

# PV-ESS-Diesel Microgrid System

\* Self-consumption \* Off-grid independent operation

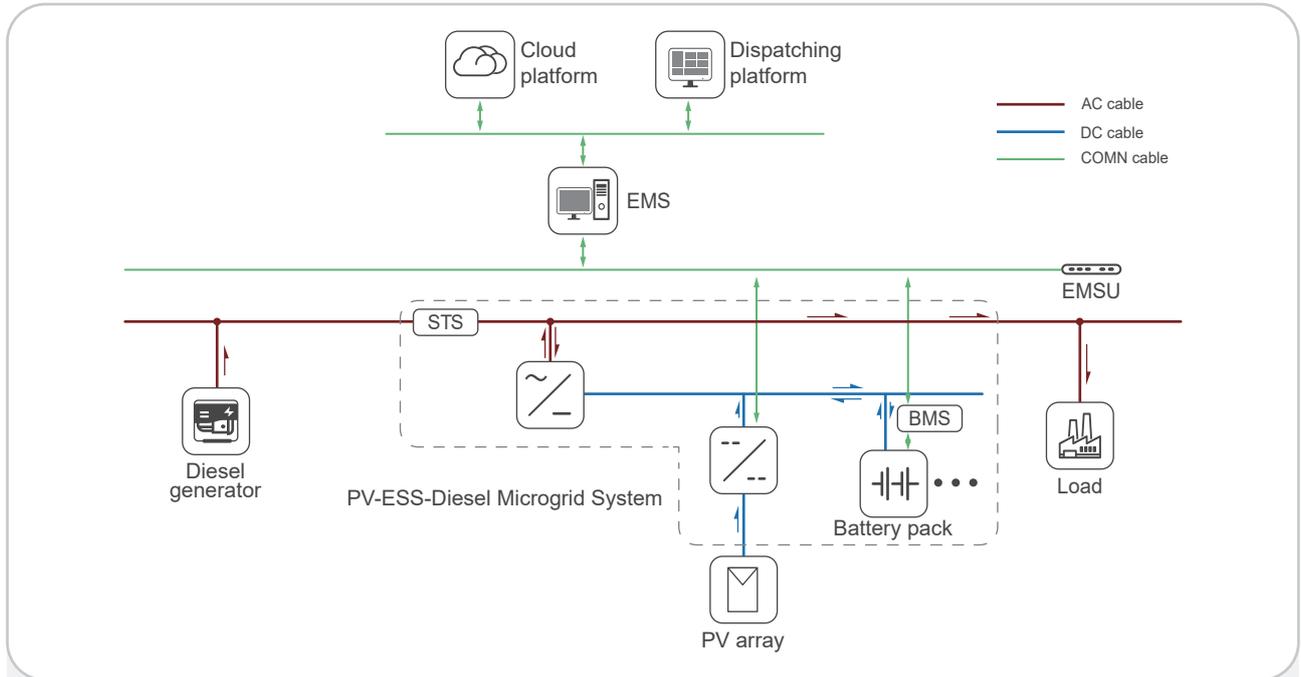


## • Overview

In off-grid scenarios without a city power, the PV-ESS-Diesel microgrid System plays a core role as an "autonomous, reliable, and efficient lifeline energy system." Solar power is prioritized for supply, energy storage provides real-time frequency and voltage regulation and power smoothing, and the diesel generator acts as a stable backup, forming a tiered "solar + battery + diesel generator" guarantee system to ensure the long-term stable operation of the microgrid. Through an intelligent energy management system (EMS), solar power generation is prioritized, energy storage implements "daytime storage and nighttime release," minimizing diesel generator startup time, reducing fuel dependence, and lowering transportation and maintenance costs. The energy storage system can handle short-term load fluctuations, allowing the diesel generator to operate in an efficient and stable range for extended periods, improving fuel efficiency, extending equipment lifespan, and reducing maintenance frequency. The energy storage system can instantly balance load fluctuations, suppressing frequency and voltage oscillations caused by equipment startup and shutdown and renewable energy fluctuations, providing grid-like stable power quality. Through multi-energy complementarity and intelligent control, the system can cope with challenges such as extreme weather and sudden load changes, ensuring uninterrupted operation of critical loads. It upgrades the traditional single-diesel power generation model to a "smart, collaborative, and multi-energy complementary" microgrid system, achieving breakthroughs in reliability, economics, and environmental protection. It is the ultimate solution for achieving modern and reliable power supply in off-grid areas, and a key energy infrastructure for promoting development, improving livelihoods, and protecting the ecological environment in remote areas.



## • System Topology



## Applicable Equipment:



UPV-S Three Phase  
Solar+Storage Hybrid Inverters

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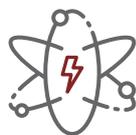


Energon Series Outdoor  
Energy Storage Battery Cabinet



PV-ESS-Diesel Microgrid System

## • 应用场景



Micro-grid



Self-consumption



High-Power  
Portable Power Station

# UPV-S

## Three Phase Solar+Storage Hybrid Inverters



### • Features

- **Operating Status Indication:** Integrated energy storage system working status, transformer-area load, energy storage capacity, power metrics.
- **Multi-Modal Operation:** Enables multi-priority management for grid, PV and load power supply, ensuring reliability across all modes.
- **Battery Pack Management:** Incorporates a BMS for comprehensive monitoring of cell and protection.
- **Remote Monitoring & Control:** Supports self-service platform monitoring and protocol integration for multi-terminal remote access.
- **Easy Installation:** IP54-rated cabinet for dust/water resistance; flexible deployment in diverse environments.


**• Technical Parameter**

<b>UPV-S 1200kW Three Phase Solar+Storage Hybrid Inverters</b>	
<b>PCS Parameters</b>	
Module	
Rated current	145A*12
Overload capacity	x1.1Normal/1.25 (30ms)
Output power	100kW*12
AC-side voltage of PCS	3P/N/PE, 230 V / 400 V
Frequency	50Hz/60Hz
Power factor	-1~1
Battery side voltage	680-900 V/Max 950V
Max battery current	200A*12
<b>STS Parameters</b>	
System	
Rated power	600kVA*3
AC voltage	400V/230V (-20%~15%)
Frequency range	50Hz/60Hz (±5Hz)
Max AC current	870A*3
Switching time	<10ms
<b>PV Parameters</b>	
PV Side (Module)	
Rated power	120kW*6
MPPT voltage range	200V-850V
Rated voltage	600V
PV startup voltage	250V
Number of branch inputs	4*6
PV Max current	240A*6
High Voltage Side (Module)	
Voltage range	500V-950V
Rated voltage	680V
Max current	180A*6
<b>System Parameters</b>	
Dimension(W*D*H)	3000*1267*2400mm
Weight(kg)	2660
Degree of Protection	IP54
Working Temperature Range	-30~60°C(> 45°C derating)
Cooling	Dry Self-Cooling
Relative Humidity	5~95%(no condensation)
Highest Altitude	4000m(>2000m derating)

# Energon

CE TEC UN38.3

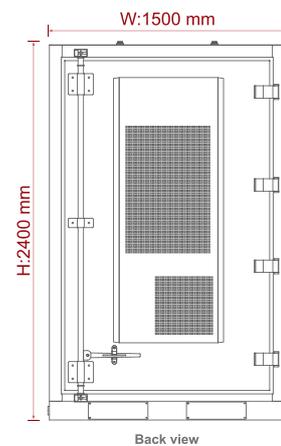
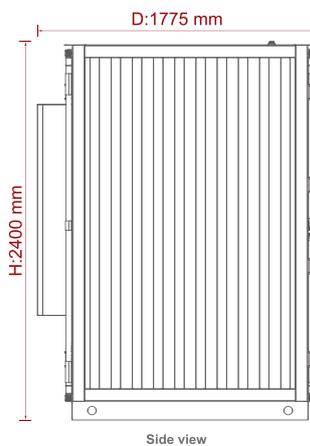
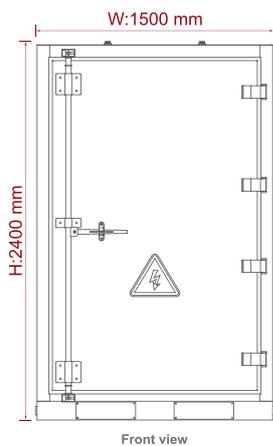
## Outdoor Energy Storage Battery Cabinet 215KWh/271KWh



### • Features

- Multi-level BMS built-in.
- IP55 fire and explosion proof cabinet.
- Scalable in power and capacity.
- Easy for on site installation.
- Fire proof devices in each modular and in the cabinet.

### • Product Dimensions




**• Technical Parameter**

<b>Energion 215KWh/271KWh</b>		
<b>Battery parameters</b>		
Cell	3.2V 280AH	3.2V 314AH
Battery type	LFP(LiFePO4)	
Battery module	51.2V 280AH	57.6V 314AH
Battery module Qty.	15	
Battery cluster	768V 280AH	864V 314AH
Battery cluster configuration	1P16S*15	1P18S*15
<b>Electrical parameters</b>		
Nominal energy	215Kwh	271Kwh
Nominal voltage	768Vdc	864Vdc
System voltage range	672-852VDC	756-958.5VDC
System charge/discharge rate	0.6P	0.5P
Depth of charge and discharge	100%~10%	
No. of cycles	8000cycles(70%SOH)	
Compensation methods	Dynamic real-time compensation	
Recommended AC side power	125KW	
<b>Protection</b>		
DC input/output	Disconnect switches+fuses	
Electrical isolation	Inter - module controlled protection breakout	
Fire protection systems	Two-stage aerosol fire module + Smoke sensors + Enclosure explosion - proof pressure relief device	
<b>System Parameters</b>		
Communication	RS485/CAN/LAN/4G	
Communication protocols	ModBusTCP/CAN	
Working temperature range	0~40°C charge/-20~50°C Discharge	
Relative humidity	0~95%(No condensing)	
Cooling	Dry Self-Cooling	
Noise	≤65db	
Highest altitude	4000m(>2000m derating)	
Degree of protection	IP55	
Dimension(W*D*H)	1500*1775*2400mm	
Weight	3.2T	3.3T
Installation method	Cabinet floor mounting	
Certification	CE-EMC(EN 61000-6-2/-4) ; CE-LVD(IEC 62477-1) ; IEC 62619 ; UN38.3	

# BESS-M

## PV-ESS-Diesel Microgrid System

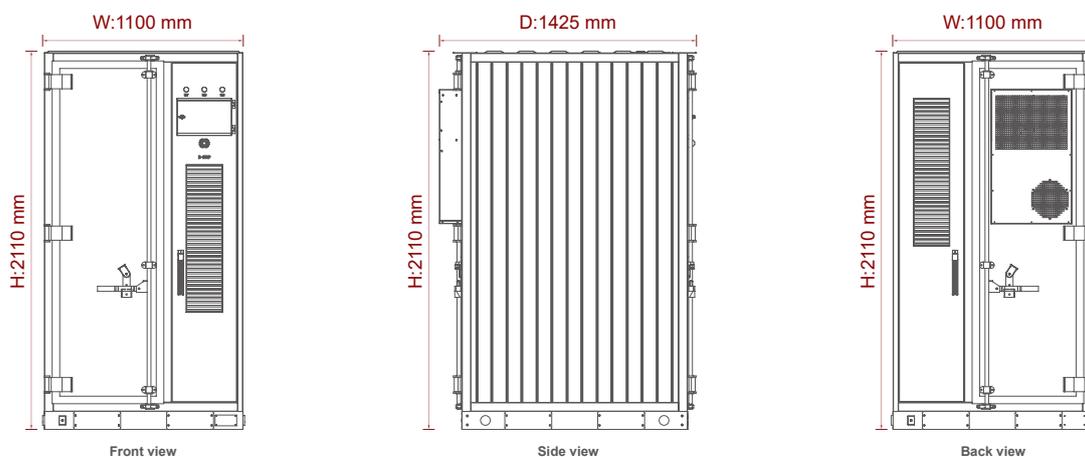
BESS-M 50-126-75



### • Features

- Status Indication: Shows system status, including load, storage capacity, and power.
- Multi-Mode Operation: Supports multi-level priority control for reliable power from grid, PV, and loads.
- Battery Management: Integrated BMS for battery monitoring and protection.
- Remote Monitoring: Multi-end remote access via self-service platform and device-side protocols.
- Easy Installation: IP54 cabinet with flexible installation options.

### • Product Dimensions




**• Technical Parameter**

<b>BESS-M 50-126-75</b>		
<b>Battery Parameters</b>		
<b>Battery Module</b>	Voltage	57.6V
	Capacity	314Ah
	Energy	18 kWh
	Cooling method	Dry Self-Cooling
<b>Battery Cluster</b>	Rated voltage	403V
	Grouping method	1P126S
	Rated capacity	314Ah
	Output voltage range	352.8V~447.3V
	Rated energy	126.6kWh
	Maximum continuous charging current	157A
	Maximum continuous discharge current	157A
<b>Work Environment</b>	Charging temperature	0~45°C
	Discharge temperature	-20~50°C
	Operating humidity	RH≤80%
<b>Storage Environment</b>	Short term storage(<1months)	-20~55°C
	Storage humidity	RH≤80%
<b>PCS Parameters</b>		
<b>PCS</b>	Rated current	73A
	overload capacity	x 1.25 (100S)
	output power	50kW
	AC port voltage	3P3W+PE/3P4W+PE, 400 V
	frequency	50Hz
	Power factor	-1~1
	Battery side voltage	350V-850V
<b>Parallel</b>	Parallel	Max 5 PCS
<b>STS</b>	Switching time	<10 ms
<b>PV</b>	Maximum power	38.4kW+38.4kW
	Number of branch inputs	2
	PV Max voltage	850V
	PV start voltage	250V
	MPPT voltage range	200V-800V
	Maximum PV current	64A+64A
<b>System Parameters</b>		
<b>System Parameters</b>	Dimension(W*D*H)	1100*1425*2110mm
	Weight(kg)	1620KGS
	Degree of protection	IP54
	Working temperature range	-30~60°C > 45 (derating)
	Cooling	Dry Self-Cooling
	Relative humidity	5~95%(no condensation)
	Highest altitude	4000m(>2000m derating)

# BESS-M

## PV-ESS-Diesel Microgrid System

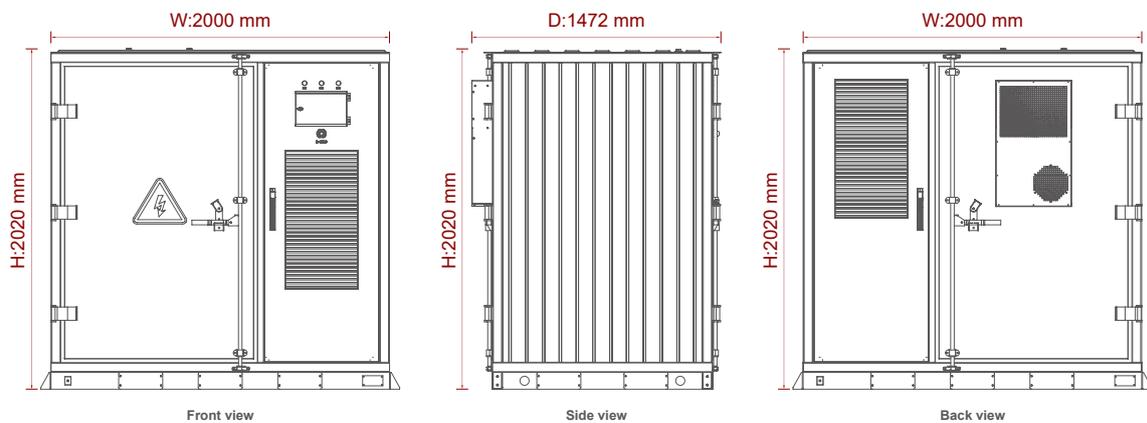
BESS-M 60-217-75



### • Features

- All-in-one design with a high degree of integration.
- Modular design with optional modules of different sizes.
- Support for grid-connected and off-grid operation.
- MPPT Solar controller available as an option.
- IP54 class fire and explosion-proof housing.
- Patented air duct design, Dry Self-Cooling, 3-5°C temperature difference of the battery cell.

### • Product Dimensions





## • Technical Parameter

BESS-M 60-217-75		
Battery Parameters		
Battery Module	Voltage	57.6V
	Capacity	314 Ah
	Energy	18 kWh
	Cooling method	Dry Self-Cooling
Battery Cluster	Rated voltage	691.2V
	Grouping method	1P 216 S
	Rated capacity	314 Ah
	Output voltage range	604.8V~766.8V
	Rated energy	217.03kWh
	Max continuous charging current	157 A
	Max continuous discharge current	157 A
Work Environment	Charging operation temperature range	0~45°C
	Discharging operation temperature range	-20~50°C
	Working humidity	RH≤80%
Storage Environment	Short-term storage temperature(<1month)	-20~55°C
	Storage humidity	RH≤80%
PCS Parameters		
PCS	Rated current	87A
	PCS overload capacity	x 1.25(100S)
	PCS output power	60kW
	AC-side voltage of PCS	3P/N/PE, 230 V / 400 V
	Frequency	50Hz/47Hz~52Hz(60Hz/57Hz~62Hz)
	Power factor	-1~1
	Battery side voltage	420V-850 V
Parallel	Parallel	Max 5 PCS
STS	Switching time	<10 ms
PV	Max power	38.4kW+38.4kW
	Number of branch inputs	2
	PV Max voltage	850V
	PV startup voltage	250V
	MPPT voltage range	200V-800V
	PV Max current	64A+64A
System Parameters		
System Parameters	Dimension(W*D*H)	2000*1472*2020mm
	Weight(kg)	< 2900
	Display	7-inch Resistive Touch Screen
	Fire protection systems	Aerosol Fire Module
	Degree of protection	IP54
	Certification	CE;IEC62619;UN38.3
	Working temperaturerange	-30~60°C(> 45°C derating)
	Cooling	Dry Self-Cooling
	Relative humidity	5~95%(No Condensing)
	Highest altitude	4000m(>2000m derating)

# BESS-M

## PV-ESS-Diesel Microgrid System

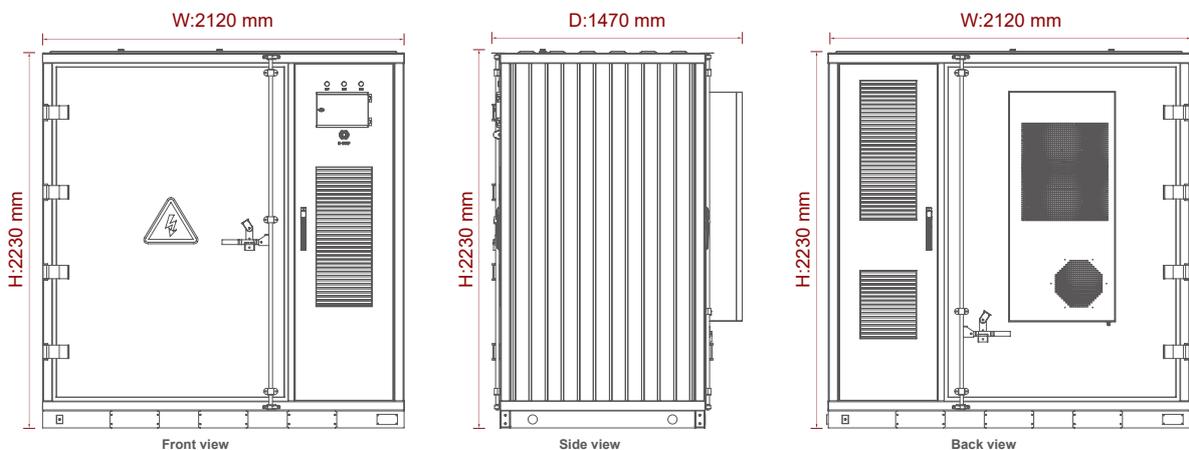
BESS-M 125-271-240 (120)



### • Features

- Status Indication: Shows system status, including load, storage capacity, and power.
- Multi-Mode Operation: Supports multi-level priority control for reliable power from grid, PV, and loads.
- Battery Management: Integrated BMS for battery monitoring and protection.
- Remote Monitoring: Multi-end remote access via self-service platform and device-side protocols.
- Easy Installation: IP54 cabinet with flexible installation options.

### • Product Dimensions





## • Technical Parameter

BESS-M 125-271-240 (120)		
Battery Parameters		
Battery Module	Voltage	57.6V
	Capacity	314 Ah
	Energy	18 kWh
	Cooling method	Dry Self-Cooling
Battery Cluster	Rated voltage	864V
	Grouping method	1P 270 S
	Rated capacity	314 Ah
	Output voltage range	756V~950V
	Rated energy	271kWh
	Max continuous charging current	157 A
Work Environment	Max continuous discharge current	157 A
	Charging operation temperature range	0~45°C
	Working humidity	RH≤80%
	Storage humidity	RH≤80%
PCS Parameters		
PCS Parameter	Rated current	181A
	PCS overload capacity	x1.1 continuous;x1.25(30ms)
	PCS output power	125kW
	AC-side voltage of PCS	3P/N/PE, 230 V / 400 V
	Frequency	50Hz/60Hz
	Power factor	-1~1
	Battery side voltage	680V-950 V
Parallel	Parallel	Max 5 PCS
STS	Rated power	170KVA
	AC voltage	400V/230V(-20%~15%)
	Frequency	50Hz/60Hz(±5Hz)
	Max AC current	250A
	Switching time	<10 ms
MPPT	PV side	
	Max power	120kW*2 (120kW)
	MPPT voltage range	200V-950V
	Rated voltage	600V
	Startup voltage	250V
	PV input string	4
	PV Max current	50A+50A+50A+50A
	Short-Circuit Current	60A+60A+60A+60A
	High voltage side	
	Voltage range	500V-950V
Rated voltage	680V	
Max current	180A	
Parallel	Parallel No.	Max 5 pcs
System Parameters		
System Parameters	Dimension(W*D*H)	2120*1470*2230mm
	Weight(kg)	3210kgs
	Display	7-inch Resistive Touch Screen
	Fire protection systems	Aerosol Fire Module
	Degree of protection	IP54
	Certification	CE;IEC62619;UN38.3
	Working temperaturerange	-30~60°C(> 45°C derating)
	Cooling	Dry Self-Cooling
	Relative humidity	5~95%(No Condensing)
	Highest altitude	4000m(>2000m derating)