

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.



Optimized Performance

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



Superb Safety & Reliability

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



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 output



Smart Control & Monitoring

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

Technical Data		GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20	GW8K-EHA-G20	GW9.999KEHA-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	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)	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 @ 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)	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 x H x D mm)	800 x 300 x 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.

*: Please visit GoodWe website for the latest certificates.

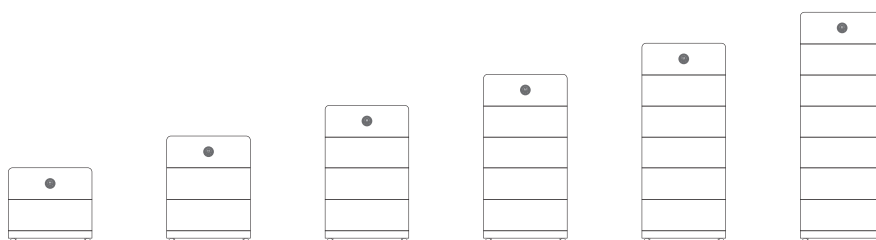
Technical Data		GW5.1-BAT-D-G20	GW8.3-BAT-D-G20	GW5.1-BAT-D-G21	GW8.3-BAT-D-G21
Rated Energy (kWh)		5.12	8.32	5.12	8.32
Usable Energy (kWh)		5 ¹	8 ²	5 ¹	8 ²
Battery Type		LFP (LiFePO ₄)			
Nominal System Voltage (V)		Charge: 420V; Discharge: 380V			
Operating Voltage Range (V) (single phase system)		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			
	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.



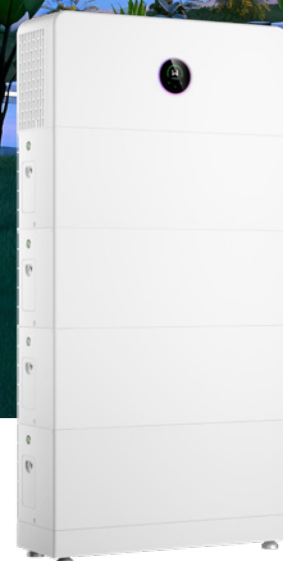
Number of Battery Modules (pcs)	1	2	3	4	5	6
Total Energy Capacity (kWh)	5.12	10.24	15.36	20.48	25.60	30.72
Total Energy Capacity (kWh)	8.32	16.64	24.96	33.28	41.60	49.92

ESA Series

5-30kW/5-108kWh | Three Phase Energy Storage Solution (HV)

The GoodWe ESA Series 5-30kW/5-108kWh is a three-phase all-in-one energy storage solution that integrates the inverter, battery, and intelligent energy management into a single system. Its pre-wired, modular design unifies the inverter and battery, delivering an installation-friendly structure that streamlines setup and accelerates commissioning. With four battery module options-5, 6*, 8, and 9*kWh-up to 12 modules can be connected for a total storage capacity of 108kWh. Featuring simplified configuration, large expandable storage, and an AI-driven EMS for dynamic tariff optimization, the ESA Series 5-30kW/5-108kWh provides an efficient, flexible, and future-ready solution for both residential and small commercial use.

*: 6/9 kWh battery coming soon



Optimized Performance

- Up to 200% DC oversizing & AC backup overload
- Up to 1C charge/discharge for rapid energy cycling
- Smart fan cooling for quiet operation, noise as low as 30dB*



Flexible & Adaptable Applications

- Dual-port design for whole-home backup
- Flexible battery mixing with different capacity or old & new batteries
- Supports on- and off-grid parallel operation



Superb Safety & Reliability

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



Smart Control & Monitoring

- Ready for AI-driven EMS
- Seamless switching to backup <4ms
- One-click upgrade & one-click configuration

Technical Data									
	GW5K- ETA-G20	GW6K- ETA-G20	GW8K- ETA-G20	GW9.999K- ETA-G20	GW12K- ETA-G20	GW15K- ETA-G20	GW20K- ETA-G20	GW25K- ETA-G20	GW29.999K- ETA-G20
Battery Side									
Battery Type	LFP (LiFePO4)								
Nominal Voltage (V)	750								
Voltage Range (V)	700 ~ 950								
Start-up Voltage (V)	720								
Number of Battery Input	1								
Max. Continuous Charging Current (A)	6.7	8.1	10.7	13.4	16.1	20.1	26.7	33.3	40.0
Max. Continuous Discharging Current (A)	7.4	8.9	11.8	14.7	17.7	22.1	29.4	36.7	44.1
Max. Charging Power (kW)	5.0	6.0	8.0	10.0	12.0	15.0	20.0	25.0	30.0
Max. Discharging Power (kW)	5.5	6.6	8.8	11.0	13.2	16.5	22.0	27.5	33.0
PV Side									
Max. Input Power (kW)	10	12	16	20	24	30	40	50	60
Max. Input Voltage (V) ¹	1000								
MPPT Operating Voltage Range (V) ²	120 ~ 950								
Start-up Voltage (V)	150								
Nominal Input Voltage (V)	750								
Max. MPPT Current (A)	21 / 21 / 21			21 / 21 / 21 / 21			21 / 21 / 42 / 42		
Max. MPPT Short Circuit Current (A)	26 / 26 / 26			26 / 26 / 26 / 26			26 / 26 / 52 / 52		
Number of MPPTs	3			4					
Number of Strings per MPPT	1 / 1 / 1			1 / 1 / 1 / 1			1 / 1 / 2 / 2		
AC Side (Grid Port)									
Rated Power (kW)	5	6	8	9.999	12	15	20	25	29.999
Max. Power (kW)	5	6	8	9.999	12	15	20	25	29.999
Rated Apparent Power to Grid (kVA)	5	6	8	9.999	12	15	20	25	29.999
Rated Apparent Power from Grid (kVA)	5	6	8	9.999	12	15	20	25	29.999
Max. Apparent Power to Grid (kVA) ³	5	6	8	9.999	12	15	20	25	29.999
Max. Apparent Power from Grid (kVA)	43.5 ⁴	43.5 ⁴	43.5 ⁴	43.5 ⁴	43.5 ⁴	43.5 ⁴	43.5 ⁴	55.2 ⁵	55.2 ⁵
Nominal Voltage (V)	220 / 380, 230 / 400, 3L / N / PE								
Voltage Range (V) (According to local standard)	180 ~ 260								
Nominal Frequency (Hz)	50 / 60								
Frequency Range (Hz)	45 ~ 55 / 55 ~ 65								
Rated Current to Grid (A)	7.6@380V 7.3@400V	9.1@380V 8.7@400V	12.2@380V 11.6@400V	15.2@380V 14.5@400V	18.2@380V 17.4@400V	22.8@380V 21.8@400V	30.4@380V 29.0@400V	37.9@380V 36.3@400V	45.5@380V 43.5@400V
Rated Current from Grid (A)	7.6@380V 7.3@400V	9.1@380V 8.7@400V	12.2@380V 11.6@400V	15.2@380V 14.5@400V	18.2@380V 17.4@400V	22.8@380V 21.8@400V	30.4@380V 29.0@400V	37.9@380V 36.3@400V	45.5@380V 43.5@400V
Max. Current to Grid (A) ⁶	7.6@380V 7.3@400V	9.1@380V 8.7@400V	12.2@380V 11.6@400V	15.2@380V 14.5@400V	18.2@380V 17.4@400V	22.8@380V 21.8@400V	30.4@380V 29.0@400V	37.9@380V 36.3@400V	45.5@380V 43.5@400V
Max. Current from Grid (A) ⁶	63 ⁴	63 ⁴	63 ⁴	63 ⁴	63 ⁴	63 ⁴	63 ⁴	80 ⁵	80 ⁵
Power Factor	0.8 leading ~ 0.8 lagging								
THDi	<3%								
AC Side (Back-up Port)									
Rated Apparent Power (kVA)	5	6	8	10	12	15	20	25	30
Max. Apparent Power (kVA) ⁷	Off-grid: 5.5 (10.0, 10s), on-grid: 43.5	Off-grid: 6.6 (12.0, 10s), on-grid: 43.5	Off-grid: 8.8 (16.0, 10s), on-grid: 43.5	Off-grid: 11.0 (20.0, 10s), on-grid: 43.5	Off-grid: 13.2 (24, 10s), on-grid: 43.5	Off-grid: 16.5 (30, 10s), on-grid: 43.5	Off-grid: 22.0 (30.0, 10s), on-grid: 43.5	Off-grid: 27.5 (45.0, 10s), on-grid: 55.2	Off-grid: 33.0 (45.0, 10s), on-grid: 55.2
Nominal Voltage (V)	220 / 380, 230 / 400, 3L / N / PE								
Nominal Frequency (Hz)	50 / 60								
Max. Current (A) ⁷	Off-grid: 11.4, on-grid: 63	Off-grid: 13.7, on-grid: 63	Off-grid: 18.2, on-grid: 63	Off-grid: 22.8, on-grid: 63	Off-grid: 27.3, on-grid: 63	Off-grid: 33.4, on-grid: 63	Off-grid: 33.4, on-grid: 63	Off-grid: 50.0, on-grid: 80	Off-grid: 50.0, on-grid: 80
THDv (@Linear Load)	<3%								
On / Off-grid Switching Time (ms)	<4								
Efficiency									
Max. Efficiency	98.0%	98.0%	98.0%	98.1%	98.1%	98.1%	98.1%	98.2%	98.2%
European Efficiency	96.4%	96.9%	97.1%	97.2%	97.2%	97.3%	97.3%	97.4%	97.4%
Max. Battery to AC Efficiency	98.0%								
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 Switch	Integrated								
DC Surge Protection	Type II (Type I + II optional)								
AC Surge Protection	Type II								
Rapid Shutdown	Optional								
AFCI	Optional								
Remote Shutdown	Integrated								
General Data									
Operating Temperature Range (°C)	-35 ~ +60								
Relative Humidity	0 ~ 100%								
Max. Operating Altitude (m)	4000 (>2000 derating)								
Cooling Method	Smart Fan Cooling								
User Interface	LED, WLAN + APP								
Communication with BMS	CAN								
Communication	RS485, WiFi + LAN + Bluetooth, 4G + Bluetooth (Optional)								
Communication Protocols	Modbus-RTU, Modbus-TCP								
Weight (kg)	34	34	34	34	34	34	34	38	38
Dimension (W x H x D mm)	800 x 340 x 270								
Ingress Protection Rating	IP66								
Mounting Method	Wall/Floor Mounted								

*1: When the input voltage ranges from 950V to 1000V, the inverter will enter the standby mode, and the voltage returns to 950V to enter the normal operation state.
 *2: Please refer to the user manual for the MPPT Voltage Range at nominal Power.
 *3: According to the local grid regulation.
 *4: 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 main breaker size in SolarGo(or SEMS+) can be set as previous breaker size.

*5: GOODWE ESA series has internal bypass 80A passthrough ability to support whole homebackup 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.
 *6: If the backup port is not used, select an appropriate circuit breaker based on the AC maximum output current.
 *7: "Off grid" means the energy of backup output only comes from PV and battery. "On grid" means the energy of the backup output includes the energy from grid or generator(on-grid) side.
 *: Please visit GoodWe website for the latest certificates.

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}		5.0	8.0	5.0	8.0
Battery Type		LFP (LiFePO4)			
Operating Voltage Range (V) (single phase system)		350 ~ 550			
Operating Voltage Range (V) (three phase system)		700 ~ 950			
Max. Input Current (System) (A)		12.0	19.0	12.0	19.0
Max. Output Current (System) (A)		13.2	21.0	13.2	21.0
Max. Input Power (System) (kW) ^{*2}		5.0	8.0	5.0	8.0
Max. Output Power (System) (kW) ^{*2}		5.0	8.0	5.0	8.0
Peak Output Power (System) (kW) ^{*2}		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	≤29	≤29	≤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 (Optional)	Heating (Optional)	-	-
Ingress Protection		IP66			
Max. Storage Time		12 months (-20°C ~ 35°C) 6 months (35°C ~ 45°C)			
Scalability		12pcs			
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.