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ODM / OEM Service

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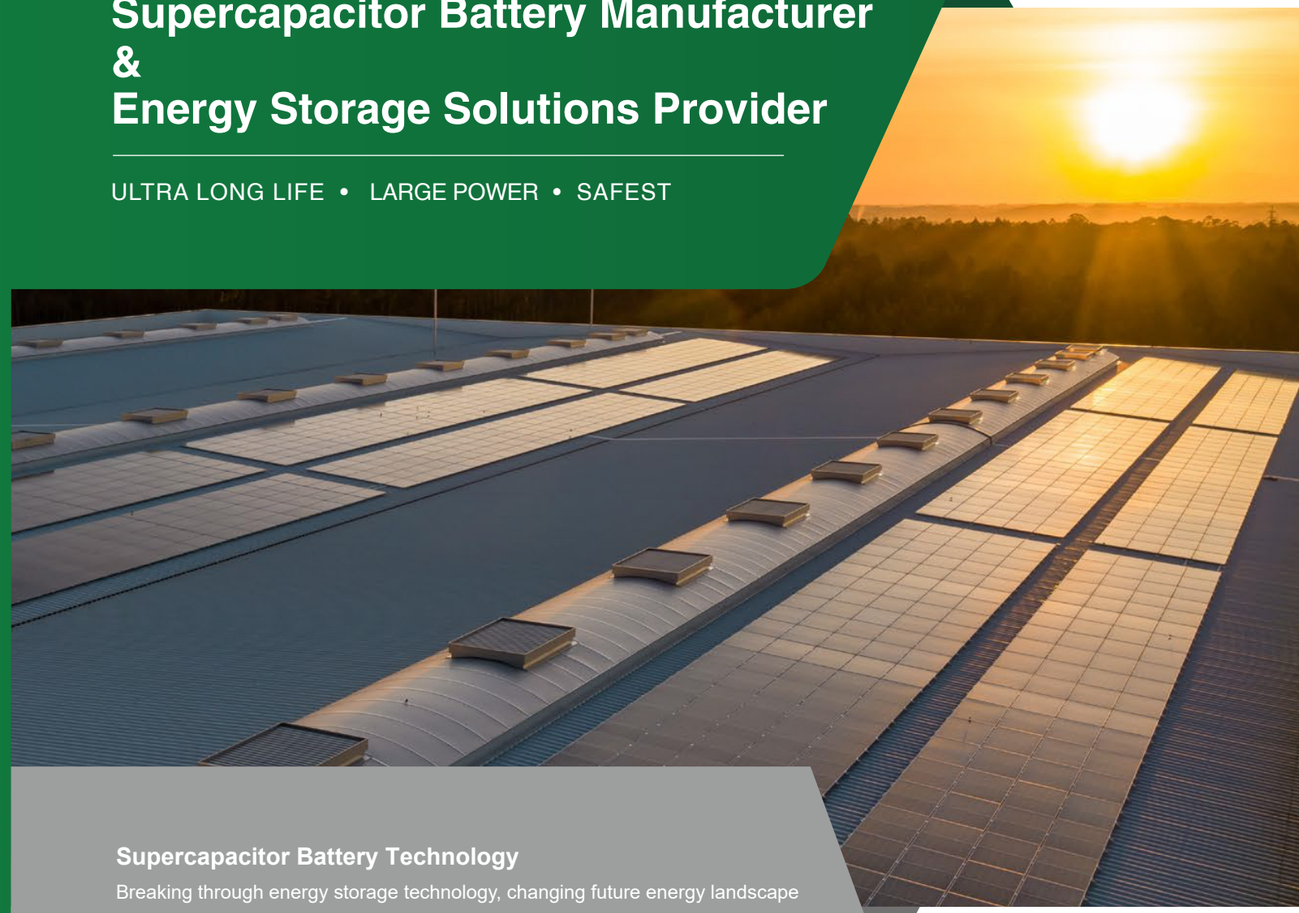
Probenergy®
REDEFINING ENERGY STORAGE

in partnership with ENERBOND

Supercapacitor Battery Manufacturer & Energy Storage Solutions Provider

ULTRA LONG LIFE • LARGE POWER • SAFEST



Supercapacitor Battery Technology

Breaking through energy storage technology, changing future energy landscape

ENERBOND

Probenergy
REDEFINING ENERGY STORAGE

Smart Energy Strategy

100% TESTING

High Reliability

Safety

Large Power

Long Life

Extreme Temperature

Smart BMS

Contents

Since
1998
FOUNDED TIME

380+
EMPLOYEES

1000+
CLIENTS

3GWH
ABILITY

Who We Are?

Shanghai Green Tech （Enerbond） is a supercapacitor battery manufacturer and energy storage solutions provider based in China. Founded in 1998, we are dedicated in researching and developing new energy storage technology, breaking through energy storage technology, changing future energy landscape, and providing superior energy storage solutions to the world.

Our company have obtained the ISO9001, ISO14001, ISO45001 certification, and we strictly follow these standards. Most of our battery products have been certified by international safety standards such as CE,UN38.3,IEC62619, UL9540A,UL1973,CEI0-21 etc.All the products must undergo strict testing and quality control during the production process with the data recorded in the MES system, and 100% OQC is guaranteed before packing and delivery.

Thanks to the unique technology of super capacitors battery system we developed, our products are featured by wide operation range under extreme low and high temperature, high charge and discharge C rate, low ESR and high round trip efficiency, no risk of thermal runaway, and the minimal capacity degradation, all these advantages contributes to the products' ultra long life. Our energy storage system integrated smart BMS, BMU, BMC, EMS which can monitor and control the internal data, making the systems and energy more intelligent. Rare maintenance and high reliability design enable our customers to enjoy the cost-effective and worry-free clean power supply.

We developed EM, EF and EG series of cells with different performance to meet various market demands. The system of Capess, Capwall, Caprack and Capmega are designed to meet different applications and project scale. We offer OEM, ODM and customized energy storage solutions according to the specific requirement.

Our service team consists of experienced technicians and sales personnel who can provide professional technical support and commercial assistance. With rich experience in residential, telecommunication, commercial and industrial energy storage projects, we have plenty of successful cases in domestic and overseas markets, receiving highly positive evaluation from customers and distributors.

Welcome to join us and let's create more green energy for the world!

DEVELOPMENT

1998

Factory Founded
The first military capacitor production line founded

2002

Green Tech team bought the military factory from government

2005

GTCAP super capacitor successfully developed and cycle life up to 1 million times.

2012

Supercapacitor products were successfully applied to fast-charging buses and wind turbine pitch control system

2016

Enerbond supercapacitor battery energy density reached 120Wh/kg,which can completely replace the traditional batteries.

2020

More certificates obtained to meet international different standards demand.

2022

New products lunched, more intelligent and more convenient for installation.

2023

The production line has been upgraded comprehensively, import digital management.

Vertical Integration

Enerbond vertical integration strategy extends from core battery chemistry, including cathode and anode materials, electrolyte, and membrane separators, to application technologies including battery management systems(BMS)and other power electronics.

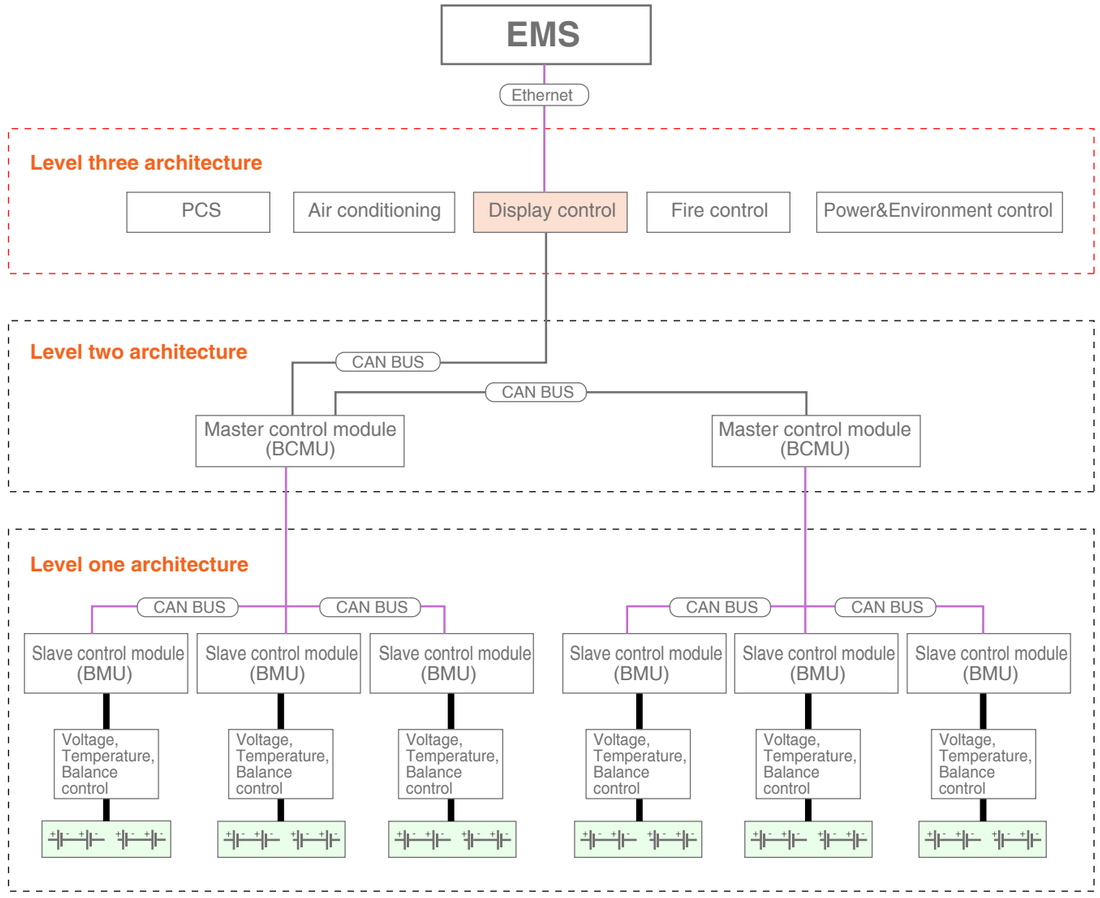
By integrating the process from raw material to system assembly, Enerbond is able to provide customized solutions with reduced project development time and controllable costs. Vertical integration also allows us to control product quality from top to bottom with our high standards.

- >> **Material Technology Know-How**
- >> **Reduced Project Development Time**
- >> **Efficient Quality Control**
- >> **Cost Effective**

Smart Battery Manage System

- The interfaces of charge and discharge are integrated.
- The cell voltage and module temperature is detected by BMS.
- Support fast charging and discharging.
- Active monitoring of the system.
- Smart action when protection function activated.

Three Levels Architecture



Enerbond R&D Target

Enerbond set its R&D target of “safer, lower cost, longer life and more environmentally friendly”.

Enerbond innovative hybrid technology offers exceptional long life, high depth of discharge, safety & energy efficiency. Our Intelligent Battery Management Software provides utmost safety and performance even in most harsh conditions.

R&D target

- >> Reduce the levelized cost of energy under 0.02USD
- >> Longer life time up to 25years
- >> Higher round trip efficiency >98%
- >> Easier installation
- >> Remote controllable
- >> Smarter system management

R&D

Battery Material Development

Cell Development

Battery System Development

Enerbond has its material, cells and product R&D centers in Japan, U.S. and Germany.

Enerbond focuses on material and product development in its own R&D center, and ensures all the products pass the complete and qualified tests before outgoing. Meanwhile, Enerbond also enhances the close cooperation with Japan, US and Germany scientific research institutions to lead this field ahead.

Uninflammable Electrolyte

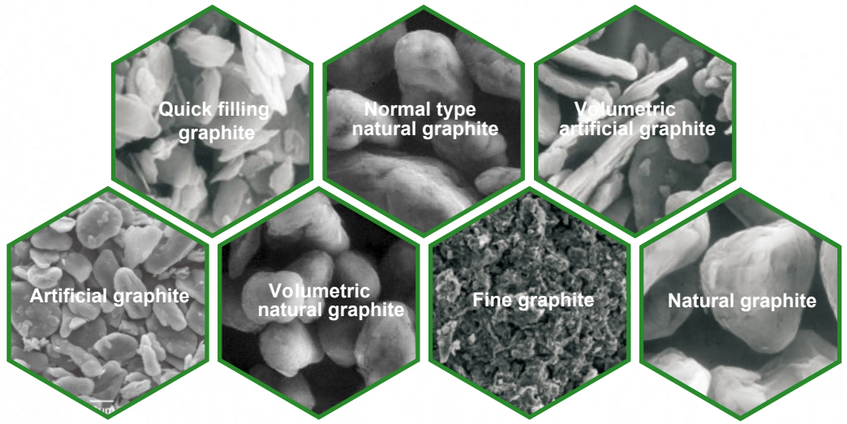
Uninflammable

10-15 minutes fast charge

Long cycle life

Enerbond electrolyte is not only Uninflammable, but also ensures fast charging within 10-15 minutes with a long cycle life.

Cathode Material For Graphene Supercapacitor Batteries

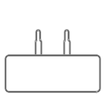
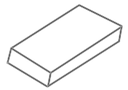


R&D Product Roadmap

Future Product Plans

>> **10-15 minutes** ultra-fast charging,long life and lower cost.

>> Improving energy density

Released Products			Next-generation Products		
					
2005	2008	2011	2013	2018	2025
Button supercapacitor	Super capacitor	Large power super capacitor	Pouch cell	Energy density 100wh/kg	Solid-state battery technology

Technology strategy

- Insist on the "fast charging, long life, high safety" three leading technology
- Master four core technologies of battery materials (anode and cathode, diaphragm and electrolyte)
- Intelligent lean manufacturing technology
- 10-15 minutes ultra-fast charging，long life and Uninflammable with improved energy density

Production Procedure

Production and Quality Control

TÜV SÜD | IEC | UN38.3 | CE | UL | RoHS | CEI0-21

Better quality is the best service

Cell Production

Automatic proportioning system, double-sided coating equipment, pole pieces of high-speed;

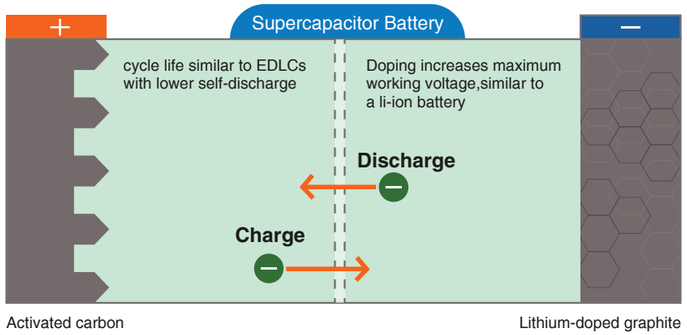
Cutting equipment, automatic assembly line, the junction surface density measurement , the viscosity testing are adopted during production process;

ABB robot,KUKA robot and spider hand, lead a significant reduction in the number of operators;

Production line strictly controls the humidity and cleanliness.

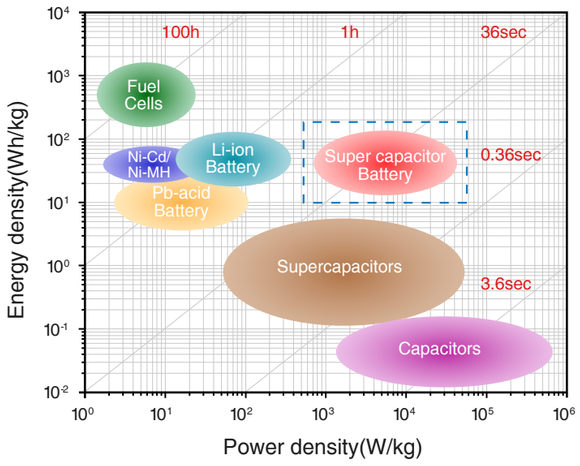
Intelligent MES management system can automatically generate manufacturing, quality control,equipment maintenance data and the battery product QR code retrospective management, timely feedback abnormalities and guide the production management;

Supercapacitor Battery Technology Description



Combining batteries and supercapacitor structures to create supercapacitor battery

Supercapacitor batteries are used when pairing supercapacitor and battery technology in a device. In this type of energy storage, one of the carbon-based electrodes in a supercapacitor is replaced with a lithium-doped carbon electrode similar to LIB. This increases the operating voltage to 3.7 V (where standard EDLCs are rated to 2.7 V maximum) as well as the capacitance by nearly 15 times.

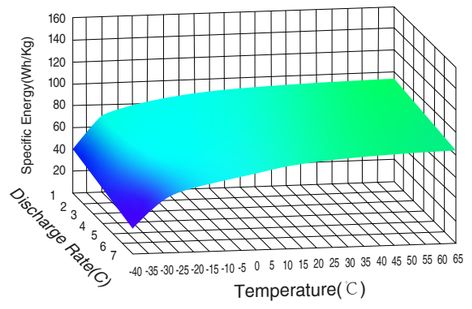


While standard EDLCs are typically discharged in under 60 seconds, supercapacitor batteries can go up to a few hours. They also have much lower self-discharge and leakage current than EDLCs. All while still benefiting from the supercapacitor's inherently high power density,high reliability and long cycle life.

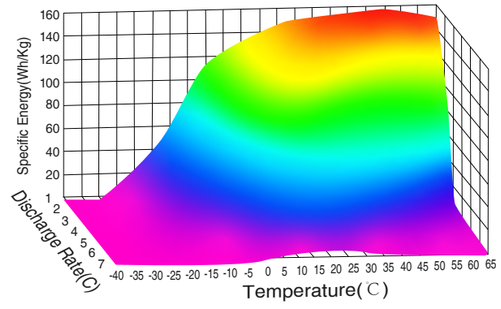
Energy Storage Solutions comparison

	Super Capacitor		Supercapacitor Battery		Li-ion Battery
Energy Density	5~10Wh/kg	15times	>150Wh/kg		>120Wh/kg
C rate	>100C		3~30C	10times	0.25~5C
Charge Time	10~60s		10~60mins	5times	1~4hrs
Life Span	>1 million times		10,000~50,000 times	2~10times	<6000 times
Low Temperature	-40℃		-40℃	2times	-20℃
Unit Price	15	1/15	1		2
Cost/Energy LCoE	50	1/50	1	1/5	5
Cost/Power LCoP	100		1	1/10	10

Supercapacitor battery is an advanced storage system which overcomes the inherent defects of super capacitor and lithium-ion battery,and have the advantages of both.

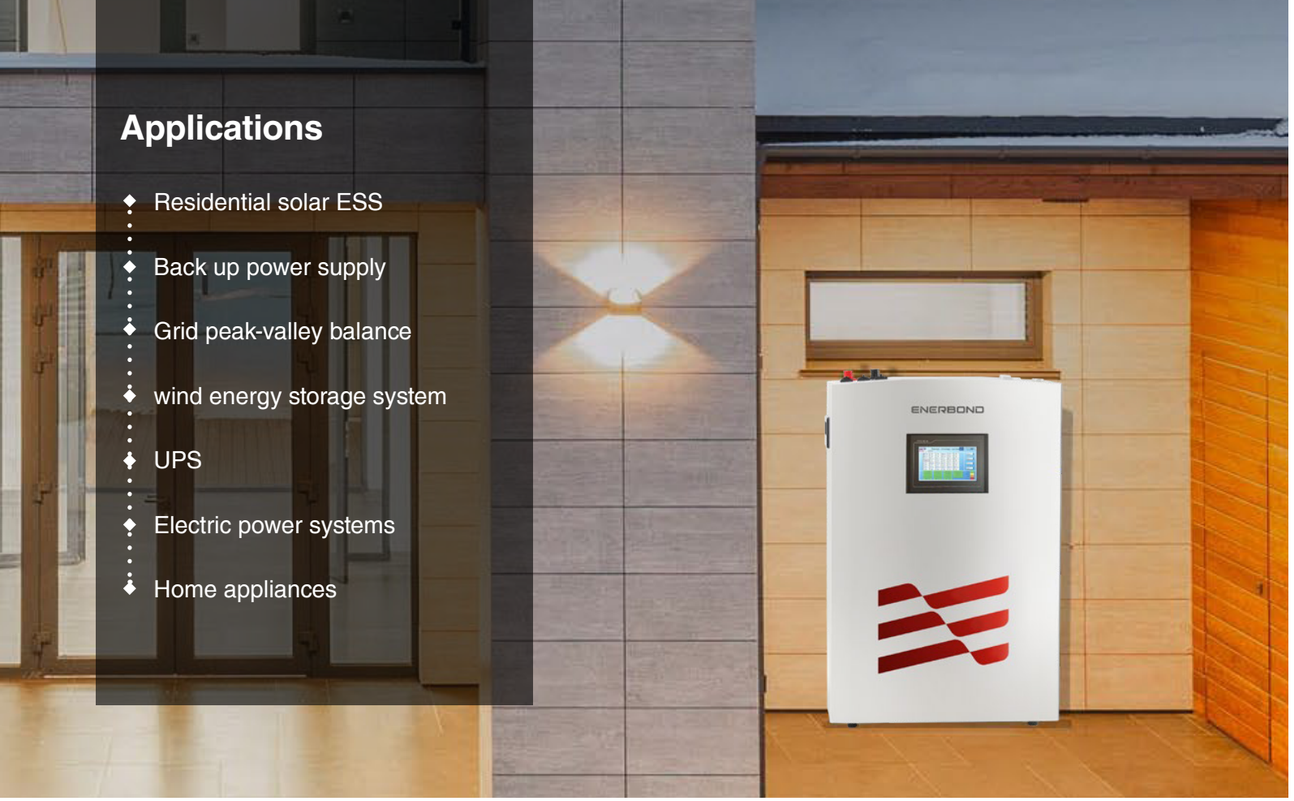


EG series temperature rising after 6C rate charging-discharging



Li-ion battery temperature rising after 2C charging-discharging

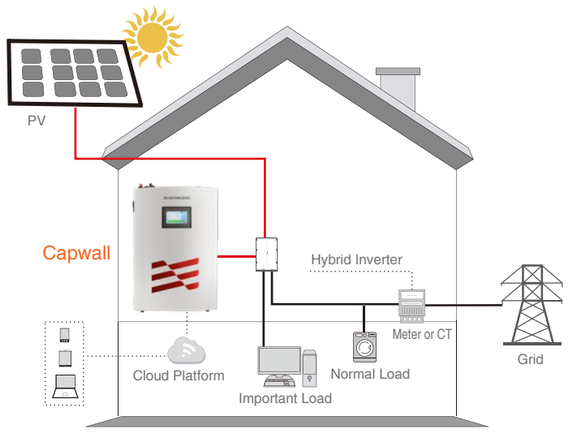
Less temperature increasing make the system longer life and more safety.



Applications

- Residential solar ESS
- Back up power supply
- Grid peak-valley balance
- wind energy storage system
- UPS
- Electric power systems
- Home appliances

- Safest & Reliable
- Long lifespan
- Fast response
- Capitalization
- Elegant design
- Smart Home



Capwall series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS

Part Number	GTEM-400V14.4K-W	GTEF-345V10K-W
Energy storage	14.4kWh	10.3kWh
Nominal Voltage	400V/DC	345.6V/DC
Maximum Charge Voltage	453V/DC	390V/DC
Discharge Cut-off Voltage	292V/DC	300V/DC
ESR/AC @1KHz 50% SOC	<150mΩ	<100mΩ
Max. Continuous Charge Current	50A	15A
Max. Continuous Discharge Current	50A	30A
Round Trip Efficiency	96%	97.7%
Charge Temperature	0℃~+55℃	0℃~+45℃
Discharge Temperature	-20℃~+60℃	-30℃~+60℃
Self-discharge Rate	2% per month	2% per month
Recommended Depth of Discharge	≤90%	≤90%
Maximum Depth of Discharge	100%	100%
Cooling Method	Natural	Natural
Mounting Options	Wall/floor	Wall/floor
Shell Material	Metal & ABS plastic	Metal & ABS plastic
Communication	CANbus	CAN,RS485
Monitoring Data	System voltage,current,temperature,SOC, SOH,cycle,cell's voltage	

COMPLIANCE INFORMATION

Certificate Options	IEC62619:2017,IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017,EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

CONVENTIONAL PARAMETERS

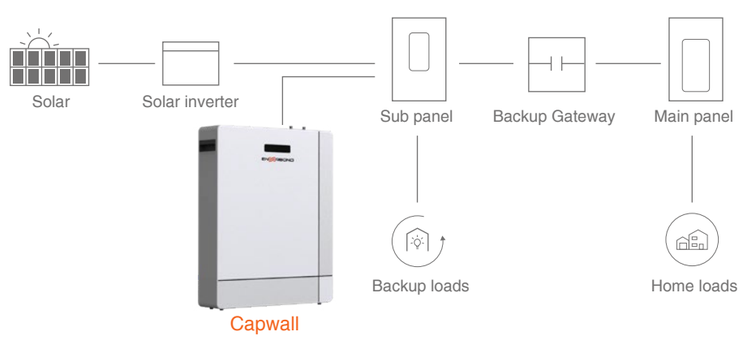
Dimensions(WxDxH)	700x840x194(mm)	730x750x138(mm)
Weight	115kg	120kg
Operating Humidity	0~90%RH Non-condensing	0~90%RH Non-condensing
Environmental Protection	IP20	IP56

Applications

- Residential solar ESS
- Back up power supply
- Grid peak-valley balance
- wind energy storage system
- UPS
- Electric power systems
- Home appliances

- Safest & Reliable
- Long lifespan
- Fast response
- Capitalization
- Elegant design
- Smart Home

Partial home backup



Capwall series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS			
Part Number	GTEM-48V5.5K-W	GTEF-48V10K-W	GTEM-48V15K-W
Energy storage	5.44kWh	10kWh	15kWh
Nominal Voltage	51.8V/DC	51.2V/DC	51.8V/DC
Maximum Charge Voltage	58.8V/DC	57.6V/DC	58.8V/DC
Discharge Cut-off Voltage	39.2V/DC	44.8V/DC	39.2V/DC
ESR/AC @1KHz 50% SOC	<8mΩ	<9mΩ	<15mΩ
Max. Continuous Charge Current	100A	100A	200A
Max. Continuous Discharge Current	100A	100A	200A
Round Trip Efficiency	97.5%	97.7%	97.5%
Charge Temperature	0℃~+55℃	0℃~+45℃	0℃~+55℃
Discharge Temperature	-20℃~+60℃	-30℃~+60℃	-20℃~+60℃
Self-discharge Rate	2% per month		
Recommended Depth of Discharge	≤90%		
Maximum Depth of Discharge	100%		
Cooling Method	Natural cooling		
Mounting Options	Wall/floor		
Shell Material	Metal & ABS plastic		
Communication	CAN, RS485		
Monitoring Data	System voltage,current,temperature,SOC, SOH,cycle,cell's voltage		

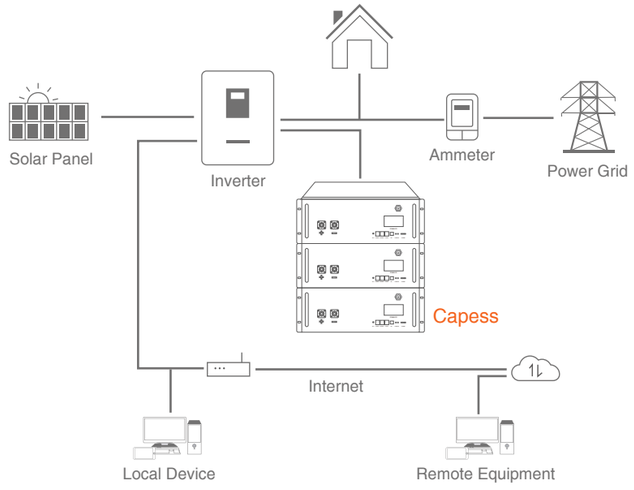
COMPLIANCE INFORMATION	
Certificate Options	IEC62619:2017,IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017,EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

CONVENTIONAL PARAMETERS			
Dimensions(WxDxH)	470x510x175(mm)	730x750x138(mm)	700x765x175(mm)
Weight	45kg	117kg	132kg
Operating Humidity	0~90%RH Non-condensing		
Environmental Protection	IP20		

Applications

- Household back-up power supply
- Micro-grid energy storage
- Solar power ESS
- Telecom tower station power supply
- UPS / Commercial / Industrial
- Wind energy storage system
- Data center back-up power

- Safest & Reliable
- Long lifespan
- High energy density
- Modular
- Fast response
- Capitalization



Capess series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS			
Part Number	GTEM-48V5500-E	GTEM-48V7400-E	GTEM-48V7600-E
Energy storage	5.44kWh	7.45kWh	7.6kWh
Nominal Voltage	51.8V/DC	51.8V/DC	51.8V/DC
Maximum Charge Voltage	58.8V/DC	58.8V/DC	58.8V/DC
Discharge Cut-off Voltage	39.2V/DC	39.2V/DC	39.2V/DC
ESR/AC @1KHz 50% SOC	<10mΩ	<10mΩ	<10mΩ
Max. Continuous Charge Current	100A	200A	100A
Max. Continuous Discharge Current	100A	200A	100A
Round Trip Efficiency	97.8%	96.8%	97.8%
Charge Temperature	0℃~+55℃		
Discharge Temperature	-20℃~+60℃		
Self-discharge Rate	2% per month		
Recommended Depth of Discharge	≤90%		
Maximum Depth of Discharge	100%		
Cooling Method	Natural cooling		
Shell Material	Metal & ABS plastic		
Communication	CAN, RS485		
Monitoring Data	System voltage,current,temperature,SOC, SOH,cycle,cell's voltage		

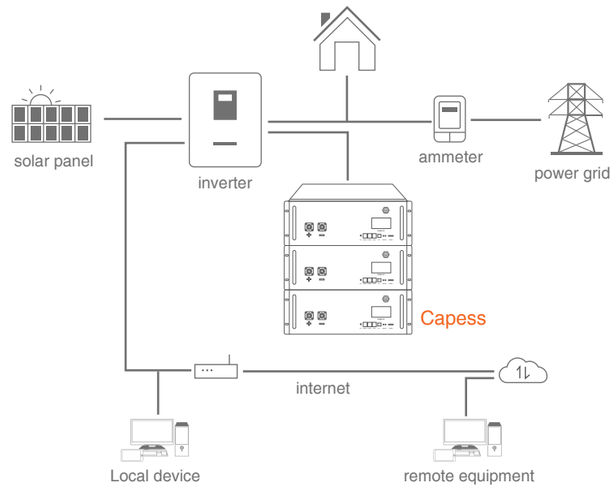
COMPLIANCE INFORMATION	
Certificate Options	IEC62619:2017,IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017,EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

CONVENTIONAL PARAMETERS			
Dimensions(WxDxH)	470x462x170(mm)	470x565x170(mm)	470x520x170(mm)
Weight	38kg	52kg	50kg
Operating Humidity	0~90%RH Non-condensing		
Environmental Protection	IP20		

Applications

- Household back-up power supply
- Micro-grid energy storage
- Solar power ESS
- Telecom tower station power supply
- UPS / Commercial / Industrial
- Wind energy storage
- Data center back-up power supply

- Safest & Reliable
- Long lifespan
- High energy density
- Modular
- Fast response
- Capitalization



Capess series

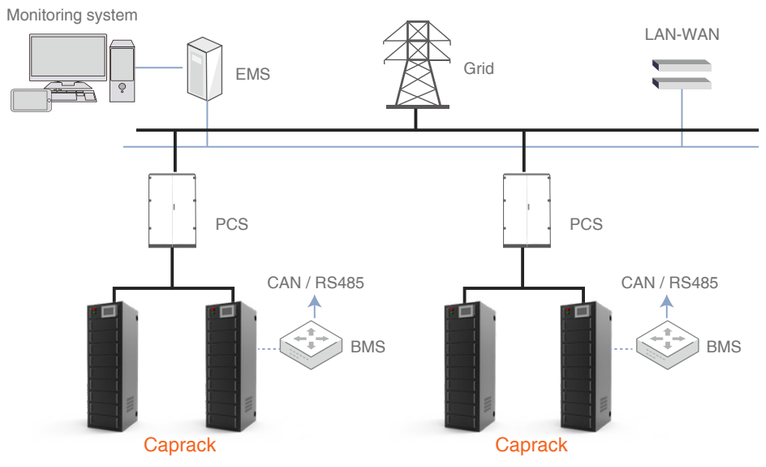
ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS			
Part Number	GTEF-48V3000-E	GTEF-48V6000-E	GTEF-48V7600-E
Energy storage	3.0kWh	6.0kWh	7.6kWh
Nominal Voltage	48V/DC	48V/DC	48V/DC
Maximum Charge Voltage	57.6V/DC	57.6V/DC	57.6V/DC
Discharge Cut-off Voltage	44.8V/DC	44.8V/DC	44.8V/DC
ESR/AC @1KHz 50% SOC	<10mΩ	<10mΩ	<10mΩ
Max. Continuous Charge Current	60A	100A	100A
Max. Continuous Discharge Current	60A	100A	100A
Power/Energy	0.98	0.926	0.67
Charge Temperature	0℃~+45℃	0℃~+55℃	0℃~+55℃
Discharge Temperature	-30℃~+60℃	-30℃~+60℃	-20℃~+60℃
Self-discharge Rate	2% per month		
Recommended Depth of Discharge	≤90%		
Maximum Depth of Discharge	100%		
Cooling Method	Natural cooling		
Shell Material	Metal & ABS plastic		
Communication	CAN, RS485		
Monitoring Data	System voltage,current,temperature,SOC, SOH,cycle,cell's voltage		

COMPLIANCE INFORMATION	
Certificate Options	IEC62619:2017,IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017,EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

CONVENTIONAL PARAMETERS			
Dimensions(WxDxH)	440x455x133.3(mm)	446x500x250(mm)	480x630x250(mm)
Weight	28kg	52kg	60kg
Operating Humidity	0~90%RH Non-condensing		
Environmental Protectiona	IP20		

- Safest & Reliable
- Long lifespan
- High energy density
- Modular
- Fast response
- Perfect compatibility



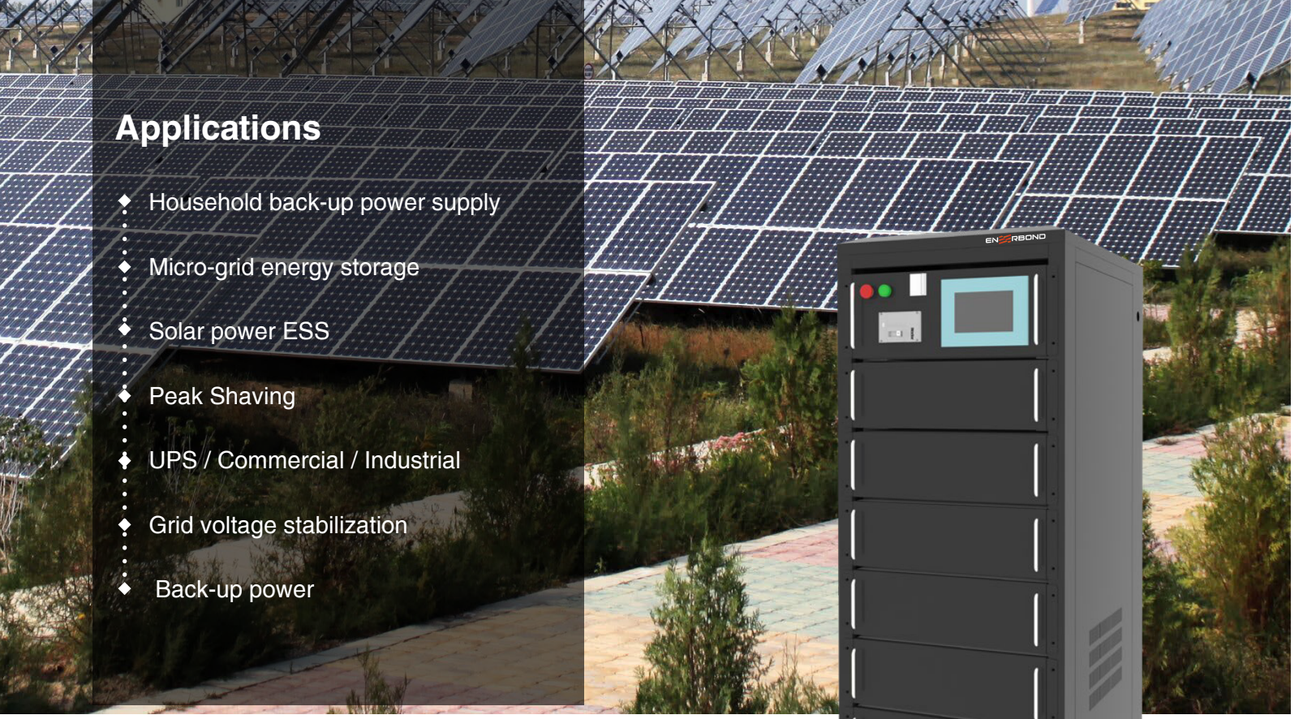
Caprack series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS	
Part Number	GTEM-800V57K-R
Energy storage	57kWh
Capacity	72Ah
Nominal Voltage	800V/DC
Maximum Charge Voltage	900V/DC
Discharge Cut-off Voltage	626V/DC
Internal Configuration	216S4P/EM18
ESR/AC @1KHz 50% SOC	<100mΩ
Max. Continuous Charge Current	80A
Max. Continuous Discharge Current	150A
Cells Self-discharge Rate	2% per month
Round Trip Efficiency	96.8%
Projected cycle life(25℃)	20000 times
Projected life(25℃)	15 years
Recommended Depth of Discharge	≤90%
Maximum Depth of Discharge	100%
Cooling Method	Natural
Shell Material	Metal & ABS plastic
Communication	CAN,RS485,LAN
Monitoring Data	System voltage,current,temperature,SOC, SOH,cycle,cell's voltage

COMPLIANCE INFORMATION	
Certificate Options	IEC62619:2017,IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017,EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

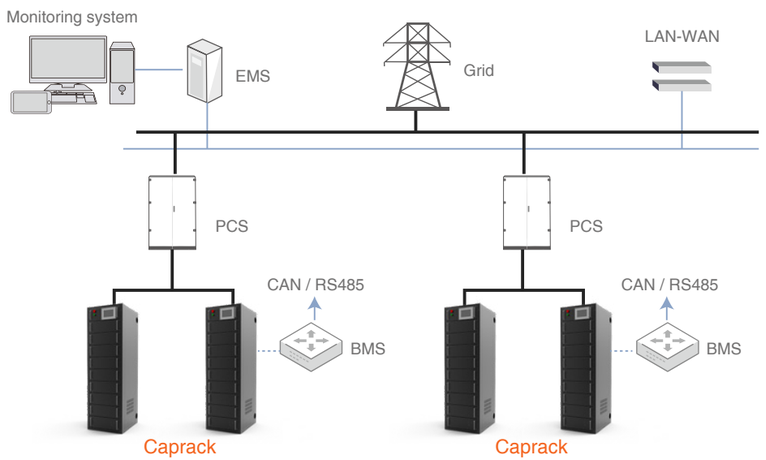
CONVENTIONAL PARAMETERS	
Dimensions(WxDxH)	560x730x1380(mm)
Weight	396kg
Operating Humidity	0~90%RH Non-condensing
Environmental Protection	IP20



Applications

- Household back-up power supply
- Micro-grid energy storage
- Solar power ESS
- Peak Shaving
- UPS / Commercial / Industrial
- Grid voltage stabilization
- Back-up power

- Safest & Reliable
- Long lifespan
- High energy density
- Modular
- Fast response
- Perfect compatibility



Caprack series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS	
Part Number	GTEM-400V50K-R
Energy Storage	50.3kWh
Nominal Voltage	400V/DC
Maximum Charge Voltage	448.2V/DC
Discharge Cut-off Voltage	324V/DC
ESR/AC @1KHz 50% SOC	<100mΩ
Max. Continuous Charge Current	120A
Max. Continuous Discharge Current	120A
Configuration	108S6P
Round Trip Efficiency*1	97.5%
Self-discharge Rate	2% per month
Recommended Depth of Discharge	≤ 90%
Maximum Depth of Discharge	100%
Charge Temperature	0℃~+55℃
Discharge Temperature	-20℃~+60℃
Cooling Method	Natural cooling
Shell Material	Metal & ABS plastic
Parallel connection optional	Add BCU
Communication	CAN,RS485,LAN
Monitoring Data	System voltage,current, temperature, SOC,SOH,cycle,cell's voltage

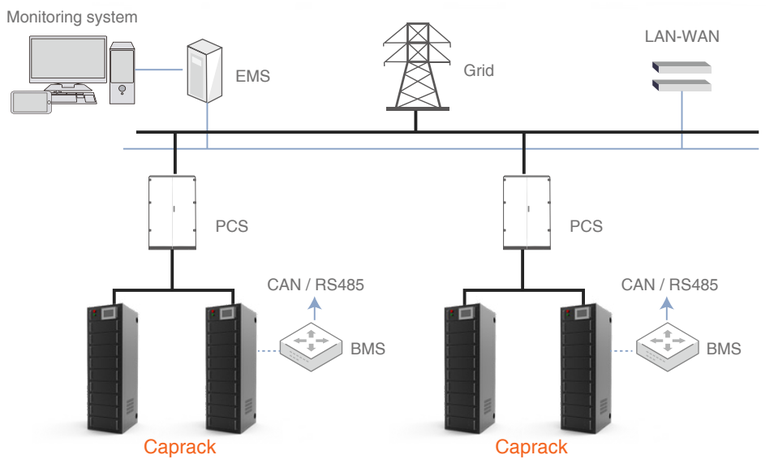
COMPLIANCE INFORMATION	
Certificate Options	IEC62619:2017, IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017, EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

CONVENTIONAL PARAMETERS	
Dimensions(WxDxH)	611x735x1487(mm)
Weight	500kg
Operating Humidity	0~90%RH Non-condensing
Environmental Protection	IP20

Applications

- Peak loading shaving
- Grid frequency stabilization
- Grid voltage stabilization
- Heave crane machinery
- Industry power compensation
- Charging station power supplier

- Safest & Reliable
- Long lifespan
- High energy density
- Modular
- Fast response
- Perfect compatibility



Caprack series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS	
Part Number	GTEG-745V52K-R
Energy Storage	52kWh
Capacity	70Ah
Nominal Voltage	745V/DC
Maximum Charge Voltage	858V/DC
Discharge Cut-off Voltage	616V/DC
Internal Configuration	324S5P/EG14
ESR/AC @1KHz 50% SOC	<100mΩ
Max. Continuous Charge Current	210A
Max. Continuous Discharge Current	210A
Cells Self-discharge Rate	2% per month
Round Trip Efficiency	97.1%
Projected Cycle Life(25℃)	50000 times
Projected Life(25℃)	15 years
Recommended Depth Of Discharge	≤90%
Maximum Depth Of Discharge	100%
Cooling Method	Natural
Shell Material	Metal & ABS plastic
Parallel Connection	Up to 10 sets (add HVB)
Compatible Protocol	CAN,RS485
Monitoring Data	System voltage,current, temperature, SOC,SOH,cycle,cell's voltage

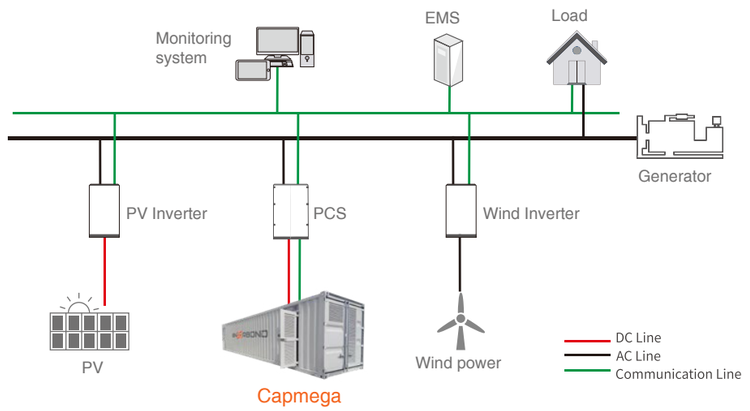
COMPLIANCE INFORMATION	
Certificate Options	IEC62619:2017, IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017, EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS

CONVENTIONAL PARAMETERS	
Dimensions(WxDxH)	790x715x1804(mm)
Weight	650kg
Operating Humidity	0~90%RH Non-condensing

Applications

- PV Large Scale BESS
- Wind Large Scale BESS
- Hybrid Large Scale BESS
- Transmission And Distribution Grids
- Industrial And Natural Island Grids, Microgrids And Hybrid Systems

- Safest & Reliable
  Prevent Short Circuit
  Improving The Safety
- Good Heat Dissipation
  Management System
- High Energy Conversion
  Efficiency
- High Energy Density
  Long Cycle Life
- Long Distance Transportation
  Extreme Conditions
- Combination Is Flexible
  Easy To Install



Capmega

Capmega series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS

Part Number	GTEF-1280V2.5MWh/1.25MW-C
Cell	EF490
Numbers of connection in series	400
Number of strings parallel connections	4
Nominal Voltage	1280V/DC
Max. Charge Voltage	1440V/DC
Standard Discharge Cut-off Voltage	1120V/DC
Nominal Capacity	1960Ah
Energy Storage	2.5MWh
Standard Charge Constant Current @25℃	1225A
Max. Power	1.25MW
Cooling Method	Forced Air
Mode of wire entry	Lower wiring patter
IP Grade	IP65
Internal Resistance	48mΩ
Energy Efficiency	95%
Heating Power	30kW
Communication	CAN,RS485,LAN
Dimensions	12192*2438*2896mm

COMPLIANCE INFORMATION

Certificate Options

CE、Low Voltage Directive 2006/95/EC、Machinery Directive 2006/42/EC

EMC Directive 2004/108/EC, RoHS,UL, CUL, UL508C and CSA, C22.2 NO.14-10, EAC/GOST R 5),C-Tick

Functional safety: STO, TÜV Sud certificate

ATEX-certified Safe Disconnection Function, Ex II (2) GD

Applications

- PV Large Scale BESS
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- Hybrid Large Scale BESS
- Transmission And Distribution Grids
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- Safest & Reliable
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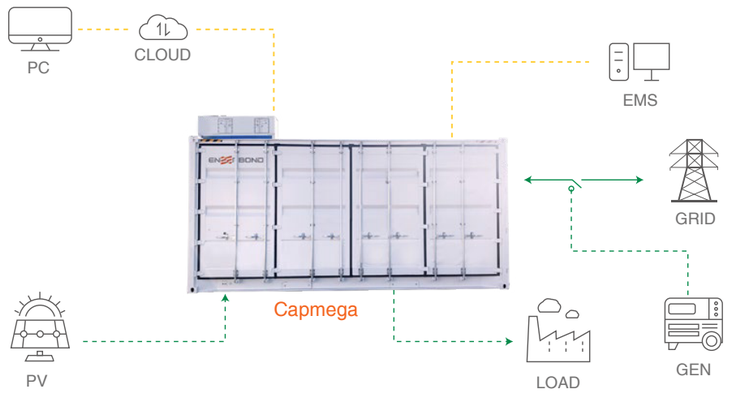


Capmega series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

PERFORMANCE SPECIFICATIONS

Part Number	GTEF-752V2.2MWh/1MW-C
Cell	EF490
Numbers of connection in series	235
Number of parallel connections	6
Nominal Voltage	752V/DC
Max. Charge Voltage	846V/DC
Standard Discharge Cut-off Voltage	658V/DC
Nominal Capacity	2940Ah
Energy Storage	2210kWh
Standard Charge Constant Current @25℃	1330A
Internal Resistance	30mΩ
Energy Efficiency	95% （0.5C/0.5C，@25℃）
Heating Power	25kW
Cooling Method	Forced Air
Mode of wire entry	Lower wiring Pattern
IP Grade	IP65
Insulation Resistance	10MΩ
Dielectric Strength	AC3000V@50Hz, 1min
Communication	CAN,RS485,LAN

COMPLIANCE INFORMATION

Certificate Options

CE, Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, EMC Directive 2004/108/EC,

RoHS,UL, CUL, UL508C and CSA, C22.2 NO.14-10, EAC/GOST R 5),C-Tick

Functional safety: STO, TÜV Sud certificate

ATEX-certified Safe Disconnection Function, Ex II (2) GD

Solar Panel + Inverter + BESS

Model: AEN-01(Low Voltage)

Safety

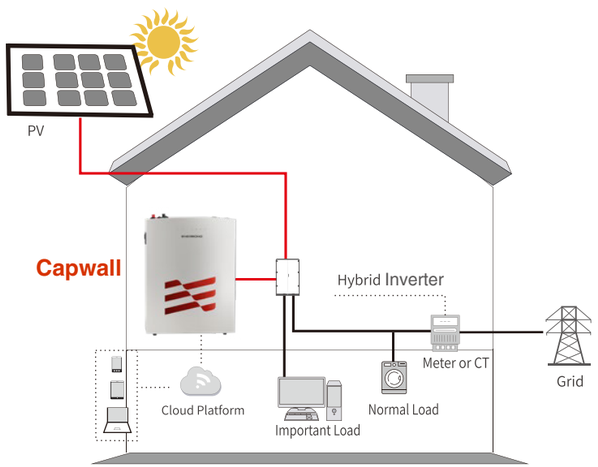
- Stable and safe,Supercapacity battery Module, pack, system,triple protection IP65,outdoor installation,away from living room

Simple

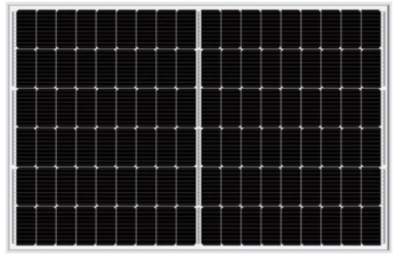
- Modular design,single person can carry and install it. Plug and play,30 mins quick installation

Intercon -nection

- Support power internet applications



Solar Panel 390-415W



Electrical parameters at Standard Test Conditions(STC*)

Module type			YLxxxDF54e/2(xxx=Pmax)					
Power output	P_{max}	W	390	395	400	405	410	415
Power output tolerances	$\triangle P_{max}$	W	0/+5					
Module efficiency	η_m	%	19.97	20.23	20.48	20.74	21.00	21.25
Voltage at Pmax	V_{mpp}	V	30.27	30.42	30.56	30.71	30.86	31.00
Current at Pmax	I_{mpp}	A	12.89	12.99	13.09	13.19	13.29	13.39
Open-circuit voltage	V_{ac}	V	36.80	36.90	37.00	37.10	37.20	37.30
Short-circuit voltage	I_{sc}	A	13.68	13.77	13.86	13.95	14.04	14.13

*STC:1000W.m^{-2} irradiance,25℃ cell temperature,AM 1.5 spectrum according to EN 608904-3

Electrical parameters at Nominal Operating Cell Temperature(NOCT*)

Power output	η_m	%	296.85	300.63	304.34	308.17	312.03	315.80
Voltage at Pmax	V_{mpp}	V	28.87	29.01	29.01	29.14	29.43	29.56
Current at Pmax	I_{mpp}	A	10.28	10.36	10.44	10.52	10.60	10.68
Open-circuit voltage	V_{oc}	V	34.98	35.08	35.17	35.27	35.36	35.46
Short-circuit voltage	I_{sc}	A	11.02	11.09	11.17	11.24	11.31	11.38

*NOCT:open-circuit module operation temperature at 800W.m^{-2} irradiance,20℃ ambient temperature,1m*s^{-1} wind speed.

Bifacial electrical parameters at Standard Test Conditions(STC*)

Power output	P_{max}	%	426.86	432.33	437.80	443.27	448.75	454.22
Voltage at Pmax	V_{mpp}	V	30.27	30.42	30.56	30.71	30.86	31.00
Current at Pmax	I_{mpp}	A	14.10	14.21	14.33	14.43	14.54	14.65
Open-circuit voltage	V_{oc}	V	36.80	36.90	37.00	37.10	37.20	37.30
Short-circuit voltage	I_{sc}	A	14.97	15.07	15.17	15.27	15.37	15.47

*Bifaciality coefficient is 70% ±5%，rear irradiance is 135W.m^{-2}

THERMAL CHARACTERISTICS

Nominal operating cell temperature	NOCT	℃	39±2
Temperature coefficient of Pmax	γ	%/℃	-0.35
Temperature coefficient of Voc	β	%/℃	-0.28
Temperature coefficient of Isc	α	%/℃	0.05

*Bifaciality coefficient is 70% ±5%，rear irradiance is 135W.m^{-2}

Hybrid Inverters 3.6kW-8kW

Model	SUN-5K-SG01LP1-US	SUN-6K-SG01LP1-US	SUN-7.6K-SG01LP1-US/EU	SUN-8K-SG01 LP1-US/EU
Battery Type	Lead-acid or lithium-ion			
Battery Voltage Range (V)	40-60V			
Max.Charging Current (A)	120 A	13SA	190A	190A
Max. Discharging Current (A)	120 A	13SA	190A	190A
Charging Curve	3 Stages / Equalization			
Extemal Temperature Sensor	Optional			
Charging Strategy for Li-ion Battery	Self-adaption to BMS			
PV String Input Data				
Max. DC Input Power (W)	6500W	7800W	9880W	10400W
PV Input Voltage (V)	370V (100v-500V)			
MPPT Range (V)	12SV-425V			
Start-up Voltage (V)	150V			
PV Input Current (A)	11A+11A	22A+11A	22A+22A	22A+22A
No. of MPPT Trackers	2			
No. of Strings Per MPPT Tracker	1+1	2+1	2+2	2+2
AC Output Data				
Rated AC Output and UPS Power (W)	5000W	6500W	7600W	8000W
Max. AC Output Power	5S00W	6600W	8360W	8800W
Peak Rower (off grid)	2 times of rated power, 10 S			
AC Output Rated Current (A)	20.8A	25A	31.7A/33A	31.4A/35A
Max AC Current (A)	22.9A	27.5A	34.9A/36.3A	36.7A/38.5A
Max.Continuous AC Passthrough (A)	35A	40A	50A	S0A
Output Frequency and Voltage	50 / 60Hz, 120/24Vac(split phase), 2O8Vac(2/3 phase). 230Vac (single phase)			
Grid Type	Split phase:2/3phase;Single Phase			
Current Harmonic Distortion	THD<3% (Linear back ＜15%)			
Max. Efficiency	97.60%			
Grid Regulation	ULI741, IEEE 1547, RULE21,VDE0126, AS4777, NRS2017, G98,G99, IEC61683, IEC62116, IEC61727			
Safety Regulation	IEC62109-1,LEC62109-2			
EMC	EN61000-6-1. EN610006-3,FCC15class B			

Battery energy storage system
Capwall 5.5kWh/10kWh/15kWh

Part Number	GTEM-48V5.5K-W	GTEF-48V10K-W	GTEM-48V15K-W
Energy storage	5.44kWh	10kWh	15kWh
Capacity	105Ah	210Ah	294Ah
Nominal Voltage	51.8V/DC	51.2V/DC	51.8V/DC
Maximum Charge Voltage	58V/DC	57V/DC	58V/DC
Discharge Cut-off Voltage	42V/DC	44V/DC	42V/DC
Internal Configuration	14S5P/EM21	16S7P/EF30	14S14P/EM21
ESR/AC @1KHz 50% SOC	<8mΩ	<9mΩ	<15mΩ
Max. Continuous Charge Current	100A	100A	200A
Max. Continuous Discharge Current	100A	100A	200A
Dimensions	470x510x175(mm)	730x750x138(mm)	700x765x175(mm)
Weight	45kg	117kg	132kg
Projected cycle life(25℃)	20000 times	10000 times	20000 times
Round Trip Efficiency	97.5%	97.7%	97.5%
Cells Self-discharge Rate	2% per month		
Projected life(25℃)	15 years		
Recommended Depth of Discharge	≤90%		
Maximum Depth of Discharge	100%		
Cooling Method	Natural		
Shell Material	Metal & ABS plastic		
Parallel Connection	Up to 16 sets		
Compatible Protocol	CAN,RS485		
Monitoring Data	System voltage,current,temperature,SOC,SOH,cycle,cell's voltage		

Solar Panel + Inverter + BESS

Model: AEN-02(High Voltage)

Safety

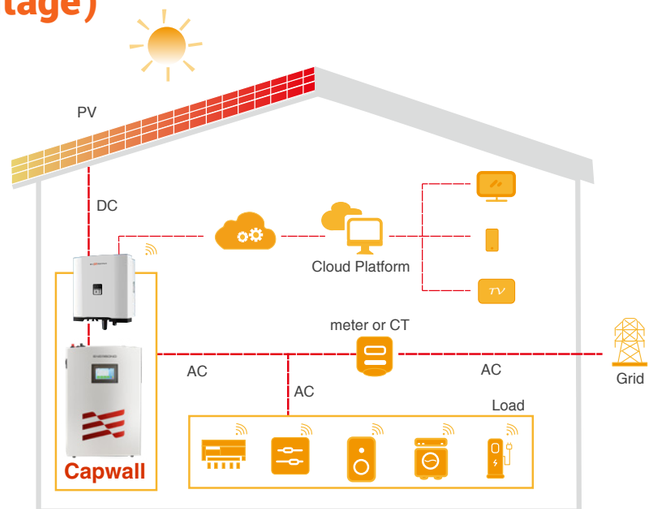
- It can meet the customer's requirement of high voltage energy storage,more stable and safety.

Simple

- Plug and play,30 mins quick installation

Intercon -nection

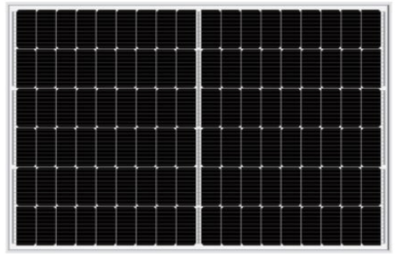
- Support power internet applications



All-in-One series

ENERBOND Probenergy REDEFINING ENERGY STORAGE

Solar Panel 390-415W



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Power output tolerances	$\triangle P_{max}$	W	0/+5					
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Voltage at Pmax	V_{mpp}	V	30.27	30.42	30.56	30.71	30.86	31.00
Current at Pmax	I_{mpp}	A	12.89	12.99	13.09	13.19	13.29	13.39
Open-circuit voltage	V_{ac}	V	36.80	36.90	37.00	37.10	37.20	37.30
Short-circuit voltage	I_{sc}	A	13.68	13.77	13.86	13.95	14.04	14.13

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Current at Pmax	I_{mpp}	A	14.10	14.21	14.33	14.43	14.54	14.65
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Temperature coefficient of Pmax	γ	%/℃	-0.35
Temperature coefficient of Voc	β	%/℃	-0.28
Temperature coefficient of Isc	α	%/℃	0.05

*Bifaciality coefficient is 70% ±5%，rear irradiance is 135W.m^{-2}

Inverters 6kW-8kW-10kW

	Parameter	GT-EST06KH	GT-EST08KH	GT-EST10KH
Efficiency	Max.Efficiency	>98.2%	>98.2%	>98.2%
PV Input	Max. PV input power(W)	7800	10400	13000
	Max. PV input voltage(V)	1000	1000	1000
	MPPT Operation Voltage Range（V）	180-950	180-950	180-950
	Number of MPPT/PV Strings	2/1	2/1	2/1
	Max. PV input current(A)	15/15	15/15	15/15
	Short-circuit current of PV input(A)	18/18	18/18	18/18
Battery	Max Input/Output Voltage(V)	550	550	550
	Operating Voltage Range(V)	180-550	180-550	180-550
	Max Charge/Discharge Current(A)	25/30	25/30	25/30
	Max Input/Output Power(W)	6000/6000	8000/8000	10000/10000
	Battery Type	Li-ion/Lead-acid		
AC Input and Output	Rated Power(W)	6000	8000	10000
	Max. Apparent AC Power(VA)	6000	8000	10000
	Nominal AC Voltage(Vac)	380,3L/N/PE	380,3L/N/PE	380,3L/N/PE
	AC Power Frequency（Hz）	50/60	50/60	50/60
	Max. AC Output Current(A)	10	12	15
	Power Factor Range	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
	OutputTHDi(@Nominal Output)	<3%	<3%	<3%
Genaral Data	Operating Temperature Range	-25℃ …+60℃(>45℃ derating)		
	Topology	Transformerless		
	Cooling Method	Natural convection		
	Ingress Protection Rating	IP65		
	Relative Humidity	0-100%, no condensation		
	DC Connection Type	MC/Amphenol/Phoenix		
	AC Connection Type	Plug-in Connector		
	Display	LCD		
	Communication With Portal	RS485 (WiFi/GPRS Optinal)		
	Communication With BMS	CAN		
	Communication With Meter	RS485		
Certification	Safety	IEC62109-1/-2		
	EMC	EN61000-6-1/-2/-3,IEC61000		
	On-Grid standard	AS4777.2:2020，NRS097-2-1:2017，PN-EN50549-1:2019, VDE-AR-N 4105:2018,EN50549-1:2019+AC:2019-4		

Battery energy storage system
Capwall 400V14.4kWh/345V10kWh

Part Number	GTEM-400V14.4K-W	GTEF-345V10K-W
Energy storage	14.4kWh	10.3kWh
Nominal Voltage	400V/DC	345.6V/DC
Maximum Charge Voltage	453V/DC	390V/DC
Discharge Cut-off Voltage	292V/DC	300V/DC
ESR/AC @1KHz 50% SOC	<150mΩ	<100mΩ
Max. Continuous Charge Current	50A	15A
Max. Continuous Discharge Current	50A	30A
Round Trip Efficiency	96%	97.7%
Charge Temperature	0℃~+55℃	0℃~+45℃
Discharge Temperature	-20℃~+60℃	-30℃~+60℃
Self-discharge Rate	2% per month	2% per month
Recommended Depth of Discharge	≤90%	≤90%
Maximum Depth of Discharge	100%	100%
Cooling Method	Natural	Natural
Mounting Options	Wall/floor	Wall/floor
Shell Material	Metal & ABS plastic	Metal & ABS plastic
Communication	CANbus	CAN,RS485
Monitoring Data	System voltage,current,temperature,SOC,SOH,cycle,cell's voltage	
Compliance Information		
Certificate Options	IEC62619:2017,IEC62040, EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017,EN 61000-3-2:2014, EN 61000-3-3:2013, RoHS, UN38.3, MSDS	

Let the world enjoy high-quality new energy batteries

Enerbond Energy works with partners globally to bring the right solutions to market, manufactured both locally and overseas allowing Enerbond Energy to service the ever growing global demand for battery storage.

Global Investment

Attract investment from the global market

- Technical support
- Favorable price
- Preferential policies











Global Projects

After-sales Service

Better quality is the best service

>> With rich management experience, efficient after-sales service management organization;

>> Experienced, responsive and conscientious service team;

>> Improve the effective service management system;

>> The spare parts warehouse in the factory center as the core, the secondary spare parts warehouse in the regional service station and the tertiary spare parts warehouse in the customer concentration area as the auxiliary spare parts guarantee;

>> The GPRS remote terminal platform is established to conduct remote monitoring and fault prediction of battery operation data.

Probenergy®
REDEFINING ENERGY STORAGE

ENERBOND

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