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ION MATE SERIES

ION RACK SERIES

EMERGY SERIES

POWER
NEVER ENDS



About FSP Group

FSP Group is the leading switching power supplier in the world.

Since established in 1993, the company has drawn together its R&D expertise, sizeable production capacity and outstanding product quality to consistently excel in this competitive marketplace.

FSP Group produces large selections of products to serve its OEM / ODM customers in LCD TV, LED Lighting, Medical, Industrial / Desktop computers and Servers. FSP Group has more than 26 branch offices worldwide, 4 manufacturing facilities and about 8,500 people throughout the world.

With its broad range of products, FSP Group is uniquely positioned for strong growth on several long term trends and environment protection including green power products, higher energy-efficient conversion products, and highly electrical safety and reliable products.

FSP Group's global presence in Taiwan, Brazil, China, Germany, Sweden, France, India, Japan, Korea, Russia, Turkey, UK, USA also provide our OEM / ODM customers with integrated global logistic. This translates to "Door-to-Door" service and faster time-to-market for product deliveries. Please check with your highly trained professional account manager on how to take advantage of our global logistic service for your business.

Our current focus in FSP Group is to further enhance our green power products, expand market presence of FSP branded retail products, and extend our research and development effort on all our products. At FSP Group, we are not only focusing on building a bigger company, also a better one.

Our Vision is to be the global leading provider of green energy solutions, to touch people's life and to contribute a better environment.

Our Mission is providing the best value to customers, employees and shareholders by our innovative service and high quality products.

POWER
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residential energy storage system

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19" 48V battery rack

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EMERGY Series
portable energy storage system

Ion Mate Series

residential energy storage system



On-Grid type Ion Mate (Expandable Power)



Off-Grid type Ion Mate (Constant Power)

Selling Points

- Maximize Solar PV power consumption to save electricity bill
- Easy installation & maintenance
- Modular and scalable in power and energy
- Flexible expanding energy with 19" Ion Rack
- Allow flexible energy management

Product introduction

In response to development in green energy industry, we integrated efficiently Photovoltaic (PV) Power, Lithium Iron-Phosphate Battery System, Utility and Master Control System into Ion Mate Series including On-grid and Off-Grid types. All of Ion Mate Series are monitored by embedded display in real-time and supply very stable electricity in pure sinewave to our users.

Features

- Ensure power reliability and quality
- Support both grid and PV power inputs
- User-adjustable charging current and voltage
- Safety low voltage (48V) battery system
- Long battery life cycles > 2,000 times in fully cycle
- High power conversion efficiency in battery to AC $\geq 91\%$
- Parallel operation up to 6 units for 4kW & 10kW power in On-Grid type
- Programmable charging/discharging time and backup energy level via LCD touch control
- Stable & reliable name-brand battery cells from fully automatic production lines

Applications

- Renewable Distribution and Smart Grids System
- End-user peak shaving
- Time-of-use energy cost management
- Continuity of energy supply
- Particular requirements in power quality

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Ion Mate Series
Demonstration Video

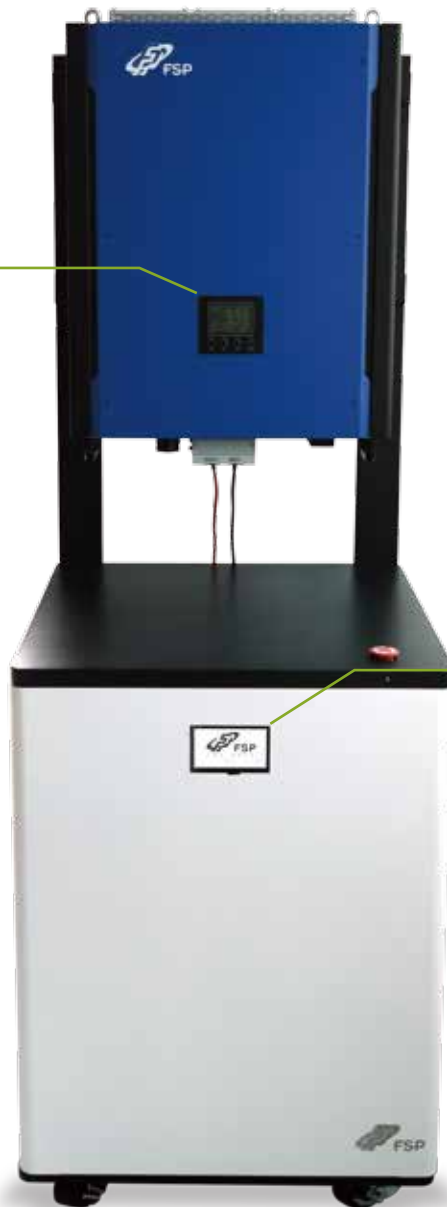
On-Grid type Ion Mate

10kW Hybrid Inverter

Power Conversion System



Display on hybrid inverter



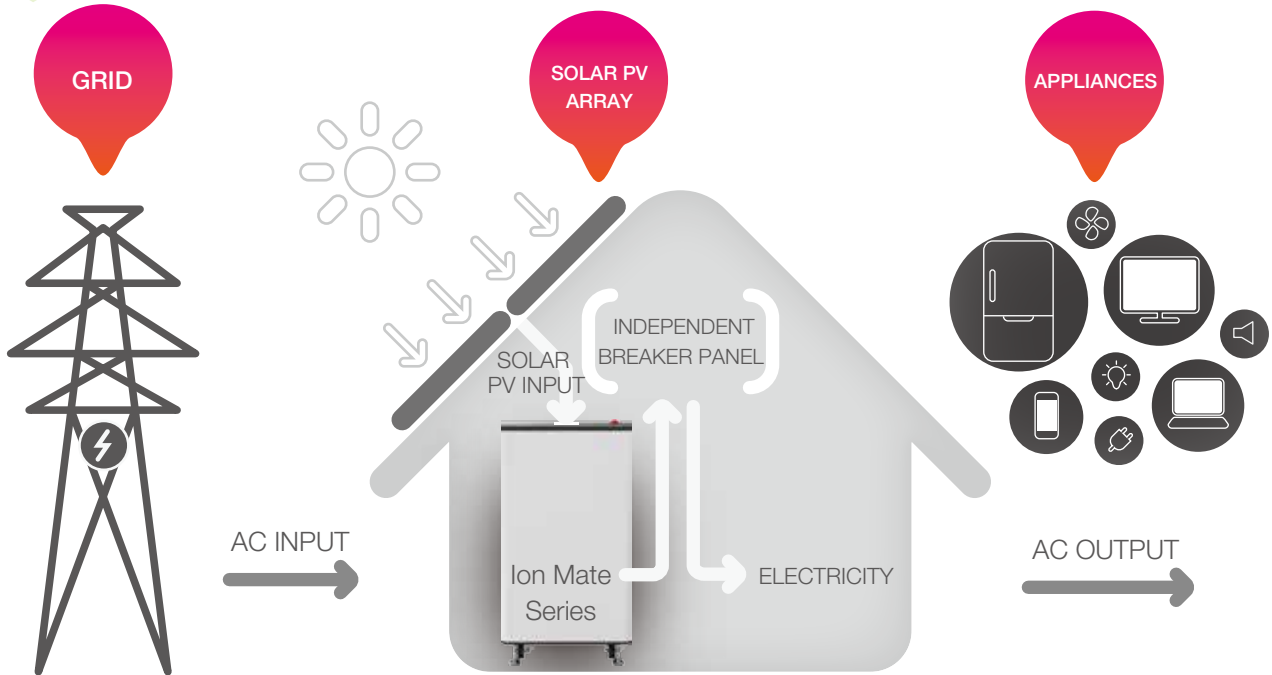
Battery Cabinet

19" LiFePO₄ Ion Racks Inside



Touch panel display on battery cabinet

System Installation



1. Breaker panel connection for On-Grid and Off-Grid types Ion Mates are different.
2. Independent breaker panel is must for Off-Grid type Ion Mate.

Off-Grid type Ion Mate



PV Charging Status and Programmable Setting on



Rear Cable Connection Panels

- Top two 19" 2U racks are power modules in consist of 2.4kW AC charger x 1 unit, 2.4kW PV charger x 1 unit and 2.3kVA inverter x 2 units.
- In addition to power modules, 19" LiFePO₄ Ion Racks are installed in other space of Off-Grid type Ion Mate.
- The antenna is for Wi-Fi transmission.

Ion Mate Series Specifications

Product Name		On-Grid type Ion Mate	
Model Name	FSP402PV-230H-48	FSP103PV-230TH-48	
System Battery Capacity	11.46kWh (adjustable)		
System AC Output	Single Phase, 230Vac	Three Phase, 230/400Vac	
Rated power	4,000W	10,000W	
Max. PV input power	5,000W	14,800W	
Operating PV voltage range	116-580Vdc	320-900Vdc	
Max. input current (DC)	18A	37.2A	
Max. input current (AC)	40A		
BATTERY CHARACTERISTIC			
Cell Type	LiFePO ₄		
Nominal Voltage	51.2Vdc		
Pack Capacity	5.73kWh (BS48B2FSP)		
Life Cycles	> 2,000 times@80% DoD in fully cycle		
Protections	OVP, UVP, OCP, SCP, OTP, UTP		
GRID-TIED CHARACTERISTIC			
Output voltage range	184-264Vac	184-264Vac per phase	
Nominal output current	17.4A	14.5A per phase	
THDi	3%	4%	
Efficiency (PV to Grid)	> 96%		
OFF-GRID CHARACTERISTIC			
AC start up voltage	120-140Vac	120-140Vac per phase	
Bypass voltage range	170-280Vac	170-280Vac per phase	
Max. AC input current	40A		
Output waveform	Pure sinewave		
THDv	< 4%		
Efficiency (PV to AC)	93%	91%	
Efficiency (Battery to AC)	91%		
CHARGING CHARACTERISTIC			
Max. charging power	4,000W	9,600W	
Max. charging current	10-80A, default 60A	10-200A programmable, default 60A	
Nominal battery voltage	48Vdc		
Battery voltage range	40-66Vdc	40-60Vdc	
Max. discharge current	110A	275A	
SYSTEM CHARACTERISTIC			
Operating Temperature	0-40 °C		
User Interface	LCD Display		
Cooling	Air forced		
Enclosure environmental rating	IP20		
Dimensions (W x H x D mm)	Hybrid Inverter 438 x 535 x 117 Battery cabinet 587 x 852 x 698	Hybrid Inverter 500 x 622 x 168 Battery cabinet 587 x 852 x 698	
Weight	Hybrid Inverter 16.3kG Battery cabinet 152kG	Hybrid Inverter 45kG Battery cabinet 152kG	
Regulatory	IEC62133		

Product Name		Off-Grid type Ion Mate	
Model Name	OMF323EAPA2		OMF323JAPA2
System Battery Capacity	11.46kWh (adjustable)		
System AC Output	220/230V, 50Hz 2.3 kVA x 2 units		100/120V, 50Hz 2.3kVA x 2 units
BATTERY			
Cell Type	LiFePO ₄		
Nominal Pack Voltage	51.2Vdc		
Pack Capacity	5.73kWh (BS48B2FSP)		
Life Cycle	> 2,000 times@80% DoD in fully cycle		
Protections	OVP, UVP, OCP, SCP, OTP, UTP		
AC CHARGER			
Input Voltage	220-240Vac, 50-60Hz		1000-120Vac, 50-60Hz
PF	0.99		
Charging Mode	CC-CV		
Efficiency	94%(@full power, 220VAC)		93%(@full power, 120VAC)
Protections	OTP, OVP, OCP, SCP		
AC Charger Power	2.4kW		
PV CHARGER			
Input Voltage	60-200Vdc		
Charging Mode	MPPT		
Efficiency	97%(@full power, 112Vdc)		
Protections	OTP, OVP, OCP, SCP, Input UVP		
PV Charger Power	2.4kW		
D-A INVERTER			
Input Voltage	40-60VDC		
Rated Output Power	2.3kVA		2.2kVA
Output Waveform	Pure Sine Wave		
THD	≤ 4%		
Efficiency	92%(@50% power, 51Vdc)		
Output Regulation	± 2%		
Protections	OTP, OVP, OCP, SCP, UVP (Input)		
SYSTEM			
Operating Temperature	0-40 °C		
User Interface	LCD Touch Panel		
Dimensions (HxWxD)	1,081 x 586 x 650, mm		
Weight	160kg		
Regulatory	IEC62133		

02

Ion Racks Series

19" Rack-Mount

Lithium Iron-Phosphate Battery



4U 51.2V/5.73kWh Ion Rack



2U 51.2V/2.87kWh Ion Rack



Selling Points

- High compatibility and easy installation thanks to rack-mount design of IPC
- Real time monitoring of cell voltages, branch currents and cell temperatures.
- Minimal lead time for establishing new battery system
- Easy maintenance due to adopting large format battery cells

Product Information

FSP configurable Ion Rack Series adopt highly reliable Lithium Iron-Phosphate battery cells for long cycle life (>2,000 times in fully cycle) and consistent performances.

The battery racks install advanced Battery Management System (BMS) of self-developed to enhance system performance, prolong life and warrant safety to meet various kinds of applications in households and industries.

Ion Rack Series Specifications

Product Type	BS48B2FSP	BS4856FSP
Rated Voltage / Capacity	51.2V / 112Ah	51.2V / 56Ah
Cell Type	Lithium Iron-Phosphate, LiFePO ₄ (> 2,000 times@80% DoD in fully cycle)	
Rated Energies	5.73kWh	2.87kWh
Charging Voltage	58.4V	
Maximum Charge Cut Off Voltage	58.4V	
Maximum Discharge Cut Off Voltage	40.0V	
Nominal Charging Current	30A	20A
Maximum Charging Current	60A	40A
Rated Discharge Current	70A	
Normal Operating Temperatures	Charging: 0-50 °C; Discharging: -20-60 °C *Consult factory for operations beyond normal operating temperatures	
Battery protection	Over-charge, Over-discharge, Over-temperature, Under-temperature, Over-current, Short-circuit protections	
Communication bus	RS-485	
Dimension, LxDxH (mm)	553 x 450 x 155 (4U rack)	590 x 485 x 87 (2U rack)
Weight	52kg	30kg
Environment	IPX3, RoHS	
Regulatory	CE, UL	



Battery Switch & Output



Block Balance & Communication Bus

Features

- Parallelable for up to 10 packs (consult factory for more than 10)
- Parallel battery branches for higher system currents.
- Built-in thermal management.
- Extended availability thru parallel battery branches with independent branch controls.
- Stable & reliable name-brand battery cells from fully automatic production lines.

Applications

- All kinds of Energy Storage Systems
- Telecom, Base Station, Data Center
- Industrial Backup Power System
- Uninterruptible Power Supply (UPS)
- Electric Vehicles

03

EMERGY Series

portable energy storage system



Scan Here



EMERGY SERIES
Demonstration Video



EMERGY 3000

EMERGY 1000

Selling Points

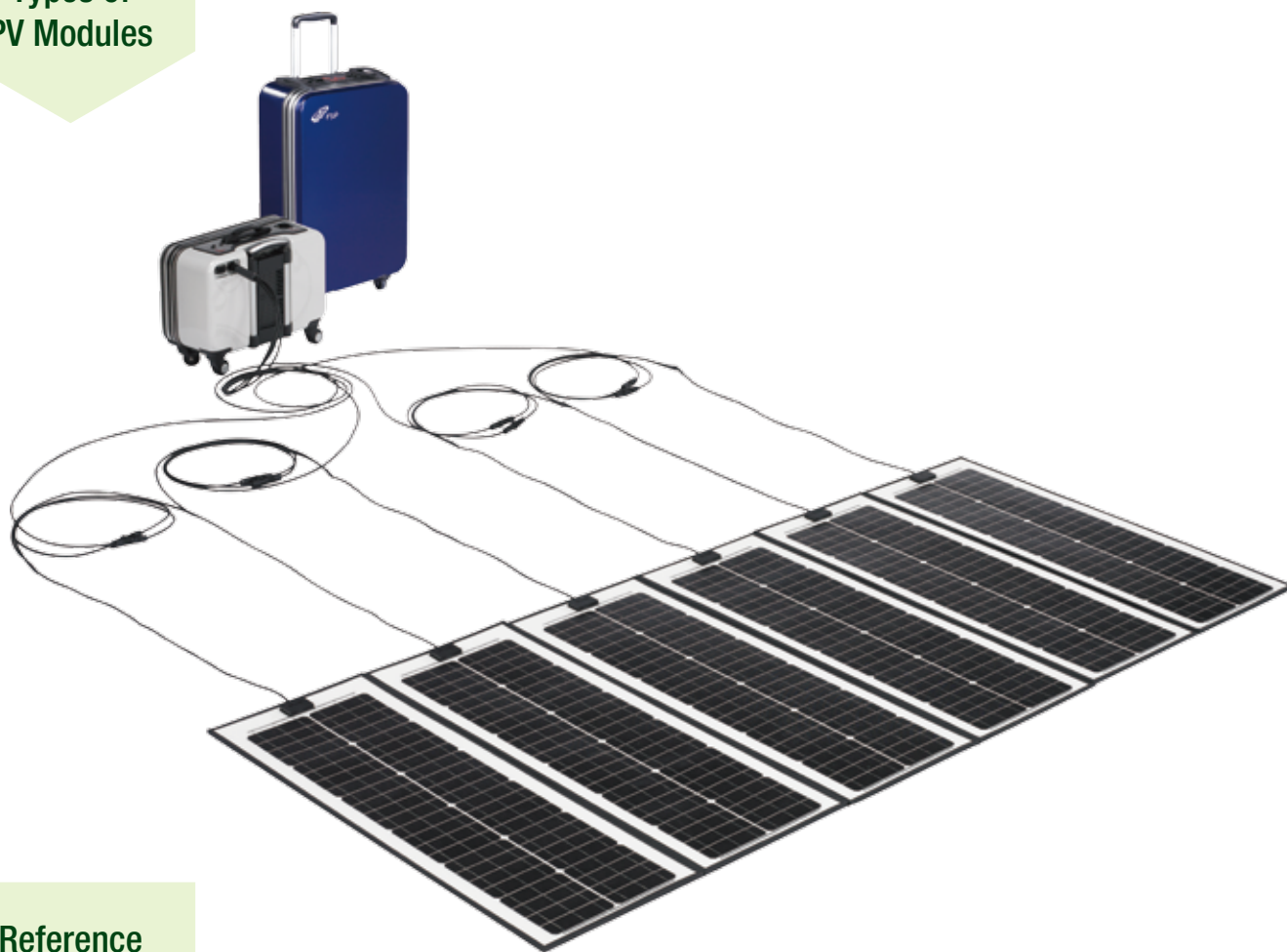
- All in One - charger, inverter, battery plug and play
- Portable - compact size design, easy to transport
- High Efficiency - no fan, quiet operating

Features

- Dual input - AC & PV
- High power charger (600W) and Inverter (1.5kW)
- High conversion efficiency (>90%)
- Quiet operating (no fan)
- Selectable on-line UPS or stand-by UPS mode
- In-house battery management techniques (patent pending) including active battery block balancing
- Master system control switch (for prolong storage) and output control switch
- LED capacity indicator
- Stable & reliable name-brand battery cells from fully automatic production linesA



**Apply to Various
Types of
PV Modules**



**Reference
Running Time
for Select Loads**

Electrical Equipment	Power Consumption	EMERGY 1000 Running Time	EMERGY 3000 Running Time	
Lighting	Camping Lantern	5W	22.4 hr	66.9 hr
	LED Lighting	10W	19.6 hr	58.5 hr
	LED Searchlight	30W	13.1 hr	39.0 hr
	Fluorescent Lamp	36W	11.9 hr	35.5 hr
Home Appliance	Radio	10W	19.6 hr	58.5 hr
	Electric Fan	66W	8.2 hr	24.4 hr
	Refrigerator	130W	4.9 hr	14.6 hr
	42" LCD TV	200W	3.4 hr	10.2 hr
	Sound System	200W	3.4 hr	10.2 hr
	Electric Pot	800W	0.9 hr	2.8 hr
	Induction Cooker	1,200W	0.6 hr	1.9 hr
3C Device	Smart Phone	2W	24.5 times	73.1 times
	Tablet	20W	15.7 times	46.8 times
	Notebook Computer	40W	11.2 hr	33.4 hr
	Projector	200W	3.4 hr	10.2 hr
	Desktop PC & Monitor	310W	2.3 hr	6.9 hr
	Laser Printer	500W	1.5 hr	4.4 hr

EMERGY Series Specifications

Product Name		EMERGY 1000		EMERGY 3000	
Product Type		PP0915ADN ¹	PP0915EZN ¹	DP2615ADN ¹	DP2615EZN ¹
Battery		Lithium Ion			
Rated Energies		0.9kWh		2.6kWh	
Output Power		1.5kVA			
Inputs	AC	100-120V, 50-60Hz	220-240V, 50-60Hz	100-120V, 50-60Hz	220-240V, 50-60Hz
	PV	50-110V ²	65-110V ²	50-110V ²	65-110V ²
Outputs	AC	100 or 120V, 50Hz or 60Hz	220 or 230V, 50Hz or 60Hz	100 or 120V, 50Hz or 60Hz	220 or 230V, 50Hz or 60Hz
	DC	5V@2A (USB)			
Transfer Time		16 mS typical			
Operating Temperatures		0-40 °C ³			
Protections	Battery	Over-charge, Over-discharge, Over-temperature, Under-temperature, Over-current, Short-circuit			
	Charger/Inverter/DC	OVP, OCP, SCP, OTP			
UPS Operating Mode		Standby or On-Line ⁴ , Selectable		Stand by	
Dimensions, LxDxH		472 x 212 x 370 mm		390 x 220 x 680 mm	
Weight		17 kg		30 kg	
Safety		IEC 62133, UN38.3			

1. AC socket(s) varies with country.
2. Will charge battery as long as PV voltage is higher than battery voltage, but may be at slower rate.
3. Consult factory for operations beyond normal operating temperatures
4. Continuous power from 400VA to 550VA, transient power up to 1.5kVA depending on battery status.