three-phase 100% unbalance load, great load adaptation
- Ethernet, CAN, RS485 communication
- Multiple sampling interface, operate with customer system or select on/off-grid module to realize on/off-grid switching function



Technical Parameter

Model	SMT-30K-TL-TH
AC on-grid parameter	
Rated power	30kW
Max.power	33kW
Input type	three-phase-four-wire
Voltage range	380Vac±15%@rated voltage 380Vac
Current range	±90A
Rated grid frequency	50/60Hz
Frequency range	45Hz~55Hz/55Hz~65Hz
Power factor adjustable range	±1
Current DC component	≤0.5%
Harmonic component	≤3%
AC off-grid parameter	
Rated voltage	380Vac
Voltage range	380Vac±1% (three-phase-five-wire)
Voltage accuracy	≤2%
Output frequency	50/60Hz
Power factor	1
Voltage harmonic distortion	≤2%
Dynamic response	≤2ms
Output DC voltage component	≤0.5%
Voltage switch range	≤0.5%, load change from 20% to 100%
Unbalance load ability	100%
Degree of three-phase unbalance	≤2%, no more than 4% in short time
DC	
Voltage range	50Vdc~820Vdc
Current range	0~50A
Voltage tolerance	±0.5%
Voltage accuracy	±0.5%
Current tolerance	0.3A@0-30A,±1%@30A-50A
Current accuracy	±1%
Ripple factor	RMS no more than±0.5%, peak value no more than±1%
Limit voltage character	YES
Limit current character	YES

Rated power	30kW
Basic characteristics	
AC and DC start function	YES
Forward and reverse switching time	≤10ms
Efficiency	≥98.5%
Standby consumption	<25W
Average normal running time	> 100000 hour
Working temperature	-40℃ ~ +50℃ full-load +50℃ ~ +60℃ derating power
Relative humidity	≤95%RH, without condensation
Altitude	3000m
Communication mode	Ethernet, RS485 , CAN, dry connector
Weight (kg)	23.5
Dimension (H*W*D)	130mm*430mm*500mm

50KW Three-Phase Hybrid Inverter

With the development of smart home and factory, the electricity consumption of them becomes huge which also makes the grid bear cumulative increased difference of electricity consumption at the time of peak and off-peak. According to this situation, the state grid divides the whole day into four stages: off-peak time, normal time, peak time and high-peak time, different time has different price. The storage system charges at off-peak time, discharges at peak time to supply the family and industry. At the same time, the storage system can save money for customer through transferring the energy. Besides, the storage system can work independently without grid which substitutes UPS and guarantees stable electricity for customer.

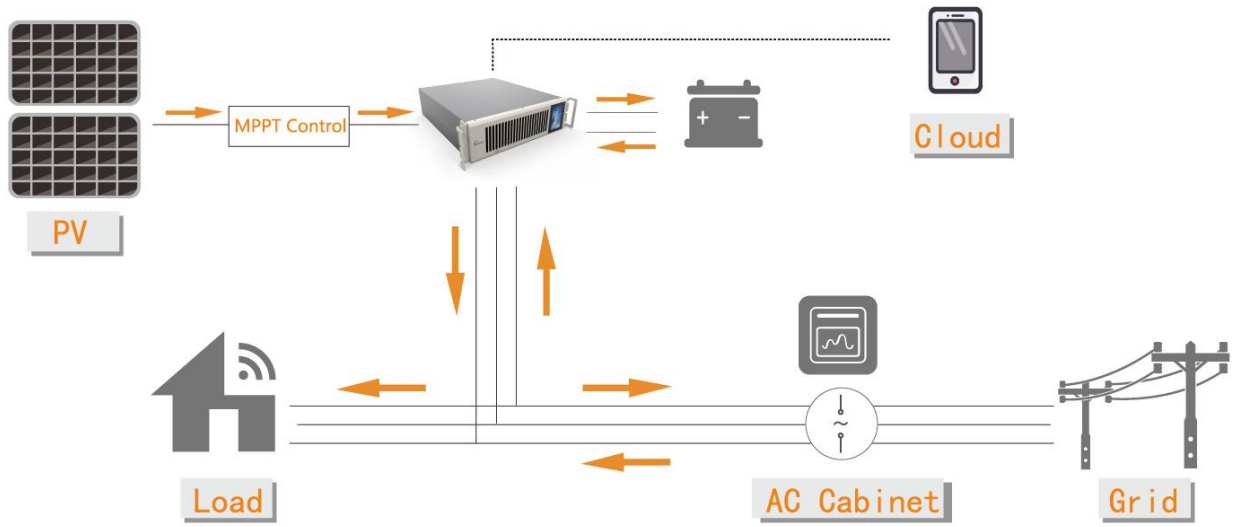
Distributed PV system has been developing for many years. Currently, some countries in Australia and Europe encourage people self-generate and self-consume but forbid the PV system connect on the state grid.

Therefore, the demand of on-grid inverter (two-way energy storage inverter) is growing .

This on-grid inverter could be installed in/outdoor, and the rated power is 50KW which has more applications and supplies more loads.

Features

- Intelligent on-grid, low harmonic;
- Support intelligent reactive compensation and harmonic compensation, improve grid quality;
- Intelligent forward and reverse operation, switch time with full-load 3.5ms;
- Efficiency 98.5%, low-consumption;
- Support half-wave load, three-phase 100% unbalance load, great load adaptation;
- Ethernet, CAN, RS485 communication;
- Multiple sampling interface, operate with customer system or select on/off-grid module to realize on/off-grid switching function;



Technical Parameter

Model	SMT-50K-TL-TH
AC on-grid parameter	
Rated power	50kW
Max.power	60kW
Input type	three-phase-four-wire
Voltage range	380Vac±15%@rated voltage 380Vac
Current range	±90A
Rated grid frequency	50/60Hz
Frequency range	45Hz ~ 55Hz/55Hz ~ 65Hz
Power factor adjustable range	±1
Current DC component	≤0.5%
Rated power	≤3%
AC off-grid parameter	
Rated voltage	380Vac
Voltage accuracy	≤1%
Output frequency	50/60Hz
Power factor	1
Voltage harmonic distortion	≤2%
Dynamic response	≤2ms
Output DC voltage component	≤0.5%
Voltage switch range	≤0.5%, load change from 20% to 100%
Unbalance load ability	100%
Degree of three-phase unbalance	≤2%, no more than 4% in short time
DC	
Voltage range	680Vdc ~ 820Vdc
Current range	±80A
Voltage tolerance	±1%
Voltage accuracy	±1%
Current tolerance	±1%
Current accuracy	±1%
Limit voltage character	YES
Limit current character	YES
Rated power	50kW
Basic characteristics	
AC and DC start function	YES

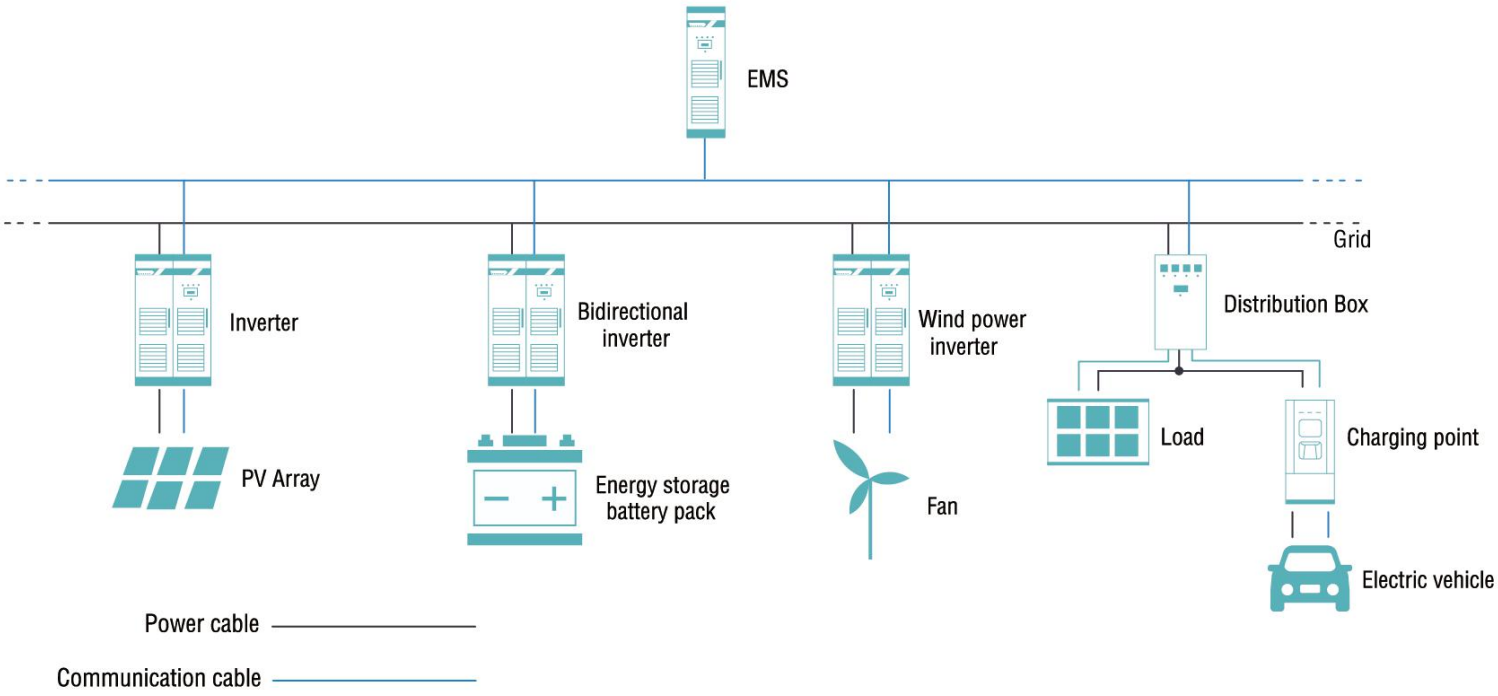
Forward and reverse switching time	≤10ms
Efficiency	≥98.5%
Standby consumption	<25W
Average normal running time	> 100000 hour
Working temperature	-40℃ ~ +50℃ full-load +50℃ ~ +60℃ derating power
Relative humidity	≤95%RH, without condensation
Altitude	3000m
Communication mode	Ethernet, RS485 , CAN, dry connector
Weight (kg)	25
Dimension (H*W*D)	130mm*430mm*500mm

UN38.3

100KW Modularized PCS

Features

- Higher reliability , easy for installation and maintenance
- Each module is separately controlled, Support three-phase 100% unbalance load operation, Support single-phase load and half-wave load
- Voltage balance module which radically solve the unbalanced voltage problem on positive and negative buses caused by half-wave load
- The maximum power of single unit is 500kW ,without transformer
- Integrated local EMS systems
- Flexible intelligent charging system, real-time data recording system
- Independent module monitoring system, support different types of battery use
- Realize multiple PCS in parallel, easily extensible
- VSG (Virtual synchronous generator)technology
- Intelligent start and stop design , which increases service life of the whole machine by 20%
- Module intelligent mechanical switched + variable frequency control, better power quality



Technical Parameter

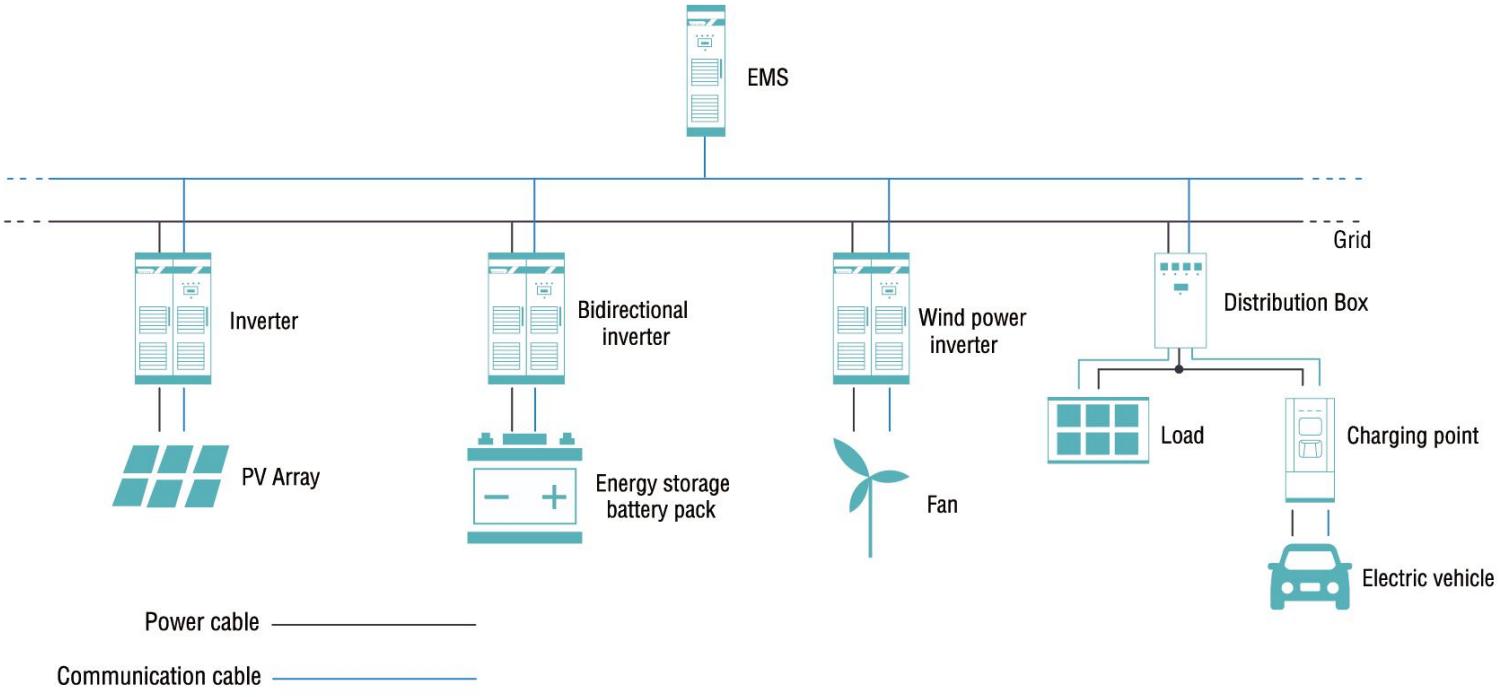
Model	SMT-100K-TL-TH
AC ON-Grid data	
AC access standard	Three-phase four-wire
Rated AC output voltage	AC400V (RMS)
Output voltage range	AC400V (-15%~+15%)
Rated grid frequency	50/60Hz
Grid frequency range	50/60HZ±5HZ
THDi	≤3%
Power factor	≥0.99 (rated power)
Power factor range	±1
Long-term overload capacity	1.1
Charge and discharge switching time	10ms
AC OFF-Grid data	
Rated AC output voltage	AC380V/400V
AC output voltage range	AC 370V ~ AC 410V
Stable voltage accuracy	±1%
Voltage unbalance factor	unbalance factor less than 2% , Short-term less than ＜4%
Voltage distortion	≤2% (Rated linear load)
Rated AC output frequency	50/60Hz
AC output frequency range	50/60HZ±5HZ
Voltage transition range	≤0.5% (Resistance load 20 ~ 100%)
DC data	
DC voltage range	DC520 V ~ DC820 V
Max. current	180A
Number of battery branches	2
Stable voltage accuracy	≤ 1%
Stable current accuracy	≤ 1%
DC voltage ripple	≤ 2%
DC current ripple	≤ 2%
System data	
Max. efficiency	97.5%
Dimensions (W*D*H)	1200mm*700mm*2000mm
Weight (kg)	1110
Cooling concept	Forced-air cooling
Noise emission	＜50dB

Insulation resistance	≥100 MΩ
Dielectric strength	AC 50 Hz、RMS 2500V(DC 3500V)，1min
Environmental protection Rating	IP21
Operating temperature range	-30℃~55℃
Operating humidity range	≤95% non-condensing
Altitude	4500m(>4000m reduce power)
Human-computer interface	Touch-screen
Communication interface	Operations serves platform: LAN/RS485 each 1; Battery:CAN/RS485 each 1
Communication protocol	Operations serves platform: IEC104、Modbus TCP ; Battery:CAN2.0B,Modbus (TCP，RTU)

250KW Modularized PCS

Features

- Higher reliability , easy for installation and maintenance
- Each module is separately controlled, Support three-phase 100% unbalance load operation, Support single-phase load and half-wave load
- Voltage balance module which radically solve the unbalanced voltage problem on positive and negative buses caused by half-wave load
- The maximum power of single unit is 500kW ,without transformer
- Integrated local EMS systems
- Flexible intelligent charging system, real-time data recording system
- Independent module monitoring system, support different types of battery use
- Realize multiple PCS in parallel, easily extensible
- VSG (Virtual synchronous generator)technology
- Intelligent start and stop design , which increases service life of the whole machine by 20%
- Module intelligent mechanical switched + variable frequency control, better power quality



Noise emission	< 50dB
Insulation resistance	≥100 MΩ
Dielectric strength	AC 50 Hz、RMS 2500V(DC 3500V)，1min
Environmental protection Rating	IP21
Operating temperature range	-30℃~55℃
Operating humidity range	≤95% non-condensing
Altitude	4500m(>4000m reduce power)
Human-computer interface	Touch-screen
Communication interface	Operations serves platform: LAN/RS485 each 1; Battery:CAN/RS485 each 1
Communication protocol	Operations serves platform: IEC104、Modbus TCP ; Battery:CAN2.0B,Modbus (TCP，RTU)

UN38.3

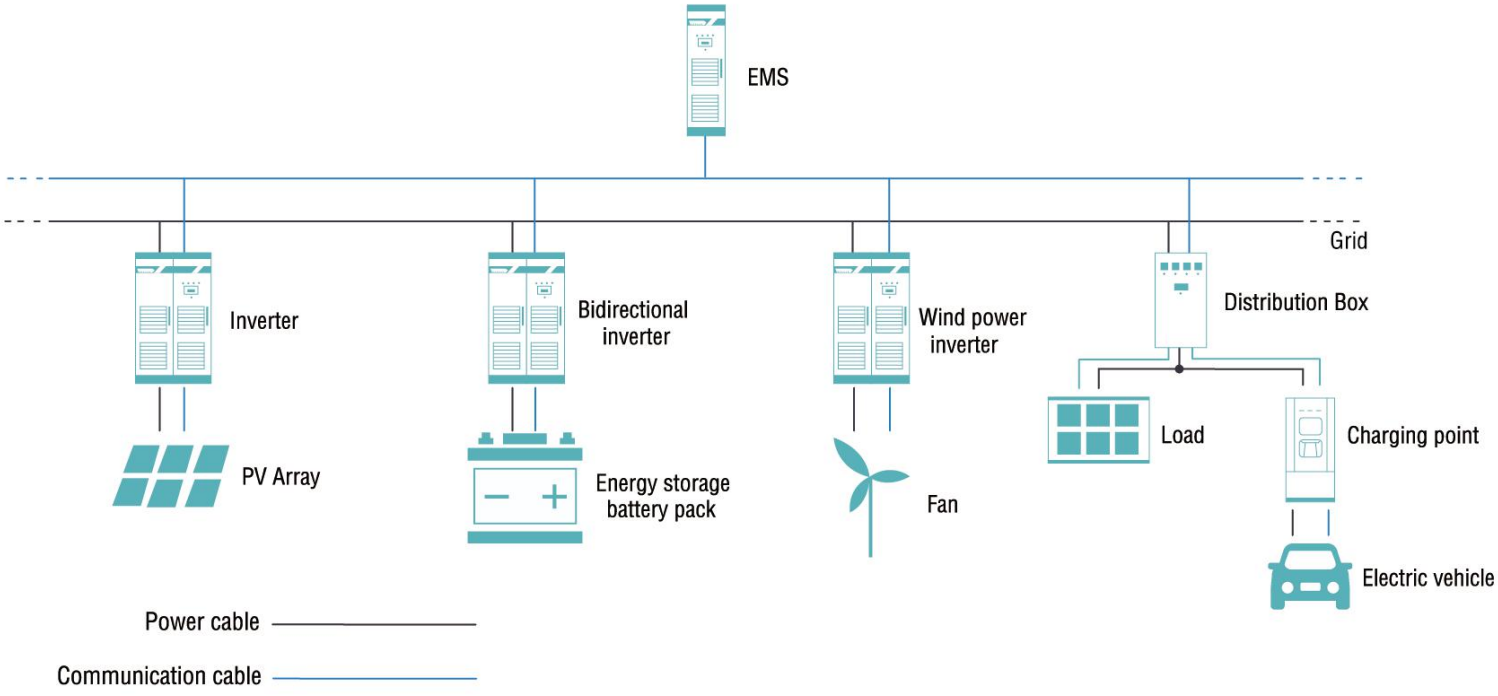
Technical Parameter

Model	SMT-250K-TL-TH
AC ON-Grid data	
AC access standard	Three-phase four-wire
Rated AC output voltage	AC400V (RMS)
Output voltage range	AC400V (-15%~+15%)
Rated grid frequency	50/60Hz
Grid frequency range	50/60HZ±5HZ
THDi	≤3%
Power factor	≥0.99 (rated power)
Power factor range	±1
Long-term overload capacity	1.1
Charge and discharge switching time	10ms
AC OFF-Grid data	
Rated AC output voltage	AC380V/400V
AC output voltage range	AC 370V ~ AC 410V
Stable voltage accuracy	±1%
Voltage unbalance factor	unbalance factor less than 2% , Short-term less than ＜4%
Voltage distortion	≤2% (Rated linear load)
Rated AC output frequency	50/60Hz
AC output frequency range	50/60HZ±5HZ
Voltage transition range	≤0.5% (Resistance load 20 ~ 100%)
DC data	
DC voltage range	DC500 V ~ DC820 V
Max. current	450A
Number of battery branches	5
Stable voltage accuracy	≤ 1%
Stable current accuracy	≤ 1%
DC voltage ripple	≤ 2%
DC current ripple	≤ 2%
System data	
Max. efficiency	97.5%
Dimensions (W*D*H)	2000mm*700mm*1200mm
Weight (kg)	1475
Cooling concept	Forced-air cooling

500KW Centralized PCS

Features

- Power module of vertical plug type, easy installation and maintenance
- Three-level (TL) topology ,high efficiency, low harmonic
- Black-start function
- Anti-resonance capability
- Anti-impact load
- Support three-phase 100% unbalance load operation
- No transformer
- Peak Valley Mode, Emergency Power Mode and Custom Mode
- PCS start up in V/F mode, providing a reference source for other microsources
- Realize multiple PCS in parallel
- VSG (Virtual Synchronous Generator) control



Technical Parameter

Model	SMT-500K-TL-TH
DC data	
Max. DC power	567kW
DC voltage range	450Vdc~850Vdc&540Vdc~850Vdc

Max. DC current	1244A
DC voltage ripple	≤1%
DC current ripple	≤1%
AC data	
Max. AC power	560kVA
AC voltage range	315V±15%&380V±15%
Rated AC frequency	50Hz/60Hz
AC frequency range	45Hz～55Hz/55Hz～65Hz
Max. AC current	1026A
Short-circuit current	≤1.5 times rated current
Isolating transformer	no
Power network	IT
THDi	≤3%
Power factor	≥0.99
Power factor range	±0.9
Islanding Mode	Yes
Voltage range of OFF-grid	315V±3%&380V±3%(Three-phase four-wire)
Voltage distortion of OFF-grid	< 3%(linear load)
Unbalanced load capacity	100%
Voltage transition range of OFF-grid	< 10%(Resistance load 0~100%)
DC component	≤0.5%
System data	
Max. efficiency	98.7%
Dimensions (W*D*H)	1200mm*700mm*2000mm
Weight (kg)	1000
Cooling concept	Forced-air cooling
Overload capacity	110% (long-term) , 120% overload 30min
Altitude	≤5000m (>4000m reduce power)
Noise emission	< 60dB
Environmental protection Rating	IP21
Self-consumption	< 50W
Dispatch communication interface	CAN、RS485、Ethernet
BMS communication interface	CAN、RS485、Ethernet

UN38.3

SHANGHAI SERMATEC ENERGY TECHNOLOGY CO.,LTD.

Tel：021-69986891

Fax：021-69986096

Web：www.sermatec.com.cn

Mail: sales@sermatec.com.cn

Add: NO.3939 Jiasong North Road，Jiading District,Shanghai