



## Micro-Grid System



**MEGACUBE 50kW**  
BATTERY ENERGY STORAGE SYSTEMS



# MEGACUBE 50kW BATTERY ENERGY STORAGE SYSTEMS

64kWh / 128kWh/ 192kWh

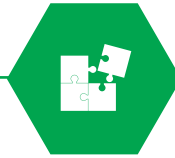
## Product Description

MEGACUBE 50kW Battery Energy Storage Systems have been created to be a install ready and cost effective on-grid, hybrid, off-grid commercial/industrial battery energy storage systems.



### Multiple applications

Applications of the MEGACUBE include micro-grid, backup power, peak shaving, time of use bill management, frequency regulation, voltage support, renewable integration, and islanding.



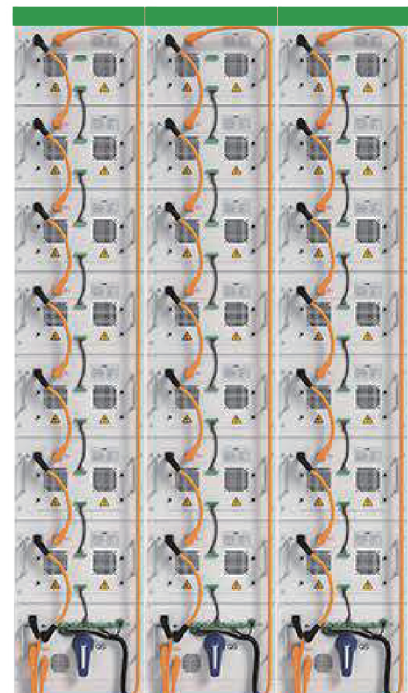
### Ready to fit anywhere

MEGACUBE 50kW battery energy storage solution is the ideal fit for large residential or light commercial applications. Each commercial BESS is manufactured to be install ready



### The future of solar energy storage

Lithium Iron Phosphate (LiFePO<sub>4</sub>) battery systems connected at high voltage come with 5000 cycle warranty and up to 80% DOD (Depth of Discharge) @ 1C 25 °C





## **Large Scale Li-Ion Battery ESS (LFP) - About**

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Each BESS is designed and shipped with the batteries pre- installed utilizing UN 3536 shipping standards. Each BESS container has a PV inverter making it easy for completing your renewable energy project. Multiple functionality modes allows simple switching between Grid, PV, or Genset enabling better user control and stability.

All system systems are offered in either 400VAC or 480VAC 3 phase.

### **BESS Benefits**

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- Demand Charge Reduction
- Energy Independence (w/PV)
- Peak Load Shifting
- Full Back Up Power
- Small Footprint to Power Ratio
- PV & Genset Ready to Connect
- Can Integrate with Solar + Car Charging

### **Common Applications**

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- Large Residences
- Small Business' & Factories
- Shopping and Distribution Centers
- Offices Buildings
- Schools and Libraries
- Island communities
- EV Stations

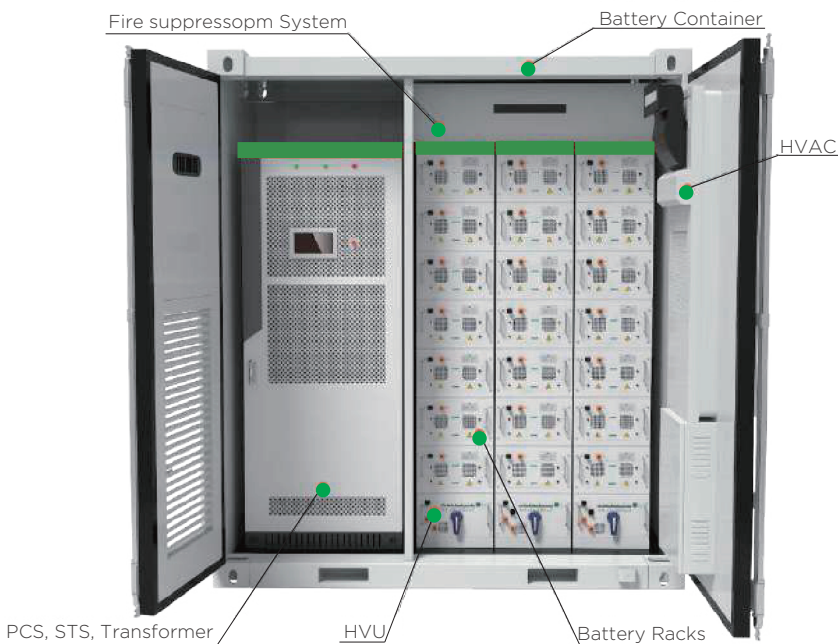
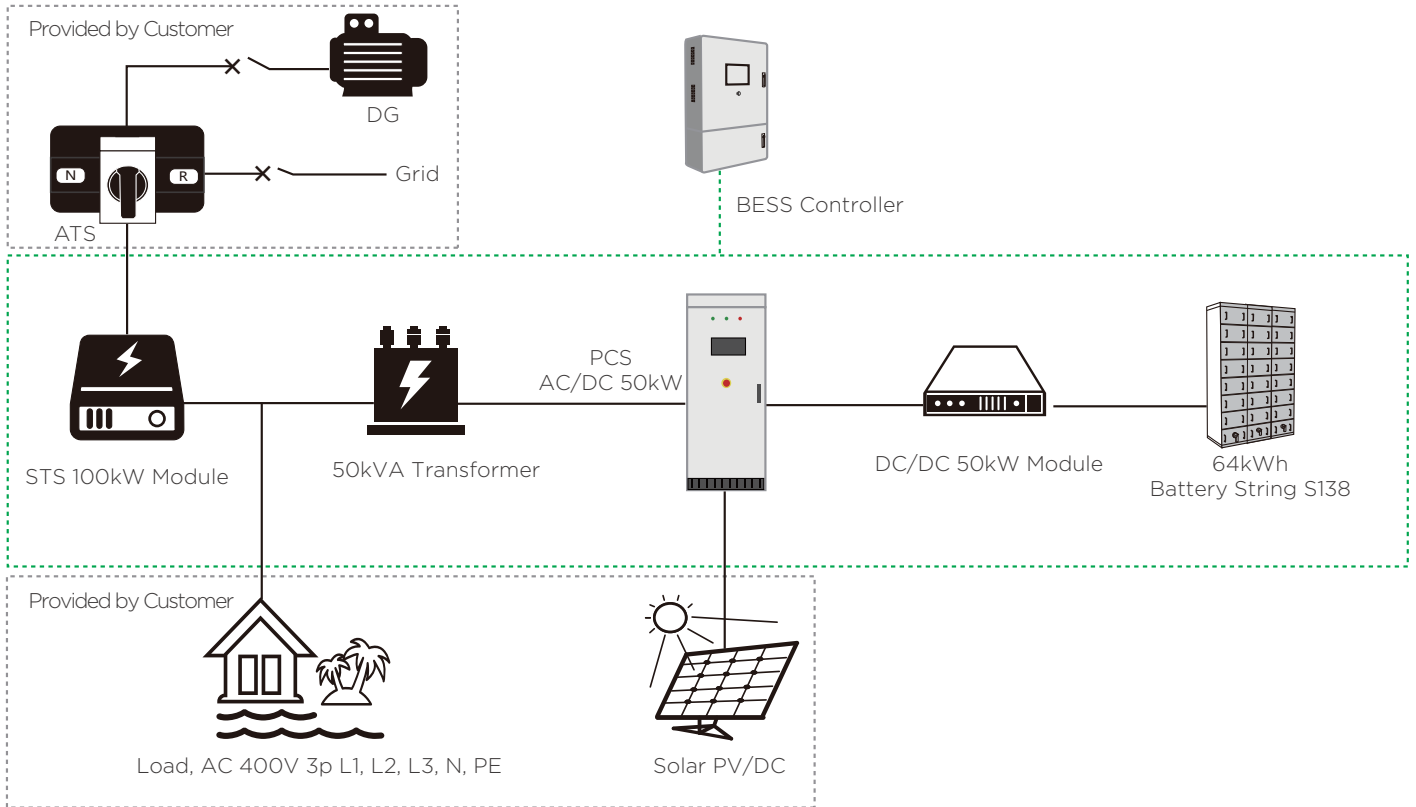
## MEGACUBE 50kW Battery Energy Storage Systems

Item	S-MGC 50-64	S-MGC 50-128	S-MGC 50-192
<b>DC Data</b>			
Battery chemistry	Lithium Iron Phosphate (LFP)		
Cell life cycle	80% Retention with 5,000 Cycles @ 1C 25C		
Cell spec	3.2V/90Ah		
String configuration	2P112S		
Number of strings	1	2	3
Rack rated energy capacity	64kWh	128kWh	192kWh
DC rated energy capacity	64.5kWh	129.0kWh	193.5kWh
Rated voltage	358.4V		
Voltage range	313.6V-397.6V		
BMS communication interface	RS485, Ethernet		
BMS communication protocol	Modbus RTU, Modbus TCP		
<b>AC Data</b>			
Rated AC power	50kW		
Maximum AC power	55kW		
Rated grid voltage	400V		
Grid voltage range	315%		
AC rate of current	72A		
Output THDi	≤3%		
AC PF	Listed: 0.8-1 leading or lagging (Controllable) Actual: 0.1-1 leading or lagging (Controllable)		
Grid frequency range	50/6032.5Hz/59.5-60.5Hz		
Isolation method	3 Phase 4 Line Transformer		
<b>General Data</b>			
Dimension w/o clearances (L*W*H)	2,200*1,300*2,490mm		
Weight of the whole system	<2.7t	<3.4t	<4.4t
Degree of protection	IP54		
Operating temperature range	-20-40°C		
Relative humidity	0-95% (non-condensing)		
Max working altitude	3,000m/9,842ft		
Cooling concept of DC hatch	HVAC		
Communication interfaces	RS485, Ethernet, GPRS		
Certifications	UL1973, UL9540A, IEC62619, CE , UN38.3		



## MEGACUBE 50kW Battery Energy Storage Systems

Product Series	Part #	Energy (kWh)	PCS Power (kW)	Max PV (kW)	PV Voltage Range (V)	PV MPPT Inputs	Battery String	Number of Strings	Battery String (V)	DC/DC Converter (kW)	STS (kW)	Dimension w/o clearances (L*W*H) (mm)	Container Size (feet)
S-MGC-50	M50-64	64	50	100	520 to 900	1	M138-7P9	1	358	50	100	2200 x 1300 x 2490	7'
	M50-128	128						2					
	M50-192	192						3					



### BESS's Include:

- Battery Racks & Wiring (LFP)
- BESS Controller with Battery Management System
- High Voltage Units (BMS)
- 50kW Power Conversion System (PCS) (DC/AC)
- 50kW PV Inverter (DC/DC)
- 50kW Transformer
- 100kW STS (excludes N/A systems)
- 7 foot Storage Container
- HVAC System
- Fire Suppression System
- Installation Manuals, Certificates, Usage Guide, etc.

## MEGACUBE 50kW Battery Energy Storage Systems

Item	Data
Battery module	M138-7P9
Pack QTY	7
Nominal capacity	64kWh
Discharge cutoff voltage - Rated voltage - Charge cutoff voltage	314V-358V-398V
Pack	3.2V/90Ah@2P16S
String measuring voltage range	100-1,000V
String voltage detection accuracy	30.5%
String voltage sampling period	100ms
String measuring current range	3300A
String current detection accuracy	≤1%
String temperature detection accuracy	32°C
SOC calculation accuracy	≤7%
Input insulation resistance	≥10MΩ, 1,000V DC
Communication	Ethernet, CAN, RS485
System cycle life	≥5,000 cycles@1C, 25°C
Dimension (W*D*H)	400*750*2,050mm
Weight	690kg
Certifications	UL1973, UL9540A, IEC62619, CE, UN38.3



### Battery String-S138

- 1C Charge/Discharge
- The energy supply can be a single battery string or parallel battery strings
- Easy configuration and maintenance

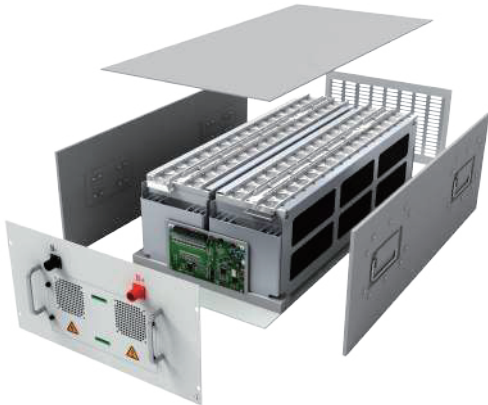
Item	Data
DC voltage range	250V-520V
PV voltage range	520V-900V
Maximum DC current	150A
Maximum PV current	192A
Rated output power	50kW
Rated grid voltage	400V
Grid voltage range	315%
The frequency range of the power grid	50/6032.5Hz
AC rated current	72A
AC PF	Actual: 0.1-1 leading or lagging (Controllable)
Off-grid voltage	400V or 480V
Off-grid voltage range	310%
Off-grid frequency	50/60Hz
Weight	520kg



### Power Conversion System

- Single-stage three-level modularization
- Multi-branch input to reduce battery series and parallels connection
- PV, DGEN, and Grid ready

## MEGACUBE 50kW Battery Energy Storage Systems



**Battery Pack-P9**



TCP / RS485

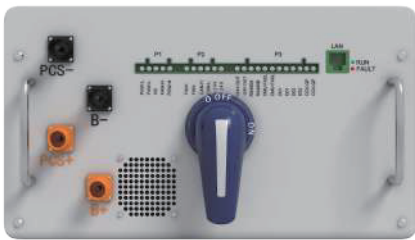


TCP / RS485



Life span >5,000 cycles @ 1C 25C

Item	Data
Capacity (kWh)	9.216kWh
Rated voltage	51.2V
Discharge cut-off voltage	44.8V
Charge cut-off voltage	56.8V
Cycle life	>6,000 cycles@0.5C 25°C
Voltage detection accuracy of battery cell	310 mV
Temperature detection accuracy of battery cell	±2°C
Balancing current of battery cell	≥150mA
Range of voltage measurement for battery cell	1-5 V
Battery balancing method	Passive balancing
Certifications	UL1973, IEC62619, UN38.3



**M138-HVU**



Multistage protection



Rich interface



Dual-channel power supply

Item	Data
Circuit breaker	160A-250A
Hall sensor	300A
Leakage current sensor	50mA
Fuse	250A
Error range of voltage detection accuracy	31%
Error range of Current detection accuracy	31%
Temperature detection accuracy	±2°C
Operating life	10 years
Certifications	UL1973



**BESS Controller**



Pre-engineered control strategy



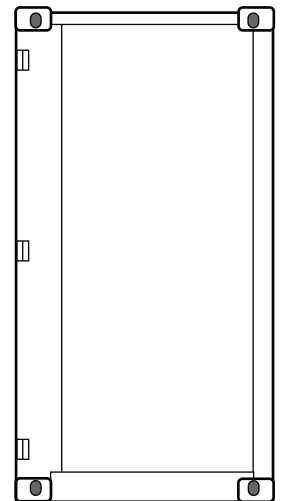
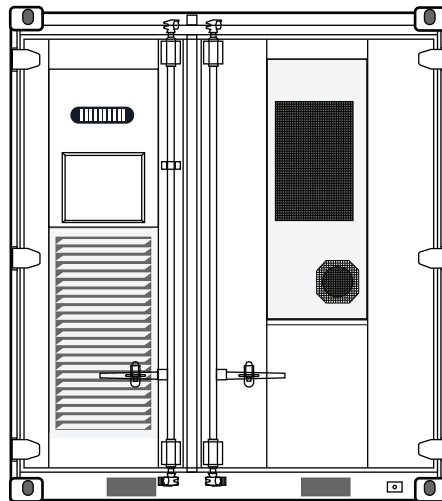
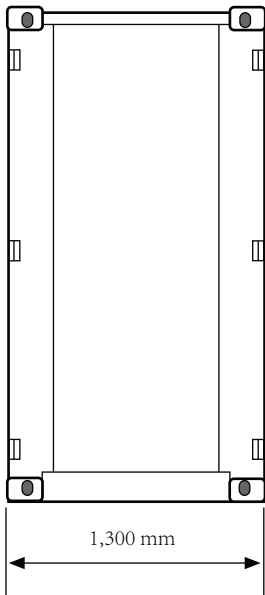
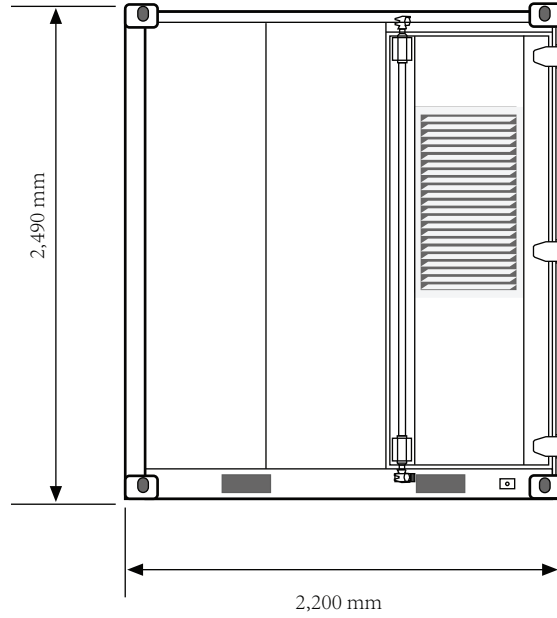
Easy configuration



Cloud base data communication

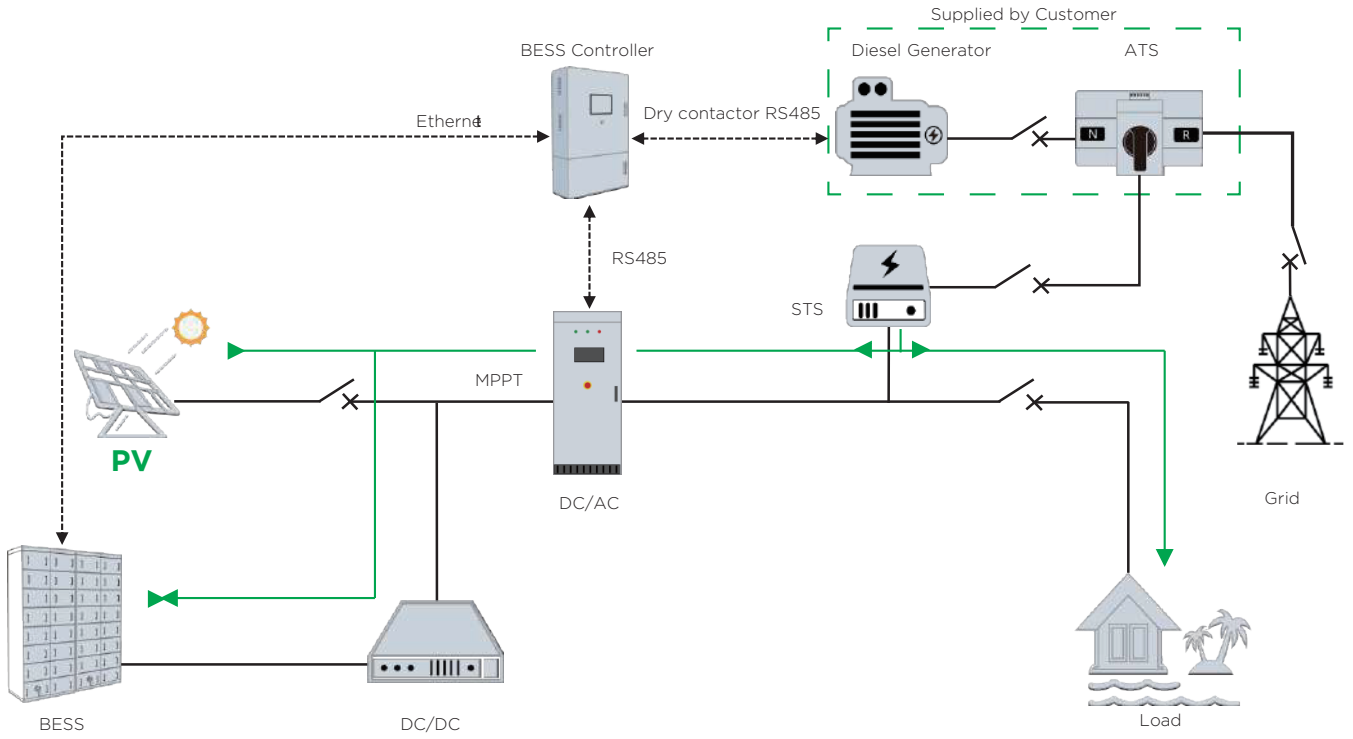
Item	Data
Dimension	480x796x230mm
Power interface	AC 220V, 50/60Hz
PCS communication	TCP / RS485
HVU communication	TCP/IP
HVAC communication	RS485
Relay	24 dry contacts inputs / outputs
Grid control application	Time shifting, peak shaving, renewable moving average
Off-grid control application	Backup power, PV/DG/EV/ESS integrated micro-grid control
Battery management system	DC busbar incoming control

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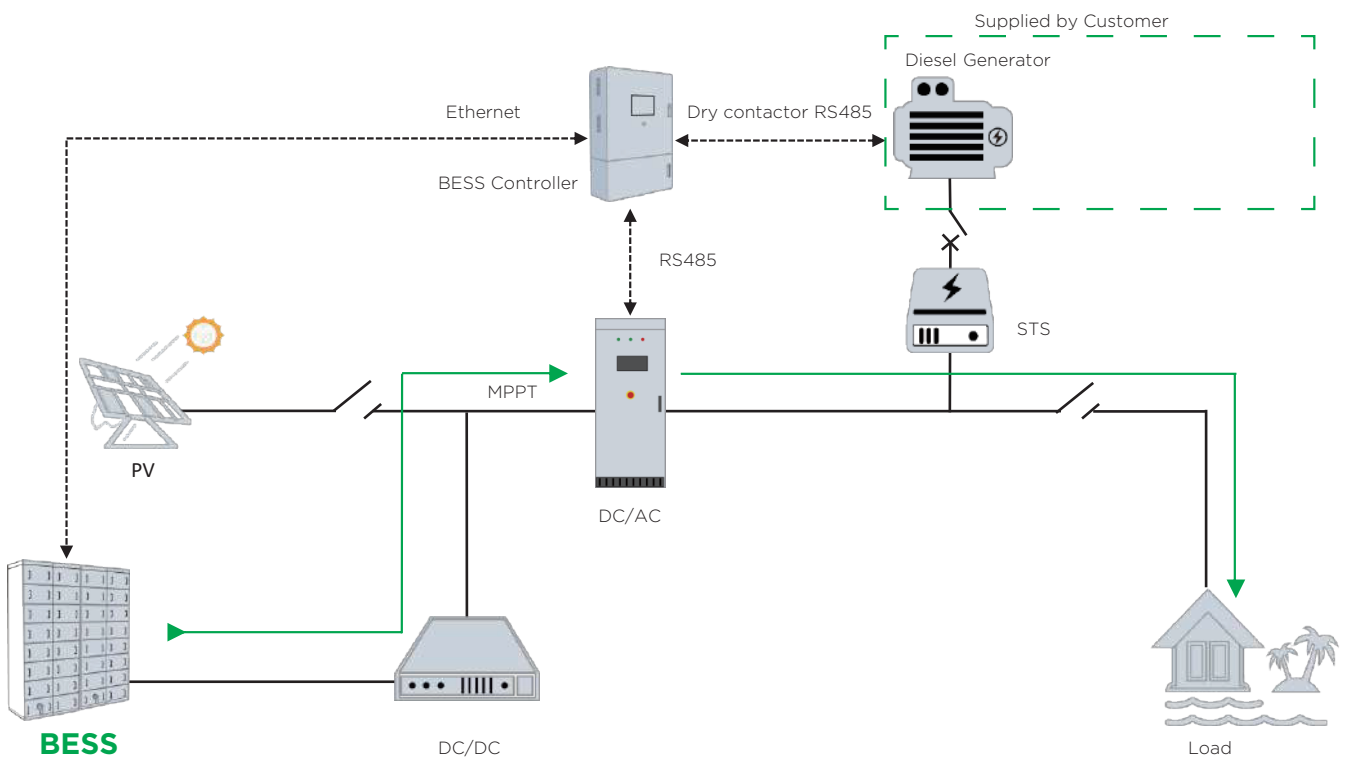


# MEGACUBE 50kW Battery Energy Storage Systems

## 1. PV & BESS Operation Off-Grid/Microgrid



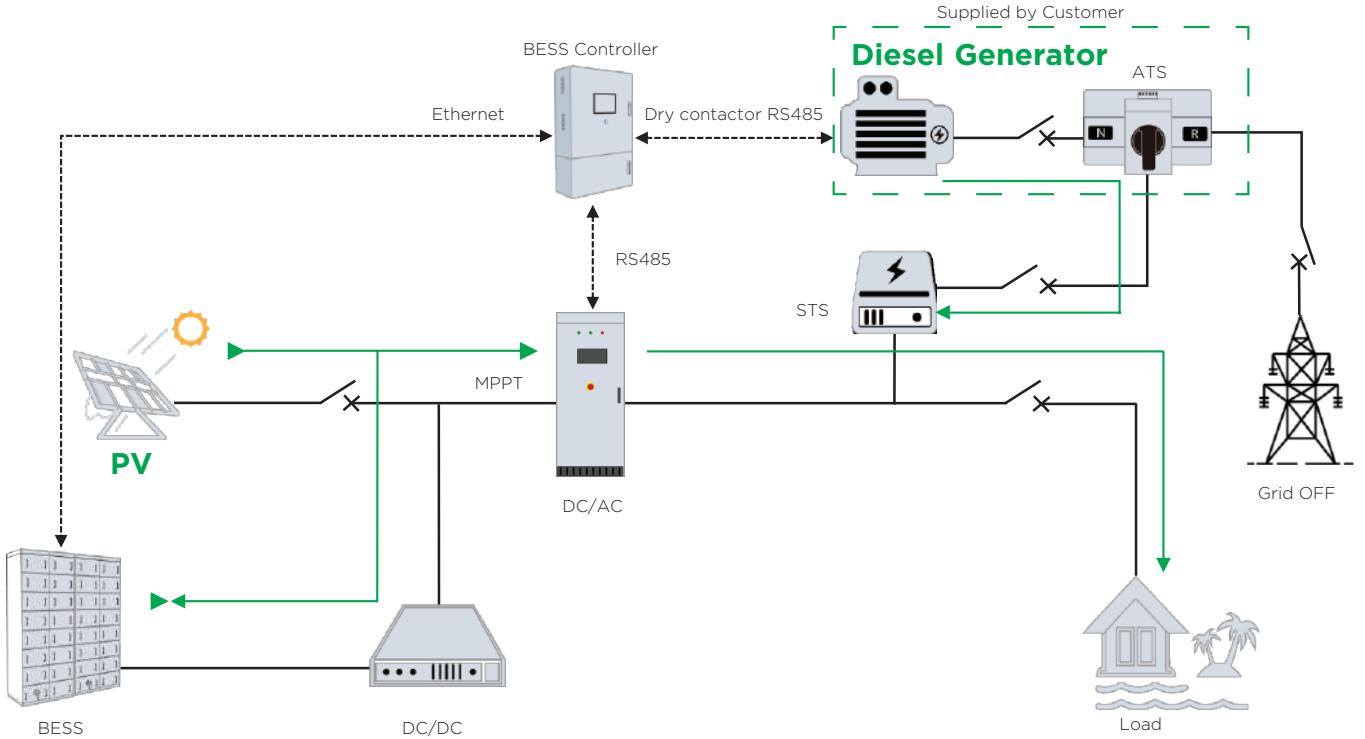
## 2. BESS Power Operation Off-Grid/Microgrid



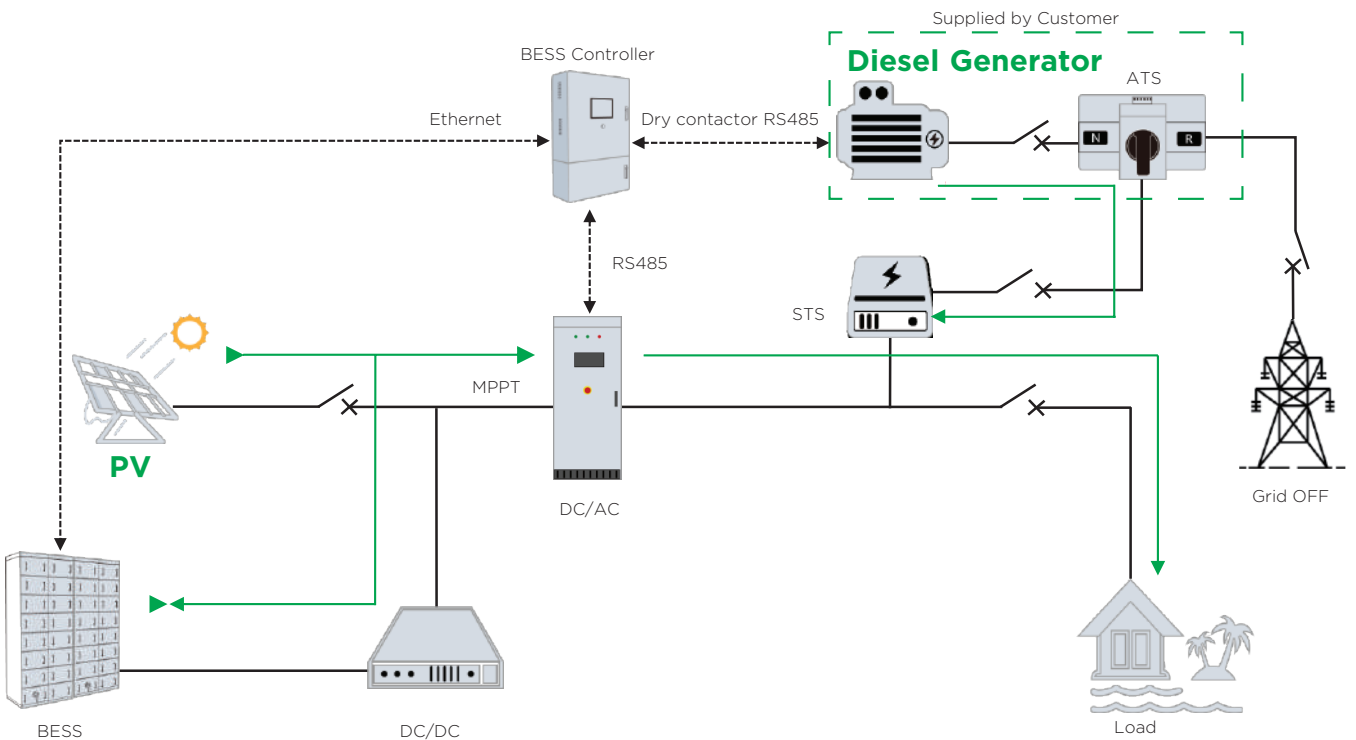


# MEGACUBE 50kW Battery Energy Storage Systems

## 3. Diesel Gen Power Operation Off-Grid/Microgrid

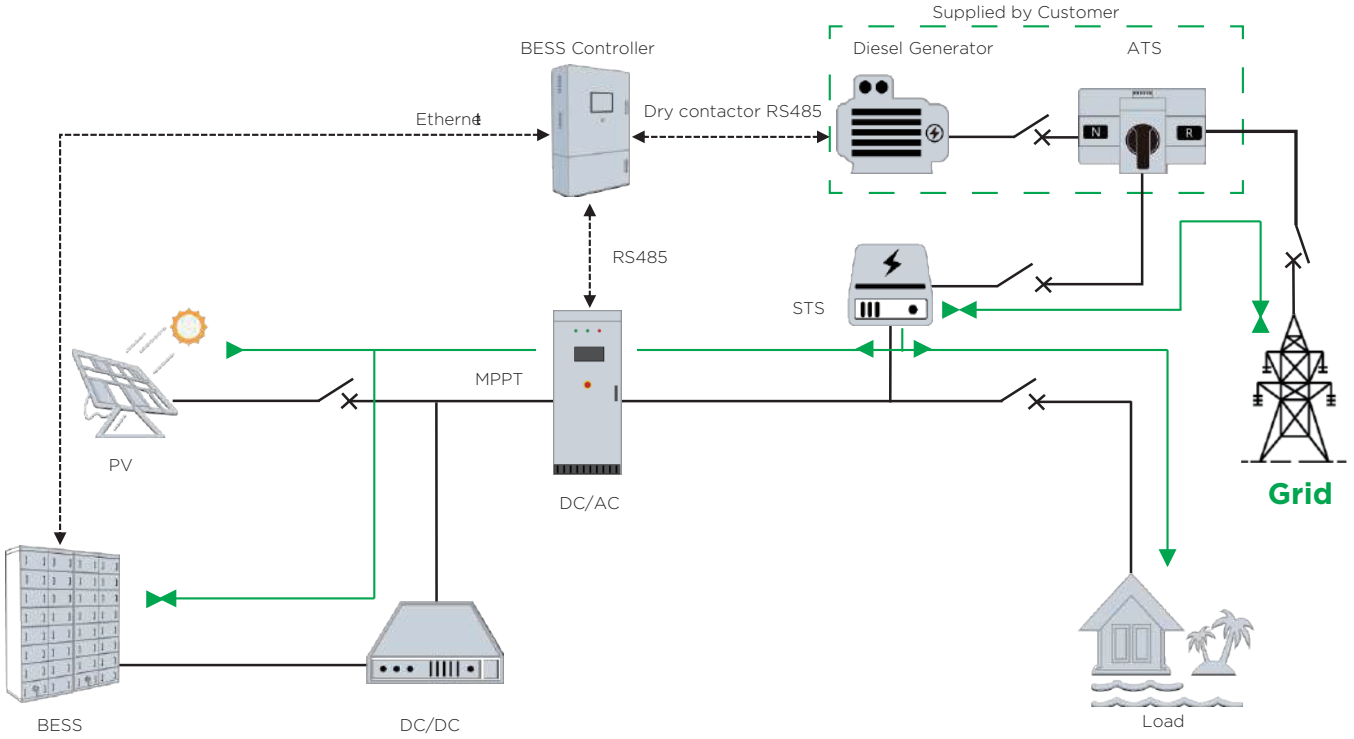


## 4. PV + Genset Operation Hybrid/Microgrid

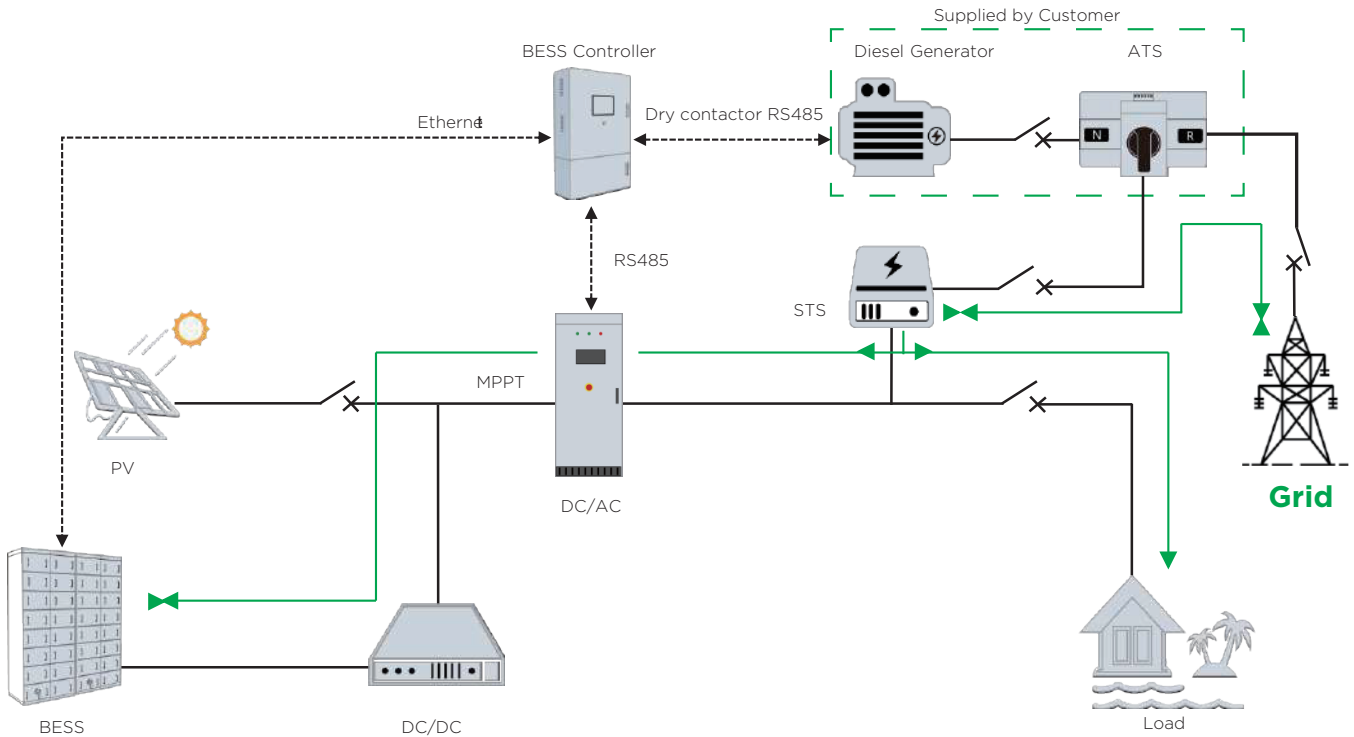


# MEGACUBE 50kW Battery Energy Storage Systems

## 5. PV + Grid Operation Hybrid/On-Grid



## 6. Grid Operation Hybrid/On-Grid

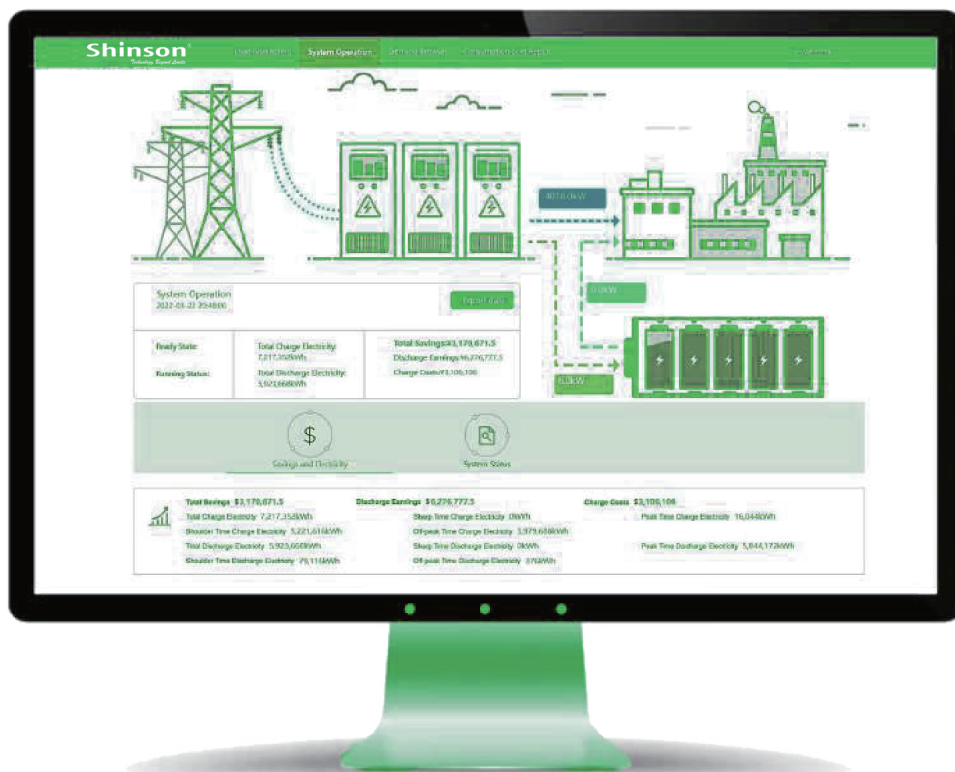




## BESS System Monitoring

A cloud based energy management system (EMS) monitors the loads at the PV power station, grid access point, and at the energy storage systems grid access point in real-time.

By monitoring real-time data, and taking safety & stability constraints into consideration, the cloud based EMS can dynamically adjust the energy storage system's charge/discharge strategies.





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