

ESA Series

3-10kW/5-48kWh | Single Phase Home Storage Solution (HV)

The GoodWe ESA Series is a fully integrated all-in-one solar and storage solution that combines inverter and battery in a pre-wired, modular design-making installation significantly faster and easier. Engineered for flexibility, the ESA system allows seamless expansion to meet evolving energy needs. 5kWh and 8kWh battery modules support 1C charging/discharging and can be mixed in a single stack up to 48kWh, with up to 6x stacks in parallel. The ESA provides UPS-level, full house back-up (63A) with no gateway needed. Models feature 2-4 MPPTs, each supporting up to 26A short-circuit input current. Safety features include 6-level battery protection and AI-driven AFCI 3.0 as standard, plus low noise levels of <35dB makes the ESA suitable for a wide variety of applications.



*Initial stock may be supplied in a gloss white finish.



Optimized Performance

- 1C charge/discharge for rapid energy cycling
- Fanless design for quiet operation, noise <30dB
- 20A per string & 200% PV oversizing



Flexible & Adaptable Applications

- Dual output ports for simplified installation & off-grid capability
- Flexible battery mixing with different capacity or old&new batteries
- Support full backup load with 63Ax5 output



Superb Safety & Reliability

- Advanced 6-layer safety protection
- Heating mode ensures reliable performance even in -20°C
- AI-driven AFCI 3.0 for safety¹



Smart Control & Monitoring

- Seamless switching to backup <4ms
- One-click upgrade & one-click configuration

ESA Series / Power Module

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Technical Data	GW3K-BHA G20	GW3.6K BHA-G20	GW5K-BHA G20	GW6K-BHA G20	GW8K-BHA G20	GW9.99K BHA-G20	GW10K-BHA -G20
Battery Side							
Battery Type							Li-ion
Nominal Voltage (V)							380
Voltage Range (V)							350 ~ 550
Start-up Voltage (V)							380
Number of Battery Inputs							1
Max. Continuous Charging Current (A)	7.9	9.5	13.2	15.8	21.1	26.4	26.4
Max. Continuous Discharging Current (A)	8.7	10.5	14.5	17.4	23.2	29.0	29.0
Max. Charging Power (kW)	3.0	3.6	5.0	6.0	8.0	10.0	10.0
Max. Discharging Power (kW)	3.3	4.0	5.5	6.6	8.8	11.0	11.0
AC Side (On-grid)							
Rated Power (kW)	3.0	3.6	5.0	6.0	8.0	9.999	10.0
Max. Power (kW)	3.0	3.6	5.0	6.0	8.0	9.999	10.0
Rated Apparent Power from Grid (kVA)	3.0	3.6	5.0	6.0	8.0	9.999	10.0
Rated Apparent Power to Grid (kVA)	3.0	3.6	5.0	6.0	8.0	9.999	10.0
Max. Apparent Power to Grid (kVA)	3.0	3.6	5.0	6.0	8.0	9.999	10.0
Max. Apparent Power from Grid (kVA)	6.0	7.2	10.0	12.0	14.5	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	
Rated Current from 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	45.5 @ 220V 43.5 @ 230V 41.7 @ 240V	45.5 @ 220V 43.5 @ 230V 41.7 @ 240V
Rated 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	43.5 @ 220V 43.5 @ 230V 41.7 @ 240V
Max. Current from Grid (A) ¹	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	63.0 @ 220V 63.0 @ 230V 60.5 @ 240V
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	43.5 @ 220V 43.5 @ 230V 41.7 @ 240V
Power Factor						0.8 leading ~ 0.8 lagging	
THDi						<3%	
Back-up Side							
Rated Apparent Power (kVA)	3.0	3.6	5.0	6.0	8.0	10.0	10.0
Max. Apparent Power (kVA)	Off-grid: 3.0 (6.0, 10s) On-grid: 6	Off-grid: 3.6 (7.2, 10s) On-grid: 7.2	Off-grid: 5.0 (10.0, 10s) On-grid: 10	Off-grid: 6.0 (12.0, 10s) On-grid: 12	Off-grid: 8.0 (16.0, 10s) On-grid: 14.5	Off-grid: 10.0 (20.0, 10s) On-grid: 14.5	Off-grid: 10.0 (20.0, 10s) On-grid: 14.5
Nominal Voltage (V)						220 / 230 / 240, L / N / PE	
Nominal Frequency (Hz)						50/60	
Max. Current (A)	Off-grid: 13.7 @ 220V 13.1 @ 230V 12.5 @ 240V On-grid: 27.3	Off-grid: 16.4 @ 220V 15.7 @ 230V 15 @ 240V On-grid: 32.8	Off-grid: 22.8 @ 220V 21.8 @ 230V 20.9 @ 240V On-grid: 45.5	Off-grid: 27.3 @ 220V 26.1 @ 230V 25 @ 240V On-grid: 50	Off-grid: 36.4 @ 220V 34.8 @ 230V 33.4 @ 240V On-grid: 63	Off-grid: 43.5 @ 220V 43.5 @ 230V 41.7 @ 240V On-grid: 63	Off-grid: 43.5 @ 220V 43.5 @ 230V 41.7 @ 240V On-grid: 63
THDv (@Linear Load)						<3%	
On / Off-grid Switching Time (ms)						<10	
Efficiency							
Max. Battery to AC Efficiency	98.0%	98.0%	98.0%	98.0%	97.8%	97.8%	97.8%
Protection							
Residual Current Monitoring							Integrated
Battery Reverse Polarity Protection							Integrated
Anti-islanding Protection							Integrated
AC Overcurrent Protection							Integrated
AC Short Circuit Protection							Integrated
AC Overvoltage Protection							Integrated
AC Surge Protection							Type II
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)	16.9	16.9	16.9	16.9	17.7	17.7	17.7
Dimension (W x H x D mm)							800 x 300 x 270
Noise Emission (dB)	≤30	≤30	≤30	≤30	≤35	≤35	≤35
Ingress Protection Rating							IP66
Mounting Method							Wall / Floor Mounted

*1: GOODWE ESA series has internal bypass 63A passthrough ability to support whole home backup solution. If the customer don't want to do any breaker upgrade, the max current from grid in SolarGo (or SEMS+) can be set as previous breaker size.

*2: Please visit GoodWe website for the latest certificates.

ESA Series / Battery Module

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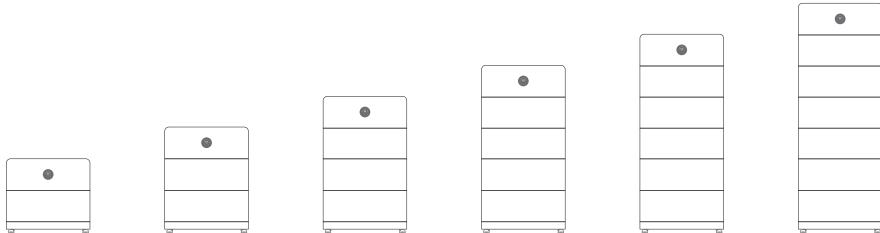
Technical Data	GW5.1-BAT-D-G20	GW8.3-BAT-D-G20	GW5.1-BAT-D-G21	GW8.3-BAT-D-G21
Rated Energy (kWh)	5.12	8.32	5.12	8.32
Usable Energy (kWh)	5 ^{*1}	8 ^{*2}	5 ^{*1}	8 ^{*2}
Battery Type	LFP (LiFePO ₄)			
Nominal System Voltage (V)	Charge: 420V; Discharge: 380V			
Operating Voltage Range (V) (single phase 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) ^{*3}	5	8	5	8
Max. Output Power (System) (kW) ^{*3}	5	8	5	8
Peak Output Power (System) (kW) ^{*3}	7.5 @ 10s	12 @ 10s	7.5 @ 10s	12 @ 10s
Charging Temperature Range (°C)	-18 ~ +55	-18 ~ +55	+2 ~ +55	+2 ~ +55
Discharging Temperature Range (°C)	-20 ~ +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 x H x D mm)	800 x 326 x 270			
Optional Function Configuration	Heating	Heating	-	-
Ingress Protection	IP66			
Max. Storage time	12 months (-20°C ~ +35°C) 6 months (+35°C ~ +45°C)			
Scalability	6 pcs			
Mounting Method	Floor stacked / Wall-mounted			
Country of Manufacture	China			
Standard and Certification	Safety EMC Transportation	IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC CE, RCM UN38.3, ADR		

*1: Test conditions, 98% 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: Test conditions, 96% 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.

*3: 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)	5.12	10.24	15.36	20.48	25.60	30.72
Total Energy Capacity (kWh)	8.32	16.64	24.96	33.28	41.60	49.92