

EM730 ledDigital Tube Keyboard User Manual

1. Keyboard function

1.1 led Keyboard structure

The control panel of EM730 series inverter is a pluggable LED keyboard. The LED keyboard has one five-digit LED digital display, four operation buttons, one digital potentiometer, and six status and unit indicators. Users can perform parameter setting, status monitoring and start/stop of the inverter via the keyboard.

1.2 Functions of keys and indicators on LED keyboard

Key/Indicator	Name	Function
	Right	Select the group number and function number of the currently modified function code. Change the monitoring parameters.
	Back	Go back to the previous menu. Cancel the current parameter modification when the menu mode selection level is enabled from the monitoring level.
	Run	When the keyboard control is enabled, press this key to start the inverter.
	Stop/Reset	When the keyboard control is enabled, press this key to stop the inverter. Reset the protection in use.
	Potentiometer/	Turn it clockwise to select the function code and menu group or increase the parameter value. Increase the currently valid reference digital input data.
	Confirm key	Turn it counterclockwise to select the function code and menu group or decrease the parameter value. Decrease the currently valid reference digital input data.

		Click it to enter the lower-level menu. Confirm and save the parameter modification, and enable the function code following the current function code.
	Unit indicator	It is ON when the frequency, current, and voltage are displayed.
	Running direction indicator	This indicator is ON during reverse running. It is OFF during forward running. It is ON when a certain frequency is being monitored or displayed.
 (Green)	Running indicator	It is ON when the inverter is running, flickering when the inverter is being stopped, and OFF after the inverter is stopped.
 (Red)	Protection indicator	When the inverter is in the protection status, this indicator will be ON in red.

( and  below means that the potentiometer rotates clockwise and counterclockwise.)

2. Operation Mode of Keyboard with Digital Tube Display

The LED keyboard menu is divided into the monitoring level (Level 0), menu mode selection level (Level 1), function code selection level (Level 2) and parameter level (Level 3) from low to high. The menu levels mentioned below are represent by numbers.

There are five parameter display modes: menu mode (--A--), used to display all function codes; user-defined mode (--U--), used to display only function codes selected by the user based on the F11 group; non-default mode (--C--), used to display only the function codes that differ from the default settings;

Protection information display mode (--E--): display the current protection information; version information mode (--P--): display software and product serial numbers.

When the keyboard is powered on, the first monitoring parameter of Level 0 is displayed by default. Press the ESC key  to open the Level 1 menu. Users can use

the keyboard  to select different menu modes. The process of menu mode selection is shown in Fig.2-1

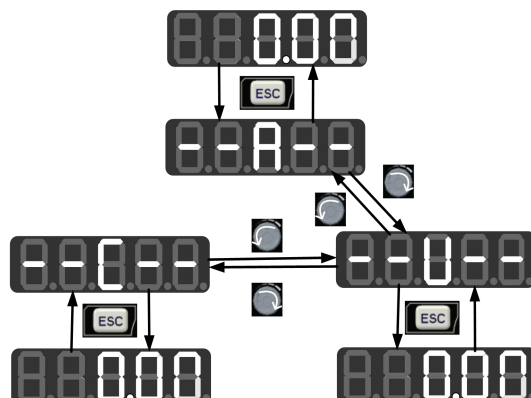


Fig.2-1 Flowchart of Menu Mode Selection

2.1 Full menu mode (--A--)

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

The entire process from the initial status of power-on to change of the value of the function code F03.28 to 5.28 in the full menu mode is shown in Fig. 2-2.

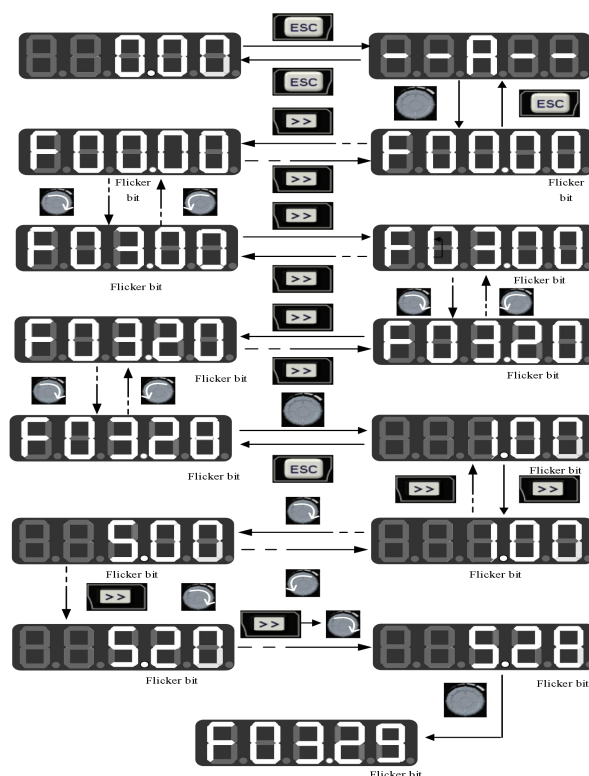


Fig. 2-2 Flowchart from Power-on to F03.28=5.28 Setting

In all menu modes, the user needs to press the ENTER key  to save parameter modifications. Differences after parameter saving are as follows: In the full menu mode, enter the function code following the function code that has been successfully modified. In the user-defined mode, enter the user-defined function code (according to the sequence defined in F11.00-F11.31) following the function code that has been successfully modified. In the non-default mode, enter the non-default function code following the non-default function code that has been successfully modified. In the protection information display mode, enter the protection information function code following the protection information function code that has been successfully modified. In the version information display mode, enter the serial number function code following the serial number function code has been successfully modified.

In the Level 3 menu, press the ESC key  to abandon parameter modifications.

2.2 User-defined mode (--U--)

Enter the F11 group of function codes from the full menu mode. Then the user can arbitrarily set the shortcut for the parameter to be accessed frequently. When F11.00 is enabled for the first time, U00.00 will be displayed by default, meaning that the function code defined by default for F11.00 is F00.00. The lowest cursor bit will flicker. The user can set any function code, similar to the function code selection in the Level 2 menu. After setting, press the ENTER key  to save it and enter the user-defined menu mode to display the set function code.

For example, F11.00 is set to U00.07 and F11.01 to U00.09. F11.00 and F11.01 will be defined as F00.07 and F00.09, respectively. They are distinguished by U and F. U indicates that this function code is user-defined, as shown in Fig. 2-3.

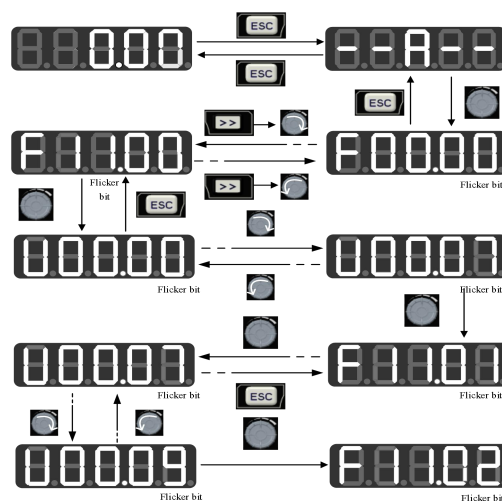


Fig. 2-3 Example of User-defined Mode Setting

In the user-defined mode, press the ENTER key  to enter the Level 2 menu. The Level 2 menu only display 32 user-defined parameters in the F11 group. The user can enter the F11 group from the full menu mode to set these function codes.

After the function codes are defined in the F11 group, enter the user-defined mode. Then we can see F00.07 defined by the first function code F11.00, F00.09 defined by the first function code F11.01, and so on to F11.31, 32 in total. Function code modification in the Level 3 menu is equivalent to that in the full menu mode, and the modification method is also the same.

In the Level 2 menu of the user-defined mode, turn the potentiometer key  on the keyboard, to change the function code defined by F11.00 to that defined by F11.31.

When the right shift key  is pressed in the Level 2 menu, the cursor will not shift. Press the ENTER key  to enter the Level 3 menu. If the displayed function code is modifiable currently, the lowest bit indicated by the cursor will flicker. Parameter modification is the same as that in the Level 3 menu under the full menu mode. After modification, press the ENTER key to confirm and save the parameters and enable next user-defined parameter. Function code modifications in the Level 3 menus under different menu modes have equivalent effects.

2.3 Non-default mode (--C--)

In the non-default mode, press the ENTER key to enter the Level 2 menu. The first parameter different from the default settings of the inverter will be displayed, starting from F00.00. When the right shift key  is pressed in the Level 2 menu, the cursor will not shift. If the increment or decrement key on the keyboard is pressed, the function group and function code will not be modified, and the non-default function code following and in front of the current function code will be displayed respectively. If the displayed function code is modifiable currently in the Level 3 menu, the lowest bit indicated by the cursor will flicker. In this case, parameters can be modified in the Level 3 menu under the full menu mode. After modification, press the ENTER key  to confirm and save the parameters and enable next non-default parameter.

For example, change F00.03 to 1 and F00.07 to 40.00 in the full menu mode, which are not default values. Then enable the non-default mode. F00.03 will be displayed first. When the potentiometer key  on the keyboard is turned clockwise, F00.07 will be displayed; and when the potentiometer key  on the keyboard is turned counterclockwise, F00.03 will be returned, as shown below:

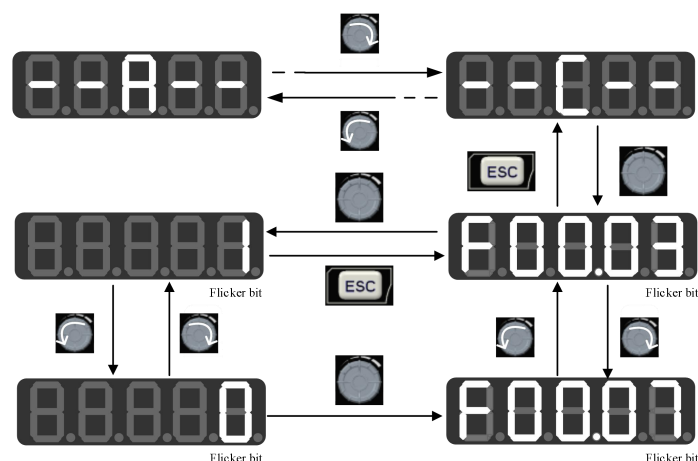


Fig. 2- 4 Function Code Modification in Non-default Mode

2.4 Protection information display mode (--E--)

In the protection information display mode, press the ENTER key to enter the Level 2 menu. The Level 2 menu will only display the fault record group under the F19 group, which is conducive to direct viewing of protection record information.

Turn the potentiometer key  on the keyboard in the Level 2 menu under this mode to increase or decrease the function code of the protection group, and the shift key  will be unavailable. In case of protection, you can press the shift key  on the keyboard in the Level 3 menu to switch the display of the protection code, protection output frequency, protection output current, protection bus voltage, and protection operation status.

3. Protection Monitoring

When the inverter is in the protection status, you can directly press the right shift key  to switch the current protection type and the output frequency, output current, output voltage, running status and working time during the protection.

4. Operation Monitoring

4.1 Normal monitoring

In the monitoring status mode 1 of EM730, you can set any function code to be viewed between F12.33 and F12.37. When F12.32=1, the monitoring mode 1 will be enabled. If the Level 0 monitoring menu appears, you can press the right shift key  to switch the monitoring parameters according to the order set for each function code between F12.33 and F12.37. When the inverter changes from the stop status to running

status, the monitoring parameter will automatically change from the current value to that indicated by F12.33. When the inverter changes from the running status to stop status, the monitoring parameter will automatically change from the current value to that indicated by F12.34.

4.2 Editing Mode

Quick change in the monitoring mode:

When F00.04 is set to "0: digital frequency setting F00.07", turn the potentiometer key  to directly change the offset;

When F00.04 is set to "8: digital potentiometer", turn the potentiometer key  to change the set frequency of F12.42 digital potentiometer. In this case, turn the potentiometer key  to enter the editing mode. The value will change from the second digit of the digital tube by default. The digital tube corresponding to the changed digit will flash. Press the right shift key  to move to next digit on the right. Press the ESC key  to cancel change and return to the original value. Or, press the ENTER key  to confirm the change and exit the editing mode. The indicator will not be flicker. Press the right shift key  to enable the normal monitoring mode: switch to next monitoring parameter. Fig. 4-6 shows the editing status in the monitoring mode.

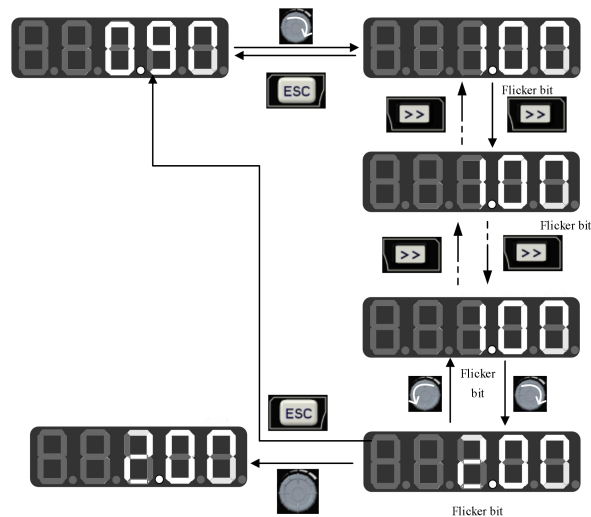


Fig. 4-6 Editing Status in the Monitoring Mode

5.Run/Stop

After setting the parameters, press the RUN key  to enable the normal operation of the inverter, and the STOP/RESET key  to stop the inverter.

6.Other Warning Prompts

6.1 P.-ON prompt

The P.-ON prompt will be displayed after power-on initialization.

6.2 P.-OFF prompt

When the voltage drops to 250V (with the soft start disconnected), P-OFF will be displayed, and the keyboard can be operated freely to exit the P.-OFF display and display normal information. In case of no keyboard operation within 5s, P-OFF will be displayed again. After the voltage is restored and the soft start is engaged, P.-ON will be displayed again.

6.3 SOFT.E warning

If the soft start is not engaged and the inverter is started, the SOFT.E warning will appear. After the voltage is restore and the soft start is engaged, normal operation will be enabled.