Power Cube

Modular Industrial and Commercial ESS Power Cube Series
Power Cube EC215-100K-M01

ZONERGY

- System efficiency is 5-8% higher than the industry average Significantly improve system investment ROI.
- Industry leading in battery temperature consistency Effectively extending battery life by more than 10%.
- Real-time data monitoring and fault recording, early warning, fault location.
- Pack-level combustible gas detection and fire protection.
- Integrated design, convenient transportation, reduce installation costs.
- The large capacity cell reduces the system series-parallel connection.
- Support for parallel, flexible capacity expansion.
- Support grid-connected and off-grid operation.

Industrial and Commercial Energy Storage Application Scenarios

- Industrial and commercial energy storage is a typical application of distributed energy storage system on the user side, mainly composed of photovoltaic modules, hybrid PCS, battery packs, loads, etc., mostly modular scalable design;
- The main application scenarios include factories and shopping malls, photovoltaic energy storage charging stations, and microgrid+ energy storage, and new application scenarios have appeared in data centers, 5G base stations, heavy trucks switching, port shore power, and so on;
- The main application modes include grid-connected mode, pure off-grid mode, and integrated grid-connected and off-grid mode;
- The main electrical system architectures are AC-coupled and DC-coupled.
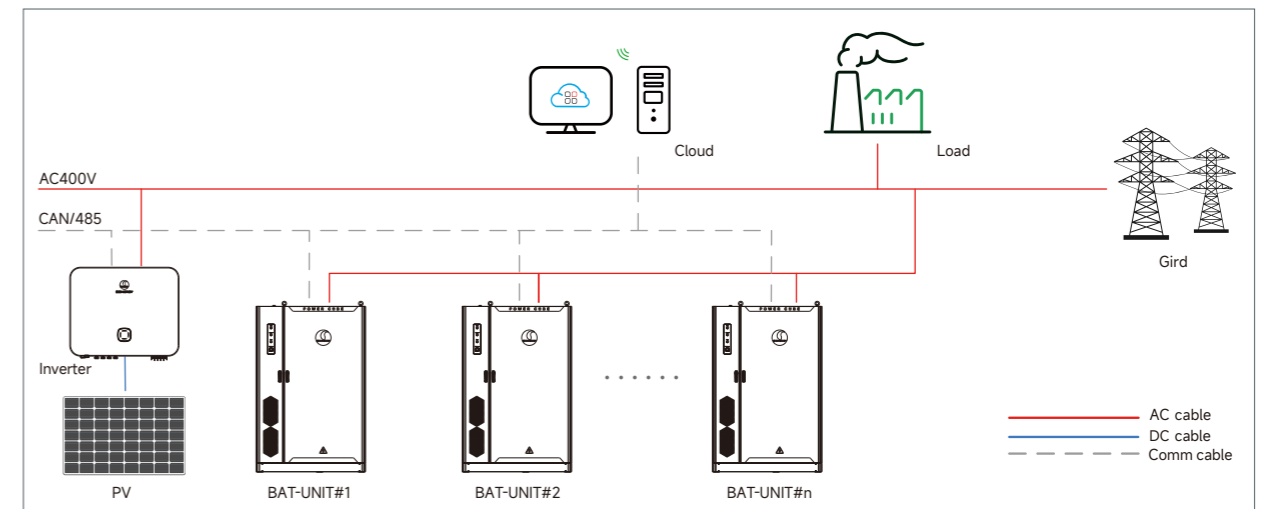

Industrial and Commercial Application

Micro-grid

Photovoltaic Energy Storage and Charging Station

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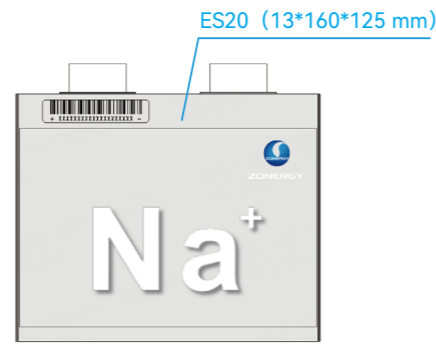| Technical parameters:	Power Cube EC215-100K-M01
Battery configuration	
Battery type	LFP 280 Ah
PACK configuration	14.336 kWh / 1P16S
Battery system configuration	215 kWh / 1P240S
Voltage Range	672-864 Vdc
AC parameters (on-grid)	
Rated power	100 kW
Maximum charge and discharge power	110 kW
Rated grid voltage	400, 3W+N+PE
Grid voltage range	360-440 Vac
rated current	150 A
Maximum Current	160 A
Rated grid frequency	50 Hz
Allowable grid frequency fluctuations	±5 Hz
Power Factor Range	-1 ~ +1
iTHD	< 3%（Rated power)
System parameters	
Size of battery cabinet	1600*1080*2270 mm（W*D*H)
Weight of battery cabinet	~2400 kg
Protection level	IP55
Operating temperature range	-30~+50℃ (>45℃Reduction)
Operating humidity range	0~95% (No condensation)
Max. working altitude	3000 m
Cooling mode	Intelligent air-cooled
Isolation mode	No transformer
Communication interface	Ethernet
Communication protocol	Modbus TCP
System certification	EN IEC62477-1, EN IEC62619, IEC60730 Annex H, EN IEC61000-6-2, EN IEC61000-6-4, UN38.3
PCS certification	GB/T34120, EN/IEC62477-1, IEC61000-6-2/-4, VDE 4105, EN50549-1, UK G99, Italy CEI 0-21

Cloud   Load   Gird

AC400V

CAN/485

Inverter

PV   BAT-UNIT#1   BAT-UNIT#2   BAT-UNIT#n

AC cable
DC cable
Comm cable

Note: Technical parameters listed hereunder are for reference only. Actual parameters shall be subject to products shipped.

Na
Sodium-ion Battery Cell
NaNFM13160125-ES20\NaNFM50160118-EA75\NFPP72174207-EA160

ZONERGY

ES20 （13*160*125 mm)

Na+

EA160 （72*174*207 mm)

Sodium-ion Battery

EA75 （50*160*118 mm)

Na+

High safety:
Be kept and transported at zero voltage, with no transport safety risk.
Less heat from spontaneous heating and few fire/explosion hazards in the event of overcharging/excessive discharge/short circuit/pressing.

Excellent rate property:
Compared to the lithium ion, the sodium ion has smaller stokes diameter and better interface reaction kinetics, its desolvation ability is about 25% to 30% smaller, and the sodium ion cell has better rate and low temperature performance.

Wide operating temperature range:
Good capacity retention ratio at high and low temperature (-60℃ to 60℃).

Good low-temperature characteristics:
①The capacity retention ratio is 90% at -20℃;
②The capacity retention ratio is 87% at -30℃;
③The capacity retention ratio is 85% at -40℃;

Moderate energy density:
Similar weight and volume energy density to that of lithium iron phosphate liion cell.

Technical Parameter:	NaNFM13160125-ES20	NaNFM50160118-EA75	NFPP72174207-EA160
Rated capacity	20 Ah	75 Ah	160Ah
Energy density	150 Wh/kg	132 Wh/kg	110 Wh/kg
Internal resistance of battery	ACR 1mΩ	ACR 0.5mΩ	ACR 0.3mΩ
Nominal voltage	3.0 V	3.0 V	3.0 V
Working voltage	1.5 – 3.95	1.5 – 3.95	1.5 – 3.4
Cycle Life	≥2500	≥2500	≥5000
Battery weight	0.4±0.02 kg	1.7±0.05 kg	4.4±0.1 kg
External dimension (T*W*H)	13*160*125 mm	50*160*118 mm	72*174*207 mm

Application Fields:
The sodium-ion battery has more application potential in fields with less energy density requirements but is sensitive to safety and cost, such as the fields of distributed energy storage, low speed vehicles and backup power. **[Energy storage]** includes residential energy storage, industrial and commercial park energy storage, telecom base applicaiton, etc.; **[Low-speed vehicles]** mainly include the low speed electric vehicle, electric bicycles, electric boats, buses and coaches.

Energy Storage Application:

Telecom base applicaiton   NaESS for C&I Park   Distributed NaESS in low-temperature region

NaESS+PV+Charger Integration Project   Residential NaESS
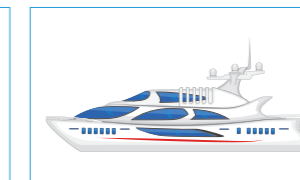
Low-speed vehicle application:

Electric bicycle   Electric tricycle   Electric boat   Electric bus

Panda

Residential Single-phase Energy Storage System Panda Series
Panda 3680S~6000S-5HP~30HP

ZONERGY

Inverter

Battery

The Lithium Iron Phosphate (LFP) cell secures safe and reliable operation.

The automatic isolation of the faulty battery module secures smooth system operation.

The 5 KWh module adopted enables variable capacity range of 5–30 kWh.

The switching time between on-off grid less than 10 ms secures Uninterruptable Power Supply for the load.

The APP-based remote monitoring offers easy maintenance and unlimited function expansion.

The built-in Smart Grid Management module enables power grid dispatching.

IP66

The Degree of Protection at IP66 makes it suitable for various harsh environments for application.

Residential Energy Storage Application Scenarios: Energy Storage + X

- The residential energy storage system addresses stable power demand and offers functions such as leveraging price differentials between peak and off-peak hours to reduce electricity costs and enhance the self-consumption rate of photovoltaic power generation. It serves as an integrated solution tailored for household scenarios.
- The core of the residential energy storage system is the battery pack, BMS, and energy storage inverter, which is paired with household PV to form a residential photovoltaic energy storage system, mainly including the battery pack, BMS, hybrid PCS, and PV modules.
- Residential energy storage is developing rapidly in the European market. Europe's higher level of electricity prices combined with peak and valley price differentials, as well as the incentive policy and declining energy storage cell prices, contribute to the favorable economic viability of residential energy storage.

Residential Energy Storage
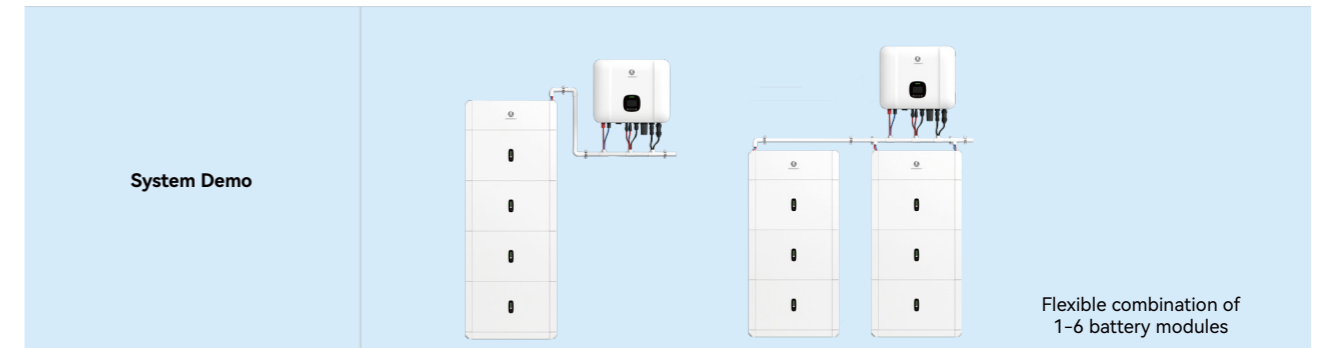
Residential Photovoltaic Energy Storage

Residential Photovoltaic Energy Storage and Charging

Residential Photovoltaic Energy Savings

Residential Photovoltaic Energy Storage Heat Pump

www.zonergy.com   asia_pacific@zonergy.com   europe@zonergy.com

System Demo							

Flexible combination of 1–6 battery modules

System Specification

Nominal Output Power	3680 W	4000 W	4600 W	5000 W	6000 W	3680 W	4000 W
Capacity Range	5.12~30.72 kWh						
Usable Capacity Range	4.6~27.65 kWh						
Battery Chemistry	LFP (LiFePO4)						
IP Protection	IP66 (Outdoor)						

Inverter Technical Specification

Model	Venus 3680-S1	Venus 4000-S1	Venus 4600-S1	Venus 5000-S1	Venus 6000-S1	Venus 3680-S2	Venus 4000-S2
Phase	Single Phase						
Max. PV Input Voltage	600 V						
MPPT Voltage Range	100 V~550 V						
Max. PV Input Current	16 A / 16 A						16 A
Max. PV Input Power	8000 W	9000 W	9000 W	9000 W	9000 W	4500 W	4500 W
Max. MPPT Short-circuit Current	20 A / 20 A						20A
Number of Independent MPPT	2						1
Start-up Voltage Range	120 V						
Max. Charging/Discharging Current	100 A						
Max. Charging/Discharging Power	5000 W						
Nominal Output Voltage on Grid	220 V,230 V,240 V (comply with local regulations)						
Output Voltage Range on Grid	180 ~ 276 V						
Rated Grid Output Frequency on Grid	50 Hz/60 Hz						
Max.AC output Power	3680 W	4000 W	4600 W	5000 W	6000 W	3680 W	4000 W
Nominal AC Output Voltage	230 V						
Communication	CAN2.0/RS485, WIFI/4G(optional)						
Display	LCD & APP						
Dimension(W*H*D) mm	540 x 450 x185						
Certification	EN IEC62109-1, EN IEC62109-2, IEC61683, IEC61727, IEC62116, IEC60068, EN IEC61000-6-1, EN IEC61000-6-3, IEC60529 IP66, EN50549-1, EN50530, Italy CEI 0-21, Germany VDE4105, UK G98, G99, Spain UNE217001, UNE217002, NTS 2.1, RoHS(2011/65/EU+2015/863), WEEE(2012/19/EU), ISTA, UKCA						

Battery Technical Specification

Module Model	Limestone 5H-P	Limestone 10H-P	Limestone 15H-P	Limestone 20H-P	Limestone 25H-P	Limestone 30H-P
Module Capacity	5.12 kWh	10.24 kWh	15.35 kWh	20.48 kWh	25.64 kWh	30.72 kWh
Usable Capacity	4.6 kWh	9.21 kWh	13.81 kWh	18.43 kWh	23.04 kWh	27.65 kWh
Nominal Voltage	51.2 V					
Max. Charging/Discharging Power	2.5 kW	5 kW	5 kW	5 kW	5 kW	5 kW
Operating Temperature Range	-20 ~ +50 °C					
Dimension(W*H*D) mm	650 x 620 x 180	650 x 980 x 180	650 x 1340 x 180	650 x 1700 x 180	650 x 1340 x 180 650 x 980 x 180	650 x 1340 x 180 650 x 1340 x 180
Certification	IEC62619, IEC63056, EN IEC61000-6-1, IEC61000-6-3, EN IEC62040-1, EN IEC62477-1, IEC60730-1 Annex H, IEC60529 IP66, UN38.3, MSDS, RoHS(2011/65/EU+2015/863), WEEE(2012/19/EU), ISTA					
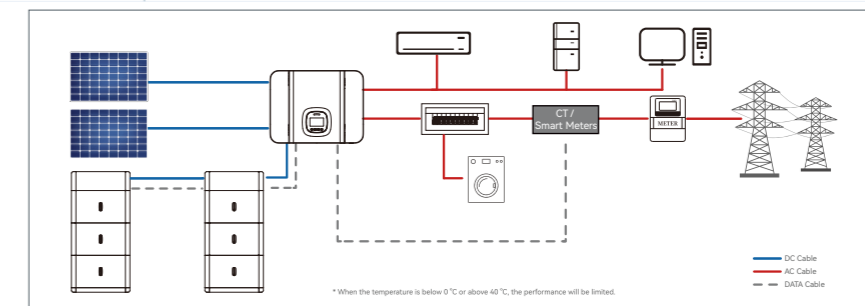
* When the temperature is below 0 °C or above 40 °C, the performance will be limited.

DC Cable
AC Cable
DATA Cable

Note: Technical parameters listed hereunder are for reference only. Actual parameters shall be subject to products shipped.

Panda

Residential Three-phase Energy Storage System Panda Series
Panda 8000T~15kT-10HS~60HS

ZONERGY

Inverter

Battery

The Lithium Iron Phosphate (LFP) cell secures safe and reliable operation.

The automatic isolation of the faulty battery module secures smooth system operation.

The module adopted enables variable capacity range of 10-60 kWh.

The switching time between on-off grid less than 10 ms secures Uninterruptable Power Supply for the load.

The APP-based remote monitoring offers easy maintenance and unlimited function expansion.

The built-in Smart Grid Management module enables power grid dispatching.

IP66

The Degree of Protection at IP66 makes it suitable for various harsh environments for application.

Residential Energy Storage Application Scenarios: Energy Storage + X

- The residential energy storage system addresses stable power demand and offers functions such as leveraging price differentials between peak and off-peak hours to reduce electricity costs and enhance the self-consumption rate of photovoltaic power generation. It serves as an integrated solution tailored for household scenarios.

- The core of the residential energy storage system is the battery pack, BMS, and energy storage inverter, which is paired with household PV to form a residential photovoltaic energy storage system, mainly including the battery pack, BMS, hybrid PCS, and PV modules.

- Residential energy storage is developing rapidly in the European market. Europe's higher level of electricity prices combined with peak and valley price differentials, as well as the incentive policy and declining energy storage cell prices, contribute to the favorable economic viability of residential energy storage.

Residential Energy Storage
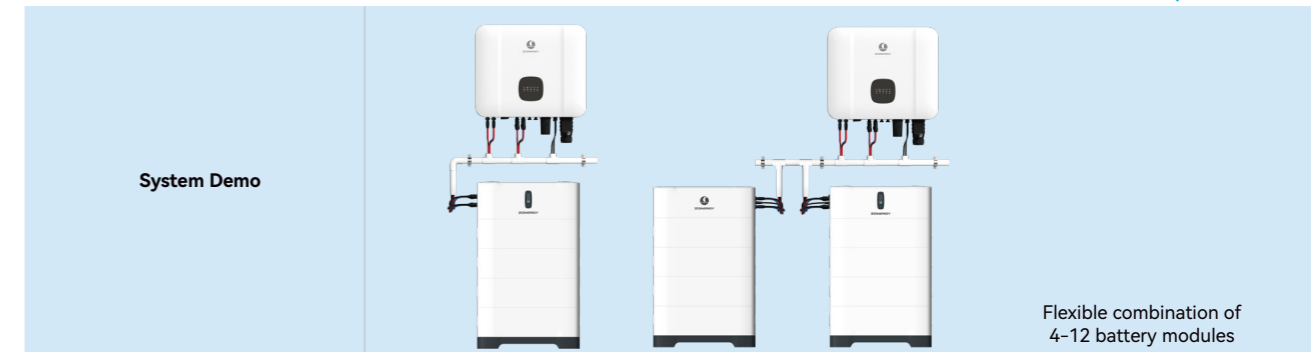
Residential Photovoltaic Energy Storage

Residential Photovoltaic Energy Storage and Charging
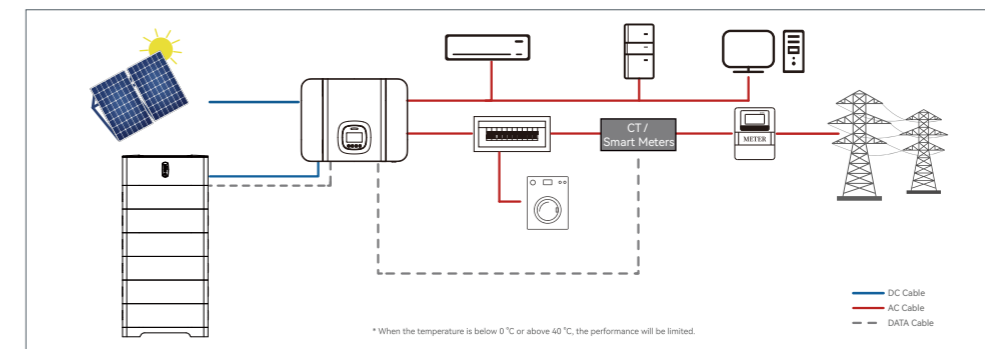
Residential Photovoltaic Energy Savings

Residential Photovoltaic Energy Storage Heat Pump

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System Demo

Flexible combination of 4-12 battery modules

System Specification				
Nominal Output Power	8000 W	10 kW	12 kW	15 kW
Capacity Range	10-60 kWh			
Usable Capacity Range	9-54 kWh			
Battery Chemistry	LFP (LiFePO4)			
IP Protection	IP66 (Outdoor)			

Inverter Technical Specification				
Model	Venus 8000-T1	Venus 10K-T1	Venus 12K-T1	Venus 15K-T1
Phase	Three Phase			
Max. PV Input Voltage	1000 V			
MPPT Voltage Range	160 V ~ 1000 V			
Max. PV Input Current	16 A		20 A	
Max. PV Input Power	12 kW	15 kW	26 kW	
Number of Independent MPPT	2			
Start-up Voltage Range	180 V			
Battery Voltage Range	180 V - 710 V			
Max. Charging/Discharging Current	30 A			
Max. Charging/Discharging Power	8 kW	10 kW	12 kW	
Nominal Output Voltage on Grid	400V			
Output Voltage Range on Grid	320 V ~ 480 V			
Nominal Output Frequency on Grid	50 Hz / 60 Hz			
Rated Grid Output Frequency on Grid	45~55Hz / 55~65Hz (comply with local regulations)			
Max. AC output Power	8.8 kW	11 kW	13.2 kW	16.5 kW
Communication	RS485/WIFI/4G(optional)			
Display	LED+bluetooth+APP			
Dimension(W*H*D) mm	420 x 520 x226			
Certification	NBT32004，IEC62109，IEC61727，IEC61683，IEC62116，Italy CEI 0-21, Germany VDE4105，EN62109-1/-2，EN62920，EN61000-6-1/-3，EN50549-1，VDE4105，UK G99/G100			

Battery Technical Specification	
Module Model	Limestone 10HS~Limestone 60HS
Number of modules	4~12
Module Capacity	10 kWh~60 kWh
Nominal Voltage	204.8 V~614.4 V
Max. Operating Current	25 A
Operating Temperature Range	-20 ~ +50 ℃
Certification	IEC62619, IEC63056, EN IEC61000-6-1, IEC61000-6-3, EN IEC62040-1, EN IEC62477-1 IEC60529 IP66, UN38.3, MSDS, RoHS(2011/65/EU+2015/863), WEEE(2012/19/EU), ISTA

CT / Smart Meters

METER

DC Cable
AC Cable
DATA Cable

* When the temperature is below 0 ℃ or above 40 ℃, the performance will be limited.

Note: Technical parameters listed hereunder are for reference only. Actual parameters shall be subject to products shipped.

Mercury

Residential Single-phase On-grid PV Inverter Mercury Series
Mercury 3680-S1~6000-S1

ZONERGY

Intelligent adaptive weak power grid to avoid frequent disconnection.

Independent dual MPPT tracking adaptable to different installation scenarios.

This product supports remote parameter setting, fault diagnosis and software upgrade.

This product with a variety of monitoring modes supports RS485, Wi-Fi/Ethernet/GPRS.

IP66

The Degree of Protection at IP66 makes it suitable for various harsh environments for application.

Wide DC voltage range and longer power generation duration.

On-Grid application scenarios and application modes

- Distributed photovoltaic systems mainly include photovoltaic modules, inverter, electricity meters, etc., and are mostly designed in a series and scalable manner;
- The main application scenarios of Mercury are households, photovoltaic sheds, etc;
- The application modes mainly include three types: full self-use, self-use and balance sold to grid, and fully sold to grid.

Technical parameters:	Mercury 3680-S1	Mercury 4000-S1	Mercury 4600-S1	Mercury 5000-S1	Mercury 6000-S1
Input (DC)					
Maximum panel input power recommended	5520 Wp	6000 Wp	6900 Wp	7500 Wp	9000 Wp
Maximum input voltage	600 V				
Start-up input voltage	120 V				
Rated input voltage	360 V				
MPPT voltage range	100 V-550 V				
Full load DC voltage range	250 V-520 V				
Number of independent MPPT	2				
Strings	1/1				
Maximum Input current	16 A/16 A				
Maximum short circuit current	20 A /20 A				
Output (AC)					
Rated output power	3680 W	4000 W	4600 W	5000 W	6000 W
Maximum output current	16 A	17.4 A	20 A	21.7 A	26 A
Nominal grid voltage	L/N/PE, 220Vac, 230Vac, 240Vac				
Nominal AC voltage range	180 VAC-276 VAC (according to local standard)				
Rated grid frequency	50 Hz/ 60 Hz				
Grid frequency range	45 Hz-55 Hz/54 Hz-66 Hz (according to local standard)				
Active power adjustable range	0~100%				
Total harmonic component (current)	<3%				
Power Factor	1 (adjustable range: 0.8 leading ~ 0.8 lagging)				
Efficiency					
Maximum efficiency	97.60%		97.70%		97.80%
European weighted efficiency	97.10%		97.20%		97.30%
MPPT efficiency	>99.9%				
Protection					
Insulation impedance detection	yes				
DC reverse connection protection	yes				
Ground fault monitoring	yes				
Over-current protection	yes				
DC switch	yes				
AFCI protection	optional				
General parameters					
Ambient temperature range	-25 ~ + 60 ℃ (Rating reduction occurs when the ambient temperature rises above 45 ℃.)				
Stand-by loss	<10 W				
Topology	no transformer				
Degrees of protection	IP66				
Relative Humidity range allowed	0~100%				
Communication	RS485, WIFI / 4G (optional)				
Protection level	Class I				
Maximum altitude for product operation	3000m(>2000m Rating reduction occurs)				
Connection mode of current sensor	external				
Noise	<29 dB				
Weight	11 kg				
Cooling mode	natural cooling				
Dimension (mm)	350*350*155				
Display	LED indicator light, Bluetooth / WIFI + APP				
Other					
Certification	EN IEC62109-1, EN IEC62109-2, IEC61683, IEC61727, IEC62116, IEC60068, EN IEC61000-6-1, EN IEC61000-6-3, EN50530, IEC60529 IP66, RoHS(2011/65/EU+2015/863), WEEE(2012/19/EU), ISTA, CQC NB/T32004, GB/T37408				
Warranty	5 Years				

Note: Technical parameters listed hereunder are for reference only. Actual parameters shall be subject to products shipped.

Apollo

Residential Three-phase On-grid PV Inverter Apollo Series
Apollo 8000–T1~15K–T1

ZONERGY

DC to AC capacity ratio can reach as high as 1.5 times.

DC arcing detection function can be selected to eliminate potential fire hazards.

IP66

The Degree of Protection at IP66 makes it suitable for various harsh environments for application.

1.1

The product supports output of 1.1 times overload. This effectively increases power generation.

The adaptive control algorithm adopted ensures the product fit for unstable grid.

Flexible monitoring modes support RS485, Wi-Fi and GPRS.

On-Grid application scenarios and application modes

- Distributed photovoltaic systems mainly include photovoltaic modules, inverter, electricity meters, etc., and are mostly designed in a series and scalable manner;
- The main application scenarios of Apollo include households, industrial and commercial roofs, residential buildings, PV+(BIPV, transportation, agriculture, gas stations, water plants, carports, etc.), microgrids, etc;
- The application modes mainly include three types: full self-use, self-use and balance sold to grid, and fully sold to grid.

Technical parameters:	Apollo 8000-T1	Apollo 10K-T1	Apollo 12K-T1	Apollo 15K-T1
Input parameters (DC)				
Max. panel input power recommend (kW)	12	15	18	22.5
Max. DC input voltage (V)		1100		
Max. input current of each MPPT (A)		16		20
Short circuit current of each MPPT (A)		25		30
No. of MPPT		2		2
Strings		1+1		2+2
Start-up voltage (V)		180		
MPPT Voltage range (V)		160V~1000		
Full-load MPPT Voltage range (V)		550~850		
Rated Input Voltage (V)		600		
Output parameters (AC)				
Rated output power (kW)	8.8kW@40℃ 8kW@45℃	11kW@40℃ 10kW@45℃	13.2kW@40℃ 12kW@45℃	16.5kW@40℃ 15kW@45℃
Max. output power (kW)	8.8	11	13.2	16.5
Output connection type		3W+PE or 3W+N+PE		
Rated voltage/Voltage range (V)		400/320~480		
Rated grid frequency		45~55Hz / 55~ 65Hz (According to local grid standards)		
Rated output current (A)	12.2	15.2	18.2	22.8
Maximum output current (A)	13.4	16.7	20.1	25.1
Power Factor (settable)		> 0.99 @ full power (adjustable range: 0.8 leading ~ 0.8 lagging)		
Total Harmonic Distortion THDi (full load)		< 3% (full load)		
Efficiency				
MPPT efficiency		99.9%		
Maximum efficiency	98.4%			98.5%
Euro. efficiency	97.8%			98.0%
China efficencty	97.5%			97.8%
Protection function				
DC switch		yes		
Output short circuit protection		yes		
Power grid fault monitoring		yes		
DC reverse connection detection		yes		
String monitoring		yes		
DC lightning protection		type II		
AC lightning protection		type II		
DC insulation impedance detection		yes		
AC leakage current detection		yes		
Over-temperature protection		yes		
DC component monitoring		yes		
Islanding detection		yes		
Smart IV diagnosis		yes		
Auxiliary power supply detection		yes		
Bus voltage monitoring		yes		
PID repair and protection		optional		
Arc fault detection		optional		
Remote upgrade and setup		yes		
anti-counterflow meter		optional		
Fault recorded		yes		
Display and communication				
Display mode		LED indicator light, Bluetooth / WIFI + APP		
Communication mode		RS485, WIFI / 4G (optional)		
General parameters				
Dimension (mm) (W×H×D)		518x422x208.5		
Weight (kg)		20		
Operating temperature range		–25℃ ~ +60℃		
Cooling mode		Air colling without fan		
Maximum altitude for product operation		3000m (> 2000m Rating reduction occurs)		
Relative Humidity		0~100%		
Input terminal		MC4		
Output terminal		OT/DT terminal (Max. 50mm^2 cable section)		
Degree of protection		IP66		
Self power consumption at night		<1W		
Noise (dB)		<35		
Topology		no transformer		
Other				
Certification		EN IEC62109-1, EN IEC62109-2, IEC61683, IEC61727, IEC62116, IEC60068, EN IEC61000-6-2, EN IEC61000-6-4, EN50530, IEC60529 IP66, RoHS(2011/65/EU+2015/863), WEEE(2012/19/EU), ISTA, CQC NB/T32004, GB/T37408		
Warranty		5 Years		

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