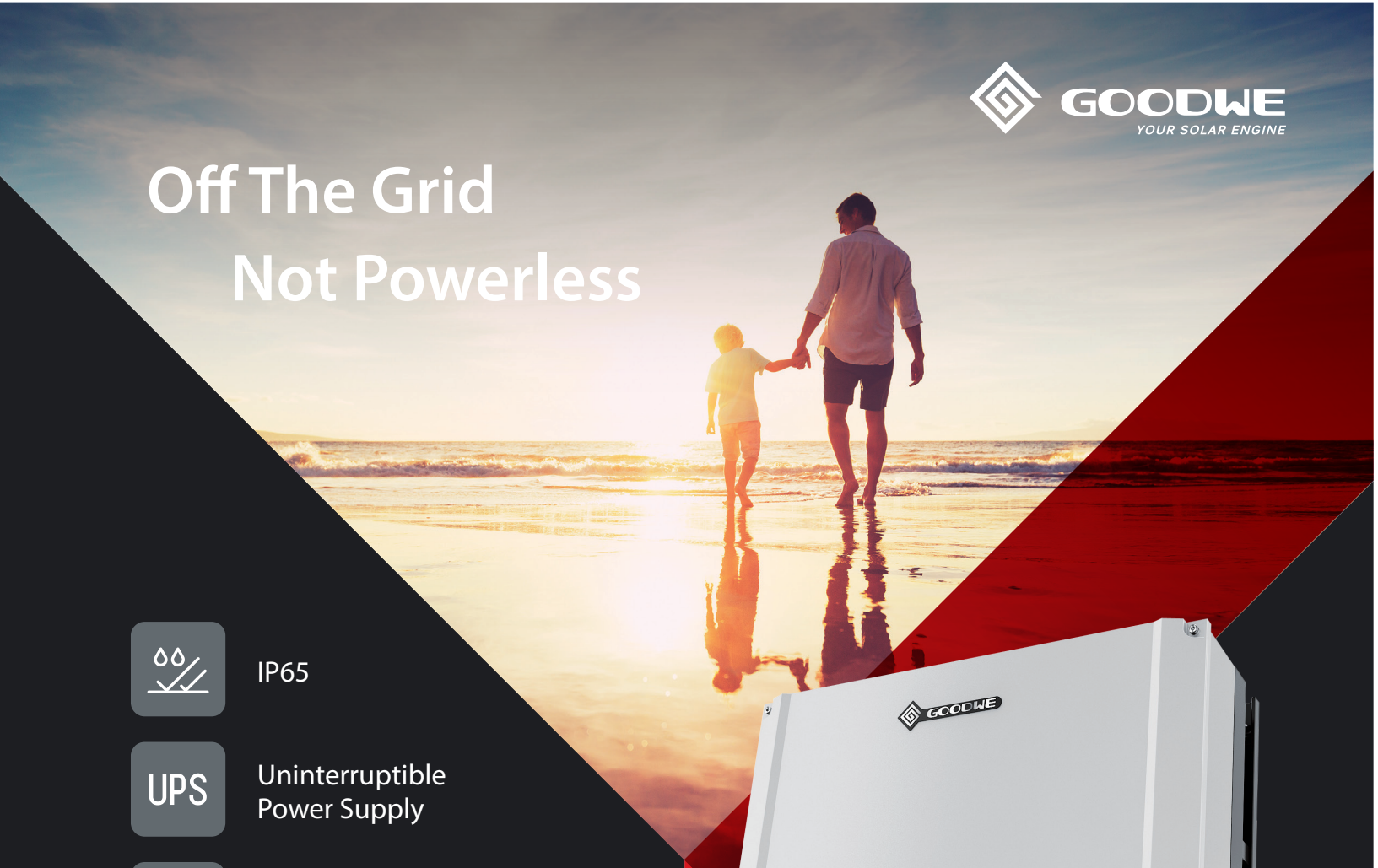
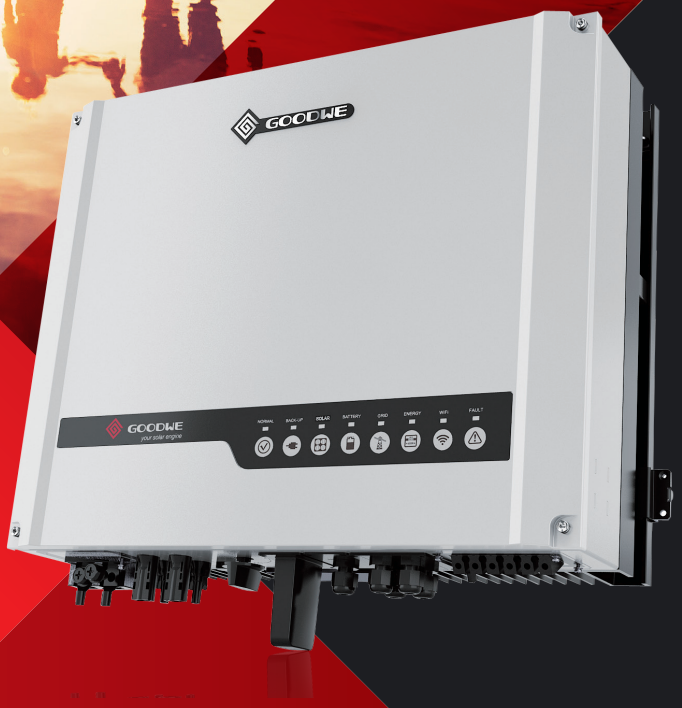
GOODWE
YOUR SOLAR ENGINE

Off The Grid
Not Powerless



- IP65
- UPS — Uninterruptible Power Supply
- Remote Upgrade
- 100A
- Export Control
- 30% PV Oversizing



ES Series

Single-phase Energy Storage Inverter

3.7kW | **5.0kW**

The GoodWe ES series bi-directional energy storage inverter can be used for both on-grid and off-grid PV systems. 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. Additionally, the power grid can also charge the storage devices via the inverter.

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Technical Data	GW3648D-ES	GW5048D-ES
Battery Input Data		
Battery Type	Li-Ion or Lead-acid*1	Li-Ion or Lead-acid*1
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)*3	150	150
MPPT Range for Full Load (V)	170~500	170~500
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
No. of MPP Trackers	2	2
No. of Strings per MPP Tracker	1	1
AC Output Data (On-grid)		
Nominal Apparent Power Output to Utility Grid (VA)	3680	4600
Max. Apparent Power Output to Utility Grid (VA)*4	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	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%
Euro 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%
Operating Altitude (m)	≤4000	≤4000
Cooling	Natural Convection	Natural Convection
Noise (dB)	<25	<25
User Interface	LED & APP	LED & APP
Communication with BMS*7	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	High Frequency Isolation	High Frequency Isolation
Certifications & Standards		
Grid Regulation	VDE-AR-N 4105, VDE0126-1-1, AS4777.2, G83/2, CEI 0-21, NRS 097-2-1, EN50438	
Safety Regulation	IEC/EN62109-1&2, IEC62040-1	
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4, EN 61000-4-16, EN 61000-4-18, EN 61000-4-29	

*1: Lead-acid battery use refers to Approved Battery Options Statement. 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 is enough.
*7: The standard configuration is CAN.