GOODWE

ES Series

3.6-5kW I Single Phase Hybrid Inverter

The GoodWe ES Series bi-directional energy storage inverter 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
- <10ms UPS-level switching
- Fanless design, long lifespan

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Technical Data	GW3648D-ES	GW5048D-ES
Battery Input Data		
Battery Type	Li-Ion	Li-Ion
Nominal Battery Voltage (V)	48	48
Max. Charging Voltage (V)	≤60 (Configurable)	≤60 (Configurable)
Max. Charging Current (A)*1	75	100
Max. Discharging Current (A)*1	75	100
Battery Capacity (Ah)*2	50 ~ 2000	50 ~ 2000
Charging Strategy for Li-Ion Battery	Self-adaption to BMS	Self-adaption to BMS
PV String Input Data		
Max. DC Input Power (W)	4600	6500
Max. DC Input Voltage (V)	580	580
MPPT Range (V)	125 ~ 550	125 ~ 550
Start-up Voltage (V)	125	125
Min. Feed-in Voltage (V)*3	150	150
MPPT Range for Full Load (V)	170 ~ 500	215 ~ 500
Nominal DC Input Voltage (V)	360	360
Max. Input Current (A)	11 / 11	11 / 11
Max. Short Current (A)	13.8 / 13.8	13.8 / 13.8
Number of MPPTs	2	2
Number of Strings per MPPT	1	1
AC Output Data (On-grid)		
Nominal Apparent Power Output to Utility Grid (VA)*8	3680	4600
Max. Apparent Power Output to Utility Grid (VA)*4*9	3680	5100
Max. Apparent Power from Utility Grid (VA)	7360	9200
Nominal Output Voltage (V)	230	230
Nominal Output Freqency (Hz)	50 / 60	50 / 60
Max. AC Current Output to Utility Grid (A)	16.0	24.5*5
Max. AC Current from Utility Grid (A)	32	40
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	
Output THDi (@Nominal Output)	<3%	<3%
AC Output Data (Back-up)		
Max. Output Apparent Power (VA)	3680	4600
Peak Output Apparent Power (VA)*6	5520, 10sec	6900, 10sec
Max. Output Current (A)	16	20
Nominal Output Voltage (V)	230 (±2%)	230 (±2%)
Nominal Output Freqency (Hz)	50 / 60 (±0.2%)	50 / 60 (±0.2%)
Output THDv (@Linear Load)	<3%	<3%
Efficiency		
Max. Efficiency	97.6%	97.6%
Max. Battery to Load Efficiency	94.0%	94.0%
European Efficiency	97.0%	97.0%
Protection		
Anti-Islanding Protection	Integrated	Integrated
PV String Input Reverse Polarity Protection	Integrated	Integrated
Insulation Resistor Detection	Integrated	Integrated
Residual Current Monitoring Unit	Integrated	Integrated
Output Over Current Protection	Integrated	Integrated
Output Short Protection	Integrated	Integrated
Output Over Voltage 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 × 440 × 184	516 × 440 × 184
Noise Emission (dB)	<25	<25
Topology	Battery Isolation	Battery Isolation
Self-consumption at Night (W)	<13	<13
Ingress Protection Rating	IP65	IP65
Mounting Method	Wall Bracket	Wall Bracket

*1: The actual charge and discharge current also depends on the battery.
*2: Under off-grid mode, then battery capacity should be more than 100Ah.
*3: When there is no battery connected, inverter starts feeding in only if string voltage is higher than 200V.
*4: 4600 for VDE 0126-1-1 & VDE-AR-N4105, 4950 for AS4777.2 (GW5048D-ES), 4050 for CEI 0-21 (GW3648D-ES).
*5: 21.7A for AS4777.2.
*6: Can be reached only if PV and battery power are enough.
*7: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.
*8: For Belgium Nominal Apparent Power Output to Utility Grid (VA): GW3648D-ES is 3600.
*9: For Belgium Max. Output Apparent Power (VA): GW3648D-ES is 3600.
*: Please visit GoodWe website for the latest certificates.

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