GOODWE

# 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 | | | $LiFePO_4$ | | | |
| 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)*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<br>13.1 @ 230V<br>12.5 @ 240V | 16.4 @ 220V<br>15.7 @ 230V<br>15.0 @ 240V | 22.8 @ 220V<br>21.8 @ 230V<br>20.9 @ 240V | 27.3 @ 220V<br>26.1 @ 230V<br>25.0 @ 240V | 36.4 @ 220V<br>34.8 @ 230V<br>33.4 @ 240V | 43.5 @ 220V<br>43.5 @ 230V<br>41.7 @ 240V |
| Max. Current From Grid (A)*4 | 27.3 @ 220V<br>26.1 @ 230V<br>25.0 @ 240V | 32.8 @ 220V<br>31.4 @ 230V<br>30.0 @ 240V | 45.5 @ 220V<br>43.5 @ 230V<br>41.7 @ 240V | 50.0 @ 220V<br>50.0 @ 230V<br>50.0 @ 240V | 63.0 @ 220V<br>63.0 @ 230V<br>60.5 @ 240V | 63.0 @ 220V<br>63.0 @ 230V<br>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<br>13.1 @ 230V<br>12.5 @ 240V | 16.4 @ 220V<br>15.7 @ 230V<br>15.0 @ 240V | 22.8 @ 220V<br>21.8 @ 230V<br>20.9 @ 240V | 27.3 @ 220V<br>26.1 @ 230V<br>25.0 @ 240V | 36.4 @ 220V<br>34.8 @ 230V<br>33.4 @ 240V | 43.5 @ 220V<br>43.5 @ 230V<br>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<br>(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.
*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.





This datasheet provides information about products offered in the EMEA region.

# ESA Series / Battery Module*

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| Technical Data | | GW5.1-BAT-D-G20 | GW8.3-BAT-D-G20 | GW6.0-BAT-D-G20 | GW9.0-BAT-D-G20 |
|---|---|---|---|---|---|
| Battery Type | | LFP ($LiFePO_4$) | | | |
| Rated Energy (kWh) | | 5.12 | 8.32 | 6.0 | 9.0 |
| Usable Energy (kWh) | | 5.0*1 | 8.0*1 | 5.8*2 | 8.7*2 |
| 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 | 7.1 | 10.7 |
| Max. Output Current (System) (A) | | 13.2 | 21.0 | 7.9 | 11.8 |
| Max. Input Power (System) (kW)*3 | | 5.0 | 8.0 | 3.0 | 4.5 |
| Max. Output Power (System) (kW)*3 | | 5.0 | 8.0 | 3.0 | 4.5 |
| Peak.Output Power (System) (kW)*3 | | 7.5 @10s | 12 @10s | 4.5 @ 10s | 6.75 @ 10s |
| Charging Temperature Range (°C) | | -18 ~ +55 | -18 ~ +55 | -20 ~ +55 | -20 ~ +55 |
| Discharging Temperature Range (°C) | | -20 ~ +55 | | | |
| Relative Humidity | | 4 ~ 100% | | | |
| Max. Operating Altitude (m) | | 4000 | | | |
| Noise Emission (dB) | | ≤29 | ≤29 | ≤27 | ≤27 |
| Communication | | CAN | CAN | CAN & 485 | CAN & 485 |
| Weight (kg) | | 57.5 ± 1 | 79 ± 1 | 61 ± 1 | 77± 1 |
| Ingress Protection | | IP66 | | | |
| Dimensions (W × H × D mm) | | 800 × 326 × 270 | | | |
| Function Configuration | | Heating (Integrated); Aerosol fire extinguishing (Integrated) | | | |
| Max. Storage time | | 12 months (-20°C ~ +35°C)<br>6 months (+35°C ~ +45°C) | | | |
| Scalability*4 | | 12 pcs | | | |
| Mounting Method | | Floor stacked / Wall-mounted | | Floor stacked / Wall-mounted / Grounded | |
| Cycle Life*5 | | ≥8000 | ≥8000 | ≥10000 | ≥10000 |
| Standard and Certification | Safety | IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC, VDE2510 | | IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC, Regulation 2023 / 1542, VDE2510-50 | |
| | 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: Test conditions, 100% DOD (cell 2.87~3.61V voltage range), 0.4P 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.
*4: For single-column stacked installations, the maximum number of parallel units is 6.
*5: Based on test data under specific laboratory conditions.
*: Based on Lynx D G2 Series technology
*: Please visit GoodWe website for the latest certificates.