



Micro-Grid System



MEGACUBE 250kW
BATTERY ENERGY STORAGE SYSTEMS



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276kWh / 552kWh / 1104kWh / 1656kWh

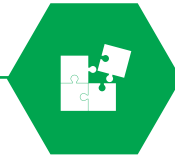
Product Description

MEGACUBE 250kW 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. 20' and 40' containers.



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

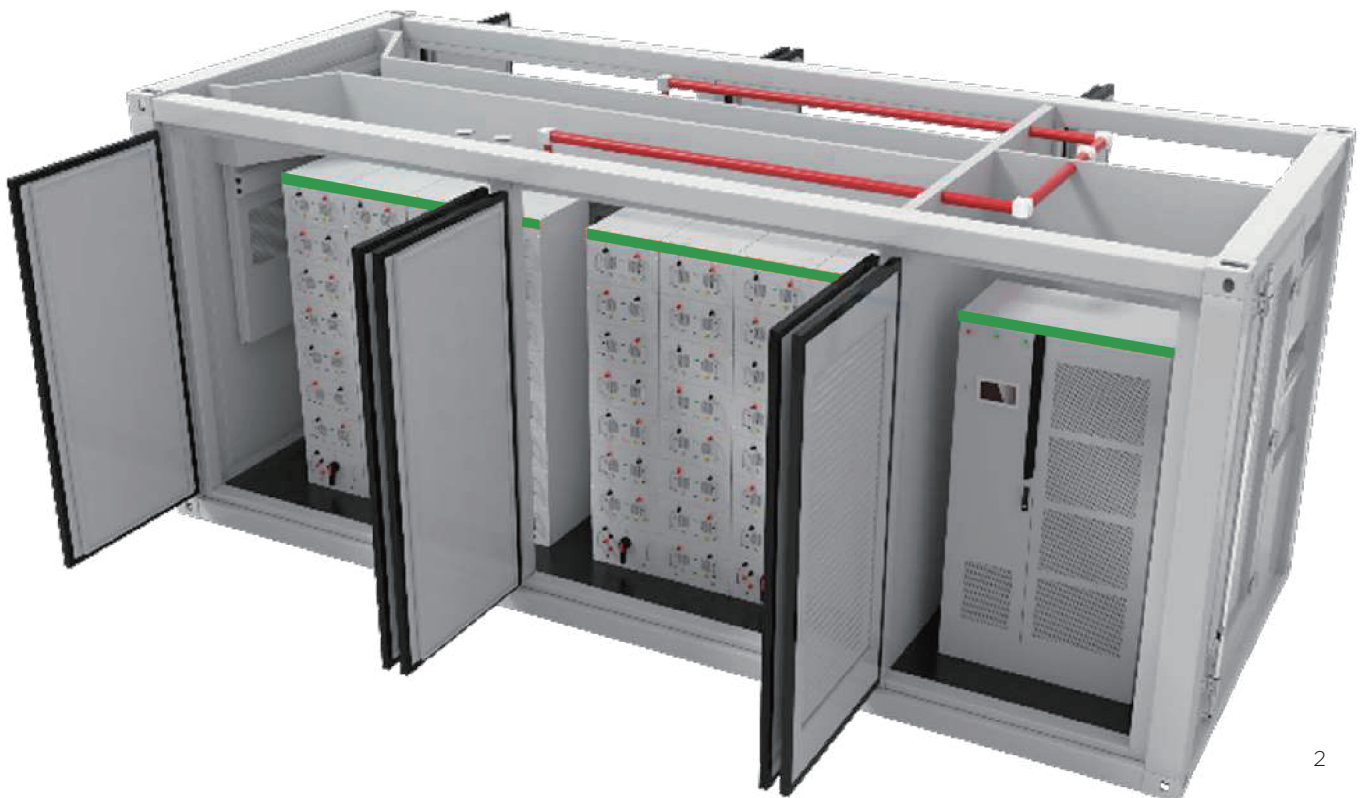
MEGACUBE 250kW battery energy storage solution is the ideal fit for medium to larger scale commercial applications.

Each commercial BESS is manufactured to be install ready



The future of solar energy storage

Lithium Iron Phosphate (LiFePO₄) 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

Each 250kW ESS 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

- Pre-Installed System from Factory
- Simplified Installation
- PV & Genset Ready to Connect
- Demand Charge Reduction
- Energy Independence (w/PV)
- Peak Load Shifting
- Full Back Up Power (Auto Switching)

Common Applications

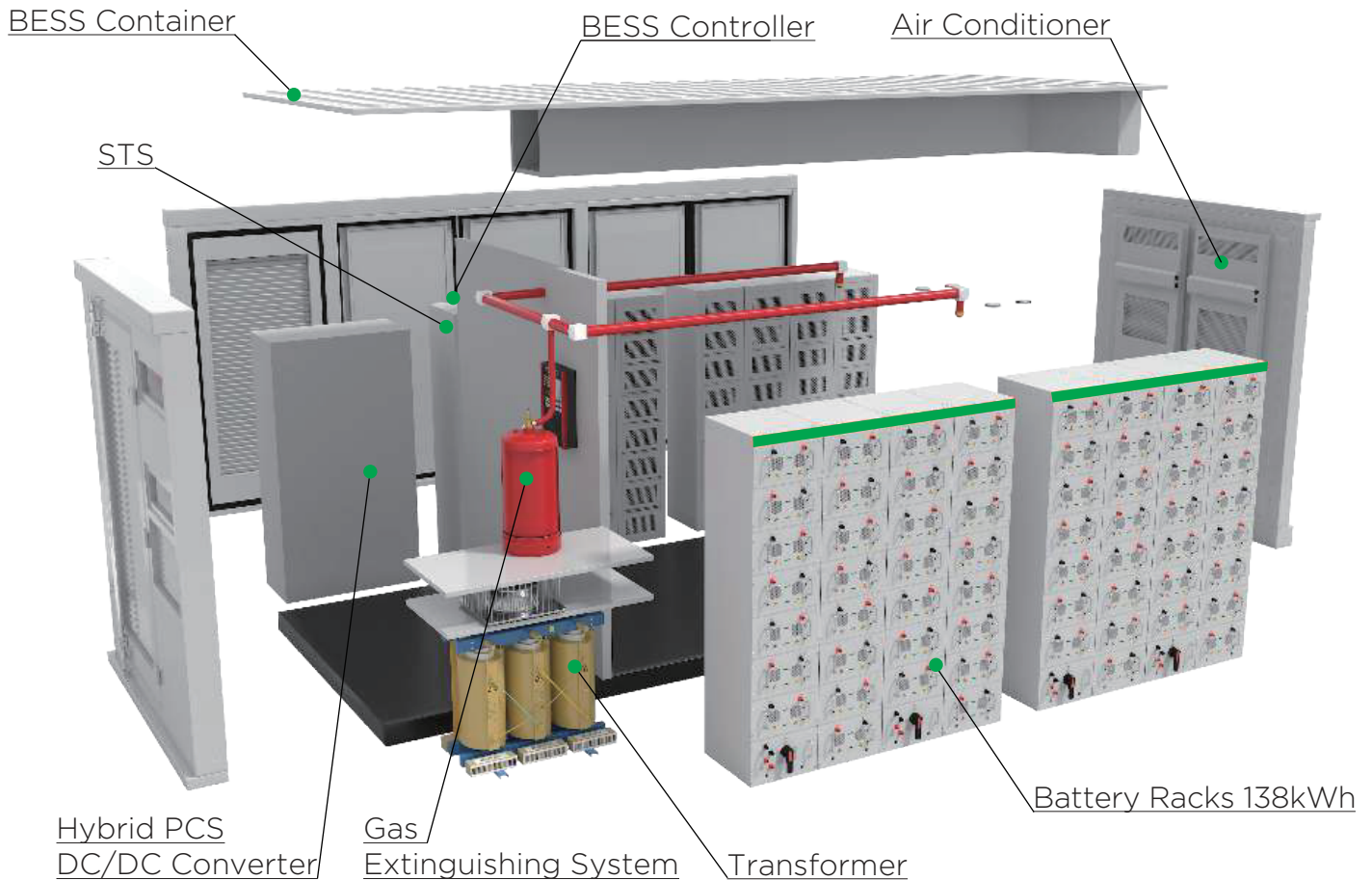
- Microgrid Projects
- Business's & Factories
- Shopping & Distribution Centers
- Offices Buildings
- Schools and Libraries
- Island communities
- EV Stations

MEGACUBE 250kW Battery Energy Storage Systems

Item	S-MGC250-276	S-MGC250-552	S-MGC250-1,104	S-MGC250-1,656
DC Data				
Battery chemistry	Lithium Iron Phosphate (LFP)			
Cell life cycle	80% Retention with 5,000 Cycles @1C 25°C			
Cell spec	3.2V/90Ah			
String configuration	2P240S			
Number of strings	2	4	8	12
Rack rated energy capacity	138kWh			
DC rated energy capacity	276kWh	552kWh	1,104kWh	1,656kWh
Rated voltage	768V			
Voltage range	672V-852V			
BMS communication interface	RS485, Ethernet			
BMS communication protocol	Modbus RTU, Modbus TCP			
AC Data				
Rated AC power	250kW			
Maximum AC power	275kW			
Rated voltage	400V/480V	400V/480V	400V/480V	400V/480V
Grid voltage range	315%/310%			
AC rate of current	360A/301A			
Output THDi	≤3%			
Adjustable PF	1 (leading) - 1 (lagging)			
Grid frequency range	50/6032.5Hz/59.5-60.5Hz			
Isolation method	3 Phase 4 Line Transformer			
General Data				
Dimension w/o clearances (L*W*H)	6,058*2,438*2,591mm		12,192*2,438*2,591mm	
Weight of the whole system	<12t	<15t	<21t	<26t
Degree of protection	IP54			
Operating temperature range	-20-40C			
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 250kW 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-MGC250	M250-276	276	250	275	250 to 672	6	M138-I5P9	2	768	300	800	6058 x 2438 x 2591	20'
	M250-552	552		4									
	M250-1104	1104		8									
	M250-1656	1656		12									



BESS's Include:

- Battery Racks & Wiring (LFP)
- BESS Controller with Battery Management System
- High Voltage Units (BMS)
- 250kW Power Conversion System (PCS) (DC/AC)
- 250kW PV Inverter (DC/DC)
- 250kW Transformer
- 800kW STS (excludes N/A systems)
- 20 foot Storage Container
- HVAC System
- Fire Suppression System
- Installation Manuals, Certificates, Usage Guide, etc.

MEGACUBE 250kW Battery Energy Storage Systems

Item	Data
Battery module	S138-15P9
Pack QTY	15 (6-15 Configurable)
Nominal capacity	138kWh (64-138kWh)
Discharge cutoff - rated voltage - charge cutoff voltage	672V - 768V - 852V
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	+/-300A
String current detection accuracy	≤1%
SOC calculation accuracy	≤7%
Input insulation resistance	≥10MΩ 1,000V DC
Communication	ModbusTCP, CAN, ModbusRTU
System cycle life	≥5,000 cycles @ 1C, 25C
Dimensions (W*D*H)	800*750*2,050mm
Weight	1,430kg
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	M250-EX	M250-NA
Battery voltage range	500-850V	
DC max current	550A	
Rated AC power	250kW	
Maximum AC power	275kW	
Rated voltage	400V	480V
Grid voltage range	+/-15%	+/-10%
AC rate of current	360A	301A
Output THDi	≤3%	
Adjustable PF	1 (leading) ~ 1 (lagging)	
Grid frequency range	50/6032.5Hz	59.5-60.5Hz
Isolation method	3 Phase 4 Line Transformer	
Dimensions (W*D*H)	1,200*800*2,160mm	
Weight	1,280kg	



Power Conversion System

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

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Item	Data
Low Voltage PV Input Mode	
HV DC bus voltage	LV voltage+40V-850V
HV DC bus current	0-100A*6
LV PV input voltage	250-840V
LV PV input current	0-120A*6
Power rating	50kW*6
Dimensions (W*D*H)	1,100*800*2,160mm
Weight	550kg



DC/DC Converter

- Bi-direction DC-DC converter
- Field-replaceable units with modular design
- Shared or separated DC bus

Item	Data
Rated power	800kW
Rated voltage	400V
Input voltage range	-25%-15%
Output voltage range	-25%-15%
Rated input current	1,155A
Max input current	1,270A (110%)
Frequency range	50/60±4.5Hz
Switching time	10ms-80ms
IP degree	IP20
Efficiency	99.5% (Full load)
The max load standing capacity during switching	300kW (RCD type, pure capacitive load or inductive load <100kvar)
Wiring mode	3 Phase 4 Wire
Dimensions (W*D*H)	800*800*2,160mm
Weight	450kg



Static Transfer Switch

- Integrated distribution cabinet function for distributed power access
- Millisecond on/off-grid switching
- Automatic operation, switching
- 15-inch display screen, for operation monitoring

MEGACUBE 250kW Battery Energy Storage Systems



Battery Pack-P9



TCP / RS485

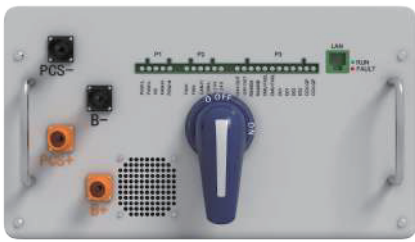


TCP / RS485



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



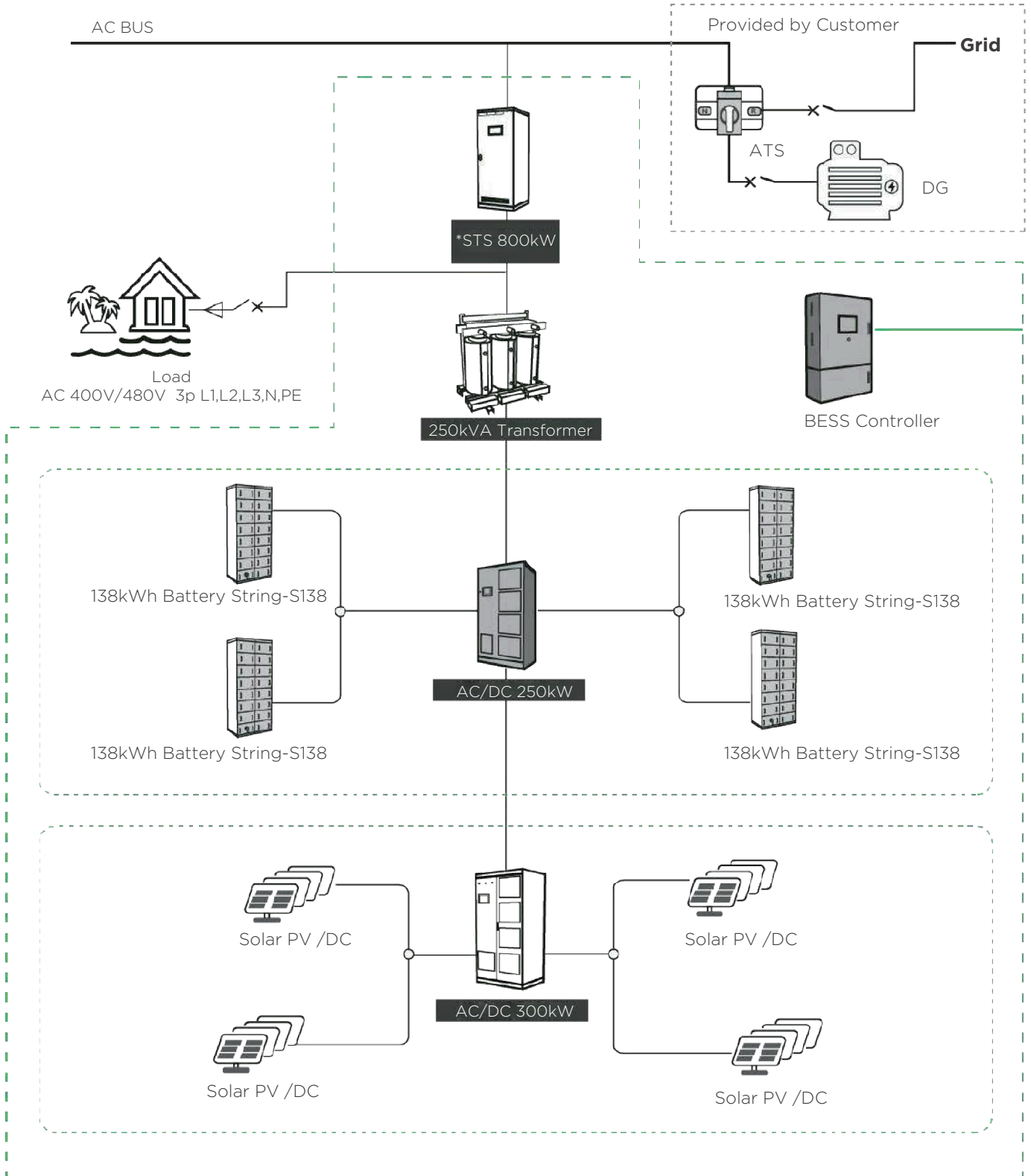
Easy configuration



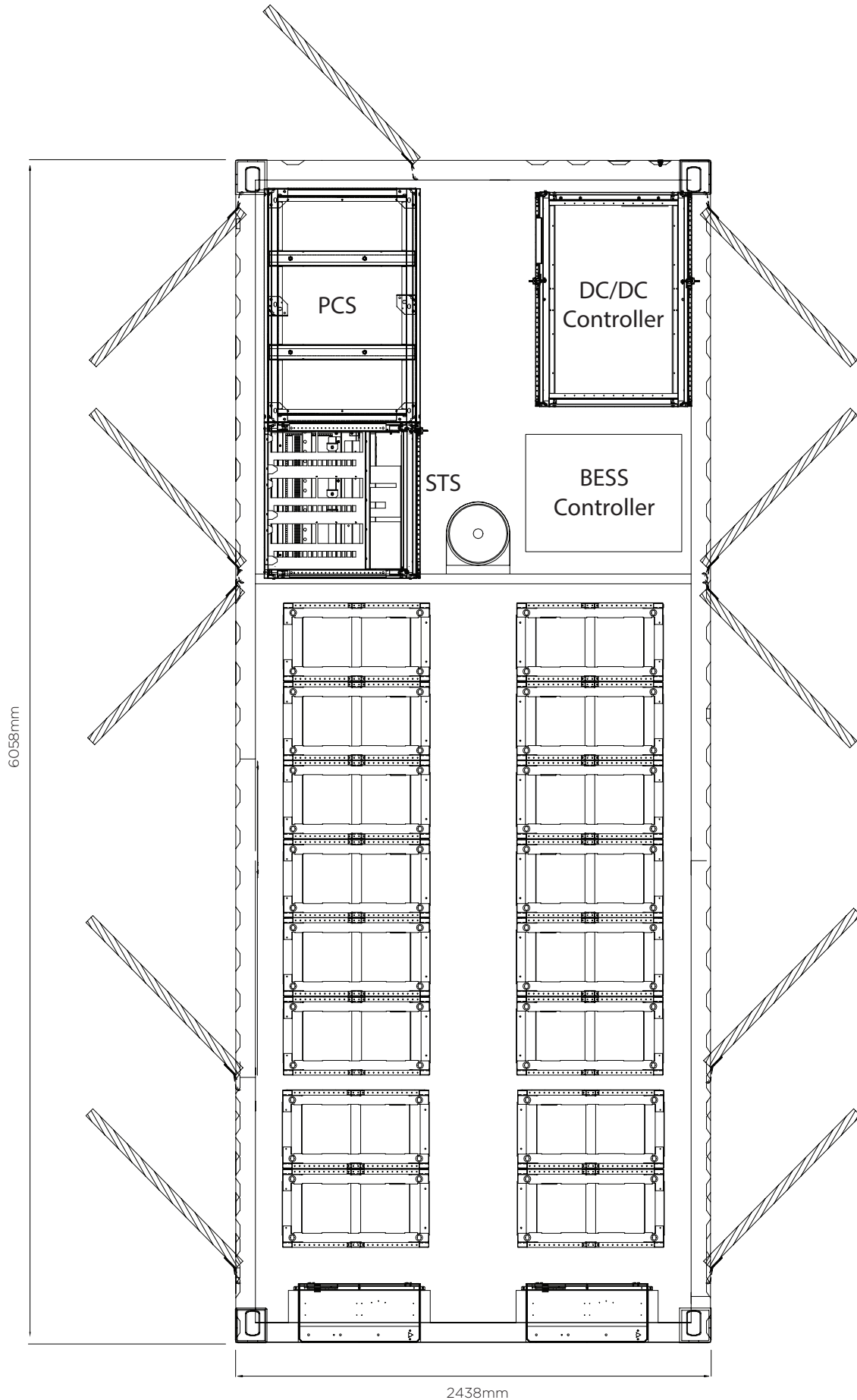
Cloud base data communication

Item	Data
Dimensions (L*W*H)	600*700*2,200mm
Weight	200kg
Protection Level	IP20
Operating Temperature	0°C-40°C
Memery	dual-core micro-controller 64M RAM 128M flash memory
Network	Safety zones divided by network switches and firewalls
Power Consumption	<100 W
Backup Time	30 minutes (optional)
HMI	15" LCD touch screen

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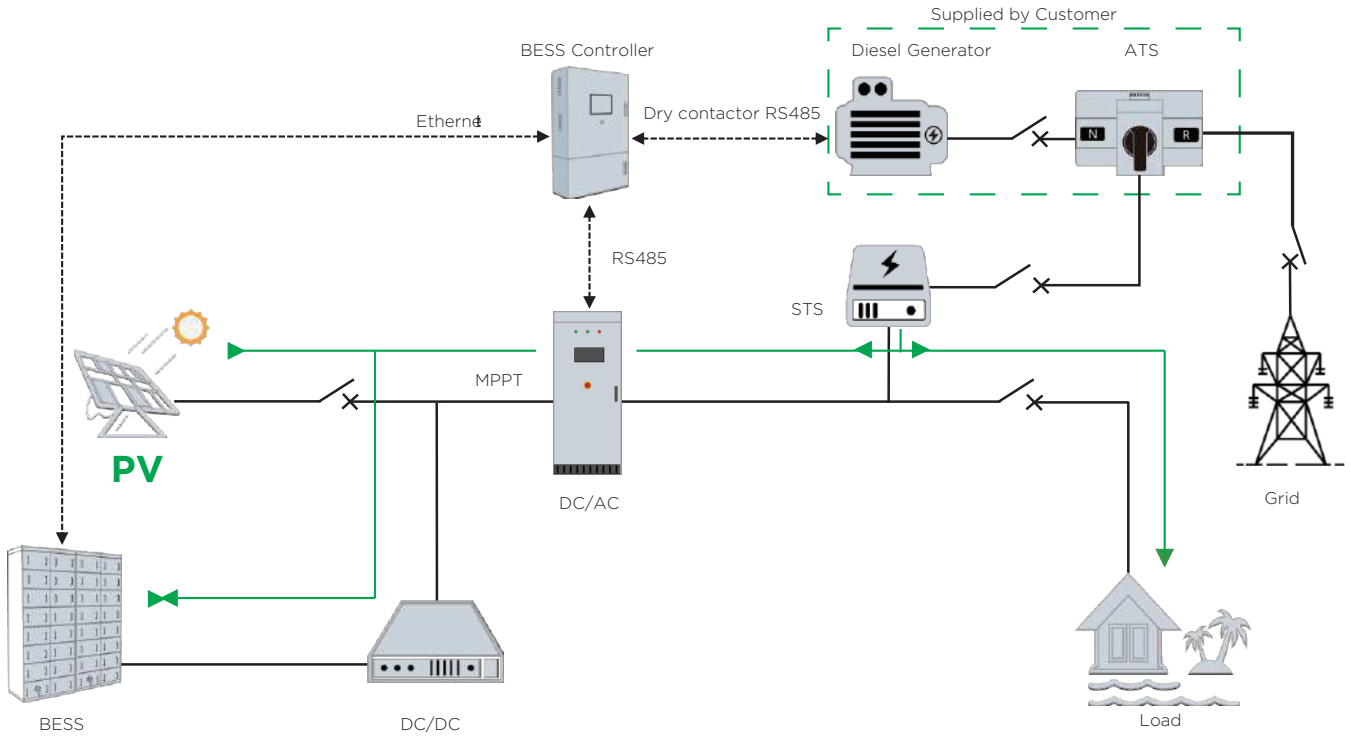


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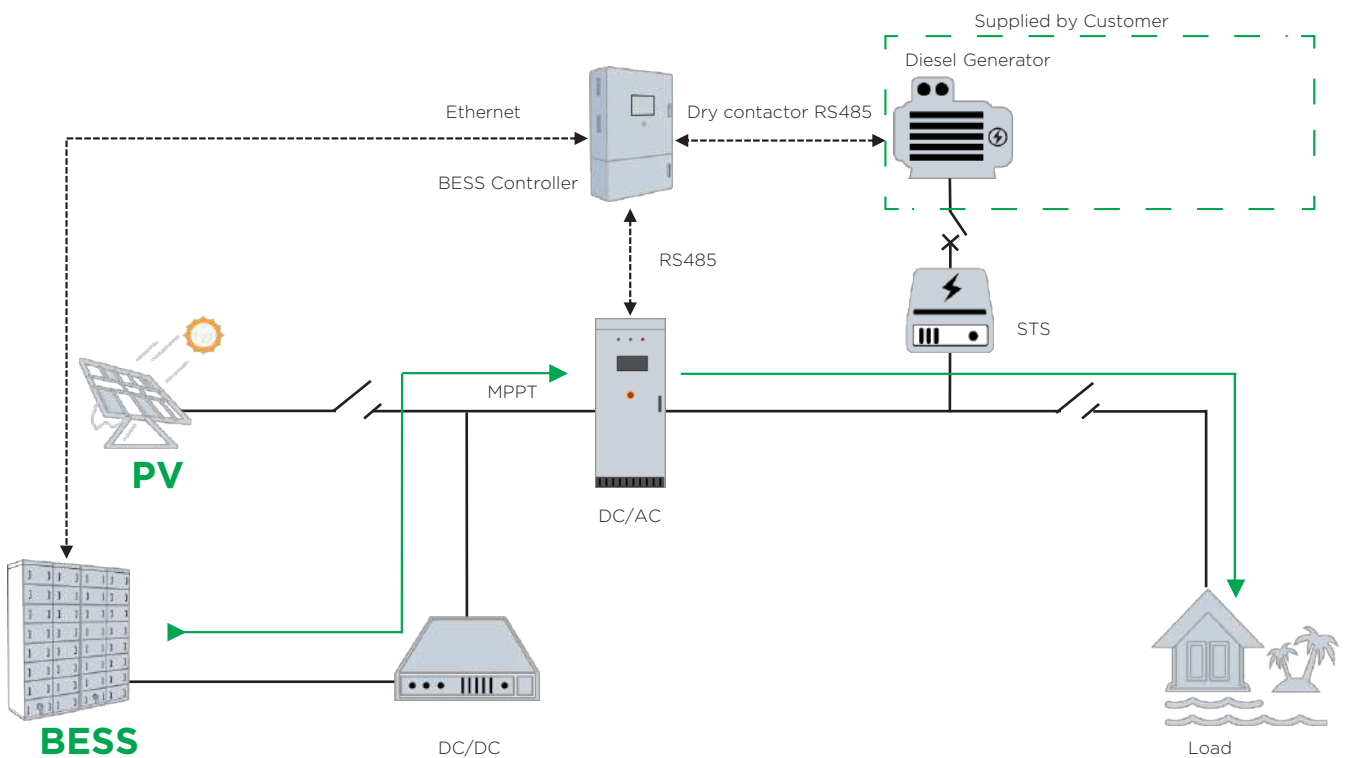


MEGACUBE 250kW Battery Energy Storage Systems

1. PV & BESS Operation Off-Grid/Microgrid

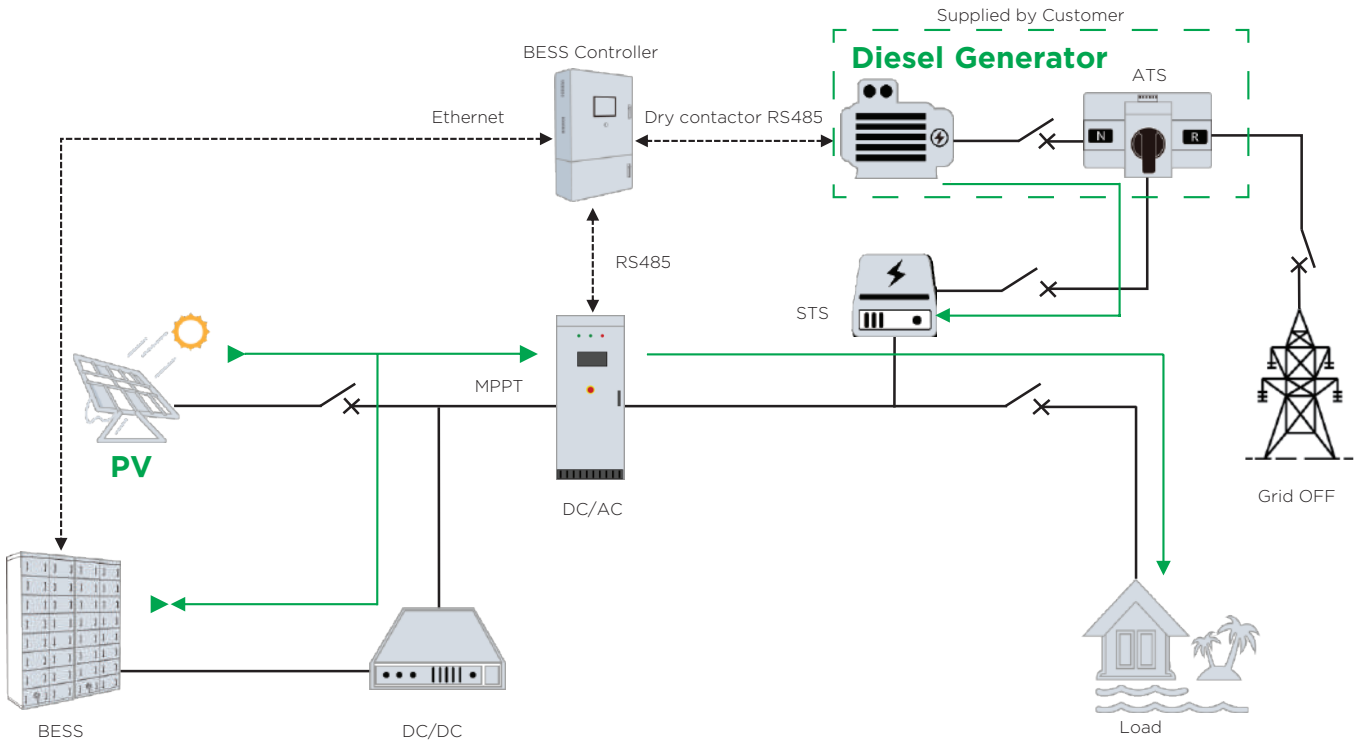


2. BESS Power Operation Off-Grid/Microgrid

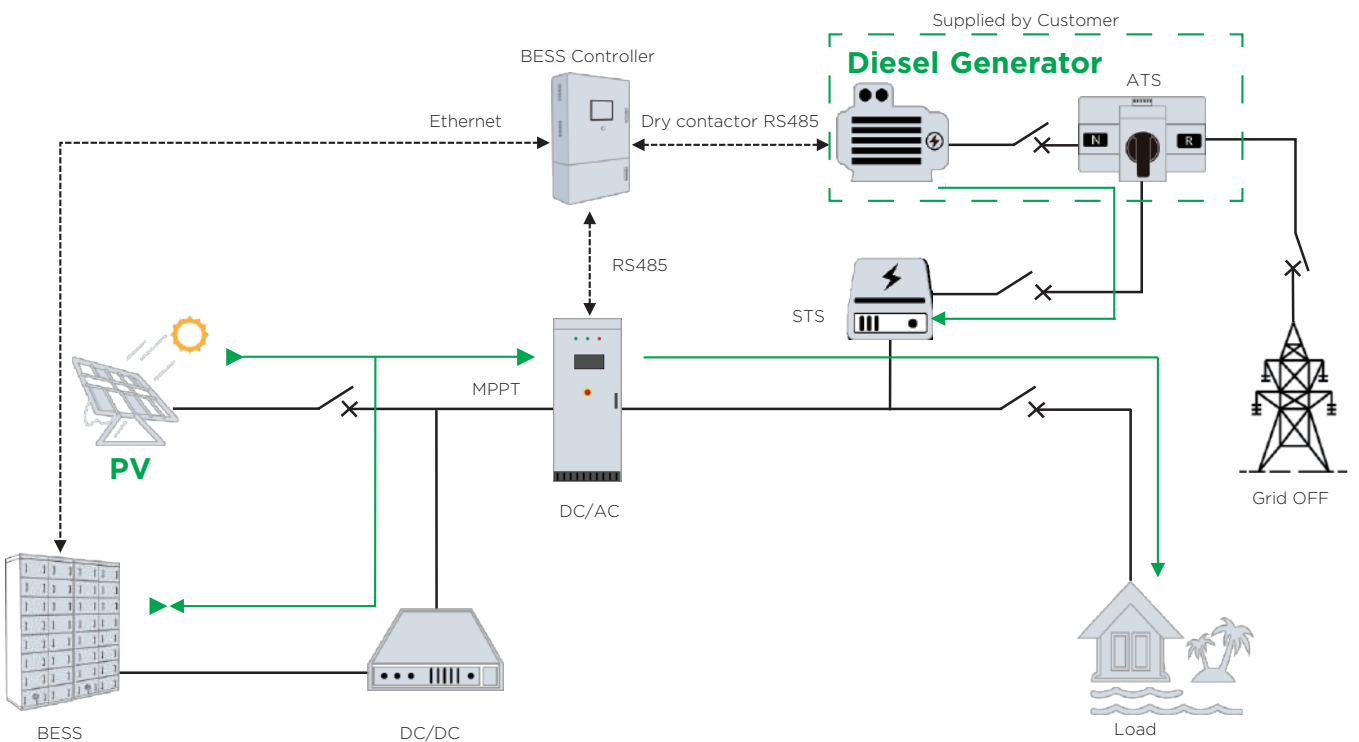


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3. Diesel Gen Power Operation Off-Grid/Microgrid

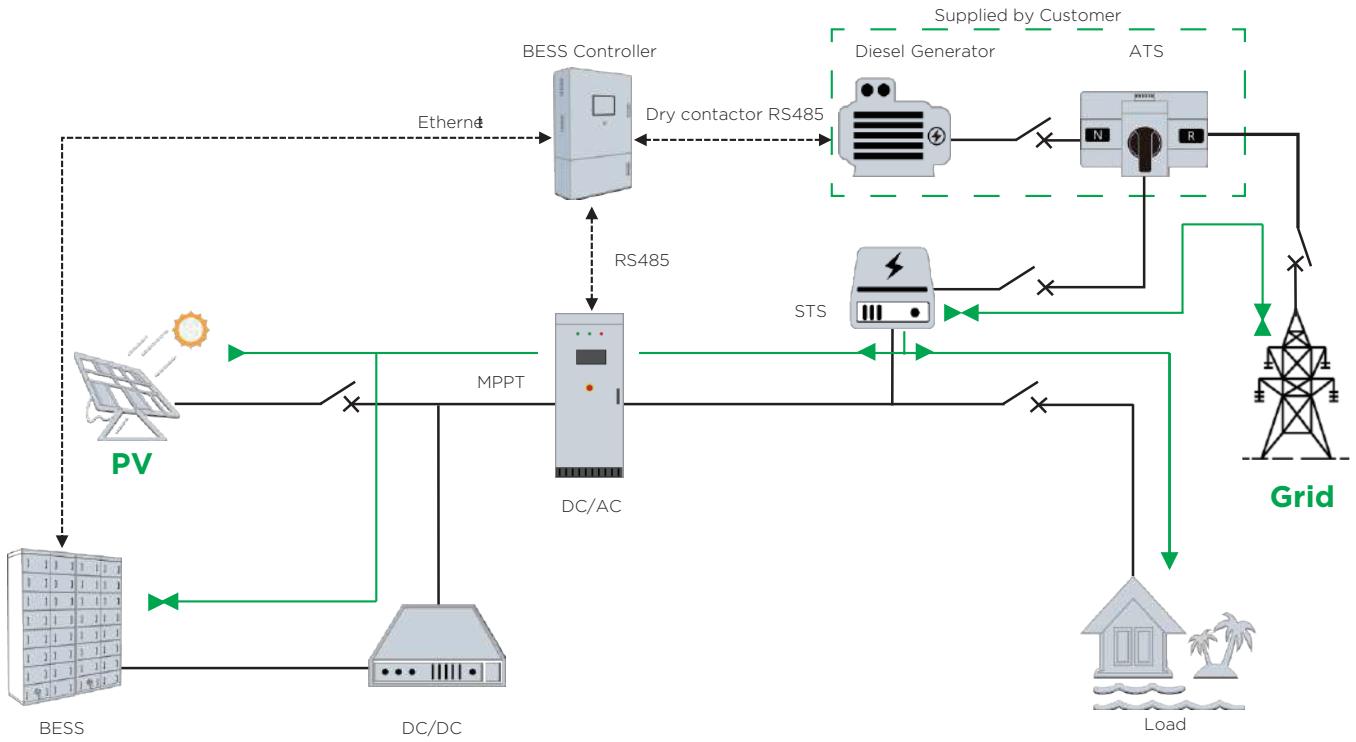


4. PV + Genset Operation Hybrid/Microgrid

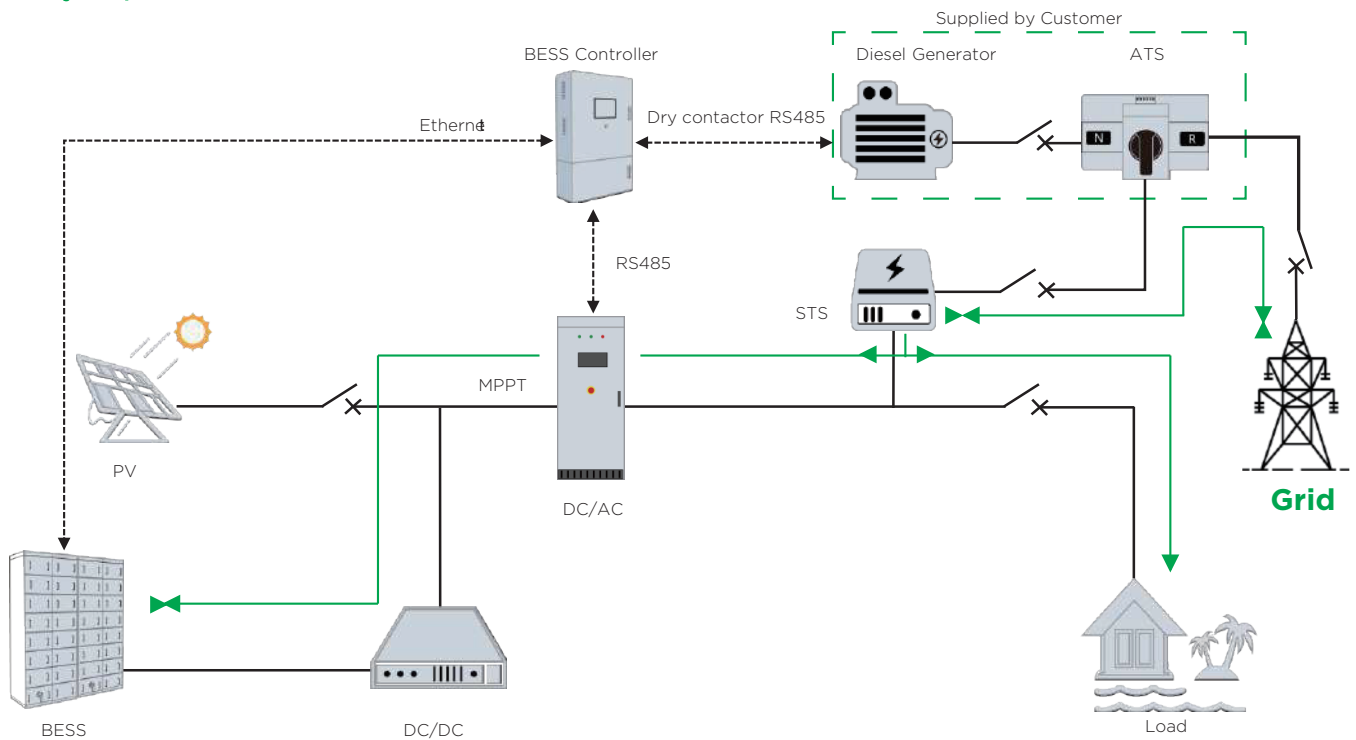


MEGACUBE 250kW Battery Energy Storage Systems

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.





Shinson[®]
Technology Beyond Limits

Shinson Technology SAS.

📍 24 Rue Lamaitine Bal Numero 92 38320
Eybens, France

✉ info@shinsontech.com

🌐 www.shinsontech.com

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