

## 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, with scalable battery capacity for future upgrades. With its streamlined setup, the ESA Series can reduce installation time by up to 50%, making it an ideal choice for efficient and adaptable residential energy systems. It also supports dynamic tariff optimization with AI-driven EMS.



\*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 <35dB
- 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<sup>1</sup>



#### Smart Control & Monitoring

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

| Technical Data                                   | GW3K-<br>EHA-G20                                | GW3.6K-<br>EHA-G20                        | GW5K-<br>EHA-G20                          | GW6K-<br>EHA-G20                          | GW8K-<br>EHA-G20                          | GW9.999K-<br>EHA-G20                      | GW10K-<br>EHA-G20                         |
|--------------------------------------------------|-------------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| Battery Side                                     |                                                 |                                           |                                           |                                           |                                           |                                           |                                           |
| Battery Type                                     |                                                 |                                           |                                           | LiFePO <sub>4</sub>                       |                                           |                                           |                                           |
| Nominal Battery Voltage (V)                      |                                                 |                                           |                                           | 380                                       |                                           |                                           |                                           |
| Battery Voltage Range (V)                        |                                                 |                                           |                                           | 350 ~ 550                                 |                                           |                                           |                                           |
| Start-up Voltage (V) <sup>1</sup>                |                                                 |                                           |                                           | 380                                       |                                           |                                           |                                           |
| Number of Battery Input                          |                                                 |                                           |                                           | 1                                         |                                           |                                           |                                           |
| Max. Continuous Charging Current (A)             | 11.9                                            | 14.3                                      | 19.8                                      | 23.7                                      | 31.6                                      | 35.6                                      | 35.6                                      |
| Max. Continuous Discharging Current (A)          | 8.7                                             | 10.5                                      | 14.5                                      | 17.4                                      | 23.2                                      | 29.0                                      | 29.0                                      |
| Max. Charging Power (kW)                         | 4.5                                             | 5.4                                       | 7.5                                       | 9.0                                       | 12.0                                      | 13.5                                      | 13.5                                      |
| Max. Discharging Power (kW)                      | 3.3                                             | 3.96                                      | 5.5                                       | 6.6                                       | 8.8                                       | 11.0                                      | 11.0                                      |
| PV Side                                          |                                                 |                                           |                                           |                                           |                                           |                                           |                                           |
| Max. Input Power (kW)                            | 6.0                                             | 7.2                                       | 10.0                                      | 12.0                                      | 16.0                                      | 20.0                                      | 20.0                                      |
| Max. Input Voltage (V) <sup>2</sup>              |                                                 |                                           |                                           | 600                                       |                                           |                                           |                                           |
| MPPT Operating Voltage Range (V) <sup>3</sup>    |                                                 |                                           |                                           | 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                                         | 2                                         | 4                                         |
| Number of Strings per MPPT                       | 1 / 1                                           | 1 / 1                                     | 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                                     | 10.0                                      |
| Nominal 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) <sup>4</sup> | 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                               |                                           |                                           |                                           |                                           |                                           |                                           |
| 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 | 43.5 @ 220V<br>43.5 @ 230V<br>41.7 @ 240V |
| Max. Current From Grid (A) <sup>4</sup>          | 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 | 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                                      | 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)                          | 10.0 (20.0, 10s)                          |
| Max. Output Apparent Power (Bypass) (kVA)        | 6.0                                             | 7.2                                       | 10.0                                      | 12.0                                      | 14.5                                      | 14.5                                      | 14.5                                      |
| Max. Output Current (A) <sup>5</sup>             | 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 | 43.5 @ 220V<br>43.5 @ 230V<br>41.7 @ 240V |
| Max. Output Current (Bypass) (A) <sup>5</sup>    | 27.3                                            | 32.8                                      | 45.5                                      | 50.0                                      | 63.0                                      | 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%                                     | 97.5%                                     |
| European Efficiency                              | 96.5%                                           | 96.5%                                     | 96.8%                                     | 97.0%                                     | 96.8%                                     | 96.8%                                     | 96.8%                                     |
| Max. Battery to AC Efficiency                    | 98.0%                                           | 98.0%                                     | 98.0%                                     | 98.0%                                     | 97.8%                                     | 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                                        | 26                                        |
| Dimension (W x H x D mm)                         | 800 x 300 x 270                                 |                                           |                                           |                                           |                                           |                                           |                                           |
| Noise Emission                                   | ≤30                                             | ≤30                                       | ≤30                                       | ≤30                                       | ≤35                                       | ≤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 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: If the Back-up port is not used, select an appropriate circuit breaker based on the AC Max. Output Current.

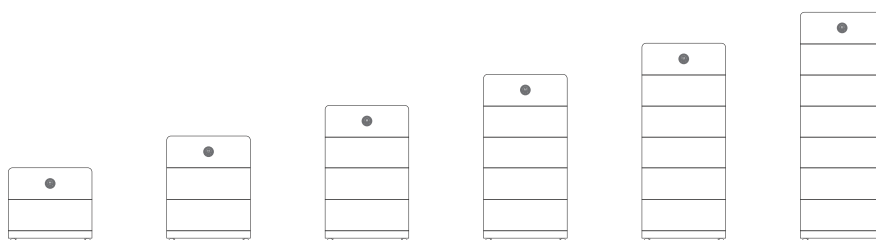
\*: Please visit GoodWe website for the latest certificates.

| 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) <sup>*1</sup>                    |                | 5                                                                 | 8               | 5               | 8               |
| Battery Type                                         |                | LFP (LiFePO <sub>4</sub> )                                        |                 |                 |                 |
| Operating Voltage Range (V)<br>(single phase system) |                | 350 ~ 550                                                         |                 |                 |                 |
| Operating Voltage Range (V)<br>(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) <sup>*2</sup>         |                | 5                                                                 | 8               | 5               | 8               |
| Max. Output Power (System) (kW) <sup>*2</sup>        |                | 5                                                                 | 8               | 5               | 8               |
| Peak.Output Power (System) (kW) <sup>*2</sup>        |                | 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)<br>6 months (+35°C ~ +45°C)             |                 |                 |                 |
| Scalability                                          |                | 6 pcs                                                             |                 |                 |                 |
| Mounting Method                                      |                | Floor stacked / Wall-mounted                                      |                 |                 |                 |
| Standard and Certification                           | Safety         | IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC, VDE2510 |                 |                 |                 |
|                                                      | 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)     | 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 |