GOODWE

ES Series (14A)

Single-phase Hybrid Inverter (LV)

The GoodWe ES series is a bi-directional energy storage inverter 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

Export control (Zero export)

8 ms UPS-level Switching

Maximum charge and discharge up to 100A

IP65 dustproof and waterproof

Fanless design, long lifespan

ES Series

GOODWE

Technical Data	GW3648D-ES	GW5048D-ES
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. Charging Voltage (V)	≤60 (Configurable)	≤60 (Configurable)
Max. Charging / Discharging Current (A)*1	75	100
Max. Charging / Discharging Power (W)	3600	4600
Battery Capacity (Ah)*2	50~2000	50~2000
Charging Mode for Li-Ion Battery	Self-adaption to BMS	Self-adaption to BMS
PV String Input Data		
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
Nominal DC Input Voltage (V)	360	360
Max. Input Current (A)	14 / 14	14 / 14
Max. Short Current (A)	17.5 / 17.5	17.5 / 17.5
Number of MPPTs	2	2
Number of Strings per MPPT	1	1
AC Output Data (On-grid)		
Nominal*9 / Max.*4 Apparent Power Output to Utility Grid (VA)	3680	5000
Nominal / 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*10	24.5
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)		
Back-up Nominal Apparent Power (VA)	3680	4600
Max. Output Apparent Power (VA)	3680	4600
Peak Output Apparent Power (VA)*5	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%
MPPT Efficiency	99.9%	99.9%
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 Overcurrent / Overvoltage Protection	Integrated	Integrated
Output Short Protection	Integrated	Integrated
General Data		
Operating Temperature Range (°C)	-25~60	-25~60
Relative Humidity	0~95%	0~95%
Operating Altitude (m)	3000	3000
Cooling	Natural Convection	Natural Convection
User Interface	LED & APP	LED & APP
Communication with BMS*6	RS485; CAN	RS485; CAN
Communication with Meter	RS485	RS485
Communicaiton with Portal	Wi-Fi	Wi-Fi
Weight (Kg)	28	30
Size (Width × Height × Depth mm)	516 × 440 × 184	516 × 440 × 184
Mounting	Wall Bracket	Wall Bracket
Protection Degree	IP65	IP65
Standby Self-Consumption (W)	<13	<13
Topology	Battery Isolation	Battery Isolation
DC Connector	MC4 (4~6mm^2)	MC4 (4~6mm^2)
AC Connector	Feed-Through Terminal Blocks UW10	Feed-Through Terminal Blocks UW10
Storage Environments (°C)	-40~85°C	-40~85°C
Active Anti-islanding Method	AFDPF+AQDPF*6	AFDPF+AQDPF*6

*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 &NRS 097-2-1, 5100 for CEI 0-21 (GW5048D-ES); 4050 for CEI 0-21 (GW3648D-ES).
*5: Can be reached only if PV and battery power is enough.

*6: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.
*7: AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback.
*8: Not all certifications & standards listed, check the official website for details.
*9: 4600 for VDE 0126-1-1 &VDE-AR-N4105 &NRS 097-2-1, 4600 for CEI 0-21 (GW5048D-ES).
*10: 18 for CEI 0-21.

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