American Wise Power Technologies, INC.

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Wise power, wise choice

PRODUCT CATALOGUE

American Wise Power Technologies, INC.

COMPANY PROFILE

About us

American Wise Power Technologies (AWP), an innovative high-tech corporation founded in California, specializes in R&D, manufacturing and marketing of power supplies products and provides green, low cost and intelligent energy and solutions to various applications such as data center, PV power plants.

Our Products

Combined with German technology, American administration and Chinese manufacturing, our products reach the balance of quality and cost. Our main products include:

Data Center Solutions (UPS included)
PV System (Solar inverter included)

Our Mission

AWP is committed to provide globally with green, energy-saving, stable, reliable and continuous power supplies products and perfect solutions. Customer's satisfaction is always our perpetual quest and in order to create consistent value for customers, we place great emphasis on our customers' market challenges and requirements by providing first-class power supply solutions with quality guaranteed products as well as best service to enhance their competitiveness and profitability.

Our Team

AWP comprises of passionate professionals and a high efficiency management team, and they endeavor to make AWP a world leading green energy solutions supplier. At present AWP team has built trusted and respected offices in Singapore, Hong Kong, Indonesia and Viet Nam, and it is our desire to always be improving, expanding and developing our service team to meet growing customers' demands.

CONTENTS

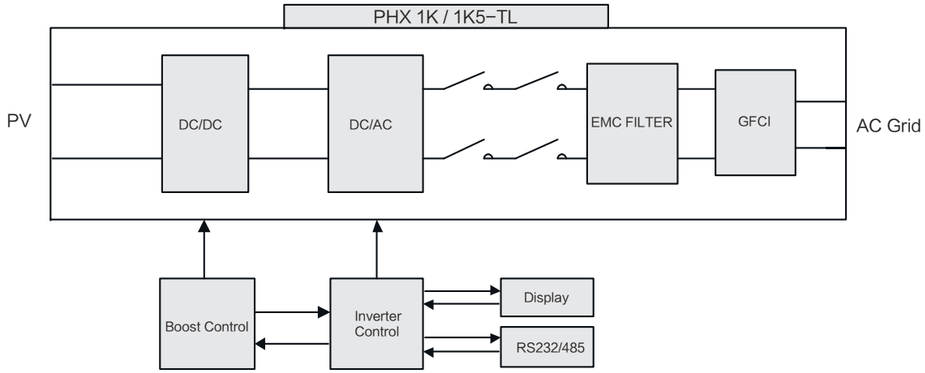
Grid-connected PV Inverter

PHX 1K / 1K5-TL

Features

- Transformerless design, high efficiency (Max. 95.5%, Euro 94.2%)
- High MPPT accuracy (>99.9%)
- Wide DC input range (60 ~ 300 Vdc), compatible with 2 to 7 panel installation
- Easy to wire, install and operate
- IP65 design, suitable for indoor and outdoor installation
- 5 years warranty (10 ~ 25 years optional)

Block diagram



Technical Data

MODEL	PHX 1K-TL	PHX 1.5K-TL
INPUT (DC)		
Max. PV power	1.25 KW	1.5 KW
Max. DC voltage	400 V	400 V
Operating MPPT voltage range	60 ~ 300 V	60 ~ 300 V
MPPT voltage range at nominal power	100 ~ 300 V	125 ~ 300 V
Start up DC voltage	70 V	70 V
Turn off DC voltage	50 V	50 V
Max. DC current	10 A	10 A
Max. short circuit current for each MPPT	12 A	12 A
Number of MPPT trackers	1	1
Number of DC connections for each MPPT	1	1
DC connection type	MC4 connector	MC4 connector
OUTPUT (AC)		
Max. AC apparent power	1000 VA	1250 VA
Nominal AC power (cos phi = 1)	1000 W	1250 W
Nominal grid voltage	220 V / 230 V / 240 V	220 V / 230 V / 240 V
Nominal grid frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Max. AC current	5.0 A	6.25 A
Grid voltage range	185 ~ 276 V	185 ~ 276 V
Grid frequency range	45 ~ 55 Hz / 55 ~ 65 Hz	45 ~ 55 Hz / 55 ~ 65 Hz
Power factor	> 0.99	> 0.99
Total harmonic distortion (THD)	< 3%	< 3%
Feed in starting power	30 W	30 W
Night time power consumption	< 1 W	< 1 W
Standby consumption	6 W	6 W
AC connection type	Plug – in connector	Plug – in connector
EFFICIENCY		
Max. efficiency (at 360 Vdc)	95.5%	95.5%
Euro efficiency (at 360 Vdc)	94.2%	94.2%
MPPT efficiency	99.9%	99.9%
PROTECTIONS		
DC insulation monitoring	Yes	Yes
DC switch	Optional	Optional
Residual current monitoring unit (RCMU)	Integrated	Integrated
Grid monitoring with anti-islanding	Yes	Yes
Protection class	I (according to IEC 62103)	I (according to IEC 62103)
Overvoltage category	PV II / Mains III (according to IEC 62109-1)	PV II / Mains III (according to IEC 62109-1)
REFERENCE STANDARD		
Safety standard	ENEN 62109, AS / NZS3100	
EMC standard	EN 61000-6-1, EN 61000-6-3, EN 61000-6-2, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3	
Grid standard	VDE 0126-1-1, RD1663, C10/11, G83/2, UTE C15-712-1, AS4777, CQC, CEI0-21, EN 50438	
PHYSICAL		
Dimensions (W × D × H) (mm)	210 × 90 × 297	
Weight	5.5 kg	
Environmental protection rating	IP 65 (according to IEC 60529)	
Cooling concept	Natural convection	
Mounting information	Wall bracket	
GENERAL		
Operating temperature range	-25℃ to +60℃ (derating above 45℃)	
Relative humidity	0% to 98%, no condensation	
Max. altitude (above sea level)	2000 m	
Noise level	< 40 dB	
Isolation type	Transformerless	
Display	2 LED, Backlight, 16*2 Character LCD	
Data communication interfaces	(RS485, WIFI, GPRS optional)	
Computer communication	RS232 as option	
Standard warranty	5 years	

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Grid–connected PV Inverter

PHX 1K / 1K5 / 2K–TL

Features

Features

- Standard 10 years warranty, 5 ~ 25 years optional
- Built–in GPRS as option
- Built–in Wifi as option
- External Inductor
- Smaller and lighter, 2 KW only 9.6kg
- High performance DSP for algorithm control
- VDE–AR–N 4105 certification
- New topology design
- Multi–button touch interface
- LCD screen visible at night
- Have anti–shading function

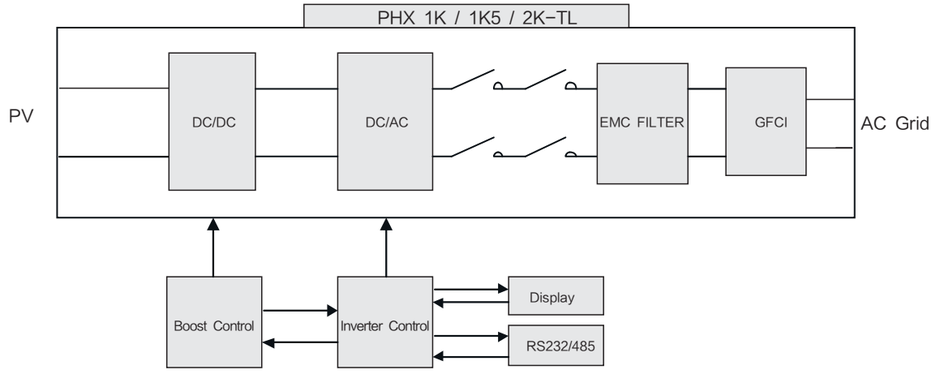
Advantages

- Longer life cycle
- Plug and play
- Free monitoring fee for data transmission
- Very lower internal temperature
- Easy transportation and installation
- Faster CPU speed
- Adjustable active and reactive power
- Maximum conversion efficiency up to 97.7%, Euro up to 96.9%
- User friendly operation
- Real–time data readable at night
- Suitable to complex installation environment

Benefits

- More stable and reliable
- No commissioning work to get real–time remote monitoring
- More convenient monitoring solution without any charge
- Longer life cycle
- Saving storage and installation space
- Higher inverter control accuracy
- Meet the latest certification and regulations
- Increase system payback ability
- Easy to operate
- Real–time operating condition accessible
- Increase the electricity generation of the system in shading environment

Block diagram



Technical Data

MODEL	PHX 1K–TL	PHX 1K5–TL	PHX 2K–TL
INPUT (DC)			
Max. PV power	1300 W	1750 W	2300 W
Max. DC voltage	500 V	500 V	500 V
Nominal DC voltage	360 V	360 V	360 V
Operating MPPT voltage range	80 ~ 360 V	120 ~ 450 V	120 ~ 450 V
MPPT voltage range at nominal power	150 ~ 360 V	150 ~ 450 V	150 ~ 450 V
Start up DC voltage	90 V	150 V	150 V
Turn off DC voltage	80 V	120 V	120 V
Max. DC current	16 A	18 A	18 A
Max. short circuit current for each MPPT	20 A	20 A	20 A
Number of MPPT trackers	1	1	1
Number of DC connection for each MPPT	1	1	1
DC connection type	MC4 connector	MC4 connector	MC4 connector
OUTPUT (AC)			
Max. AC apparent power	1100 VA	1650 VA	2200 VA
Nominal AC power (cos phi = 1)	1000 W	1500 W	2000 W
Nominal grid voltage	220 V / 230 V / 240 V	220 V / 230 V / 240 V	220 V / 230 V / 240 V
Nominal grid frequency	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz
Max. AC current	5.8 A	9.0 A	11.0 A
Grid voltage range	185 ~ 276 V	185 ~ 276 V	185 ~ 276 V
Grid frequency range	45 ~ 55 Hz / 55 ~ 65 Hz	45 ~ 55 Hz / 55 ~ 65 Hz	45 ~ 55 Hz / 55 ~ 65 Hz
Power factor	0.95 capacitive..95 inductive	0.95 capacitive..95 inductive	0.95 capacitive..95 inductive
Total harmonic distortion (THD)	< 2%	< 2%	< 2%
Feed in starting power	30 W	30 W	30 W
Night time power consumption	< 1 W	< 1 W	< 1 W
Standby consumption	6 W	6 W	6 W
AC connection type	Plug–in connector	Plug–in connector	Plug–in connector
EFFICIENCY			
Max. efficiency (at 360 Vdc)	97.7%	97.7%	97.7%
Euro efficiency (at 360 Vdc)	96.7%	96.8%	96.9%
MPPT efficiency	99.9%	99.9%	99.9%
PROTECTIONS			
DC insulation monitoring	Yes		
DC switch	Optional		
Residual current monitoring unit (RCMU)	Integrated		
Grid monitoring with anti–islanding	Yes		
Protection class	I (according to IEC 62103)		
Overvoltage category	PV II / Mains III (according to IEC 62109–1)		
REFERENCE STANDARD			
Safety standard	EN 62109, AS / NZS 3100		
EMC standard	EN 61000–6–1, EN 61000–6–3, EN 61000–6–2, EN 61000–6–4, EN 61000–3–2, EN 61000–3–3		
Grid standard	VDE–AR–N–4105,VDE 0126–1–1, RD 1699, C10/11, G83/2, UTE C15–712–1, AS 4777, CEI 0–21, EN 50438		
PHYSICAL			
Dimensions (W × D × H) (mm)	343 × 150 × 281		
Weight	9.6 kg		
Environmental protection rating	IP 65 (according to IEC 60529)		
Cooling concept	Natural convection		
Mounting information	Wall bracket		
GENERAL			
Operating temperature	–20℃ to +60℃ (derating above 45℃)		
RangeRelative humidity	0% to 98%, no condensation		
Max. altitude (above sea level)	2000 m		
Noise level	< 40 dB		
Isolation type	Transformerless		
Display	3 LED, Backlight, 4 × 20 Character LCD		
Data communication interfaces	RS485 (WiFi, GPRS integrated)		
Computer communication	USB		
Standard warranty	10 years (5 ~ 25 years optional)		

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Grid-connected PV Inverter

PHX 2K5 / 3K-TL

Features

Features

- Standard 10 years warranty, 5 ~ 25 years optional
- Built-in GPRS as option
- Built-in Wifi as option
- External Inductor
- Smaller and lighter, 3kW-TL2 weighs only 9.9kg
- High performance DSP for algorithm control
- VDE-AR-N 4105 certification
- New topology design
- Multi-button touch interface
- LCD screen visible at night
- Have anti-shading function

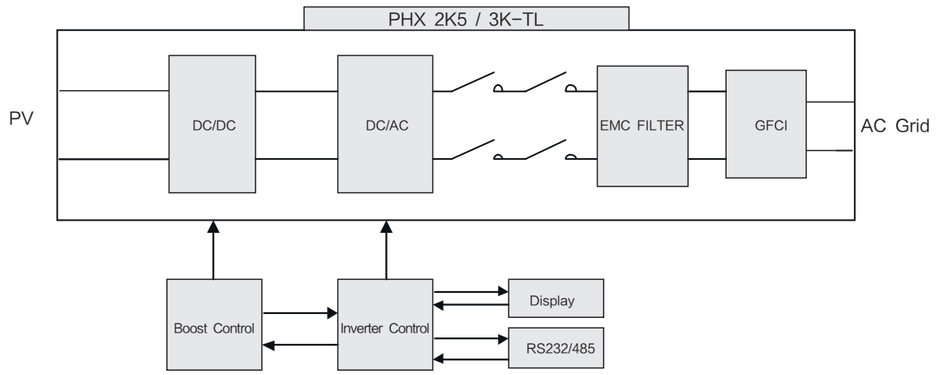
Advantages

- Longer life cycle
- Plug and play
- Free monitoring fee for data transmission
- Very lower internal temperature
- Easy transportation and installation
- Faster CPU speed
- Adjustable active and reactive power
- Maximum conversion efficiency up to 97.7%, Euro up to 96.9%
- User friendly operation
- Real-time data readable at night
- Suitable to complex installation environment

Benefits

- More stable and reliable
- No commissioning work to get real-time remote monitoring
- More convenient monitoring solution without any charge
- Longer life cycle
- Saving storage and installation space
- Higher inverter control accuracy
- Meet the latest certification and regulations
- Increase system payback ability
- Easy to operate
- Real-time operating condition accessible
- Increase the electricity generation of the system in shading environment

Block diagram



Technical Data

MODEL	PHX 2K5-TL	PHX 3K-TL
INPUT (DC)		
Max. PV power	2800 W	3250 W
Max. DC voltage	500 V	500 V
Nominal DC voltage	360 V	360 V
Operating MPPT voltage range	120 ~ 450 V	120 ~ 450 V
MPPT voltage range at nominal power	150 ~ 450 V	150 ~ 450 V
Start up DC voltage	150 V	150 V
Turn off DC voltage	120 V	120 V
Max. DC current	18 A	18 A
Max. short circuit current for each MPPT	20 A	20 A
Number of MPPT trackers	1	1
Number of DC connection for each MPPT	1	1
DC connection type	MC4 connector	MC4 connector
OUTPUT (AC)		
Max. AC apparent power	2750 VA	3000 VA
Nominal AC power (cos phi = 1)	2500 W	3000 W
Nominal grid voltage	220 V / 230 V / 240 V	220 V / 230 V / 240 V
Nominal grid frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Max. AC current	12.5 A	14.0 A
Grid voltage range	185 ~ 276 V	185 ~ 276 V
Grid frequency range	45 ~ 55 Hz / 55 ~ 65 Hz	45 ~ 55 Hz / 55 ~ 65 Hz
Power factor	0.95 capacitive...95 inductive	0.95 capacitive...95 inductive
Total harmonic distortion (THD)	< 2%	< 2%
Feed in starting power	30 W	30 W
Night time power consumption	< 1 W	< 1 W
Standby consumption	6 W	6 W
AC connection type	Plug-in connector	Plug-in connector
EFFICIENCY		
Max. efficiency (at 360 Vdc)	97.7%	97.7%
Euro efficiency (at 360 Vdc)	96.9%	97.0%
MPPT efficiency	99.9%	99.9%
PROTECTIONS		
DC insulation monitoring	Yes	
DC switch	Optional	
Residual current monitoring unit (RCMU)	Integrated	
Grid monitoring with anti-islanding	Yes	
Protection class	I (according to IEC 62103)	
Overvoltage category	PV II / Mains III (according to IEC 62109-1)	
REFERENCE STANDARD		
Safety standard	EN 62109, AS / NZS 3100	
EMC standard	EN 61000-6-1, EN 61000-6-3, EN 61000-6-2, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3	
Grid standard	VDE-AR-N-4105,VDE 0126-1-1, RD 1699, C10 / 11, G83/2, UTE C15-712-1, AS 4777, CEI 0-21, EN 50438	
PHYSICAL		
Dimensions (W × D × H) (mm)	343 × 150 × 281	
Weight	9.9 kg	
Environmental protection rating	IP 65 (according to IEC 60529)	
Cooling concept	Natural convection	
Mounting information	Wall bracket	
GENERAL		
Operating temperature	-20℃ to +60℃ (derating above 45℃)	
Range relative humidity	0% to 98%, no condensation	
Max. altitude (above sea level)	2000 m	
Noise level	< 40 dB	
Isolation type	Transformerless	
Display	3 LED, Backlight, 4 × 20 Character LCD	
Data communication interfaces	RS485 (WiFi, GPRS integrated)	
Computer communication	USB	
Standard warranty	10 years (5 ~ 25 years optional)	

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Grid-connected PV Inverter

PHX 3K / 4K / 5K-TL

Features

Features

- Standard 10 years warranty, 5 ~ 25 years optional
- Built-in GPRS as option
- Built-in Wifi as option
- External Inductor
- Smaller and lighter, only 16.5kg
- High performance DSP for algorithm control
- VDE-AR-N 4105 certification
- New topology design
- Dual MPPT design
- Multi-button touch interface
- LCD screen visible at night
- Have anti-shading function

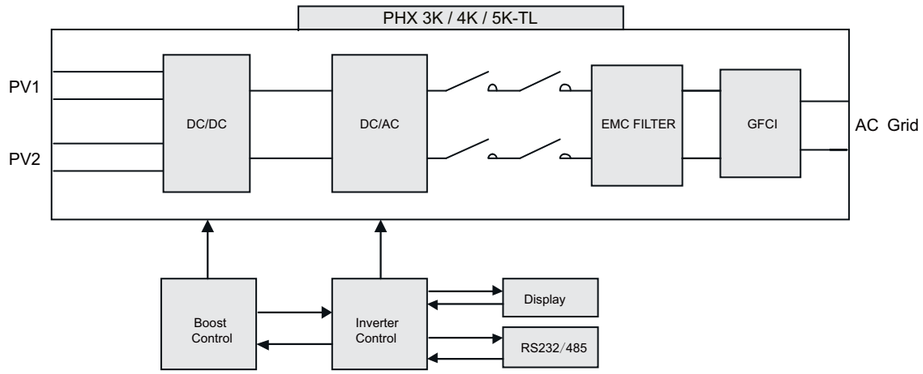
Advantages

- Longer life cycle
- Plug and play
- Free monitoring through our webportal
- Very lower internal temperature
- Easy transportation and installation
- Faster CPU speed
- Adjustable active and reactive power
- Maximum conversion efficiency up to 98.2%, Euro up to 97.5%
- More flexible system design
- User friendly operation
- Real-time data readable at night
- Suitable to complex installation environment

Benefits

- more stable and reliable
- No commissioning work to get real-time remote monitoring
- More convenient monitoring solution without any charge
- Longer life cycle
- Saving storage and installation space
- Higher inverter control accuracy
- Meet the latest certification and regulations
- Increase system payback
- Fit in various installation environments
- Easy to operate
- Real-time operating condition accessible
- Increase the electricity generation of the system in shading environment

Block diagram



Technical Data

MODEL	PHX 3K-TL	PHX 4K-TL	PHX 5K-TL
INPUT (DC)			
Max. PV power	3400 W	4500 W	5200 W
Max. DC voltage	590 V	590 V	590 V
Nominal DC voltage	360 V	360 V	360 V
Operating MPPT voltage range	120 ~ 550 V	120 ~ 550 V	120 ~ 550 V
MPPT voltage range at nominal power	150 ~ 500 V	200 ~ 500 V	200 ~ 500 V
Start up DC voltage	150 V	150 V	150 V
Turn off DC voltage	120 V	120 V	120 V
Max. DC current	12 A / 12 A	16 A / 16 A	18 A / 18 A
Max. short circuit current for each MPPT	16 A / 16 A	20 A / 20 A	20 A / 20 A
Number of MPPT trackers	2	2	2
Max. Input Power for each MPPT	2000 W	2600 W	3000 W
Number of DC connection for each MPPT	A:1 / B:1	A:1 / B:1	A:1 / B:1
DC connection type	MC4 connector	MC4 connector	MC4 connector
OUTPUT (AC)			
Max. AC apparent power	3300 VA	4400 VA	5000 VA
Nominal AC power (cos phi = 1)	3000 W	4000 W	4600 W
Nominal grid voltage	220 V / 230 V / 240 V	220 V / 230 V / 240 V	220 V / 230 V / 240 V
Nominal grid frequency	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz
Max. AC current	14.4 A	19.0 A	22.0 A
Grid voltage range	185 ~ 276 V	185 ~ 276 V	185 ~ 276V
Grid frequency range	45 ~ 55 Hz / 55 ~ 65 Hz	45 ~ 55 Hz / 55 ~ 65 Hz	45 ~ 55 Hz / 55 ~ 65 Hz
Power factor	0.9 capacitive...9 inductive	0.9 capacitive...9 inductive	0.9 capacitive...9 inductive
Total harmonic distortion (THD)	< 2%	< 2%	< 2%
Feed in starting power	30 W	30 W	30 W
Night time power consumption	< 1 W	< 1 W	< 1 W
Standby consumption	6 W	6 W	6 W
AC connection type	Plug-in connector	Plug-in connector	Plug-in connector
EFFICIENCY			
Max. efficiency (at 360 Vdc)	98.2%	98.2%	98.2%
Euro efficiency (at 360 Vdc)	97.3%	97.5%	97.5%
MPPT efficiency	99.9%	99.9%	99.9%
PROTECTIONS			
DC insulation monitoring	Yes		
DC switch	Optional		
Residual current monitoring unit (RCMU)	Integrated		
Grid monitoring with anti-islanding	Yes		
Protection class	I (according to IEC 62103)		
Overvoltage category	PV II / Mains III (according to IEC 62109-1)		
REFERENCE STANDARD			
Safety standard	EN 62109, AS / NZS 3100		
EMC standard	EN 61000-6-1, EN 61000-6-3, EN 61000-6-2, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 61000-3-12		
Grid standard	VDE-AR-N-4105, VDE 0126-1-1, CEI0-21, C10/11, G83/2, G59/3 UTE C15-712-1, EN 50438, AS 4777, CQC		
PHYSICAL			
Dimensions (W × D × H) (mm)	352 × 162.5 × 421		
Weight	16.5 kg		
Environmental protection rating	IP 65 (according to IEC 60529)		
Cooling concept	Internal fan convection		
Mounting information	Wall bracket		
GENERAL			
Operating temperature range	-25℃ to +60℃ (derating above 45℃)		
Relative humidity	0% to 98%, no condensation		
Max. altitude (above sea level)	2000m		
Noise level	< 40 dB		
Isolation type	Transformerless		
Display	3 LED, Backlight, 20 × 4 Character LCD		
Data communication interfaces	RS485 (WiFi, GPRS integrated)		
Computer communication	USB		
Standard warranty	10 years (5 ~ 25 years optional)		

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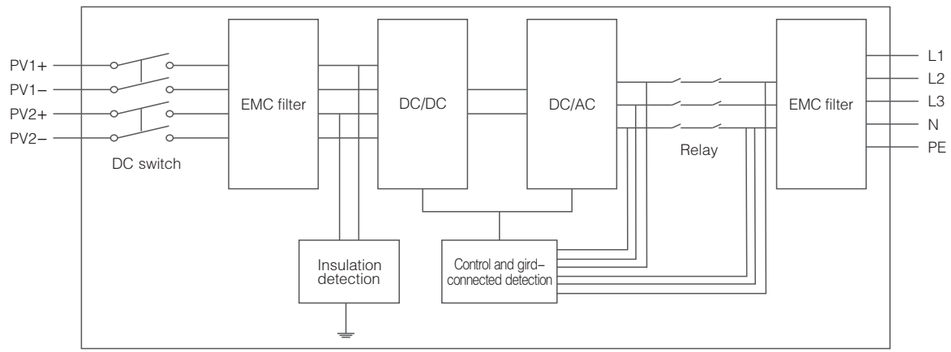
Three-phase Grid-connected PV Inverter

PHX 5K / 6K / 8K-TL

Features

- Built-in GPRS (optional)
- Built-in Wi-Fi (optional)
- External inductance favorable for heat dissipation
- Smaller and lighter, only 22 kg
- High performance DSP for algorithm control
- VDE-AR-N 4105 certification
- New topology, maximum efficiency 98.2%, Europe efficiency 97.5%
- Dual MPPT design
- Waterproof and dustproof (IP65) design
- Convenient and rapid operation with touch-key design
- Control module with bi-directional power supply of DC and AC
- Anti-shading function, suitable for complicated installation environment

Principle diagram



Technical Data

MODEL	PHX 5K-TL	PHX 6K-TL	PHX 8K-TL
INPUT (DC)			
Max. input power	5150 W	6150 W	8200 W
Max. input voltage	1000 V	1000 V	1000 V
Nominal DC voltage	640 V	640 V	640 V
MPPT voltage range	150 V ~ 800 V	150 V ~ 800 V	150 V ~ 800 V
Full-load MPPT voltage range	260 V ~ 800 V	280 V ~ 800 V	360 V ~ 800 V
Starting voltage	250 V	250 V	250 V
Turn-off voltage	150 V	150 V	150 V
Max. input current (A / B)	11 A / 11 A	11 A / 11 A	14 A / 14 A
Max. short-circuit current of each MPPT	16 A / 16 A	16 A / 16 A	20 A / 20 A
Number of MPP trackers	2	2	2
Max. input power of each MPPT	3000 W	4000 W	5000 W
Number of DC connection	A:2 / B:2	A:2 / B:2	A:2 / B:2
DC connection type	MC4 connector	MC4 connector	MC4 connector
OUTPUT (AC)			
Max. AC apparent power	5000 VA	6000 VA	8000 VA
Nominal AC power	5000 W	6000 W	8000 W
Nominal output current	7.2 A	8.7 A	11.6 A
Nominal output voltage	3 / N / PE; 220 / 380 V 3 / N / PE; 230 / 400 V 3 / N / PE; 240 / 415 V	3 / N / PE; 220 / 380 V 3 / N / PE; 230 / 400 V 3 / N / PE; 240 / 415 V	3 / N / PE; 220 / 380 V 3 / N / PE; 230 / 400 V 3 / N / PE; 240 / 415 V
Rated grid frequency	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz
Max. output current	8.8 A	10.7 A	13.6 A
Grid voltage range	185 V ~ 276 V		
Grid frequency range	45 ~ 55 Hz / 55 ~ 65 Hz		
Power factor	0.9 (leading), 0.9 (lagging)		
THD	< 2%		
Feed in starting power	30 W		
Self-consumption (at night)	< 1 W		
Standby consumption	< 10 W		
AC connection type	Plug-in connector		
EFFICIENCY			
Max. efficiency	97.6%		
Europe efficiency	96.8%		
MPPT efficiency	99.9%		
PROTECTIONS			
DC insulation monitoring	Yes		
DC switch	Optional		
Residual current monitoring unit (RCMU)	Integrated		
Grid monitoring with anti-islanding	Yes		
Electricity fuse protection	Yes		
Protection class	I (according to IEC 62103)		
Overvoltage category	III (according to IEC 62109-1)		
REFERENCE STANDARD			
Safety standard	EN 62109, AS / NZS 3100		
EMC standard	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3		
Grid standard	VDE-AR-N4105, VDE-0126-1-1, G83 / 1, EN 50438, RD 1699, CEI 0-21, AS 4777, C10 / C11		
GENERAL DATA			
Data communication interfaces	RS485 (Wi-Fi, GPRS optional)		
Computer communication	USB		
Display	3 ×LED & 20 ×4 LCD		
Isolation type	Transformerless		
Cooling	Natural cooling		
Noise	< 40 dB		
Operating temperature	– 25 °C ~ + 60 °C (> 45°C derating)		
Relative humidity	0 ~ 98% non-condensing		
Altitude	2000 m		
IP rating	IP 65 (according to IEC 60529)		
Installation method	Wall-mounted		
Dimensions (W × D × H) (mm)	352 × 172.5 × 421		
Packaged dimensions (W × D × H) (mm)	695 × 275 × 525		
Net weight (kg)	24.5		
Gross weight (kg)	28.4		

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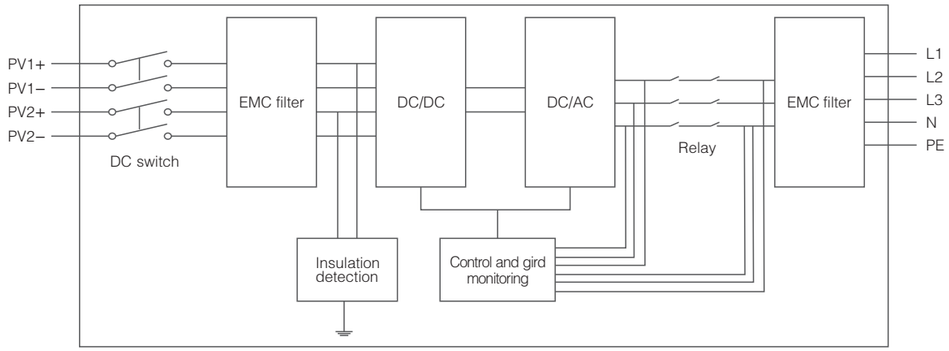
Three–phase Grid–connected PV Inverter

PHX 13K / 15K / 17K / 20K–TL

Features

- Economy, high efficiency, high reliability and long life circle
- Smaller and lighter, 20KTL weights only 45 kg
- External inductor, reducing machine temperature and extending device lifetime
- LCD screen with four buttons, easy to operate, user friendly
- Ethernet, Wi–Fi or GPRS data communication technology, one power station needs only one monitoring equipment.
- All–round remote control for users, installers, distributors and manufacturer, real–time operation status accessible, quick response against fault
- VDE–AR–N 4105 and BDEW certified, adjustable active and reactive power, with LVRT function
- Optional built–in lightning protection module, no need for external lightning protection box
- With anti–shading function, suitable to all kinds of complicated installation environment

Principle diagram



Technical Data

MODEL	PHX 13K–TL	PHX 15K–TL	PHX 17K–TL	PHX 20K–TL
INPUT (DC)				
Max. input power	13500 W	15600 W	17800 W	21200 W
Max. input voltage	1000 V	1000 V	1000 V	1000 V
Nominal DC voltage	640 V	640 V	640 V	640 V
Operating MPPT voltage range	250 ~ 800 V	250 ~ 800 V	250 ~ 850 V	250 ~ 850 V
Full–load MPPT voltage range	400 ~ 800 V	400 ~ 800 V	440 ~ 850 V	480 ~ 850 V
Starting voltage	300 V	300 V	300 V	300 V
Turn–off voltage	250 V	250 V	250 V	250 V
Max. input current (A/B)	22 A / 11 A	22 A / 11 A	22 A / 22 A	22 A / 22 A
Max. short–circuit current of each MPPT	25 A / 15 A	25 A / 15 A	25 A / 25 A	25 A / 25 A
Number of MPP trackers	2	2	2	2
Number of DC connection	A:3 / B:3	A:3 / B:3	A:3 / B:3	A:3 / B:3
DC connection type	MC4 connector	MC4 connector	MC4 connector	MC4 connector
OUTPUT (AC)				
Max. output power	13000 VA	15000 VA	17000 VA	19200 VA
Rated output power	13000 W	15000 W	17000 W	19200 W
Rated grid voltage	3 / N / PE; 220 / 380 V 3 / N / PE; 230 / 400 V 3 / N / PE; 240 / 415 V			
Rated grid frequency	50 Hz / 60 Hz			
Max. output current	20.0 A	23.0 A	26.0 A	29.0 A
Grid voltage range	185 ~ 276 V			
Grid frequency range	45 ~ 55 Hz / 55 ~ 65 Hz			
Power factor	0.9i…1…0.9c			
THD	< 2%			
Feed in starting power	60 W			
Self–consumption (at night)	< 1 W			
Standby consumption	< 12 W			
AC connection type	Plug–in connector			
EFFICIENCY				
Max. efficiency	98.0%	98.0%	98.1%	98.2%
Europe efficiency	97.5%	97.5%	97.6%	97.8%
MPPT efficiency	99.9%	99.9%	99.9%	99.9%
PROTECTIONS				
DC insulation monitoring	Yes			
DC switch	Optional			
Residual current monitoring unit (RCMU)	Integrated			
Grid monitoring with anti–islanding	Yes			
Protection class	I (according to IEC 62103)			
Overvoltage category	PV II / Mains III (according to IEC 62109–1)			
REFERENCE STANDARD				
Safety standard	EN 62109, AS / NZS 3100			
EMC standard	EN 61000–6–1, EN 61000–6–2, EN 61000–6–3, EN 61000–6–4, EN 61000–3–11, EN 61000–3–12			
Grid standard	VDE–AR–N–4105, VDE 0126–1–1, PEA, C10/11, G59/3, AS4777, CEI0–21			
GENERAL DATA				
Data communication interfaces	RS485 (Wi–Fi, GPRS optional)			
Computer communication	RS485 (USB)			
Display	TFT graphic display			
Isolation type	Transformerless			
Cooling	Natural cooling			
Noise Level	< 45 dB			
Operating temperature	– 25°C ~ + 60°C (> 45°C derating)			
Relative humidity	0 ~ 98% non–condensing			
Max. altitude	2000 m			
IP rating	IP 65 (according to IEC 60529)			
Installation method	Wall–mounted			
Dimensions (W × D × H) (mm)	575 × 248 × 650			
Packaged dimensions (W × D × H) (mm)	720 × 384 × 750			
Net weight (kg)	44.5	44.5	45	45
Gross weight (kg)	52	52	52.5	52.5

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Grid–connected PV Inverter

PHX 33K / 40K–TL

Features

More Energy Generated

- Transformerless design, maximum conversion efficiency up to 98.6%, Europe efficiency up to 98.4%
- Three MPP inputs
- Gain maximum energy generated by shadowed PV cells
- Wide MPPT voltage range (320 ~ 900V), longer daily power generation time
- Intelligent MPPT algorithm
- The maximum power point tracking is not affected by abrupt change of illumination
- Accurate identification technology of power change
- Static MPPT is stable and accurate
- Wide operating temperature range (– 25℃ ~ + 60℃), continuous power generation at full load in high temperature

Advanced Control Technology

- Double modulation of three level SPWM and SVPWM, natural and smooth switch
- Adaptive control, adapting to harsh weak power grids environment
- Harmonic current compensation, THD < 1%
- Supporting active and reactive power grid dispatch and SVG function at night
- LVRT function

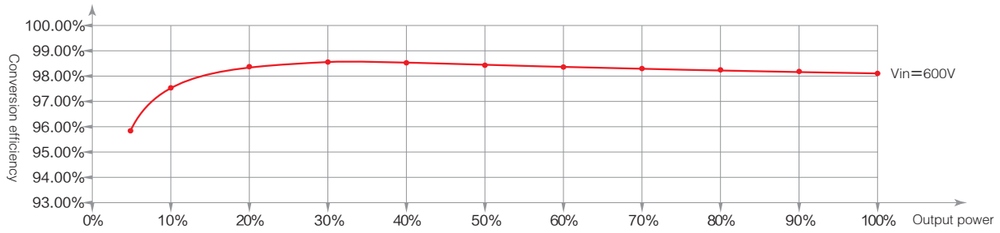
High Reliability

- Long lifetime design of film capacitor, 25 years of designed service life for complete machine
- Natural heat dissipation, waterproof, dust resistance, salt fog resistance and corrosion resistance
- Active+passive islanding protection
- Multilayer, step–by–step overcurrent, overvoltage, overtemperature and short–circuit protections for software and hardware
- 6 strings fault monitoring with rapid positioning

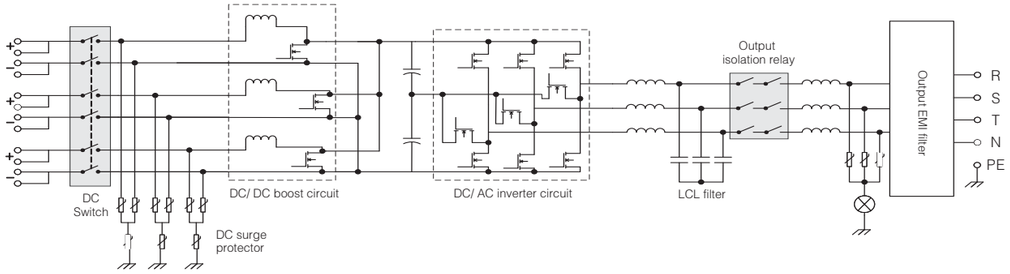
Friendly and Flexible

- Status display with LED indicators, concise interface
- Built–in DC SPD and fuse, no need of DC combiner box, reducing cost for users
- DC shut–off circuit breaker for safe and convenient maintenance operating
- IP 65 protection level for outdoor use
- Wall mounting design, one–step forming of aluminum shell
- Standard RS485 / APP / GPRS / Wi–Fi / Bluetooth communications; Optional PLC viewing the system operation information

Efficiency curve



Principle diagram



Technical Data

MODEL	PHX 33K–TL	PHX 40K–TL
INPUT (DC)		
Max. DC input power	33 kWp	40 kWp
Max. DC input voltage	1000 V	
Starting voltage	200 V	
Max. DC input current	3 ×23 A	
MPP voltage range	320 ~ 900 V	
Full–load MPP voltage range	480 ~ 800 V	580 ~ 850 V
Number of MPP inputs	3	
Rated DC input voltage	620 V	680 V
DC terminals	2 ×6	
MPPT efficiency (static)	> 99.9%	
Withstanding voltage & insulation for DC input against the enclosure	Basic insulation 3000 Vdc / 1 min	
OUTPUT (AC)		
Rated output power	30 KW	36 KW
Max. apparent power	33 KVA	40 KVA
Rated output voltage	3 ×380 / 400 / 415 Vac +N+PE	3 ×277 / 480 Vac +PE
Rated output current	3 ×45.9 A	
Max. allowable output current	3 ×48 A	
Rated frequency	50 Hz / 60 Hz	
DC component	< 0.5% (rated current)	
THD	< 3% (rated power)	
Power factor	0.8 leading ~ 0.8 lagging	
Withstanding voltage & insulation for AC output sides against the enclosure	Basic insulation 3000 Vdc / 1 min	
EFFICIENCY		
Max. inverter efficiency	98.7%	98.9%
Europe efficiency	98.4%	98.5%
PROTECTIONS		
Input reverse connection protection	Yes	
DC input switch	Yes	
DC overvoltage and overload protection	Yes	
Output AC short–circuit protection	Yes	
AC overload, overcurrent limitation and protection	Yes	
Grid over / under–voltage and unbalanced protection	Yes	
Grid over / under–frequency protection	Yes	
Leakage protection	Yes	
Lightning protection	Yes	
Islanding protection	Active and passive protection	
DC surge protection	Yes	
AC surge protection	Yes	
Insulation resistance testing protection	Yes	
CERTIFICATES AND APPROVALS		
Certificates	VDE / TUV / CE / CQC	
Grid–connected standard	TUV / VDE–AR–N–4105 / G59	
EMC / safety	EN 61000–6–2, EN61000–6–3, EN 61000–3–2, EN 61000–3–3, EN 61000–3–11, EN 61000–3–12, EN / IEC 62109–1, EN / IEC 62109–2	
DISPLAY AND COMMUNICATIONS		
Display	LED indicators / Bluetooth / APP	
RS485	Yes	
USB	Yes	
PLC	Optional	
APP and Bluetooth	Yes	
OTHERS		
Standby loss	< 15 W	
Topology	Transformerless	
MTBF	40000 h	
Warranty	5 / 10 / 15 / 20 / 25 years (optional)	
Operating temperature	– 25 °C ~ + 60 °C	
Cooling	Natural cooling	
Relative humidity	0 ~ 100% (non–condensing)	
IP rating	IP 65	
Max. operating altitude	3000 m	
Dimensions (W × D × H) (mm)	260 × 580 × 800	
Packaged dimensions (W × D × H) (mm)	690 × 935 × 345	
Net weight (kg)	≤ 65	
Gross weight (kg)	< 70	

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Three-Level Inverter (Built-in Transformer)

PHX 100K-M/T / 250K-M/T / 250K-TF

EA100KL-M/T / EA250KL-M/T / EA250KTF PV Grid-connected Inverter adopt modular three-level SVPMW technology. They are featured with high frequency, high power density, small footprint, optional various communications and built-in transformer design. They are ideal for distributed PV grid-connected power stations.

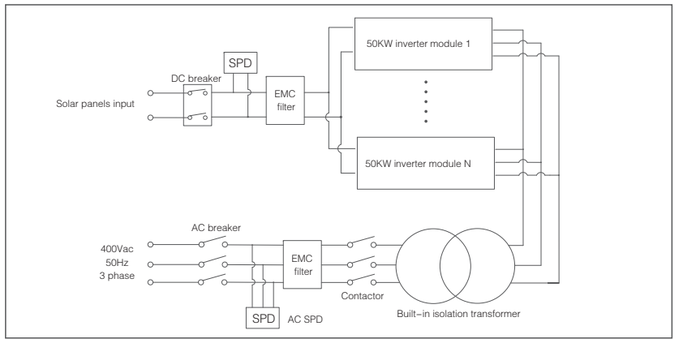
Features

- Advanced modular three-level SVPMW technology
- Maximum efficiency up to 98.5 (w/o transformer)
- Wide MPPT range (500V ~ 850V) with effective MPPT algorithms
- Modular design, front accessible maintenance with less time (less than 10 min)
- Auto separate failed module from the system to improve reliability
- Low voltage, ZVRT (Zero voltage ride through) test
- Advanced Anti-islanding technology
- Independent air dusts design to adapt to dust environment
- Smart startup & hibernation function
- Night SVG function, responding to the grid dispatching order whole day.
- Adjustable active power, power factor range 0.9 (leading) to 0.9 (lagging).
- TUV, CE, CQC certification

Safety

Effective protection functions: overvoltage, short-circuit, islanding, overtemperature and overcurrent protection etc.
Standards complied: EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4, EN61000-3-2, EN61000-3-3, EN60164-1-1, EN55022, EN50178, EN45011

Principle diagram



100KW N = 2, 250KW N = 5

Technical Data

MODEL	PHX 100K-M/T	PHX 250K-M/T	PHX 250K-TF
DC SIDE			
Max. DC voltage	1000 Vdc		
MPPT voltage range	500 ~ 850 Vdc		
Max. DC power	110 KW	275 KW	275 KW
Max. input current	220 A	550 A	550 A
Number of MPP inputs	1	5	1
AC SIDE			
Rated output power	100 KW	250 KW	250 KW
Max. output power	110 KW	275 KW	275 KW
Max. output current	158 A	397 A	397 A
Rated grid voltage	400 Vac		
Grid voltage tolerance	340 ~ 460 Vac		
Rated grid frequency	50 Hz / 60 Hz		
Grid frequency tolerance	47 ~ 51.5 Hz / 57 ~ 61.5 Hz		
THD	< 3% (rated power)		
Power factor	0.9 (leading) ~ 0.9 (lagging)		
SYSTEM			
Max. efficiency	97%		
Europe efficiency	96.5%		
IP rating	IP 20		
Self-consumption (at night)	< 30 W		
Ambient temperature	-25℃ ~ + 55℃ (above 50℃ derating)		
Cooling	Air cooling		
Relative humidity	0 ~ 95% non-condensing		
Altitude	6000 m (above 3000 m derating)		
DISPLAY AND COMMUNICATIONS			
Display	LCD (touch screen)		
Standard communication	RS485		
Optional communication	Ethernet / USB		
OTHERS			
Dimensions (W × D × H) (mm)	600 × 800 × 2000	1200 × 800 × 2000 800 × 800 × 2000 (transformer cabinet)	1200 × 800 × 2000 800 × 800 × 2000 (transformer cabinet)
Packaged dimensions (W × D × H) (mm)	700 × 900 × 2070	1300 × 930 × 2070 (inverter) + 900 × 920 × 2000 (transformer cabinet)	1300 × 930 × 2070 (inverter) + 900 × 920 × 2000 (transformer cabinet)
Net weight (kg)	520	470 + 770	470 + 770
Gross weight (kg)	550	500 + 800	500 + 800

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Power Plant PV Inverter

PHX 500KW

500KW PV Grid–connected Inverter are designed with external transformer and featured with wide input voltage range and high conversion efficiency. Its excellent protection, higher MPPT efficiency, real–time monitoring and parallel operation of multiple inverters make it ideal for large–scale gird–connected PV power plant.

Features

- Maximum conversion efficiency up to 98.7% (w/o transformer)
- Effective IGBT module
- Wide DC input range for flexible configuration of PV array
- DSP + CPLD full–digital control technology, excellent protection, safety and reliability
- Advanced MPPT algorithms
- Advanced anti–islanding technology
- Efficient thermal system design adapting to harsh environment
- Multi–communication interfaces, easy to monitor
- ZVRT (Zero voltage ride through) function
- Active and reactive power regulation function (optional)
- Applicable to large–scale power station having centralized high–voltage gird–connected design of multiple inverters (with external step–up transformer)
- TUV, CE, CQC certification

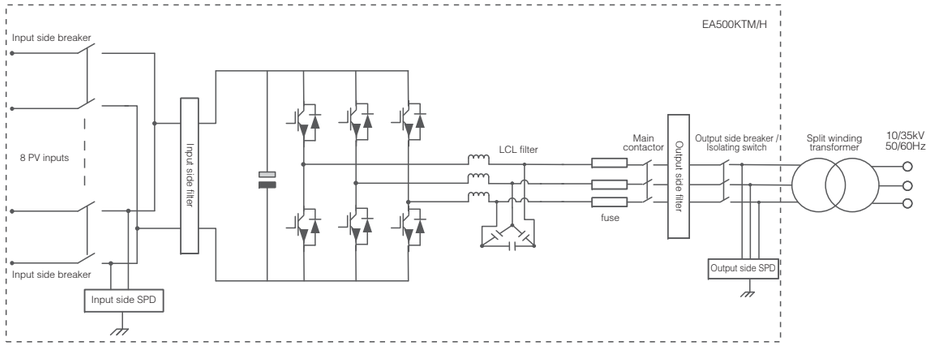
Communications

RS485 / Ethernet / USB, Computer monitoring software

Safety

Effective protection functions: overvoltage, short–circuit, islanding, overtemperature and overload protection etc.
Standards complied: EN61000–6–1, EN61000–6–2, EN61000–6–3, EN61000–6–4, EN61000–3–2, EN61000–3–3, EN60164–1–1, EN55022, EN50178, EN45011

Principle diagram



Technical Data

MODEL	PHX 500K–TM	PHX 500K–TH
DC SIDE		
Max. DC voltage	1000 Vdc	
MPPT voltage range	500 ~ 850 Vdc	
Max. DC power	550 KWp	
Max. input current	1100 A	
Number of PV Inputs	8	
AC SIDE		
Rated output power	500 KW	
Max. output power	550 KW	
Max. output current	1008 A	
Rated grid voltage	315 Vac	
Grid voltage tolerance	245 ~ 362 Vac	
Rated grid frequency	50 Hz / 60 Hz	
Grid frequency tolerance	47 ~ 51.5 Hz / 57 ~ 61.5 Hz	
THD	< 3% (rated power)	
Power factor	0.9 (leading) ~ 0.9 (lagging)	
SYSTEM		
Max. efficiency	98.7%	
Europe efficiency	98.5%	
IP rating	IP 20 (indoor)	
Self–consumption (at night)	< 100 W	
Ambient temperature	–25℃ ~ +55℃	
Cooling	Air cooling	
Relative humidity	0 ~ 95 % non–condensation	
Altitude	6000 m (> 3000 m derating)	
DISPLAY AND COMMUNICATIONS		
Display	LCD (touch screen)	
Standard communication	RS485	
Optional communication	Ethernet / USB	
OTHERS		
Dimensions (W × D × H) (mm)	1200 × 800 × 2000	
Packaged dimensions (W × D × H) (mm)	1300 × 930 × 2070	
Net weight (kg)	930	
Gross weight (kg)	960	

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Outdoor MW Integrated PV Power Plant

PHX 1MW

This product adopts all–in–one integration technology. Its inverter adopts integrated DC distribution cabinet design with smaller footprint, which greatly shortens the construction time of power plants. Its transportation, installation and maintenance are one–stop completed. It is ideal for the construction of outdoor PV power plants.

Features

- ntegrated technology; stable and reliable performance; convenient installation
- IP54 for outdoor use
- High efficient IGBT components
- Wide DC input range for flexible configuration of PV array
- Advanced MPPT algorithms
- Efficient thermal system design adapting to harsh environment
- ZVRT (Zero Voltage Ride Through) function
- Active power 0 ~ 100% adjustable
- Reactive power 0.9 (leading) ~ 0.9 (lagging) adjustable
- TUV, CE, CQC certification

Communications

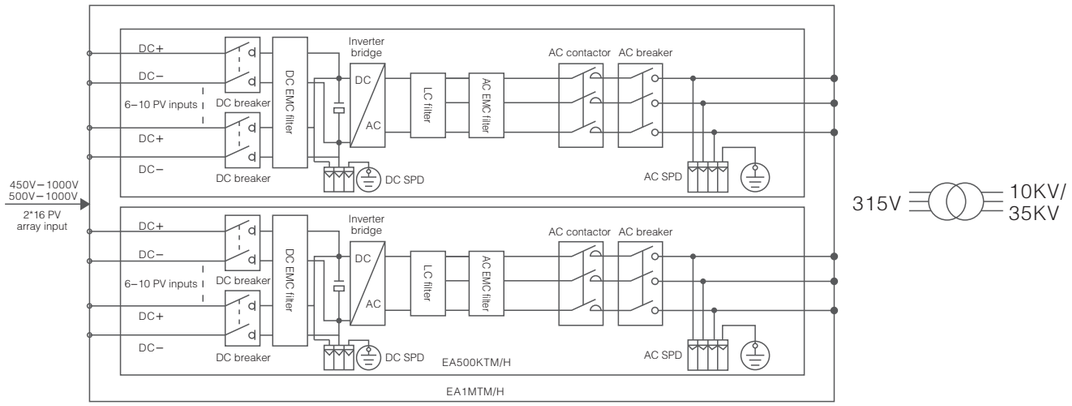
RS485 / Ethernet / USB, Computer monitoring software

Safety

Effective protection functions: DC / AC breaker protection, DC / AC overcurrent protection, DC / AC overvoltage / undervoltage protection, overtemperature, grid real–time monitoring, insulation monitoring, grouding fault protection, fan fault protection etc.

Standards complied：EN61000–6–1, EN61000–6–2, EN61000–6–3, EN61000–6–4, EN61000–3–2, EN61000–3–3, EN60164–1–1, EN55022, EN50178, EN45011

Principle diagram



Technical Data

MODEL	PHX 1M–TM	PHX 1M–TH
INPUT (DC)		
Max. DC power	1120 KWp	
Max. input voltage	1000 V	
Starting voltage	505 V	
Min. operating voltage	500 V	
Max. input current	2200 A	
MPPT voltage range	500 ~ 850 V	
Number of DC cabinet input terminals	8 ×2	
OUTPUT (AC)		
Rated power	1000 KW	
Max. AC output power	1100 KW	
Max. output current	2016 A	
Current distortion	< 3% (> 30% rated power)	
Rated grid voltage	315 V	
Grid voltage tolerance	245 ~ 362 V (settable)	
Rated grid frequency	50 Hz / 60 Hz (settable)	
Grid frequency tolerance	47 ~ 51.5 Hz / 57 ~ 61.5 Hz (settable)	
Power factor	> 0.99	
DC current component	< 0.5% (rated output current)	
Adjustable power factor range	0.9 (leading) ~ 0.9 (lagging)	
Isolation transformer	None	
EFFICIENCY		
Max. conversion efficiency	98.7%	
Europe efficiency	98.5%	
OTHERS		
Display	Touch screen	
Exhaust air volume	15987 m / h	
Communications	RS485, Ethernet, USB (optional)	
Altitude	6000 m (> 3000 m derating)	
Cooling	Temperature control forced–air cooling	
IP rating	IP 54	
Self–consumption (at night)	< 200 W	
Relative humidity	0 ~ 95% non–condensing	
Ambient temperature	–25℃ ~ +55℃	
Dimensions (W × D × H) (mm)	2800 × 2038 × 2591	
Weight (kg)	4000	

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Off−Grid Solar Inverter

PAT 500W ~ 3000W (with isolated transformer)
PF = 1

Features

- High reliability: adopt high−speed DSP control system, combine advanced SPWM technology and high−speed power MOS
- Operating mode selectable: energy storage priority or power supply priority
- No PID attenuation damage for solar panels to ensure their service life
- Flexible battery management system: auto switch three−stage charging mode shortens recharge time; wide charging current is selectable according to configured battery; flexible DOD (Depth of discharge) is settable to meet more applications
- AC input with effective online synchronous stabilizing technology
- No−load auto shutdown function (optional)
- Automatic frequency selection
- Auto Power−On/Off function; real−time monitoring, test and intelligent startup / shutdown by RS232 or USB interface communicating with PC; remote monitoring by optional SNMP networks

Technical Data

MODEL	PAT 500	PAT 1000	PAT 2000	PAT 3000
Rated power	500 W	1000 W	2000 W	3000 W
Battery voltage	12 Vdc	24 Vdc	48 Vdc	
PV INPUT				
Max. input voltage (Voc)	60 Vdc	100 Vdc	150 Vdc	
Optimum operating voltage (Vmp)	16 ~ 48 Vdc	33 ~ 80 Vdc	65 ~ 120 Vdc	
Max. charging current	50 A			65 A
Recommended PV configuration	700 W	1400 W	2800 W	3500 W
AC INPUT				
AC input range (bypass mode)	0 ~ 132 Vac / 0 ~ 264 Vac (high−end limit)			
Rated input voltage	100 Vac / 110 Vac / 115 Vac / 120 Vac or 200 Vac / 220 Vac / 230 Vac / 240 Vac ±25%			
Rated Input frequency	50 Hz / 60 Hz ±5 Hz (auto−sense)			
Max. charging current	20 A			30 A
INVERTER OUTPUT				
Output voltage	100 Vac / 110 Vac / 115 Vac /120 Vac ±2% or 200 Vac / 220 Vac / 230 Vac / 240 Vac ±2% settable			
Rated output power	500 W	1000 W	2000 W	3000 W
Power factor	1			
Rated output frequency	50 Hz / 60 Hz ±1%			
Waveform	Sinusoidal			
Max. efficiency (resistive load)	⩾ 78%	⩾ 82%	⩾ 85%	⩾ 85%
Sleep mode	Settable (< 3% load) access in ⩽ 2 min			
Output voltage harmonic	⩽ 3% (linear load)			
BATTERIES				
Charging current	5 ~ 50 A settable			5 ~ 65 A settable
DOD	9.6 ~ 13.0 Vdc / cell (settable), 10.8 Vdc / cell (default)			
EOD	9.6 ~ 11.5 Vdc / cell (settable), 10.2 Vdc / cell (default)			
Equalizing charge voltage	13.6 ~ 15.0 Vdc / cell (settable), 14.1 Vdc / cell (default)			
Floating charge voltage	13.2 ~ 14.6 Vdc / cell (settable), 13.5 Vdc / cell (default)			
Restroration point of overvoltage	15.5 Vdc	31.0 Vdc	62.0 Vdc	
OTHERS				
Transfer time	3 ~ 6 ms (typical); ⩽ 10 ms (max.)			
Overload (linear load)	105% for 5 mins, 110% for 2 mins, 125% for 1 min, 150% for 10 s, 180% for 1 s			
ECO mode (optional)	Load < 3% (settable) , Yes / No settable			
No−load shutdown (optional)	Load < 3% ~ 50%, Yes / No settable			
Load adaptation	Inductive load: ⩽ 30%; capacitive load: ⩽ 50%; resistive load: ⩽ 100%			
Protections	Output overload – short−circuit – overdischarge – overcharge – battery reverse polarity – PV reverse polarity			
Lightning protection	Class Ⅲ			
Communications	RS232 / USB / RS485 ; SNMP / WiFi / Bluetooth (optional)			
Standards	IEC62040, IEC / EN 61000			
IP rating	IP21			
Display	LCD & LED			
Operating temperature	0℃ ~ 40℃			
Relative humidity	⩽ 93%			
Noise	< 50 dB			
Dimensions (W × D × H) (mm)	480 × 380 × 202			480 × 380 × 217
Packaged dimensions (W × D × H) (mm)	545 × 458 × 278			545 × 458 × 295
Net weight (kg)	17	18.8	27.7	35
Gross weight (kg)	18	19.8	28.7	36

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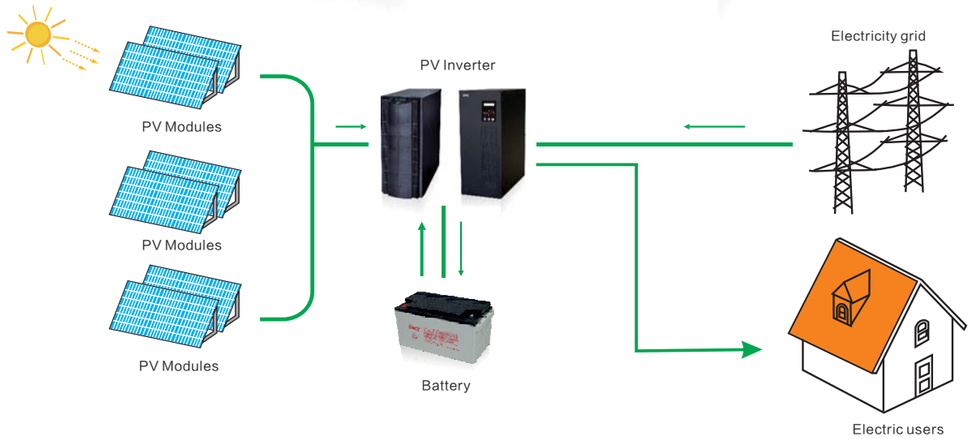
Off–Grid Solar Inverter

PAT 3KW ~ 8KW (with isolated transformer)
PF = 1



Features

- Independent MPPT control microprocessor system
- Independent inverter control microprocessor system featured with high–speed online stabilization
- Advanced SPWM technology, high–speed power MOS
- MPPT control using PWM technology enable to bear the maximum PV open–circuit voltage
- Operating mode selectable: PV priority or utility power priority
- Charging current selectable according to configured battery
- AC input with effective online synchronous stabilization technology
- Auto–tracking mains phase to ensure that inverter output voltage has same phase with utility voltage, reducing transfer time and peak surge
- No–load auto shutdown function (optional)
- Automatic frequency selection
- Auto Power–On/Off function; real–time monitoring, test and intelligent startup / shutdown by RS232 or USB interface communicating with PC; remote monitoring by optional SNMP networks

Technical Data

MODEL	PAT 3000	PAT 4000	PAT 3000	PAT 5000	PAT 6000	PAT 8000
Rated power	3 KW	4 KW	3 KW	5 KW	6 KW	8 KW
Battery voltage	96 Vdc		192 Vdc			
Operating mode	PV priority / AC priority					
PV INPUT						
Input voltage range	96 Vdc ~ 200 Vdc		192 Vdc ~ 400 Vdc			
Max. charging current	10 ~ 60 A selectable		10 ~ 40 A selectable	10 ~ 60 A selectable		
Optimum operating voltage (Vmp)	120 ~ 142 Vdc		240 ~ 284 Vdc			
Max. PV power (Pmax)	5760 W		7680 W	11520 W		
Max. conversion efficiency	98%					
AC INPUT						
Input voltage	165 ~ 275 Vac					
Input frequency	40 ~ 70 Hz (overloacking : auto transfer to DC power supply)					
Output voltage	220 Vac ±5%					
Input power factor	⩾ 0.8					
Max. efficiency	88% (online mode)					
Max. charging current	8 A		12 A			
Short circuit	Current–limiting, transfer to bypass; air circuit–breaker					
INVERTER OUTPUT						
Output voltage	220 Vac ±5%					
Output frequency	50 Hz / 60 Hz ±1% (auto–sense)					
Waveform	Sinusoidal					
Output power factor	1					
Waveform distortion	⩽ 5% (linear load)					
Transfer time (PV – AC)	0 ms					
Max. efficiency	92%					
Short circuit	Current–limiting, transfer to bypass or system auto shutdown					
ALARMS						
Utility power abnormal	4 s per beep , auto mute in 40 s					
Low battery	0.2 s per beep					
Overload	1 s per beep					
COMMUNICATIONS						
Communication interface	RS232, USB, RS485, SNMP (optional)					
Dry contacts	PV fault, low battery, overload, bypass, inverter fault, generator ON / OFF					
OTHERS						
Overload protections	110% for 255 s; 125% for 60 s; 150% for 10 s					
Wiring	Terminal blocks					
EMI	EN62040–2:2006; EN61000–3–2:2006; EN61000–3–3:2008					
IP rating	IP20					
Ambient temperature	0℃ ~ 40℃					
Relative humidity	10% ~ 90% (non–condensing)					
Noise	⩽ 50 dB					
Operating altitude	2000 m (derating 1% for each additional 100 m)					
Dimensions (W × D × H) (mm)	560 × 265 × 725					
Packaged dimensions (W × D × H) (mm)	662 × 360 × 905					
Net weight (kg)	76	80	60	67	69	85
Gross weight (kg)	85	89	69	76	78	94

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Off–Grid Solar Inverter

PAT 10 KVA ~ 120 KVA (3:3) (with isolated transformer)
PF = 0.9

This Off–Grid solar system is available in 10KVA ~ 120KVA models with DSP digital control technology, it is combined with pulse–width modulation (SVPWM), disturbance MPPT control and multi–level control technolgy to enable the stysem to track the maimum power of solar panels fast. Its secure power supply feature provides good quality power with regualted voltage and frequency to the loads, and it is featured with engergy storage and staggering power consumption as well. It is an ideal inverter for medium–sized or large–scale residential, commercial and industrial PV applications which are off the gird, such as village, farm, factory, office building and islands etc.

Features

- High–speed DSP digital control
- Full–bridge invertert control techonology, providing secure power supply in the event of three phase 100% unbalanced loads
- Multi–string PV connected
- Inbuilt AC rectifier and MPPT control modules, configured battery parameters by operating interface, self–regulation for charging voltage and current
- Hot–swap MPPT modules for easy maintenance and power expansion
- Auto access MPP tracking states, be most probable to use PV energy in priority
- Intelligent AC and PV complementation power supply function to extend the battery life.
- Using multicore control technology and auto MPP trackers, auto–start AC rectifier enable PV and AC source to supply power to the loads at the same time in the event of insufficient PV, which reduces battery discharge times and entend the battery life
- Intelligent staggering power consumption function
- Standard RS232, RS485 and optional SNMP communication port
- Multiple remote control: startup, shutdown, abnormal clearance, EPO, battery test and remote alarm port
- Staggering energy storage and power generation

Technical Data

MODEL	PAT 10K	PAT 20K	PAT 30K	PAT 40K	PAT 60K	PAT 80K	PAT 100K	PAT 120K
Rated power	9 KW	18 KW	27 KW	36 KW	54 KW	72 KW	90 KW	108 KW
Rated current	15 A	30 A	45 A	60 A	91 A	120 A	162 A	182 A
Output power factor	0.9							
Rated input voltage	380 Vac ±20%							
Rated output voltage	380 Vac ±1%							
Battery voltage	360 Vdc							
Number of battery	12 Vdc × 30 pcs / 2 Vdc × 180 pcs							
Operating mode	AC and PV complementation							
PV INPUT								
Max. voltage (Voc)	750 Vdc							
Optimum operating voltage (Vmp)	450 ~ 550 Vdc							
Max. conversion efficiency	⩾ 98%							
Floating charge voltage (25℃)	414 Vdc ±1%							
Equalizing charge voltage (25℃)	428 Vdc ±1%							
MPPT Max. current	60 A		120 A		180 A	240 A	360 A	
Max. PV power	25 KW		2 × 25 KW		3 × 25 KW	4 × 25 KW	6 × 25 KW	
Number of PV input	1		2 + 1 (reserve)		3 + 1 (reserve)	4 + 2 (reserve)	6 + 2 (reserve)	
MPPT modules	1		2 + 1 (reserve)		3 + 1 (reserve)	4 + 2 (reserve)	6 + 2 (reserve)	
AC RECTIFIER								
Input voltage range	380 Vac ±20% three–phase							
Rated frequency	50 Hz / 60 Hz ±5 Hz (settable)							
Power factor	0.8							
Floating charge voltage (25℃)	410 Vdc ±1%							
Equalizing charge voltage (25℃)	415 Vdc ±1%							
Max. charging current	12 A	25 A	38 A	50 A	75 A	167 A	208 A	250 A
INVERTER								
Inverter voltage	380 Vac three–phase +N +G							
Phase voltage	220 / 230 / 240 Vac (settable)							
Output voltage precision	± 1%							
Transient voltage range	± 5%							
Transient recovery time	20 ms							
Rated frequency	50 Hz / 60 Hz ±1 Hz (settable)							
Frequency tracking range	50 Hz / 60 Hz ±3 Hz							
Peak factor	3 : 1							
Waveform	Sinusoidal							
Waveform distortion	⩽ 3% (linear load)							
Voltage unbalance	± 3% (100% unbalanced load)							
Overload	⩾ 105% ~ 110% for 1 h; ⩾ 110% ~ 125% for 10 mins; ⩾ 125% ~ 150% for 1 min; ⩾ 150% shut down in 10 s; ⩾ 200% shut down immediately							
Short circuit	Current–limiting, shut down immediately until the user start up							
Max. efficiency	⩾ 90%	⩾ 91%	⩾ 92%		⩾ 93%			
BYPASS								
Rated voltage	380 Vac three–phase + N+G							
Voltage range	± 20%							
Rated frequency	50 Hz / 60 Hz ±5 Hz							
Max. current	19 A	38 A	57 A	76 A	114 A	152 A	190 A	228 A
BATTERIES MANAGEMENT								
EOD voltage settings	1.58 Vdc ~ 1.83 Vdc (settable), 1.75 Vdc (default)							
Staggering DOD (Depth of Discharge) settings	1.85 Vdc ~ 2.1 Vdc (settable), 1.89 Vdc (default)							
Charging current settings	Factory default 0.15 C_{10}; 0.07 ~ 0.3 C_{10} (settable)							
Battery management	Auto–transfer between equalizing charge and floating charge; Auto– temperature compensation of batteries							
TRANSFER TIME								
Inverter – Bypass	0 ms							
Bypass – Inverter	0 ms							
COMMUNICATIONS								
Remote control	Inverter startup, shutdown, abnormal clearance, EPO, battery self–test							
Communication interface	RS232 / RS485 ; SNMP / WiFi / Bluetooth (optional)							
Dry contacts output	Bypass input abnormal, rectifier input abnormal, system fault, system alarm, low battery, output overload, fan fault, generator ON / OFF							
OTHERS								
Operating temperature	0℃ ~ 40℃							
Max. relative humidity	90% (non–condensing)							
Max. altitude	1000 m at rated power (derating 1% for each additional 100 m); Max. 4000 m							
Noise level at 1 m	⩽ 65 dB (varies with loads and temperature)							
IP rating	IP20							
Dimensions (W × D × H) (mm)	450 × 840 × 1100		600 × 700 × 1750			960 × 800 × 1700		
Packaged dimensions (W × D × H) (mm)	530 × 920 × 1140		690 × 790 × 1850			1040 × 890 × 1750		
Weight (kg)	230	245	380	430	515	760	800	860

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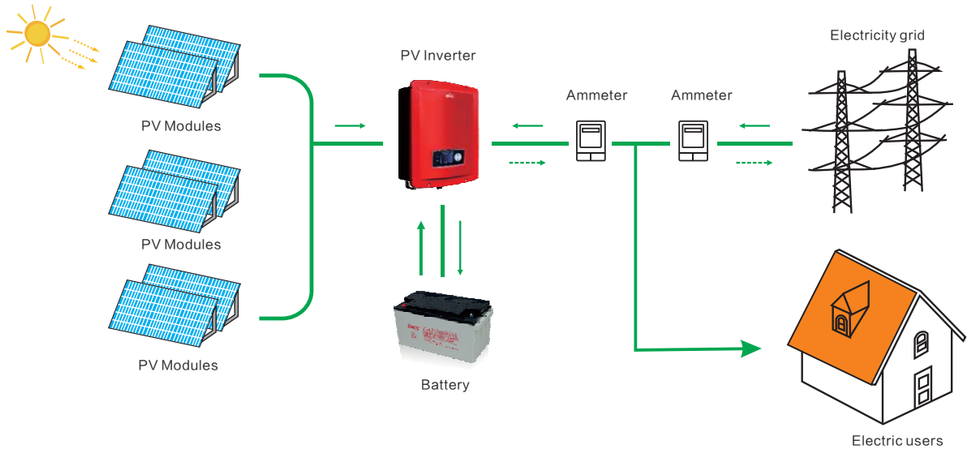
Hybrid (Bi–direction) Solar Inverter

PHS 1KW ~ 3KW (with isolated transformer)
PF = 1



Features

- PV energy combined with flexible energy storage systems: enable households to store surplus electricity generated by solar panel array, and power not being utilised can be exported to the mains grid.
- Advanced MPPT algorithm
- Built–in transfomer to ensure electric safety
- Intelligent battery management, configurable charging current
- Effective protections: overload, short circuit, overdischarge, overcharge, battery reverse polarity, PV reverse polarity protections
- No PID attenuation damage for solar panels to ensure its service life
- Unique ECO mode, daily consumption less than 1% at no–load standby
- Staggering energy storage and power generation

Technical Data

MODEL	PHS 1K	PHS 2K	PHS 3K
Rated power	1 KW	2 KW	3 KW
Output power factor	1		
Operating mode	Grid–connected mode / backflow prevention mode (settable)		
PV INPUT			
Max. input voltage (Voc)	150 Vdc		
Optimum operating voltage (Vmp)	70 ~ 115 Vdc		
Max. conversion efficiency	⩾ 98%		
Max. charging current	23 ±2 A	48 ±2 A	62 ±2 A
Recommended PV configuration	⩽ 1.5 KW	⩽ 2.8 KW	⩽ 3.5 KW
AC INPUT			
Input voltage range	170 ~ 264 Vac		
Rated Input frequency	50 Hz / 60 Hz (settable)		
Frequency range	50 Hz / 60 Hz ±2.5 Hz		
Power factor	0.98		
Max. charging current	18 ±2 A	38 ±2 A	58 ±2 A
INVERTER			
Inverter voltage	230 Vac (220 Vac / 240 Vac settable)		
Waveform	Sinusoidal		
THD (linear load)	⩽ 3%		
Overload	⩾ 110%: transfer to bypass in 4 mins or shut down in off–grid ⩾ 125%: transfer to bypass in 1 min or shut down in off–grid ⩾ 150%: transfer to bypass in 5 s or shut down in off–grid ⩾ 180%: shut down in 0.5 s		
Max. efficiency	⩾ 85%		
BATTERIES			
Battery type	VRLA AGM maintenance–free battery		
Battery voltage	48 Vdc		
Number of battery	12 Vdc ×4 pcs 2 Vdc ×24 pcs		
DOD (depth of discharge)	Settable		
Floating charge voltage	56 Vdc		
Charging current	0.05 C ~ 0.3 C (settable)		
Intelligent management	Auto floating charge, auto temperature compensation (optional)		
COMMUNICATIONS			
Remote control	Transfer to bypass or inverter; shut down		
Communication interface	RS232 / USB / RS485 ; SNMP / WiFi / Bluetooth (optional)		
OTHERS			
Operating temperature	0℃ ~ 40℃		
Max. relative humidity	95% (non–condensing)		
Max. altitude	1000 m at rated power (derating 1% for each additional 100 m); Max. 4000 m		
Cooling	Forced ventilation (fan speed varies with loads)		
Noise level at 1 m	⩽ 50 dB (varies with loads and temperature)		
IP rating	IP21		
Dimensions (W × D × H) (mm)	480 × 380 × 202		480 × 380 × 217
Packaged dimensions (W × D × H) (mm)	545 × 458 × 278		545 × 458 × 295
Net weight (kg)	18.8	27.7	35
Gross weight (kg)	19.8	28.7	36

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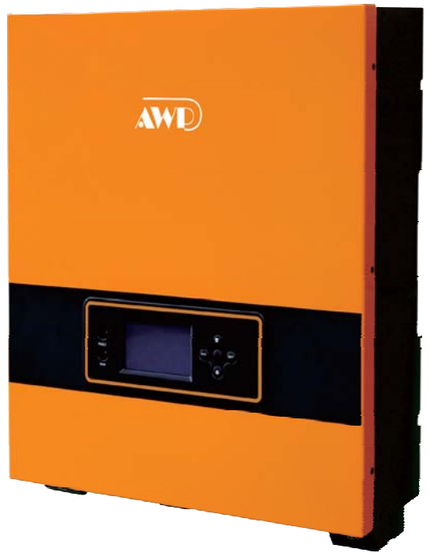
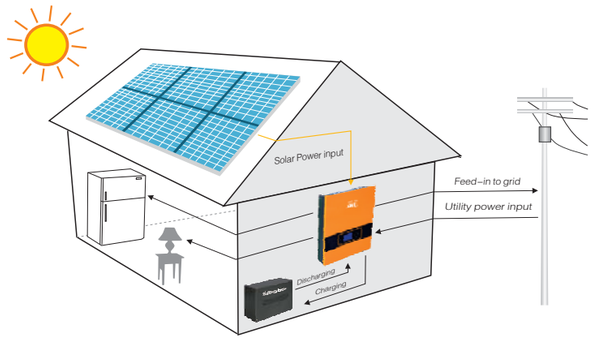
Hybrid (Bi–direction) Solar Inverter

PHS 3K (Transformerless)
PF = 1



Hybrid (Bi–direction) Solar Inverter is PV energy combined with energy storage systems. It utilizes solar power, AC utility and battery power to ensure continuous power supply, and users can store the unused energy produced during the day by PV system in the battery and use it whenever they need, even at night, it helps increase self–consumption and achieve greater energy self–sufficiency.



Features

Operating Flexibility

- Operating modes can be programmed flexibly
- On–grid operating, easy feed–in to the grid, backflow prevention, energy self–generation and self–consumption.
- Off–grid operating, no worry about grid power failure
- Solar power, battery power and AC utility power source to provide loads with continuous power
- Even with grid or PV input only, inverter can still start working without battery
- Priority of PV, battery or grid power source can be programmed flexibly
- High efficiency of battery management system, EOD, floating voltage and charge current are settable.

High efficiency and safety

- Soft–switching technology, inproving inverter efficiency
- DSP complete digital control technology
- Small size, light weight, easy installation
- Superior protection

Intelligent monitoring

- LCD, LED display real–time operating information
- Monitoring software display real–time operating information
- Monitoring software make operating modes programmed and control
- Various communications selectable via USB, RS232, RS485, SNMP

Technical Data

MODEL	PHS 3K
Rated power	3000 W
Operating mode	Flexible setup via upper computer software or LCD interface
PV INPUT	
Max. input power	4500 W
Rated input voltage	360 Vdc
Max. input voltage	500 Vdc
Start–up voltage	115 Vdc
Initial feeding voltage	150 Vdc
MPPT voltage range	250 Vdc ~ 450 Vdc
Max. input current	18 A
PV short circuit current	18 A
Number of MPPT	1
BATTERIES	
Battery type	Lithium battery
Rated voltage	51.2 Vdc
Voltage range	46.4 Vdc ~ 57.6 Vdc
Battery type	VRLA AGM maintenance–free battery
Rated voltage	48 Vdc
Voltage range	40 Vdc ~ 58 Vdc
Battery capacity	100 Ah ~ 120 Ah optimized
Rated charger power	1425 W
Max. charging current	25 A (5 A / 10 A / 15 A / 20 A / 25 A settable)
Charging curve	3–Stage
Max. charging efficiency	94%
Rated discharge power	3000 W
Max. discharge current	100 A
Discharge depth (%)	80% default
Max. discharge efficiency	94%
AC GRID INPUT	
AC start–up voltage	120 Vac
Grid voltage range	170 ~ 280 Vac
Rated grid frequency	50 Hz / 60 Hz
Allowed grid frequency	50 ±5 H z / 60 ±5 H z
AC input power	5100 VA / 5100 W
Max. input current	30 A
AC OUTPUT (connect with load)	
Rated output power	3000 VA / 3000 W
Rated output voltage	230 Vac (208 / 220 / 240Vac settable)
Rated output current	13.0 A (14.4 A / 13.6 A / 12.5 A)
Output voltage range	184 Vac ~ 264.5 Vac
Rated output frequency	50 Hz / 60 Hz
Output frequency precision	±1 %
Power factor	0.9 leading ~ 0.9 lagging
Output voltage precision	±1 %
Transient recovery time	⩽ 40 ms
Peak factor	3 : 1
Linear load waveform distortion	⩽ 3%
Short circuit current	45 A (100 ms)
TRANSFER TIME	
Off–grid mode → On–grid mode	0 ms
On–grid mode → Off–grid mode	10 ms
EFFICIENCY	
MPPT efficiency	99%
Max. PV efficiency	96%
OTHERS	
Communications	RS232 / USB / RS485 / SNMP (optional)
Protection rating	IP20
Operating temperature	0℃ ~ 40℃ (> 40℃ derating)
Max. relative humidity	0 ~ 90%
Max. altitude	< 1000 m (> 1000 m derating)
Cooling	forced ventilation
Alarm	LED, buzzer
Display	LED, LCD
Noise	⩽ 50 dB
Topology	Transformerless
Dimensions (W × D × H) (mm)	410 × 123 × 470
Packaged dimensions (L × W × H) (mm)	582 × 508 × 183
Net weight (kg)	14.42
Gross weight (kg)	16.40

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PV Array Combiner Box

PVCB−8/16/18SD
PVCB−8/16/18S

Combiner box houses the parallel connections that are necessary when multiple solar panels are used in a system. It is mainly used for the connection of PV inverter and PV array to lessen the cable for the connecting, easy to maintain and improve the reliability. It also provides an easy access point for future panel additions.

PV array combiner is specially designed for the high efficiency and reliability; it is the supporting components of our PV inverters for the PV power generation system solutions. The user could connect a certain number of PV modules in series to be the PV array according to the voltage range of DC input, then connect PV arrays to the combiner box for the converge, through the output of lightning protection device and breaker, it is easy for back−end inverters to access and improves the system safety and reduces the installation time. There are smart combiner boxes with anti−reverse diode and without anti−reverse diode for users to choose.

Model specification

PVCB −XX X

- X: S: Smart; D: with anti−reverse diode; L: Non−smart
- XX: The maximum number of PV array inputs in parallel
- PVCB: Short for PV COMBINER BOX

Communications

Standard configuration RS485, optional Ethernet and computer monitoring software

Features

- Protection class IP65 for outdoor use
- Wide DC voltage input range (maximum open−circuit voltage up to 1000V)
- Each PV array attached to PV dedicated fuse (withstand voltage 1000VDC, the fusing current is optional)
- Each input fuse is housed in fuse holder for easy replacement and overhaul
- High voltage lightning protection (SPD) special for PV
- Add diode modules to achieve anti−reverse protection function
- Natural cooling
- Golden sun & CE certification

Technical Data

MODEL	PVCB−8SD	PVCB−16SD	PVCB−18SD	PVCB−8S	PVCB−16S	PVCB−18S
Max. PV Array Voltage	1000 Vdc	1000 Vdc	1000 Vdc	1000 Vdc	1000 Vdc	1000 Vdc
Number of inputs	8	16	18	8	16	18
Rated current of fuse	According to the customer request					
Output terminal	PG 29	PG 29	PG 29	PG 29	PG 29	PG 29
IP rating	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65
Ambient temperature	−25 ℃ ~ +60 ℃	−25 ℃ ~ +60 ℃	−25 ℃ ~ +60 ℃	−25 ℃ ~ +60 ℃	−25 ℃ ~ +60 ℃	−25 ℃ ~ +60 ℃
Humility	0 ~ 99%	0 ~ 99%	0 ~ 99%	0 ~ 99%	0 ~ 99%	0 ~ 99%
Dimensions (W × D × H) (mm)	600 × 575 × 270	700 × 575 × 270	850 × 575 × 270	700 × 575 × 230	700 × 575 × 230	700 × 575 × 230
Weight (kg)	28	40	45	26	30	30
STANDARD CONFIGURATION						
Output DC Circuit Breaker	Yes	Yes	Yes	Yes	Yes	Yes
PV special lightning protection module	Yes	Yes	Yes	Yes	Yes	Yes
Anti−reverse diode module	Yes	Yes	Yes	None	None	None
Radiator	Yes	Yes	Yes	None	None	None
Fan	None	None	None	None	None	None

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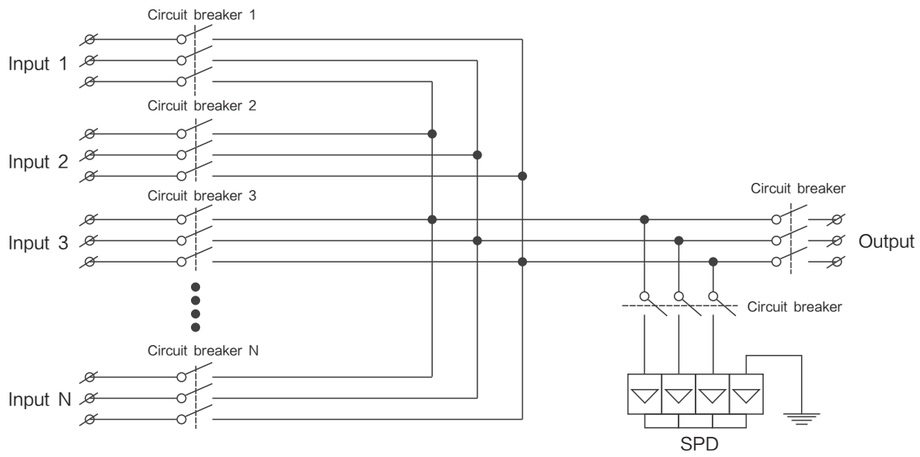
Grid–Connected AC Combiner Box

AC combiner box in grid tie systems is used to bring together the output of multiple PV inverters and then connect to the grid. It could lessen the cable for the connecting between inverters and the grid. To a large extent it reduces distribution material cost and workload.

Principle diagram

The output terminal of each inverter is connected to the input terminal of the combiner box, combined by cooper bar and sent to the grid.



Features

- Protection class IP65 for outdoor use
- Simply wiring, easy operation, reducing the wiring workload
- High efficiency and strong security with standard configuration of AC lightning protection modules
- Wall mounting with small volume and light weight, reducing installation time.

Technical Data

MODEL	PDCB–6L1	PDCB–7L1
Max. input voltage	600 Vac ±15%	
Rated insulation voltage	690 Vac	
Rated frequency	50 Hz	
Rated working current of branch	50 A	
Rated working current of Bus	300 A	350 A
Valid value of rated short–time withstand current Icw (1 s) (kA)	10	
Max. value of rated short–time withstand current Ipk (kA)	10	
Low frequency withstand voltage for 1 min	2500 Vac	
IP rating	IP 65; IP 20 after open the door	
Lightning protection level	Class C	
Fire–resistance rating	UL 790 – Class C	
Service life	More than 10 years	
Mounting	Wall bracket	
Cable entry & exit	Bottom entry / exit	
Dimensions (W × D × H) (mm)	720 × 820 × 170	

Operating environment parameters

Environment			Operating environment	Transport environment	Storage environment
Item		Parameter			
Climatic condition	Temperature	Low temperature	– 25 ℃	– 40 ℃	– 40 ℃
		High temperature	+ 55 ℃	+ 70 ℃	+ 70 ℃
		Low relative humidity	5%	/	5%
		High relative humidity	95%	/	95%
		Condensing	None	/	None
	Altitude	Low altitude	0	0	0
		High altitude	3000 m	3000 m	3000 m

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Wireless Data Logger

Inverter Logger

Inverter Logger is mainly used in distributed PV power station. It records inverters' operation status and the generated power to make a long–term monitoring of the PV system. As a high cost performance product, Inverter Logger only needs to be invested a little but greatly promotes the rate of return on investment of the system.

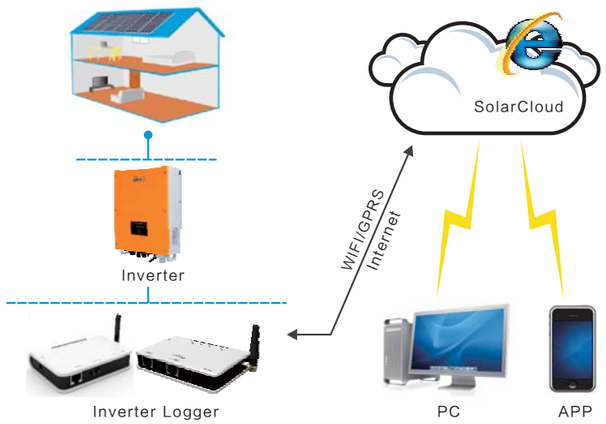
Features

- Supports diversified data format of inverters
- Ethernet / Wi–Fi / GPRS communications available
- Support maximum 64pcs inverters cascade
- Easy operating, plug & play
- Can be connected to additional equipments such as ammeter, radiation transducer and temperature sensor
- More than 25 years' datas can be stored
- Supports SolarCloud monitoring
- Built–in Web Server, supporting offline access

Applications

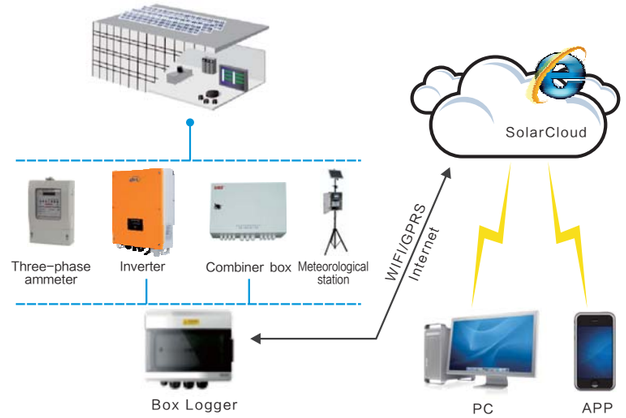
Monitoring solutions for residential roof power plants

A rooftop PV power station on residential building typically features a capacity of 5KW. Normally a family home installs about 1 to 4 pcs inverters, configures with 1pcs Inverter Logger for their data acquisition. The Inverter Logger establishs communication with inverters through special RS485 cable, and uploads datas to SolarCloud platform through Ethernet / Wi–Fi /GPRS communications.



Monitoring solutions for commercial roof power plants

A rooftop PV power station on commercial building typically features a capacity of about 5KW to 1MW. Besides inverters, there is other corollary equipment such as smart meters, smart combiner boxes and meteorological station. Users can use Box Logger for data acquisition in this application. Box Logger has two independent RS485 ports. It supports maximum 64pcs equipment access and customized access of the third–party equipment such as smart meters, smart combiner boxes and meteorological station. At last Box Logger uploads datas to SolarCloud platform through Ethernet / Wi–Fi /GPRS communications.



Technical Data

MODEL		Inverter Logger (Wi–Fi / Ethernet)	Inverter Logger (GPRS)	Box Logger
Power supply	Power input	5 Vdc	5 Vdc	85 ~ 264 Vac
	Power output	–	–	12 Vdc / 5 Vdc 500 mA
Operating environment	Operating temperature	–20℃ ~ +65℃	–20℃ ~ +65℃	–40℃ ~ +85℃
Indicator lights / buttons	Indicator lights	4 LED	4 LED	5 LED
	Buttons	1 reset button	1 reset button	1 reset button
Storage	Storage	256Kb EEPROM + external 8G TF card	256Kb EEPROM + external 8G TF card	Inside 128MB FLASH + outside 8G TF card
Data Transmission Interfaces	RS485/422	1*RS485 / RS422 / RS232	1*RS485 / RS422 / RS232	2*RS485 / RS422
	Analog input	–	–	6* analog input: 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA, 4 mA ~ 20 mA, 1* PT100 / PT1000
	Analog output	–	–	–
	Digital input	–	–	2* optical coupling isolation input
	Digital output	–	–	2*relay output
	USB	–	–	1*USB 2.0
	CT interface	–	–	–
Communications	Ethernet	1*100 M network Interface	–	1*10 M / 100 M auto –sense network Interface
	GPRS	–	1*GPRS	2*GPRS + Bluetooth
	Wi–Fi	1*Wi–Fi	–	–
	RF	–	–	1*RF module / 2.4G
	Expansion interface (EXI)	–	–	–
Software	Modular remote upgrade	√	√	√
Others	Dimensions (mm)	110 × 80 × 26	110 × 80 × 26	273 × 273 × 110
	IP rating	IP 21	IP 21	IP 66
	Clock	RTC clock	RTC clock	RTC clock
	EMC testing	EN61000–4–2; EN61000–4–4; IEC61000–4–5	EN61000–4–2; EN61000–4–4; IEC61000–4–5	EN61000–4–2; EN61000–4–4; IEC61000–4–5

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iSolar Web Monitoring

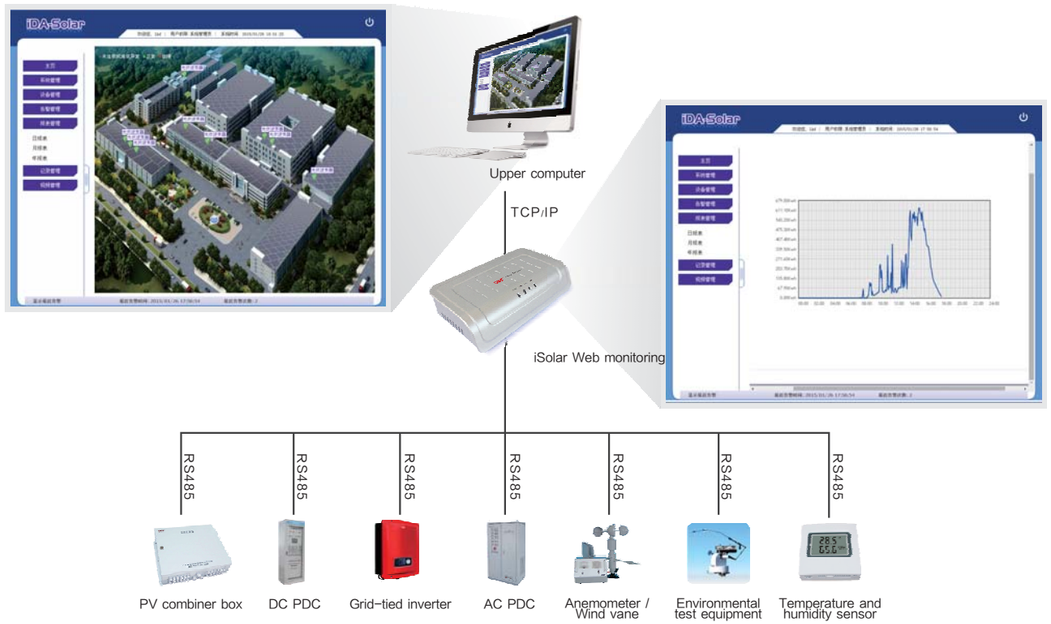
iDA-Solar series

In PV system, combiner boxes are added for the connection of PV inverter and PV array to lessen the cable for the connecting, reduce user cost and make installation convenient. iSolar Web monitoring are designed in order to carry out effective monitoring of combiner boxes and inverters. It makes data collection and protocol conversion on different devices such as PV modules, combiner boxes, inverters, weather sensors, smart meters and solar tracking control system, and utilizes intelligent network monitoring equipment to summarize data, and then manages the PV plant through the local monitoring management server.

Features

- Embedded WEB design, abundant display, and quickness
- Networking with monitoring center through TCP / IP, communicating with other equipment through RS485
- Abundant interfaces enable to connect a full range of PV grid-connected inverters, combiner box and environmental test equipment
- Its working status indicator can intuitively reflect the running state of monitoring equipment
- Supports parameter settings of TCP / IP mode, webpage configuration and remote upgrade
- Good scalability of hardware and software enable to provide data interface for upper management system like SCADA
- Enable to integrate monitoring datas from a variety of different types of devices and make classification process, classified storage and unified display

Applications



Technical Data

MODEL	iDA-SL300
Name	iSolar Web monitoring
Network interface	10 / 100Mbps high speed Ethernet auto-sense
Serial port	3*RS232 / RS485 serial port
Network protocol	TCP / IP, UDP, DHCP, DNS, ARP, ICMP etc.
LED indicator	Power, GPRS / USB, Alarm, Run and LAN 10 / 100M Link / Active
Power input (DC)	5 V
Power consumption	Max. 2.5 W
Operating environment	Temperature: 0℃ ~ 50℃, humility: 10 ~ 80%
Other configurations	Real-time clock
Hardware upgrade	FTP remote network upgrade
Language	Chinese, English
System safety	Provide filtering mechanisms based on IP, and user ID and password protection of system operation and control managment

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MPPT Solar Charge Controller

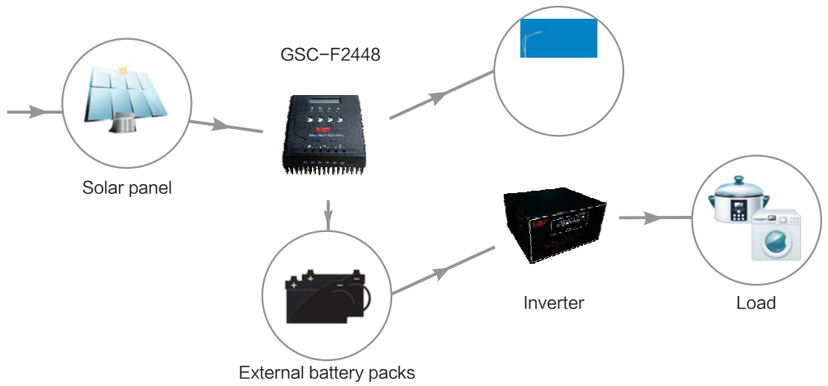
LCD / LED 5 A ~ 60 A

Applications

Solar home system
Public security monitoring system
Solar street lamp system
DC signal light power supply system
Small and medium−sized telecommunication station
Small PV power station and solar DC power supply system

Features

- **Unattended:** PV auto−start and auto−charging, no need of manual operation.
- **High efficient MPPT:** Multiple Power Point Trackers (MPPTs) enable the output power of solar panel array to be at maximum state, improving the energy conversion 20% ~ 30%.
- **High reliability:** Adopt advanced microprocessor to achieve "MPPT + SOC" dual intelligent optimized charging control to ensure the product to be stable and reliable
- **Intelligent charging management:** Adopt charging mode combined constant current and constant voltage to ensure effective battery charging and battery life.
- **Battery protections:** Automatically test the battery running condition. The system will automatically shut down in the event of overdischarge to avoid consuming the battery energy.
- **High efficiency:** Adopt low power consumption MOSFET and PWM soft switch and synchronous rectifier technology, effectively improving the system operating efficiency.
- **Intelligent:** Auto−start by Illumination recognition (optional) – the system can configure auto start the load in the event of insufficient sunshine, such as fog, rain, night etc.
- **Protections:** Overcharge / overdischarge, short circuit, overload, reverse connection, TVS lightning protection etc.
- **Strong adaptability (optional):** Charging voltage is settable to adapt to lithium battery and lead−acid battery
- **Communications (optional):** RS232 and dry contacts port for communication and real−time monitoring
- **Temperature compensation (optional):** The test interface of ambient temperature of the external battery group is available. The battery charging voltage is adjustable in real time according to the ambient temperature of the battery.



Technical Data

MODEL	F12 – 05 / 10 / M	F12 – 20	F24 – 05 / 10 / M	F24 – 20	F1224 – 10 / 20 / 30 / 40 / 50 / 60 M F2448 – 10 / 20 / 30 / 40 / 50 / 60 M
Display	LED				LCD + LED
Rated voltage	12 V		24 V		12 V / 24 V; 24 V / 48 V
Max. charging current	5 / 10 A	20 A	5 / 10 A	20 A	10 / 20 / 30 / 40 / 50 / 60 A
Max. load current	5 / 10 A	20 A	5 / 10 A	20 A	10 / 20 / 30 / 40 / 50 / 60 A
Max. PV power	12 V – 05 A 60 W 12 V – 10 A 120 W	240 W	24 V – 05 A 120 W 24 V – 10 A 240 W	480 W	12 V – 120 / 240 / 360 / 480 / 600 / 720 W 24 V – 240 / 480 / 720 / 960 / 1200 / 1440 W 48 V – 480 / 960 / 1440 / 1920 / 2400 / 2880 W
Battery capacity (lead−acid)	17 Ah ~ 400 Ah				38 Ah ~ 800 Ah
Max. efficiency	⩾ 98%				
Max. PV input voltage	F1224 (12 V: 0 ~ 30 V; 24 V: 0 ~ 60 V); F2448 (24 V: 0 ~ 48 V; 48 V: 0 ~ 96 V)				
Optimum operating voltage of PV (Vmp)	12 V: 15 ~ 22 V; 24 V: 29 ~ 38 V; 48 V: 58 ~ 72 V				
Equalizing charge voltage	12 V: 14.6 V ±1 %; 24 V: 29.2 V ±1 %; 48 V: 58.4 V ±1 %				
Floating charge voltage	12 V: 14.4 V ±1 %; 24 V: 28.8 V ±1 %; 48 V: 57.6 V ±1 %				
Overcharge protections	12 V: 14.7 V ±1 %; 24 V: 29.4 V ±1 %; 48 V: 58.8 V ±1 %				
Charging fold−back voltage	12 V: 13.2 V ±1 %; 24 V: 26.4 V ±1 %; 48 V: 52.8 V ±1 %				
Undervoltage alarm	12 V: 11.2 V ±1 %; 24 V: 22.4 V ±1 %; 48 V: 44.8 V ±1 %				
Overdischarge protections	12 V: 10.8 V ±0 .3 V; 24 V: 21.6 V ±0 .3 V; 48 V: 43.2 V ±0 .4 V				
Overdischarge restoring start voltage	12 V: 13.2 V ±0 .3 V; 24 V: 26.4 V ±0 .3 V; 48 V: 52.8 V ±0 .4 V				
Overload / short circuit protections	110% for 255 s; 125% for 60 s; 150% for 10 s / Auto shutdown if short circuit				
PV reverse polarity protection	Available				
Communications (optional)	RS232 / dry contacts				
Operating temperature	−20℃ ~ +45℃				
Storage temperature	−25℃ ~ +85℃				
Max. altitude	1000 m at rated power (derating 1% for each additional 100 m); Max. 4000 m				
Relative humidity	0 ~ 95% (non−condensing)				
Storage humidity	⩽ 85%				
Installation	Vertical wall mounting				
Dimensions (W × D × H) (mm)	136 × 100 × 35				164 × 168 × 55 (F1224 – 10 / 20 / 30 M & F2448 – 10 / 20 M) 164 × 168 × 100 (F1224 – 40 / 50 / 60 M & F2448 – 30 / 40 / 50 / 60 M)
Packaged dimensions (W × D × H) (mm)	145 × 110 × 45				215 × 208 × 145
Net weight (kg)	0.23				0.85 (F1224 – 10 / 20 / 30 M & F2448 – 10 / 20 M) 2.05 (F1224 – 40 / 50 / 60 M & F2448 – 30 / 40 / 50 / 60 M)
Gross weight (kg)	0.28				1.05 (F1224 – 10 / 20 / 30 M & F2448 – 10 / 20 M) 2.25 (F1224 – 40 / 50 / 60 M & F2448 – 30 / 40 / 50 / 60 M)

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Distribution Box

It includes PV input, battery input, AC input, AC output breakers, and also manual bypass for AC mode to avoid load cut off during maintenance.
It can help you to do the inverter central power management easily.

ATS

ATS can be connected two ways input (Generator and Utility), and output connected to Inverter’s AC input. When battery voltage is low, inverter can send signal to ATS, and ATS will choose utility as first priority, if utility is not available, ATS will send start signal to Generator. ATS can be connected in 10 ways inverters’ signals to start Generator

Wireless Monitor Router

ZigBee

Combiner Box

Technical Data

MODEL	PVCB-6L	PVCB-12L	PVCB-18L
Max DC. voltage	400 Vdc		
Number of inputs	6	12	18
Rated current of each fuse (replaceable)	10 A / 12 A / 15 A		
Max. output current	63 A	100 A	125 A
Input terminal (mm)	Φ4 – 6.8		
Output terminal (mm)	Φ14 – 18		
Protection degree	IP65		
Operating temperature	–25 ~ +60℃		
Relative humidity	0 ~ 99%		
Dimension (W × D × H) (mm)	404 × 136.5 × 365		
Net weight (kg)	7.5	7.7	8.0
DC circuit breaker	Yes		
Anti–lightning class	C–Class		

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