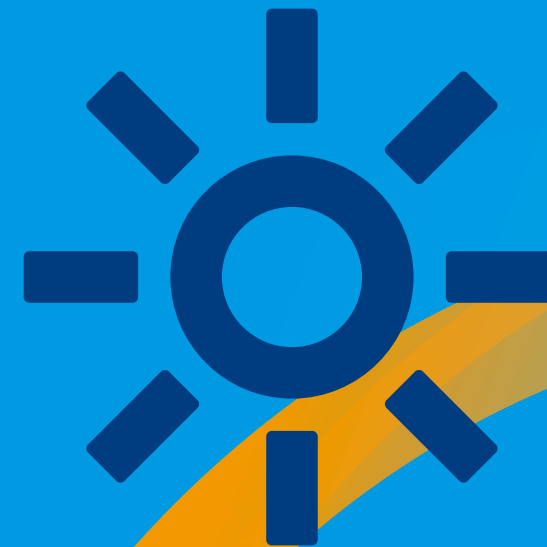




## World Leading Frequency Conversion Technology

Committed to bringing people a green,  
low-carbon and comfortable high-quality life



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### ENSTAR DEVELOPMENT (HONG KONG) LIMITED

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[www.EnStar-HVAC.com](http://www.EnStar-HVAC.com)





**Vision**

To provide world-leading renewable energy and comfort system solutions for green buildings



**Mission**

To create sustainable, efficient and comfortable building environment



**Philosophy**

Customer-oriented  
Quality-driven  
Technology-focused



# Management System Certification

- IATF16949: 2016
- GB/T19001: 2016  
Idt ISO9001: 2015
- GB/T24001: 2016  
Idt ISO14001: 2015
- GB/T29490: 2013 (IPMS)

# Product Series



# Micro Inverter 1-in-1



Flexible Application



High Efficiency



Multiple Protection



- 1-in-1 design, flexible application
- Wide operating voltage range, flexibly adapted to different PV modules
- Multiple protection and high reliability, including over voltage, over current, short circuit current and anti-islanding etc.
- IP67 protection level, reliable and durable, 10-year warranty
- Independent MPPT control for each input, higher power generation capacity

- High peak efficiency, up to 96.5%
- Real-time data monitoring, suitable for operation status and maintenance
- Easy to install, plug and play set-up
- With Reactive Power Compensation function, flexible to switch on/off and to set multiple compensation modes

Model	LN-MS300C1-S1	LN-MS400C1-S1	LN-MS500C1-S1
<b>Input Data (DC)</b>			
Maximum Input Voltage (V)	60		
Commonly Used Module Power (W)	210-400	210-500	210-600
MPPT Voltage Range (V)	25-55		
Number of MPPTs	1		
Number of Inputs per MPPT	1		
Maximum Input Current (A)	13		
Maximum Input Short Circuit Current (A)	19.5		
<b>Output Data (AC)</b>			
Rated Output Power (VA)	300	400	500
Rated Output Current (A)	1.3	1.8	2.2
Nominal Output Voltage Range (V)	230 (0.85Un~1.1Un)		
Nominal Frequency/Range (Hz)	50 (47-52) or 60 (57-62)		
Power Factor	>0.99 (default)		
Power Factor (Adjustable)	0.95 leading...0.95 lagging		
Total Harmonic Distortion	<3%		
Maximum Output Overcurrent Protection (A)	1.5	2.5	2.5
<b>Efficiency</b>			
CEC Peak Efficiency	96.5%		
CEC Weighted Efficiency	95%		
Nominal MPPT Efficiency	99%		
Night Power Consumption (mW)	<50		
<b>Mechanical Data</b>			
Ambient Temperature (°C)	-40~+65		
Dimensions (W × H × D mm)	173 × 187 × 41.5		
Weight (kg)	2.6		
Ingress Protection	IP67		
Protective Class	Class I		
Cooling	Natural convection-No fans		
<b>Features</b>			
Communication	WiFi		
Compatibility	Compatible with 60, 72 cell PV modules		
Compliance	EN50549-1:2019, VDE 0124:2020, VDE4105:2018, EN 62109-1:2010, EN62109-2:2011, IEC61000-6-3:2021, IEC61000-6-1:2019		



# Micro Inverter 2-in-1

-   
**Faster  
Installation**
-   
**High  
Efficiency**
-   
**Multiple  
Protection**



- 2-in-1 design, faster installation
- Wide operating voltage range, flexibly adapted to different PV modules
- High peak efficiency, up to 96.5%
- Multiple protection and high reliability, including over voltage, over current, short circuit current and anti-islanding etc.
- IP67 protection level, reliable and durable, 10-year warranty
- Independent MPPT control for each input, higher power generation capacity
- Real-time data monitoring, suitable for operation status and maintenance
- Easy to install, plug and play set-up
- With Reactive Power Compensation function, flexible to switch on/off and to set multiple compensation modes

Model	LN-MS600C2-S1	LN-MS800C2-S1	LN-MS1000C2-S1
<b>Input Data (DC)</b>			
Maximum Input Voltage (V)	60		
Commonly Used Module Power (W)	210-400	210-500	210-600
MPPT Voltage Range (V)	25-55		
Number of MPPTs	2		
Number of Inputs per MPPT	1		
Maximum Input Current (A)	13*2		
Maximum Input Short Circuit Current (A)	19.5*2		
<b>Output Data (AC)</b>			
Rated Output Power (VA)	600	800	1000
Rated Output Current (A)	2.6	3.5	4.35
Nominal Output Voltage Range (V)	230 (0.85Un~1.1Un)		
Nominal Frequency/Range (Hz)	50 (47-52) or 60 (57-62)		
Power Factor	>0.99 (default)		
Power Factor (Adjustable)	0.95 leading...0.95 lagging		
Total Harmonic Distortion	<3%		
Maximum Output Overcurrent Protection (A)	2.9	3.8	4.8
<b>Efficiency</b>			
CEC Peak Efficiency	96.5%		
CEC Weighted Efficiency	95%		
Nominal MPPT Efficiency	99%		
Nighttime Power Consumption (mW)	<50		
<b>Mechanical Data</b>			
Ambient Temperature (°C)	-40~+65		
Dimensions (W × H × D mm)	223.5 × 191 × 41.5		
Weight (kg)	3.7		
Ingress Protection	IP67		
Protective Class	Class I		
Cooling	Natural convection-No fans		
<b>Features</b>			
Communication	WiFi		
Compatibility	Compatible with 60, 72 cell PV modules		
Compliance	EN50549-1:2019, VDE 0124:2020, VDE4105:2018, EN 62109-1:2010, EN62109-2:2011, IEC61000-6-3:2021, IEC61000-6-1:2019		



# Micro Inverter 4-in-1



Lower Cost



High Efficiency



Multiple Protection



- 4-in-1 design, lower cost
- Wide operating voltage range, flexibly adapted to different PV modules
- High peak efficiency, up to 96.5%
- Multiple protection and high reliability, including over voltage, over current, short circuit current and anti-islanding etc.
- IP67 protection level, reliable and durable, 10-year warranty
- Independent MPPT control for each input, higher power generation capacity
- Real-time data monitoring, suitable for operation status and maintenance
- Easy to install, plug and play set-up
- With Reactive Power Compensation function, flexible to switch on/off and to set multiple compensation modes

Model	LN-MS1200C4-S1	LN-MS1600C4-S1	LN-MS2000C4-S1
<b>Input Data (DC)</b>			
Maximum Input Voltage (V)	60		
Commonly Used Module Power (W)	210-400	210-500	210-600
MPPT Voltage Range (V)	25-55		
Number of MPPTs	4		
Number of Inputs per MPPT	1		
Maximum Input Current (A)	13*4		
Maximum Input Short Circuit Current (A)	19.5*4		
<b>Output Data (AC)</b>			
Rated Output Power (VA)	1200	1600	2000
Rated Output Current (A)	5.2	7	8.7
Nominal Output Voltage Range (V)	230 (0.85Un~1.1Un)		
Nominal Frequency/Range (Hz)	50 (47-52) or 60 (57-62)		
Power Factor	>0.99 (default)		
Power Factor (Adjustable)	0.95 leading...0.95 lagging		
Total Harmonic Distortion	<3%		
Maximum Output Overcurrent Protection (A)	5.8	7.7	9.6
<b>Efficiency</b>			
CEC Peak Efficiency	96.5%		
CEC Weighted Efficiency	95%		
Nominal MPPT Efficiency	99%		
Nighttime Power Consumption (mW)	<50		
<b>Mechanical Data</b>			
Ambient Temperature (°C)	-40~+65		
Dimensions (W × H × D mm)	344 × 234 × 41.5		
Weight (kg)	6.4		
Ingress Protection	IP67		
Protective Class	Class I		
Cooling	Natural convection-No fans		
<b>Features</b>			
Communication	WiFi		
Compatibility	Compatible with 60, 72 cell PV modules		
Compliance	EN50549-1:2019, VDE 0124:2020, VDE4105:2018, EN 62109-1:2010, EN62109-2:2011, IEC61000-6-3:2021, IEC61000-6-1:2019		



# Micro Solar Energy Storage Battery



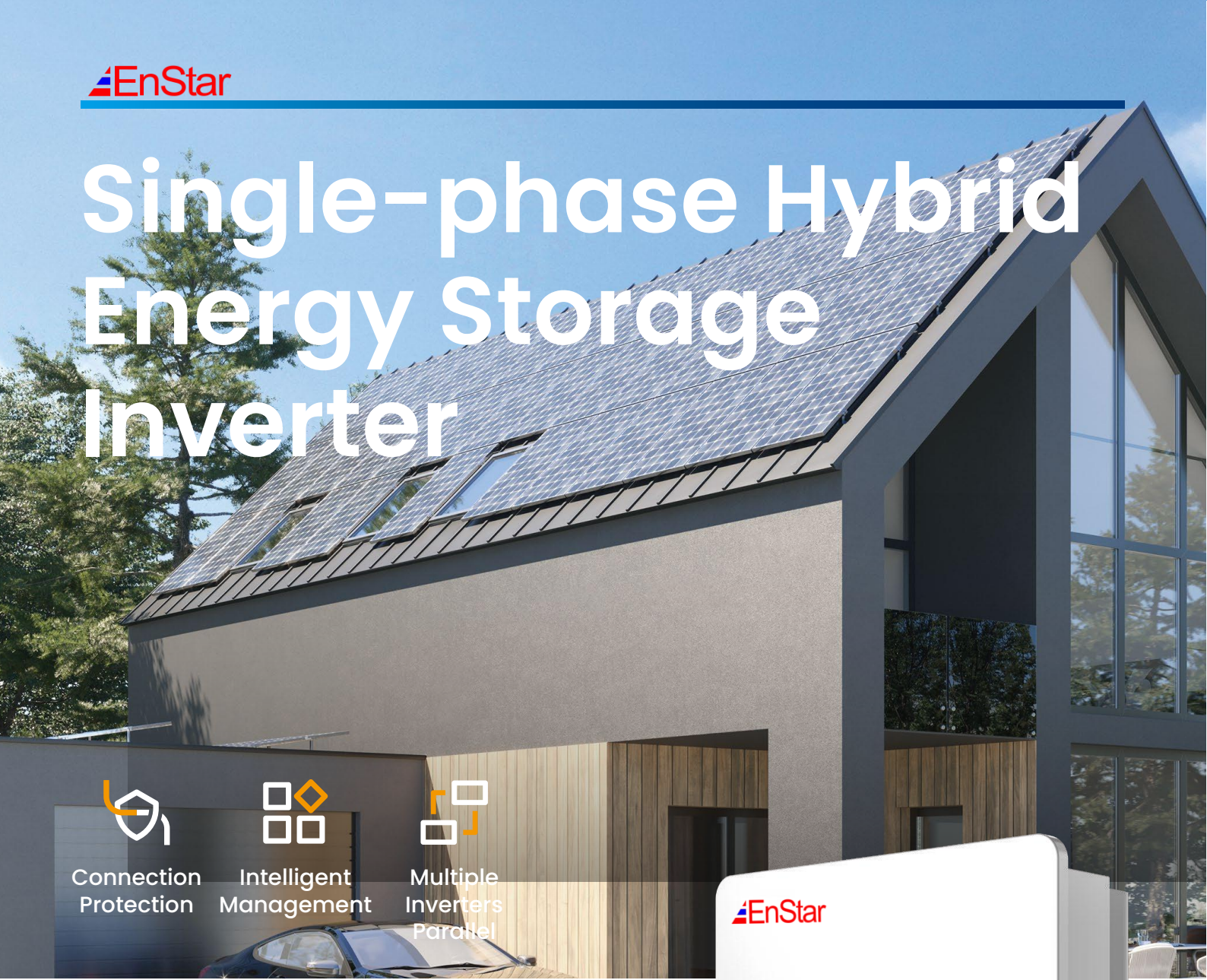
- Wall-mounted or floor-mounted optional
- Space-saving ultra-thin design
- Modular design, IP65 waterproof grade
- Photovoltaic and energy storage integration, high energy utilization
- Multiple protection, high safety and reliability
- Quick installation, intelligent operation
- Off-grid function, for emergency or outdoor activities



Model	LB-S2560L-B1
<b>DC Input Parameters</b>	
PV Input Voltage Range (V)	20-60
MPPT Voltage Range (V)	25-55
MPPT Number	2
Max. Input Current Of Single MPPT (A)	13
Max. Input Power Of Single MPPT (W)	800
<b>DC Output Parameters</b>	
Voltage Output Range (V)	48-56.8
Max. Output Power (W)	800
Max. Output Current (A)	20
<b>Off-grid Output Parameters (Reserved)</b>	
AC Voltage (V)	220
Output Frequency (Hz)	50
Output Power (W)	800
Max. Output Current (A)	5
<b>Battery Parameters</b>	
Battery Type	LiFePO <sub>4</sub>
Nominal Capacity (kWh)	2.56
Battery Energy (Ah)	50
Nominal Voltage (V)	51.2
Max. Charge Current (A)	25
Cycle Life	>6000 cycles (25°C)
<b>General Parameters</b>	
Dimensions W*H*D (mm)	485 × 330 × 180
Weight (kg)	30 (66.13 lbs)
Operating Temperature (°C)	-10~50
Ingress Protection	IP65
Cooling	Natural Convection
Altitude (m)	≤4000
Certification	UN38.8, IEC62619, IEC62109-1



# Single-phase Hybrid Energy Storage Inverter



-   
**Connection Protection**
-   
**Intelligent Management**
-   
**Multiple Inverters Parallel**

- Multiple inverters parallel
- Compatible with lead-acid, lithium-ion batteries and other batteries
- Economical and efficient, maximum efficiency  $\geq 97.5\%$
- Safe and reliable, compatible with anti-reverse function and battery reverse connection protection
- Intelligent management



Model	LN-M3KL-S1	LN-M6KL-S1	LN-M8KL-S1
<b>Input Data (PV)</b>			
Max. PV Input Power (kW)	4.5	9	12
Start-up Voltage (V)	100		
Max. PV Voltage (V)	500		
MPPT Voltage Range/Nominal	125-500/360		
Max. Input Current per MPPT	16/16	16/16	16/32
MPPT Number/Max. parallel Strings	2/1	2/1	3/2+1
Number per MPPT			
<b>Output Data (AC)</b>			
Rated Output Power (kW)	3	6	8
Max. Output Current (A)	14.3	28.7	38.3
Grid Voltage Range/Nominal (V)	230/176-270		
Rated Frequency (Hz)	50/60		
Power Factor	1 (0.99 leading...0.99 lagging)		
Total Harmonic Distortion	<3%		
Type of Grid Connection	L+N+PE		
<b>Battery Data (DC)</b>			
Battery Voltage Range (V)	40-58		
Max. Charging Voltage (V)	58		
Max. Charge/Discharge Current (A)	60	120	160
Communication Interface	CAN		
<b>EPS Output</b>			
Rated Power (kW)	3	6	8
Rated Output Voltage (V)	230		
Rated Output Current (A)	13	26	35
Rated Frequency (Hz)	50/60		
Automatic Switching Time (ms)	<10		
Total Harmonic Voltage Distortion	<2%		
Overload Capacity	110%, 60S/120%, 30S/150%, 10S		
<b>General Data</b>			
Battery Charging/Discharging Efficiency	96.5%		
Max. DC Efficiency	98.2%		
Euro Efficiency	97.5%		
MPPT Efficiency	99.9%		
Ingress Protection	IP65		
Noise Emission (dB)	<35		
Operating Temperature Range (°C)	-25-60		
Cooling	Natural Convection		
Relative Humidity	0-95% (No Condensation)		
Altitude (m)	≤2000		
Dimensions W*H*D (mm)	451 × 474 × 212	451 × 474 × 212	467 × 484 × 200
Weight (kg)	18	18	20
Isolation Transformer	No		
Self-Consumption (W)	<3		
<b>Display And Communication</b>			
Display	LCD touch screen		
Interface: RS485/Wifi/4G/CAN/DRM	Yes/Selectable/Selectable/Yes/Yes		

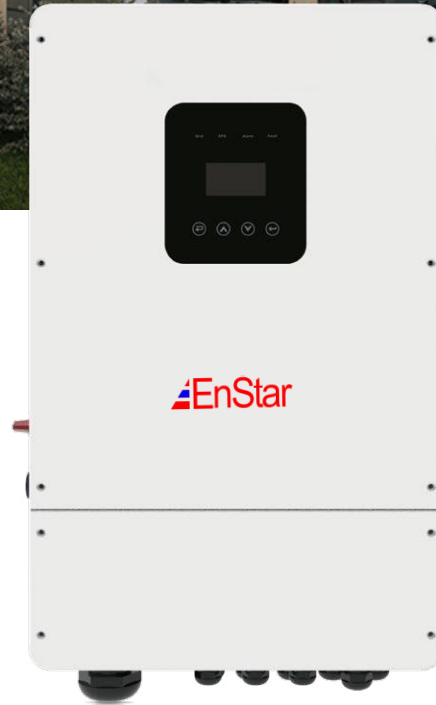


# Split-phase Hybrid Energy Storage Inverter



High Efficiency    Multiple Inverters Parallel    Diesel Generator Compatibility

- Safe and reliable
- Multi-inverter parallel connection
- Multi inverters parallel mode sharing same battery pack
- Parallel SOC equalization control and parallel current sharing control
- Split-phase topology without transformers, higher system efficiency
- Connected to diesel generator and the grid at the same time



Model	LN-M5KL-SP1	LN-M6KL-SP1	LN-M8KL-SP1
<b>Input Data (PV)</b>			
Max. Power (kW)	7.5	9	12
Max. DC Voltage (V)	500		
MPPT Voltage Range (V)	120-500		
Max. Input Current of Single MPPT (A)	12		
MPPT Number/Max. parallel Strings Number per MPPT	4/1		
<b>Output Data (AC)</b>			
Rated Output Power (kVA)	5	6	8
Max. Output Current (A)	24	28.8	38.3
Ac Output Voltage (V)	120/240 (split phase), 208 (2/3 phase), 230 (single phase)		
Frequency (Hz)	50/60		
Power Factor	0.8 leading...0.8 lagging		
Total Harmonic Distortion	<3%		
AC Output Topology	split phase, 2/3 phase, single phase		
<b>Battery Data (DC)</b>			
Battery Voltage Range (V)	40-58		
Max. Charging Voltage (V)	58		
Max. Charge/Discharge Current (A)	120/120	135/135	190/190
Battery Type	Lithium/Lead-acid Battery		
Communication Interface	CAN/RS485		
<b>EPS Output</b>			
Rated Power (kVA)	5	6	8
Rated Output Voltage (V)	120/240 (split phase), 208 (2/3 phase), 230 (single phase)		
Rated Output Current (A)	24	28.8	38.3
Rated Frequency (Hz)	50/60		
Automatic Switching Time (ms)	<20		
Total Harmonic Voltage Distortion	<2%		
Overload Capacity	125%, 60S/150%, 1S		
<b>General Data</b>			
Max. Efficiency	≥98.2%		
North American Efficiency	≥97.2%		
Ingress Protection	IP65/NEMA 3R		
Noise Emission (dB)	<25	<29	<29
Operation Temperature (°C)	-25-60 (-13°F-140°F)		
Cooling	Natural Convection		
Relative Humidity	0-95% (No Condensation)		
Altitude (m)	≤2000 (≤6561.67 ft)		
Dimensions W*H*D (mm)	430 × 710 × 220 (16.93 × 27.95 × 8.66 in)		
Weight (kg)	41 (90 lbs)		
Isolation Transformer	No		
Self-Consumption (W)	<3		
<b>Display And Communication</b>			
Display	LCD touch screen		
Interface: RS485/Wifi/4G/CAN/DRM	Yes		
Safety Standard	UL1741SA all options, UL1699B, CSA 22.2		
EMC	FCC Part 15, Class B		
On-Grid	IEEE 1547, IEEE 2030.5, Hawaii Rule 14H, Rule 21 Phase I, II, III, NRS		



# Three-phase Hybrid Energy Storage Inverter



Less Noise



Intelligent Management



Diesel Generator Compatibility



- Safe and reliable, with island protection, PV reverse polarity protection, battery reverse polarity protection, insulation monitoring, AC over current protection, short circuit protection
- No external cooling fans, less noise
- Diesel generator connection compatible
- Support full power discharge, automatic management of battery charge and discharge
- Multiple operating modes, more economical
- Can be used as a UPS for the important loads in case of power off
- Intelligent management

Model	LN-M8KH-T1	LN-M10KH-T1	LN-M12KH-T1
<b>Input Data (PV)</b>			
Max. PV Input Power (kW)	12	15	18
Max. PV Voltage (V)		1000	
MPPT Voltage Range (V)		180-850	
Full Power MPPT Voltage Range (V)	330-850	430-850	510-850
Start-up Voltage (V)		125	
Max. Input Current per MPPT (A)		13/13	
Max. Short-circuit Current (A)		16/16	
Number of MPP Trackers		2	
MPPT Number/Max. parallel Strings Number per MPPT		2/1	
Rated Input Voltage (V)		600	
<b>AC Output Data (On-Grid)</b>			
Nominal Output Power (kVA)	8	10	12
Max. Apparent Power (kVA)	8.8	11	13.2
Max. Apparent Power (kVA)	17.6	22	26.4
Max. Apparent Current (A)	25	31.8	38.1
Nominal Output Current (A)	11.5	14.4	17.3
Max. Output Current (A)	12.7	15.9	19.1
Nominal Grid Voltage (V)		380/400, 3W+N+PE	
Nominal Grid Frequency (Hz)		50/60	
Total Harmonic Distortion		<2%	
<b>Battery Data (DC)</b>			
Max. Charging/Discharging Power (kW)	8.8	11	13.2
Battery Input Voltage Range (V)		125-600	
Battery Working Voltage Range (V)		150-550	
Max. Charging/Discharging Current (A)		50	
Rated Charging/Discharging Current (A)		40	
Battery Type		Lithium/Lead-acid Battery	
<b>AC Output Data (Back Up)</b>			
Nominal Output Power (kVA)	8	10	12
Max. Apparent Power (kVA)	8.8	11	13.2
Nominal Output Current (A)	11.5	14.4	17.3
Max. Output Current (A)	12.7	15.9	19.1
Nominal Output Voltage (V)		400, 3W+N+PE	
Nominal Output Frequency (Hz)		50/60	
Total Harmonic Voltage Distortion		<2%	
Max. Efficiency	97.9%	98.2%	98.2%
Euro Efficiency	97.2%	97.5%	97.5%
MPPT Efficiency		99.9%	
Max. Battery Charge/Discharge Efficiency	97.5%	97.5%	97.6%
<b>General Data</b>			
Ingress Protection		IP65	
Operating Temperature Range (°C)		-35-60	
Relative Humidity		0-100%	
Altitude (m)		≤4000 (Derating above 2000 m)	
Cooling		Natural Convection	
Noise Emission (dB)		≤25	
Installation		Wall Mounted	
EMC		IEC/EN 61000-6-1:2019, IEC/EN 61000-6-2:2019, IEC/EN 61000-6-3:2021, IEN/EN 61000-6-4:2019, IEC/EN 61000-3-2:2019/A1:2021, EN 61000-3-3:2013/A2:2021, IEC/EN 61000-3-11:2019, EN 61000-3-12:2011, Europe:EN 50549-1:2019/AC:2019, Poland:EN50549-1:2019/Rfg:2016/NC Rfg:2018/PTPIREE:2021, Germany:VDE-AR-N 4105:2018/DIN VDE V 0124-100(VDE V 0124-100):2020, South Africa:NRS 097-2-1:2017 Edition 2.1, UK:G99/1-6:2020, Spain:UNE217001:2020/UNE217002:2020/NTS V2.1:2021-07, IEC61727:2004/IEC62116:2014/IEC61683:1999, Hungary:EN50549-1:2019/RFG:2016/Hungary	
Grid Regulation		IEC/EN62109-1:2010, IEC/EN62109-2:2011	
Safety Regulation		IEC/EN62109-1:2010, IEC/EN62109-2:2011	
<b>Communication Interface</b>			
HMI		LCD; APP	
BMS		RS485, CAN	
EMS		RS485	
Meter		RS485	
Supported Communication Interface		WIFI/GPRS/4G	
<b>Mechanical Parameters</b>			
Dimensions W*H*D (mm)		530 × 560 × 220	
Weight (kg)	30	31	32



# Low-voltage Energy Storage Battery



Ultra-thin Design



Support Cloud



Multiple Protection

- Multiple protection design, safe and guaranteed
- Long design life, ultra-low degradation
- Modular design, up to 8 in parallel
- Intelligent management, remote upgrade by one click
- Leading ultra-thin body design
- Easy installation and maintenance

Model	LB-M5120L-B1
Battery Type	LiFePO <sub>4</sub> IP16S
Total Energy (kWh)	5.32
Rated Energy (kWh)	5.05
Nominal Voltage (V)	51.2
Working Voltage (V)	43.2-57.6
Charging Voltage (V)	57.6
Max. Charge Current (A)	50
Max. Discharge Current (A)	100
Communication	RS485, CAN, WIFI
Storage Temperature (°C)	0-45 (Recommended)
Storage Humidity	≤85%
Working Temperature (°C)	Charging: -10-50 Discharging: -20-50
Working Humidity	≤95% (No Condensation)
Working Altitude (m)	≤2000
Ingress Protection	IP65
Protective Class	I
Weight (kg)	45
Dimensions W*H*D (mm)	420 × 650 × 140
Design Life	15 Years (25°C)
Cycle Life	>6000 cycles (25°C)
Scalability	Recommended ≤3, (Max. 8 in parallel)
Certification	CE, IEC62619, IEC/EN 61000-6-1/3, UN38.3, IEC62368





# High-voltage Energy Storage Battery



Support  
Cloud



Long  
Cycle Life



Flexible  
Expansion

- Intelligent protection strategy, safe running
- Professional cells, long cycle life
- Flexible expansion, multiple choices of power
- Cloud OTA, remote upgrade, operation and maintenance
- Modular design, stacking installation



Model	LB-M10.2H-S1	LB-M15.3H-S1	LB-M20.4H-S1	LB-M25.6H-S1	LB-M30.7H-S1	LB-M35.8H-S1	LB-M40.9H-S1
<b>System Parameters</b>							
Nominal Capacity (kWh)	10.24	15.36	20.48	25.6	30.72	35.84	40.96
Usable Capacity (kWh)	9.72	14.58	19.44	24.3	29.16	34.02	38.88
Nominal Voltage (V)	204.8	307.2	409.6	512	614.4	716.8	819.2
Working Voltage (V)	182.4~230.4	273.6~345.6	364.8~460.8	456~576	547.2~691.2	638.4~806.4	729.6~921.6
Charging Voltage (V)	224	336	448	560	672	784	896
Max. Charge Current (A)	25						
Max. Discharge Current (A)	40						
Weight (kg)	117	165	213	261	309	357	405
Dimension W*D*H (mm)	636 × 330 × 628	636 × 330 × 816	636 × 330 × 1004	636 × 330 × 1192	636 × 330 × 1380	636 × 330 × 1568	636 × 330 × 1756
Design Life	15 Years (25°C)						

Model	LB-M5120H-B1
<b>Battery Parameters</b>	
Battery Type	LiFePO <sub>4</sub> IP32S
Nominal Capacity (kWh)	5.12
Usable Capacity (kWh)	4.86 (95% DOD)
Nominal Voltage (V)	102.4
Working Voltage (V)	91.2~115.2
End-of-charge Voltage (V)	112
Max. Charge Current (A)	25
Max. Discharge Current (A)	40
Communication	RS485, CAN, WIFI
Storage Temperature (°C)	-20~50
Storage Humidity	≤85%
Working Temperature (°C)	Charging: -10~50 Discharging: -20~50
Working Humidity	≤95% No Condensation
Working Altitude (m)	≤2000
Ingress Protection	IP65
Protective Class	I
Weight (kg)	45
Dimensions W*D*H (mm)	636 × 330 × 188
Design Life	15 Years (25°C)
Cycle Life	>6000 cycles (25°C)
Max. Scalability	8S
Certification	CE, IEC62619, IEC63056, IEC/EN61000-6-2/3, UN38.3



# All-in-One Single-phase Energy Storage



Plug & Play



Outdoor Installation



CATL LFP Battery



- CATL LFP Battery, stable and safe
- Multiple protection, high reliability
- IP65, outdoor installation
- Modular design, plug and play, quick installation
- Global Cloud Platform & Mobile APP Access
- Supporting 200% Oversized PV Power

Model	LN-MA3K68L-S1	LN-MA5KL-S1
<b>PV String Input</b>		
Max. DC Voltage (V)		580
Rated Voltage (V)		400
MPPT Voltage Range (V)		80-560
Starting Voltage (V)		150V
Number of MPPT		2
Strings per MPPT		1
Max. Input Current per MPPT (A)		15
Max. Short-circuit Current per MPPT (A)		18
<b>AC Output (Grid)</b>		
Rated AC Output Power (W)	3680	5000
Max. AC Apparent Power (VA)		7360 (Power Grid Input)
Max. AC Output Power (W)	3680	5000
Nominal Grid Voltage (V)		230
Frequency Range (Hz)		50/60±5
Max. Output Current (A)	16	22
Max. Input Current (A)		32
Power Factor		0.8 leading...0.8 lagging
THDi		<3%
<b>Battery Input (DC)</b>		
Battery Type		LiFePO <sub>4</sub>
Rated Battery Voltage (V)		48
Charging Voltage Range (V)		40-60
Max. Charging Current (A)	50	100
Max. Discharge Current (A)	80	100
<b>AC Output (Backup)</b>		
Max. Output Apparent Power (VA)	4000	5000
Peak Output Apparent Power (VA/10S)		6900
Max. Output Current (A)	16	20
Rated Output Voltage (V)		230
Rated Output Frequency (Hz)		50/60
Output THDv (@Linear Load)		<3% (Linear Load)
<b>Efficiency</b>		
Max. PV Efficiency		97.6%
Euro. PV Efficiency		97.0%
<b>Protection</b>		
DC Switch		Bipolar DC Switch (125A/Pole)
Anti Islanding Protection		Yes
Output Overcurrent Protection		Yes
DC Reverse Connection Protection		Yes
String Fault Detection		Yes
AC/DC Surge Protection		DC Type II, AC Type I II
Insulation Detection		Yes
AC Short-circuit Protection		Yes
<b>Regular Size</b>		
Dimensions W*H*D (mm)		540 × 590 × 240
Weight (kg)		32
Operating Temperature Range (°C)		-25~+60
Noise (dB)		<25
Cooling Type		Natural Convection
Max. Operating Altitude (m)		≤2000
Operating Humidity		0-95% (No Condensation)
IP Class		IP65
Topology		Battery Isolation
Communication		RS485/CAN2.0/WIFI/4G
Display		LCD/APP
<b>Model</b>		
<b>LB-MA5120L-B1</b>		
<b>Battery Parameters</b>		
Battery Type		LiFePO <sub>4</sub>
Nominal Energy (kWh)		5.12
Usable Energy (kWh)		4.6
Depth of Discharge (DOD)		90%
Rated Voltage (V)		51.2
Operating Voltage Range (V)		44.8-56.5
Max. Charging/Discharging Current (A)		50/80
Max. Charging/Discharging Power (W)		2825/4096
Operating Temperature Range (°C)		-10~+50
Operating Humidity Range		0-95% (No Condensation)
Power Consumption (W)		<2
Communication		CAN & RS485
Monitored Parameters		System Voltage, System Current, Cell Voltage, Cell Temperature, PCBA Temperature Detection
Weight (kg)		54
Dimensions W*H*D (mm)		540 × 490 × 240
IP Protection		IP65
Cycle Life		10000 cycles
Certification		IEC/EN 62619; UN38.3
Warranty		5-year product warranty; 10-year performance guarantee



# All-in-One Three-phase Energy Storage



Plug & Play



Outdoor  
Installation



CATL LFP  
Battery

- CATL LFP Battery, stable and safe
- Multiple protection, high reliability
- IP65, outdoor installation
- Modular design, plug and play, quick installation
- Global Cloud Platform & Mobile APP Access
- Supporting 200% Oversized PV Power



Model	LN-MA10KL-T1
<b>PV String Input</b>	
Max. DC Voltage (V)	1100
Rated Voltage (V)	720
MPPT Voltage Range (V)	140-1000
Starting Voltage (V)	200V
Number of MPPT	2
Strings per MPPT	1
Max. Input Current per MPPT (A)	15
Max. Short-circuit Current per MPPT(A)	20
<b>AC Output (Grid)</b>	
Rated AC Output Power (kW)	10
Max. AC Apparent Power (kVA)	11
Nominal Grid Voltage (V)	400, 3P+N+PE
Frequency Range (Hz)	50/60±5
Max. Output Current (A)	16
Power Factor	0.8 leading...0.8 lagging
THDi	<3%
<b>Battery Input (DC)</b>	
Battery Type	LiFePO <sub>4</sub>
Rated Battery Voltage (V)	51.2
Charging Voltage Range (V)	44-58
Max. Charging Current (A)	160
Max. Discharge Current (A)	200
<b>AC Output (Backup)</b>	
Max. Output Apparent Power (kVA)	10
Max. Output Current (A)	14.5
Rated Output Voltage (V)	400
Rated Output Frequency (Hz)	50/60 (±2%)
Output THDv (@Linear Load)	<2% (Linear Load)
<b>Efficiency</b>	
Max. PV Efficiency	97.6%
Euro. PV Efficiency	97.0%
<b>Protection</b>	
Anti Islanding Protection	Yes
Output Overcurrent Protection	Yes
DC Reverse Polarity Protection	Yes
String Fault Detection	Yes
AC/DC Surge Protection	DC Type II, AC Type I II
Insulation Detection	Yes
AC Short-circuit Protection	Yes
<b>Regular Size</b>	
Dimensions W*H*D (mm)	540 × 980 × 240
Weight (kg)	49
Operating Temperature Range (°C)	-25~+60
Noise (dB)	<25
Cooling Type	Natural Convection
Max. Operation Altitude	2000
Operation Humidity	0-95% (No Condensation)
IP Class	IP65
Topology	Battery Isolation
Communication	RS485/CAN2.0/WIFI/4G
Display	LCD/APP

Model	LB-MA5120L-B1
<b>Battery Parameters</b>	
Battery Type	LiFePO <sub>4</sub>
Nominal Energy (kWh)	5.12
Usable Energy (kWh)	4.6
Depth of Discharge (DOD)	90%
Rated Voltage (V)	51.2
Operating Voltage Range (V)	44.8-56.5
Max. Charging/Discharging Current (A)	50/80
Max. Charging/Discharging Power (W)	2825/4096
Operating Temperature Range (°C)	-10~+50
Operating Humidity Range	0-95% (No Condensation)
Power Consumption (W)	<2
Communication	CAN & RS485
Monitored Parameters	System Voltage, System Current, Cell Voltage, Cell Temperature, PCBA Temperature Detection
Weight (kg)	54
Dimensions W*H*D (mm)	540 × 490 × 240
IP Protection	IP65
Cycle Life	10000 cycles
Certification	IEC/EN 62619; UN38.3
Warranty	5-year product warranty; 10-year performance guarantee



# Single-phase Off-grid Inverter North America



Flexible Application



Parallel Split Phase  
120V/240V



Multiple Inverters Parallel



- Pure sine wave AC output
- Solar and the grid can provide power to the load at the same time
- 2 parallel machines can be divided into phase 120V/240V
- Can work with or without batteries
- Max. 6 parallel machines

Model	LN-MF3KL-SL1
Rated Power (kW)	3
System DC Voltage (V)	48
Parallel Option	Yes, up to 6 units
Monitoring Option	WiFi or GPRS
AC Voltage (V)	110-110-120
Surge Power (kVA)	6
Peak Efficiency	90%
Transfer Time	10ms (For Personal Computers) 20ms (For Home Appliances)
Waveform	Pure Sine Wave
Max. PV Array Open Circuit Voltage (V)	250
Max. PV Array Power (kW)	4
Operating Voltage MPPT Range (V)	120-250
Battery Overcharge Protection (V)	60
Max. Solar Charge Current (A)	80
Max. AC Charge Current (A)	40
Max. Charge Current (A)	80
Max. PV Input Current (A)	22
Dimensions W*H*D (mm)	470 × 320 × 135 (18.5 × 12.6 × 5.32 in)
Net Weight (kg)	11.5 (25 lbs)
Communication Interface	USB/CAN/RS485
Relative Humidity	5%-95% (No Condensation)
Operating Temperature (°C)	0-50 (0-122°F)
Storage Temperature (°C)	-15-60 (5°F-140°F)



# Single-phase Off-grid Inverter



High PV Voltage



Suitable Harsh Environment



Built-in ATS, Support Generator



- 2 PV Array Input
- 500V high PV input voltage
- Maximum PV array power 8kW
- Built-in ATS, can automatically switch between the power grid and the generator
- Built-in dustproof kit, suitable for harsh environment
- Can work with or without batteries

Model	LN-MF6KL-S1
Rated Power (kW)	6
System DC Voltage (V)	48
Parallel Option	Yes, up to 6 units
Monitoring Option	WiFi or GPRS
AC Voltage (V)	220~230~240
Surge Power (kVA)	12
Peak Efficiency	94%
Transfer Time	10ms (For Personal Computers) 20ms (For Home Appliances)
Waveform	Pure Sine Wave
Self Consumption at 0 Load (W)	<70
Type of PV Array Input Terminal	MC4
Max. PV Array Open Circuit Voltage (V)	500
Max. PV Input Current/Per String (A)	16
Number of PV Array Input	2 Strings
Max. PV Array Power (kW)	Each String: 4; Total 8
Operating Voltage MPPT Range (V)	120~450
Battery Overcharge Protection (V)	60
Max. Solar Charge Current (A)	100
Max. AC Charge Current (A)	80
Max. Charge Current (A)	100
Dimensions W*H*D (mm)	460 × 395 × 132
Net Weight (kg)	13.5
Communication Interface	USB/CAN/RS485
Relative Humidity	5% to 95% (No Condensation)
Altitude (m)	<2000
Operating Temperature (°C)	0~50
Storage Temperature (°C)	-15~60
Noise (dB)	<60
Certification	CE, IEC62109-1, IEC62109-2



# Split-phase Off-grid Inverter

## North America



Isolated via  
Transformer



Remote  
Monitoring



High  
Performance  
Control Chip

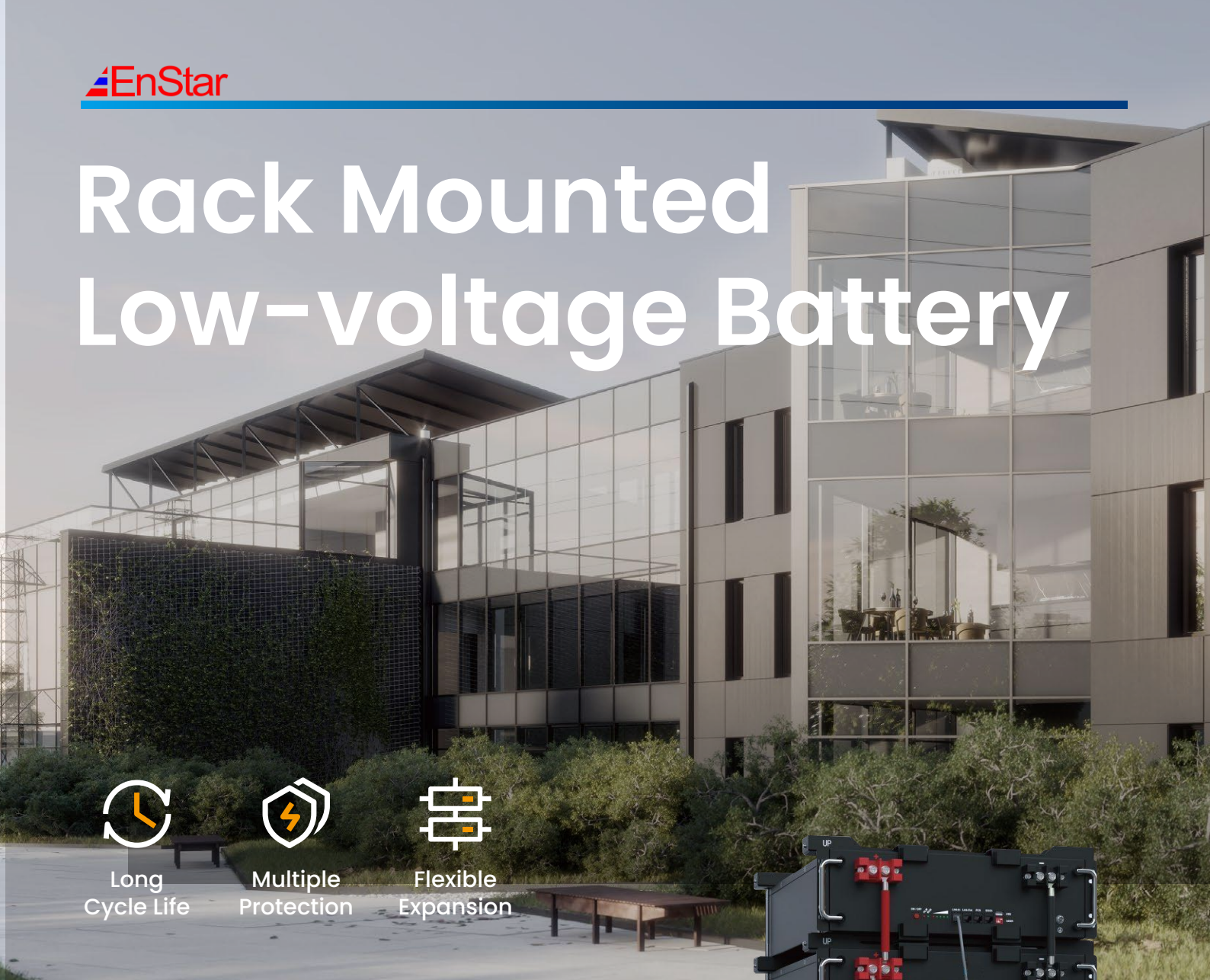


- Rated power 6kW/12kW, with DSP control
- Pure sine wave AC output
- Built-in MPPT solar charge controller
- Low frequency with transformer
- Configurable AC/solar input priority via LCD setting
- Compatible to grid voltage or generator power
- WiFi/GPRS remote monitoring
- RS485/CAN communication for BMS

Model	LN-MF6KL-SPI
Battery Voltage (V)	48
Rated Power (kW)	6
Monitoring Option	WiFi/GPRS
Output Voltage (V)	104-110-115-120/220-230-240
Surge Power (20ms) (kW)	18
Capable Of Starting Electric Motor	3HP
Waveform	Pure Sine Wave
Output Frequency (Hz)	50/60 ± 0.1
Max. PV Charge Current (A)	80
Max. PV Array Power (kW)	5
Operating Voltage MPPT Range (V)	60-245
AC Input Voltage (V)	250
Frequency Range (Hz)	50/60 (Auto sensing)
Overcharger Protection	AGM: 60V; FLD: 62V; USE: CE+4.0V
Max. Charge Current (A)	60
Max. Charge Current (PV+AC) (A)	140
Dimensions W*H*D (mm)	540 × 360 × 218 (21.26 × 14.17 × 8.58 in)
Net Weight (kg)	45 (99.21 lbs)
Typical Transfer Time (ms)	10
Communication Interface	USB/CAN/RS485
Operating Temperature (°C)	0-55 (0-131°F)
Storage Temperature (°C)	-20-60 (-4°F-140°F)

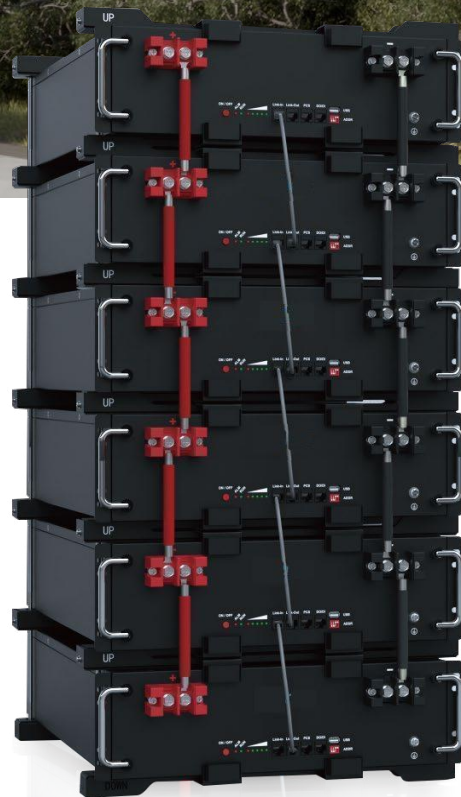


# Rack Mounted Low-voltage Battery



-   
 Long  
Cycle Life
-   
 Multiple  
Protection
-   
 Flexible  
Expansion

- Modular design, easy installation
- High-quality LFP cells, long cycle life
- Multiple protection, high security
- Multi-module parallel, flexible expansion
- Max. 12 parallel machines



Model	LB-MF5420L-B1
Nominal Voltage (V)	51.2
Rated Capacity (Ah)	106
Rated Energy (kWh)	5.5
Working Voltage Range (V)	40-58.4
Discharge Cut-off Voltage (V)	40
Parallel Max. Units	12
Max. Charge Current (A)	100
Max. Discharge Current (A)	100
Cycle Life	25±2°C, 0.2C/0.2C, 6000 cycles
Ingress Protection	IP20
Dimensions W*H*D (mm)	440 × 540 × 130.5
Communication BMS	RS485/CAN
Warranty	5 Years
Weight (kg)	48
Operation Temperature Discharge (°C)	-20-55
Operation Temperature Charge (°C)	0-55
Storage Temperature (°C)	-20-+55 (10-90% RH)
Certification	CE (EMC)/UN38.3/MSDS/ROHS/IEC62619
Upgrade Method	U-disk upgrade+Remote upgrade+PC upgrade



# Commercial Hybrid Energy Storage Inverter



Modular Design



System Expansion



High DC Voltage Utilization



- Support photovoltaic access and battery hybrid energy storage
- Can switch between on-grid and off-grid output
- Can be connected with high-voltage energy storage battery between 200V~865V
- Each function unit adopting streamlined and intelligent modular design
- With EMS function
- Support system expansion, allowing the maximum number of parallel operation modules of 4 off-grid parallel operation
- High DC voltage utilization via three-phase three-level four-bridge topology
- Support 1.1 times continuous AC overload output and three-phase 100% unbalanced load access, allowing the rated output load phase out operation
- Support single-phase single-load access
- Based on capacity available, intelligently adjust the load operating conditions
- Modbus TCP/RS485/CAN communication
- All kinds of protection functions required by CQC and TUV certification
- IP65 protection level
- Cooling mode: Intelligent air cooling or Water cooling optional
- Installation mode: wall mounted or drawer type

Model	LN-G30KF-ANI	LN-G60KF-ANI	LN-G90KF-ANI	LN-G120KF-ANI
<b>Photovoltaic Input Parameter</b>				
Max. DC Voltage (V)	1100			
Starting Voltage (V)	250			
MPPT Voltage Range (V)	250-1000			
Full load MPPT Voltage Range (V)	375-850		450-850	
MPPT Max. Input Current (A)	45	45	65	65
MPPT Input Group Strings	3+3	3+3+3+3	5+5+5+5	5+5+5+5
Number of MPPT	2	4	4	4
<b>Battery Input Parameter</b>				
Max. DC Bus Voltage (V)	900			
Max. DC Current (A)	55	110	165	220
DC Voltage Working Range (V)	600-900			
DC Voltage Ripple Coefficient	2%			
Rated Power (kW)	30	60	90	120
<b>AC Side Parameter</b>				
Max. Power Output (kW)	33	66	99	132
AC Access Mode	Quick plug terminal/M8 Waterproof joint			
Mode of Isolation	No isolation			
Range of Reactive Power (kVA)	0-30	0-60	0-90	0-120
Rated Grid Voltage (V)	400			
<b>Operation Parameters of Grid Connection</b>				
Allowable Grid Voltage (V)	304-440			
Rated Grid Frequency (Hz)	50/60			
Allowable Grid Frequency (Hz)	47-53/57-63			
Total Harmonic Distortion of Current	3%			
Power Factor	-1-1			
Charge and Discharge Conversion Time (ms)	20			
Rated Output Voltage (V)	400			
<b>Off-grid Operation Parameters</b>				
Voltage Deviation	±2%			
Voltage Imbalance Degree	22%, less than 4%			
Access Load Allowed Imbalance Degree	100%			
Voltage Total Harmonic Distortion Rate	3% (No load or rated resistive load)			
Rated Output Frequency (Hz)	50			
Dynamic Voltage Transient Range	10% (Under resistive/balanced load condition, the load increases from 20% to 100% or decreases from 100% to 20%)			
Output Overvoltage Protection Value	Can be set			
Output Undervoltage Protection Value	Can be set			
Max. Efficiency	97%			
<b>Common Parameters</b>				
Allowable Ambient Temperature (°C)	-40~+6			
Allowable Relative Humidity	0~100%			
Noise (dB)	59			
Dimensions W*H*D (mm)	800 × 680 × 330			
Weight (kg)	≤95			
Ingress Protection	IP65			
Cooling	Intelligent air cooling			
Insulation Resistance	1MΩ			
Communication Interface	Ethernet, 485			
<b>Disply and Communication</b>				
Human-computer Interface	LCD Color display: charge/discharge, shutdown, standby, fault			
Communication Protocol	Modbus, TCP/RTU			