GOODWE

ES Series (14A)

3.6-5kW I Single Phase Hybrid Inverter (LV)

The GoodWe ES series of bi-directional energy storage inverters can be used for both on-grid and off-grid PV systems, with the ability to control the flow of energy intelligently. During the day, the PV array generates electricity which can be provided either to the loads, fed into the grid, or charge the battery, depending on the economics and set-up. The electricity stored can be released when the loads require it during the night, including inductive loads such as air conditioners or refrigerators. Additionally, the power grid can also charge storage devices via the inverter. An all-round intelligent system for maximum energy flexibility.

- Charge controller and inverter integrated
- Maximum charge and discharge up to 100A
- Export control (Zero export)
- IP65 dustproof and waterproof
- 8 ms UPS-level Switching
- Fanless design, long lifespan

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Technical Data	GW3648D-ES[*6] GW3648C-ES[*6]	GW5048D-ES[*6] GW5048C-ES[*6]
Battery Input Data		
Battery Type[*1]	Li-Ion	Li-Ion
Nominal Battery Voltage (V)	48	48
Battery Voltage Range (V)	40~60	40 ~ 60
Max. Continuous Charging Current (A)[*1]	75	100
Max. Continuous Discharging Current (A)[*1]	75	100
Max. Charging Power (W)	3600	4600
Max. Discharging Power (W)	3600	4600
PV String Input Data		
Max. Input Power (W)	4600	6500
Max. Input Voltage (V)	580	580
MPPT Operating Voltage Range (V)	125~550	125 ~ 550
Start-up Voltage (V)	125	125
Nominal Input Voltage (V)	360	360
Max. Input Current per MPPT (A)	14	14
Max. Short Circuit Current per MPPT (A)[*7]	17.5	17.5
Number of MPP Trackers	2	2
Number of Strings per MPPT	1	1
AC Output Data (On-grid)		
Nominal Apparent Power Output to Utility Grid (VA)[*5]	3680	5000
Max. Apparent Power Output to Utility Grid (VA)[*2]	3680	5000
Max. Apparent Power from Utility Grid (VA)	7360	9200
Nominal Output Voltage (V)	230	230
Output Voltage Range (V)	0 ~ 300	0 ~ 300
Nominal AC Grid Frequency (Hz)	50/60	50 / 60
Max. AC Current Output to Utility Grid (A)	16.0	24.5
Max. AC Current From Utility Grid (A)	32	40
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	
Max. Total Harmonic Distortion	<3%	<3%
AC Output Data (Back-up)		
Back-up Nominal Apparent Power (VA)	3680	4600
Max. Output Apparent Power (VA)[*3]	3680 (5520@10sec)	4600 (6900@10sec)
Max. Output Current (A)	16	20
Nominal Output Voltage (V)	230 (±0.2%)	230 (±0.2%)
Nominal Output Frequency (Hz)	50/60 (±0.2%)	50/60 (±0.2%)
Output THDv (@Linear Load)	<3%	<3%
Efficiency		
Max. Efficiency	97.6%	97.6%
European Efficiency	97.0%	97.0%
Max. Battery to AC Efficiency	94.0%	94.0%
MPPT Efficiency	99.9%	99.9%
Protection		
PV Insulation Resistance Detection	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated
General Data		
Operating Temperature Range (°C)	-25~+60	-25 ~ +60
Relative Humidity	0~95%	0 ~ 95%
Max. Operating Altitude (m)	3000	3000
Cooling Method	Natural Convection	Natural Convection
User Interface	LED & APP	LED & APP
Communication with BMS[*4]	RS485; CAN	RS485; CAN
Communication with Meter	RS485	RS485
Communication with Portal	WiFi	WiFi
Weight (kg)	28	30
Dimension (W × H × D mm)	516 x 440 x 184	516 × 440 × 184
Noise Emission (dB)	<25	<25
Topology	Non-isolated	Non-isolated
Ingress Protection Rating	IP65	IP65
Mounting Method	Wall Mounted	Wall Mounted
Country of Manufacture	China	China

*1: The actual charge and discharge current also depends on the battery.
*2: 4600 for VDE 0126-1-1 & VDE-AR-N4105 & NRS 097-2-1, 5100 for CEI 0-21 (GW5048D-ES); 4050 for CEI 0-21 (GW3648D-ES).
*3: Peak output apparent power can be reached only if PV and battery power is enough.
*4: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.
*5: 4600 for VDE 0126-1-1 & VDE-AR-N4105 & NRS 097-2-1, 4600 for CEI 0-21 (GW5048D-ES).
*6: FOR AUSTRALIA ONLY. Model GW3648D-ES and GW5048D-ES inverters are designed without DC switch. For inverters designed with DC switch, the model name should be GW3648C-ES and GW5048C- ES.
*7: For Australia Max. Short Circuit Current per MPPT (A) please refer to 'Manufacturer declaration: short circuit current'.
*: Under off-grid mode, then battery capacity should be more than 100Ah.
*: When there is no battery connected, inverter starts feeding in only if string voltage is higher than 200V.
*: AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback.
*: Please visit GoodWe website for the latest certificates.