This document only provides basic information on installing and debugging the EM700 series inverter. For more detailed information, please refer to the EM700 Series Inverter User Manual, which can be downloaded directly by scanning the QR code on the right below. For more product information, please visit the official website of Sine Electric Co., Ltd. www.sinee.cn or scan the QR code on the left below.

Sine Electric WeChat Official Account

Scan the QR code to view the detailed manual

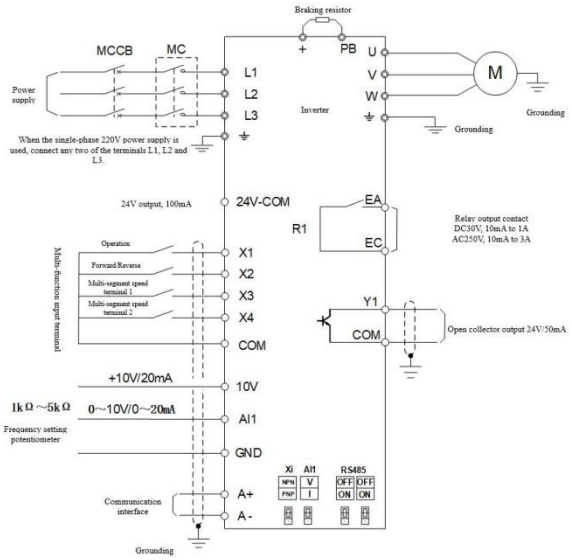
Safety Signs

- Please read the safety manual and instructions carefully before using the product, otherwise, there maybe a risk of personal injury or product damage!
- When the power is on and for 10 minutes after the power is turned off, do not touch the terminals or remove the cover; otherwise, there is a risk of electric shock!

Danger Failure to follow these instructions may result in serious injury or even death.

1. Do not install the inverter if water has entered the package, or if any parts are missing or damaged upon unpacking!
2. Please install the inverter on flame-retardant objects such as metal, and keep it away from combustibles, otherwise it may cause a fire!
3. Do not twist the fixing bolts of the equipment components at will, especially the bolts with red marks!
4. The instructions of this manual must be followed and the construction must be carried out by professional electrical engineers, otherwise unexpected dangers may occur!
5. The inverter and the power supply must be separated by a circuit breaker (it is recommended to use a specification greater than or equal to and closest to 2 times the rated current), otherwise a fire may occur!
6. Please make sure that the power supply is in a zero energy state before wiring, otherwise there is a risk of electric shock!
7. Please correctly, standardized and reliably ground the inverter according to the standard, otherwise there may be a risk of electric shock and fire!
8. If the indicator light does not light up and the keyboard does not display after power-on, please turn off the power switch immediately. Do not touch the inverter R, S, T and any terminals on the wiring terminals with your hands or screwdriver, otherwise there is a risk of electric shock. After disconnecting the power switch, you should contact our customer service staff immediately.
9. At the beginning of power-on, the inverter automatically performs safety detection on the external strong current circuit. At this time, you must not touch the inverter U, V, W terminals or motor terminals, otherwise there is a risk of electric shock!
10. Do not disassemble any parts of the inverter when the inverter is powered on.
11. Do not touch the cooling fan, radiator and discharge resistor to test the temperature, otherwise it may cause burns!
12. Non-professional technicians should not detect signals during operation, otherwise it may cause personal injury or equipment damage!
13. Do not repair and maintain the equipment with power on, otherwise there is a risk of electric shock!
14. Cut off the main circuit power supply and confirm that the keyboard display interface is off for at least 10 minutes before performing maintenance and repair on the inverter, otherwise the residual charge on the capacitor will cause harm to people!
15. Personnel who have not received professional training should not perform maintenance and repair on the inverter, otherwise it will cause personal injury or equipment damage!
16. The synchronous machine generates electricity when rotating. In case of power failure, you must wait 10 minutes after the motor stops before performing maintenance and repair on the inverter. Otherwise, there is a risk of electric shock!

Inverter standard wiring diagram



●It is recommended to use wires with a diameter of 0.5~1mm2 for the control circuit wires

●Please use a PH0 cross screwdriver to install the control circuit terminals, and the tightening torque is 0.5N.m

Position No.	Silkscreen	Functional Description
Xi	Xi NPN PNP	When the jumper is placed at the NPN end, the X terminal input is in NPN mode. When the jumper is placed at the PNP end, the X terminal input is in PNP mode.
AI1	AI1 V I	When the jumper is placed at the V terminal, the analog input AI1 is a voltage input. When the jumper is placed at the I terminal, the analog input AI1 is a current input.
RS485	RS485 OFF OFF ON ON	The two jumpers need to be operated synchronously. When the jumper is set to ON, a 120Ω terminal resistor is added to the RS485 bus. When the jumper is set to OFF, the terminal resistor is disconnected.

Product Confirmation

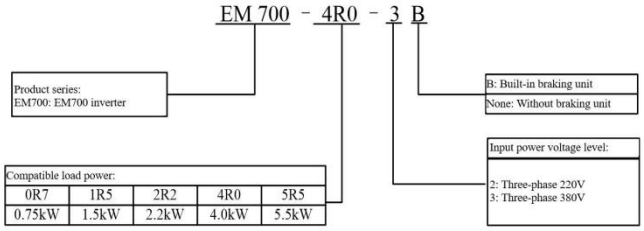
When you receive the product, please confirm according to the table below.

Item to be confirmed	Confirming methods
Check whether the product is consistent with the order.	Check the nameplate on the side face of the inverter.
Check whether any part is damaged.	Check the overall appearance for damage caused in transportation.
Check whether the fastened parts (e.g. screws) are loose.	If necessary, check the product with a screwdriver.

If there are any adverse situations, please contact the agent or our marketing department.

- **Nameplate**

- **Inverter model description**



Connect the power line and control line

The functions of the main circuit terminals of the EM700 series inverter are shown in the following table. Please connect the wires correctly according to the corresponding functions.

Terminal number	Functional Description
L1、L2、L3	AC power input terminal, connected to three-phase AC power, for single-phase power input, any two terminals can be connected
U、V、W	Inverter AC output terminal, connected to three-phase AC motor
⊞、PB	Braking resistor connection terminal, one end of the braking resistor is connected to the field, and the other end is connected to the PB
⏚	Ground terminal, for safety, please be sure to connect to the protective ground

Digital tube display keyboard operation mode

The LED keyboard menu is divided into monitoring level (level 0), menu mode selection level (level 1), function code selection level (level 2), and parameter value level (level 3) from low to high. The menu level mentioned in this manual is represented by numbers.

There are 5 parameter display modes: full menu mode (--A--), used to display all function codes; user-defined mode (--U--), used to display only the function code selected by the user through the F11 group; non-factory value mode (--C--), used to display only function codes different from the factory value, fault information display mode (--E--), used to display the current fault information; version information mode (--P--), used to display the software and product serial number.

The keyboard displays the first monitoring parameter of level 0 by default when it is powered on. Press the ESC key ESC to enter the level 1 menu. In the level 1 menu, you can select different menu modes by pressing the up ∧ or down V key. The menu mode selection operation flow is shown in Figure 4-1.

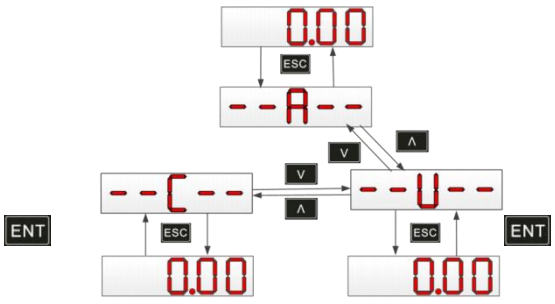
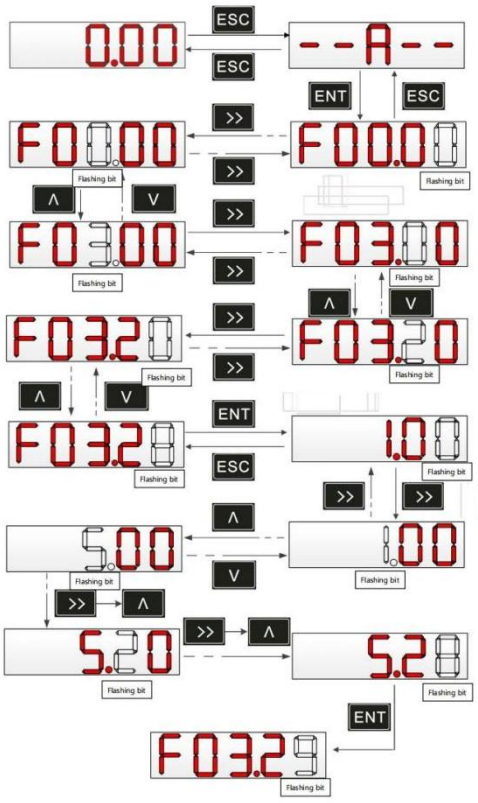


Figure 4-1 Menu mode selection operation flow chart

Full menu mode (--A--)

In full menu mode, press the ENTER key to enter level 2 menu and select any function code. Then press the ENTER key to enter the level 3 menu to view or modify function code. Except for a few special function codes, function codes that general users need to use can be modified.

For example: In full menu mode, the entire operation process from the power-on initial state to changing the value of function code F03.28 to 5.28 is shown in the figure below.



After the parameter modification is completed, press the ENTER key ENT to save the parameter. Press the ESC key ESC in the level 3 menu to abandon the parameter modification.

Common process parameters of frequency converter

Function Code	Name	Parameter Description	Unit	Default	Property
F00.01	Motor 1 drive control mode	0: V/F control (VVF) 1: Speed sensorless vector control (SVC)		0	○
F00.04	Main frequency source A selection	0: Digital frequency given F00.07 1: AI1 6: Main frequency communication percentage given 7: Main frequency communication direct given 8: Digital potentiometer given		8	○
F00.07	Digital frequency setting	0.00～maximum frequency F00.16	Hz	0.00	●
F00.14	Acceleration time 1	0.00～650.00（F15.13=0）	s	15.00	●
F00.15	Deceleration time 1	0.00～650.00（F15.13=0）	s	15.00	●
F00.16	Maximum frequency	1.00～600.00	Hz	50.00	○
F00.18	Upper frequency	Lower frequency limit F00.19～maximum frequency F00.16	Hz	50.00	●
F00.19	Lower frequency	0.00～Upper frequency limit F00.18	Hz	0.00	●
F00.21	Inversion of Control	0: Allow forward/reverse 1: Disable reverse		0	○

Note: Common process parameters may also include input and output terminal function settings .For details on the settings, please refer to the function table F02 group and F03 group in the "EM700 Series Inverter User Manual" for settings.

Motor parameter identification

To achieve better control performance, motor parameter identification is required.

Identification method	Applicable situations	Identification effect
F01.34=01 Asynchronous motor static tuning	The motor and the load are difficult to separate, and rotation self-learning is not allowed.	Generally
F01.34=02 Asynchronous motor rotation tuning	The motor and the load can be easily separated. The motor shaft should be separated from the load before operation. It is forbidden to perform rotation self-learning operation with the motor under load.	Optimal

Parameter identification steps

- Before performing the self-identification operation, make sure that the motor is in a stopped state, otherwise the self-identification cannot be performed normally.
- If the motor and load can be separated, completely disconnect the mechanical load from the motor when the power is off.
- After power on, set the inverter command source to keyboard control (set F00.02=0)
- Accurately enter the motor nameplate parameters.

Motor	Corresponding parameters
Motor 1 (Motor 2 has corresponding parameters in group F14)	F01.00 Motor type　F00.01 Motor rated power F01.02 Motor rated voltage　F00.03Motor rated current F01.04 Motor rated frequency　F00.05Motor rated speed F01.06 Motor winding connection

Start and stop control

Function code	Name	Parameter Description	Default
F00.02	Command source selection	0: Keyboard control 1: Terminal control 2: Communication control	0
F04.00	Startup method	0: Direct start 1: Speed tracking start	0
F04.19	Parking options	0: deceleration stop 1: free stop	0

Terminal control start and stop

Function code	Name	Parameter Description	Default
F00.03	Terminal control mode selection	0: Terminal RUN, F/R forward/reverse 1: Terminal RUN, F/R reverse 2: Terminal RUN, Xi stop, F/R reverse 3: Terminal RUN, Xi stop, F/R forward/reverse	0

Terminal RUN: Xi terminal is set to "1: Run terminal RUN"

Terminal F/R: Xi terminal is set to "2: Run direction F/R"

Terminal control can be divided into two-wire and three-wire control modes

Two-wire control:

F00.03=0: Terminal RUN runs, F/R controls forward/reverse

RUN terminal valid/invalid controls the start and stop of the inverter, F/R terminal invalid/valid controls forward/reverse; if F00.21 is set to 1, when reverse is prohibited, F/R terminal is invalid.

F00.03=1: Terminal RUN forward, F/R reverse

RUN terminal valid/invalid controls the forward and stop of the inverter, F/R terminal valid/invalid controls reverse and stop, RUN terminal and F/R terminal are valid at the same time, and the inverter stops. F/R terminal is invalid when reverse is prohibited.

Three-wire control:

F00.03=2: Terminal RUN forward, Xi stop, F/R reverse

RUN is a normally open forward run button, F/R is a normally open reverse run button, both are valid on the pulse edge; Xi is a normally closed stop button, and the level is valid. Pressing the Xi button in the running state will stop the machine.

F00.03=3: Terminal RUN for running, Xi for stopping, F/R for forward/reverse

RUN is a normally open running button, which is valid for pulse edges, F/R is a forward/reverse switching switch (forward when open, reverse when closed), and Xi is a normally closed stop button, which is valid for level.

When F00.03 start/stop selection is 0 or 1, even if the RUN terminal status is valid, pressing the STOP key or the terminal external stop command can stop the inverter. At this time, the RUN terminal status must be invalidated once and then valid again before re-entering the running state.

- The motor type is asynchronous motor:
  Set F01.34=1 to confirm, then press the RUN key, the inverter will start to perform static self-identification of the motor.
  Or set F01.34=2, then press the RUN key, the inverter will start to perform rotating self-identification of the motor.
- It takes about two minutes for the motor to complete self-identification and exit from the "tune" interface to the initial power-on state.
- If multiple motors are used in parallel, the rated power and rated current of the motors are the sum of the power and current of the connected motors;
- If two motors are used in parallel, it is necessary to set the parameters of motor 2 in group F14 and perform parameter identification for motor 2 according to F14.34.

Fault/prompt code table

Fault Codes	Description	Fault Codes	Description
E01	Short circuit fault	E17	The inverter temperature sensor is abnormal.
E02	Instantaneous overcurrent	E18	Soft start relay is not energized
E04	Steady-state overcurrent	E19	Current detection circuit abnormality
E05	Steady-state overvoltage	E20	Stall fault
E06	Steady-state undervoltage	E21	PID feedback disconnection
E07	Input phase loss	E24	Self-recognition of abnormalities
E08	Output phase loss	E26	Load drop protection
E09	Inverter overload	E27	Accumulated power-on time reached
E10	Inverter overheating	E28	Cumulative running time reached
E11	Parameter setting conflict	E43	Material cut protection
E13	Motor overload	E44	Cable failure
E14	External fault	E57	Pipeline network overpressure
E15	Inverter memory fault	E58	Pipeline network underpressure
E16	Communication abnormality	E76	Short circuit to ground

Prompt code	Description
P.-ON	The inverter is powered on.
P.-OFF	The inverter is in power-off state
SOFT.E	When the soft start is not engaged, the inverter will report SOFT.E when it is started. When the voltage is restored, the soft start will be engaged and it will run normally.

For more detailed fault information and troubleshooting methods, please refer to the EM700 Series Inverter User Manual.