12000W Three-phase Energy Storage Inverter ES-HSI-12K series

Household ECO Solar PV Renewable Energy

Features

- Dual MPPT inputs, with a maximum input current of 27A per string
- HMI LCD display for easy operation and control
- Built-in BMS communication port (RS485)
- Built-in WiFi communication, supporting APP mobile monitoring
- Supports both on-grid and off-grid applications
- Generator connection supported
- Parallel operation of up to 6 units supported
- IP66 protection rating, adaptable to various complex environments
- Programmable power supply priority for PV, battery, or grid
- 5-year long-term warranty

Applications

- Commercial Energy Storage System
- Household Energy Storage System
- Off-grid Energy Storage System

Global Trade Item Identifier

- MW Search: http://www.meanwell.com.cn/serviceGTIN.aspx

Description

The ES-HSI-12K series energy storage inverter is a green energy solution that combines high efficiency, intelligence, and reliability. It features dual MPPT inputs with a maximum current of 27A per string, significantly enhancing photovoltaic power efficiency. Equipped with HMI LCD display, it offers intuitive operation and easy control. The device includes built-in WiFi communication and a BMS communication port (RS485), supporting real-time remote monitoring via a mobile app and enabling integration with battery management systems. The system supports parallel operation of up to 6 units and is capable of both on-grid and off-grid applications, adapting to various power consumption scenarios. With an IP66 protection rating, the unit is built to withstand harsh environmental conditions. Users can also configure programmable power supply priorities (PV, battery, or grid) to manage energy allocation, achieving efficient and economical energy management.

Model Encoding

ES - HSI - 12K

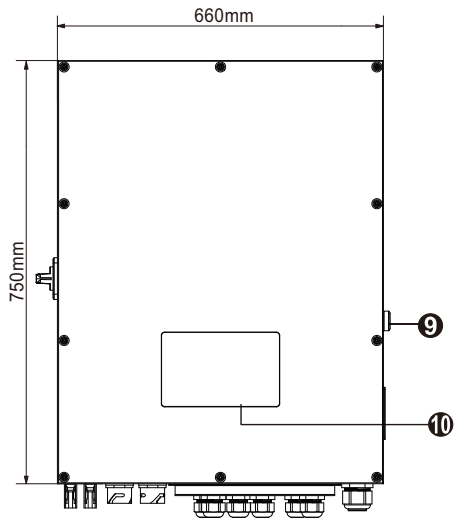
- 12K: Rated Power (12K:12KW)
- HSI: Series Name
- ES: Product Categories (ES: Energy Storage category)

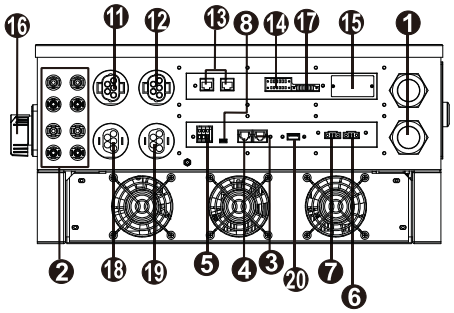
Specification	ES-HSI-12K
PV INPUT (DC)	
Maximum DC Power	18000W
Nominal DC Voltage	720Vdc
Maximum DC Voltage	900 Vdc
Start-up Voltage / Initial Feeding Voltage	150 Vdc / 150 Vdc
Number Of MPPT	2
MPPT Voltage Range	150 Vdc ~ 850 Vdc
Maximum Input Current	26A + 26A
AC OUTPUT	
Rated Power	12KW
Nominal Output Voltage	3L/N/PE; 380/400Vac
Output Frequency Range	50Hz/60Hz
Nominal Output Current	17.4A
Power Factor	>0.99
Power Factor Range	0.9lead~0.9lag
AC INPUT	
Input Power	12KW
Input Voltage Range	170-290Vac* per phase
Nominal Frequency	50Hz/60Hz
Maximum AC Input Current	40A
BATTERY	
Battery Type	Lead-acid or Lithium-ion
Nominal DC Voltage	48Vdc
DC Voltage Range	40-60Vdc
Maximum Diacharging Current	250A
Maximum Charging Current	240A
EFFICIENCY	
MPPT Tracking Efficiency	>99%
Max. Efficiency	>96%
European Efficiency	>95%
Battery Inversion Efficiency	>93%
PROTECTION&CERTIFICATE	
Safety/EMC	IEC 62109, IEC 62116, IEC 61727, IEC 61683, IEC 62109
Grid Connection Standard	EN 50549-1
OTHERS	
Ingress Protection Rating	IP66
Dimension	255*660*750mm
Net Weight(kgs)	54kg
Working Temp.	-25℃~60℃, >45℃ power derating
Humidity	0-100%RH(No condersing)
Communication Port	USB,RS-232,RS-485,WiFi,CAN
NOTE	

1.For altitudes above 1000 m, derate power by 1% per 100 m increase in elevation.

※ Product Liability Disclaimer : For detailed information ,please refer to https://www.meanwell.com/serviceDisclaimer.aspx

Product Overview





1) Battery connectors
2) PV connectors
3) BMS communication port
4) RS-232 communication port
5) Dry contact
6) EPO
7) Battery thermal sensor
8) USB communication port
9) Cold start button
10) LCD
11) AC Grid connector
12) Generator connector
13) Parallel communication port
14) Current sharing port
15) Intelligent slot
16) DC switch
17) External CT connector
18) AC output 1
19) AC output 2
20) Reserved port

Installation Precautions

Grid Connection

It's very important for system safety and efficient operation to use appropriate cable for grid (utility) connection. To reduce risk of injury, please use the proper recommended cable size as below.

Suggested cable requirement for AC wire:

Grid Voltage	Cable Size
380Vac	10AWG

NOTE 1: The AC input overvoltage is of category III. It should be connected to the power distribution.
NOTE 2: Before connecting to grid, please install a separate AC breaker between inverter and grid.the recommended of AC breaker is 40A.

Battery Connection

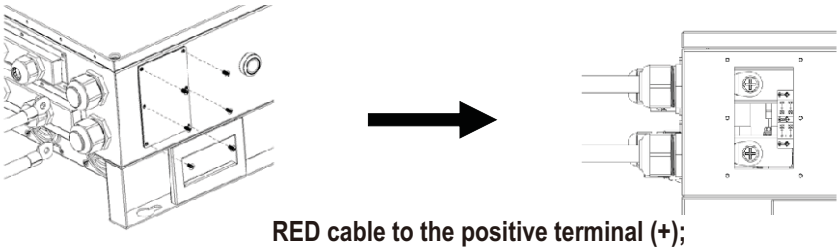
Before connecting to batteries, please install separately a DC circuit breaker between inverter and batteries.
NOTE 1: Please only use sealed lead acid battery, vented and Gel battery. Please check maximum charging voltage and current when first using this inverter. If using Lithium iron or Nicd battery, please consult with installer for the details.
NOTE 2: Please use 60Vdc/300A circuit breaker.
NOTE 3: The overvoltage category of the battery input is II.

Please follow below steps to implement battery connection:

Step 1: Check the nominal voltage of batteries. The nominal input voltage for inverter is 48Vdc.

Step 2: Use two battery cables. Remove insulation sleeve 12 mm and insert conductor into cable ring terminal.

Step 3: Remove battery cover and follow battery polarity near the battery terminal, Place the external battery cable ring terminal over the battery terminal.

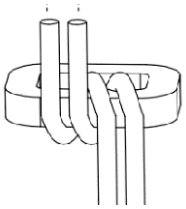


RED cable to the positive terminal (+);
BLACK cable to the negative terminal (-).

Step 4: Make sure the wires are securely connected. The reference tightening torque is 15 N•m

It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable size as below.

Nominal Battery Voltage	Cable Size
48V	2AWG



The package contains a magnetic ring. If there are EMC requirements, be sure to wrap the battery cable around the magnetic ring twice as shown in the figure on the right.

Load Connection

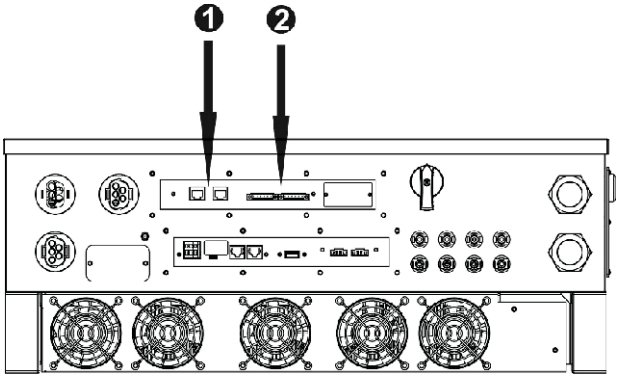
To prevent further supply to the load via the inverter during any mode of operation, an additional disconnection device should be placed on in the building wiring installation.

It's very important for system safety and efficient operation to use appropriate cable for AC connection. To reduce risk of injury, please use the proper recommended cable size as below.

Grid Voltage	Cable Size
380Vac	10AWG

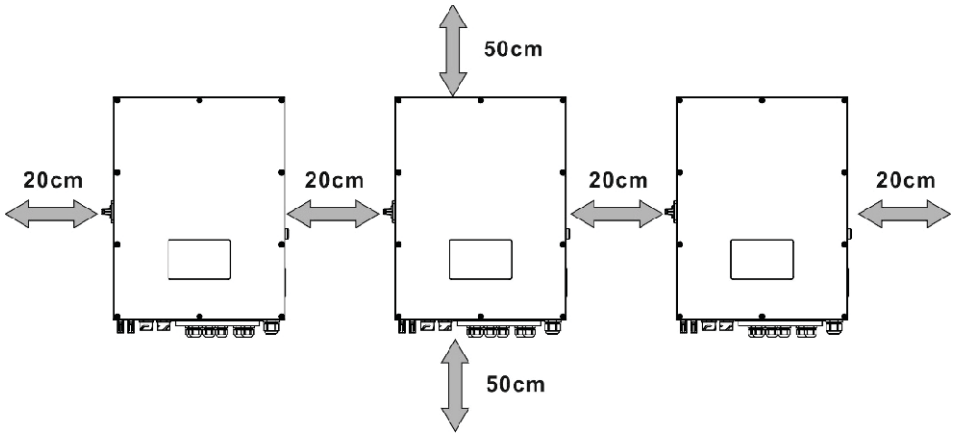
Parallel Operation

Overview: Parallel operation in single phase with up to 6 units. The supported maximum output power is 72KW.



1) Parallel communication port
2) Current sharing port

When installing multiple units, please follow below chart.



NOTE: For proper air circulation to dissipate heat, allow a clearance of approx. 20 cm to the side and approx. 50 cm above and below the unit.

Wiring Connection

The cable size of each inverter is shown as below:

Battery cable size for each inverter:

Cable Size	Torque
2AWG	15N•m

NOTE: Be sure the length of all battery cables is the same. Otherwise, there will be voltage difference between inverter and battery to cause parallel inverters not working.

AC input and output cable size for each inverter:

Cable Size	Torque
8AWG	1.5~2.5N•m

You need to connect the cables of each inverter together. Take the battery cables for example: You need to use a connector or bus-bar as a joint to connect the battery cables together, and then connect to the battery terminal. The cable size used from joint to battery should be X times cable size in the tables above. “X” indicates the number of inverters connected in parallel. Regarding AC input and output, please also follow the same principle.

Recommended breaker specification of battery for each inverter:

single inverter
350A/60Vdc

If you want to use only one breaker at the battery side for the whole system, the rating of the breaker should be X times current of one unit. “X” indicates the number of inverters connected in parallel.

Recommended battery capacity:

Inverter parallel numbers	2	3	4	5	6
Battery Capacity	800AH	1200AH	1600AH	2000AH	2400AH

NOTE:Please follow the battery charging current and voltage from battery spec to choose the suitable battery. The wrong charging parameters will reduce the battery lifecycle sharply.

APP Download and Instructions

Energy-Mate can connect all your devices via WI-FI to track your energy use and production in real time, dynamically display the status data of the device in real time.

1. Software installed

Scan the QR code and install the opened app on your smartphone.

This software could be operated on mobile phones with Android 6.0 and IOS12.0 or above, refer to the user manual for details

Accessories List

※ Standard Accessories

	Items	Number
1	PV connectors	8
2	AC connectors	3
3	Fixing screws	6
4	Parallel communication cable	1
5	CD Software	1
6	Manual	1
7	RS-232 cable	1
8	Current sharing cable	1
9	Protective sleeve	1
10	Magnetic ring	1

※ Optional Parts List

Model	Items	Description
LB-4810		48V Lithium Battery Pack