

# Air-Cooled Energy Storage System

20kW / 45.6kWh | 25kW / 60.8kWh | 30kW / 60.8kWh

The all-in-one air-cooled ESS cabinet integrates long-life battery modules, a high-performance inverter, fire protection, air conditioning, and more into a single unit, enabling long-term operation with safety, stability, and reliability for various scenarios, including commercial buildings, industrial facilities, and emergency backup systems.



## System

- Prestalled all-in-one design for the ease of installation and deployment
- Parallel connection of up to 6 cabinets, reaching 180kW / 360kWh
- 20ms off-grid switching time for seamless power support
- IP54 ingress rating for indoor and outdoor installation
- Cell-level and cabinet-level hot aerosol fire extinguishing system for fire safety



## Inverter Module

- Three-phase output
- Max. 99% PV-to-grid efficiency
- Intelligent management via Bluetooth on the App
- IP65 Ingress rating
- Multiple safety protections, including anti-islanding, over-current, short-circuit, and over-voltage protection

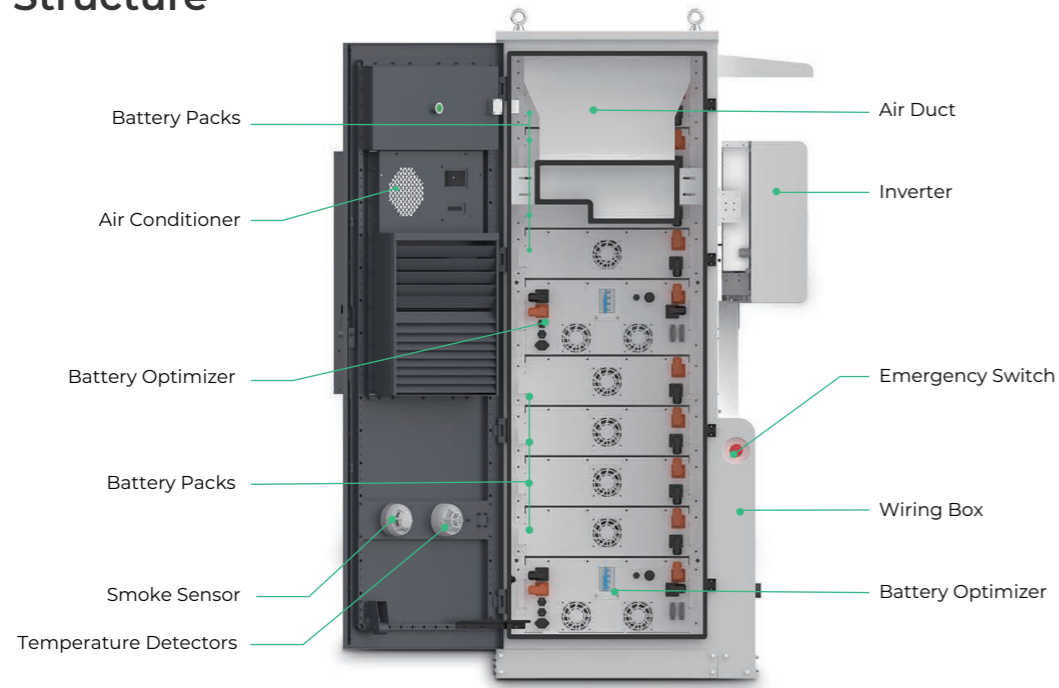


## Battery Module

- 10 years of warranty
- Advanced LFP cells with high safety, long life, stable and reliable characteristics
- Long lifespan with over 6,000 times of cycle life
- Multiple safety protections, including over-current, short-circuit, over-voltage, and output short-circuit protection



# System Structure



# Technical Specifications

Model	CS2045-E/H	CS2560-E/H	CS3060-E/H
<b>Battery Parameters</b>			
Nominal Energy	45.6 kWh	60.8 kWh	60.8 kWh
Nominal Voltage/Voltage Range	316.8 V / 277.2 - 361.35 V	422.4 V / 369.6 - 481.8 V	422.4 V / 369.6 - 481.8 V
Charge Discharge Rate	0.5P / 0.5P		
Number of Battery Optimizer	2	2	2
Number of Battery Pack	6	8	8
<b>Battery Pack Model</b>		<b>RBmax7.6MH</b>	
Nominal Energy	7.6 kWh (3351P, 3.2 V 72 Ah)		
Nominal Voltage/Voltage Range	105.6 V / 92.4 - 120.45 V		
Max. Continuous Working Current	50 A		
Cycle Life	6000 @ 25°C, 90% DOD, 0.5P / 0.5P, 70% EOL		
Dimension (W×D×H)	500 x 760 x 148.3 mm		
Net Weight	65 kg		
<b>Battery Optimizer Model</b>		<b>RMH95050</b>	
DC Working Voltage	550 - 950 V		
Nominal Power	15 kW		
Dimension (W×D×H)	650 x 250 x 250 mm		
Net Weight	15 kg		
<b>Inverter Model</b>		<b>SUN20000T-EI</b>	<b>SUN25000T-EI</b> <b>SUN30000T-EI</b>
<b>Input (PV)</b>			
Max. Power (W)	45000		
MPPT Range (Full Load) (V)	340 ~ 800	270 ~ 800	340 ~ 800
MPPT Range (V)	160 ~ 950		
Max. DC Voltage (V)	1000		
Start Voltage (V)	180		
Max. DC Current (A)	30 / 30	30 / 30 / 30	30 / 30 / 30
MPP Tracker No.	2	3	3
String No.	2+2	2+2+2	2+2+2

## Input (DC BUS)

Compatible Battery Type	Lithium-ion		
Bus Voltage Range (V)	550-950		
Max. Charge / Discharge Current (A)	50		
Lithium Battery Charge Curve	Self-adaption to BMS		

## Output (On Grid)

Nom. Power (Output) (W)	20000	25000	30000
Maximum Apparent Power (Output) (VA)	22000	27500	33000
Nominal Voltage (V)	380 / 400 V (Three Phase)		
Nominal AC Frequency (Hz)	50 / 60 Hz		
Nominal Current (Output) (A)	3 * 33.33 / 3 * 28.9	3 * 41.67 / 3 * 36.3	3 * 43.5 / 3 * 43.5
Maximum Current (Input) (A)	3 * 63		

## Output (BackUp)

Nom. Power (VA)	20000	25000	30000
Maximum Power (5min) (VA)	24000	30000	36000
Apparent Power (10s) (VA)	30000	37500	45000
Nom. Bypass Power (VA)	45000		
Nominal Back-up Voltage (V)	380 / 400 V (Three phase)		
Nominal Back-up Frequency (Hz)	50 / 60 Hz		
Nominal Back-up Current (A)	3 * 33.33 / 3 * 28.9	3 * 41.67 / 3 * 36.3	3 * 43.5 / 3 * 43.5
THDV	<3% (R Load), 5% (RCD Load)		

## Efficiency

Max. Efficiency (PV to Grid)	98.8%	98.8%	98.8%
Eur. Efficiency (PV to Grid)	97.2%	97.9%	97.9%
Max. Charge Efficiency (PV to Battery)	98%	98%	98%
Max. Charge/Discharge Efficiency (Grid to Battery)	98%	98%	98%

## General

Temp. Range	-25~60°C	Noise Emission	45 dB
Max. Operation Altitude	4000 m	Humidity	0-100%
Topology	Transformerless	Cooling	Smart Fan
Protection	IP65		

## HMI & COM

Display	LED+APP (Bluetooth)		
Communication Interface	LED + APP (Bluetooth), BMS (CAN / RS485), Wi-Fi / GPRS / 4G / Ethernet (optional), DI (DRM / RCR), Meter (RS485), 1 * DO, USB (Firmware Upgrade)		

## Protection

Protection	Anti-islanding Protection, AC Over-current Protection, AC Short-circuit Protection, AC Over-voltage Protection, Insulation Detection, GFCI				
SPD	DC Type 2, AC Type 2	AFCI	Optional	RSD	Optional

## Mechanical

W x H x D	650 x 500 x 265 mm	Weight	40 kg	DC Switch	Internal
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## System Parameters

Ambient Temperature	-20°C~50°C (>45°C Derating)				
Parallel	6				
Storage Environment Temperature	0°C~40°C				
Relative Humidity of Working Environment	5~95%, Non-condensing				
Cooling Method	Intelligent Air-cooled Air conditioner				
Noise Level	60dB				
Firefighting Methods	Cell-level + Cabinet-level Gas Fire Protection (Aerosol)				
Off-Grid Switching Time	20 ms				
Working Altitude	4000m (>2000m Derating)				
Installation Method	Floor-to-ceiling Installation				
Communication Model	RS485, CAN, Dry, WI-FI				
Enclosure Rating	IP54				
Weight	<1000kg				
Size (L x W x H)	1050 x 685 x 2000 mm				

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions