GOODWE

ESA Series

3-10kW/5-48kWh I 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 <30dB 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 63A×5 output

Superb Safety & Reliability

- Advanced 6-layer safety protection
- Heating mode ensures reliable performance even in -20°C
- AI-driven AFCI 3.0 for safety[1]

Smart Control & Monitoring

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

1: Optional functions or devices are purchased separately.

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	GW9.999K-EHA-G20
Battery Side						
Battery Type			$LiFePO_4$			
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	9.999
Nominal Apparent Power to Grid (kVA)	3.0	3.6	5.0	6.0	8.0	9.999
Max. Apparent Power to Grid (kVA)	3.0	3.6	5.0	6.0	8.0	9.999
Max. Apparent Power from Grid (kVA)*4	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)*4	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)*5	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. Output Current (Bypass) (A)*5	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			
Country of Manufacture			China			

*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.
*4: GOODWE ESA series has internal bypass 63A passthrough ability to supprt whole home backup solution. If the customer don't want to do any breaker upgrade, the main breaker size in SolarGo (or SEMS+) can be set as previous breaker size.
*5: If the Back-up port is not used, select an appropriate circuit breaker based on the AC Max. Output Current.
*: Please visit GoodWe website for the latest certificates.

ESA Series / Battery Module

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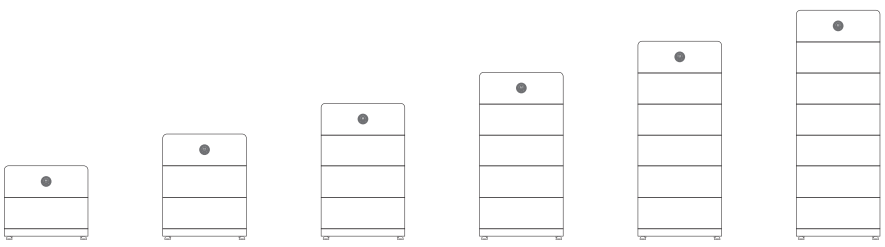
Technical Data		GW5.1-BAT-D-G20	GW8.3-BAT-D-G20	GW5.1-BAT-D-G21	GW8.3-BAT-D-G21
Rated Energy (kWh)		5.12	8.32	5.12	8.32
Usable Energy (kWh)		5*1	8*2	5*1	8*2
Battery Type		LFP ($LiFePO_4$)			
Nominal System Voltage (V)		Charge: 420V; Discharge: 380V			
Operating Voltage Range (V) (single phase system)		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 × H × D mm)		800 × 326 × 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	IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC, VDE2510			
	EMC	CE, RCM			
	Transportation	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