SYNERGISTEC

CONSOLIDATING VALUE & PERFORMANCE

CATALOGUE 2023





Our Footprint in South Africa



Synergistec, has its Head Office in Kwazulu-Natal and a warehousing in Johannesburg & Kwazulu-Natal with more than10000m2.

Synergistec is a leading Distributor and importer of Solar products.

INVERTERS OFF GRID

All-in-one solar charger inverter

HF2420S60-100/HF2430S60-100



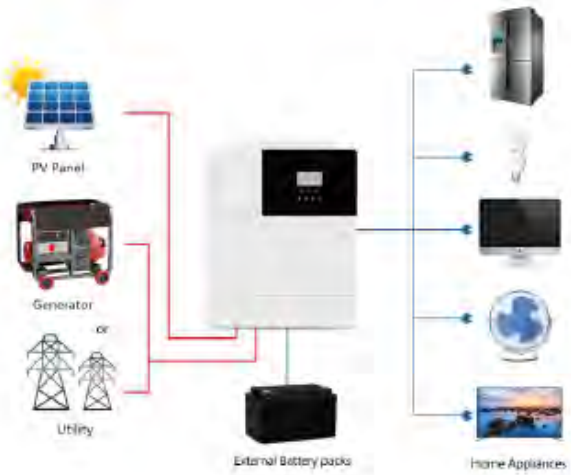
Product overview

HF series is a new all-in-one hybrid solar charge inverter, which integrates solar energy storage &means charging energy storage and AC sine wave output. Thanks to DSP control and advanced controlalgorithm, it has high response speed, high reliability and high industrial standard.

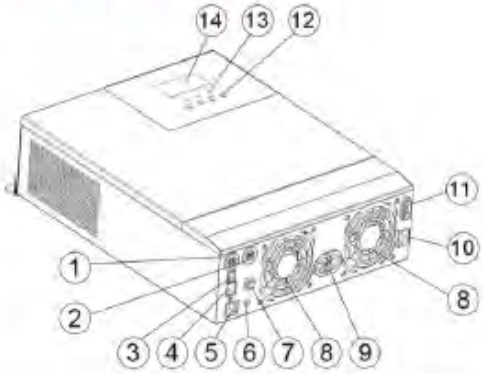
Performance characteristics

- Full digital voltage and current double closed loop control, advanced SPWM technology, output of pure sine wave.
- Two output modes: mains bypass and inverter output; uninterrupted power supply.
- Available in 4 charging modes: Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging.
- Advanced MPPT technology with an efficiency of 99.9%.
- With the charging requirement (voltage, current, mode) settings, and suitable for various types of energy storage batteries.
- ON/OFF rocker switch for AC output control.
- Power saving mode available to reduce no-load loss.
- Intelligent variable speed fan to efficiently dissipate heat and extend system life.
- Lithium battery activation design, allowing access of lead-acid battery and lithium battery.
- 360° all-round protection with a number of protection functions. Such as overload, short circuit and over current.
- Supply of a variety of user-friendly communication modules, such as RS485(GPRS, WiFi, Bluetooth), CAN, USB etc., and suitable for computer, mobile phones, Internet monitoring as well as remote operations.
- Lithium battey can be activated by both mains and PV.

Product connection diagram



Appearance



①	AC input port	⑧	Cooling fan
②	AC output port	⑨	Battery port
③	USB communication port	⑩	ON/OFF rocker switch
④	RS485/CAN communication port	⑪	PV port
⑤	Dry node port	⑫	Touch button
⑥	Grounding screw hole	⑬	LED Indicator
⑦	AC input Overload protector	⑭	LCD screen

Technical parameters >>>

Models	HF2420S60-100	HF2430S60-100
AC mode		
Rated input voltage	220/230Vac	
Input voltage range	(170Vac~280Vac) ±2% ; (90Vac-280Vac)±2%	
Frequency	50Hz/ 60Hz (Auto detection)	
Frequency Range	47±0.3Hz ~ 55±0.3Hz (50Hz)/57±0.3Hz ~ 65±0.3Hz (60Hz);	
Overload/short circuit protection	Circuit breaker	
Efficiency	>95%	
Conversion time (bypass and inverter)	10ms (typical)	
AC reverse protection	Available	
Maximum bypass overload current	30A	
Inverter mode		
Output voltage waveform	Pure sine wave	
Rated output power (VA)	2000	3000
Rated output power (W)	2000	3000
Power factor	1	
Rated output voltage (Vac)	230Vac	
Output voltage error	±5%	
Output frequency range (Hz)	50Hz ± 0.3Hz/60Hz ± 0.3Hz	
Efficiency	>92%	
Overload protection	(102% < load <125%) ±10%: report error and turn off the output after5 minutes; (125% < load < 150%) ± 10%: report error and turn off the output after 10 seconds; Load >150% ±10%: report error and turn offthe output after 5 seconds;	
Peak power	4000	6000
Loaded motor capability	1HP	2HP
Output short circuit protection	Circuit breaker	
Bypass breaker specifications	30A	
Rated battery input voltage	24V (Minimum starting voltage 22V)	
Battery voltage range	20.0Vdc~33Vdc ± 0.6Vdc (Undervoltage alarm/shutdown voltage/overvoltage alarm /overvoltage recovery... settable on LCD screen)	
Power saving mode	Load ≤25W	
AC charging		
Battery type	Lead acid or lithium battery	
Maximum charge current	60A	80A
Charge current error	± 5Adc	
Charge voltage range	18.0Vdc~33Vdc	
Short circuit protection	Circuit breaker and blown fuse	
Circuit breaker specifications	30A	
Overcharge protection	Alarm and turn off charging after 1 minute	
PV charging		
Maximum PV open circuit voltage	100Vdc	
PV operating voltage range	30-100Vdc	
MPPT voltage range	30-95Vdc	
Battery voltage range	18-33Vdc	
Maximum output power	1400W	
PV charging current range (can be set)	0-60A	
Charging short circuit protection	Blown fuse	
Wiring protection	Reverse polarity protection	
Certified specifications		
Certification	CE(IEC/EN62109-1,-2)、ROHS2.0	
EMC certification level	EN61000	
Operating temperature range	-15°C to 55°C	
Storage temperature range	-25°C ~ 60°C	
Humidity range	5% to 95% (Conformal coating protection)	
Noise	≤60dB	
Heat dissipation	Forced air cooling, variable speed of fan	
Communication interface	USB/RS485(WiFi/GPRS)/Dry node control	
Size (L*W*D)	378mm*280mm*103mm	
Weight (kg)	6.2	

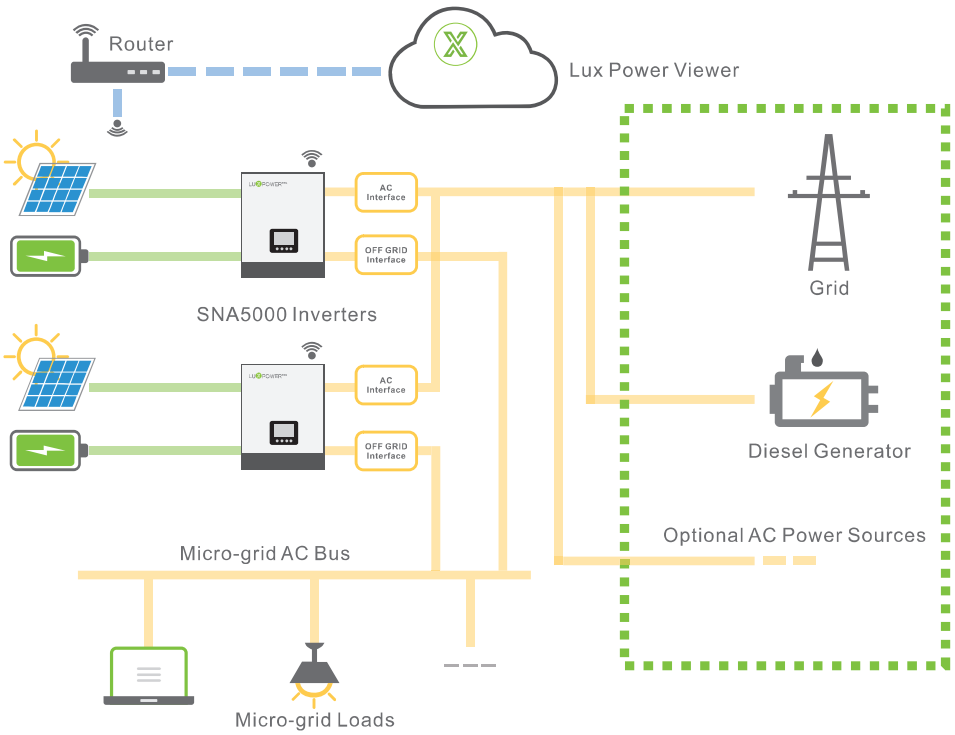
OFF-GRID INVERTER

SONAR 3K/4K/5K
SONAR 3K/4K/5K WPV

- Support Li-ion battery, advanced battery management integrated for Lead-acid battery
- Advanced paralleling technical to support 9 units paralleling
- 2 MPPT charger controllers integrated with HV and LV MPPT models
- WIFI/GPRS remote monitoring, setting and upgrade
- Local monitoring, setting, upgrade supported
- Flexible working modes with settable charge and load power supply priority
- Support solar and AC take the load jointly, working as hybrid
- Support mirco grid system with seperate generator input terminal, and can remote control generator



Solution



Off grid system is a good solution for the area where is no electricity, shortcomings or with unstable power

Advantage of photovoltaic power:

- economic
- clean
- environmentally friendly
- noise-free

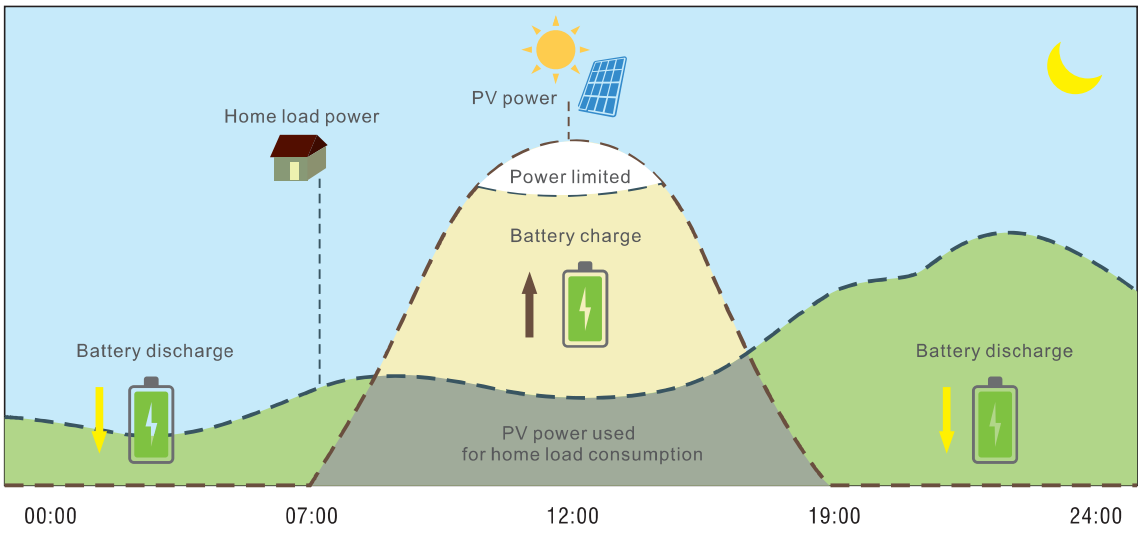
Can partially or completely replace diesel generator. System Capacity: 3-50kW

Working Modes

SNA5k serial off grid inverters can support the system to work as a back-up power or a replacement of diesel generator. Since the inverter support paralleling function, the capacity of system can range from 3kW to 50kW. The inverter support several working modes.

Pure off-grid working mode: working as traditional off grid inverters, can set output to utility first , battery first or solar first.

Hybrid working mode: working as a hybrid, support solar and utility jointly take the load, can set to self consumption mode or charge priority mode.



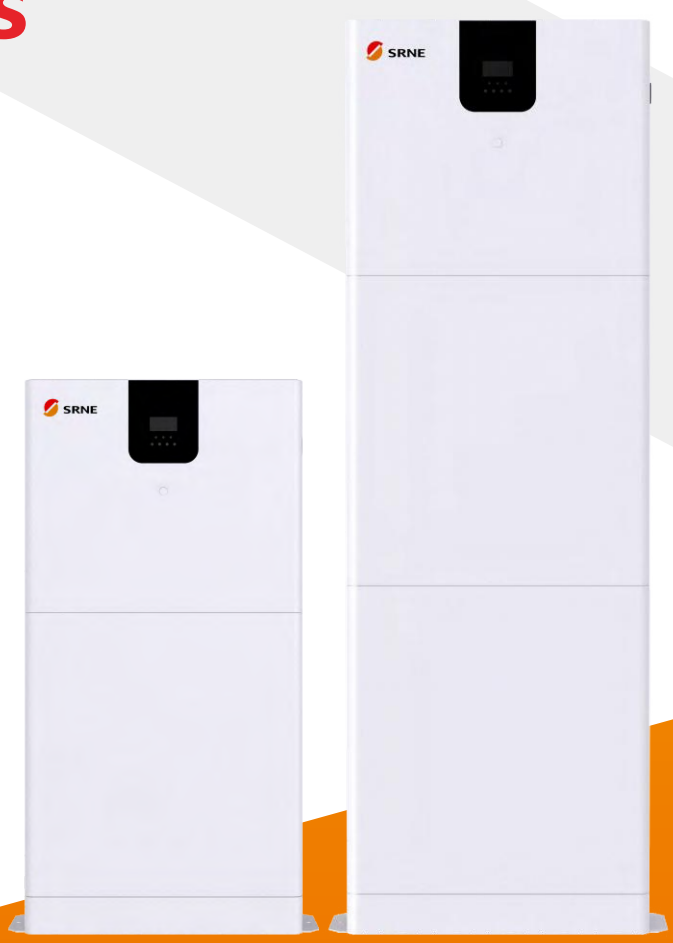
Output Data	SNA 3000 WPV	SNA 4000 WPV	SNA 5000 WPV
Rated power	3000W/3000VA	4000W/4000VA	5000W/5000VA
Parallel capacity	YES	YES	YES
Normal output voltage	230/240,Split phase 220/110 Vac *	230/240,Split phase 220/110 Vac *	230/240,Split phase 220/110 Vac *
Normal output frequency	50/60Hz	50/60Hz	50/60Hz
Surge power	6000VA	8000VA	10000VA
Switch time	10ms	10ms	10ms
Wavefrom	Pure sine wave	Pure sine wave	Pure sine wave
Battery Data			
Battery Type	Lithium/Lead-Acid	Lithium/Lead-Acid	Lithium/Lead-Acid
Normal Voltage	51.2V/48V	51.2V/48V	51.2V/48V
Max. Charge Voltage	59V	59V	59V
Solar Charger Data			
Max. Recommended PV Power	6000W	6000W	6000W
MPPT Tracker	2	2	2
Max. PV Open Circuit Voltage	480Vdc	480Vdc	480Vdc
MPPT Voltage Range	100-385Vdc	100-385Vdc	100-385Vdc
Max. Solar Charge Current	100A	100A	100A
Max. MPPT Efficiency	>98%	>98%	>98%
Parallel MPPT Charger	YES	YES	YES
AC Charger Data			
Normal Voltage	230Vac	230Vac	230Vac
AC Voltage Range	110-280Vac	110-280Vac	110-280Vac
Max. Charge Current	60A	60A	60A
Frequency Range	50/60Hz(Auto Sensing)	50/60Hz(Auto Sensing)	50/60Hz(Auto Sensing)
General Data			
Dimensions(W/H/D)	504x330x135mm	504x330x135mm	504x330x135mm
Weight	14Kg	14Kg	14Kg
Protection Degree	IP 20	IP 20	IP 20
Relative Humidity		5%~95% Relative Humidity(Non-condensing)	
Operating Temperature	0~50℃	0~50℃	0~50℃
Storage Temperature	-15℃~60℃	-15℃~60℃	-15℃~60℃
Interfaces			
Display	LCD+LED	LCD+LED	LCD+LED
Lithium Battery Communication	CAN/RS485	CAN/RS485	CAN/RS485
RS485/Dry Connector	YES/YES	YES/YES	YES/YES
Wifi/GPRS	YES/YES	YES/YES	YES/YES
Warranty	2years	2years	2years

* For split phase version

Vertical Energy Storage System

SR-EOV24 Series

EOV24-5.0S-S1 EOV24-10.0S-S1
EOV24-5.0U-S1 EOV24-10.0U-S1



Long life and safety
Vertical industry integration ensures more than 5000 cycles with 80% DoD.

Easy to install and use
Integrated inverter design, easy to use and quick to install. Small size, minimizing installation time and cost Compact and stylish design suitable for your sweet home environment.

Multiple working modes
The inverter has a variety of working modes. Whether it is used for main power supply in the area without electricity or backup power supply in the area with unstable power to deal with sudden power failure, the system can respond flexibly.

Fast and flexible charging
A variety of charging methods, which can be charged with photovoltaic or commercial power, or both at the same time

Scalability
You can use 4 batteries in parallel at the same time, and can provide a maximum of 20kwh for your use.

Application scenario >>>





Product parameters

	SR-EOV24-5.0S-S1	SR-EOV24-10.0S-S1
BATTERY TECHNICAL SPECIFICATION		
Battery model	SR-EOV24-5.0A-E1	
Number of batteries	1	2
Battery Energy	5.12kWh	10.24kWh
Battery Capacity	200AH	400AH
Weight	100kg	170kg
Dimension L× D× H	1190x600x184mm	1800x600x184mm
Battery Type	LiFePO4	
Battery Rated Voltage	25.6V	
Battery Working Voltage Range	22.4 ~ 28.8V	
Maximum Charging Current	150A	
Maximum Discharging Current	150A	
DOD	80%	
Designed Life-span	5000	
INVERTER TECHNICAL SPECIFICATION		
INVERTER MODEL	SR-EOV24-3.5S-C1	
PV CHARGE		
Solar Charge Type	MPPT	
Maximum Output Power	4000W	
PV Charging Current Range	0～80A	
PV Operating Voltage Range	120～500V	
MPPT Voltage Range	120～450V	
AC CHARGE		
Maximum Charge Power	2240W	
AC Charging Current Range	0～80A	
Rated Input Voltage	220/230Vac	
Input Voltage Range	90～280Vac	
AC OUTPUT		
Rated Output Power	3500W	
Maximum Output Current	30A	
Frequency	50Hz	
Overload Current	35A	
BATTERY INVERTER OUTPUT		
Rated Output Power	3500W	
Maximum Peak Power	6000VA	
Power Factor	1	
Rated Output Voltage (Vac)	230Vac	
Frequency	50Hz	
Auto Switch Period	< 15ms	
THD	< 3%	
GENERAL DATA		
Communication	RS485/CAN/WIFI	
Storage time / temperature	6 months @25℃;3 months @35℃;1 months @45℃;	
Charging temperature range	0～45℃	
Discharging temperature range	-10～45℃	
Operation Humidity	5% ～ 85%	
Nominal Operation Altitude	< 2000m	
Cooling Mode	Force-Air Cooling	
Noise	60dB(A)	
Ingress Protection Rating	IP20	
Recommended Operation Environment	Indoor	
Installation Method	Vertical	
Certification	UN38.3,MSDS,EN55032,EN55024,EN61000-3-2,EN61000-3-3	

INVERTERS HYBRID

Hybrid Inverter

SUN-**3.6/5/8**K-SG03LP1-EU





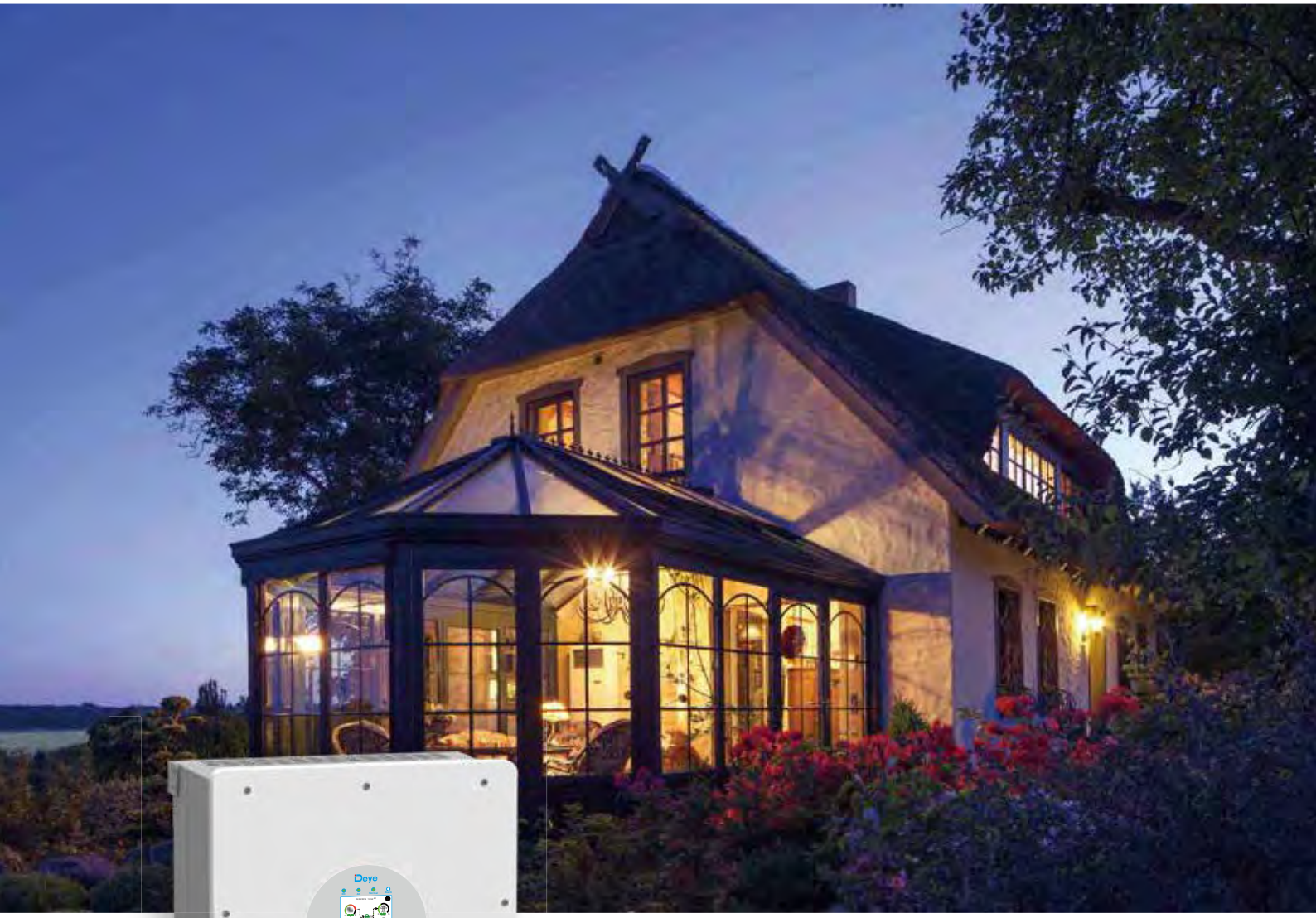
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Technical Data

Model	SUN-3.6K -SG03/05LP1-EU	SUN-5K -SG03/05LP1-EU	SUN-8K -SG03/05LP1-EU
Battery Input Data			
Battery Type	Lead-acid or Li-Ion		
Battery Voltage Range (V)			40~60
Max. Charging Current (A)	90	120	190
Max. Discharging Current (A)	90	120	190
External Temperature Sensor	Yes		
Charging Curve	3 Stages / Equalization		
Charging Strategy for Li-Ion Battery	Self-adaption to BMS		
PV String Input Data			
Max. DC Input Power (W)	4680	6500	10400
Rated PV Input Voltage (V)	370 (125~500)		
Start-up Voltage (V)	125		
MPPT Voltage Range (V)	150-425		
Full Load DC Voltage Range (V)	300-425		
PV Input Current (A)	13+13		
Max. PV ISC (A)	17+17		22+22
Number of MPPT / Strings per MPPT	2/1+1		2+2
AC Output Data			
Rated AC Output and UPS Power (W)	3600	5000	8000
Max. AC Output Power (W)	3690	5500	8800
AC Output Rated Current (A)	16.4	22.7	33.4/35
Max. AC Current (A)	18	25	36.7/38.5
Max. Continuous AC Passthrough (A)	35		50
Peak Power (off grid)	2 time of rated power, 10 S		
Power Factor	0.8 leading to 0.8 lagging		
Output Frequency and Voltage	50/60Hz; L/N/PE 220/230Vac (single phase)		
Grid Type	Single Phase		
DC injection current (mA)	THD<3% (Linear load<1.5%)		
Efficiency			
Max. Efficiency	97.60%		
Euro Efficiency	97.00%		
MPPT Efficiency	99.90%		
Protection			
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Surge protection		
Certifications and Standards			
Grid Regulation	CEI 0-21, VDE-AR-N 4105, NRS 097, IEC 62116, IEC 61727, G99, G98, VDE 0126-1-1, RD 1699, C10-11		
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2		
General Data			
Operating Temperature Range (℃)	-45~60℃, >45℃ derating		
Cooling	Natural cooling		Fan cooling
Noise (dB)	<30 dB		
Communication with BMS	RS485; CAN		
Weight (kg)	20.5		32
Size (mm)	330W x 580H x232D		670W x 420H x233D
Protection Degree	IP65		
Installation Style	Wall-mounted		
Warranty	5 years		

Hybrid Inverter

SUN- 12 / 14 / 16 K-SG01LP1-EU





- Colorful touch LCD, IP65 protection degree
- DC couple and AC couple to retrofit existing solar system
- Max. 16pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- Max. charging/discharging current of 290A
- 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

Deye

Stock Code: 605117.SH

Technical Data

Model	SUN-12K-SG01LP1-EU	SUN-14K-SG01LP1-EU	SUN-16K-SG01LP1-EU
Battery Data			
Battery Type	Lead-acid or Li-Ion		
Battery Voltage Range (V)	40~60		
Max. Charging Current (A)	220	250	290
Max. Discharging Current (A)	220	250	290
External Temperature Sensor	Yes		
Charging Curve	3 Stages / Equalization		
Charging Strategy for Li-Ion Battery	Self-adaption to BMS		
PV String Input Data			
Max. DC Input Power (W)	15600	18200	20800
Max. DC Input Voltage (V)	500		
Start-up Voltage (V)	125		
MPPT Range (V)	150-425		
Rated DC Input Voltage (V)	370		
PV Input Current (A)	26+26+26		
Max. PV I_{SC} (A)	44+44+44		
No.of MPP Trackers	3		
No.of Strings per MPP Tracker	2		
AC Output Data			
Rated AC OutputPower (W)	12000	14000	16000
AC Output Rated Current (A)	52.2	60.9	69.6
Max. Continuous AC Passthrough (A)	100		
Peak Power (off grid)	2 time of rated power, 5 S		
Power Factor	0.8 leading to 0.8 lagging		
Output Frequency and Voltage	50/60Hz; L/N/PE 220/230Vac (single phase)		
Grid Type	Single Phase		
DC injection current (mA)	<0.5%1n		
Backup Data			
Backup Power (W)	10000	12000	14000
Backup Rated Current (A)	43.5	52.2	60.9
Backup UPS	6ms Automatic switchover time		
Efficiency			
Max. Efficiency	97.60%		
Euro Efficiency	96.50%		
MPPT Efficiency	99.90%		
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection		
Output Over Voltage Protection	DC Type II/AC Type III		
Certifications and Standards			
Grid Regulation	CEI 0-21, VDE-AR-N 4105, NRS 097, IEC 62116, IEC 61727, G99, G98, VDE 0126-1-1, RD 1699, C10-11		
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2		
General Data			
Operating Temperature Range (℃)	-40~60℃, >45℃ derating		
Cooling	Smart cooling		
Noise (dB)	<30 dB		
Communication with BMS	RS485; CAN		
Weight (kg)	48.5		
Size (mm)	464W×798.4H×300D		
Protection Degree	IP65		
Installation Style	Wall-mounted		
Warranty	5 years		
Features			
Max. Number of Parallel (PCS)	16		

LUXPOWER TEK

LXP3-6K

HYBRID INVERTER

- Intelligent working modes
- Stronger UPS
- Easy to use with battery
- IP65, indoor & outdoor use
- Advanced Parallel, up to 60kW
- Plug & Play, seamless switching under 10ms



SPECIFICATION

Solar	LXP5K	LXP6K
Max. DC Input Power	8000W	8000W
Nominal DC Input Voltage	360V.d.c	360V.d.c
DC Input Voltage Range	100 - 550V.d.c	100 - 550V.d.c
MPPT Voltage Range	120 - 500V.d.c	120 - 500V.d.c
Start-up Voltage	140V.d.c	140V.d.c
MPPT Number	2	2
Max. DC Input Current	12.5A/12.5A	12.5A/12.5A
Battery		
Compatible Battery Type	Lithium-ion/Lead-Acid	Lithium-ion/Lead-Acid
Nominal Battery Voltage	48V.d.c	48V.d.c
Battery Voltage Range	40 - 60V.d.c	40 - 60V.d.c
Max. Charge/Discharge Current	80A/80A	80A/80A
Max. Charge/Discharge Power	4000W/4000W	4000W/4000W
Charging Curve	3 stages	3 stages
Max. Charge Voltage	59V	59V
Capacity of Battery	2-20kWh	2-20kWh
Grid		
Nominal AC Output Power	4600W/5000W	6000W
Max. AC Output Power	4600VA/5000VA	6000VA
Max. AC Output Current	25A	26A
Nominal AC Voltage	230V.a.c	230V.a.c
AC Voltage Range	180 - 270V.a.c	180 - 270V.a.c
Nominal AC Frequency	50Hz / 60Hz	50Hz / 60Hz
AC Frequency Range	45 - 55Hz / 55 - 65Hz	45 - 55Hz / 55 - 65Hz
Power Factor	Adjustable 0.8 overexcited to 0.8 underexcited	Adjustable 0.8 overexcited to 0.8 underexcited
THDI	<3%	<3%
UPS		
UPS Max. Output Power without Solar	4000W	4000W
UPS Max. Output Power with Solar	5000W	6000W
UPS Nominal Output Voltage	230V.a.c	230V.a.c
UPS Nominal Output Frequency	50Hz / 60Hz	50Hz / 60Hz
UPS Nominal Output Current	17.4A	17.4A
Peak Power Without Solar	4500W, 30s	4500W, 30s
THDV	<5%	<5%
Switching Time	Typical 0.01s	<0.01s
Efficiency		
Europe Efficiency	97.5%	97.5%
Max. Efficiency	97.9%	97.9%
Battery Charge/Discharge Efficiency	94.5%	94.5%
Protection		
Reverse Polarity Protection	Yes	Yes
Over Current/Voltage Protection	Yes	Yes
Anti-islanding Protection	Yes	Yes
AC Short-ciruit Protection	Yes	Yes
Leakage Current Protection	Yes	Yes
Ground Fault Monitoring	Yes	Yes
Grid Monitoring	Yes	Yes
Ingress Protect Degree	IP65 / NEMA4X	IP65 / NEMA4X
DC Switch	Yes	Yes
General		
Dimensions (W/H/D)	455 / 476 (565) / 181	455 / 476 (565) / 181
Weight	20 kg	20 kg
Topology	Tranformerless (solar), HF (Battery)	Tranformerless (solar), HF (Battery)
Cooling Concept	Natural Convection	Natural Convection
Relatively Humidity	0-100%	0-100%
Operating Temperature Range	-25 - 60	-25 - 60
Altitude	<2000m	<2000m
Noise Emission	<25dB	<25dB
Standby Consumption	<5W	<5W
Display & Communication Interfaces	LCD, RS485, Wi-Fi, Ethernet	LCD, RS485, Wi-Fi, Ethernet

Hybrid Inverter

LXP-LB-US 12kW
LXP-LB-EU 12kW

- 12kW EPS Output
- 10 units Paralleling
- AC Coupling Function
- 3 MPPT Input for max input 18kW
- Separated Generator Input
- 200A AC Passthrough Current
- PV Module Monitoring
- Peak Shaving Function
- Color LCD, Touch Screen







Specification

Your Reliable Energy Solution Partner

Battery Parameters	LXP-LB 12K
Compatible Battery Type	Lead-acid/Lithium
Nominal Battery Voltage	48V
Battery Voltage Range	40V~60V
Maximun Charging/Discharging Current	250A/250A
Maximun Charging/Discharging Power	12000W
Input DC(PV Side)	
Max. DC Input Power for Single MPPT	12000W/7000W/7000W
Max. PV Input Power	18000W
DC Input Voltage Range	100V~600V
Nominal DC Input Voltage	360V
Full Power MPPT Voltage Range	230~500V
Max. DC Input Current	25A/15A/15A
MPPT Number/(Strings per MPPT)	3(2/1/1)
Output/Inout AC(Grid)	
Nominal Power	12000W
Nominal AC Voltage	240V 208V
Operating Voltage Range	180V-270V
Max. Continuous AC Current	50A@240V 50A@208V
Nominal AC Frequency	50Hz/60Hz
UPS Output-with Battery	
UPS Max. Output Power	12000W
UPS Nominal Output Voltage	240V 208V 120V/240V 120V/208V
UPS Nominal Output Frequency	50Hz/60Hz
UPS Nominal Output Current	50A@240V 57.7A@208V
Peak Power	14kW 10minutes / 16kW 5minutes / 20kW 500ms
Switching Time	<20ms
Efficiency	
MPPT Efficiency	99.9%
Max. Efficiency	97.5%
EU Efficiency	96.5%
Battery Charging Efficiency	95%
Battery Discharging Efficiency	94.5%
Protection	
Anti-islanding Protection	YES
DC Switch	YES
Ingress Protect Degree	IP65
SPD Protection	YES
AFCI	OPT
RSD	OPT
General Data	
Dimension(mm)	670*490*265
Weight	42kg
Display	Color LCD
Topology	Transformer-less
Ambient Temperature Range	-25~60°C
Cooling	FAN
Communication	RS485/Wi-Fi/CAN
Standard & Certification	
EMC	IEEE1547 FCC SDOC
Safety Standard	UL 1741
Grid Standdards	IEEE1547

INVERTERS HYBRID
THREE PHASE

Three Phase Hybrid Inverter

SUN- 5 / 6 / 8 / 10 / 12 K-SG04LP3-EU





- 100% — 100% unbalanced output, each phase
  Max. output up to 50% rated power
- 48 — 48V low voltage battery, transformer isolation design
- 6 — 6 time periods for battery charging/discharging
- 240 — Max. charging/discharging current of 240A
- 16 — Frequency droop control, Max.16pcs parallel
- DC couple and AC couple to retrofit existing solar system
- Support storing energy from diesel generator

Deye

Clean Power For You

Model	SUN-5K-SG04LP3-EU	SUN-6K-SG04LP3-EU	SUN-8K-SG04LP3-EU	SUN-10K-SG04LP3-EU	SUN-12K-SG04LP3-EU
Battery Input Data					
Battery Type	Lead-acid or Li-Ion				
Battery Voltage Range (V)	40~60				
Max. Charging Current (A)	120	150	190	210	240
Max. Discharging Current (A)	120	150	190	210	240
Charging Curve	3 Stages / Equalization				
External Temperature Sensor	Yes				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
PV String Input Data					
Max. DC Input Power (W)	6500	7800	10400	13000	15600
Rated PV Input Voltage (V)	550				
Max. PV Input Voltage (V)	800				
Min. PV Input Voltage (V)	150				
Start-up Voltage (V)	160				
MPPT Range (V)	200-650				
Full Load DC Voltage Range (V)	350-650				
PV Input Current (A)	13+13			34+17	
Max. PV ISC (A)	17+17			34+17	
Number of MPPT / Strings per MPPT	2/1+1			2/2+1	
AC Output Data					
Rated AC Output and UPS Power (W)	5000	6000	8000	10000	12000
Max. AC Output Power (W)	5500	6600	8800	11000	13200
Peak Power (off grid)	2 times of rated power, 10 S				
AC Output Rated Current (A)	7.6/7.3	9.1/8.7	12.1/11.6	15.2/14.5	18.2/17.4
Max. AC Current (A)	11.4/10.9	13.6/13	18.2/17.4	22.7/21.7	27.3/26.1
Max. Continuous AC Passthrough (A)	50				
Output Frequency and Voltage	50/60Hz; 220/380, 230/400Vac				
Grid Type	Three Phase				
Current Harmonic Distortion	THD<3% (Linear load<1.5%)				
Efficiency					
Max. Efficiency	97.60%				
Euro Efficiency	97.00%				
MPPT Efficiency	99.90%				
Protection					
PV Input Lightning Protection	Integrated				
Anti-islanding Protection	Integrated				
PV String Input Reverse Polarity Protection	Integrated				
Insulation Resistor Detection	Integrated				
Residual Current Monitoring Unit	Integrated				
Output Over Current Protection	Integrated				
Output Shorted Protection	Integrated				
Output Over Voltage Protection	Integrated				
Surge protection	DC Type II / AC Type II				
Certifications and Standards					
Grid Regulation	EN50549, AS4777.2, VDE0126, IEC61727, VDEN4105, G99, NBT32004, CEI0-21, NRS097, NBR16149/16150, RD1699				
Safety EMC / Standard	IEC62109-1/-2, EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4				
General Data					
Operating Temperature Range (℃)	-25~60℃, >45℃ Derating				
Cooling	Smart cooling				
Noise (dB)	<45 dB				
Communication with BMS	RS485; CAN				
Weight (kg)	34.5				
Size (mm)	422W×702H×281D				
Protection Degree	IP65				
Installation Style	Wall-mounted				
Warranty	5 years				

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Three Phase Hybrid Inverter

SUN-5/6/8/10/12/15/20/25K-SG01HP3-EU-AM2





- 100% unbalanced output, each phase
- AC couple to retrofit existing solar system
- *Max. 10 pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- Max. charging/discharging current of 50A
- High voltage battery, higher efficiency
- 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

Deye

Stock Code: 605117.SH

Technical Data

Model	SUN-5K-SG01 HP3-EU-AM2	SUN-6K-SG01 HP3-EU-AM2	SUN-8K-SG01 HP3-EU-AM2	SUN-10K-SG01 HP3-EU-AM2	SUN-12K-SG01 HP3-EU-AM2	SUN-15K-SG01 HP3-EU-AM2	SUN-20K-SG01 HP3-EU-AM2	SUN-25K-SG01 HP3-EU-AM2
Battery Input Data								
Battery Type	Lithium-ion							
Battery Voltage Range (V)	160~700							
Max. Charging Current (A)	37							50
Max. Discharging Current (A)	37							50
Number of Battery Input	1							
Charging Strategy for Li-Ion Battery	Self-adaption to BMS							
PV String Input Data								
Max. DC Input Power (W)	6500	7800	10400	13000	15600	19500	26000	32500
Max. DC Input Voltage (V)	1000							
Start-up Voltage (V)	180							
MPPT Range (V)	150-850							
Full Load DC Voltage Range (V)	195-850	195-850	260-850	325-850	340-850	420-850	500-850	625-850
Rated DC Input Voltage (V)	600							
PV Input Current (A)	20+20				26+20		26+26	
Max. PV I_{SC}(A)	30+30				39+30		39+39	
No.of MPP Trackers	2							
No.of Strings per MPP Tracker	1+1				2+1		2+2	
AC Output Data								
Rated AC Output and UPS Power (W)	5000	6000	8000	10000	12000	15000	20000	25000
Max. AC Output Power (W)	5500	6600	8800	11000	13200	16500	22000	26000
AC Output Rated Current (A)	7.6/7.3	9.1/8.7	12.2/11.6	15.2/14.5	18.2/17.4	22.8/21.8	30.4/29	37.9/36.3
Max. AC Output Rated Current (A)	8.4/8	10/9.6	13.4/12.8	16.7/16	20/19.2	25/24	33.4/31.9	39.4/37.7
Max. Three-phase Unbalanced Output Current(A)	13	13	18	22	25	30	35	40
Max. Continuous AC Passthrough (A)	40				80			
Peak Power (off grid)	1.5 time of rated power, 10 S							
Generator Input/Smart Load /AC Couple Current (A)	7.6/40/7.6	9.1/40/9.1	12.2/40/12.2	15.2/40/15.2	18.2/80/18.2	22.8/80/22.8	30.4/80/30.4	37.9/80/37.9
Power Factor	0.8 leading to 0.8 lagging							
Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac							
Grid Type	Three Phase							
Total Harmonic Distortion (THD)	<3% (of nominal power)							
DC Current Injection	<0.5% In							
Efficiency								
Max. Efficiency	97.60%							
Euro Efficiency	97.00%							
MPPT Efficiency	99.90%							
Protection								
Integrated	Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge Protection							
Over Voltage Category	DC Type II/AC Type III							
Certifications and Standards								
Grid Regulation	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150							
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2							
General Data								
Operating Temperature Range (℃)	-40-60°C, >45°C Derating							
Cooling	Smart Cooling							
Noise (dB)	≤55 dB							
Communication with BMS	RS485; CAN							
Weight (kg)	30.5							
Cabinet Size (WxHxD mm)	408×638×237 (Excluding Connectors and Brackets)							
Protection Degree	IP65							
Installation Style	Wall-mounted							
Warranty	5 Years (10 Years Optional)							

*Note: Five units in parallel has realized, ten units in parallel is under testing. Must use the inverters of the same model for parallel connecting.

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Three Phase Hybrid Inverter

SUN-29.9/30/35/40/50 K-SG01HP3-EU-BM3/4





- 100 — 100% unbalanced output, each phase; Max. output up to **50%** rated power
- DC couple and AC couple to retrofit existing solar system
- 10 — *Max. 10pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- 100 — Max. charging/discharging current of 100A
- H — High voltage battery, higher efficiency
- 6 — 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

Deye

Stock Code: 605117.SH

Technical Data

Model	SUN-29.9K-SG01HP3 -EU-BM3	SUN-30K-SG01HP3 -EU-BM3	SUN-35K-SG01HP3 -EU-BM3	SUN-40K-SG01HP3 -EU-BM4	SUN-50K-SG01HP3 -EU-BM4
Battery Input Data					
Battery Type	Lithium-ion				
Battery Voltage Range (V)	160~800				
Max. Charging Current (A)	50+50				
Max. Discharging Current (A)	50+50				
Number of battery input	2				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
PV String Input Data					
Max. DC Input Power (W)	38870	39000	45500	52000	65000
Max. DC Input Voltage (V)	1000				
Start-up Voltage (V)	180				
MPPT Range (V)	150-850				
Full Load DC Voltage Range (V)	360-850	360-850	360-850	360-850	450-850
Rated DC Input Voltage (V)	600				
PV Input Current (A)	36+36+36	36+36+36	36+36+36	36+36+36+36	
Max. PV I_{SC} (A)	55+55+55	55+55+55	55+55+55	55+55+55+55	
No.of MPP Trackers	3			4	
No.of Strings per MPP Tracker	2				
AC Output Data					
Rated AC Output and UPS Power (W)	29900	30000	35000	40000	50000
Max. AC Output Power (W)	29900	33000	38500	44000	55000
AC Output Rated Current (A)	45.4/43.4	45.5/43.5	53.1/50.8	60.7/58	75.8/72.5
Max. AC Output Rated Current (A)	45.4/43.4	50/47.8	58.4/55.8	66.7/63.8	83.4/79.7
Max. Three-phase Unbalanced Output Current	60	60	60	70	83.3
Max. Continuous AC Passthrough (A)	200				
Peak Power (off grid)	1.5 time of rated power, 10 S				
Generator input/Smart load /AC couple current (A)	45.4 / 200 / 45.4	45.5 / 200 / 45.5	53.1 / 200 / 53.1	60.7 / 200 / 60.7	75.8 / 200 / 75.8
Power Factor	0.8 leading to 0.8 lagging				
Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac				
Grid Type	Three Phase				
Total Harmonic Distortion (THD)	<3% (of nominal power)				
DC current injection	<0.5% In				
Efficiency					
Max. Efficiency	97.60%				
Euro Efficiency	97.00%				
MPPT Efficiency	99.90%				
Protection					
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection				
Output Over Voltage Protection	DC Type II/AC Type III				
Certifications and Standards					
Grid Regulation	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150				
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2				
General Data					
Operating Temperature Range (℃)	-40~60℃, >45℃ derating				
Cooling	Smart cooling				
Noise (dB)	≤65 dB				
Communication with BMS	RS485; CAN				
Weight (kg)	75				
Size (mm)	527W×894H×294D				
Protection Degree	IP65				
Installation Style	Wall-mounted				
Warranty	5 years				

*Note: The function of Multiple units work in parallel mode will be avaiable in Q1 2023

LITHIUM BATTERIES
LV

V5.7 - V1

PRODUCT WARRANTY

The **EVO v5.7-v1 Series** lithium-iron battery is covered by a product **warranty of 10 years**[*1]

BATTERY WALL MOUNT BRACKETS

Effortlessly install your battery system with convenience and style. Achieve a sleek and professional installation with ease[*2]

WIFI CONNECTIVITY

Introducing our lithium battery with built-in Wi-Fi hotspot, eliminating the need for specialised cables. Easily connect, configure and optimise your battery system with our BMS software or app

CONVENIENT LCD DISPLAY

Our LCD Display provides State of Charge, voltage, current, charging/ discharging info, temperature, and cell voltages. Stay informed and in control of your battery system at a glance

INTRODUCING OUR AI-POWERED ASSISTANCE

Experience the convenience of 24/7 assistance, revolutionising lithium iron battery technology.

48v | 5.7 kwh | 7.2KW max continues discharge

EVO ENERGY



The Future of Lithium-Iron Batteries

[*1] Warranty based on product registration and being purchased through an authorised Distributor
[*2]Please make sure the wall is strong enough to handle the load of the battery.

10 YEARS WARRANTY

V5.7 - V1

EVO ENERGY

BATTERY	DATA SPECIFICATIONS
Energy Capacity [kWh]	5.760kWh
Usable capacity [kWh]	5.760kWh
Max Continues Discharge Power kWh]	7.2KW | 1.25C Rating
Current Capacity Ah	120Ah
Max & Recommended Charge Current [Ah]	150Ah/80Ah
Max & Recommended Discharge Current [Ah]	150Ah/100Ah
Nominal Voltage	48VDC
Cut off Voltage [VDC]	42.5VDC
Bulk Charge/ Float Charge [VDC]	53.5VDC/52.5VDC
Working Temperature [°C]	-10°C to 55°C
Communication	RS485/ CAN (CAN H4; CAN L5)
Parallel	Up to 15 Units
Storage Temperature Long Term [°C]	-20°C to +35°C (<1 Year, SOC: 20% - 60%)
Certification	UN38.3 and CE approved
Dimension of actual unit/ weight mm/kg.	650L x 475w x 240h / 67.5kg (INCL. BRACKET)
Dimensions boxed [mm/kg]	690L x 510w x 300h / 68kg
Enclosure	Aluminuim, IP21
Accessories Not Included	35mm cable 2m (1 x Red, 1x Black)
Product Warranty*	10 years / 6000 cycles (subject to product registration)

INTRODUCING OUR REVOLUTIONARY 5.7KWH LITHIUM BATTERY

POWER, PERFORMANCE AND UNMATCHED CONVENIENCE

- Experience the future of home backup energy storage with our cutting-edge 5.7kWh lithium battery. Unlike typical 5kWh batteries, ours offers an impressive discharge and charge capability of 1.25C, allowing for a remarkable 7.2kW rate, setting an industry benchmark.
- We understand the importance of reliability, which is why our battery comes with a remarkable 10-year warranty or 6000 cycles, covering both the BMS and cells. While competitors offer limited warranties, we prioritize your peace of mind.
- Designed with both installers and end-users in mind, our battery ensures hassle-free installation and boasts a sleek aesthetic that enhances any space. Its advanced features, including a WiFi hotspot for easy configuration and a user-friendly app with AI assistance, make it truly exceptional.
- Safety is paramount, which is why we utilize lithium iron phosphate technology. Compared to traditional lithium-ion batteries, our lithium iron phosphate battery offers superior safety, stability, and a longer lifespan, ensuring worry-free usage.
- We spare no expense in quality. Our battery utilizes premium cells from industry leaders BYD and CATL, known for supplying top-tier manufacturers with reliable lithium cells for vehicles and home backup systems. The high-quality, waterproof BMS with comprehensive protections (OVP, UVP, DOCP, COC, and OTP) ensures optimal performance and safety at all times.
- Rest assured, our battery has undergone rigorous testing and holds essential certifications, including UN38.3 for transportation and CE approval.
- Choose the future of home backup energy storage. Trust our passion, expertise, and commitment to delivering advanced technology without compromising on quality. Experience the power, longevity, and unparalleled performance of our 5.7kWh lithium battery.

Evo is a global player in the solar energy sector. Products may vary slightly from their pictures: The images of the products in our catalogs are for illustrative purposes only. Although we have made every effort to display the colors and images accurately, we cannot guarantee that a device's display of the colors accurately reflects the colour of the products. Your product may vary slightly from those images.

EVO APOCALYPSE ii

48v

CE Approved







Features

Product Warranty

EVO ii .5 Series lithium-iron battery is covered by a product warranty of 10 years*1

Wall Mount

Simplify Installation, saving you time with sturdy wall ear points for securing the battery*2

Evo is a global player in the solar energy sector. Products may vary slightly from their pictures: The images of the products in our catalogues are for illustrative purposes only. Although we have made every effort to display the colours and images accurately, we cannot guarantee that a device's display of the colours accurately reflects the colour of the products. Your product may vary slightly from those images. *1 warranty based on product registration. *2 please make sure the wall is strong enough to handle the load of the battery

EVO APOCALYPSE II

48v

Battery	Data Specifications
Energy Capacity [Wh]	11520Wh
Recommended Usable capacity [Wh]	11520Wh
Max Continues Discharge Power [Wh]	9600WH
Current Capacity [Ah]	240Ah
Max & Continues Charge Current [Ah]	200Ah (Recommended 100Ah)
Max & Continues Discharge Current [Ah]	200Ah
Nominal Voltage	48VDC
Cut off Voltage [VDC]	42VDC
Bulk Charge/ Float Charge [VDC]	52VDC
Working Temperature [°C]	-10°C to 55°C
Communication	RS485 / CAN (CAN H4; CAN L5)
Parallel	Up to 15 Units
Storage Temperature Long Term [°C]	-20°C to +35°C (<1 Year, SOC: 20% - 60%)
Elevation [meters]	MAX 4000m
Dimension of actual unit/ weight [mm/kg]	800H x 920w x 155d / 126kg
Dimensions boxed [mm/kg]	850L x 950w x 160d / 130kg
Cells	BYD LiFePO4 (Lithium Iron) 15 Cells 3.2V max 400A
Design Life	15-18 Years
Product Warranty*1	10 years/ 6000 cycles (subject to product registration)



CE Approved

UN38.3 PASSED
Transport Safety Certified

EVO

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HINAESS
TOGETHER FOR A BLUE FUTURE



Hi-5

5.12kWh





GET AWAY

FROM LOAD SHEDDING

FEATURES

1C Continuous Power

10 Year Warranty

32 Units Stackable

- 10 year warranty
- Ultra safe LFP material
- Short circuit protection
- Flexible remote upgrade
- Wide range inverter compatibility
- Parallel up to 32 modules
- 1C rate continuous charge/discharge
- Multi protection to avoid over discharge
- Smart BMS management for longer lifespan
- Active balancing charging, low self consumption

Guiyang, China
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www.hinaess.com

Together

For a Blue Future



HINAESS
TOGETHER FOR A BLUE FUTURE

Model	Hi-5
Cell Type	LFP
Rated Power	5.12kWh
Rated Capacity	100Ah
Rated Voltage	51.2V
Charge Voltage	56.5V
Max Charge/Discharge Current	100A
Discharge Peak Current	105A / 15s, 120A / 0.5s
Parallel	Up to 32 units parallelable w/o extra device needed, slave battery drops offline or come back alive does not affect system running
IP Level	IP20
Dimension	481*452.6*165mm
Weight	50Kg
Communication	CAN/RS485
Compatible Inverter	Victron, Luxpower, Deye, Voltronic, SMA Goodwe, Growatt, Sofar, Solark, SRNE, Must
Humidity	5%~85% RH (No condensation)
Work Temperature	-20 °C ~ +55 °C
Storage Temperature	-10 °C ~ +35 °C
Remote Maintenance	Flexible remote upgrade, Original firmware backup to prevent upgrade failure
Warranty *	10 year, 6000 cycles
Certification	CE UN38.3 IEC62619
Protection	Over charge/discharge/current/voltage/temperature protection Short circuit protection, Reverse connection protection Charge balance, Low SOC protection

* @ 25°C, 90% Dod, 0.5C testing condition

HINAESS
TOGETHER FOR A BLUE FUTURE

PowerGem

Load Shedding? Not On Our Watch.

FEATURES

1C Continuous Power

10 Year Warranty

32 Units Stackable

NEAT

10 year warranty
Ultra safe LFP material
Elegant enclosure design
Floor-standing / wall-mounting

HANDY

Quick installation
Remote monitoring
Flexible remote upgrade
Auto-addressing for master / slaves set up

ROBUST

Parallel up to 32 modules
Wide range inverter compatibility
1C rate continuous charge/discharge
Multi protection to avoid over discharge
Smart BMS management for longer lifespan
Active balancing charging, low self consumption



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Together
For a Blue Future

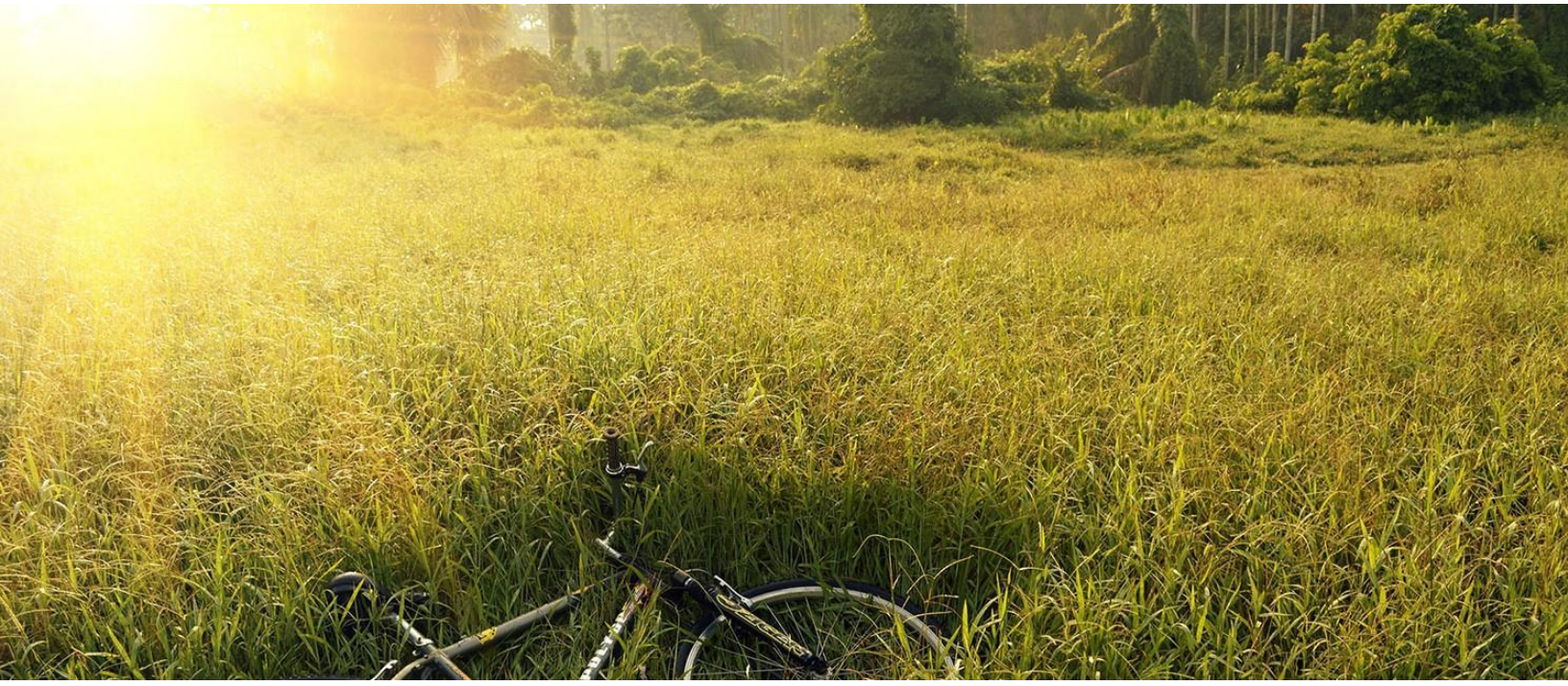


HINAESS
TOGETHER FOR A BLUE FUTURE

Model	PowerGem
Cell Type	LFP
Rated Power	5.12kWh
Rated Capacity	100Ah
Rated Voltage	51.2V
Charge Voltage	56.5V
Max Charge/Discharge Current	100A
Discharge Peak Current	105A / 15s, 120A / 0.5s
Parallel	Up to 32 units parallelable w/o extra device needed, slave battery drops offline or come back alive does not affect system running
IP Level	IP20
Dimension	640*428*166mm
Weight	58Kg
Communication	CAN/RS485
Compatible Inverter	Victron, Luxpower, Deye, Voltronic, SMA Goodwe, Growatt, Sofar, Solark, SRNE, Must
Humidity	5%~85% RH (No condensation)
Work Temperature	-20 ℃ ~ +55 ℃
Storage Temperature	-10 ℃ ~ +35 ℃
Remote Maintenance	Flexible remote upgrade, remote monitoring Original firmware backup to prevent upgrade failure
Warranty *	10 year, 6000 cycles
Certification	CE UN38.3 IEC62619
Protection	Over charge/discharge/current/voltage/temperature protection Short circuit protection, Reverse connection protection Stronger active balance, Low SOC protection

* @ 25℃, 90% Dod, 0.5C testing condition

SE-G5.1 Pro





- **Safer**

Cobalt Free Lithium Iron Phosphate (LFP) Battery: Safety and long Lifespan, high efficiency and high power density.
Intelligent BMS, providing complete protection.

- **Reliable**

Support high discharge power. IP20, natural cooling, wide temperature range: -20℃ to 55℃.

- **Flexible**

Modular design, easy to expand, Max. 64 units in parallel, Max. capacity of 327kWh.
Suited to residential and commercial applications for increasing the self-consumption ratio.

- **Convenient**

Battery module auto networking, easy maintenance, support remotely monitoring and upgrade, support USB drive upgrade the firmware.

- **Eco-Friendly**

Use environmental protection materials, the whole module non-toxic, pollution-free.

Deye

Stock Code: 605117.SH

Model		SE-G5.1 Pro
Main Parameter		
Battery Chemistry		LiFePO4
Capacity (Ah)		100
Scalability		Max. 64 pcs pack (327kWh) in parallel (Max. 32 pcs no external setup)
Nominal Voltage (V)		51.2
Operating Voltage(V)		43.2~57.6
Energy (kWh)		5.12
Usable Energy (kWh) [1]		4.61
Charge/Discharge Current (A)	Recommend [2]	50
	Max. [2]	100
	Peak(2mins,25℃)	150
Other Parameter		
Recommend Depth of Discharge		90%
Dimension (W/H/D, mm)		445*133*430
Weight Approximate(kg)		44
Master LED Indicator		5LED(SOC:20%~SOC100%),3LED (working, alarming, protecting)
IP Rating of Enclosure		IP20
Operating Temperature		Charge:0～55℃ / Discharge:-20℃～55℃
Storage Temperature		0℃～35℃
Humidity		5%~95%
Altitude		≤2000m
Cycle Life		≥6000(25℃±2℃,0.5C/0.5C,70%EOL)
Installation		19-inch standard cabinet, cabinet depth ≥600mm / with rack
Communication Port		CAN2.0, RS485
Warranty Period [3]		10 years
Energy Throughput [3]		16MWh@70%EOL
Certification		UN38.3, UL1973, IEC62619, CE, CEI 0-21

[1] DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

[2] The current is affected by temperature and SOC.

[3] The warranty is due whichever reached first of warranty period or life cycle power.

Introduction

This series lithium iron phosphate battery is one of new energystorage products developed and produced by Deye, it can be used to support reliable power for various types of equipment and systems.

This series is especially suitable for application scene of high power,limited installation space, restricted load-bearing and long cycle life.

This series battery has built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. What's more, BMS can balance cells charging to extend cycle life.

Multiple batteries can connect in parallel for larger capacity and longer power supporting duration requirements.

Battery Pack Accessories

Model	Accessories Parts Description	Remark
3U-LBCable	Battery Parallel Cable (Included)	Battery power and communication parallel connection cable
3U-LRfe	Battery Rack Fixed Ears (Included)	Used for battery fixing with 19inch rack or cabinet
3U-Bracket	Battery Brackets (Optional)	Simple stacking bracket, 1 unit including 4 pcs brackets, Max. stacking 4 floors
3U-HRack	Battery Rack (Optional)	Special battery rack, can install 13 pcs batteries
3U-LRack	Battery Rack (Optional)	Special battery rack, can install 9 pcs batteries
3U-LPCable	Hybrid inverter Cable (Optional)	Battery power and communication cable connect with hybrid inverter



Model: 3U-LBCable

Details: Pair of 300mm 4AWG Power cable and 300mm RJ45 communication cable for battery parallel.



Model: 3U-LRfe

Details: Pair of rack fixed ears used for battery fixing with 19inch rack or cabinet.



Model: 3U-Bracket

Details: Simple stacking bracket, height 187mm, 1 set including 4 pcs brackets, Max. stacking 4 floors.





Model: 3U-HRack

Details: Special battery rack, can install 13 pcs batteries, included special battery hanging ears.

Dimension(W×D×H): 589 × 590 × 2240mm

Weight Approximate: 85kg



Model: 3U-LRack

Details: Special battery rack, can install 9 pcs batteries, included special battery hanging ears.

Dimension(W×D×H): 589 × 590 × 1640mm

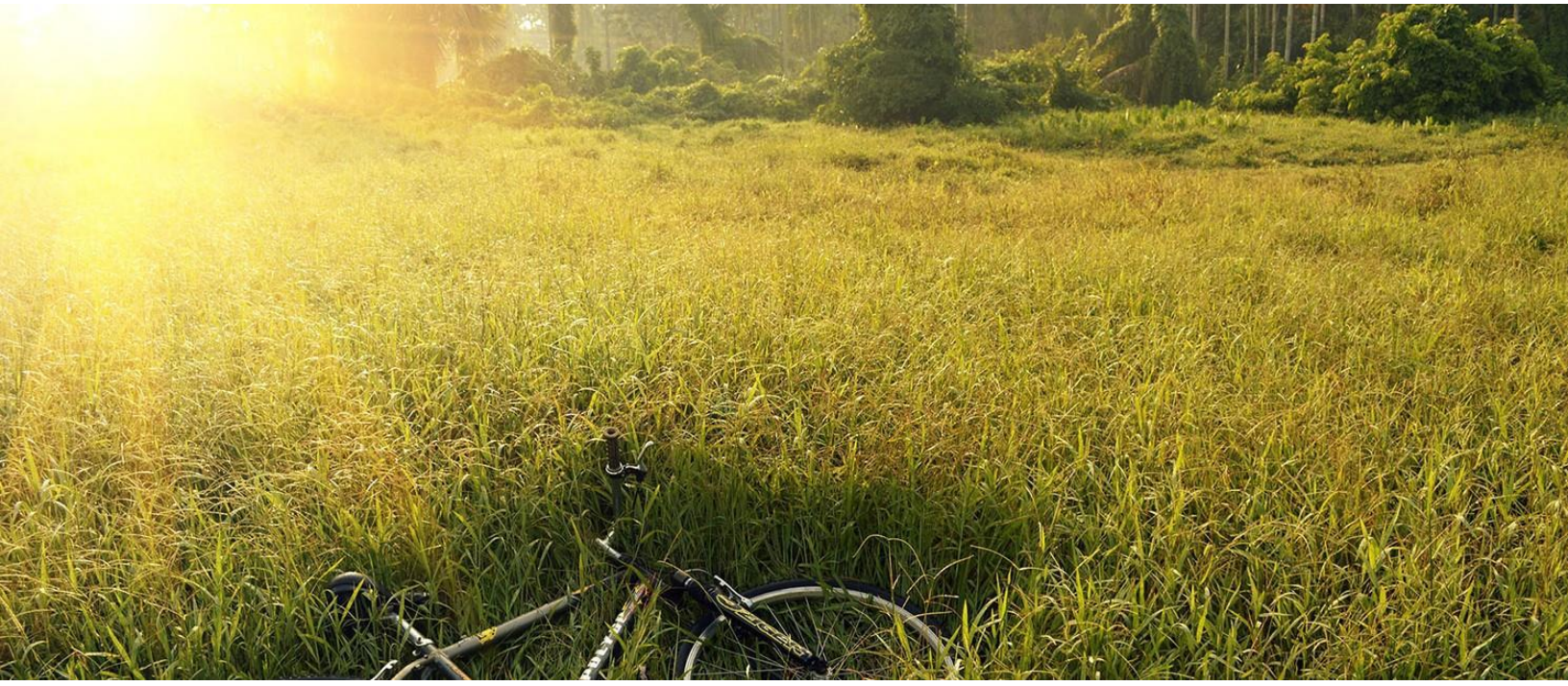
Weight Approximate: 65kg



Model: 3U-LPCable

Details: Pair of 4AWG battery power cable and RJ45 communication cable connect with hybrid inverter, one end of the power cable has a copper terminal (M6), and the other end is suspended. The cable length can be customized based on customer requirements, default length is 2000mm.

SE-G5.3





- **Safer**

Cobalt Free Lithium Iron Phosphate (LFP) Battery: Safety and long lifespan, high efficiency and high power density.
Intelligent BMS, providing complete protection.

- **Reliable**

Support high discharge power. IP20, natural cooling, wide temperature range: -20℃ to 55℃.

- **Flexible**

Modular design, easy to expand, Max. 64 units in parallel, Max. capacity of 340kWh.
Suited to residential and commercial applications for increasing the self-consumption ratio.

- **Convenient**

Battery module auto networking, easy maintenance, support remotely monitoring and upgrade, support USB drive upgrade the firmware.

- **Eco-Friendly**

Use environmental protection materials, the whole module non-toxic, pollution-free.

Deye

Stock Code: 605117.SH

Technical Data

Model		SE-G5.3
Main Parameter		
Battery Chemistry		$LiFePO_4$
Capacity (Ah)		104
Scalability		Max. 64 pcs pack (340kWh) in parallel (Max. 32 pcs no external setup)
Nominal Voltage (V)		51.2
Operating Voltage(V)		43.2~57.6
Energy (kWh)		5.32
Usable Energy (kWh) [1]		4.79
Charge/Discharge Current (A)	Recommend [2]	50
	Max. [2]	100
	Peak	150 (2mins,25℃)
Other Parameter		
Recommend Depth of Discharge		90%
Dimension (W/H/D, mm)		440*133*560
Weight Approximate(kg)		44
Master LED Indicator		5LED(SOC:20%~SOC100%), 3LED (working, alarming, protecting)
IP Rating of Enclosure		IP20
Operating Temperature		Charge:0～55℃ (Optional heating) / Discharge:-20℃～55℃
Storage Temperature		0℃～35℃
Humidity		5%~95%
Altitude		≤2000m
Cycle Life		≥6000(25℃±2℃, 0.3C/0.3C, 90%DOD, 70%EOL)
Installation		19-inch standard rack (depth ≥600mm / with), Floor-Mounted, Wall-Mounted,
Communication Port		CAN2.0, RS485
Warranty Period [3]		10 years
Energy Throughput [3]		16MWh@70%EOL
Certification		CE, IEC62619, UN38.3

[1] DC Usable Energy, test conditions: 90% DOD, 0.3C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

[2] The current is affected by temperature and SOC.

[3] The warranty is due whichever reached first of warranty period or energy throughput.

Introduction

This series lithium iron phosphate battery is one of new energystorage products developed and produced by Deye, it can be used to support reliable power for various types of equipment and systems.

This series is especially suitable for application scene of high power,limited installation space, restricted load-bearing and long cycle life.

This series battery has built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. What's more, BMS can balance cells charging to extend cycle life.

Multiple batteries can connect in parallel for larger capacity and longer power supporting duration requirements.

Battery Pack Accessories

Model	Accessories Parts Description	Remark
3U-Lrfe-B	Battery Rack Fixed Ears and screws (Included)	Used for battery fixing with 19inch rack or cabinet.
SE-G5.3-BCable	Battery Parallel Cable (Included)	Battery power and communication parallel connection cable, and ground line.
3U-W-Bracket-B	Battery Wall-Mounted Brackets and screws (Included)	Simple wall hanging support.
SE-G5.3-PCable	Hybrid inverter Cable (Included)	Battery power and communication cable connect with hybrid inverter.
3U-Bracket-B	Battery Stack Brackets and screws (Optional)	Simple stacking bracket, 1 unit including 4 pcs brackets, Max. stacking 4 floors.



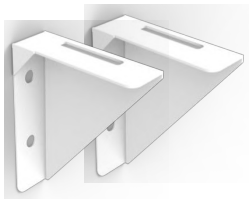
Model: 3U-Lrfe-B

Details: Pair of rack fixed ears used for battery fixing with 19inch rack or cabinet, included 6 pcs M4 screws, 4 sets of M6 screws and buckle nuts.



Model: SE-G5.3-BCable

Details: Pair of 270mm 4AWG Power cable (Both ends are M8 copper terminals) and 250mm RJ45 communication cable for battery parallel, and 250mm 10AWG yellow-green ground line.



Model: Battery Wall-Mounted Brackets

Details: Pair of simple wall hanging support, included 4 sets of M6 expansion screws.



Model: SE-G5.3-PCable

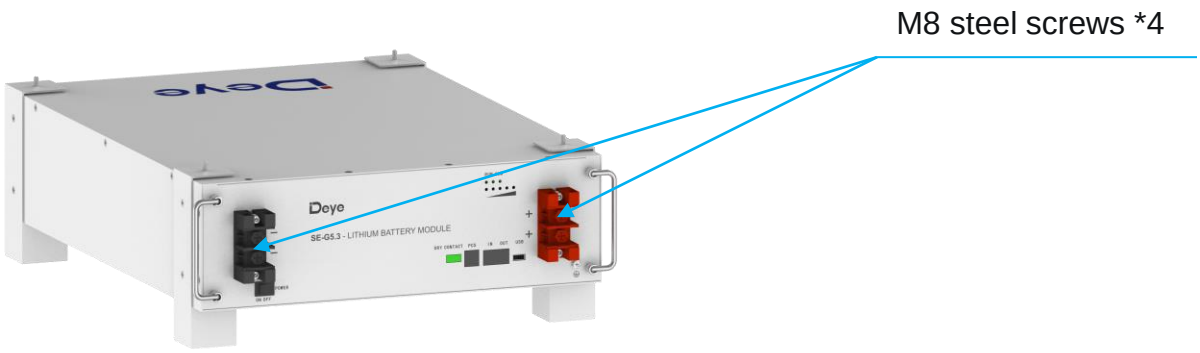
Details: Pair of 4AWG battery power cable (Both ends are M8 copper terminals) and RJ45 communication cable connect with hybrid inverter. The cable length can be customized based on customer requirements, default length is 1500mm.



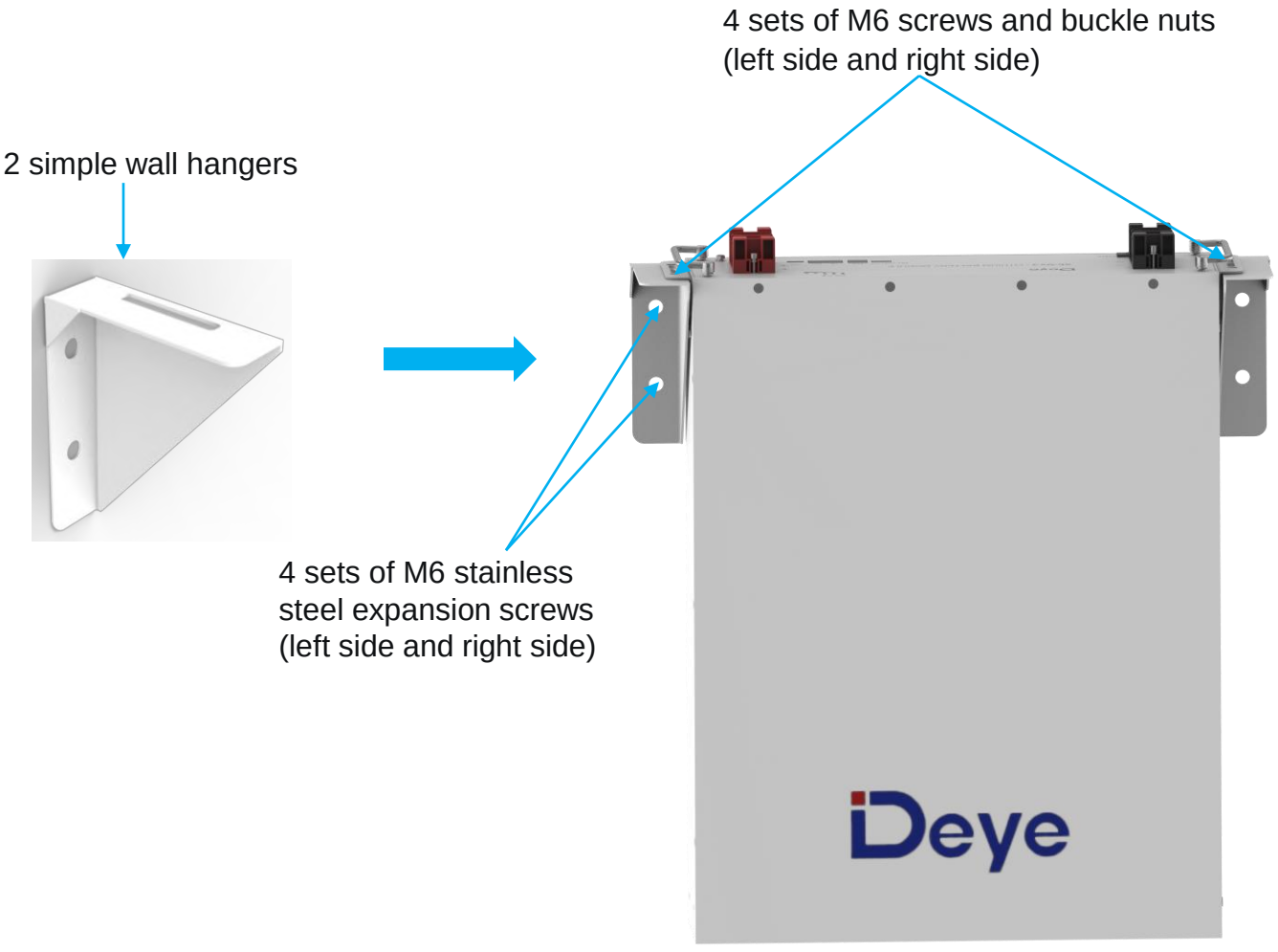
Model: 3U-Bracket-B

Details: Simple stacking bracket, height 180mm, 1 set including 4 pcs brackets and 8 pcs M4 screws, Max. stacking 4 floors.





Wall-mounted method



User Manual

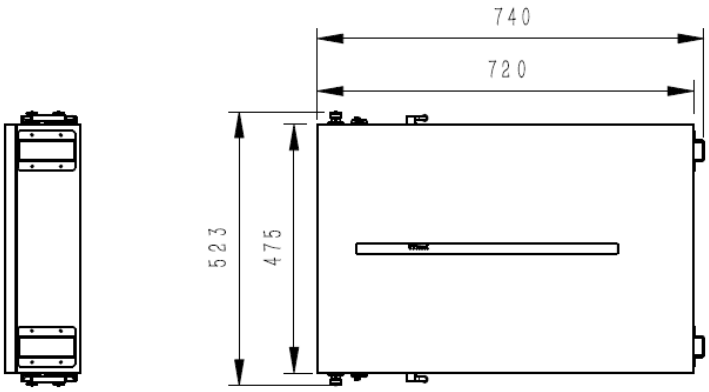
Spring series LFP Battery

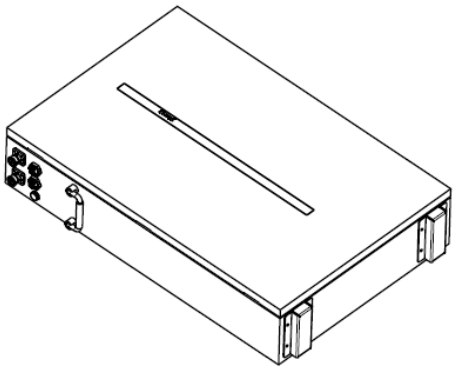
RW-M6.1



V2.0A







Main Parameter		**RW-M6.1**
Battery Chemistry		LiFePO4
Capacity (Ah)		120
Scalability		Max.32 pcs in parallel(196kWh)
Nominal Voltage (V)		51.2
Operating Voltage(V)		43.2~57.6
Energy (kWh)		6.14
Usable Energy (kWh) [1]		5.53
Charge/Discharge Current (A)	Recommend [2]	60
	Max. [2]	100
	Peak(2mins,25℃)	150
Other Parameter		
Recommend Depth of Discharge		90%
Dimension (W/H/D, mm)		475*720*145 (Without Base, depth of 161mm with Hanging Board)
Weight Approximate(kg)		58
Master LED indicator		5 LED (SOC 20%~100%)
		3 LED (working, alarming, protecting)
IP Rating of enclosure		IP65
Working Temperature		Charge: 0℃ ~ +55℃ Discharge: -20℃ ~ +55℃
Storage Temperature		-20℃ ~ +35℃
Humidity		5%~95%
Altitude		≤2000m
Installation		Wall-Mounted, Floor-Mounted
Communication Port		CAN2.0, RS485
Certification		UN38.3, IEC62619, CE

BOS-G





- **Convenient**

Quick installation standard of 19-inch embedded designed module is comfortable for installation and maintenance.

- **Safe and reliable**

Cathode material is made from LiFePO4 with safety performance and long cycle life, The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge.

- **Intelligent BMS**

It has protection functions including over-discharge, over-charge, over-current and over-high or low temperature. The system can automatically manage charge and discharge state and balance current and voltage of each cell.

- **Eco-friendly**

The whole module is non-toxic, non-polluting and environmentally friendly.

- **Flexible configuration**

Multiple battery modules can be in parallel for expanding capacity and power. Support USB upgrade, wifi upgrade(optional), remote up grade(Compatible with Deye inverter).

- **Wide temperature**

Working temperature range is from -20°C to 55°C, with excellent discharge performance and cycle life.

Deye

Technical Data

Model	BOS-G		
Main Parameter			
Cell Chemistry	LiFePO4		
Module Energy (kWh)	5.12		
Module Nominal Voltage (V)	51.2		
Module Capacity (Ah)	100		
Battery Module Qty in series. (Optional)	3 (Min)	8 (Standard US Cluster)	12 (Standard EU Cluster)
System Nominal Voltage (V)	153.6	409.6	614.4
System Operating Voltage (V)	124.8~175.2	332.8~467.2	499.2~700
System Energy (kWh)	15.36	40.96	61.44
System Usable Energy (kWh) [1]	13.8	36.86	55.29
Charge/Discharge Current (A) [2] — Recommend	50		
Charge/Discharge Current (A) [2] — Nominal	100		
Charge/Discharge Current (A) [2] — Peak Discharge (2 mins, 25°C)	125		
Working Temperature (°C)	Charge: 0~55/Discharge: -20~55		
Status Indicator	Yellow: Battery High Voltage Power On Red: Battery System Alarm		
Communication Port	CAN2.0/RS485		
Humidity	5~85%RH		
Altitude	≤2000 m		
IP Rating of Enclosure	IP20		
Dimension (W/D/H,mm)	589*590*1640		589*590*2240
Weight Approximate (kg)	258	434	628
Installation Location	Rack Mounting		
Storage Temperature (°C)	0~35		
Recommend Depth of Discharge	90%		
Cycle Life	25±2°C, 0.5C/0.5C, EOL70%≥6000		
Warranty [3]	10 years		
Certification	CE/IEC62619 / UL1973 / UL9540A / UN38.3		

1 DC Usable Energy, test conditions: 90% DOD, 0.2C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

2 The current is affected by temperature and SOC.

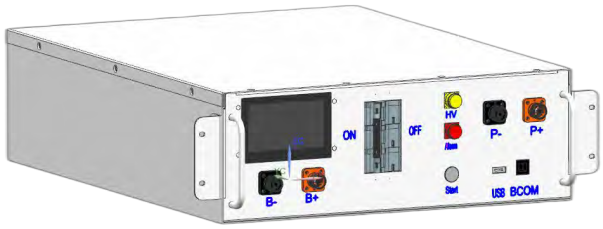
3 The warranty is due whichever reached first of warranty period or life cycle power.

Deye
NINGBO DEYE ESS TECHNOLOGY CO., LTD
NO. 18TH ZHENGLONG ROAD LONGHSAN CIXI NINGBO ZHEJAING 315311 P.R.CHINA
Tel: +86-0574-8622 9263 | E-mail: sales@deye.com.cn

System Components

Model	Description
HVB750V/100A-EU	High Voltage Battery cluster control box conforming to European or British Standards

Operating Voltage	120～750Vdc
Nominal Charge/Discharge Current	100A
Max.Charge/Discharge Current	125A
DC Input Rating	12±2%V/4.15A
Operating Temperature Range	-20~65°C
Ingress Protection	IP20
Dimension (W/D/H)	440*570*150mm
Weight Approximate	15.5kg





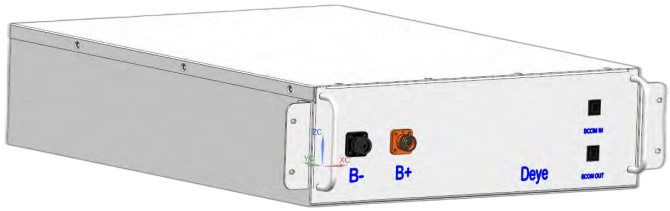
High voltage box Standard configuration：

① 120 ohm terminal resistance
② 140mm communication cable
③ 220mm power cable
④ 2.1m power cable（EU Version）
⑤ EPCable2.0 （ 1000V/4AWG Red-cable ）
⑥ ENCable2.0（ 1000V/4AWG Black-cable ）



BOS-GM5.1	5.12 kwh battery module

Battery Type	LiFePO4(LFP)
Nominal Voltage	51.2Vdc
Rated Capacity	100Ah
Rated Energy	5.12kWh
Nominal Charge/Discharge Current	100A
Peak.Discharge Current	125A
Charge Temperature	0~55°C
Discharge Temperature	-20℃～55°C
Storage Temperature	0℃～35°C
Ingress Protection	IP20
Dimension (W/D/H)	440*570*133mm
Weight Approximate	44kg



Battery module Standard configuration：

①110mm communication cable
② 200mm power cable



EPCable2.0	Standard 2-meter power cable connected to the positive pole of the external PCS

1000V/4AWG cable



ENCable2.0	Standard 2-meter power cable connected to the negative pole of the external PCS

1000V/4AWG cable





A48100 Unit

Product Specification

Size and Weight

Table 2-1 A48100 Device size

Product	Nominal Voltage	Nominal Capacity	Dimension	Weight
A48100	DC48V	100Ah	504×597×155mm	≈45kg

Performance Parameter

Table 2-2 A48100 performance parameter

Item	Parameter value
Nominal Voltage(V)	48
Work Voltage Range(V)	42~54
Nominal Capacity(Ah)	100
Nominal Energy(kWh)	4.8
Recommended Charge/Discharge Current (A)	50
Max. Power Charge/Discharge Current (A)	75
Peak Power Charge/Discharge Current (A)	100 (15S)
Charge Voltage (Vdc)	53.5

Interface Definition

This section elaborates the interface functions of the front interface of the device.

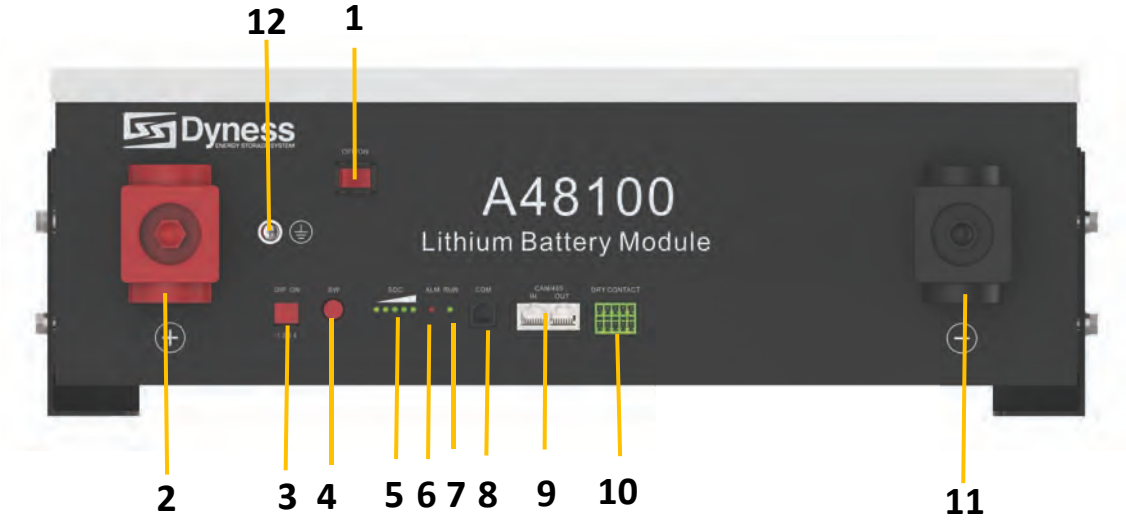
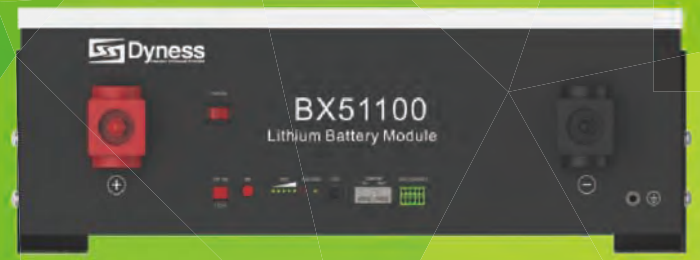


Figure2-1 The sketch of interface.

DYNESS
ENERGY STORAGE SYSTEM

BX51 100





SPECIFICATION

Model	BX51100
Module Type	LFP
Battery Module Capacity (kWh)	....
Battery Module Voltage (Vdc)	....
Battery Module Capacity (Ah)	100
Battery Cell Capacity (Wh)	320
Battery Cell Voltage (Vdc)	3.2
Battery Cell Capacity (AH)	100
Battery Module Charge/Discharge Current (A)	50 (recommended)
Battery Module Charge/Discharge Current (A)	75（max)
Battery Module Cell Quantity (pcs)	16
Discharge condition[°C]	-20~55
Charge condition[°C]	0~55
Battery Module Charge Voltage (Vdc)	56.5
Enclosure Protection (IP)	IP20
Size [mm]	558*545*190
Weight [kg]	50Kg
Battery Module Cell Quantity in Series (pcs)	16
Configuration	40 modules parallel at most
Communication	CAN/RS485
Storage Temperature [℃]	-10~35

Features and advantages

- LiFePO4 battery, Safe, Longer life span
- Modular design, Easy to stack, Quick installation
- Larger energy capacity
- Natural cooling with optional heat/fan configuration
- Wide temperature range of -20~50˚C



Dyness
ENERGY STORAGE SYSTEM

Dyness
ENERGY STORAGE SYSTEM
Power You Day and Night

NEW



Powerbox Pro

ENERGY STORAGE SOLUTIONS

LiFePO4 chemistry battery with safety performance and longer cycle life, which offers you various capacities to meet more of your requirements.

APP Monitoring • Various Installation • IP65 Protection • Flexible Expansion

Features and advantages

APP Monitoring
Remote upgrade aviliable

Easy to Installation
Plug and play

Expandable
Up to 4 units in parallel

High Safety
LFP & smart BMS

Wide Compatibility
Matching with leading inverter brands

Tailor-made Cabinet
Suitable for mulit-module install

+86 029 8954 0338 www.dyness-tech.com.cn sales@dyness-tech.com

Technical Parameters

Model	Powerbox Pro
Battery Type	LiFePO4
Battery Capacity	200Ah
Nominal Battery Energy	10.24kWh
Recommend Output Power	5.12kW
Max Output Power	7.68kW
Net Weight	115kg
Nominal Voltage	51.2V
Dimension[W*D*H]	555*210*1020mm
Working Voltage	44.8~58.4V
Charging Temp. Range	0-50℃
Discharging Temp. Range	-20-55℃
Communication	CAN / RS485/RS232
Warranty	10 Years
Warranty Document Supplied	Yes
Calendar Life [1]	>6000 Cycles
Protection Level	IP65
Scalability	Up to 4 units in parallel
Color	White
Alarms	Overcharge/Overdischarge/Overcurrent/ Overtemperature/Short Circuit
Monitoring & Protection	Each system has smart BMS, breaker embedded in system
Pros	Can be used in both off-grid and hybrid setups, compact design, modular expansion
Compatible Inverters	Victron/SMA/Goodwe/ Imeon /Solis/SAJ / Growatt/Luxpower/Voltronic/Deye etc.
Certification & Safety Standard	TUV/CE/UN38.3 CEI-021 Undergoing

[1]Test conditions:0.2C Charging/Discharging,@25℃,80% DOD

Dyness
ENERGY STORAGE SYSTEM
Power You Day and Night

SHUANG DENG GROUP

SMART ENERGY
EFFICIENCY MANAGEMENT
EXPERT









ABOUT SHOTO

shoto

LOW VOLTAGE BATTERY STORAGE FOR RESIDENTIAL APPLICATION

HIGH-TECH ECO-FRIENDLY GLOBAL SMART ENERGY

Shoto is a leading manufacturer of green energy storage solutions. Since its founding in 1990, Shoto has built solid expertise in the field of energy storage and has become a convinced supporter of green energy. Shoto has successfully expanded its solutions for telecoms, data centers, energy storage systems and renewable energies worldwide with branches in all continents and more than 100million satisfied customers.

As one of the world's largest manufacturers of lead-acid batteries and lithium, Shoto has more than 30 years of experience and is one of the "China Top 100 Electronic Information Enterprises" and one of the "World Top 500 New" Energy Companies. SHOTO offers the highest safety and performance standards for battery solutions forprivate households and commercial purposes.

WHY SHOTO?

Vertical industry integrated

Self-designed and self-manufactured LFP cell, pack and rack to ensure the highest safety.

Modular design

Thanks to its modular and scalable design, it can be expanded to meet future energy requirements.

Longer life

More than 5000 cycles with 90% DOD and 10+ years design life.

Matching flexibility

Compatible with the most universal hybrid inverters.

Easy installation

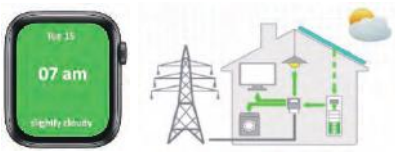
Simple rack mounted structure to reduce the installation time and cost.

shoto

PRODUCT PARAMETER

Model	48-100	51.2-100
Nominal Capacity (kWh)	4.8	5.12
Depth of Charge	90%	
Usable Capacity (kWh)	4.32	4.6
Cycle Life	≥5000 @25 ºC	
Charge Voltage (V)	54	57.6
Discharge Voltage (V)	45	48
Nominal Voltage (V)	48	51.2
Max Parallel Quantity (Pcs)	16	
Charge/Discharge Current(A)	Recommend 50 (0.5C)	
	Max 100 (1C)	
Communication Port	RS485 & CAN	
Weight (Kg)	41	43
Dimensions (W*H*D)mm	442*133*420	
Operating Tempature	Charge -5ºC~+45ºC	
	Discharge -20ºC~+50ºC	
Recommend Operating Tempature	Charge +15ºC~+35ºC	
	Discharge +15ºC~+35ºC	
	Storage -20ºC~+35ºC	
Humidity	5%-95%	
Altitude	≤ 4000m	
Certificate	TUV(IEC 62619)/CE-EMC/UN38.3	
Compatible Inverters	Growatt,Goodwe,Victron,Deye,Sofar and Luxpower More brands to be announced	

SYSTEM FUNCTION



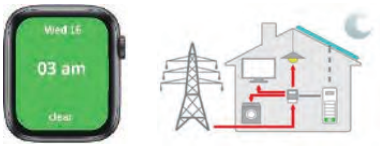
Solar energy preferably used by domestic appliances, and additional Energy is stored in battery.



During the day, when battery is fully charged, the additional energy produced by solar can be sold and fed into the public



At evening, the energy stored in the battery supplies electricity to the domestic appliances.



At night, when the energy stored in the battery is depleted, the public grid supplies energy to the domestic appliances.



PRODUCT PARAMETER



Model	HP10-Box 5
Nominal Capacity (kWh)	5.12
Depth of Charge	80%
Usable Capacity (kWh)	4.1
Charge Voltage (V)	54.0-56.4
Discharge Voltage (V)	45.0-53.0
Nominal Voltage (V)	51.2
Max Parallel Quantity (Pcs)	16
Charge/Discharge Current(A)	Recommend 50（0.5C）
	Max 100A(1C)
Communication Port	CAN/RS485
Weight (Kg)	46.5±2Kg
Dimensions (W*H*D)mm	580*150*470
Operating Tempature	Charge -5℃~+45℃
	Discharge -20℃~+50℃
Recommend Operating Tempature	Charge +15℃~+35℃
	Discharge +15℃~+35℃
	Storage -20℃~+35℃
Humidity	5%-95%

Altitude	≤4000m
Warranty	5 Years Product Warranty ,10+ Years design Life (@25℃ /77℉)
Certificate	TUV(IEC 62619)/CE-EMC/UN38.3
Compatible Inverters	Growatt,Goodwe,Victron,Deye,Sofar and more brands to be announced

eTower

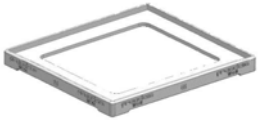


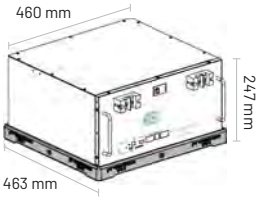
Modular LiFePO4 energy storage from your trusted high performance battery partner.

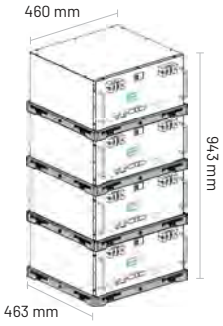
The following specifications pertain to the Freedom Won eTower modular stackable battery, designed for smaller residential and light commercial applications with options of 1,2,3, or 4 modules in a tower per system.

Modular LiFePO4 Energy Storage Specification Sheet

	1 x e5000	2 x e5000	3 x e5000	4 x e5000
Total Energy Capacity [kWh]	5	10	15	20
Energy, 80% DoD [kWh] 1	4	8	12	16
Energy, 90% DoD [kWh] 1	4,5	9	13,5	18
Current Capacity [Ah]	100	200	300	400
Max/Cont. Charge Current [A] 2	80/70	144/126	216/189	288/252
Max/Cont. Charge Power [kW] 2	4,2/3,6	7,7/6,6	11,2/9,8	15,0/13,1
Max/Cont. Discharge Current [A] 2	100/90	180/162	270/243	360/324
Max/Cont. Discharge Power [kW] 2	5,2/4,7	9,4/8,4	14,0/12,6	18,7/16,8
Max Recommended Inverter Total Rated Power (cont.) [kVA]	5kVA	8kVA	12kVA	15kVA
Nominal Voltage [V]	52V, to suit 48V Inverters, min 47V, max 56V *do not connect modules in series - (for high voltage batteries, refer to Freedom Won LiTE HV ranges)			
Combined weight [kg]	45	90	135	180
Installation method	Stacked horizontally onto each other to form a tower with pedestals included, (one per module) or 19 inch rack mounted with brackets (cabinet excluded). Vertical mounting on floor or wall (shelf/bracket) with terminals facing upwards also acceptable. Generally up to 4 x e5000's per system (for larger capacity requirements, see Freedom Won LiTE ranges)			
Dimensions when e5000 placed horizontally: Height x Width x Depth (Front to rear) (mm)	Single unit with pedestal: 247x460x463	2 module tower with pedestals: 479x460x463	3 module tower with pedestals: 711x460x463	4 module tower with pedestals: 943x460x463
Dimensions exclude busbars on front Module height equates to 5U (U = standard 19" rack unit)	Single unit without pedestal: 222x440x443			
DC Leads to Inverter or DC Bus per positive & negative connection - minimum cable size [mm^2] *cables included – see included accessories	1 x 35mm	1 x 35mm	2 x 35mm	2 x 35mm







eTower (specs continued)

Enclosure	Steel – painted white, rated for indoor use only, out of direct sun and away from other heat sources.
DC Connection - Integrated Terminals on Front	2 x M6 bolts each for positive and for negative terminals for DC leads to inverter and busbars for connection of parallel e5000's in tower or rack configuration.
Tower Interconnecting Busbars - minimum cross section area [mm^2] *busbars included - see included accessories	70 (17mm x 4mm busbar available in accessories) *note that the Freedom Won busbar accessories are designed for the pedestal tower dimensions not for 19" rack mounting, which has different spacing.
Communication and Control Interfaces (See manual for further details)	• CAN Bus (RJ45 Socket x 1) - for interfacing with compatible inverters and system controllers (the eTower is fully compatible with all common CAN bus compatible brands). • RS485 (RJ45 Socket x 1) - for interfacing with the Voltronics Axpert range of inverters equipped with a RS485 lithium battery interface and the applicable firmware. • RS232 (RJ45 Socket x 1) - for interfacing with a PC for firmware and setting updates (only by Freedom Won technicians). • RS485 (RJ45 x 2) - for the communication connection of parallel batteries up to four in tower. • Digital Outputs x 2 - for controlling external relays based on pre-set functions.
Protection	Internal electronic protection including overcurrent, cell under and over voltage, temperature out of range, weak cell detection, minimum SOC control, active voltage based charge current limiting. *do not short circuit or connect in reverse polarity!
Human Interface	• State of Charge Display (0 to 100% indicated by six green LED's) • Alarm LED (red) • Run LED (green) • On LED (green) • BMS Reset Button • Main On/Off Switch • Serial RS232 Plug for Programming via PC (by Freedom Won only) • Dip Switch block for selecting module addresses.
Warranty 3	10 years limited warranty
Design Life 4	>15 years
Included Accessories	• Plastic pedestal for tower stacking (cleats for 19" rack not included but available from Freedom Won if required). • DC cables standard 1,8m long in 35mm^2 single core with M6 terminal lugs on one end, red for positive and black for negative. • Interconnecting tower busbars drilled and cut to length for single tier jumps using tower pedestals, with heat shrink covering, red for positive and black for negative. • Interconnecting RS485 parallel battery communication cables for interconnecting the tower modules' communication RJ45 sockets (standard ethernet cables may also be used). • Inverter interface CAN Bus cable at 1,8m length for connecting compatible CAN bus equipped Victron inverters • Inverter interface CAN Bus cable at 1,8m length for connecting compatible CAN bus equipped Type 1 inverters e.g. Sunsynk, Growatt, Solis, Goodwe (see Freedom Won Interfacing Guide for full details). • Inverter interface RS485 cable at 1,8m length for connecting Voltronic/Axpert Inverters
Packaging	One e5000 per cardboard box complete with above included accessories.
Certificate of Compliance	UN 38.3 / IEC 62619

Notes to Specification Sheet

1 DoD = Depth of Discharge, max recommended 90% DoD, recommended 80% DoD for average daily discharge, 70% DoD on average for optimal life. Max permissible DoD is 100%.
2 Max discharge and charge (current and power) duration – 5 minutes per 30-minute cycle.
3 Refer to e tower warranty document for further details.
4 Assumed moderate cycling and ideal conditions of temperature, charge and discharge rates, and depth of discharge per cycle.

freedom WON
PLUG INTO THE CURRENT FUTURE

Li^{TE} Home and Business 52V Range

The following specifications pertain to the Freedom Won Li^{TE} Commercial range of 52V lithium iron phosphate batteries manufactured by Freedom Won with capacities fitting in above the Freedom Won Li^{TE} Home and Business and below the Freedom Li^{TE} Industrial ranges.



	Home 5/4	Home 10/8	Home 15/12	Home 20/16	Home 30/24	Business 40/32	Business 60/48	Business 80/64
Total Energy Capacity [kWh]	5	10	15	20	30	40	60	80
Energy, 80% DoD [kWh] [1]	4	8	12	16	24	32	48	64
Energy, 90% DoD [kWh]	4,5	9	13,5	18	27	36	54	72
Current Capacity [Ah]	100	200	300	400	600	800	1200	1600
Max & Cont. Charge Current [A] [2]	100	200	300	400	600	600	800	800
Max & Cont. Charge Power [kW] [2]	5	10	15	20	30	30	40	40
Max/Cont. Discharge Current [A] [2]	200/100	300/200	480/300	480/400	750/600	750/600	1000/800	1000/800
Max/Cont. Discharge Power [kW] [2]	10/6	15/10	24/15	24/20	38/30	38/30	50/40	50/40
Max Recommended Inverter Total Rated Power (cont.) [kVA]	8	10	15	15	25	25	35	35
Nominal Voltage [V]	52V, to suit 48V Inverters, min 47V, max 56V							
Weight [kg]	49	89	130	173	254	326	508	637
Dimensions on or against wall excluding protuberances such as glands and breaker handle -Height X Width X Depth [mm]	500x340x290	745x340x290	745x490x290	745x640x290	1300x413x370	1300x522x370	1300x743x370	1300x1009x370
Enclosure	Aluminium - powder coated white front, rated for indoor use							
DC Connection - Integrated Cables [no. per electrode] [3]	1x 50mm^2	1x 50mm^2	2 x 50mm^2	2 x 50mm^2	2 x 95mm^2	2 x 95mm^2	2 x 95mm^2	2 x 95mm^2
Control Interface	RJ45 Socket x 2 - CAN Bus for Interfacing with Compatible Inverters and System Controllers, and communication for the connection of parallel batteries - note that parallel batteries must all be of the same model.							
Protection	Shunt Trip Circuit Breaker sized to suit max current, can be tripped by BMS if critical fault, manual reset. Includes overcurrent, cell under and over voltage, temperature, weak cell detection, minimum SOC control.							
Human Interface	State of Charge Display (0 to 100%), Error light, Error Reset Button, USS Plug for Programming, Wifi remote monitoring (optional accessory).							
Warranty [4]	10 years or 4 000 cycles for average 80% DoD, and max 90% DoD							
Service Life [4]	16 years (>5 500 cycles) expected life at 80% DoD (1 l, >20 years (>7 500 cycles) at 50% DoD							
Essential Accessories	Note that for connecting the battery to a PC a USS "printer" cable is required (one is supplied with each battery) CAN Bus Termination Resistor - one required per battery (one included with battery) CAN Bus Cable (RJ45 LAN Cable)-one required per battery (not supplied with battery). Note some inverters will require a special (non-standard pin configuration) cable - see installation manual.							

Notes to Specification Sheet

1 DoD = Depth of Discharge, recommended 80% DoD for average daily discharge, 70% DoD on average for optimal life – max for normal operation 90% DoD, max for system in standby 100% DoD.

2 Max load duration – 30 seconds per 40 second cycle. 1.5 x Max overload can be handled for 5 seconds.

3 Fly Leads 1,8m long, power cable Red = Positive, Black = Negative, conductors in table refer to one electrode i.e. per positive and negative connections.

4 End of Life (EoL) defined as cell dropping to 60% of Beginning of Life (BoL) capacity for expected life and 70% of BoL capacity for warranty. This warranty applies to Lites sold after 1 September 2019. For Lites sold prior please contact Freedom Won for warranty information.

SOLAR PANELS

www.jinkosolar.com

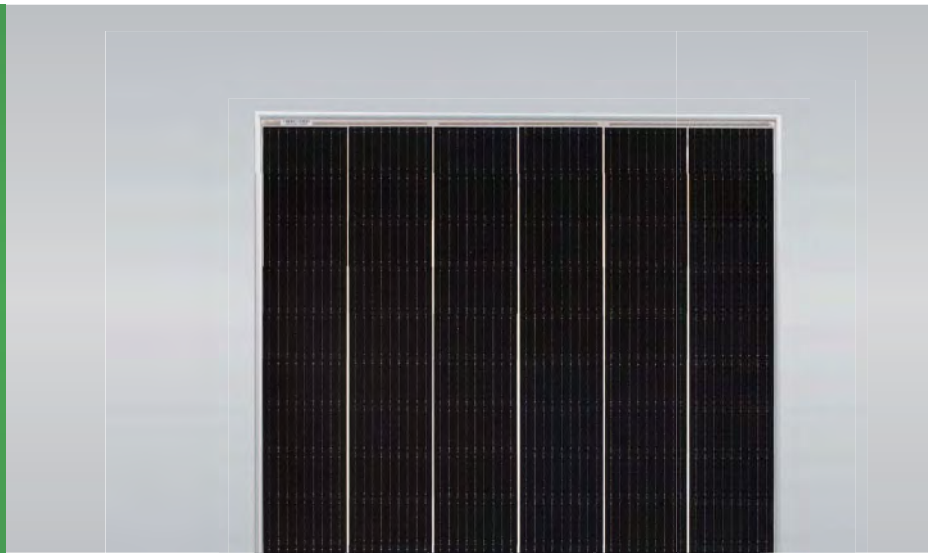
Jinko Solar
Building Your Trust in Solar

Tiger Mono-facial

450-470 Watt

Tiling Ribbon (TR) Technology

Positive power tolerance of 0~+3%





KEY FEATURES

TR technology + Half Cell
TR technology with Half cell aims to eliminate the cell gap to increase module efficiency (mono-facial up to 20.93%)

9BB instead of 5BB
9BB technology decreases the distance between bus bars and finger grid line which is benefit to power increase.

Higher lifetime Power Yield
2.5% first year degradation,
0.6% linear degradation

Best Warranty
12 year product warranty,
25 year linear power warranty

Avoid debris, cracks and broken gate risk effectively
9BB technology using circular ribbon that could avoid debris, cracks and broken gate risk effectively

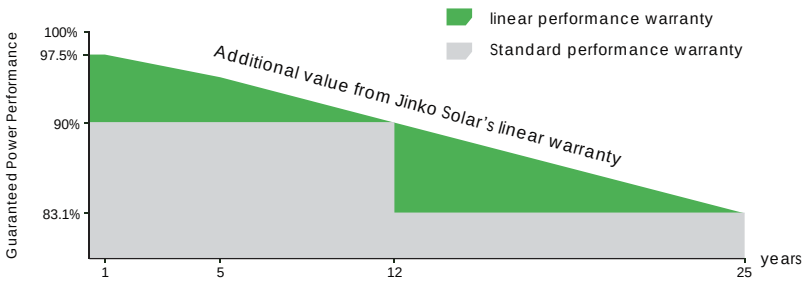
PV CYCLE · TÜVRheinland CERTIFIED · CE

POSITIVE QUALITY™ Continuous Quality Assurance · CLEAN ENERGY COUNCIL MEMBER

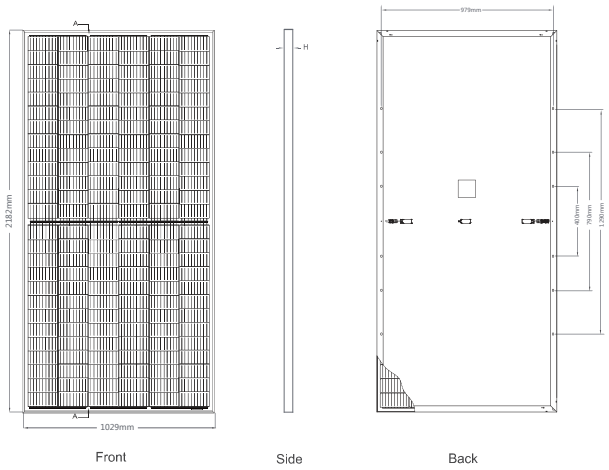
- ISO9001:2015, ISO14001:2015, OHSAS18001 certified factory
- IEC61215, IEC61730 certified product

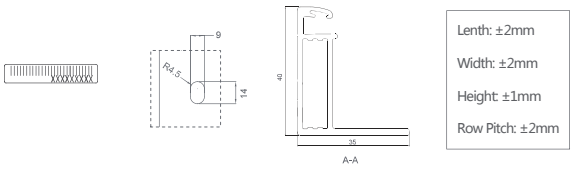
LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty • 25 Year Linear Power Warranty
0.6% Annual Degradation Over 25 years



Engineering Drawings





Lenth: ±2mm
Width: ±2mm
Height: ±1mm
Row Pitch: ±2mm

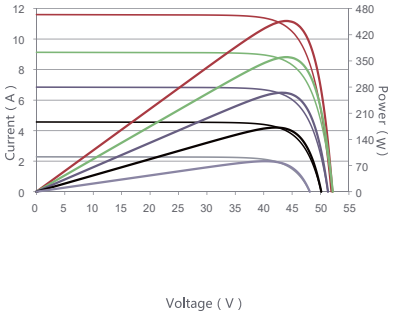
Packaging Configuration

(Two pallets = One stack)

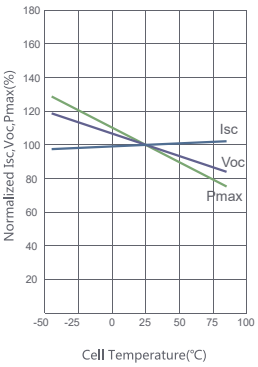
27pcs/pallets, 54pcs/stack, 540pcs/ 40'HQ Container

Electrical Performance & Temperature Dependence

Current-Voltage & Power-Voltage Curves (460W)



Temperature Dependence of Isc,Voc,Pmax



Mechanical Characteristics

Cell Type	P type Mono-crystalline
No.of cells	156 (2×78)
Dimensions	2182×1029×40mm (85.91×40.51×1.57 inch)
Weight	26.1 kg (57.54 lbs)
Front Glass	3.2mm,Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	TUV 1×4.0mm² (+): 290mm , (-): 145 mm or Customized Length

SPECIFICATIONS

Module Type	JKM450M-7RL3 JKM450M-7RL3-V		JKM455M-7RL3 JKM455M-7RL3-V		JKM460M-7RL3 JKM460M-7RL3-V		JKM465M-7RL3 JKM465M-7RL3-V		JKM470M-7RL3 JKM470M-7RL3-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	450Wp	335Wp	455Wp	339Wp	460Wp	342Wp	465Wp	346Wp	470Wp	350Wp
Maximum Power Voltage (Vmp)	42.86V	39.20V	42.97V	39.32V	43.08V	39.43V	43.18V	39.58V	43.28V	39.69V
Maximum Power Current (Imp)	10.50A	8.54A	10.59A	8.61A	10.68A	8.68A	10.77A	8.74A	10.86A	8.81A
Open-circuit Voltage (Voc)	51.50V	48.61V	51.60V	48.70V	51.70V	48.80V	51.92V	49.01V	52.14V	49.21V
Short-circuit Current (Isc)	11.32A	9.14A	11.41A	9.22A	11.50A	9.29A	11.59A	9.36A	11.68A	9.43A
Module Efficiency STC (%)	20.04%		20.26%		20.49%		20.71%		20.93%	
Operating Temperature(℃)	-40℃~+85℃									
Maximum system voltage	1000/1500VDC (IEC)									
Maximum series fuse rating	20A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.35%/℃									
Temperature coefficients of Voc	-0.28%/℃									
Temperature coefficients of Isc	0.048%/℃									
Nominal operating cell temperature (NOCT)	45±2℃									

*STC: Irradiance 1000W/m² Cell Temperature 25°C AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C AM=1.5 Wind Speed 1m/s

* Power measurement tolerance: ± 3%

The company reserves the final right for explanation on any of the information presented hereby. TR JKM450-470M-7RL3-(V)-C1-EN

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Building Your Trust in Solar

Tiger Pro 72HC

530-550 Watt

MONO-FACIAL MODULE

P-Type

Positive power tolerance of 0~+3%

IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018
Occupational health and safety management systems



MBB HC Technology

Key Features

Multi Busbar Technology

Better light trapping and current collection to improve module power output and reliability.

Durability Against Extreme Environmental Conditions

High salt mist and ammonia resistance.

Reduced Hot Spot Loss

Optimized electrical design and lower operating current for reduced hot spot loss and better temperature coefficient.

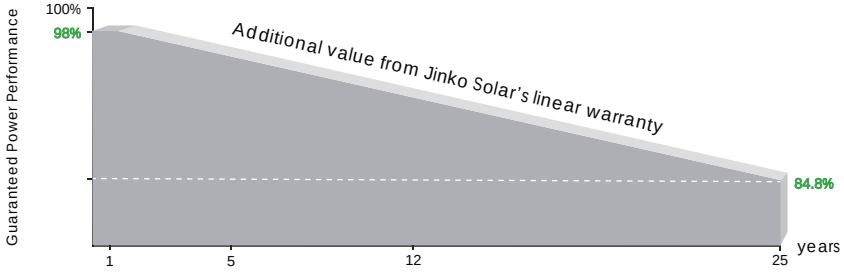
Enhanced Mechanical Load

Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).

Longer Life-time Power Yield

0.55% annual power degradation and 25 year linear power warranty.

LINEAR PERFORMANCE WARRANTY

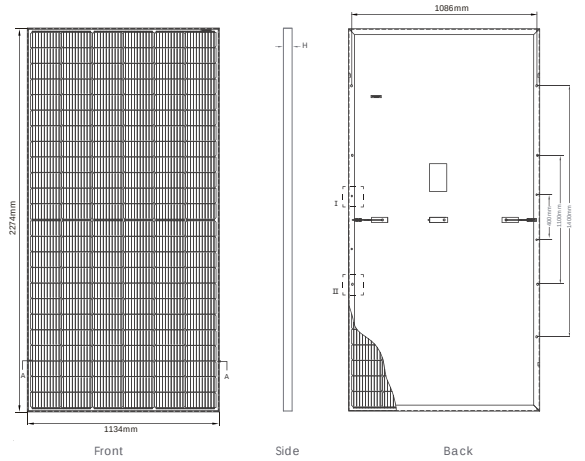


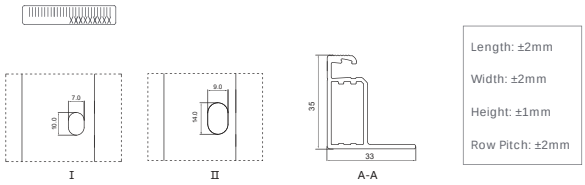
12 Year Product Warranty

25 Year Linear Power Warranty

0.55% Annual Degradation Over 25 years

Engineering Drawings

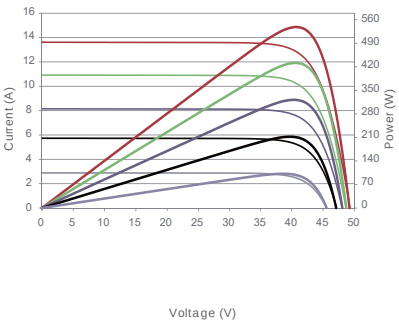




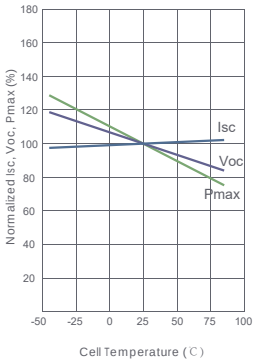
Length: ±2mm
Width: ±2mm
Height: ±1mm
Row Pitch: ±2mm

Electrical Performance & Temperature Dependence

Current-Voltage & Power-Voltage Curves (540W)



Temperature Dependence of Isc,Voc,Pmax



Mechanical Characteristics

Cell Type	P type Mono-crystalline
No. of cells	144 (6×24)
Dimensions	2274×1134×35mm (89.53×44.65×1.38 inch)
Weight	28.9 kg (63.7 lbs)
Front Glass	3.2mm,Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm² (+): 400mm , (-): 200mm or Customized Length

Packaging Configuration

(Two pallets = One stack)

31pcs/pallets, 62pcs/stack, 620pcs/ 40'HQ Container

SPECIFICATIONS

Module Type	JKM530M-72HL4 JKM530M-72HL4-V		JKM535M-72HL4 JKM535M-72HL4-V		JKM540M-72HL4 JKM540M-72HL4-V		JKM545M-72HL4 JKM545M-72HL4-V		JKM550M-72HL4 JKM550M-72HL4-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	530Wp	394Wp	535Wp	398Wp	540Wp	402Wp	545Wp	405Wp	550Wp	409Wp
Maximum Power Voltage (Vmp)	40.56V	37.84V	40.63V	37.91V	40.70V	38.08V	40.80V	38.25V	40.90V	38.42V
Maximum Power Current (Imp)	13.07A	10.42A	13.17A	10.50A	13.27A	10.55A	13.36A	10.60A	13.45A	10.65A
Open-circuit Voltage (Voc)	49.26V	46.50V	49.34V	46.57V	49.42V	46.65V	49.52V	46.74V	49.62V	46.84V
Short-circuit Current (Isc)	13.71A	11.07A	13.79A	11.14A	13.85A	11.19A	13.94A	11.26A	14.03A	11.33A
Module Efficiency STC (%)	20.55%		20.75%		20.94%		21.13%		21.33%	
Operating Temperature(℃)	-40℃~+85℃									
Maximum system voltage	1000/1500VDC (IEC)									
Maximum series fuse rating	25A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.35%/℃									
Temperature coefficients of Voc	-0.28%/℃									
Temperature coefficients of Isc	0.048%/℃									
Nominal operating cell temperature (NOCT)	45±2℃									

*STC: Irradiance 1000W/m² Cell Temperature 25°C AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C AM=1.5 Wind Speed 1m/s

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Specifications included in this datasheet are subject to change without notice.

Hi-MO 5m

(G2)

LR5-72HPH

540~560M

- Based on M10-182mm wafer, best choice for ultra-large power plants
- Advanced module technology delivers superior module efficiency
  - M10 Gallium-doped Wafer
  - Integrated Segmented Ribbons
  - 9-busbar Half-cut Cell
- Excellent outdoor power generation performance
- High module quality ensures long-term reliability

12 12-year Warranty for Materials and Processing

25 25-year Warranty for Extra Linear Power Output



Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

TS62941: Guideline for module design qualification and type approval

LONGi

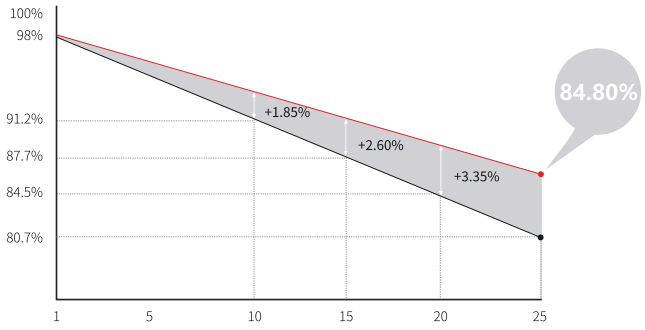
Hi-MO 5m

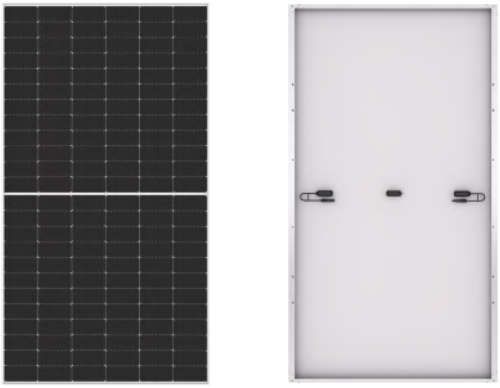
LR5-72HPH 540~560M

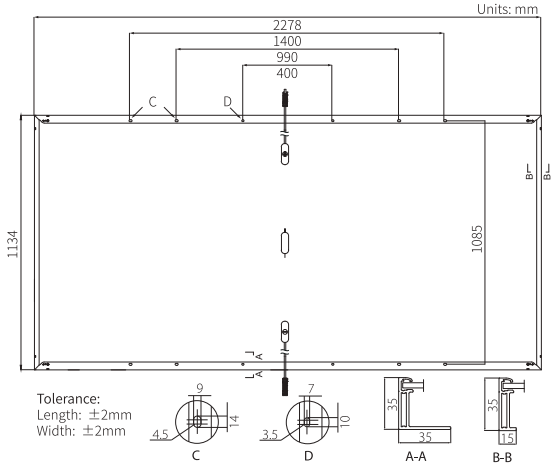
21.7%	0~3%	<2%	0.55%	HALF-CELL
MAX MODULE EFFICIENCY	POWER TOLERANCE	FIRST YEAR POWER DEGRADATION	YEAR 2-25 POWER DEGRADATION	Lower operating temperature

Additional Value

25-Year Power Warranty







Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm², +400, -200mm/±1400mm length can be customized
Glass	Single glass, 3.2mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	27.5kg
Dimension	2278×1134×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 620pcs per 40' HC

Electrical Characteristics

STC : AM1.5 1000W/m² 25°C NOCT : AM1.5 800W/m² 20°C 1m/s Test uncertainty for Pmax: ±3%

Module Type	LR5-72HPH-540M		LR5-72HPH-545M		LR5-72HPH-550M		LR5-72HPH-555M		LR5-72HPH-560M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	540	403.6	545	407.4	550	411.1	555	414.8	560	418.6
Open Circuit Voltage (Voc/V)	49.50	46.54	49.65	46.68	49.80	46.82	49.95	46.97	50.10	47.11
Short Circuit Current (Isc/A)	13.85	11.20	13.92	11.25	13.98	11.31	14.04	11.35	14.10	11.40
Voltage at Maximum Power (Vmp/V)	41.65	38.69	41.80	38.83	41.95	38.97	42.10	39.11	42.25	39.25
Current at Maximum Power (Imp/A)	12.97	10.43	13.04	10.49	13.12	10.56	13.19	10.61	13.26	10.67
Module Efficiency(%)	20.9		21.1		21.3		21.5		21.7	

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ 3%
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	25A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 1 or 2 IEC Class C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.265%/°C
Temperature Coefficient of Pmax	-0.340%/°C

LONGi

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Tel: +86-21-80162606

Web: www.longi.com

Specifications included in this datasheet are subject to change without notice. LONGi reserves the right of final interpretation. (20220410V15) G2

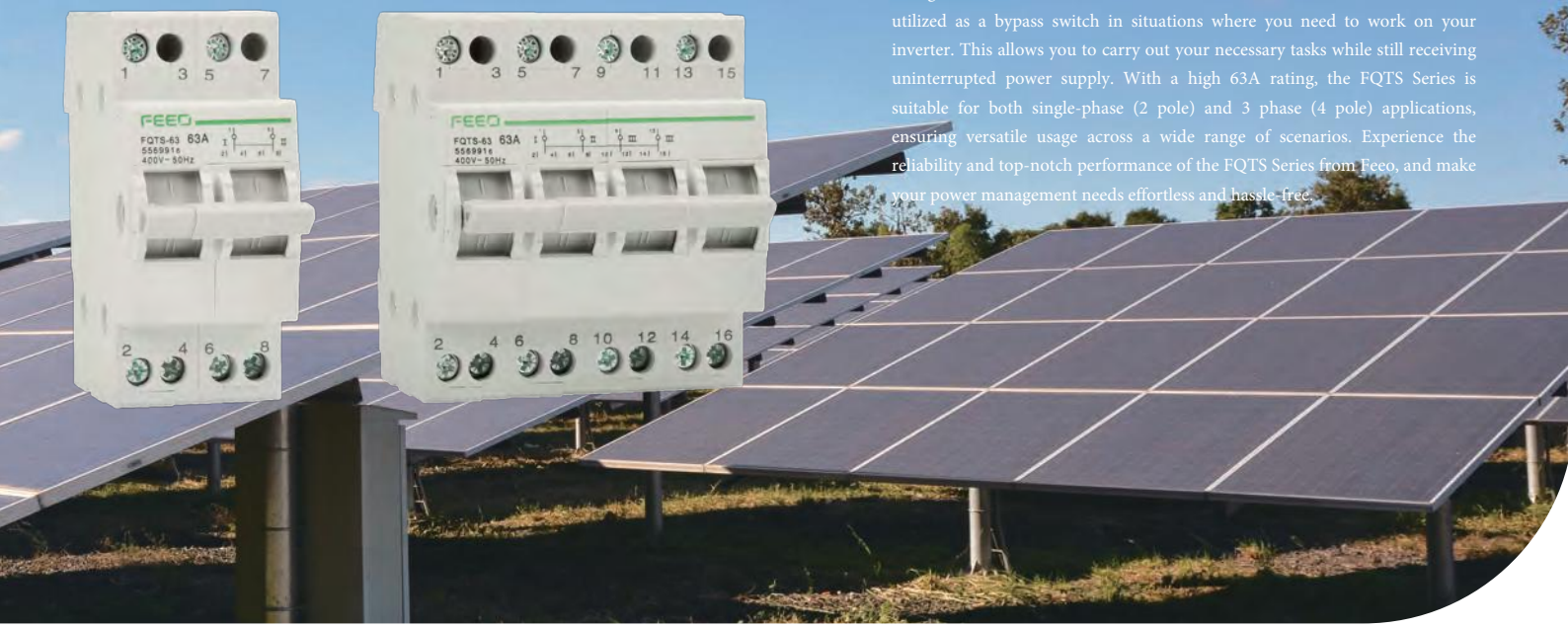
FEEO PRODUCTS

FEEO

FQTS

Manual Transfer Switch (MTS) Circuit Breaker

The FQTS Series from Feeo is a premium range of hand-operated miniature dual power transfer switches that offer unparalleled quality. These switches allow for seamless switching between power sources, such as the power utility or a generator, with ease and convenience. In addition, the FQTS can also be utilized as a bypass switch in situations where you need to work on your inverter. This allows you to carry out your necessary tasks while still receiving uninterrupted power supply. With a high 63A rating, the FQTS Series is suitable for both single-phase (2 pole) and 3 phase (4 pole) applications, ensuring versatile usage across a wide range of scenarios. Experience the reliability and top-notch performance of the FQTS Series from Feeo, and make your power management needs effortless and hassle-free.



Product Features

- The product has increased the interlocking function, that is, in the case of the closing of one side of the circuit breaker, the other side of the circuit breaker can only maintain the disconnected state, and realize the protection functions such as line switching.
- The product has overload and short circuit protection functions, can be automatically disconnected when a fault occurs on the line, protect the line.
- Power in and out, in line with the characteristics of the power line, easy installation.

Technical Parameters

Name	Manual transfer switch	
Rated current	63A	63A
Rated current	2P, 4P	
Rated working voltage	400VAC	
Frequency	50HZ	

FSCB–PV 1/1

DC Combiner Box



Advantages

• High Reliability

Select professional photovoltaic fuse, Surge Protective Device, DC Circuit Breaker or Isolator Switch(TUV Certificate).

• Strong Adaptability

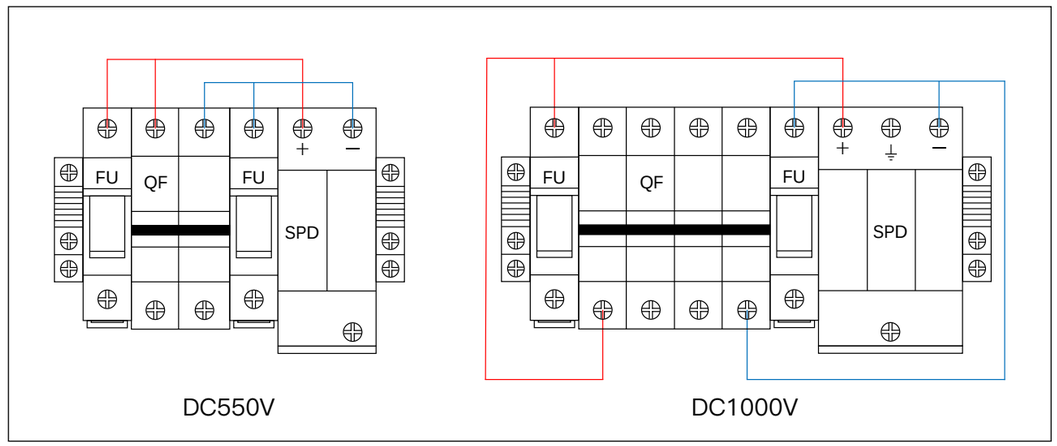
IP65 protection grade, waterproof, dustproof and UV proof.

• Flexible configuration

It is applicable to monocrystalline silicon, polycrystalline silicon and thin film cell photovoltaic modules.

The voltage and current of photovoltaic accessories can be modified.

Wiring Diagram

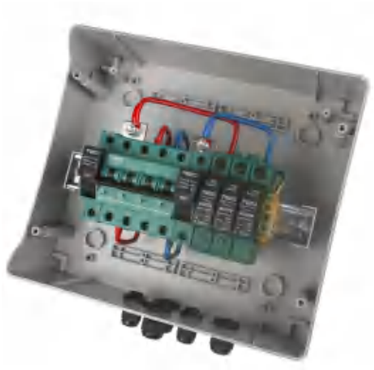


DC550V DC1000V

Desciption

FSCB–PV1/1 solor combiner box is suitable for inverter (MAX input voltage DC 550V/DC 1000V, 1 PV input channel, 1 output channel, single inverter). Box body is made of PC engineering materials, with test for fire retardant, temperature rise, anti impact, anti ultraviolet,and other testing. IP65 protection grade.

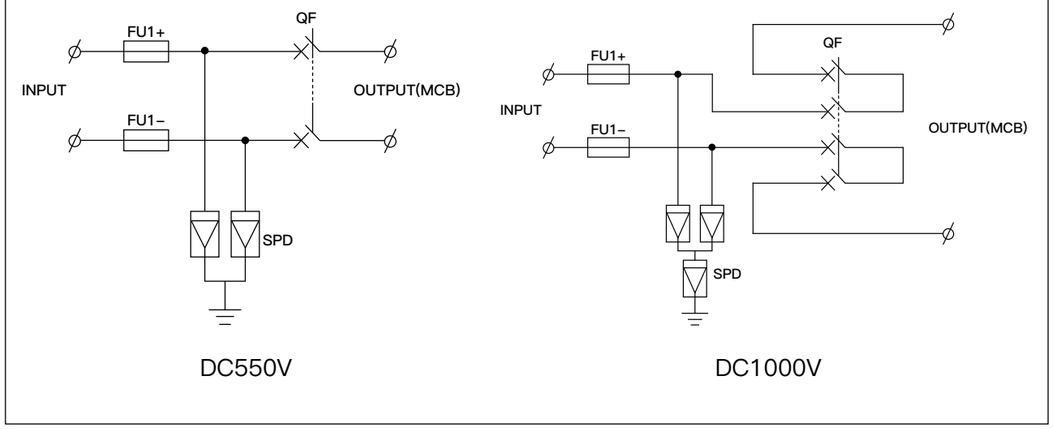
Design and configuration, strictly accordance with the "Technical specification for photovoltaic junction equipment" CGC/GF 037:2014. Provide users with a safe, brief, beautiful and applicable photovoltaic system products.



Technical Parameters

Name	FSCB–PV1/1	
	Electric parameter	
System maximum DC voltage	550	1000
Maximum input current for each string	15A	
Maximum input strings	1	
Maximum output switch current	16A/20A	
Number of inverter	1	
Number of output strings	1	
	Lightning protection	
Category of test	II grade protection	
Nominal discharge current	20kA	
Maximum discharge current	40kA	
Voltage protection level	2.8KV	3.8KV
Maximum continuous operating voltage Uc	630V	1050V
Poles	2P	3P
Structure characteristic	Plug–push module	
	System	
Protection grade	IP65	
Output switch	DC isolation switch (optianal)/DC circuit breaker (standard)	
SMC4 Waterproof Connectors	Standard	
PV DC FUSE	Standard	
PV Surger protective device	Standard	
Monitoring module	Optional	
Precenting diode	Optional	
Box material	PC	
Installation method	Wall mounting type	
Operating Temperature	–25℃ ~+55℃	
Elevation of Temperature	2km	
Permissible relative humidity	0–95%,no condensation	
	Mechanical parameter	
Width×High×Depth (mm)	215×210×100	300×260×140

Schematic Diagram



DC550V DC1000V

FSCB-PV 2/1

DC Combiner Box



Advantages

• High Reliability

Select professional photovoltaic fuse, Surge Protective Device, DC Circuit Breaker or Isolator Switch(TUV Certificate).

• Strong Adaptability

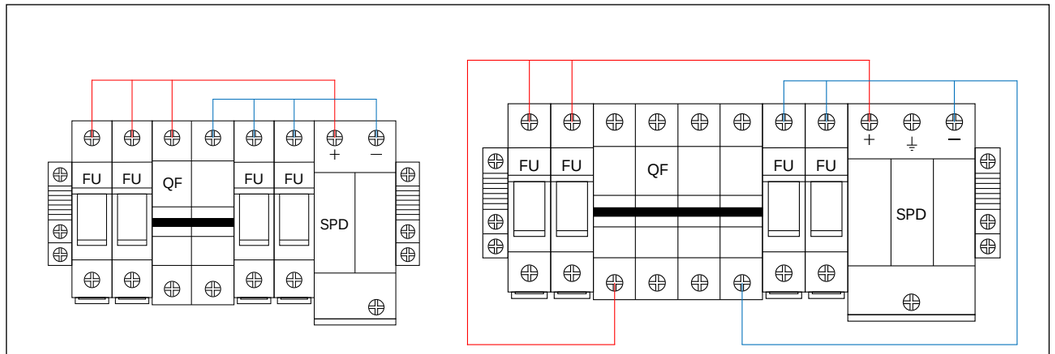
IP65 protection grade, waterproof, dustproof and UV proof.

• Flexible configuration

It is applicable to monocrystalline silicon, polycrystalline silicon and thin film cell photovoltaic modules.

The voltage and current of photovoltaic accessories can be modified.

Wiring Diagram



DC550V DC1000V

Desciption

FSCB-PV2/1 DC combiner box is suitable for inverter (MAX input voltage DC550V/DC1000V, 2 PV input channel, 1 output channel, single inverter). Box body is made of PC engineering materials, with test for fire retardant, temperature rise, anti impact, anti ultraviolet,and other testing. IP65 protection grade.

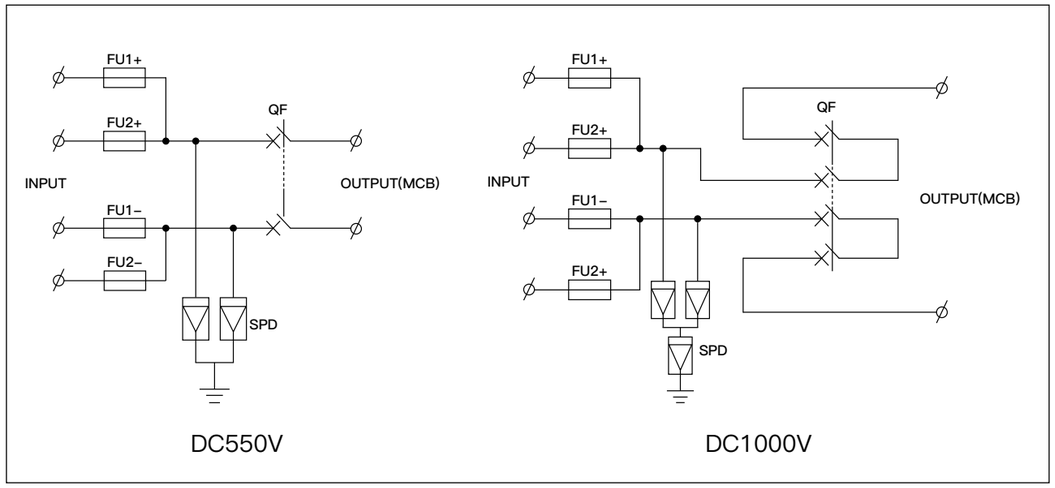
Design and configuration, strictly accordance with the "Technical specification for photovoltaic junction equipment" CGC/GF 037:2014. Provide users with a safe, brief, beautiful and applicable photovoltaic system products.



Technical Parameters

Name	FSCB-PV2/1	
	Electric parameter	
System maximum DC voltage	550	1000
Maximum input current for each string	15A	
Maximum input strings	1	
Maximum output switch current	32A	
Number of inverter	1	
Number of output strings	1	
	Lightning protection	
Category of test	II grade protection	
Nominal discharge current	20kA	
Maximum discharge current	40kA	
Voltage protection level	2.8KV	3.8KV
Maximum continuous operating voltage Uc	630V	1050V
Poles	2P	3P
Structure characteristic	Plug-push module	
	System	
Protection grade	IP65	
Output switch	DC isolation switch (optianal)/DC circuit breaker (standard)	
SMC4 Waterproof Connectors	Standard	
PV DC FUSE	Standard	
PV Surger protective device	Standard	
Monitoring module	Optional	
Precenting diode	Optional	
Box material	PC	
Installation method	Wall mounting type	
Operating Temperature	-25℃ ~+55℃	
Elevation of Temperature	2km	
Permissible relative humidity	0-95%,no condensation	
	Mechanical parameter	
Width×High×Depth (mm)	215×210×100	300×260×140

Schematic Diagram



DC550V DC1000V

FSAB–PV 4/1

AC Combiner Box



Advantages

- **High Reliability**

With AC Surge Protection Device

With AC circuit breaker, rated voltage of AC690V.

- **Strong Adaptability**

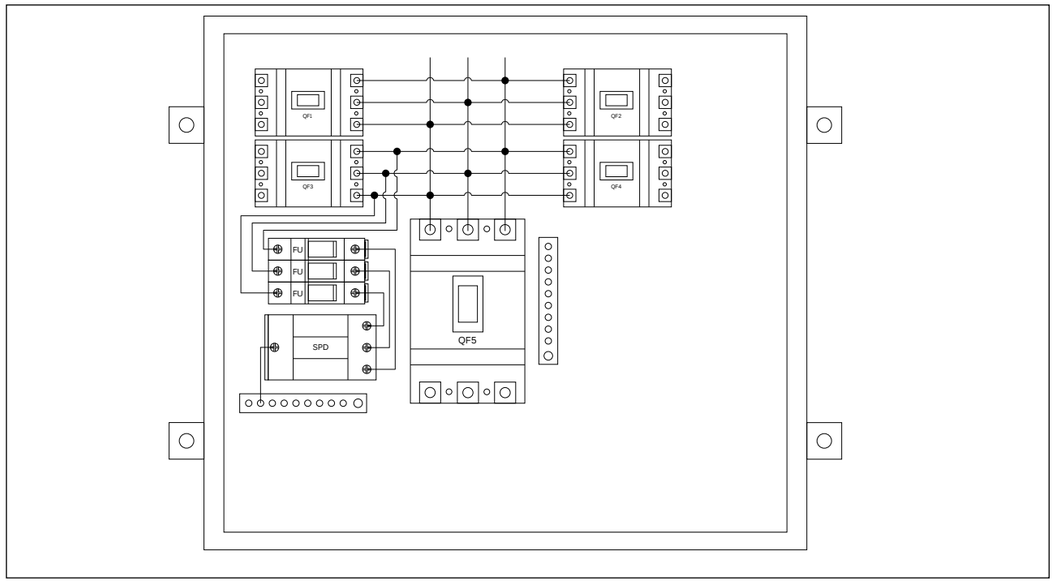
IP66 protection grade, waterproof, dustproof and UV proof.

- **Flexible configuration**

It is applicable to monocrystalline silicon, polycrystalline silicon and thin film cell photovoltaic modules.

The voltage and current of photovoltaic accessories can be modified.

Wiring Diagram



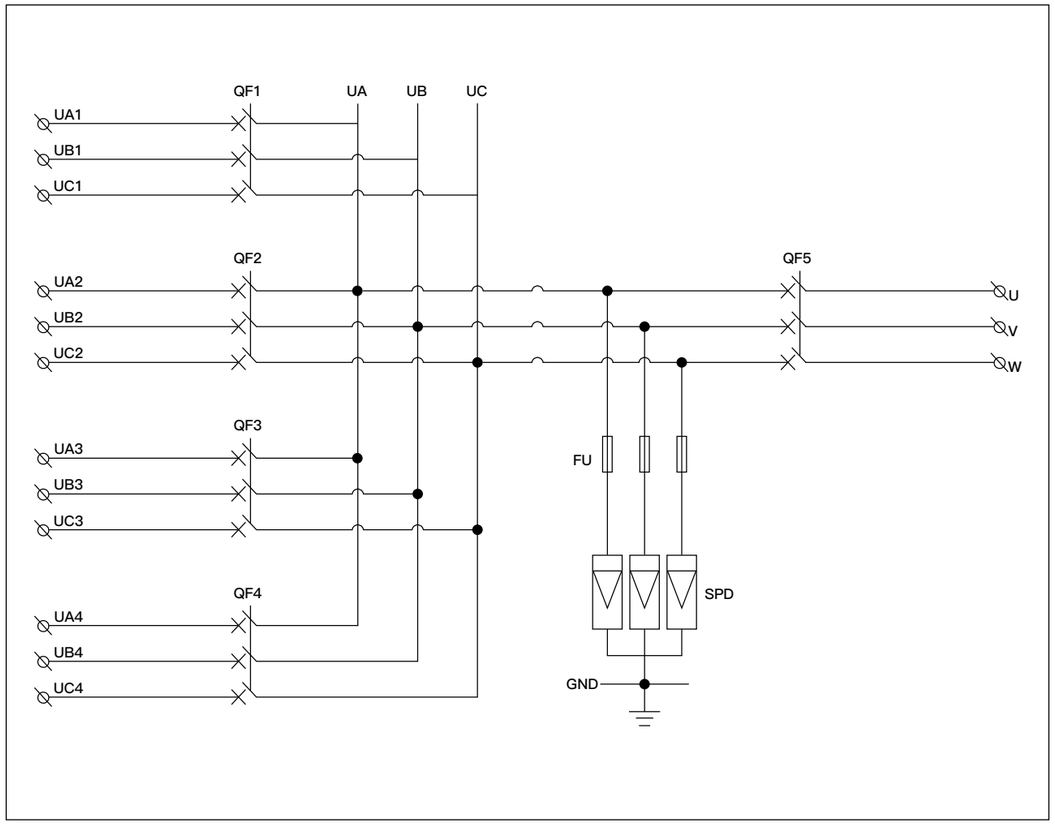
Desciption

FSAB–PV4/1 Photovoltaic AC bus box is an important part of photovoltaic group series power generation system, to accept group series inverter and AC distribution cabinet or boost transformer, the product is connected to up to 4 photovoltaic group series inverter, the input line using circuit breaker input, output using circuit breaker or load isolation switch, bus bus after the bus bus bus, lightning protection, System of rated voltage up to AC690V, protection grade with lists of type inverter is extremely IP65, reached the requirements of outdoor installation,, uv protection, waterproof, dustproof, salt fog corrosion, etc. Greatly simplifies the product set of string type inverter with ac power distribution cabinet or connection between step–up transformer, the product structure is simple, clear reasonable wiring and tidy. High reliability and easy maintenance. Outdoor wall–mounted installation, can adapt to all kinds of harsh environment. In addition to standard material and size, can be customized according to user requirements.

Technical Parameters

Name	FSAB–PV4/1
Input strings	4
Maximum input voltage	AC690
Each input current	0~100A
Maximum output current	250A
Rated operating voltage Un	480VAC
Voltage protection level Up	⩽ 3.2kV
Nominal current capacity In	20kA (Optional)
Maximum current capacity Imax	40kA (Optional)
Response time	＜ 25ns
Output input switch	Circuit breaker
Surge protector	Standard
Box material	SMC/Metal
Enclosure protection grade	IP66
Cable joint protection grade	IP66
Operating Temperature	–40℃ ~+85℃
Elevation of Temperature	⩽ 4km
Permissible relative humidity	95%,no condensation, no corrosive gas
Width×High×Depth (mm)	800×600×200

Schematic Diagram



FSP-D40

Type2 Solar DC Surge Protective Device (DC SPD)

▶ Application

Surge protective device, protect against lightning surge voltages in solar system (photovoltaic power supply system). These units must be installed in parallel on the dc networks to be protected and provide common and different modes protection. Its installed location are recommended at both ends of the dc power supply line (solar panel side and inverter/converter side), especially if the line routing is external and long. High energy MOVs equipped with specific thermal disconnectors and related failure indicators.



▶ Specifications

FSP-D40 Surge protector	FSP-D40				
PVDC - specific	EN50539-11				
Pole	2P	2P	3P	3P	2P(COSTOMIZED)
Electrical parameter					
Classified test	II	II	II	II	II
Uoc max (VDC)	600	800	1000	1500	12/24
Uc (VDC)	600	800	1000	1500	12/24
In (8 /20)us (kA)	20	20	20	20	20
Ima x (8 /20)us (kA)	40	40	40	40	40
Up (kV)	2.0	2.5	3.8	5.3	2.0

▶ Remote Signal Contact

Remote signal contact	Maximum working voltage (V)	250VAC/30VDC	250VAC /30VDC
	Maximum working current (A) IA (250 V /AC)	IA (250V/AC)	IA (250V /AC)
	I A (30 V DC)	IA (30V/AC)	IA (30V /AC)

▶ Installation and Dimensions

Wiring capacity(mm2)	Hard wire	4~25	4~25
	Flexible wire	4~16	4~16
Stripping length(mm)		10	10
Terminals crcwa		M5	M5
Torque (Nm)	Main circuit	3.5	3.5
	Remote signal contact	0.25	0.25
Protection class	All profile	IP40	IP40
	Connection port	IP20	IP20
Installation environment		No obvious shock and vibration	
Altitude (m)		≤2000	≤2000
Working Temperature		-30℃ ~ +70℃	-30℃ ~ +70℃
Relative humidity		30%~90 %	30%~90 %
How to install		Installed with H 35-7.5/DIN35 steel mounting rail	
Size (mm) (W x H x L)	W	36	54
	H	90	90
	L	67.6	67.6
Weight (kg)		0.24	0.36

FSP-A

Type 2 AC Surge Protective Device

Application

FSP-A series surge protection device (in short SPD,alias:surge suppressor surge arrester)is suitable for TN-S, TN-C-S, TT, IT etc, power supply system of AC 50/60Hz,<380V, installed on the joint of LPZ1 or LPZ2 and LPZ3. It's designed according to IEC61643-1, GB18802.1, it adopts 35mm standard rail, there is a failure release mounted on the module of surge protection device, When the SPD fails in breakdown for over heat and over-current, the failure release will help electric equipments separate from the power supply system and give the indication signal, green means normal, red means abnormal, it also could be replaced for the module when has operating voltage.



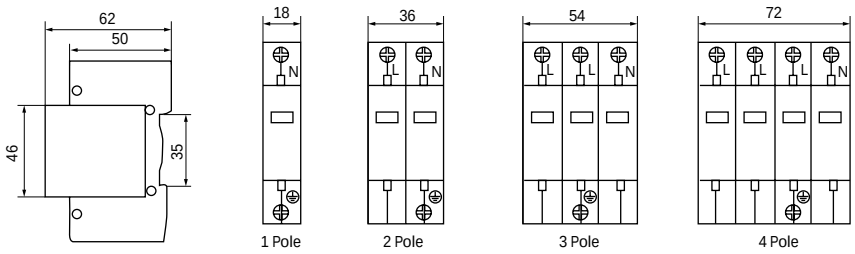
Product Features

- Inside over-current and over-heat protection, temperature control open circuit.
- Module design, convenient installation, could be replaced online.
- Time of response <25ns
- The color of visible window shows operating status, green means normal, red means abnormal

Specifications

Technical Parameters					
Pole	1P	2P	3P		4P
Rated Operating Voltage Un(V~)	230V/275V		385V/420V		
Maximum Continuous Operating Voltage Uc(V~)	275/385/420VAC				
Voltage protection Level Up(V~)kV	≤2.5				
Nominal Discharge Current In μs kA	5	20	30	40	60
Maximum Discharge Current Imax μs kA	10	40	60	80	100
Response Time (ns)	<25				
Test Standard	IEC61643.1, GB18802.1				
Operating Environment(centigrade)	-40℃ ~+85℃				
Max Connection Line	35mm2 hard wire/35mm2 strand wire copper line				
Recommended Connection Line	16mm2 hard wire/25mm2 strand wire copper line				
Installation	Standard Rail 35mm				
Material of Outer Covering	Burning-proof Nylon				

Overall Dimensions



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FWP-A

Type 1+2 AC Surge Protective Device

▶ Application

Type 1 + 2 SPD' s have characteris cs of type 1 but also type 2, they are capable of discharging a very high lightning current (T1 10/350 µ s) and they have as well a low residual voltage (Up). They are installed in the main distribu on switchboard but also in subdistribu- on board. Because of their power, Type 1 + 2 SPD' s can let pass through a too high residual voltage, if the announced Up is not compa ble with the withstand voltage of the equipment to protect or if the cable length to the equipment is longer than 10m,



▶ Features

- ☐ Patented QuickSafe ® technology
- ☐ Safety Reserve system
- ☐ Din rail moun ng
- ☐ Pluggable
- ☐ Improved safety
- ☐ Back up protec on up to 160 A Fuse or 125 A Mcb

▶ Specifications

Key characteristics			
Protection mode	L-N/L-PE/N-PE		
Number of protected lines	1-4		
Test class	I-II		
Integrated thermal disconnector	Yes		
End of life indicator	Yes		
Safety reserve	Yes		
Safety reserve			
Electrical characteristics			
Nominal discharge current	/n (8/20)	kA	20
Maximal discharge current	/max (8/20)	kA	40
Impulse current	/imp (10/350)	kA	7
maximal continuous operating voltage	Uc	V	275/385/420
Type of current/frequency		Hz	a.c.50/60
Voltage protection level at In	Up(L-PE)	kV	1,2
Voltage protection level at In	Up(L-N)	kV	-
Voltage protection level at In	Up(N-PE)	kV	-
Short circuit withstand	/SCCR	kA	100
Total current	/TOTAL	kA	20
Follow current interrupted	/fi	kA	-/-
Ground residual current	/PE	µ A	< 350
TOV withstand(L-N:5s/N-PE:200 ms)	UT	V	337
Voltage Combination Wave	Uoc	kV	20
Required thermal/back up protection			
Curve B or C Circuit breaker		A	≤125
gG-gL fuse		A	≤160
Comments			
Mechanical characteristics			
Dimensions	HxWxD	mm	89 × 18 × 69
Wire range:Solid wire		mm²	2.5...25
Wire range:Stranded wire		mm²	12.5
Stripping length		mm	Per 1
Packing quantities		piece	
Miscellaneous characteristics			
Maximal altitude		m	2000
Weight		g	150
Response time		ns	25
Fire resistance according to UL 94			< V-0

FDS-32

Solar DC Fuse

Application

A range of 10x38mm fuse links specifically designed for protecting photovoltaic strings. These fuse links are capable of interrupting low overcurrents associated with faulted photovoltaic string arrays (reverse current, multi-array fault).



Structural Characteristics

- According to IEC60269-1
- Rated current: 1-32A
- Rated voltage: DC 1000V
- Rated breaking capacity:DC 20KA
- Operating class gPV for Solar protection

Specifications

Pole	1P
Rated Voltage Ue (V DC)	1000
Rated Current In (A)	1,2,3,4,5,6,8,10,12,15,20,25,32
Biggest Block Ability(KA)	20
The Most High Power Consumption(W)	3.5

Connection and Installation

Connection(mm2)	2 .5 -1 0
Working Temperature(℃)	-30~+70
Resistance And Damp Hot	Class 2
Altitude(m)	≤ 2000
Relative Humidity	≤ 95%
Protection Class/Degree	IP20
Pollution	3
Installation Environment	No obvious shock and vibration
Installation Class/Type	Class III/DIN rail

Size(mm)

Size/Dimension(mm)		
(WxHxL)	W	18
	H	60
	L	78
Fuse Size		10x38
Fuse Link Weight(kg)		0.011
Fuse holder weight(kg)		0.07

Application conditions

- Photovoltaic system fuse accord with UL248-1 standard.
- Photovoltaic battery dc fuse designed to used for photovoltaic (PV) system.
- Main effect is to protect the solar panels. Solar panels points in effective condition is broken.
- Fault light cells break points at the same time, does not affect other normal work of light from the stack.
- Technical Data Rated coltage: DC1000V Breaking capacity: 25KA Function level: PV.

FDS-160

Solar DC Fuse

▶ Application

Fuse features light in weight, small in size, low in power loss and high in breaking capacity. This product has been widely used in overload and short circuit protection of electric installation. This product conforms to ICE 60269 standard with all of the rating at the world advanced level.



▶ Structural Characteristics

- ☐ According to IEC60269-6
- ☐ Rated current: 40-160A
- ☐ Rated voltage: DC 1000V
- ☐ Rated breaking capacity:DC 50kA
- ☐ Operating class gPV for Solar protection
- ☐ See Model of product:NH00

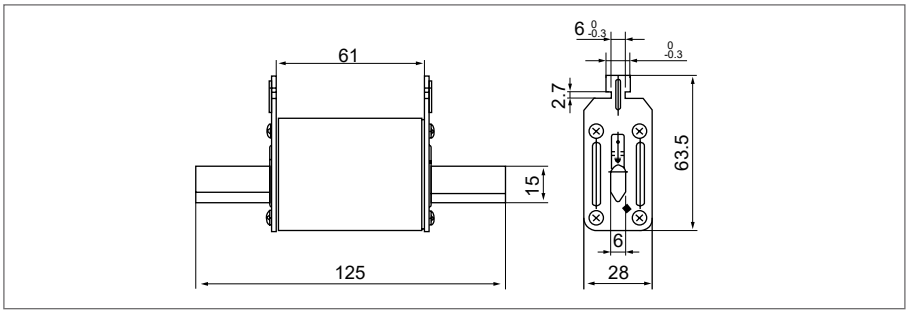
▶ Specifications

Rated Voltage Ue (V DC)	1000
Rated Current In (A)	40,50,63,80,100,125,160
Biggest Block Ability(KA)	50

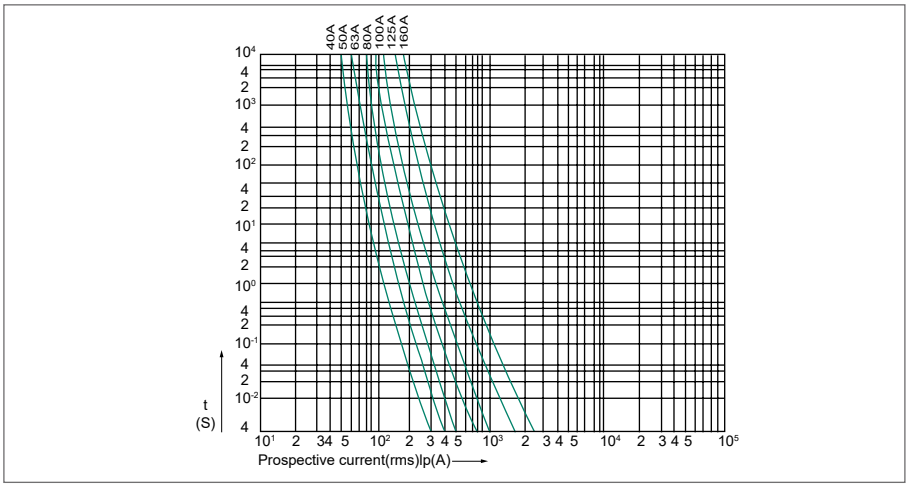
▶ Electrical Characteristics

Rating	Blowing Time	
	1.13In	1.45In
In≤ 60	1 hour Min	1 hour Max
63< In ≤160	2 hour Min	2 hour Max

▶ Dimensions



▶ Characteristic Curve



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FDS-250

Solar DC Fuse

▶ Application

Fuse features light in weight, small in size, low in power loss and high in breaking capacity. This product has been widely used in overload and short circuit protection of electric installation. This product conforms to ICE 60269 standard with all of the rating at the world advanced level.



▶ Structural Characteristics

- ☐ According to IEC60269-6
- ☐ Rated current: 32-250A
- ☐ Rated voltage: DC 1000V
- ☐ Rated breaking capacity:DC 50kA
- ☐ Operating class gPV for Solar protection
- ☐ See Model of product:NH1

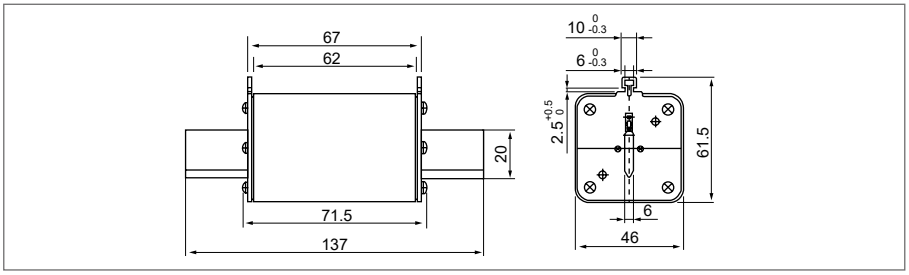
▶ Specifications

Rated Voltage Ue (V DC)	1000
Rated Current In (A)	32,40,50,63,80,100,125,160,200,250
Biggest Block Ability(KA)	50

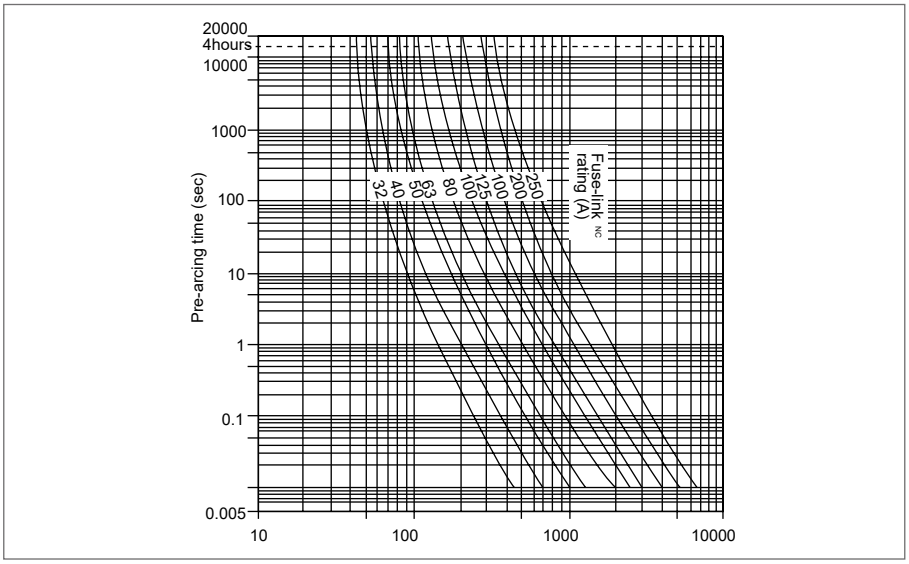
▶ Electrical Characteristics

Rating	Blowing Time	
	1.13In	
In≤ 60	1 hour Min	1 hour Max
63< In ≤250	2 hour Min	2 hour Max

▶ Dimensions



▶ Characteristic Curve



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FHDS

Solar DC 1500V Fuse

▶ Application

A range of 10x85mm PV fuses specifically designed for protecting and isolating photovoltaic strings.
These fuse links are capable of interrupting low overcurrents associated with faulted PV systems (reverse current, multi-array fault).
Available in four mounting styles for application flexibility.



▶ Structural Characteristics

- ☐ According to IEC60269-6
- ☐ Rated current: 1-30A
- ☐ Rated voltage: DC 1500V
- ☐ Rated breaking capacity:DC 20kA
- ☐ Operating class gPV for Solar protection

▶ Specifications

Pole	1P
Rated Voltage Ue (V DC)	1500
Rated Current In (A)	1,2,3,4,5,6,8,10,12,15,20,25,30
Biggest Block Ability(KA)	20

▶ Connection and Installation

Connection(mm2)	2 .5 -1 0
Working Temperature(℃)	-30~+70
Resistance And Damp Hot	Class 2
Altitude(m)	≤ 2000
Relative Humidity	≤ 95%
Protection Class/Degree	IP20
Pollution	3
Installation Environment	No obvious shock and vibration
Installation Class/Type	Class III/DIN rail

▶ PV fuse Features

- ☐ Specifically designed to provide fast-acting protection under low fault current conditions associated with PV systems.
- ☐ Variety of mounting options for flexibility.
- ☐ Fuses meet IEC photovoltaic standards for global product acceptance.
- ☐ Low watts loss for greater PV system efficiency.
- ☐ Low heat rise permits more precise sizing.
- ☐ In-line crimp terminal version is easy to apply in wire harness construction.

FHB Series

Fuse Type Isolator Switch

▶ Product Application

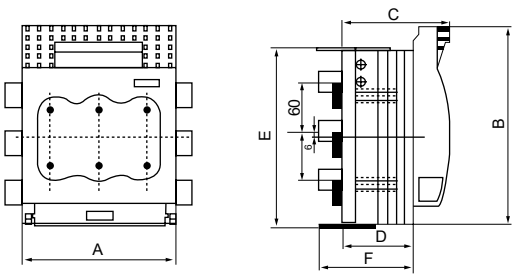
FHB series fuse type isolator is a product with advanced international level in the middle of the 90s. The rated voltage is 800V, rated voltage to 660V, rated current up to 630A, rated frequency 50Hz, power distribution and electric circuit high short-circuit current, used as power switch, isolation switch and emergency switch and circuit protection purposes, but generally not directly as a single motor for opening and closing.



▶ Technical Parameters

Convention heating current Ith	160A	250A	400A	630A
Rated insulation voltage Ui	800V/1500V			
Rated operating voltage Ue	AC400V, 690V/DC1000V			
Rated frequency	50Hz			
Rated connection capacity (A r.m.s)	10Ie			
Rated breaking capacity (A r.m.s)	8Ie			
Rated limit short-circuit current (r.m.s)	50KA			
Rated operating current	160A	250A	400A	630A
	100A	200A	315A	425A
Mechanical life (times)	5000	3000	2000	1500
Electric life (times)	1000	600	400	300
Weight (3P) kg	1.2	3.6	4.8	6.5
Auxiliary micro switch main parameters	50Hz, AC-15, 230V, 3A			

▶ Dimensions



Model/Size	A	B	C	D	E	F
FHB-160/3	160	200	97	60	200	87
FHB-250/3	185	247	128	88	221	87
FHB-400/3	210	290	145	97	268	125
FHB-630/3	256	300	160	112	285	139

MC4

Solar Connector

- Simple on-site processing.
- Acomodates PV cable with different insulation diameters.
- Mating safety provided bykeyed housings.
- Multiple plugging and unplugging cycles .
- High current carrying capacity.





▶ Technical Parameters

Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size(mm2)	CableOD(ϕ Dmm)
FMC4-CMMM-14	FMC4-CMMM-H	FMC4-CM-T14	AWG14(2.5 mm2	ϕ 4.5- ϕ 8.5
FMC4-CMMM-12		FMC4-CM-T12	AWG12(4.0 mm2)	
FMC4-CMMM-10		FMC4-CM-T10	AWG10(6.0 mm2)	
FMC4-CFPM-14	FMC4-CFPM-H	FMC4-CF-T14	AWG14(2.5 mm2)	ϕ 4.5- ϕ 8.5
FMC4-CFPM-12		FMC4-CF-T12	AWG12(4.0 mm2)	
FMC4-CFPM-10		FMC4-CF-T10	AWG10(6.0 mm2)	

▶ Technical Parameters

Rated Current	30A(2.5-6mm2) 45A(4-6mm2)
Rated Voltage	1000V DC 1500V DC
Test Voltage	6000V(50Hz, 1min)
Overvoltage Type/Pollution Degree	CAT III /2
Contact Resistance Of Plug Connector	Im Ω
Contact Material	Copper, Tin-plated
Insulation Material	PPO
Degree Of Protection	IP2X/IP67
Flame Class	UL94-VO
Safety Class	II
Suitable Cable	OD 4.5-8.5(2.5-6.0mm2)
Insertion Force/Withdrawal Force	≤ 50N/ ≥ 50N
Connecting System	Crimp connection
Temperature Range	-40℃ ~ +125℃

PV CABLES

SOLARFLEX®-X H1Z2Z2-K

1500 V DC, EN 50618



Technical data

- Cables for PV systems acc. to EN 50618
- **Temperature range** -40°C to +90°C
- Permissible **operating temperature** at the conductor +120°C
- **Nominal voltage** AC 1,0/1,0 kV DC 1,5/1,5 kV
- **Maximum permissible DC voltage** 1.8 kV
- **Test voltage** AC 6,5 kV
- **Minimum bending radius** fixed installation 5x outer Ø

Cable structure

- Tinned copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation: special cross-linked compound
- Sheath: special cross-linked compound
- Sheath colour: see table below

Properties

- Complies protection class II
- UV-resistant
- Ozone resistant

Tests

- Halogen-free acc. to DIN VDE 0285-525-1 / DIN EN 50525-1 appendix B / DIN EN 60754-1 / IEC 60754-1
- Flame retardant acc. to IEC 60332-1-2
- Smoke density acc. to IEC 61034
- Weathering/UV-resistance acc. to EN 50618 appendix E
- Ozone resistant acc. to EN 50618
- Water resistant acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21 Annex E
- DC Voltage resistance of insulation acc. to DIN VDE 0283-618 / DIN EN 50618 Tab. 2

Approvals

- EN 50618 / TÜV

Application

The SOLARFLEX®-X is used for cabling solar modules. Suitable for direct burial. Recommendation: Laying in pipe. Not suitable for the permanent installation in water.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
713529	1 x 2,5	black	4,8 - 5,4	24,0	45,0	14
713544	1 x 2,5	blue	4,8 - 5,4	24,0	45,0	14
713543	1 x 2,5	red	4,8 - 5,4	24,0	45,0	14
713530	1 x 4	black	5,2 - 5,9	38,4	60,0	12
713546	1 x 4	blue	5,2 - 5,9	38,4	60,0	12
713545	1 x 4	red	5,2 - 5,9	38,4	60,0	12
713531	1 x 6	black	5,8 - 6,4	57,6	80,0	10
713570	1 x 6	blue	5,8 - 6,4	57,6	80,0	10
713569	1 x 6	red	5,8 - 6,4	57,6	80,0	10
713532	1 x 10	black	6,9 - 7,7	96,0	126,0	8
713572	1 x 10	blue	6,9 - 7,7	96,0	126,0	8
713571	1 x 10	red	6,9 - 7,7	96,0	126,0	8

Dimensions and specifications may be changed without prior notice.

09.06.2021 / Dimensions and specifications may be changed without prior notice.

EVO Mounting Structure

EVO-R PV

EVO ENERGY

USER GUIDE



MOUNTING STRUCTURE

EVO-R PV MOUNTING RAIL
EVO-TH PV MOUNTING
EVO-IBR PV MOUNTING
EVO-CRM PV MOUNTING
EVO-ADJUSTABLE PV MOUNTING
EVO-FRM PV MOUNTING

EVO-R PV MOUNTING RAIL

15 YEARS WARRANTY



PATENT PENDING

1.082 KG/M

3 Lengths Available
3.55m | 4.7m | 5.85m

6063 T6 Aluminium

Grip for Nut

Corrosion Reisitant

Multi Purpose

OVERVIEW

EVO-R PV MOUNTING RAIL is a cutting-edge aluminum rail system specially designed to revolutionize solar panel installations on rooftops. Crafted with precision and innovation, this versatile rail offers a seamless and secure solution for mounting solar panels on various roof types, making it an ideal choice for residential, commercial, and industrial applications.

EVO ENERGY

FEATURES

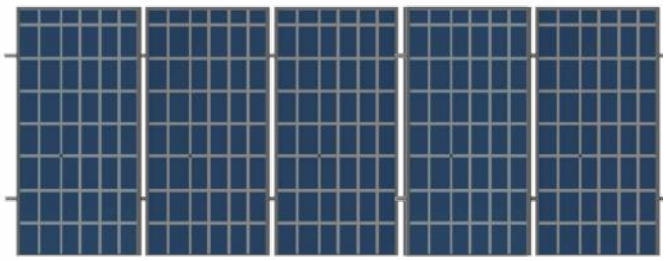
ADAPTABLE DESIGN: The EVO-R PV Mounting Rail features an innovative design that adapts to a range of roofing styles in Portrait or Landscape, including ground mount, Tile, IBR, Seamed, Slate, Marley tile, and Corrugated roof mount. This adaptability streamlines the installation process and eliminates the need for multiple rail versions, saving time and resources.

UNMATCHED STRENGTH: Crafted from high-grade Aluminum 6063 T6, the EVO-R rail exhibits exceptional strength-toweight ratio, ensuring optimum structural integrity. With a minimum extrusion thickness of 2mm, it remains non-flexible, preventing bending or bowing when subjected to harsh weather conditions and weight.

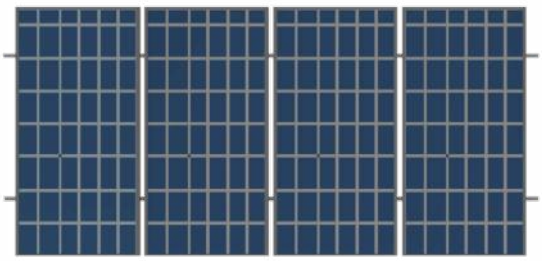
ENHANCED STABILITY: Unlike conventional rails with securing points on only two sides, the EVO-R PV Mounting Rail is engineered with mounting options on three sides. This unique feature enables multiple mounting configurations, providing superior stability and increased load-bearing capacity.

EYE-CATCHING AESTHETICS: With a focus on both functionality and aesthetics, the EVO-R PV Mounting Rail stands out as a visually appealing solution among traditional rail options available on the market. Its sleek and modern appearance complements any rooftop setting.

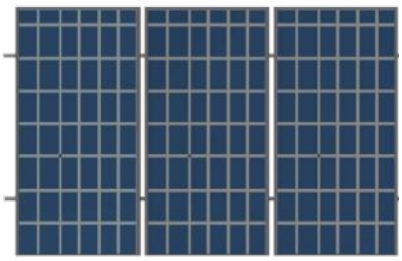
SECURE GRIP TECHNOLOGY: The rail boasts a cerated grip design for secure fastening of end clamps or mid clamps with wing nuts. The cerated grip ensures a firm hold, preventing loosening over time and maintaining consistent panel alignment.



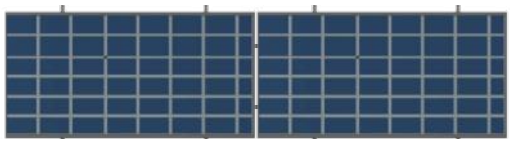
5 PANELS Portrait 2x EVO-R5850



4 PANELS Portrait 2x EVO-R4800

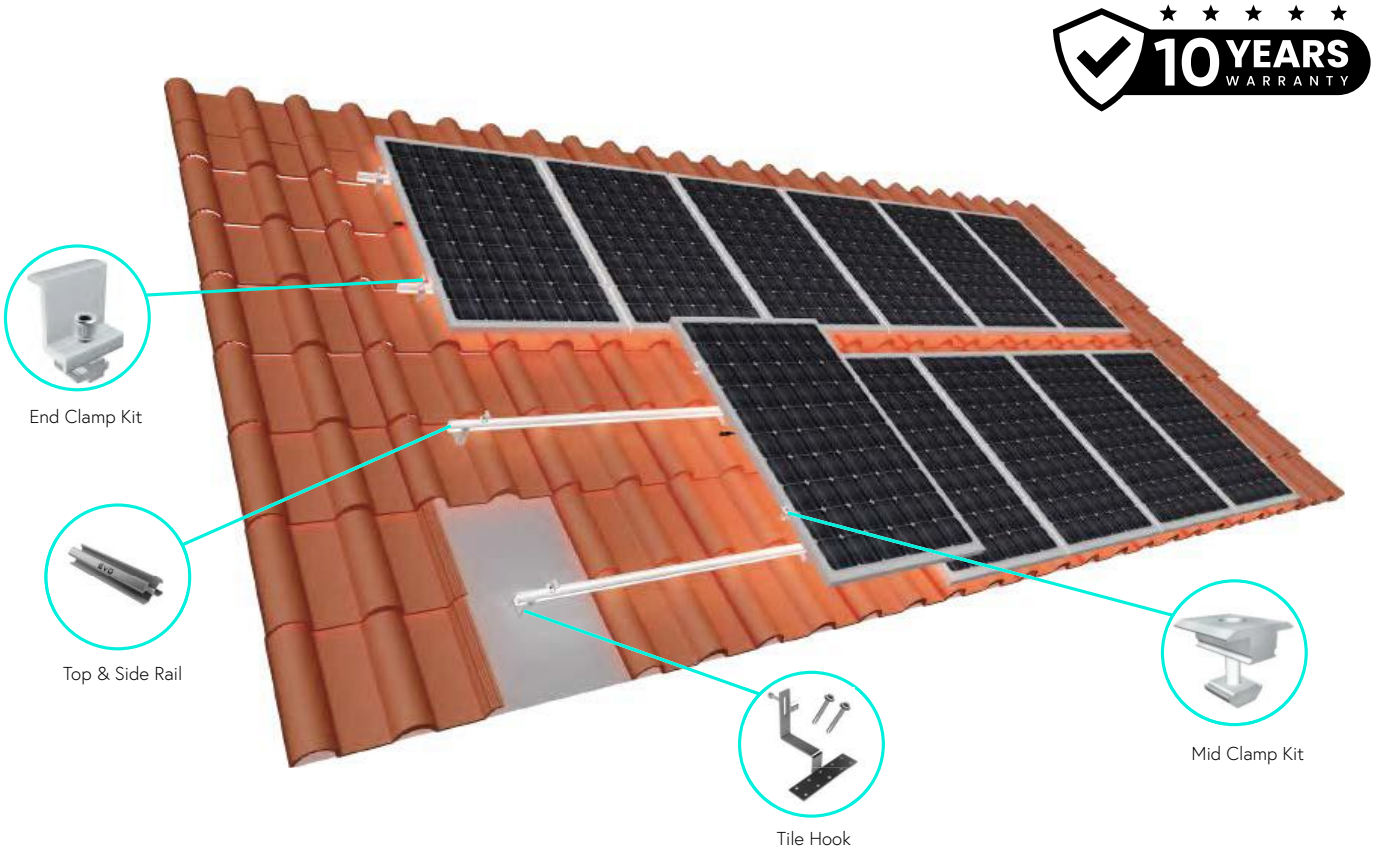


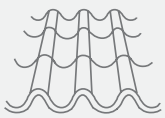
3 PANELS Portrait 2x EVO-R3600

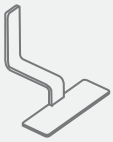


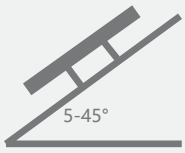
2 PANELS Landscape 2x EVO-R4800

EVO-TH PV MOUNTING

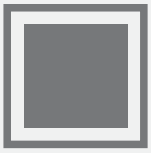



Applied to Tile Roof


Tile Roof Hook



Tilt Angle


Suitable for Framed or Frameless Solar Modules


Panel Layout Landscape or Portrait

TECHNICAL PARAMETERS

System Name	EVO Tile Hook system	**Panel Layout**	Portrait or Landscape
Installation Site	Pitched Roof	**Hook Material**	AL6005-T5(Anodized) / Mild Steel Galv / SUS304
Foundation	Tile, Flat Tile, Slate Tile, Asphalt Shingle Tile	**Fastener**	SUS304 & Zinc-Nickel Alloy Electroplated Steel
Tilt Angle	5-45°	**Small Components**	AL6005-T5(Anodized)
Wind Load	Max 60m/s	**Color**	Silver
Snow Load	Max 1.6KN/m^2	**Warranty**	10-year warranty
Applicable Solar Module	Framed		

OVERVIEW

EVO TILE ROOF HOOK SOLAR PV MOUNTING SYSTEM is applied to tile roof residential and commercial solar projects. The system can achieve stable and strong connection between the roof support structure and solar modules with a modular design.

ADVANTAGES

INLAND AND COASTAL UNITS AVAILABLE: Design options available in Stainless Steel for coastal application or Galvanised mild Steel for inland application

SAVE INSTALLATION TIME AND COST: Purpose built components.

COMPATIBLE TO DIFFERENT TYPES OF SOLAR MODULES: Compatible to most kinds of framed PV Modules with adjustable accessories.

COMPONENTS



Tile Hook



End Clamp



Inner / Mid Clamp



Top & Bottom Rail



Splice

TILE HOOK OPTIONS



EVO-TH-SS
SS = Stainless Steel (Coastal)



EVO-TH-HDG
HDG = Hot Dip Galvanised Mild Steel (Inland)

ACCESSORIES



EVO-EC



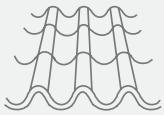
EVO-IC



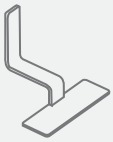
EVO-R3600(3.55m)
EVO-R4800(4.7m)
EVO-R5850 (5.85m)



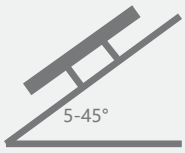
LM-RS-R-R42



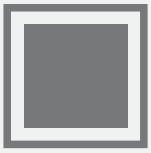
Applied to Tile Roof



Tile Roof Hook



Tilt Angle



Suitable for Framed or Frameless Solar Modules



Panel Layout
Landscape or Portrait

EVO-IBR PV MOUNTING





10 YEARS WARRANTY

Suitable for EVO Rail

6005-T5 Aluminium

Wind 60m/s

Corrosion Reisitant

Panel Layout
Landscape or Portrait

OVERVIEW

EVO-IBR PV MOUNTING BRACKET is a sleek and costeffective solution designed to seamlessly integrate with the EVO-R PV Mounting Rail. This innovative clamp provides a secure and adjustable mounting point for solar panels on IBR (Inverted Box Rib) profile roofs. With a focus on ease of installation and highperformance, the EVO-CLAMP is engineered to meet the demands of various solar projects.

FEATURES

WIDE TILT RANGE: The EVO-IBR clamp offers a tilt angle range of 0 to 15 degrees, providing flexibility to optimize solar panel orientation for maximum energy generation in different geographic locations.

PORTRAIT OR LANDSCAPE ORIENTATION: Whether you prefer portrait or landscape orientation, the EVO-IBR clamp accommodates both configurations, giving you the freedom to design your solar array as desired.

UNIVERSAL COMPATIBILITY: The EVO-IBR clamp is compatible with both framed and frameless solar panels, making it an ideal choice for a wide range of solar panel types and manufacturers.

EXTREME WEATHER RESISTANCE: Engineered to withstand harsh weather conditions, the EVO-IBR clamp is tested to handle wind speeds of up to 60 meters per second, ensuring the utmost stability and durability.

HIGH-QUALITY MATERIAL: Manufactured from premium Aluminum 6005-T5, the EVO-IBR clamp exhibits excellent corrosion resistance and structural integrity, guaranteeing longterm performance.

WATERPROOF DESIGN: To ensure maximum protection, the EVO-IBR clamp features a rubber seal at the contact point between the IBR roof sheet and the brackets, effectively preventing leaks and water ingress.

EVO ENERGY



5x EVO-IBR per EVO-R5850



4x EVO-IBR per EVO-R4800



4x EVO-IBR per EVO-R4800



4x EVO-Bi Stirching screw per EVO-IBR



EVO-IBR Assembly 1



1x EVO-L Bracket per EVO-CRM



1x EVO-RNW EVO-IBR



EVO-IBR Assembly 2

AS/NZS 1170, DIN 1055, JIS C 8955: 2017, International Building Code IBC 2009, California Building Code CBC 2010
EVO-IBR Clamp excludes screwsand rail. EVO-RNW nut and Bolt included

EVO-CRM PV MOUNTING





Suitable for EVO Rail

6005-T5 Aluminium

Wind 60m/s

Corrosion Reisitant

Panel Layout
Landscape or Portrait

OVERVIEW

EVO-CRM PV MOUNTING BRACKET is a sleek and cost-effective solution designed to seamlessly integrate with the EVO-R PV Mounting Rail. This innovative clamp provides a secure and adjustable mounting point for solar panels on Corrugated profile roofs. With a focus on ease of installation and high-performance, the EVO-CLAMP is engineered to meet the demands of various solar projects.

FEATURES

WIDE TILT RANGE: The EVO-CRM clamp offers a tilt angle range of 0 to 5 degrees (with EVO-L), providing flexibility to optimize solar panel orientation for maximum energy generation in different geographic locations.

PORTRAIT OR LANDSCAPE ORIENTATION: Whether you prefer portrait or landscape orientation, the EVO-IBR clamp accommodates both configurations, giving you the freedom to design your solar array as desired.

UNIVERSAL COMPATIBILITY: The EVO-IBR clamp is compatible with both framed and frameless solar panels, making it an ideal choice for a wide range of solar panel types and manufacturers.

EXTREME WEATHER RESISTANCE: Engineered to withstand harsh weather conditions, the EVO-IBR clamp is tested to handle wind speeds of up to 60 meters per second, ensuring the utmost stability and durability.

HIGH-QUALITY MATERIAL: Manufactured from premium Aluminum 6005-T5, the EVO-IBR clamp exhibits excellent corrosion resistance and structural integrity, guaranteeing longterm performance.



5x EVO-CRM per EVO-R5850



4x EVO-CRM per EVO-R4800



4x EVO-CRM per EVO-R4800



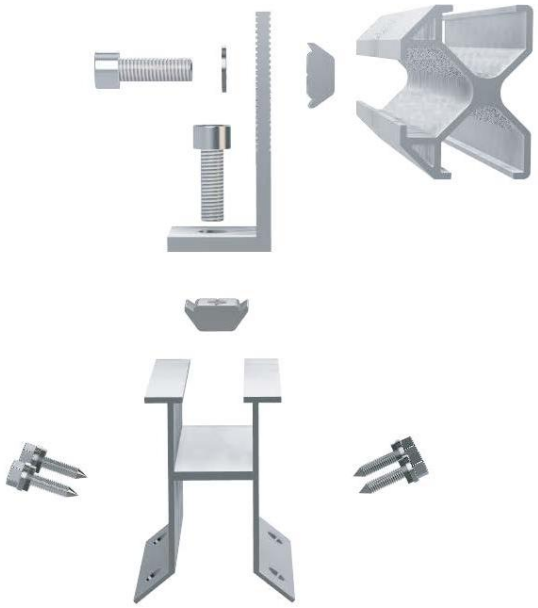
4x EVO-Bi Stirching screw per EVO-CRM



1x EVO-L Bracket per EVO-CRM



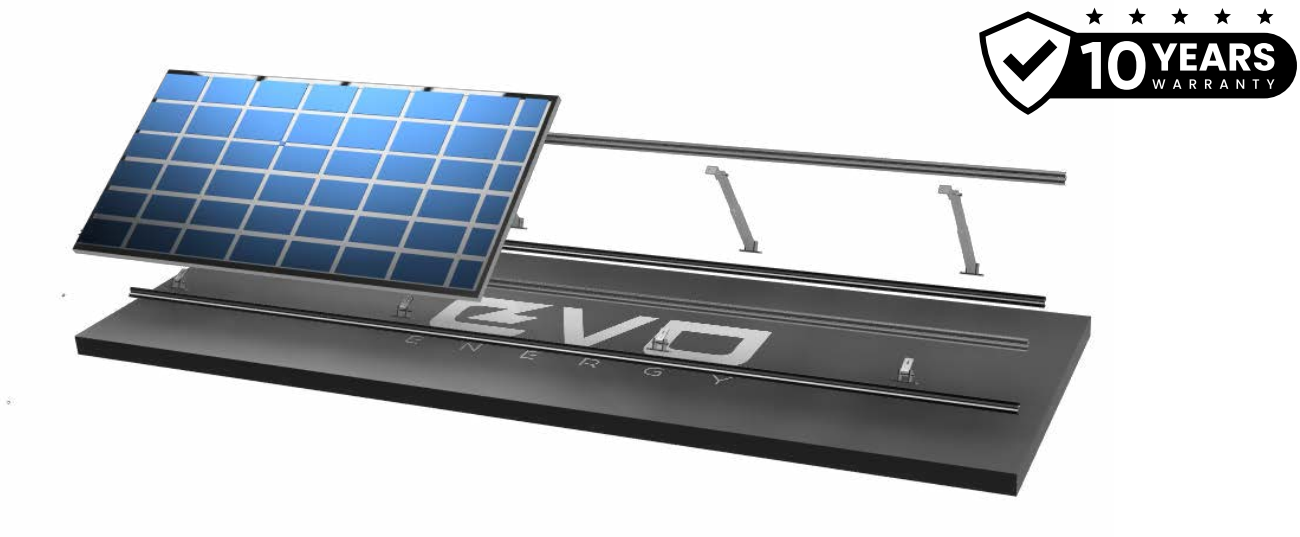
1x EVO-RNW EVO-CRM



EVO-CRM Assembly

AS/NZS 1170, DIN 1055, JIS C 8955: 2017, International Building Code IBC 2009, California Building Code CBC 2010
EVO-IBR Clamp excludes screws, EVO-L, EVO-R, EVO-RNW nut.

EVO-ADJUSTABLE PV MOUNTING



Suitable for EVO Rail

6005-T5 Aluminium

Wind 60m/s

Corrosion Reisitant

Panel Layout
Landscape or Portrait

TECHNICAL PARAMETERS

System Name	EVO Adjustable Roof Mount	**Panel Layout**	Portrait or Landscape
Installation Site	Pitched Roof	**Hook Material**	AL6005-T5(Anodized) / Mild Steel Galv / SUS304
Foundation	Tile, Flat Tile, Slate Tile, Asphalt Shingle Tile	**Fastener**	Q235B (Hot-Dii Galvanized), Al6005-T5(Anodized)l
Tilt Angle	10-60°	**Small Components**	AL6005-T5(Anodized)
Wind Load	Max 60m/s	**Color**	Silver
Snow Load	Max 1.6KN/m^2	**Warranty**	10-year warranty
Applicable Solar Module	Framed		

OVERVIEW

EVO-ADJUSTABLE Solar Panel Mounting Brackets - Optimize Solar Production with Precision Angle Adjustment

The EVO-ADJUSTABLE Solar Panel Mounting Brackets are a game-changer in the solar industry, providing an innovative solution for maximizing solar production by optimizing panel angles. Designed to seamlessly integrate with the EVO-R PV Mounting Rail, these brackets offer unparalleled flexibility and efficiency, making them the preferred choice for installation companies.

EVO ENERGY

FEATURES

ADVANCED ANGLING MECHANISM: The EVO-ADJUSTABLE Brackets feature a solid front leg with a pivoting point and an adjustable rear leg, allowing seamless and precise angling of solar panels. This dynamic design empowers solar installers to achieve the perfect tilt angle (from 10 to 60 degrees) for optimal energy production.

EXCEPTIONAL STRENGTH: Engineered to withstand harsh environmental conditions, the EVO-ADJUSTABLE Brackets boast an impressive wind resistance of up to 60m/s and a remarkable load capacity of 1.6KN/m^2. These brackets are built to ensure the utmost stability and security of solar panels, safeguarding your investment.

UNIVERSAL COMPATIBILITY: Compatible with both framed and unframed solar panels, the EVO-ADJUSTABLE Brackets provide versatility for a wide range of panel types. With the right EVO attachments, you can effortlessly integrate this system into your existing solar panel setup.

COMPLIANCE WITH STRINGENT STANDARDS: We take pride in ensuring topnotch quality and safety. The EVO-ADJUSTABLE Brackets comply with renowned design standards, including AS/NZS 1170, DIN 1055, JIS C 8955:2017, International Building Code IBC 2009, and California Building Code CBC 2010.

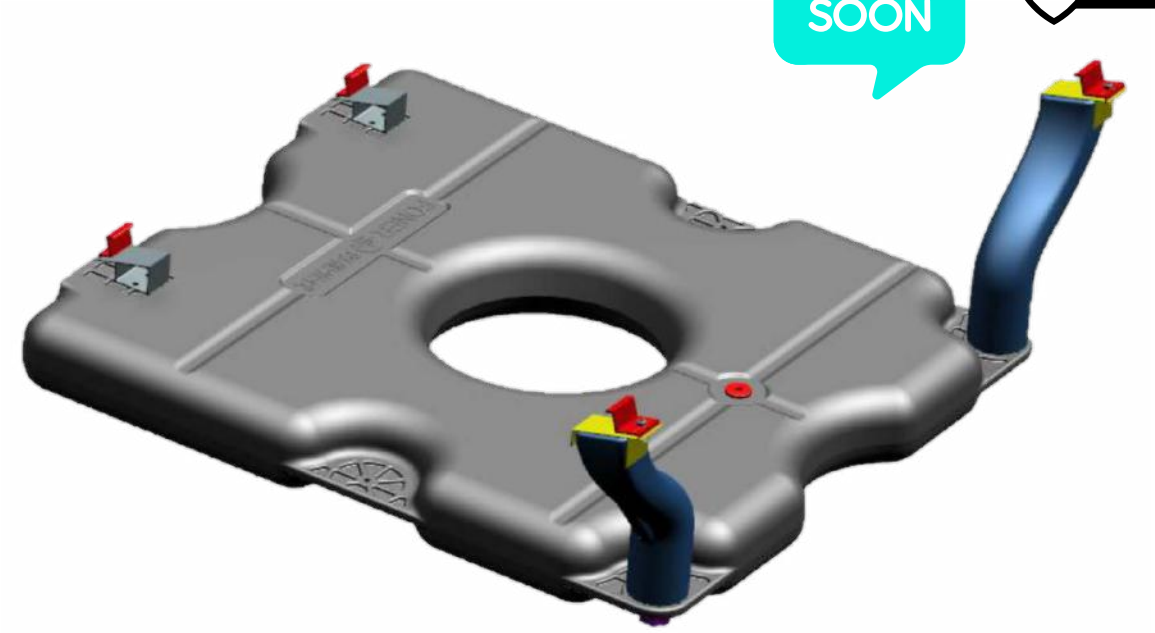
DURABLE CONSTRUCTION: Crafted with premium AI6005-T5 aluminum, the main components of the EVO-ADJUSTABLE Brackets exhibit exceptional corrosion resistance and structural integrity. The use of high-quality SUS304 and zinc-plated nickel alloy electroplated and hot-dip galvanized fasteners makes it ideal for coastal as well as inland installations, extending product life.

10-YEAR WARRANTY: We stand by the reliability of the EVO-ADJUSTABLE Brackets with a 10-year warranty, offering installation companies peace of mind and confidence in the long-term performance of their solar projects

EVO-FRM PV MOUNTING

COMING SOON

25 YEARS WARRANTY



Suitable for EVO Rail

2 HDPE

Hdpe 2

Wind 50m/s

Corrosion Resistant

Recyclable

TECHNICAL PARAMETERS

System Name	EVO Flat Roof Mount Ballist	**Material**	Modified HDPE, ANTI-UV
Installation Site	Flat Roof	**Fastener**	Q235B (Hot-Dii Galvanized), AI6005-T5(Anodized)l
Compatible panel	500w-595W 1096-1303mm 35mm	**Small Components**	AL6005-T5(Anodized)
Tilt Angle	15°	**Color**	Grey
Wind Load	Max 50m/s	**Warranty**	25-year warranty
Snow Load	Max 0.65KN/m^2	**Weight With Water**	160kg min
Applicable Solar Module	Framed	**Design Standard**	GB50009-2012, GB50797-2012
Panel Layout	Landscape	**Dimensions**	1180x1260x140mm

EVO ENERGY

OVERVIEW

INTRODUCING THE EVO-FRM FLAT ROOF MOUNT: a groundbreaking solution for hassle-free and efficient flat roof solar panel installations. Engineered with innovation and designed for convenience, this HDPE anti-UV blow-moulded unit sets a new standard for simplicity, durability, and cost-effectiveness in the solar industry. Its innovative water-fillable weight system ensures a secure and stable installation without adding complexity. With outstanding durability, wide temperature tolerance, and exceptional wind and snow load capacities, the EVO-FRM is engineered for performance and longevity. Its lightweight design facilitates a smooth installation process, while its neat and aesthetic appearance adds a touch of professionalism to your solar project. Join the sustainability movement with EVO-FRM, the eco-friendly choice for flat roof solar panel installations.

ADVANTAGES

WATER-FILLABLE WEIGHT SYSTEM: The EVO-FRM boasts a unique waterfillable design, allowing easy adjustment of its weight based on installation requirements. When filled with water or sand, the unit reaches a minimum weight of 160kg, providing the necessary counterbalance to securely anchor solar panels.

RUGGED DURABILITY: Built to withstand the toughest environmental conditions, the EVO-FRM is engineered from HDPE (High-Density Polyethylene) with UV stabilizers. This robust construction ensures excellent resistance to weathering, ensuring the longevity of your solar panel installation.

WIND-RESISTANT DESIGN: The EVO-FRM can handle wind speeds of up to 50m/s, offering exceptional stability and reliability even in windy regions.

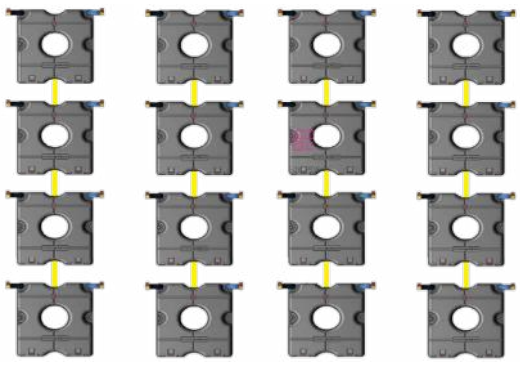
WIDE TEMPERATURE RANGE: Designed to perform in extreme temperatures, the EVO-FRM can endure temperatures from -40 to 85 degrees Celsius, making it suitable for diverse geographic locations

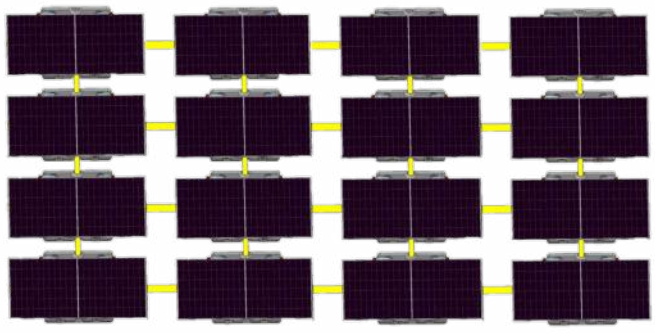
EASY INSTALLATION: The lightweight design of the EVO-FRM simplifies the installation process, making it easier and safer to transport onto flat concrete roofs.

NEAT AND AESTHETIC: The EVO-FRM creates a tidy and professional installation appearance, enhancing the visual appeal of your solar project.

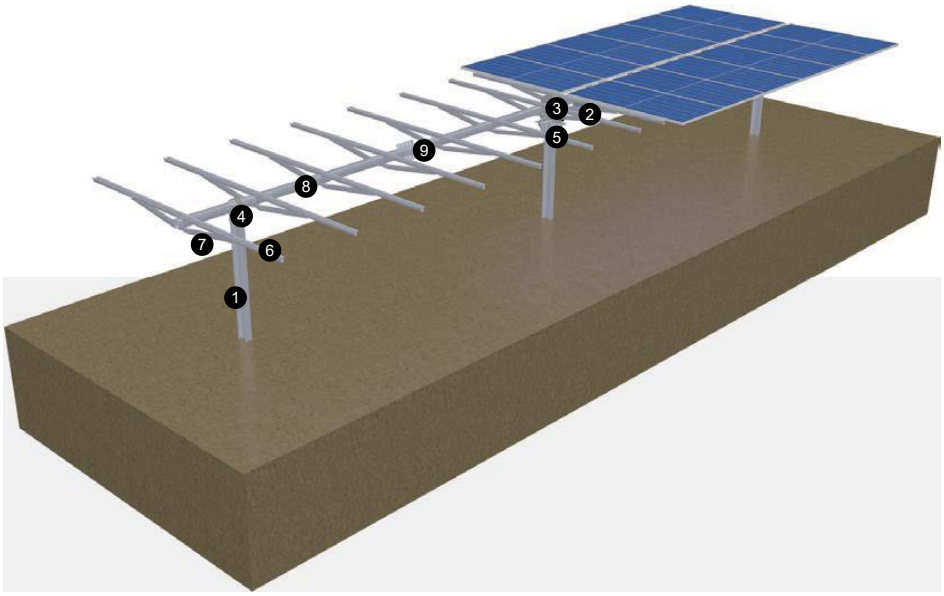
ECONOMICAL CHOICE: Offering a competitive price point in the market, the EVO-FRM delivers outstanding value without compromising on quality.

SUSTAINABLE SOLUTION: Contributing to environmental responsibility, the EVO-FRM is made from recyclable materials, aligning with eco-friendly practices.



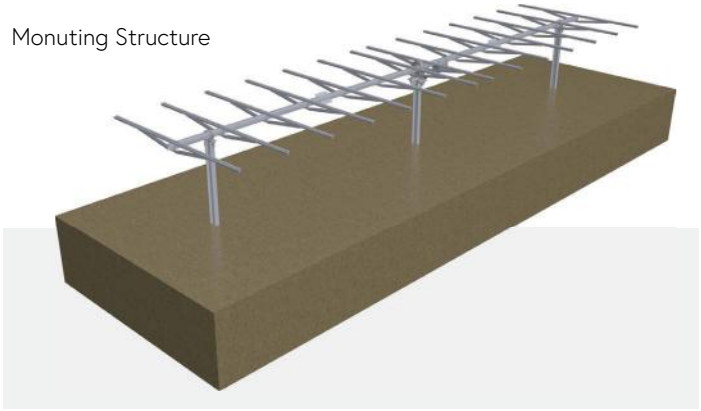


EVO SMART HORIZONTAL SINGLE AXIS TRACKING SOLAR PV MOUNTING SYSTEM



1. Post
2. Control Box
3. Motor
4. Bearing Sleeve
5. Post Connector
6. Л-type Rail
7. Diagonal Bracing
8. Main Axis
9. Main Axis Connector

Monuting Structure



Ground Mounting System

Tracking Angle ±45°or ±60°

Ground Clearance 500-2000mm

Applicable Modules frame or frameless

Orientation Portrait or Landscape

OVERVIEW

EVO SMART HORIZONTAL SINGLE AXIS TRACKING SOLAR PV MOUNTING SYSTEM is mainly applied to large-scale solar power plants at low latitude areas. One motor and control system make the whole solar module array track automatically. The unique linkage structure and slewing bearing ensure the stability of the whole system, low failure rate and maintenance costs. It is a good choice for large-scale solar power plants with roughly 20% power generation, comparing to fixed systems.

FEATURES

AUTOMATIC TRACKING WITHOUT MANUAL DEBUGGING With good environmental adaptability the stracking is not effected by rainy and cloudy weather; A Wide Range of tracking angles improves the power generation .

EQUIPPED WITH GPS TO ENSURE THE ACCURACY OF TIME High weather resistance contributes to safe and stable op er ation between -30° to 75°. The electromagnetic compatibility design makes the system stable and reliable.

REMOTE COMMUNICATION, GROUP CONTROL FOR MULTI-EQUIPMENT Automatically identify the failure, with automatic self-protection and alarm; Quadruple over-current protection ensures the safety of the whole system .

CUSTOMIZED SYSTEM CONFIGURATION AVAILABLE It can be designed according to customer's specific requirement.

TECHNICAL PARAMETERS

GPS Module	Automatically obtain latitude and longitude and precise time Compatible with GPS + Beidou satellite positioning system	**Design Support**	Support Wind Protection, Snow Removal Mode Rain Cleaning Mode Position Return Mode
Installation Capacity	Maximum 90 solar modules per row	**Drive Method**	Slewing Speed Reducer
Tracking Angle	±45°or ±60°	**Structure Material**	Hot-dip Galvanized + POSMAC Steel
Wind Resistance	47m/s design standard ASCE7-10, <18m/s (shelter from wind)	**Control System**	Micro Controller Unit
Tracking Algorithm	Astronomical Algorithms +Tilt Sensors	**Protection Level**	IP65
Drive Device	Slewing Drive,24V DC motor	**System Warranty**	10 Years
Power Supply	Self-powered/External Connection	**System Daily Power Consumption**	≤0.1Kwh
Communication Method	LoRa wireless communication or 485 bus (Modbus protocol)		

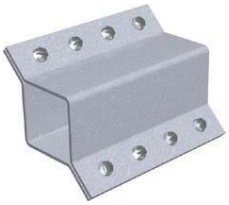
COMPONENTS



Control Box



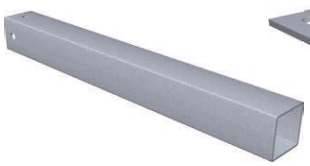
Motor



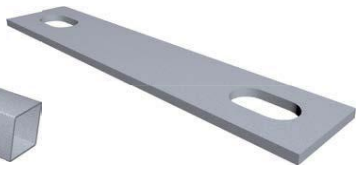
Main Axis Connector



Bearing Base



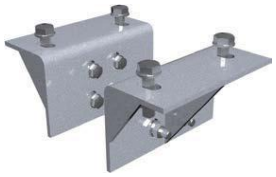
Main Axis



Supporting Piece



Post



Motor Base



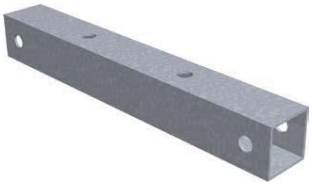
Bearing Sleeve



U-type Rail



Diagonal Bracing



Square Bar

EVO-SPLICE RAIL CONNECTOR - UNIFYING STRENGTH AND PRECISION



Introducing the EVO-Splice Rail Connector, a revolutionary solution designed to seamlessly join two EVO Rails and elevate the structural integrity of your solar panel installation. The EVO-Splice Connector securely connects EVO Rails for better alignment, strength, and reliability.

FEATURES

SEAMLESS INTEGRATION: The EVO-Splice Rail Connector effortlessly slides into the grooves of the EVO Rails, creating a unified and uninterrupted rail extension. This streamlined design guarantees an aesthetically pleasing and secure connection.

PRECISION ALIGNMENT: Alignment is paramount for the optimal performance of your solar array. The EVO-Splice Connector ensures that the joined EVO Rails are perfectly aligned, maintaining uniformity and stability across the entire installation.

ENHANCED STRENGTH: By securing two EVO Rails together, the EVO-Splice Connector reinforces the structural integrity of your solar panel array. This added strength ensures longevity and robustness, even in demanding environmental conditions.

SIMPLE FASTENING: The EVO-Splice Connector features a straightforward fastening mechanism. The flat aluminium piece joins the rails, and a long RNW (Reinforced Nut and Washer) with bolts on either side securely holds them in place. This uncomplicated design guarantees a secure connection with ease.

ERGONOMIC DESIGN: The EVO-Splice Connector's ergonomic design provides ease of handling and installation. The rail can be joined easily without special tools or equipment because of its intuitive design.

UNIVERSAL COMPATIBILITY: Designed to integrate seamlessly with the EVO Rail system, the EVO-Splice Connector is compatible with a variety of EVO Rail configurations. This compatibility ensures consistency and reliability across diverse solar projects.

ELEVATE YOUR SOLAR CONNECTION EXPERIENCE: The EVO-Splice Rail Connector epitomizes our commitment to innovation and precision. By providing a simple yet robust solution for joining EVO Rails, it ensures alignment, strength, and reliability, essential elements for the success of your solar panel installation. With the EVO-Splice Connector in place, you can confidently embark on a journey toward a greener and more sustainable energy future.

EVO ENERGY

EVO-BI STITCHING SCREWS - SEAMLESSLY FASTEN SOLAR BRACKETS WITH PRECISION



Introducing EVO-BI Stitching Screws, the pinnacle of innovation in solar bracket fastening. Designed exclusively for securing our EVO-IBR and EVO-CRM brackets onto IBR and corrugated roofs respectively, these screws redefine precision and ease in the mounting process. The EVO-BI Stitching Screws have advanced threading, waterproof sealing, and ergonomic design for a seamless and long-lasting attachment solution.

FEATURES

PRECISION THREADING: EVO-BI Stitching Screws boast exceptional threading that effortlessly embeds into roofing materials. This threading makes installation easier and protects your roofing material.

EFFORTLESS DRILLING: The tapered tip of the EVO-BI Stitching Screw ensures effortless penetration, creating a clean hole without undue force. This design guarantees a professional look without needing too much pressure during installation.

SECURE GRIP: The innovative threading of the EVO-BI Stitching Screw guarantees a secure hold upon installation, preventing unintended loosening. This steadfast grip enhances the overall stability and reliability of your solar panel array.

WATERPROOF SEAL: Each EVO-BI Stitching Screw is thoughtfully equipped with a rubber washer that forms a watertight seal upon installation. The seal prevents water from entering and protects the roof's structure.

ERGONOMIC HEX HEAD: The EVO-BI Stitching Screw features a hex head design, perfectly suited for use with cordless drills. The hex head provides a secure grip, allowing for efficient and precise installation, even in challenging positions.

DURABILITY AND DEPENDABILITY: Engineered from top-grade materials, the EVO-BI Stitching Screws are built for durability and sustained performance. It is crafted to withstand outdoor exposure, ensuring the continued stability of your solar installation.

UNIVERSAL COMPATIBILITY: Tailored to the EVO-IBR and EVO-CRM brackets, the EVO-BI Stitching Screws provide a unified solution for attaching brackets to IBR and corrugated roofs.

ELEVATE YOUR SOLAR ATTACHMENT EXPERIENCE: EVO-BI Stitching Screws epitomize the art of securing solar brackets with finesse and efficiency. With their precision threading, effortless drilling, and waterproof sealing, these screws streamline the installation process while ensuring unwavering dependability. Merging aesthetics and functionality, the EVO-BI Stitching Screws elevate your solar attachment journey, setting new benchmarks for excellence.

EVO ENERGY

EVO-L RAIL ALIGNMENT BRACKET
- PRECISION ALIGNMENT AND STABILITY ENHANCEMENT



Introducing the EVO-L Rail Alignment Bracket, a pivotal innovation designed to elevate the alignment and stability of your solar installation. The EVO-L bracket is designed to fit perfectly with our other brackets, keeping your EVO-R PV Mounting Rail secure and aligned. This precision-engineered solution guarantees flawless rail placement while enhancing the overall integrity of your solar panel array.

FEATURES

SEAMLESS ALIGNMENT: The EVO-L Rail Alignment Bracket is the missing link to flawless rail alignment. Designed to connect seamlessly with our EVO-IBR and EVO-CRM brackets, the EVO-L forms an L-shaped structure that ensures your EVO-R PV Mounting Rail is positioned with unparalleled accuracy.

STABILITY ENHANCEMENT: Secure alignment is the cornerstone of a reliable solar installation. EVO-L Bracket and EVO-CRM together provide extra stability to keep your rail secure in tough conditions.

INTEGRATED ADJUSTABILITY: The EVO-L Bracket is ingeniously designed to allow for easy adjustments. This adaptability empowers you to fine-tune the alignment of your EVO-R Rail, guaranteeing optimal panel positioning for maximum energy production.

COMPLEMENTARY DESIGN: The EVO-L Bracket is a natural extension of our EVO-IBR and EVO-CRM brackets. While its usage with EVO-CRM is essential, it is optional with EVO-IBR. Seamless integration creates a stable solar installation.

SECURE FASTENING: Equipped with an EVO-RNW Wingnut, the EVO-L Bracket secures effortlessly to the EVO-R Rail. Add another EVO-RNW Wingnut for a strong and reliable connection between EVO-L and your chosen bracket.

ELEVATE YOUR SOLAR ALIGNMENT: The EVO-L Rail Alignment Bracket is a testament to our commitment to innovation and precision. By seamlessly aligning your EVO-R Rail with our trusted EVO-IBR and EVO-CRM brackets, it ensures a level of accuracy that is unrivaled. With the EVO-L in place, you can be confident in the alignment, stability, and overall performance of your solar panel array.

EVO ENERGY

EVO-BOND RAIL BONDING SYSTEM - UNITING EXCELLENCE IN SOLAR PANEL INSTALLATIONS





Introducing the EVO-BOND Rail Bonding System, an essential component that ensures precision, safety, and efficiency in your solar panel installations. This innovative system comprises a braided steel strip with clamps on either end, designed to seamlessly connect EVO Rails and establish robust electrical contact for earthing within a row of solar panels.

FEATURES

SEAMLESS CONNECTIVITY: The EVO-BOND Rail Bonding System bridges the gap between EVO Rails, creating a seamless electrical connection. This bonding solution guarantees consistent and reliable electrical grounding across the entire array.

ENHANCED SAFETY: Safety is paramount in solar installations, and the EVO-BOND system excels in ensuring secure grounding. Your solar panel array becomes safer by establishing a low-resistance path for electrical currents.

OPTIMISED PERFORMANCE: Reliable electrical bonding is essential for achieving optimal performance from your solar panels. With the EVO-BOND system, you can rest assured that each panel is operating efficiently and delivering the expected energy output.

EASY INSTALLATION: Installing the EVO-BOND Rail Bonding System is quick and straightforward. The clamps on either end of the braided steel strip securely attach to EVO Rails, requiring minimal effort and time.

DURABILITY AND LONGEVITY: Crafted from high-quality materials, the EVO-BOND system is designed to withstand the rigors of outdoor environments. Its durable construction ensures a long lifespan, providing ongoing grounding assurance for your solar array.

AESTHETIC NEATNESS: Beyond its functional attributes, the EVO-BOND Rail Bonding System maintains the clean and professional appearance of your solar installation. Its discreet design seamlessly integrates with the EVO Rails, contributing to the visual appeal of your project.

VERSATILITY: The EVO-BOND system is compatible with various EVO Rail configurations, allowing it to adapt to different project requirements and layouts.

UNLOCKING THE POWER OF ELECTRICAL GROUNDING: The EVO-BOND Rail Bonding System is more than just a connection; it's a promise of excellence in your solar panel installation. By facilitating effective electrical grounding and maintaining the highest safety standards, the EVO-BOND system empowers your solar array to perform at its best, ensuring a greener and more sustainable energy future.

TAKE NOTE
Technical specifications and attributes may be subject to change without prior notice as we continuously enhance our products and manufacturing processes.

EVO ENERGY