

Smart and scalable residential all-in-one energy storage solution

- Fast, hassle-free and lower cost installation
- Scalable and flexible solution
- Highest safety and optimized performance
- Smart, Seamless Energy Management

The GoodWe ESA Series is an all-in-one residential energy storage solution (ESS) that combines reliability and advanced functionality. It integrates the inverter, battery, UPS-grade switching, and battery enclosure in a pre-wired modular system-streamlining installation and reducing costs.
Compact, elegantly designed, and IP66-rated for durability, the unit operates reliably indoors or outdoors in any weather conditions. With smart controls, scalable storage, and flexible configurations, the ESA empowers homeowners to manage their energy needs with confidence and ease.
The innovative modular and stackable design ensures adaptability, growing alongside your household energy demands and making true energy independence simpler than ever.



- AI-driven EMS and <4ms UPS-level switching
- Smart home integration with multi-protocol communications
- Allows different capacities of old and new batteries mixing
- Supports 6 batteries per stack, scalable up to 48kWh

ESA Series / Power Module

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Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20	GW8K-EHA-G20	GW10K-EHA-G20
Battery Side						
Battery Type	LFP($LiFePO_4$)					
Nominal Battery Voltage (V)	380					
Battery Voltage Range (V)	350 ~ 550					
Start-up Voltage (V)*1	380					
Number of Battery Input	1					
Max. Continuous Charging Current (A)	11.9	14.3	19.8	23.7	31.6	35.6
Max. Continuous Discharging Current (A)	8.7	10.5	14.5	17.4	23.2	29.0
Max. Charging Power (kW)	4.5	5.4	7.5	9.0	12.0	13.5
Max. Discharging Power (kW)	3.3	3.96	5.5	6.6	8.8	11.0
PV Side						
Max. Input Power (kW)	6.0	7.2	10.0	12.0	16.0	20.0
Max. Input Voltage (V)*2	600					
MPPT Operating Voltage Range (V)*3	40 ~ 560					
Start-up Voltage (V)	50					
Nominal Input Voltage (V)	400					
Max. MPPT Current (A)	20					
Max. MPPT Short Circuit Current (A)	26					
Number of MPPTs	2	2	2	2	4	4
Number of Strings per MPPT	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1 / 1 / 1	1 / 1 / 1 / 1
AC Side (On-grid)						
Nominal Power (kW)	3.0	3.6	5.0	6.0	8.0	10.0
Nominal Apparent Power to Grid (kVA)	3.0	3.6	5.0	6.0	8.0	10.0
Max. Apparent Power to Grid (kVA)	3.0	3.6	5.0	6.0	8.0	10.0
Max. Apparent Power from Grid (kVA)	6.0	7.2	10.0	12.0	14.5	14.5
Nominal Voltage (V)	220 / 230 / 240, L / N / PE					
Voltage Range (V)	170 ~ 280					
Nominal Frequency (Hz)	50 / 60					
Frequency Range (Hz)	45 ~ 55 / 55 ~ 65					
Max. Current to Grid (A)	13.7 @ 220V 13.1 @ 230V 12.5 @ 240V	16.4 @ 220V 15.7 @ 230V 15.0 @ 240V	22.8 @ 220V 21.8 @ 230V 20.9 @ 240V	27.3 @ 220V 26.1 @ 230V 25.0 @ 240V	36.4 @ 220V 34.8 @ 230V 33.4 @ 240V	43.5 @ 220V 43.5 @ 230V 41.7 @ 240V
Max. Current From Grid (A)	27.3 @ 220V 26.1 @ 230V 25.0 @ 240V	32.8 @ 220V 31.4 @ 230V 30.0 @ 240V	45.5 @ 220V 43.5 @ 230V 41.7 @ 240V	50.0 @ 220V 50.0 @ 230V 50.0 @ 240V	63.0 @ 220V 63.0 @ 230V 60.5 @ 240V	63.0 @ 220V 63.0 @ 230V 60.5 @ 240V
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)					
THDi	<3%					
Back-up Side						
Nominal Output Apparent Power (kVA)	3.0	3.6	5.0	6.0	8.0	10.0
Max. Output Apparent Power (kVA)	3.0 (6.0, 10s)	3.6 (7.2, 10s)	5.0 (10.0, 10s)	6.0 (12.0, 10s)	8.0 (16.0, 10s)	10.0 (20.0, 10s)
Max. Output Apparent Power (Bypass) (kVA)	6.0	7.2	10.0	12.0	14.5	14.5
Max. Output Current (A)	13.7	16.4	22.8	27.3	36.4	43.5
Max. Output Current (Bypass) (A)	27.3	32.8	45.5	50.0	63.0	63.0
Nominal Output Voltage (V)	220 / 230 / 240, L / N / PE					
Nominal Output Frequency (Hz)	50 / 60					
THDv (@Linear Load)	<3%					
Efficiency						
Max. Efficiency	97.6%	97.6%	97.6%	97.6%	97.5%	97.5%
European Efficiency	96.5%	96.5%	96.8%	97.0%	96.8%	96.8%
Max. Battery to AC Efficiency	98.0%	98.0%	98.0%	98.0%	97.8%	97.8%
Protection						
PV String Current Monitoring	Integrated					
PV Insulation Resistance Detection	Integrated					
Residual Current Monitoring	Integrated					
PV Reverse Polarity Protection	Integrated					
Battery Reverse Polarity Protection	Integrated					
Anti-islanding Protection	Integrated					
AC Overcurrent Protection	Integrated					
AC Short Circuit Protection	Integrated					
AC Overvoltage Protection	Integrated					
DC Surge Protection	Type II					
AC Surge Protection	Type II					
RSD	Optional					
AFCI	Integrated					
Remote Shutdown	Integrated					
General Data						
Operating Temperature Range (°C)	-35 ~ +60 (Derating at +40)					
Relative Humidity	0 ~ 95%					
Max. Operating Altitude (m)	4000 (>2000 derating)					
Cooling Method	Natural convection					
User Interface	LED, WLAN + APP					
Communication with BMS	CAN					
Communication	RS485, WiFI + LAN + Bluetooth					
Communication Protocols	Modbus-RTU, Modbus-TCP					
Weight (kg)	24	24	24	24	26	26
Dimension (W × H × D mm)	800 × 300 × 270					
Noise Emission	≤30	≤30	≤30	≤30	≤35	≤35
Topology	Non-isolated					
Ingress Protection Rating	IP66					
Mounting Method	Wall / Floor Mounted					

*1: If there's no PV, start-up voltage will be 380V.
*2: When the input voltage is 560V-600V, the inverter will enter standby mode, and the voltage returns to 560V to enter the normal operation state.
*3: Please refer to the user manual for the MPPT Voltage Range at Nominal Power.
*: Please visit GoodWe website for the latest certificates.

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ESA Series / Battery Module

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Technical Data		GW5.1-BAT-D-G20	GW8.3-BAT-D-G20	GW5.1-BAT-D-G21	GW8.3-BAT-D-G21
Rated Energy (kWh)		5.12	8.32	5.12	8.32
Usable Energy (kWh)*1		5	8	5	8
Battery Type		LFP ($LiFePO_4$)			
Operating Voltage Range (V) (single phase system)		350 ~ 550			
Operating Voltage Range (V) (three phase system)		700 ~ 950			
Max. Input Current (System) (A)		12	19	12	19
Max. Output Current (System) (A)		13.2	21.0	13.2	21.0
Max. Input Power (System) (kW)*2		5	8	5	8
Max. Output Power (System) (kW)*2		5	8	5	8
Peak.Output Power (System) (kW)*2		7.5 @ 10s	12 @ 10s	7.5 @ 10s	12 @ 10s
Charging Temperature Range (°C)		-18<T≤55	-18<T≤55	2<T≤55	2<T≤55
Discharging Temperature Range (°C)		-20<T≤55	-20<T≤55	-20<T≤55	-20<T≤55
Relative Humidity		5 - 95%			
Max. Operating Altitude (m)		4000			
Noise Emission (dB)		≤29			
Communication		CAN			
Weight (kg)		57.5 ± 1	79.0 ± 1	57.5 ± 1	79.0 ± 1
Dimensions (W × H × D mm)		800 × 326 × 270			
Optional Function Configuration		Heating	Heating	-	-
Ingress Protection		IP66			
Max. Storage Time		12 months (-20°C<T≤35°C) 6 months (35°C<T≤45°C)			
Scalability		6 pcs			
Mounting Method		Floor stacked / Wall-mounted			
Standard and Certification	Safety	IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC			
	EMC	CE, RCM			
	Transportation	UN38.3, ADR			

*1: Test conditions, 100% DOD (cell 2.85 ~ 3.6V voltage range), 0.2P charge & discharge at 25 ± 2°C for battery system at the beginning of life. Usable energy is defined by its initial design value. Actual available energy may vary depending on charge / discharge rate, environmental conditions (e.g. temperature), transport and storage factors.
*2: Max. Input Power / Max. Output Power / Peak.Output Power derating will occur related to Temperature and SOC.
*: Please visit GoodWe website for the latest certificates.



Number of Battery Modules (pcs)	1	2	3	4	5	6
Total Energy Capacity (kWh, with 5.1 batt module)	5.12	10.24	15.36	20.48	25.60	30.72
Total Energy Capacity (kWh, with 8.3 batt module)	8.32	16.64	24.96	33.28	41.60	49.92

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