GOODWE
YOUR SOLAR ENGINE

Power Whenever You Need

- **IP65**
- **UPS** — Uninterruptible Power Supply
- **Remote Upgrade**
- **50A**
- **Export Control**
- **20% More Compact**

EM Series
Single-phase Energy Storage Inverter

3.0kW | **3.7kW** | **5.0kW**

The GoodWe EM 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	GW3048-EM	GW3648-EM	GW5048-EM
Battery Input Data			
Battery Type	Li-Ion or Lead-acid*[1]	Li-Ion or Lead-acid*[1]	Li-Ion or Lead-acid*[1]
Nominal Battery Voltage (V)	48	48	48
Max. Charging Voltage (V)	≤60 (Configurable)	≤60 (Configurable)	≤60 (Configurable)
Max. Charging Current (A)*[1]	50	50	50
Max. Discharging Current (A)*[1]	50	50	50
Battery Capacity (Ah)*[2]	50~2000	50~2000	50~2000
Charging Strategy for Li-Ion Battery	Self-adaption to BMS	Self-adaption to BMS	Self-adaption to BMS
PV String Input Data			
Max. DC Input Power (W)	3900	4600	6500
Max. DC Input Voltage (V)*[3]	550	550	550
MPPT Range (V)	100~500	100~500	100~500
Start-up Voltage (V)*[4]	150	150	150
MPPT Range for Full Load (V)	280~500	170~500	230~500
Nominal DC Input Voltage (V)	360	360	360
Max. Input Current (A)	11	11/11	11/11
Max. Short Current (A)	13.8	13.8/13.8	13.8/13.8
No. of MPP Trackers	1	2	2
No. of Strings per MPP Tracker	1	1	1
AC Output Data (On-grid)			
Nominal Power Output to Utility Grid (W)	3000	3680	5000*[5]
Max. Apparent Power Output to Utility Grid (VA)*[6]	3000	3680	5000
Max. Apparent Power from Utility Grid(VA)	5300	5300	5300
Nominal Output Voltage (V)	230	230	230
Nominal Output Freqency (Hz)	50/60	50/60	50/60
Max. AC Current Output to Utility Grid (A)	13.6	16	22.8*[7]
Max. AC Current From Utility Grid (A)	23.6	23.6	23.6
Output Power Factor	~1(Adjustable from 0.8 leading to 0.8 lagging)		
Output THDi (@Nominal Output)	<3%	<3%	<3%
AC Output Data (Back-up)			
Max. Output Apparent Power (VA)	2300	2300	2300
Peak Output Apparent Power (VA)*[8]	3500,10sec	3500,10sec	3500,10sec
Automatic Switch Time (ms)	10	10	10
Nominal Output Voltage (V)	230 (±2%)	230 (±2%)	230 (±2%)
Nominal Ouput Frequency (Hz)	50/60 (±0.2%)	50/60 (±0.2%)	50/60 (±0.2%)
Max. Output Current (A)	10	10	10
Output THDv (@Linear Load)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	97.6%	97.6%	97.6%
Max. Battery to Load Efficiency	94.5%	94.5%	94.5%
Euro Efficiency	97.0%	97.0%	97.0%
Protection			
Anti-islanding Protection	Integrated	Integrated	Integrated
PV String Input Reverse Polarity Protection	Integrated	Integrated	Integrated
Insulation Resistor Detection	Integrated	Integrated	Integrated
Residual Current Monitoring Unit	Integrated	Integrated	Integrated
Output Over Current Protection	Integrated	Integrated	Integrated
Output Short Protection	Integrated	Integrated	Integrated
Output Over Voltage Protection	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (°C)	-25~60	-25~60	-25~60
Relative Humidity	0~95%	0~95%	0~95%
Operating Altitude (m)	≤4000	≤4000	≤4000
Cooling	Natural Convection	Natural Convection	Natural Convection
Noise (dB)	<25	<25	<25
User Interface	LED & APP	LED & APP	LED & APP
Communication with BMS*[9]	RS485; CAN	RS485; CAN	RS485; CAN
Communication with Meter	RS485	RS485	RS485
Communicaiton with Portal	Wi-Fi	Wi-Fi	Wi-Fi
Weight (kg)	16	17	17
Size (Width*Height*Depth mm)	347*432*175	347*432*175	347*432*175
Mounting	Wall Bracket	Wall Bracket	Wall Bracket
Protection Degree	IP65	IP65	IP65
Standby Self Consumption (W)	<13	<13	<13
Topology	High Frequency Isolation	High Frequency Isolation	High Frequency Isolation
Certifications & Standards			
Grid Regulation	AS/NZS 4777.2:2015, G83/2, G100, CEI 0-21, VDE4105-AR-N, VDE0126-1-1, NRS 097-2-1, RD1699, UNE206006, 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]: Maximum operating dc voltage is 530V.
*[4]: When there is no battery connected, inverter starts feeding in only if string voltage is higher than 200V.

*[5]: 4600 for VDE0126-1-1&VDE-AR-N4105 & CEI 0-21(GW5048-EM).
*[6]: For CEI 0-21 GW3048-EM is 3300, GW3648-EM is 4050, GW5048-EM is 5100; for VDE-AR-N4105 GW5048-EM is 4600.
*[7]: 21.7A for AS4777.2.
*[8]: Can be reached only if PV and battery power is enough.
*[9]: The standard configuration is CAN.