



Luster Solar

Power Whenever You Need

Residential & Small Commercial
Energy Storage Solutions

1. Hybrid Solutions

- ✓ On-grid & backup function integrated
- ✓ Especially designed for newly installed systems

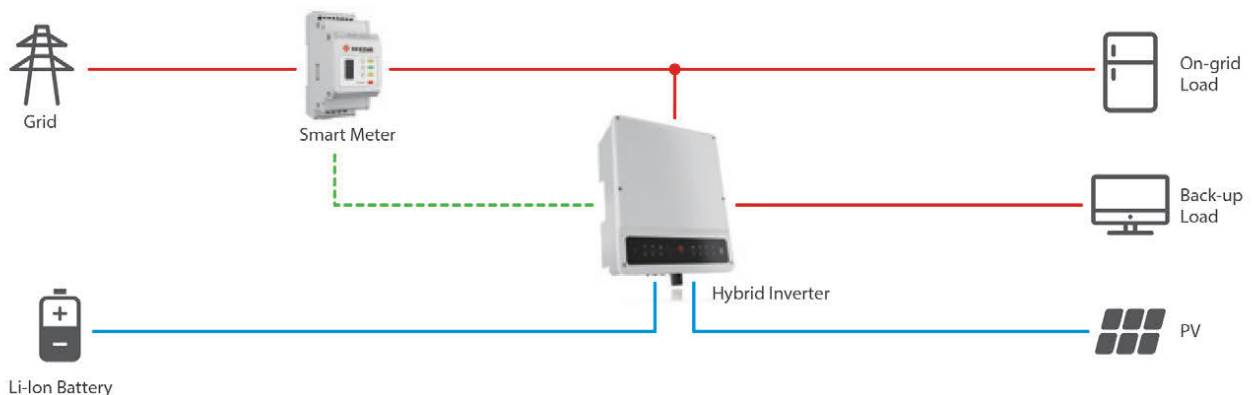
1.1 Typical Application

- Enhance self-consumption: During the day, the electricity from the PV array is used to optimize self-consumption. The excess power charges the the batteries, whose power supplies the loads at night. By utilizing storage, the self-consumption can reach up to 95%.
- Benefit from peak shaving: By setting the charging and discharging time, the battery can be charged using the electricity generated at off-peak rates and discharged to fulfill the loads during peak hours (if the grid regulations allow it).
- Provide backup for critical loads: Connected to the backup side of the inverter, loads such as refrigerators, routers, lamps, computers and other critical appliances can be powered when the grid fails. The system can automatically switch to backup mode within 10 milliseconds.

System Wiring and Operation

■ AC cable ■ DC cable ■ COM cable

The hybrid inverters are the core of the energy storage systems and they are integrated following elements into one unit: MPP trackers, power inverter, battery charging & discharging function, BMS communication & by-pass & backup function. Luster Solar hybrid portfolio is a perfect fit for a great number of residential and small commercial scenarios.

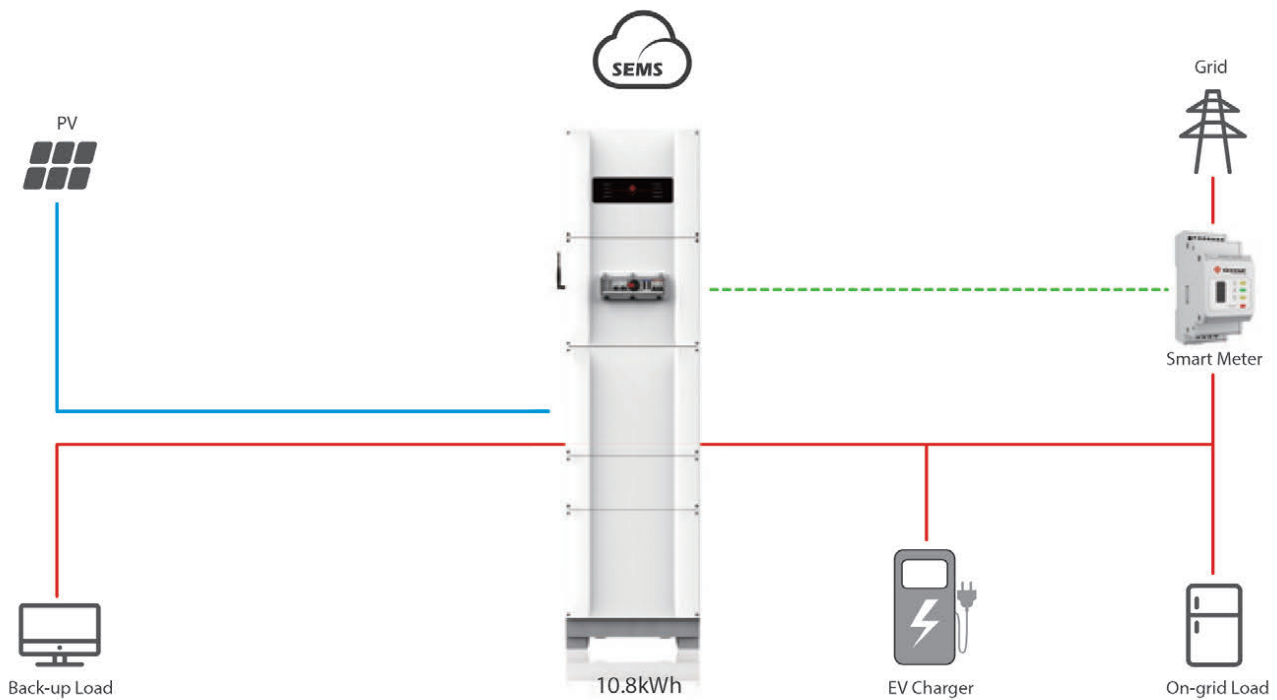


Operation Modes

There are three basic modes that end users can choose from the PV Master App.

- General Mode: At daytime, the power generated by the PV system is used in the following order: First, feed the home loads; second, charge the battery and third, export the surplus power to the grid. At night, the battery powers the loads. If the power supply from the batteries is not sufficient, the system is designed to switch automatically to the grid in order to keep the loads supplied.
- Backup Mode: Under this mode, the battery is only used as a backup power supply when the grid fails and as long as the grid works, the batteries won't be used to power the loads. The battery will get charged with the power generated by the PV system or from the grid.
- Economic Mode: The customer is able to set the battery charging and discharging times according to the grid peak and off-peak tariffs and the household power consumption habits.

1.2 All in One System (ESA Series)



Luster Solar is pleased to introduce the ESA Series, an “All-in-One” hybrid system that is designed to simplify the installation process to the maximum. It consists of the following elements: a hybrid inverter, a battery bank and a pre-wired system located inside a modern cabinet; it also includes connection devices and a preset cable slot. It is estimated that this system reduces the installation cost by as much as 60%!

Features

- Pre-Installed Devices: Built-in DC switch, AC breaker (On-Grid/Backup), battery breaker, switch board, earth terminal and communication unit.
- Pre-Wired Design: The smart meter, the battery and the AC breaker are pre-wired and pre-connected at the factory and at the moment the set reaches the end users, it is ready to be deployed and installed.
- Preset Cable Slot: As part of the systems design, there is a cable slot, where external PV and CT cables to the grid or the loads can be placed.
- In addition, the ESA system is also equipped with an AC load bypass switch, used for switching the load supply from the backup to the grid; the bypass switch also performs the rapid shutdown protection through the connection of an additional external breaker with a switch board.

Luster Solar Hybrid Portfolio

	ES	EM	ESA	EH	ET
Power Range	3.6-5kW	3-5kW	5kW+10.8kWh	3.6-6kW	5-10kW
Grid Type	Single-phase	Single-phase	Single-phase (All-in-One)	Single-phase	Three-phase
Lithium Battery	Low Voltage	Low Voltage	Low Voltage	High Voltage	High Voltage

2. AC coupled retrofit solution

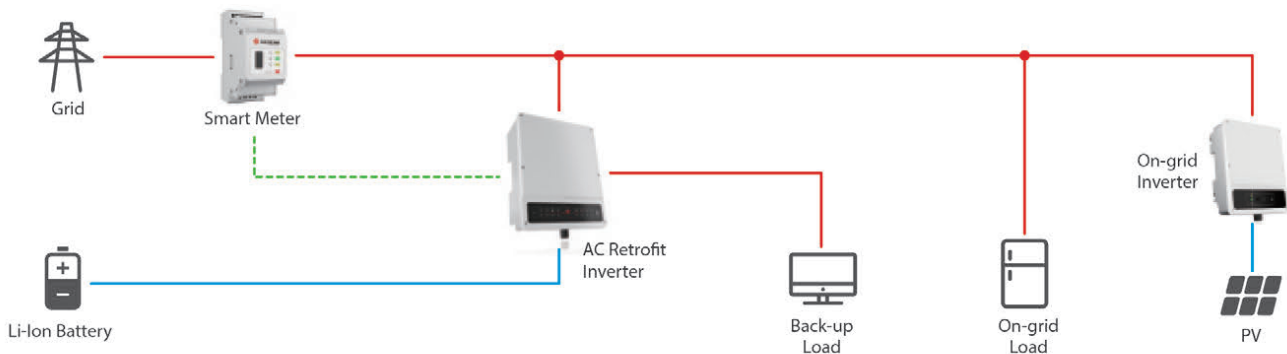
- ✓ On-grid & backup function integrated
- ✓ Converting on-grid systems into hybrid systems

2.1 Typical Application

- Enhancing Self-Consumption: At daytime, the electricity from the PV array is used for self-consumption. The surplus is used to charge the batteries, which in turn can power the loads at night. The utilization of energy storage technologies can bring the self-consumption rate up to 95%.
- Provide Backup to Critical Loads: When the grid fails, the backup function of the hybrid inverter can feed power to critical loads such as refrigerators, routers, lamps, computers and other key appliances. The system automatically switches to backup mode within 10 milliseconds.

System Wiring and Operation

The Luster Solar AC-coupled retrofit inverters are formed by the following key elements into one single unified unit: power inverter, the battery charging & discharging function, the BMS communication and the by-pass & backup function. This kind of inverter is designed to make it easy to convert and upgrade existing grid-tied systems into hybrid ones. It is suitable for both single-phase and three-phase systems, and it is also compatible with various power sources including solar and wind generators of different brands in both residential and commercial scenarios.



Operation Modes

In a similar way to the hybrid system, the default setting in the AC coupled retrofit inverter prioritizes the PV generation to power the loads, then charge the battery and finally export any surplus power to the grid. There are also three basic operation modes available in the PV Master App.

One major difference to a newly installed hybrid system is that PV will not work during the day time if there is an outage. This is because the original grid-tied inverter does not work when the grid fails and it is only the battery that powers the critical loads during the time that the outage lasts.

Luster Solar Retrofit Family

	SBP	BH	BT
Power Range	3.6-5kW	1-6kW	5-10kW
Grid Type	Single-phase	Single-phase	Three-phase
Lithium Battery	Low Voltage	High Voltage	High Voltage

3. Extended Operation Scenarios

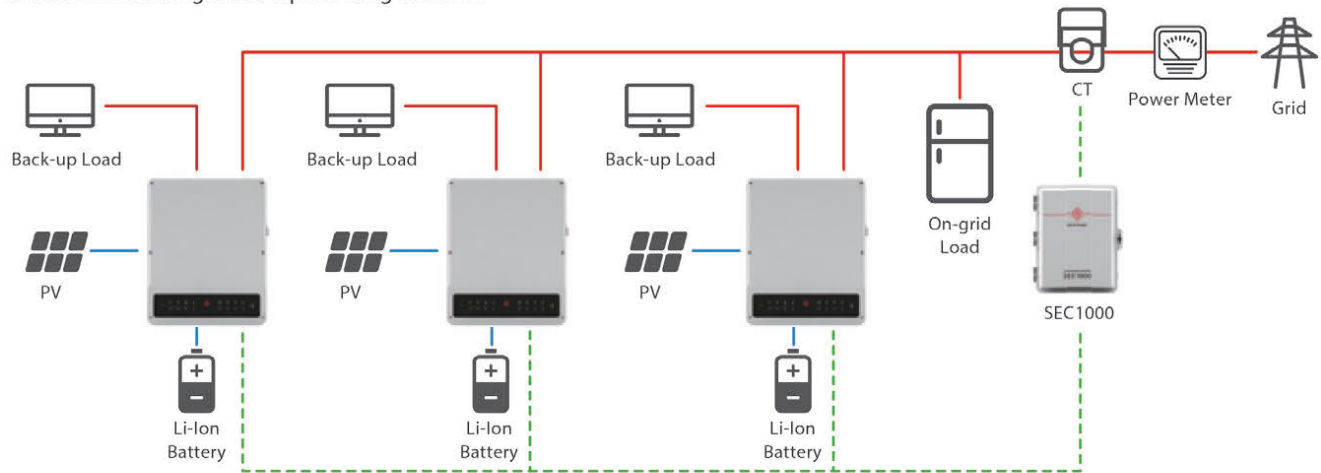
Based on their key functions and capabilities, the Luster Solar energy storage inverters can be displayed on multiple scenarios. Below are some of the most frequent.

3.1 Paralleling Scenario (Only ET Series)

The new three-phase ET inverters paralleling solution is particularly designed to meet the increasing demand for PV storage systems with higher capacity, which is completely suitable for installation such as small commercial storage systems. This kind of solution involves the integration on the AC side of multiple hybrid inverters (maximum 10 units) into one unified system.

System Wiring and Operation

The use of the SEC1000 Luster Solar Smart Energy Controller is recommended to achieve a smooth interconnection of all the units when working under a paralleling scenario.

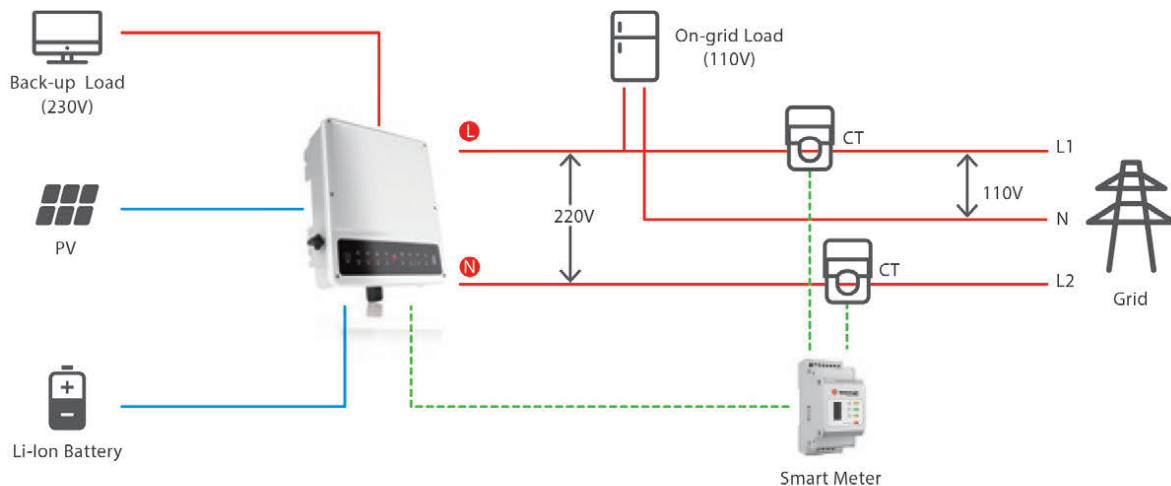


Operation Modes

It follows the same principal of the inverter paralleling scenario: when the grid is available, the PV system, the batteries and the loads share the energy in a united system. In contrast, when outage occurs, the paralleled system breaks into independent units in which the PV and the batteries supply backup power only to the corresponding loads.

3.2 Split-phase System Solution

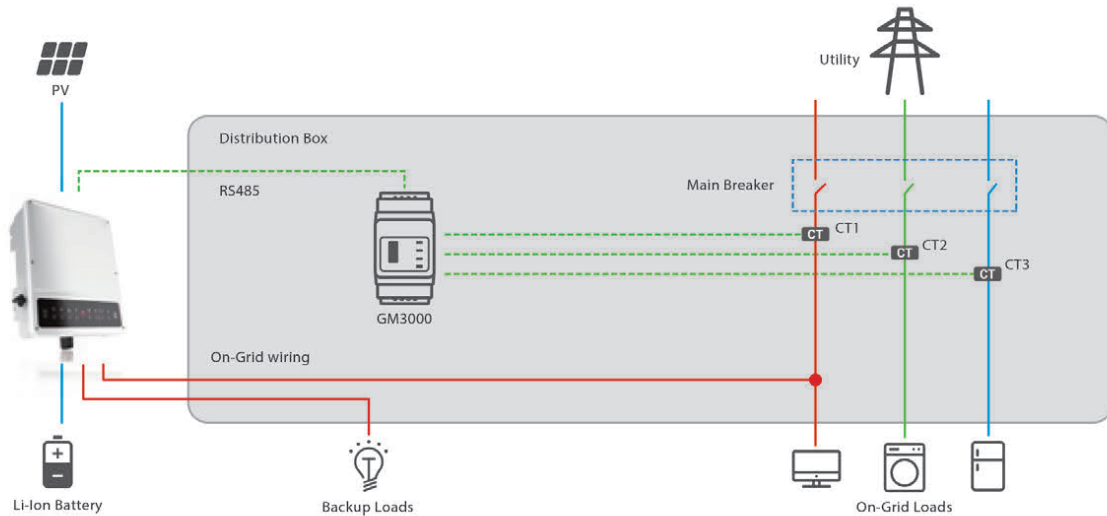
A split-phase system, which differentiates from most European standards systems, has completely different application scenario. For such a grid, Luster Solar provides a solution of a smart meter with two CTs to integrate both 110V and 220V loads on the grid side (see below).



Luster Solar energy storage ES, EM, and EH series are applicable.

3.3 Single-phase Inverter in three-Phase Utility Solution

Luster Solar single-phase hybrid inverters can work on three-phase grid systems where a three-phase smart meter is adopted to monitor load consumption on all three phases (net zero). The system can implement data-driven decisions to control battery charge or discharge power. This solution is applicable in three-phase home connections where there is no phase-level zero export requirement.



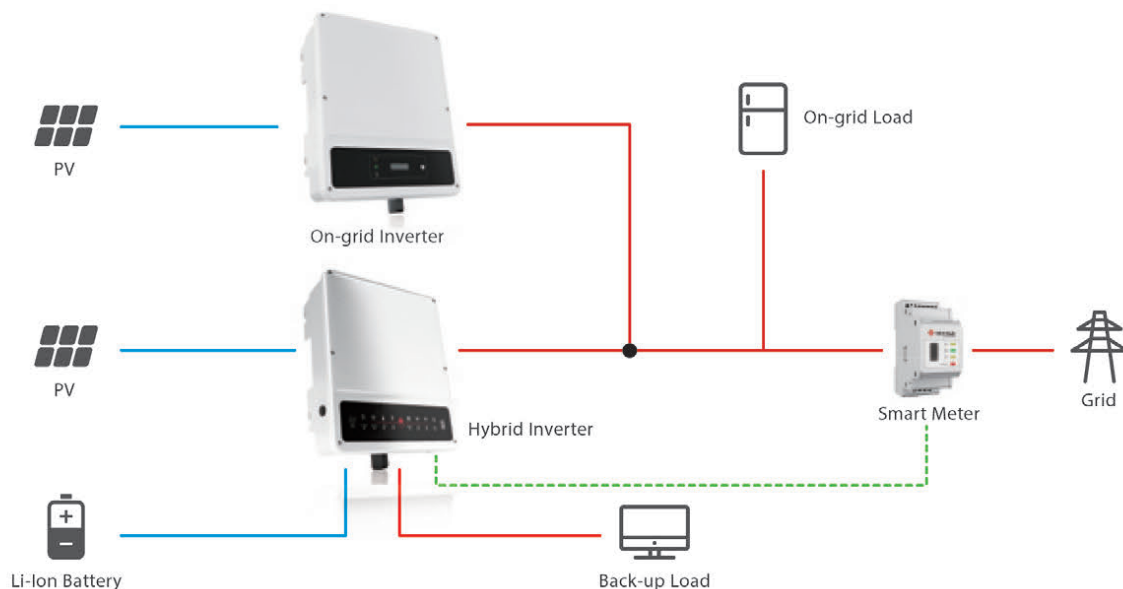
Luster Solar energy storage ES, EM, and EH series are applicable.

3.4 Solution to achieve solar capacity extension

The extension of solar capacity is a characteristic that makes solar energy storage systems very attractive because they help reduce the required investment, also allowing adaptation to higher power consumption patterns in both single and three phase systems.

This kind of solution is suitable for the ES, EM, EH and ET Series. It can also work with any brand of solar inverters.

System Wiring and Operation



This solution integrates both hybrid and retrofit functions into a single system. In both on-grid systems as well as hybrids, the solar energy is used to supply electricity to both back-up loads and to charge the battery before the power is injected into the grid. By adopting such a solution, the system provides a more reliable source of supply for the loads, while ensuring a sufficient supply of green energy to charge the battery.

EH Series

Single Phase Hybrid Inverter (HV Battery)



Technical Data		LS3600-EH	LS5000-EH	LS6000-EH
Battery Input Data	Battery Type	Li-Ion		
	Battery Voltage Range(V)	85~450		
	Start-up Voltage (V)	90		
	Max. Charging/Discharging Current (A)	25/25		
	Max. Charging/Discharging Power (W)	3600	5000	6000
	Battery Ready Optional Function	YES	YES	YES
PV String Input Data	Max. DC Input Power (W)	4800	6650	8000
	Max. DC Input Voltage (V)	580		
	MPPT Range (V)	100~550		
	Start-up Voltage (V)	90		
	Nominal DC Input Voltage (V)	380		
	Max. Input Current (A)	12.5/12.5		
	Max. Short Current (A)	15.2/15.2		
	No. of MPP Trackers	2		
	No. of Strings per MPP Tracker	1		
AC Output/Input Data (On-grid)	Nominal Apparent Power Output to Utility Grid (VA) ^{*2}	3600	5000	6000
	Max. Apparent Power Output to Utility Grid(VA) ^{*2*5}	3600/3960 ^{*1}	5000/5500 ^{*1}	6000/6600 ^{*1}
	Max. Apparent Power from Utility Grid (VA)	7200 (Charging 3.6kw,back-up output3.6kw)	10000 (Charging 5kw,back-up output 5kw)	12000 (Charging 6kw,back-up output 6kw)
	Nominal Output Voltage (V)	230		
	Nominal Output Frequency (Hz)	50/60		
	Max. AC Current Output to Utility Grid (A) ^{*2}	16/18 ^{*1}	21.7/24 ^{*1}	26.1/28.7 ^{*1}
	Max. AC Current From Utility Grid (A)	32	43.4	52.2
	Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
	Output THDi (@Nominal Output)	<3%		
Back-up Output Data (Back-up)	Max. Output Apparent Power (VA)	3600	5000	6000
	Peak Output Apparent Power (VA)	4320 ,60sec	6000 ,60sec	7200 ,60sec
	Max. Output Current (A)	15.7	21.7	26.1
	Nominal Output Voltage (V)	230 (±2%)		
	Automatic Switch Time (ms)	<10		
	Nominal Output Frequency (Hz)	50/60 (±0.2%)		
	Output THDv (@Linear Load)	<3%		
	Efficiency	PV Max. Efficiency	97.6%	
PV Europe Efficiency		97.0%		
PV Max. MPPT Efficiency		99.9%		
Battery Charged by PV Max. Efficiency		98.0%		
Battery Charge/Discharge from/to AC Max. Efficiency		96.6%		
Protection	Anti-Islanding Protection	Integrated		
	Battery Input Reverse Polarity Protection	Integrated		
	Insulation Resistor Detection	Integrated		
	Residual Current Monitoring Unit	Integrated		
	Output Over Current Protection	Integrated		
	Grid Output Short Protection	Integrated		
	Output Over Voltage Protection	Integrated		
	General Data	Operating Temperature Range (°C)	-35~60	
Relative Humidity		0~95%		
Operating Altitude (m)		4000		
Cooling		Natural Convection		
Noise (dB)		<35		
User Interface		LED & APP		
Communication with BMS ^{*3}		RS485; CAN		
Communication with Meter		RS485		
Communication with Portal		Wi-Fi/Ethernet(Optional)		
Weight (kg)		17		
Size (Width*Height*Depth mm)		354*433*147		
Mounting		Wall Bracket		
Protection Degree		IP65		
Standby Self-Consumption (W) ^{*4}	<10			
Topology	Battery Non-Isolation			

^{*1}: For CEI 0-21.

^{*2}: The grid feed in power for VDE-AR-N 4105 and NRS097-2-1 is limited 4600VA, for AS/NZS 4777.2 is limited 4950VA & 21.7A.

^{*3}: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.

^{*4}: No back-up output.

^{*5}: For Belgium Max. Output Apparent Power (VA): GW3600-EH is 3600; GW5000-EH is 5000; GW6000-EH is 6000.

*: Please contact Luster Solar for the latest certificates.

ET Series

Three Phase Hybrid Inverter (HV Battery)



Technical Data		LS5K-ET	LS6.5K-ET	LS8K-ET	LS10K-ET
Battery Input Data	Battery Type	Li-Ion			
	Battery Voltage Range (V)	180~600			
	Max. Charging Current (A)	25			
	Max. Discharging Current (A)	25			
	Charging Strategy for Li-Ion Battery	Self-adaption to BMS			
PV String Input Data	Max. DC Input Power (W)	6500	8450	9600	13000
	Max. DC Input Voltage (V)*1	1000			
	MPPT Range (V)*2	200~850			
	Start-up Voltage (V)	180			
	Min. Feed-in Voltage (V)	210			
	MPPT Range for Full Load (V)*3	240~850	310-850	380~850	460~850
	Nominal DC Input Voltage (V)*4	620			
	Max. Input Current (A)	12.5/12.5			
	Max. Short Current (A)	15.2/15.2			
	No. of MPP Trackers	2			
	No. of Strings per MPP Tracker	1/1			
AC Output Data (On-grid)	Nominal Apparent Power Output to Utility Grid (VA)	5000	6500	8000	10000
	Max. Apparent Power Output to Utility Grid (VA)*5*9	5500	7150	8800	11000
	Max. Apparent Power from Utility Grid (VA)	10000	13000	15000	15000
	Nominal Output Voltage (V)	400/380, 3L/N/PE			
	Nominal Output Frequency (Hz)	50/60			
	Max. AC Current Output to Utility Grid (A)	8.5	10.8	13.5	16.5
	Max. AC Current from Utility Grid (A)	15.2	19.7	22.7	22.7
	Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
	Output THDi (@Nominal Output)	<3%			
	AC Output Data (Back-up; Optional)	Max. Output Apparent Power (VA)	5000	6500	8000
Peak Output Apparent Power (VA)*6		10000, 60sec	13000, 60sec	16000, 60sec	16500, 60sec
Max. Output Current (A)		8.5	10.8	13.5	16.5
Nominal Output Voltage (V)		400/380			
Nominal Output Frequency (Hz)		50/60			
Output THDv (@Linear Load)		<3%			
Efficiency	Max. Efficiency	98.0%	98.0%	98.2%	98.2%
	Max. Battery to Load Efficiency	97.5%	97.5%	97.5%	97.5%
	European Efficiency	97.2%	97.2%	97.5%	97.5%
Protection	Anti-Islanding Protection	Integrated			
	PV String Input Reverse Polarity Protection	Integrated			
	Insulation Resistor Detection	Integrated			
	Residual Current Monitoring Unit	Integrated			
	Output Over Current Protection	Integrated			
	Output Short Protection	Integrated			
	Battery Input Reverse Polarity Protection	Integrated			
	Output Over Voltage Protection	Integrated			
General Data	Operating Temperature Range (°C)	-35~60			
	Relative Humidity	0~95%			
	Operating Altitude (m)	≤4000			
	Cooling	Natural Convection			
	Noise (dB)	<30			
	User Interface	LED & APP			
	Communication with BMS*7	RS485; CAN			
	Communication with Meter	RS485			
	Communication with EMS	RS485 (Insulated)			
	Communication with Portal	Wi-Fi			
	Weight (kg)	24			
	Size (Width*Height*Depth mm)	415*516*180			
	Mounting	Wall Bracket			
	Protection Degree	IP66			
Standby Self-Consumption (W)*8	<15				
Topology	Battery Non-Isolation				

*1: For 1000V system, Maximum operating voltage is 950V.

*2: For Australia safety, there will be a warning if PV voltage > 600V.

*3: For Australia safety, MPPT range is 200~550V.

*4: For Australia safety, MPPT voltage upper limit is 550V.

*5: For Australia safety, nominal DC input voltage is 450V.

*6: According to the local grid regulation.

*7: Can be reached only if PV and battery power is enough.

*8: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.

*9: No Back-up Output.

*10: For Belgium Max. Output Apparent Power (VA): GW5K-ET is 5000; GW6.5K-ET is 6500; GW8K-ET is 8000; GW10K-ET is 10000.

*11: Please contact Luster Solar for the latest certificates.

ES Series

Single Phase Hybrid Inverter (LV Battery)



Technical Data		LS3648D-ES	LS5048D-ES
Battery Input Data	Battery Type	Li-Ion	
	Nominal Battery Voltage (V)	48	
	Max. Charging Voltage (V)	≤60 (Configurable)	
	Max. Charging Current (A)* ¹	75	100
	Max. Discharging Current (A)* ¹	75	100
	Battery Capacity (Ah)* ²	50~2000	
	Charging Strategy for Li-Ion Battery	Self-adaption to BMS	
PV String Input Data	Max. DC Input Power (W)	4600	6500
	Max. DC Input Voltage (V)	580	
	MPPT Range (V)	125~550	
	Start-up Voltage (V)	125	
	Min. Feed-in Voltage (V)* ³	150	
	MPPT Range for Full Load (V)	170~500	215~500
	Nominal DC Input Voltage (V)	360	
	Max. Input Current (A)	11/11	
	Max. Short Current (A)	13.8/13.8	
	No. of MPP Trackers	2	
	No. of Strings per MPP Tracker	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	
	Nominal Output Frequency (Hz)	50/60	
	Max. AC Current Output to Utility Grid (A)	16	24.5* ⁶
	Max. AC Current from Utility Grid (A)	32	40
	Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	
AC Output Data (Back-up)	Output THDi (@Nominal Output)	<3%	
	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%)	
	Nominal Output Frequency (Hz)	50/60 (±0.2%)	
Efficiency	Output THDv (@Linear Load)	<3%	
	Max. Efficiency	97.6%	
	Max. Battery to Load Efficiency	94.0%	
Protection	European Efficiency	97.0%	
	Anti-Islanding Protection	Integrated	
	PV String Input Reverse Polarity Protection	Integrated	
	Insulation Resistor Detection	Integrated	
	Residual Current Monitoring Unit	Integrated	
	Output Over Current Protection	Integrated	
	Output Short Protection	Integrated	
General Data	Output Over Voltage Protection	Integrated	
	Operating Temperature Range (°C)	-25~60	
	Relative Humidity	0~95%	
	Operating Altitude (m)	≤4000	
	Cooling	Natural Convection	
	Noise (dB)	<25	
	User Interface	LED & APP	
	Communication with BMS* ⁷	RS485; CAN	
	Communication with Meter	RS485	
	Communication with Portal	Wi-Fi	
	Weight (kg)	28	30
	Size (Width*Height*Depth mm)	516*440*184	
	Mounting	Wall Bracket	
	Protection Degree	IP65	
Standby Self-Consumption (W)	<13		
Topology	Battery Isolation		

*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 contact Luster Solar for the latest certificates.

EM Series

Single Phase Hybrid Inverter (LV Battery)



Technical Data		LS3048-EM	LS3648-EM	LS5048-EM
Battery Input Data	Battery Type	Li-Ion		
	Nominal Battery Voltage (V)	48		
	Max. Charging Voltage (V)	≤60 (Configurable)		
	Max. Charging Current (A)*1	50		
	Max. Discharging Current (A)*1	50		
	Battery Capacity (Ah)*2	50~2000		
	Charging Strategy for Li-Ion Battery	Self-adaption to BMS		
PV String Input Data	Max. DC Input Power (W)	3900	4600	6500
	Max. DC Input Voltage (V)*3	550		
	MPPT Range (V)	100~500		
	Start-up Voltage (V)	125		
	Min. Feed-in Voltage (V)*4	150		
	MPPT Range for Full Load (V)	280~500	170~500	170~500
	Nominal DC Input Voltage (V)	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			
AC Output Data (On-grid)	Nominal Power Output to Utility Grid (W)*10	3000	3680	5000*5
	Max. Apparent Power Output to Utility Grid (VA)*6*11	3000	3680	5000
	Max. Apparent Power from Utility Grid (VA)	5300		
	Nominal Output Voltage (V)	230		
	Nominal Output Frequency (Hz)	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		
	Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)		
AC Output Data (Back-up)	Output THDi (@Nominal Output)	<3%		
	Max. Output Apparent Power (VA)	2300		
	Peak Output Apparent Power (VA)*8	3500, 10sec		
	Automatic Switch Time (ms)	10		
	Nominal Output Voltage (V)	230 (±2%)		
	Nominal Output Frequency (Hz)	50/60 (±0.2%)		
	Max. Output Current (A)	10		
Efficiency	Output THDv (@Linear Load)	<3%		
	Max. Efficiency	97.6%		
	Max. Battery to Load Efficiency	94.5%		
Protection	European Efficiency	97.0%		
	Anti-Islanding Protection	Integrated		
	PV String Input Reverse Polarity Protection	Integrated		
	Insulation Resistor Detection	Integrated		
	Residual Current Monitoring Unit	Integrated		
	Output Over Current Protection	Integrated		
	Output Short Protection	Integrated		
General Data	Output Over Voltage Protection	Integrated		
	Operating Temperature Range (°C)	-25~60		
	Relative Humidity	0~95%		
	Operating Altitude (m)	4000		
	Cooling	Natural Convection		
	Noise (dB)	<25		
	User Interface	LED & APP		
	Communication with BMS*9	RS485; CAN		
	Communication with Meter	RS485		
	Communication with Portal	Wi-Fi		
	Weight (kg)	16	17	17
	Size (Width*Height*Depth mm)	347*432*175		
	Mounting	Wall Bracket		
	Protection Degree	IP65		
Standby Self-Consumption (W)	<13			
Topology	Battery Isolation			

*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: 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 3300W, GW3648-EM is 4050W, GW5048-EM is 5100W; for VDE-AR-N4105 GW5048-EM is 4600.

*7: 21.7A for AS4777.2.

*8: Can be reached only if PV and battery power are enough.

*9: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.

*10: For Belgium Nominal Power Output to Utility Grid (W): GW3648-EM is 3600.

*11: For Belgium Max. Apparent Power Output to Utility Grid (VA): GW3648-EM is 3600.
*: Please contact Luster Solar for the latest certificates.

BH Series (AC-Coupled)

Single Phase AC Retrofit Inverter (HV Battery)



Technical Data		LS1000-BH	LS2000-BH	LS3000-BH	LS3K-BH	LS3600-BH	LS5000-BH	LS6000-BH
Battery Input Data	Battery Type	Li-Ion			Li-Ion			
	Battery Voltage Range (V)	80~400			85~400	85~450		
	Start-up Voltage (V)	80			90			
	Max. Charging/Discharging Current (A)	13	15	15	32/32	25/25		
	Charging /Discharging Strategy for Li-Ion Battery	Self-adaption to BMS			NA			
AC Output Data /Input Data (On-grid)	Nominal Power Output to Utility Grid (W)	1000	2000	3000	3000	3600	5000	6000
	Max. Apparent Power Output to Utility Grid (VA)	1000	2000	3000	3000/3300*1	3600/3960*1	5000/5500*1	6000/6600*1
	Max. Apparent Power from Utility Grid (VA)	NA	NA	NA	6000(Charging 3kw, back-up output 3kw)	7200(Charging 3.6kw, back-up output 3.6kw)	10000(Charging 5kw, back-up output 5kw)	12000(Charging 6kw, back-up output 6kw)
	Nominal Output Voltage (V)	230			230			
	Nominal Output Frequency (Hz)	50/60			50/60			
	Max. AC Current Output to Utility Grid (A)*2	5	10	13.5	13.1/14.3*1	16/18*1	21.7/24*1	26.1/28.7*1
	Max. AC Current from Utility Grid (A)	NA			26.2	32	43.4	52.2
	Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			~1 (Adjustable from 0.8 leading to 0.8 lagging)			
	Output THDi (@Nominal Output)	<3%			<3%			
	Output Data (Back-up)	Max. Output Apparent Power (VA)				3000	3600	5000
Peak Output Apparent Power (VA)					3600, 60SEC	4320, 60SEC	6000, 60SEC	7200, 60SEC
Max. Output Current (A)					13.1	15.7	21.7	26.1
Automatic Switch Time (ms)		No Back-up			<10			
Nominal Output Voltage (V)					230 (±2%)			
Nominal Output Frequency (Hz)					50/60 (±0.2%)			
Output THDv (@Linear Load)					<3%			
Efficiency	Max. Efficiency	96.0%	96.5%	96.5%	96.6%			
Protection	Anti-Islanding Protection	Integrated			Integrated			
	Battery 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			-35~60			
	Relative Humidity	0~95%			0~95%			
	Operating Altitude (m)	≤4000			4000			
	Cooling	Natural Convection			Natural Convection			
	Noise (dB)	<25			<35			
	User Interface	LED & APP			LED & APP			
	Communication with BMS	CAN			CAN			
	Communication with Meter	RS485			RS485			
	Communication with Portal	Wi-Fi/Ethernet			Wi-Fi/Ethernet (Optional)			
	Weight (kg)	8.5			15.5			
	Size (Width*Height*Depth mm)	344*274.5*128			354*433*147			
	Mounting	Wall Bracket			Wall Bracket			
	Protection Degree	IP65			IP65			
	Standby Self-Consumption (W)*3	<15			<10			
Topology	Battery Non-Isolation			Battery Non-Isolation				

*1: For CEI 0-21.

*2: The grid feed in power for VDE-AR-N 4105 and NRS097-2-1 is limited 4600VA, for AS/NZS 4777.2 is limited 4950 VA & 21.7A.

*3: No Back-up Output.

*: Please contact Luster Solar for the latest certificates.

BT Series (AC-Coupled)

Three Phase AC Retrofit Inverter (HV Battery)



Technical Data		LS5K-BT	LS6K-BT	LS8K-BT	LS10K-BT
Battery Input Data	Battery Type	Li-Ion			
	Battery Voltage Range (V)	180~600			
	Max. Charging Current (A)	25			
	Max. Discharging Current (A)	25			
	Charging Strategy for Li-Ion Battery	Self-adaption to BMS			
AC Output Data (On-grid)	Nominal Apparent Power Output to Utility Grid (VA)	5000	6000	8000	10000
	Max. Apparent Power Output to Utility Grid (VA)*1	5500	6600	8800	11000
	Max. Apparent Power from Utility Grid (VA)	10000	12000	15000	15000
	Nominal Output Voltage (V)	400/380, 3L/N/PE			
	Nominal Output Frequency (Hz)	50/60			
	Max. AC Current Output to Utility Grid (A)	8.5	10.5	13.5	16.5
	Max. AC Current from Utility Grid (A)	15.2	18.2	22.7	22.7
	Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
	Output THDi (@Nominal Output)	<3%			
	AC Output Data (Back-up)	Max. Output Apparent Power (VA)	5000	6000	8000
Peak Output Apparent Power (VA)*2		10000, 60sec	12000, 60sec	15000, 60sec	15000, 60sec
Max. Output Current (A)		8.5	10.5	13.5	16.5
Nominal Output Voltage (V)		400/380			
Nominal Output Frequency (Hz)		50/60			
Output THDv (@Linear Load)		<3%			
Efficiency	Max. Battery to Load Efficiency	97.6%			
	Max. Charge Efficiency	97.6%			
Protection	Anti-Islanding Protection	Integrated			
	Insulation Resistor Detection	Integrated			
	Residual Current Monitoring Unit	Integrated			
	Output Over Current Protection	Integrated			
	Output Short Protection	Integrated			
	Battery Input Reverse Polarity Protection	Integrated			
	Output Over Voltage Protection	Integrated			
General Data	Operating Temperature Range (°C)	-35~60			
	Relative Humidity	0~95%			
	Operating Altitude (m)	≤4000			
	Cooling	Nature Convection			
	Noise (dB)	<30			
	User Interface	LED & APP			
	Communication with BMS*3	RS485; CAN			
	Communication with Meter	RS485			
	Communication with EMS	RS485 (Insulated)			
	Communication with Portal	Wi-Fi; LAN			
	Weight (kg)	21			
	Size (Width*Height*Depth mm)	415*516*180			
	Mounting	Wall Bracket			
	Protection Degree	IP66			
	Standby Self-Consumption (W)*4	<15			
Topology	Battery Non-Isolation				

*1: According to the local grid regulation.

*2: Can be reached only if battery capacity is enough, otherwise will shut down.

*3: CAN communication is configured by default. If 485 communication is used, please replace the corresponding communication line.

*4: No Back-up Output.

*: Please contact Luster Solar for the latest certificates.