

FlexCombo-M50/M100 Microgrid System

Resilient, Reliable, and Quick Delivery Power Block

Introduction



Shenzhen Cubenergy Co., Ltd. (hereinafter referred to as "Cubenergy") is a young while leading manufacturer of C&I scale stationary Battery Energy Storage System (BESS). It is an innovative energy solution provider, integrating BESS with Grid, PV system, Diesel Generator with self-developed BMS and cloud-based EMS, WeWatt™, forming a series of standardized, all-in-one, EPC-free microgrid ESS.

Headquartered in Shenzhen, China, Cubenergy was established in Oct. 2015. Cubenergy built up its BESS factory in Dongguan, Guangdong, with the annual production capacity of over 2GWh, 2 R&D centers in Chengdu and Shenzhen, 7 sales offices globally.

Cubenergy has been developing quickly, till end of 2021, accumulatively, the company has manufactured 620MWh BESS and battery strings. Internationally, Cubenergy FlexCombo DC coupling microgrid ESS, from 50kW to 500kW, is a well-known trademark that more than 300 sets has been deployed in US, Canada, Brazil, Myanmar, African countries etc. only in 2021.

Cubenergy follows very high standards in manufacturing its products. The battery pack, string and ESS are certified by TUV to align with IEC/UL standards of UL9540A, UL1973, IEC62619 etc.

The future of energy is distributed, clean, and consumer-centric. Cubenergy makes the future of energy resilient.

FlexCombo-M50/M100 Microgrid System



Advanced & Guaranteed System

- Strong R&D team supports innovative products and continuous improvement thereafter;
- Self-developed BESS controller and EMS, ensuring best reliability of the system;
- High-standard testing process guaranteeing quality delivery;

Reliable & Competitive Quality

- UL9540A compliant up to battery string level, 1 out of 7 manufacturers in China;
- Containerized with protection level at IP54 for the whole system and IP65 for the battery compartment;

Money-saved & Versatile Application

- 6,000 cycles battery cell against market prevailing 3,000 cycles battery cell;
- DC coupling system ensuring: higher DC/AC ratio, higher round trip efficiency;
- Accessible to different sources of powers: PV, Grid or DG, supports both on-grid and off-grid modes;

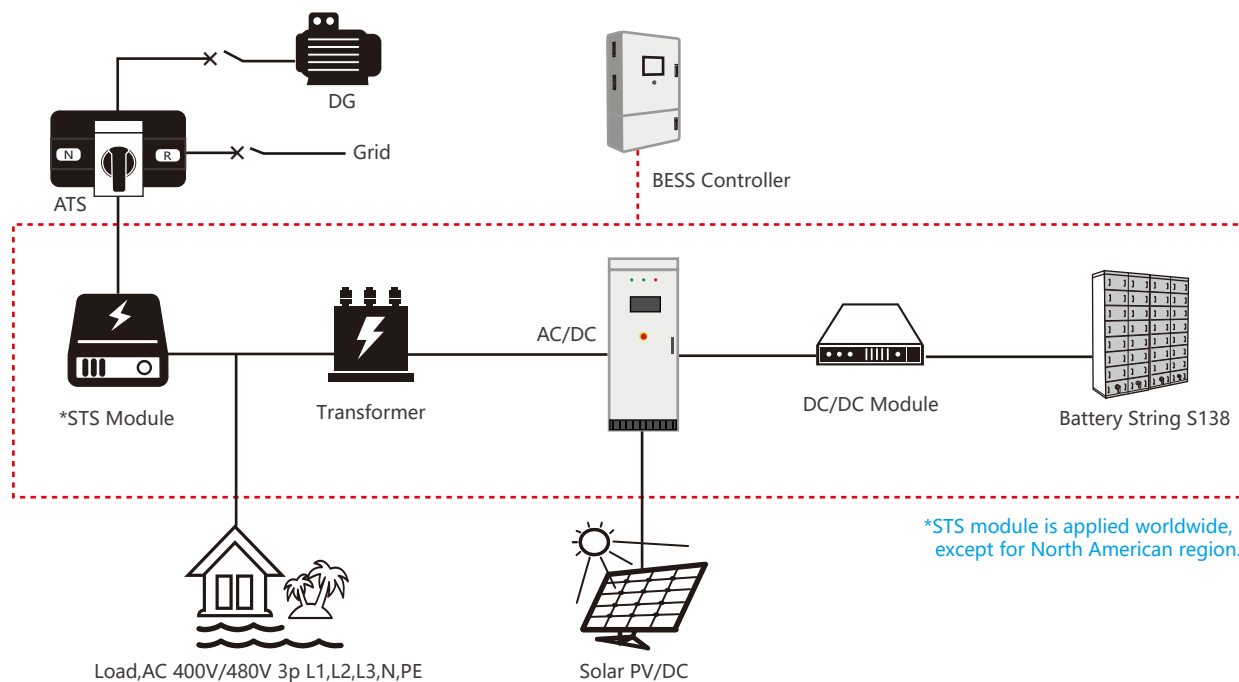
Smart & Easy Operation

- Fully integrated and plug-and-play microgrid system;
- 7*24 cloud-based monitoring and operation platform supports the visit of Mysql database and multiple mobile/PC devices.

Product features (M50/M100)

- The 50kW/100kW PCS cabinet contains a Hybrid PCS with 250V~520V DC voltage;
- The n*64kWh(n=2~6) battery string is converted to 400V/480V AC through the 50kW/100kW Hybrid PCS, AC power is transferred to the isolated transformer supporting the load;
- The battery string is charged from corresponding PV string and DC/DC Module during day time operation;
- When BAT and PV supplies are insufficient, ATS switches the power supply to DG or grid. STS performs on-grid and off-grid seamless switching to ensure continuous power supply of load;
- The EMS control system runs automatically without manual operation.

System Topology (PV+50/100kW PCS+128/192/256/320/384kWh BESS)

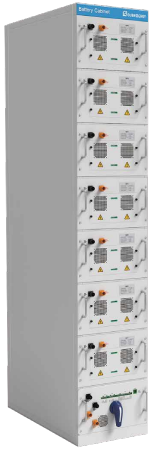


System Configuration



Product Model	Strings		BESS-Controller		Power Conversion System	
	S138-7P9	BESS-Controller 4	BESS-Controller 6	PWG2-50K	PWG2-100K	
M50-128	2	1	-	1	-	
M50-192	3	1	-	1	-	
M50-256	4	1	-	1	-	
M50-320	5	-	1	1	-	
M50-384	6	-	1	1	-	
M100-128	2	1	-	-	1	
M100-192	3	1	-	-	1	
M100-256	4	1	-	-	1	
M100-320	5	-	1	-	1	
M100-384	6	-	1	-	1	

□ Key Components



Battery String-S138

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

Item	Data
Battery module	S138-7P9
Pack QTY	7
Nominal capacity	64kWh
Discharge cutoff- Rated- Charge cutoff voltage	314V~358V~398V
Pack	3.2V/90Ah@2P16S
String measuring voltage range	100~1,000V
String voltage detection accuracy	±1%
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	Modbus_RTU/TCP
System cycle life	≥5,000 cycles@1C, 25°C
Dimension (W*D*H)	400*750*2,050mm
Weight	705kg
Certifications	UL1973, UL9540A, IEC62619, CE , UN38.3



Power Conversion System

- Single-stage three-level modularization;
- Multi-branch input to reduce battery series and parallels connection;

Item	M50/M100-EX	M50/M100-NA
PV input voltage	520~900Vdc(MPPT 520V~800V)	
PV input current	192A/384A, MPPT=1	
PV string configuration	Vmp>520Vdc, Voc<900Vdc, Isc<192A/Isc<384A	
Max PV input power	100kWp/200kWp	
DC input voltage	250~520Vdc	
DC input current	0~150A/0~300A	
Max DC input power	50kW/100kW	
Rated AC output power	50kW/100kW	
Rated grid voltage	400V	480V
Grid voltage range	±15%	±10%
The frequency range of the power grid	50/60±2.5Hz	59.5~60.5Hz
AC rated current	72A/144A	60A/120A
Adjustable PF	1(leading)~1(lagging)	
Off-grid voltage	400V	480V
Off-grid voltage range	±10%	
Off-grid frequency	50/60Hz	60Hz
Weight	520kg/750kg	

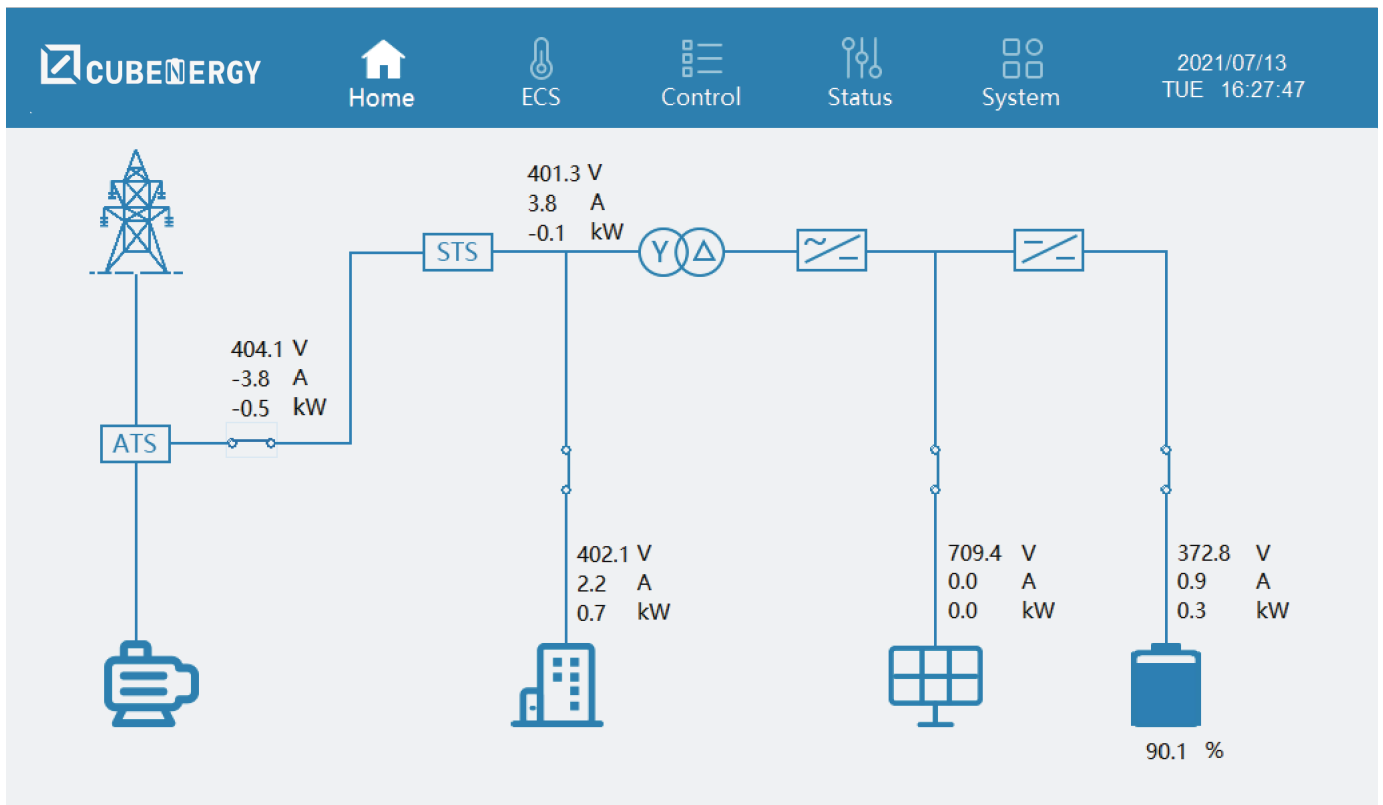


BESS Controller

- Data acquisition;
- Multiple protection: overload protection & reverse power protection;
- Intelligent interaction HMI;

Item	Data
Dimension (L*W*H)	480*230*770mm
Weight	35.5kg
Power interface	AC 220V, 50/60Hz
PCS communication	Modbus RTU、Modbus TCP
HVU communication	Modbus TCP
HVAC communication	Modbus RTU
Grid control application	Time shifting, peak shaving, renewables moving average
Off-grid control application	Backup power, PV/DG/EV/ESS integrated micro-grid control
Battery management system	DC busbar incoming control

EMS



*STS module is applied worldwide, except for North American region.

□ System Technical Specifications

Item	128kWh		192kWh		256kWh		320kWh		384kWh	
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	2P112S									
Number of strings	2	3	4	5	6					
Rack rated energy capacity	128kWh	192kWh	256kWh	320kWh	384kWh					
DC rated energy capacity	129.0kWh	193.5kWh	258.0kWh	322.5kWh	387kWh					
Rated voltage	358.4V									
Voltage range	313.6V~397.6V									
BMS communication interface	RS485, Ethernet									
BMS communication protocol	Modbus RTU, Modbus TCP									
AC Data										
Rated AC power	50kW	100kW	50kW	100kW	50kW	100kW	50kW	100kW	50kW	100kW
Maximum AC power	55kW	110kW	55kW	110kW	55kW	110kW	55kW	110kW	55kW	110kW
Rated grid voltage	400V/480V		400V/480V		400V/480V		400V/480V		400V/480V	
Grid voltage range	±15%/±10%									
AC rate of current	72A/60A	144A/120A	72A/60A	144A/120A	72A/60A	144A/120A	72A/60A	144A/120A	72A/60A	144A/120A
Output THDi	≤3%									
Adjustable PF	1(leading)~1(lagging)									
Grid frequency range	50/60±2.5Hz/59.5~60.5Hz									
Isolation method	3 Phase 4 Line Transformer									
General Data										
Dimension w/o clearances (L*W*H)	2,991*2,438*2,591mm									
Weight of the whole system	< 3.9t	< 4.2t	< 4.9t	< 5.3t	< 5.57t	< 5.8t	< 6.37t	< 6.6t	< 7.27t	< 7.5t
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									

NOTES

Product dimensions and physical appearance in this brochure are nominal and are provided for the convenience of our customers. Cubenergy reserves the right to make changes from time to time, without prior notification, which may change the dimensions and physical appearance shown.

We therefore recommend you to consult with a Cubenergy sales representative before your purchase.

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 www.cubenergy.com

 2F, Building 2, Tongchan New Materials Industrial Park, No. 28, Langshan Road, Nanshan District, Shenzhen

 info@cubenergy.com

 +86 0755-8652-0699