

## Chapter IV Instruction of HMI Module

### 4.1 The difference between LCD message of SR and the traditional LCD message

In traditional LCD, it can only display some fixed and simple message such as time, I/O status etc. It cannot display the counter value, timer value and analogue value. And all the LCD message screens are set and programmed by the program engineer, so users cannot change, add, or remove any message screen. And the operation of the traditional LCD message screen is not easy to use for the end user.

Regarding the above shortcomings of the traditional HMI module, we have adopted a new method to develop the SR, and offer to user a free, and easily LCD instruction, the powerful function of the LCD is as follows:

#### 1. Providing 64 Human-Machine Interfaces

When using SUPER CAD, users can add HMI according to the demand no more than 64. And the non-alarming interfaces can be seen on LCD panel.



Use the up/down moving key to see different screen page

Message screen and function screen will change to each other by pressing the right/left moving key

Fig. 4.1

#### 2. Providing Several HMI Module

When you add an HMI, the system will create a referring module screen according to the connection relation, so user just need to make some minor changes on the HMI, for example as follows:

Note: B0 block is a CMPR instruction, and it has an SLCD as L:0, connect the under output leg of B0 to the under leg of L:0, Double click the L:0, it will create the following left screen.

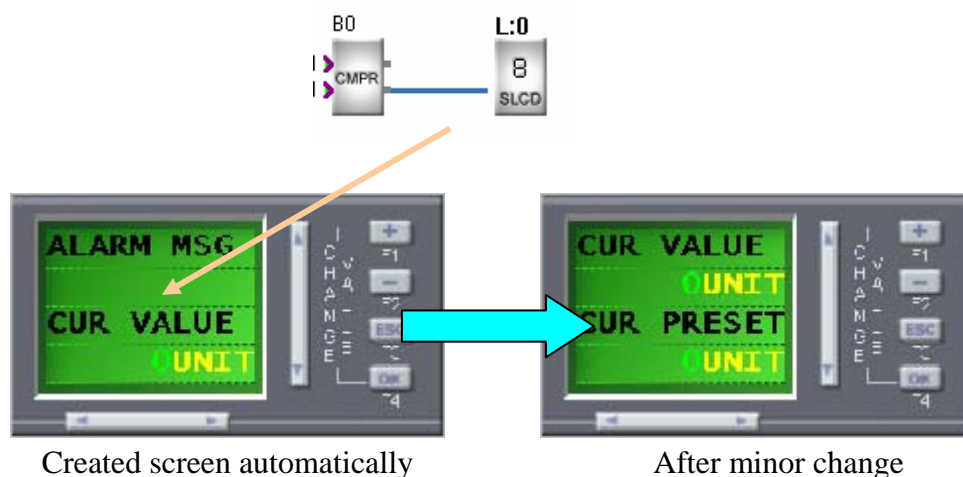
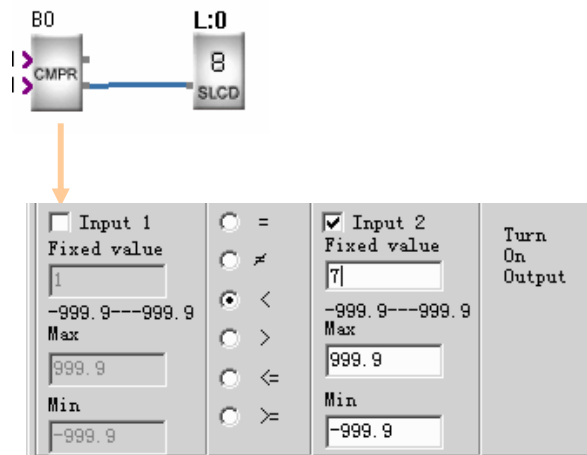


Fig. 4.2

#### 3. Direct, Clear & Simple Connecting Relationship

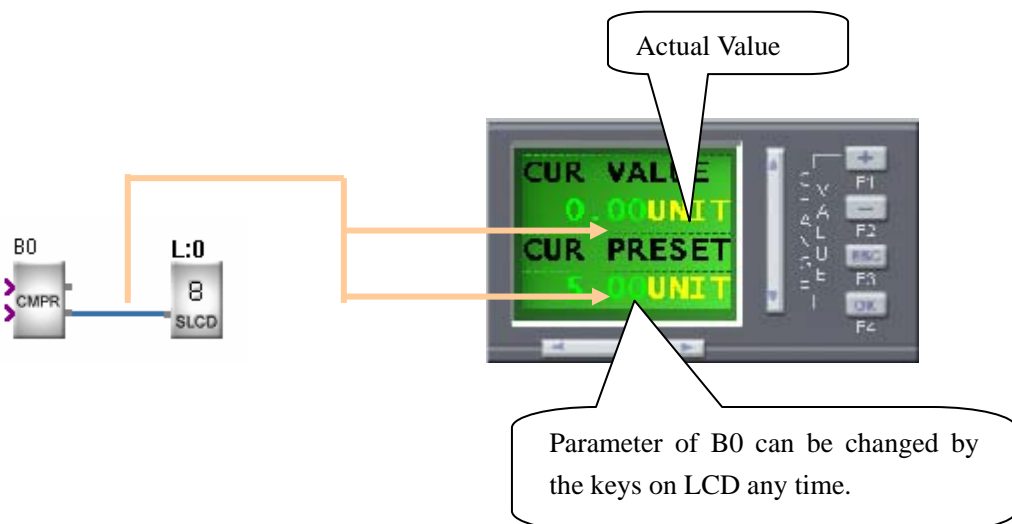
User only need to link the LCD with the function block, then all the message shown on LCD will be related to the connected instruction. For example as follows:

**⚠Note:** Set the parameter of B0 as follows:



**Fig. 4.3**

The LCD will display the actual value and parameter value of B0.



**Fig. 4.4 Actual Value & Parameter of the Running**

#### 4. Alarm triggering function.

When the output of the previous instruction is 1, it can activate the linked alarm LCD (L0), and the alarm message will be displayed to user.

The trigger method is as follows:

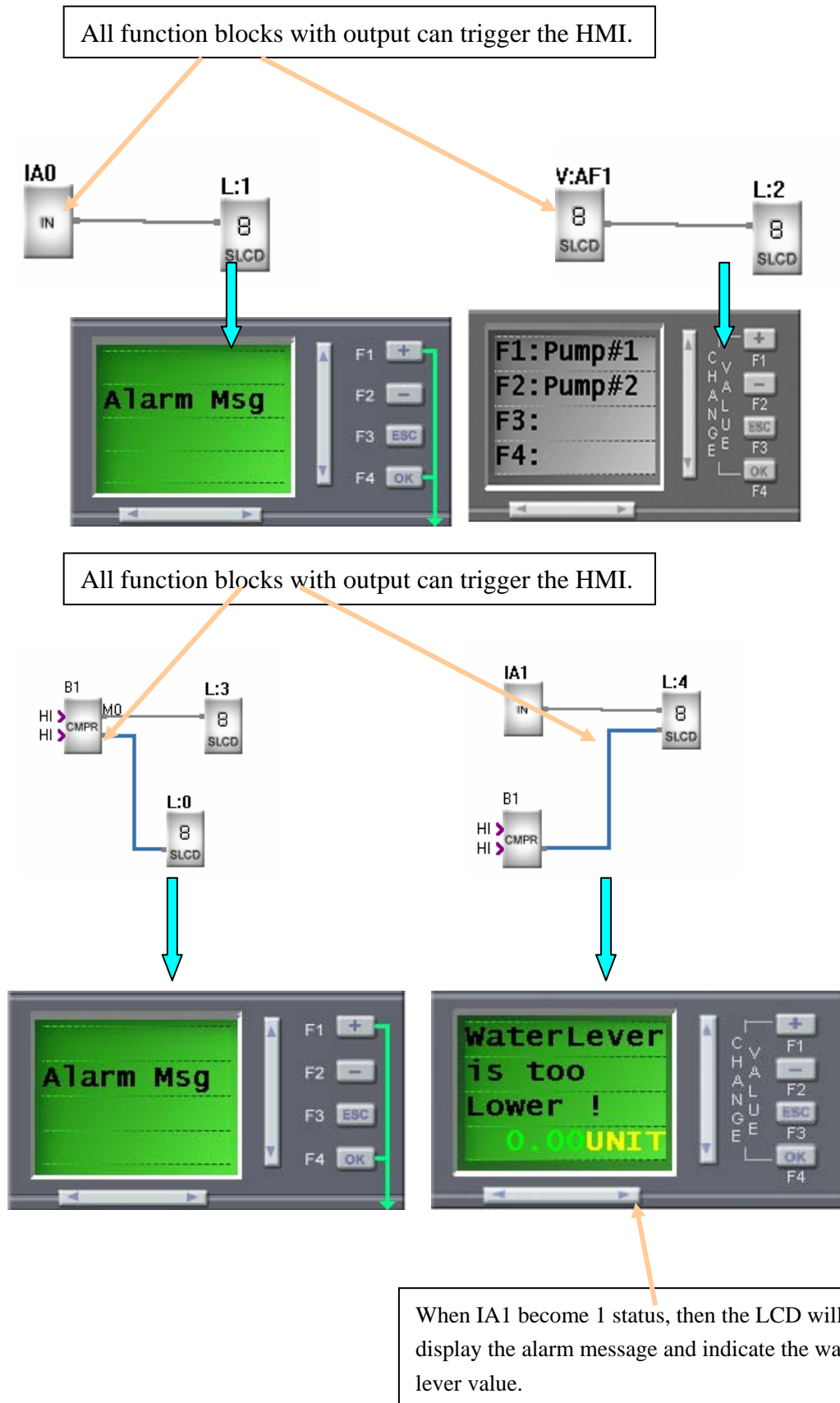
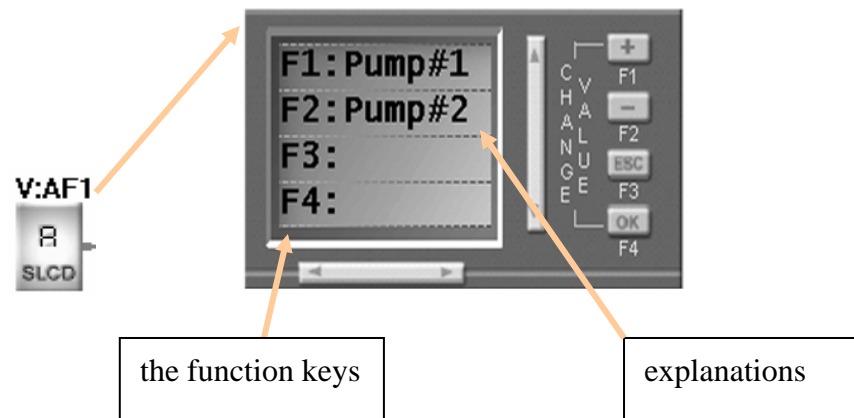


Fig. 4.5

## 5. Providing 32 function keys

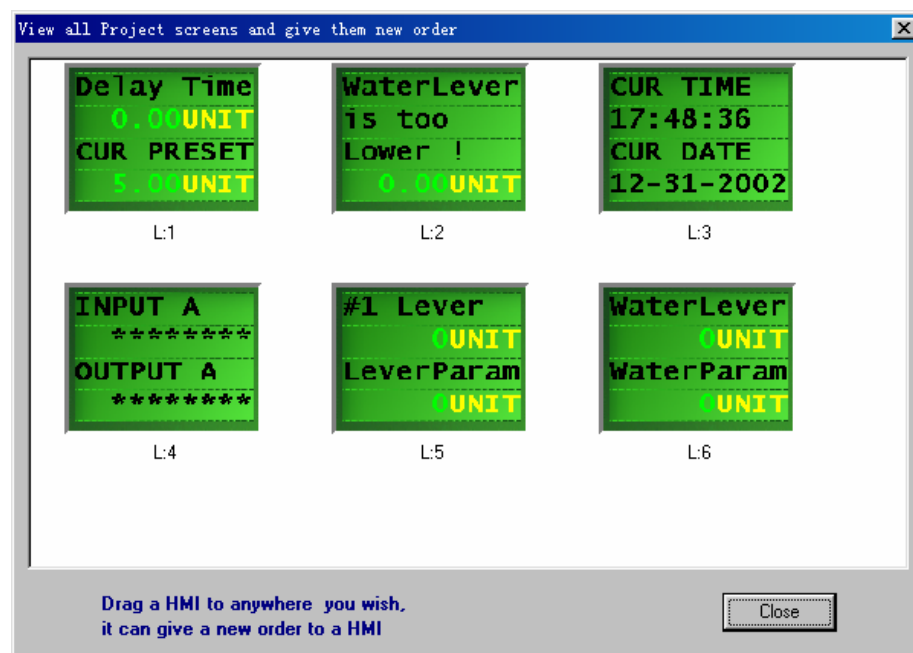
These function keys are the same work with In(Input I0-In), equal to soft switch. On

LCD, all the function keys can be defined and provided with explanations. In SUPER CAD, 8 pages of function keys are provided and each page has four function keys.



**Fig. 4.6**

6. We can order message screen pages very easily. When you edit a lot of LCD message screens, and they have the different priority, so we can use order them according to its priority, the more important one should be displayed more previous than the not important one by their sequence, and you can use the page up and page down to view all the message pages. See the following figure, and you can click each message screen, and move it to any place.

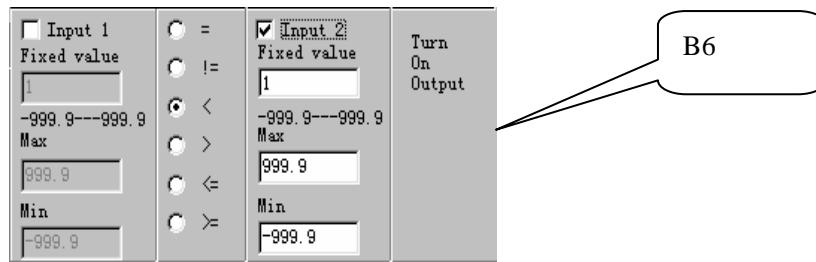


**Fig. 4.7**

## 7. With Special Characters Function

There are some fixed special characters in the LCD. These characters can represent some standard ASCII code. You can select these special characters when you cannot type them in the windows system. It is very easy to use for the user. There are following special characters in its software.

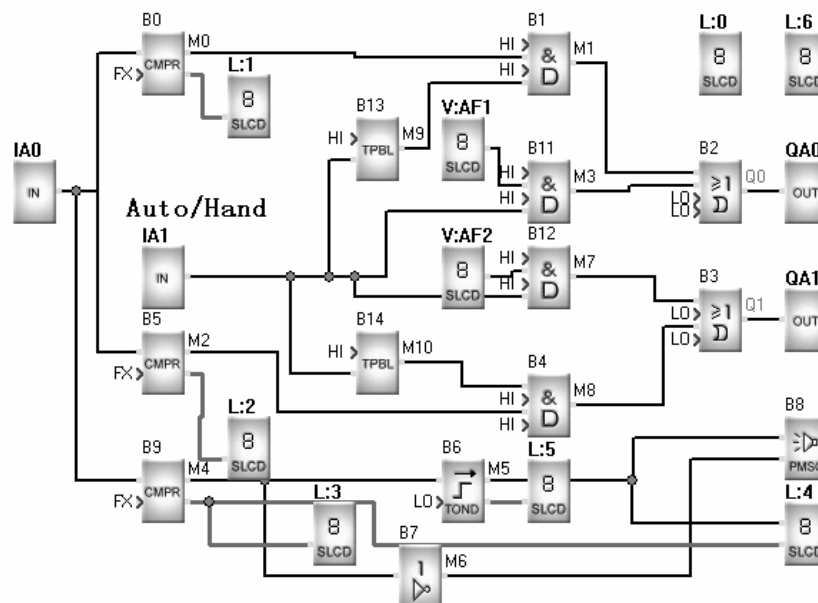




**Fig. 4.10**

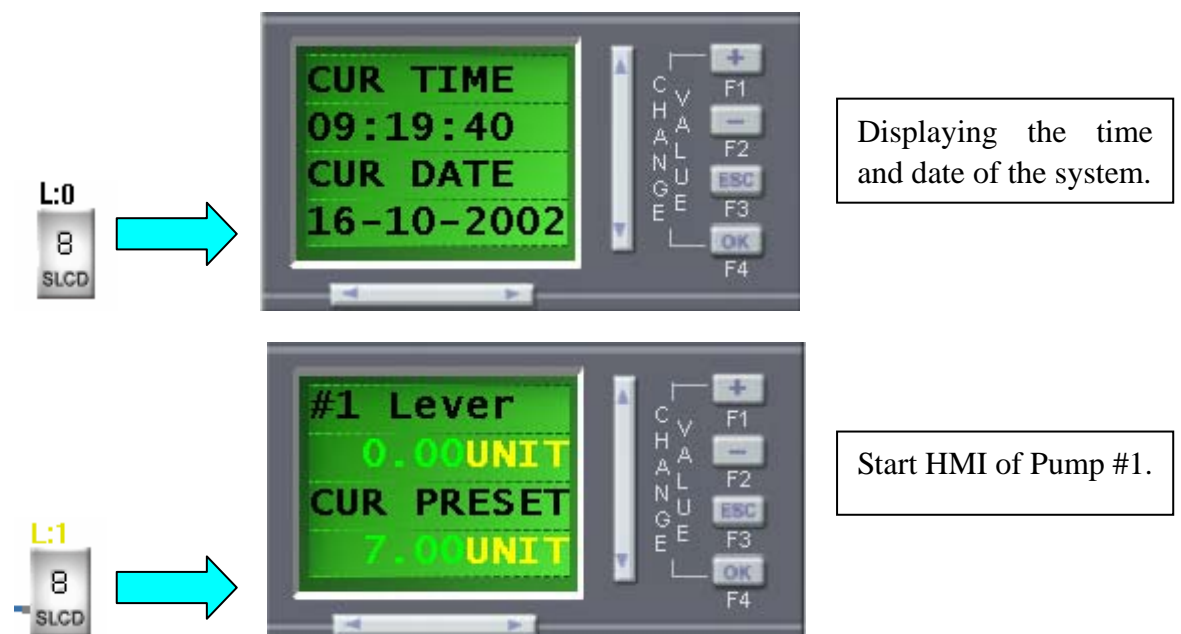
B0 will control the pump #1, B1 will control the pump #2, and B6 will control the voice alarm message to alarm.

e. The logic control program of SR-12MRDC is as follows:



**Fig. 4.11**

f. Edit the LCD message screen. There are total 7 message screens in this example, descript as follows:



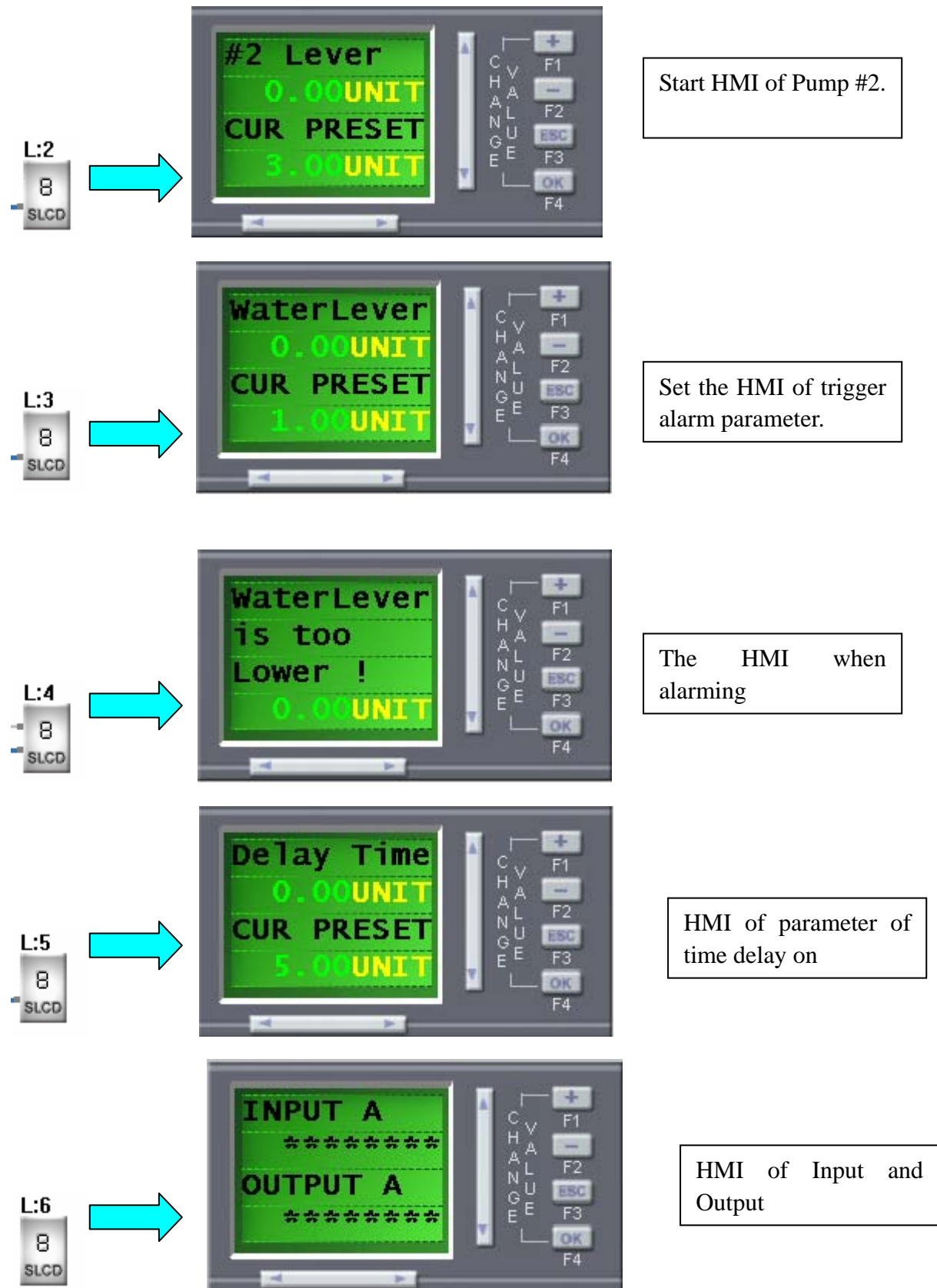


Fig. 4.12

### 4.3 Editing of the HMI

**⚠Note:** There is a LCD display on the hardware of SR, and the LCD can display the system messages, alarm messages, RUN/STOP status, I/O status, parameter changes and function keys. All the messages can be edited by users according to his

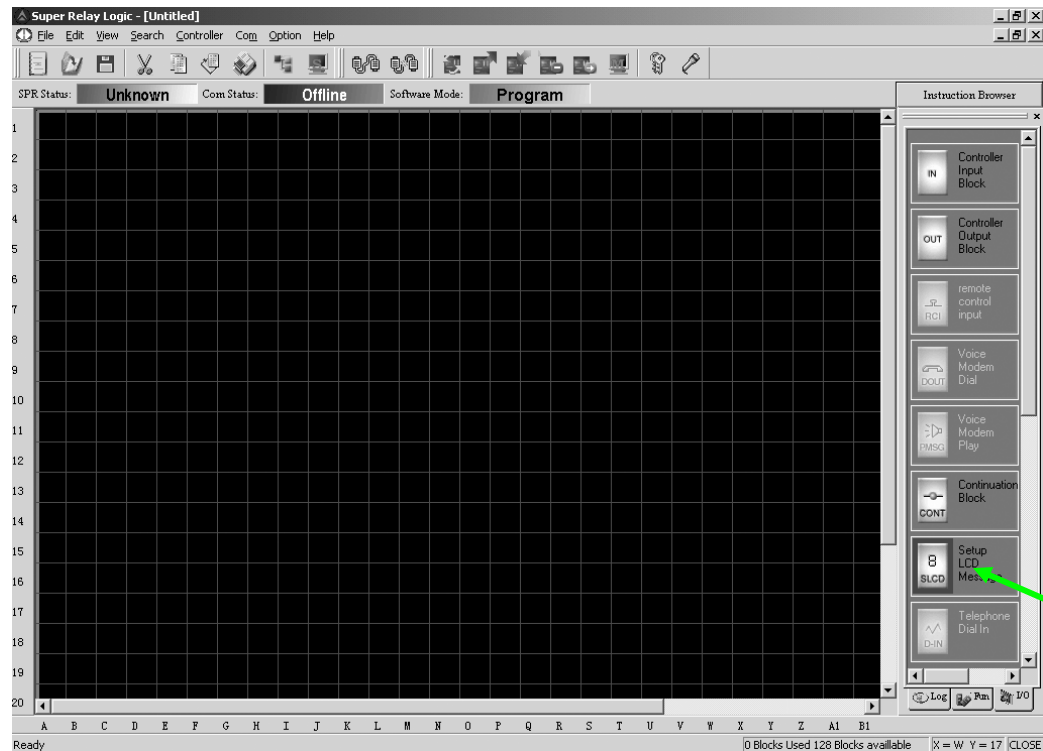
requirements.

LCD message screen can be divided into 3 types:

- a. System message: display system time, I/O status, and function keys.
- b. Parameter message: display the value and pre-set parameter of Counter, Timer and an Analog
- c. Alarm message: the alarm message, which will be displayed on the LCD after activated.

1) Edit the system message:

Start SUPER CAD and create a new file as follows:



SLCD is used to edit message screens

**Fig. 4.13**

Choose the SLCD, and put it to the edit window, a SLCD set up window will appear as follows:



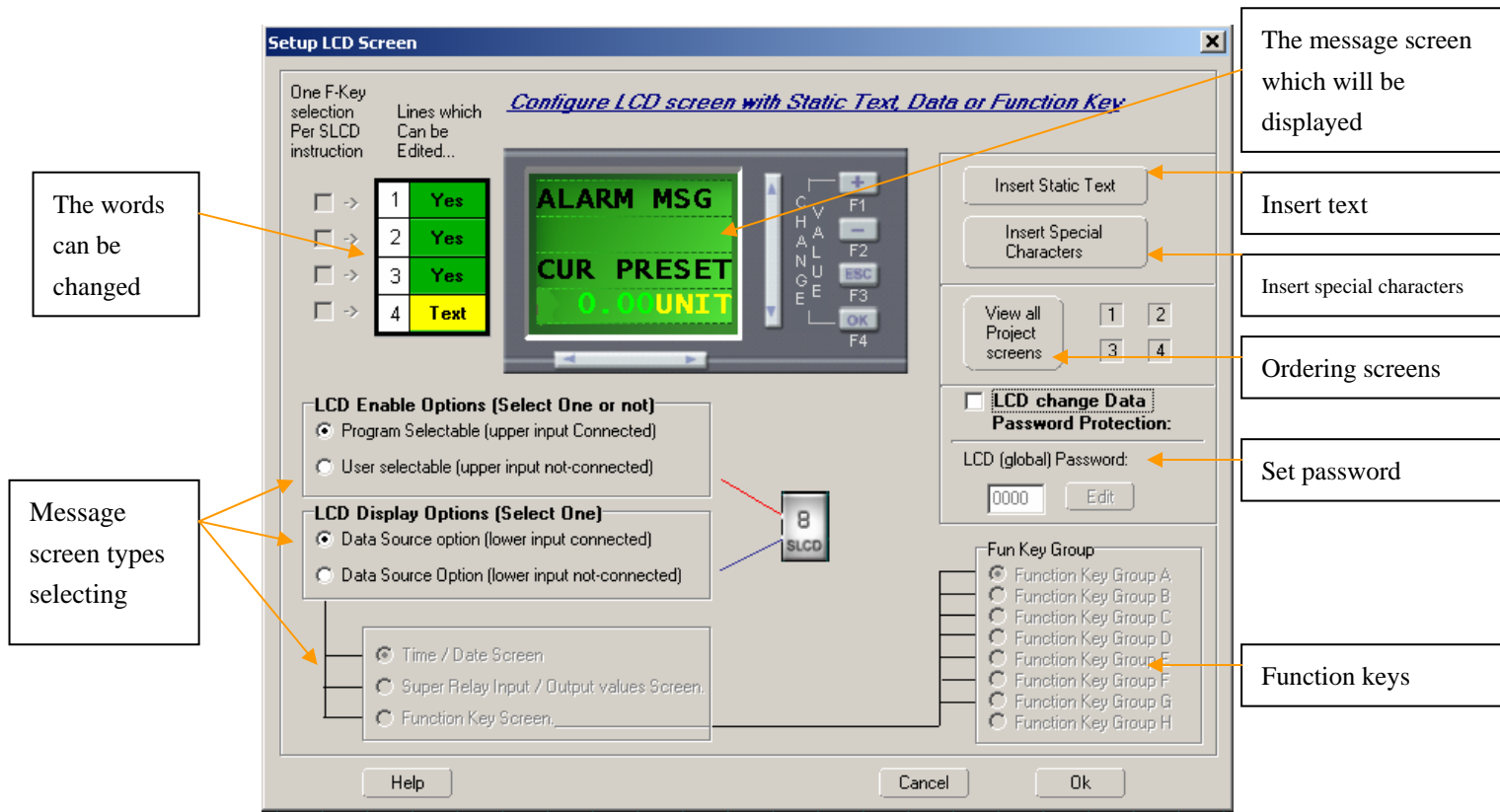


Fig. 4.14

- ①. Edit a system time message screen in the program, the operation is as follows:  
Take a SLCD instruction to the edit window as the following figure:

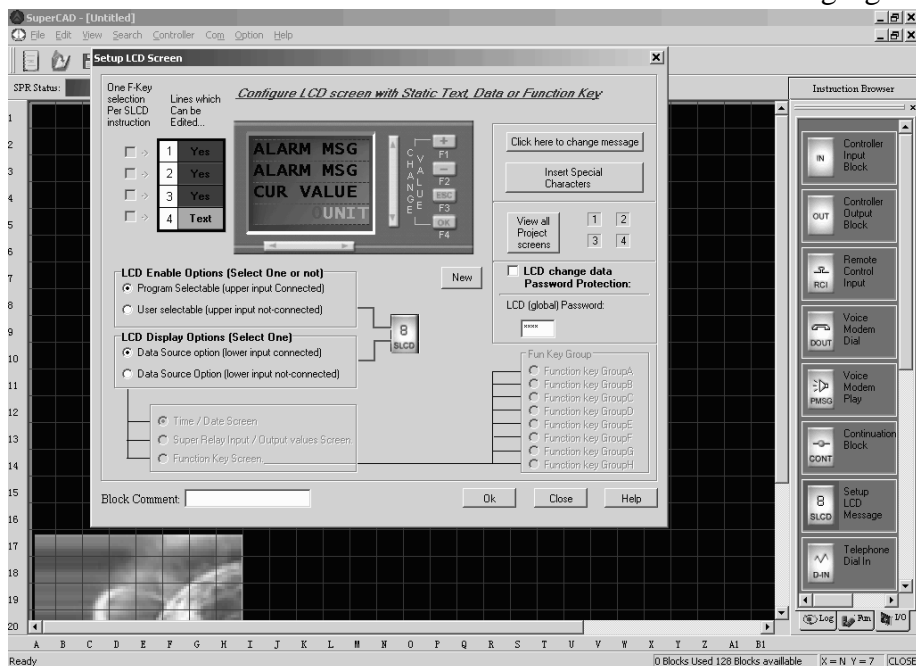
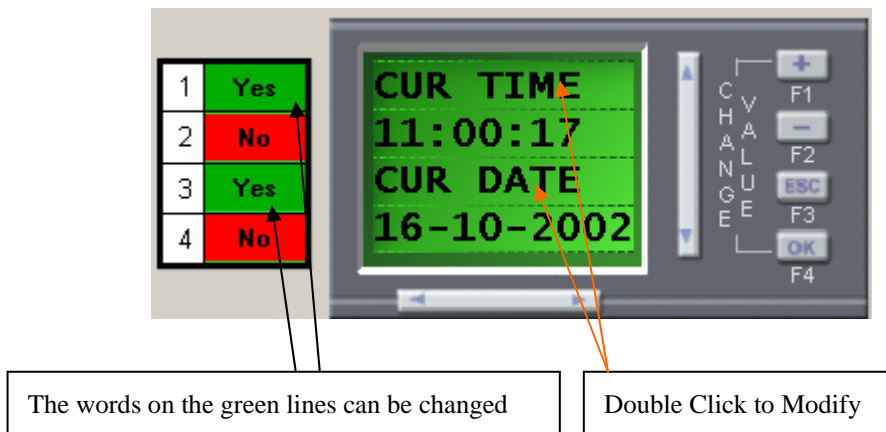


Fig. 4.15

Choose “User selectable (Upper input not connected)”  
And choose “Data Source Option (Lower input not connected)”  
And choose “Time/Date Screen”, then the message screen will appear as follows:



**Fig. 4.16**

Double click “CUR TIME” or “CUR DATE” to modify them as you wanted.  
Double click “CUR TIME” to enter the modifying dialog box as follows:



**Fig. 4.17**

Type “TIME IS:” and press “Enter”, the modified words description is as follows:



**Fig. 4.18**

Click “OK” to finish the setting of the time/Date. In run status, the second line will indicate the real time, and the forth line will indicate the Year/Month/Date.

## ② I/O status message screen

Take a SLCD instruction to the edit window and choose the selectable items as follows:

Choose “User selectable (Upper input not connected)” And choose “Data Source Option (Lower input not connected)” And choose “Super Relay Input/Output values Screen”, the message screen will appear as follows:

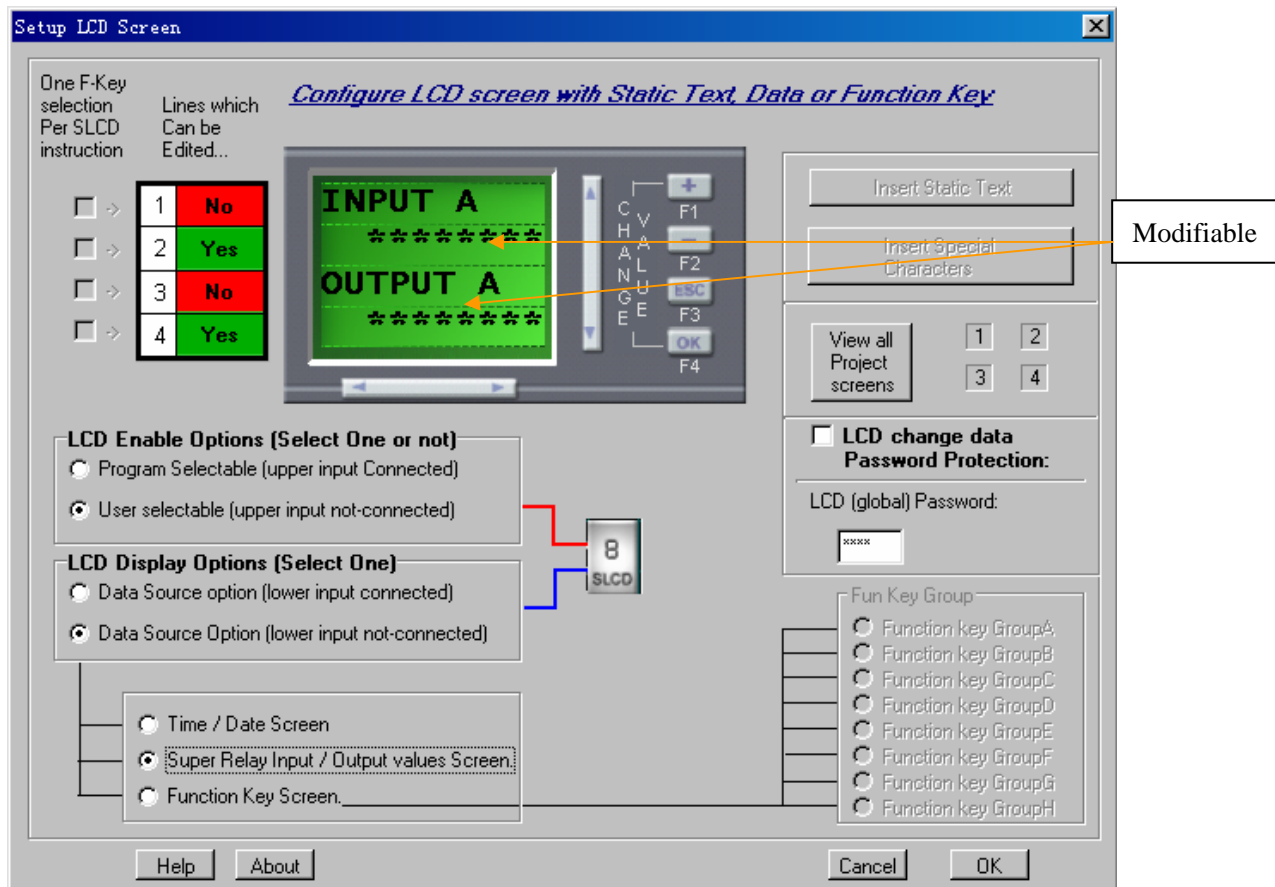


Fig. 4.19

Double click **\*\*\*\*\***, to choose the group of I/O, see following figure:

We divided the I/O into 8 groups, because the SR I/O can be extended to 74I/48O, and each LCD line can only display 10 points at the most.

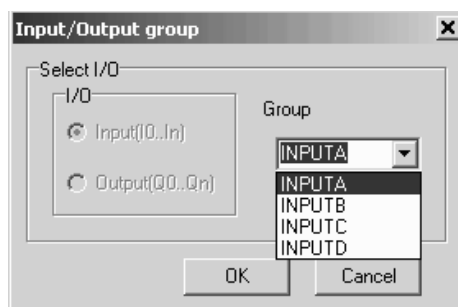


Fig. 4.20

Select INPUTB, the modified message screen will appear as follows:

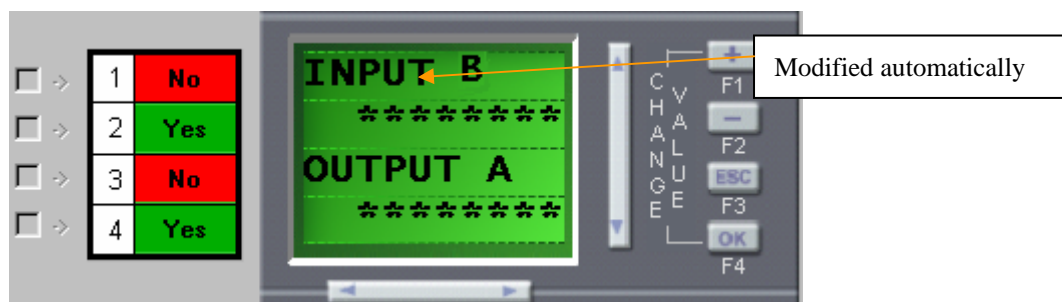
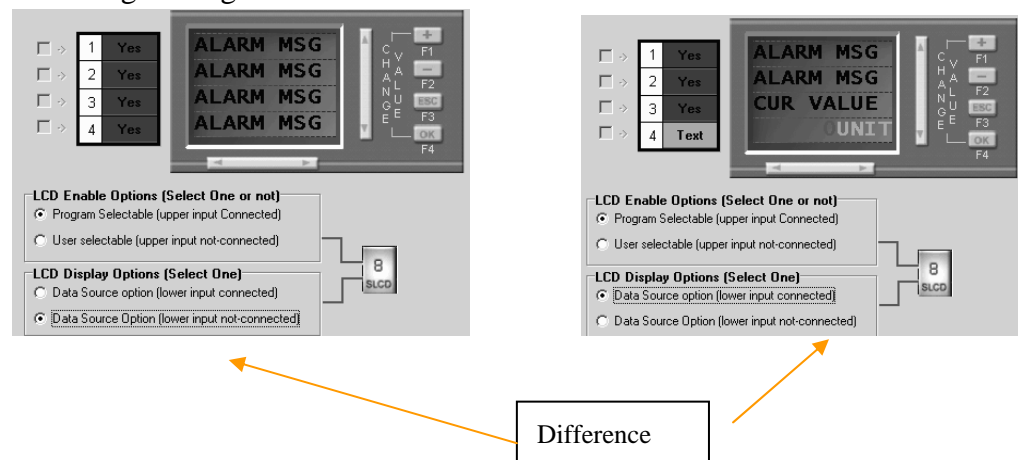


Fig. 4.21

### ③ Edit a alarm message screen.

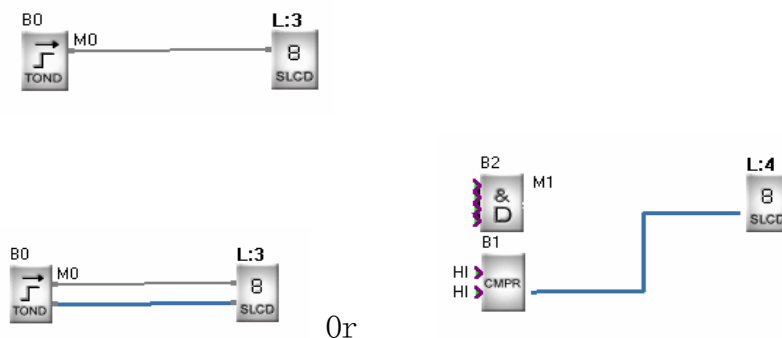
Alarm messages screen will be activated by a connected instruction, when the condition is satisfied, the alarm message will appear on the LCD:

There are 2 kinds of alarm message screens; the relative selectable items are as following two figures:



**Fig. 4.22**

On the other hand, their link mode is not the same, they are as follows two figure:



**Fig. 4.23**

The related instructions are: TOND, TOFD, SPBL, BLNK, TMOD, UDCT, PONS, CMPR, CT CMPR.

### ④ Edit a parameter message screen.

User can change the preset of the parameter on this kind of message screen by the panel keys on the SR.

Take a SLCD instruction to the edit window and choose the selectable items as follows:

Choose “User selectable (Upper input not connected)”

And choose “Data Source Option (Lower input connected)”

The dialogue box is as follows:

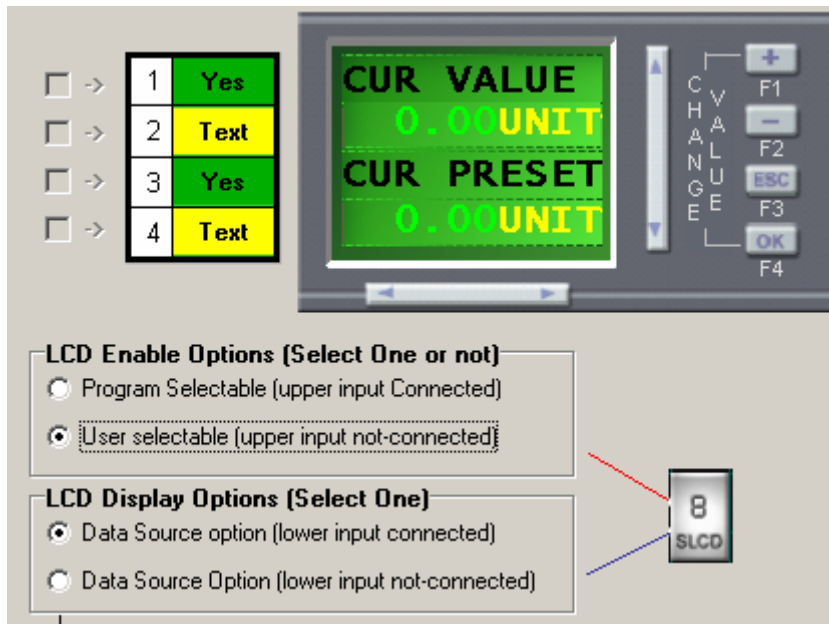


Fig. 4.24

This message screen will display two values, one is current value, and the other is preset value.

User can change the description words on each line of the LCD screen.

The related connected instructions are: TOND, TOFD, SPBL, BLNK, TMOD, UDCT, PONS, CMPR, CT CMPR.

Note:

TOND, TOFD, SPBL, BLNK, TMOD, UDCT, PONS, CMPR, CT CMPR can have two different message screens such as following program:

L: 6 displays the parameter setup, L:3 displays the alarming information.

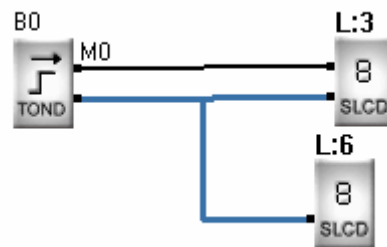


Fig. 4.25

There are 2 kinds of set method for presetting the value of CMPR:

1) One kind is that it only has 1 leg need to be compared (including two conditions):

(1) Lower leg connected to an input for comparing to a fixed value, see following figure.

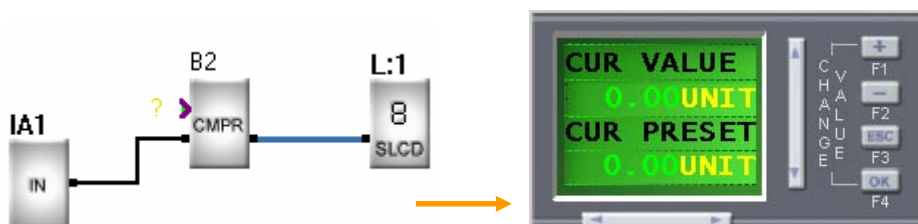


Fig. 4.26

(2) Upper leg connected to an input for comparing to a fixed value, see following figure

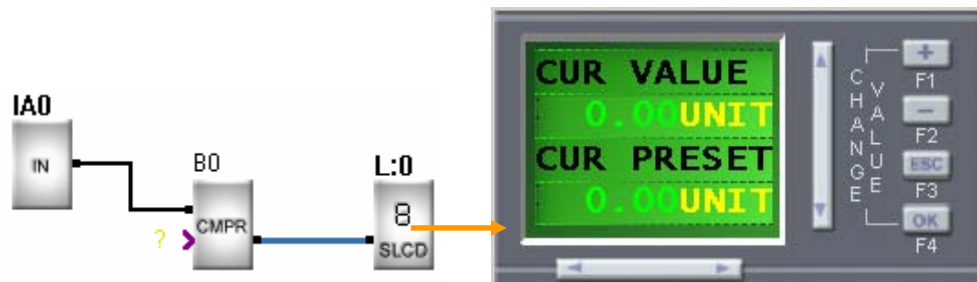


Fig. 4.27

2) Two leg are connected to inputs for comparing each other

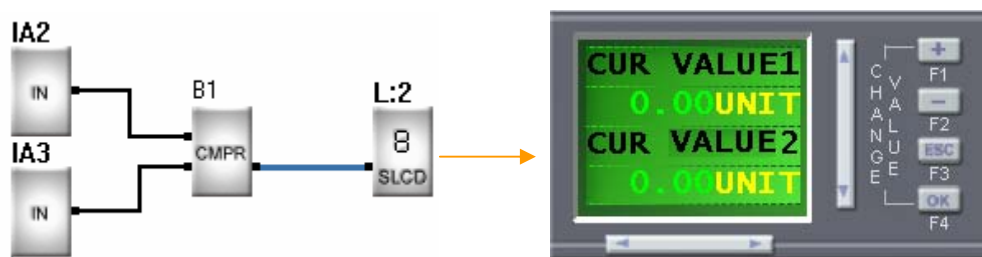


Fig. 4.28

### ⑤ Order message screens

When you edited a lot of message screens, you need to order them and let the more important one be displayed more previously. You just need to click, the ordering dialogue box will appear as follows:

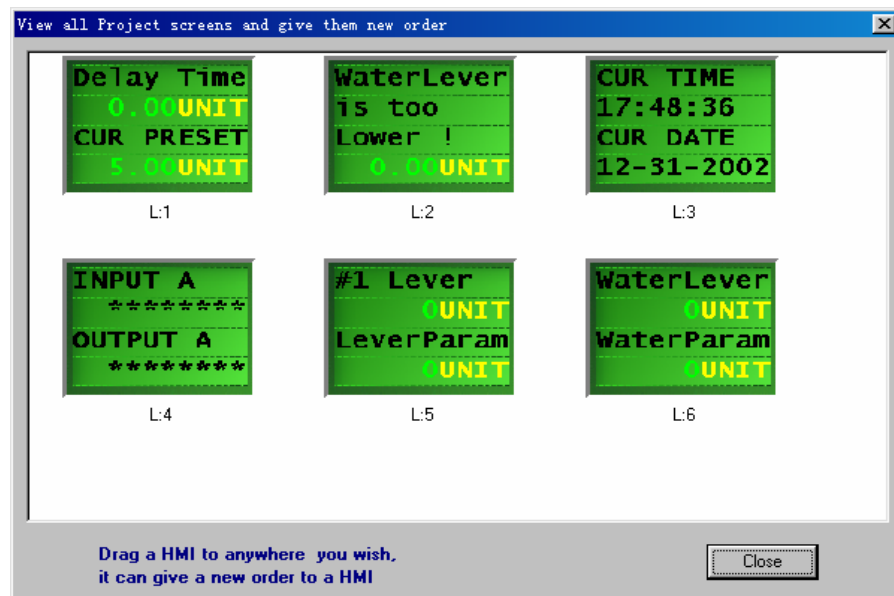


Fig. 4.29

User can move each message screen to any place by clicking and moving it, such as place L:2 to the first place, just need to click and move L:2 to the place of L:1, then L:1 will go to the second place automatically, it is very easy to use.

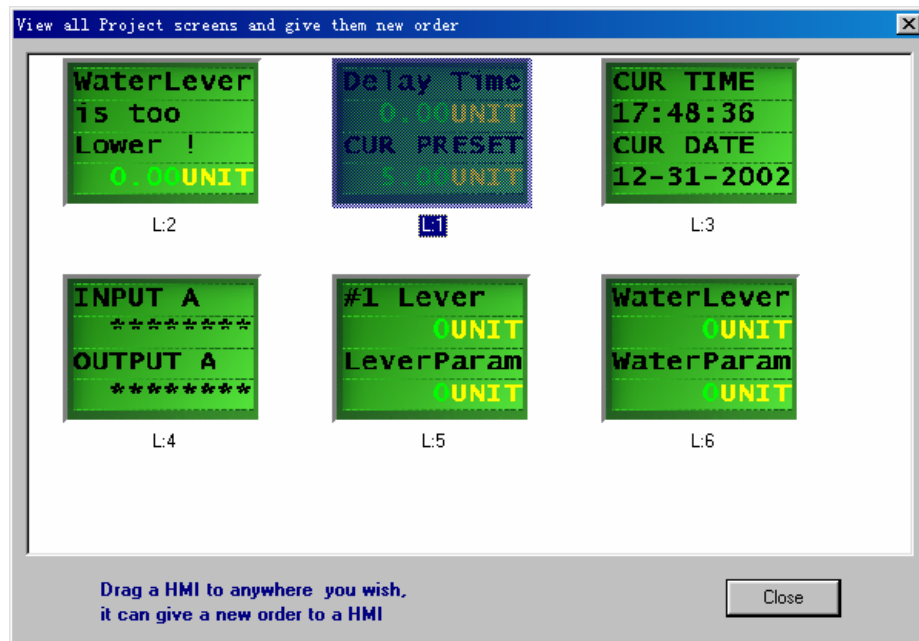


Fig. 4.30

#### 4.4 Instruction of Virtual Keys

In the Super Relay Logic software, we have defined 32 function keys in 8 pages (A,B,C,D,E,F,G,H), each page has 4 function keys (F1—F4), when a function key was activated, it will offer a high or low potential (1 or 0 status) output, and this output can be used as an input for any other instructions to act as a switch function. User can select the function key group from group A to group H, and then select a key from F1 to F4 in the following figure:

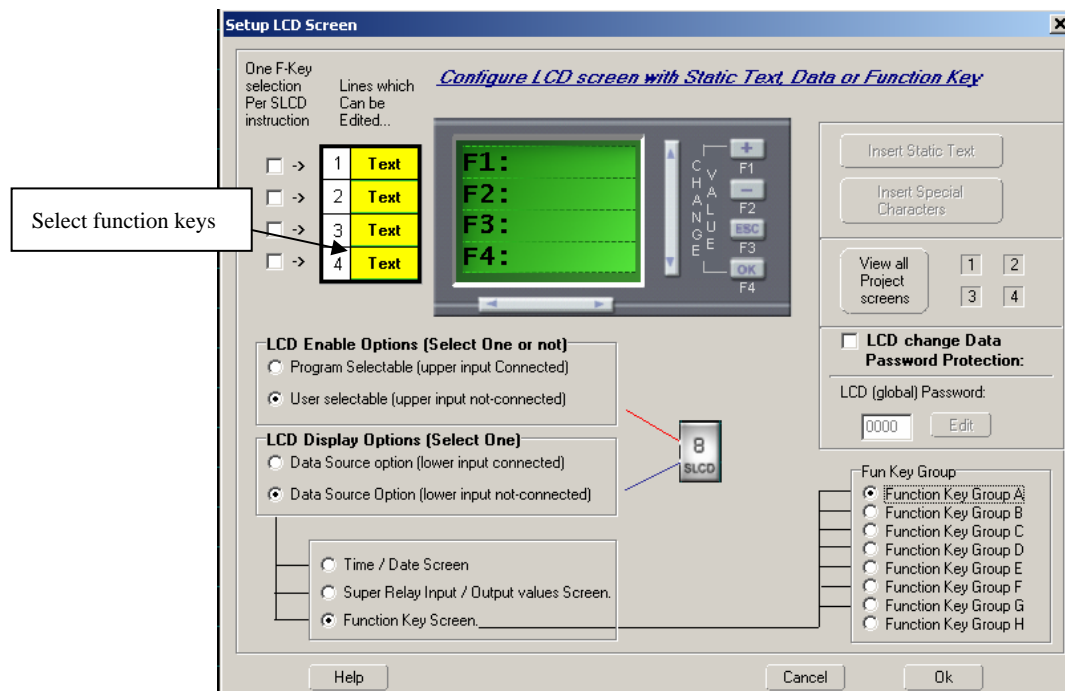


Fig. 4.31

After selected the selectable items, the following dialogue box will appear, and you can name the function key (or give some description for the function key), and you



can set the password protection for the function key. At last, click OK to finish the definition of a function.

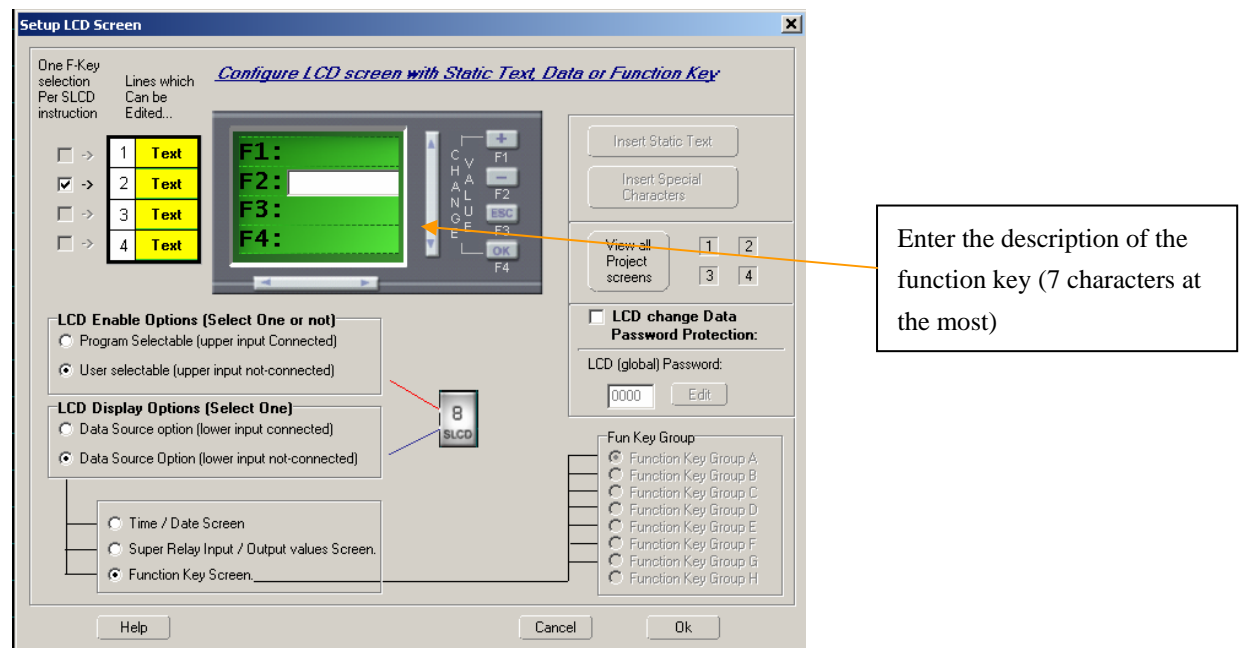


Fig. 4.32


Such as typing “Run fan” into the blank of , and press “Enter” to finish the setting. It will display as:



Fig. 4.33


If you want to modify the description, just need to double click “F2:Run fan”, then type the new words in the blank of , and then press “Enter”. Then press “OK”, the function will displayed in the edit window as follows:



Fig. 4.34

The function can be acted as an input to any other instructions. Such as:



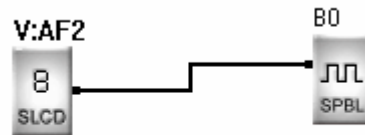


Fig. 4.35

## 4.5 Set password

There is a password protection option in SLCD dialogue box, you can choose according to your need.

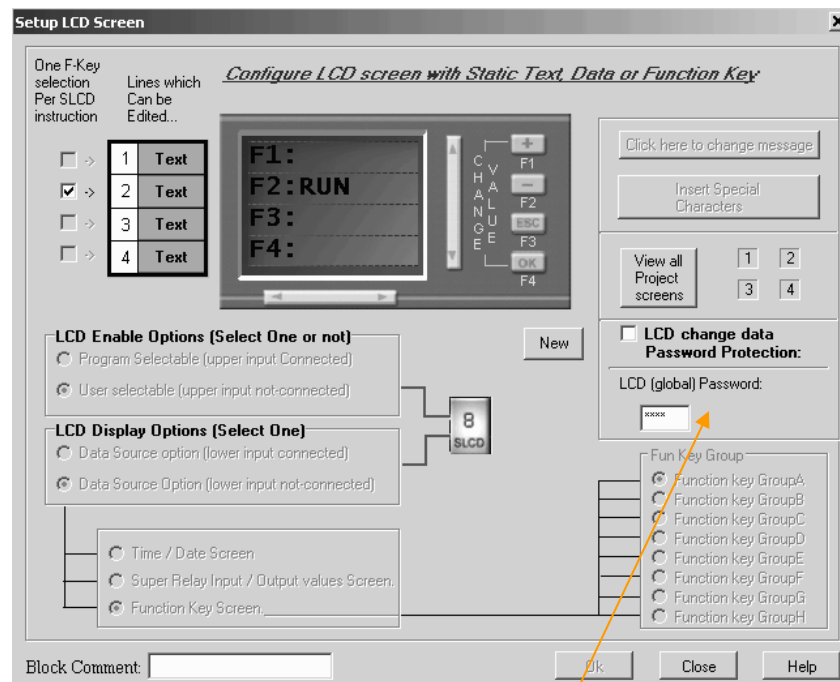


Fig. 4.36

Click and choose “LCD change Data password protection”, and “Edit” will be activated, you can change a new password.



Fig. 4.37

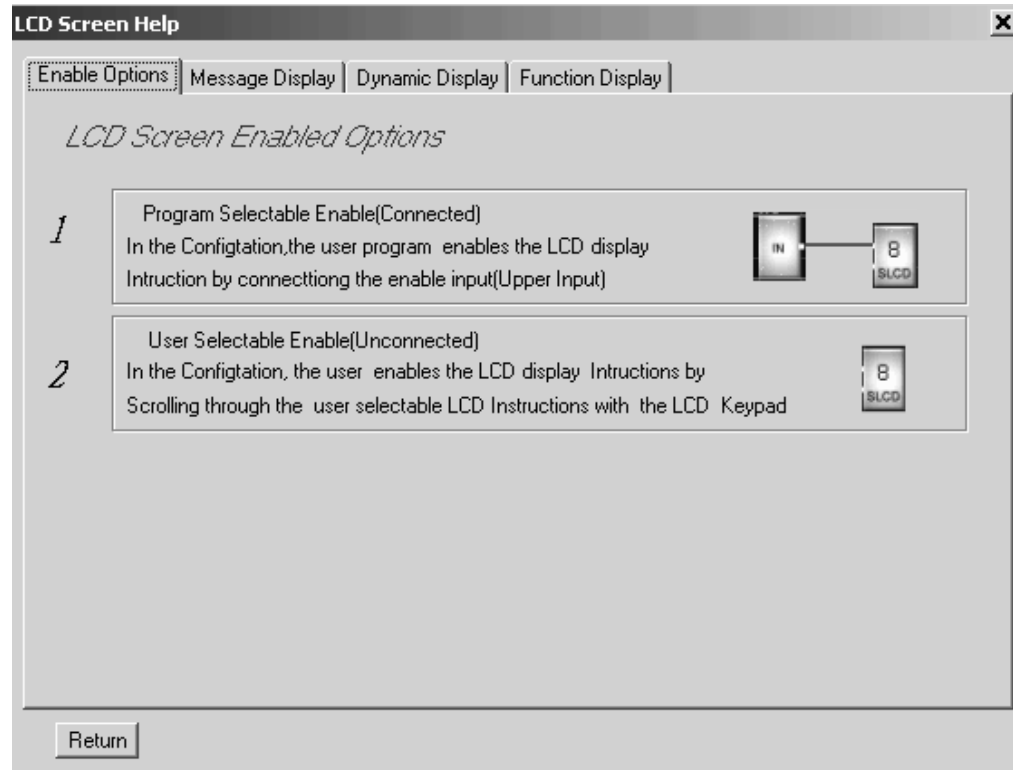
Click “Edit” , enter the 4 Characters password(0—9), then press “Enter” to confirm, see following figure.



**Fig. 4.38**

#### **4.6 Instruction of Help in LCD Software**

There is "Help" button in the dialogue box of Setup LCD Screen, click to select the help function, the following figure will appear.



**Fig. 4.39**

User can use this help function to view and study all the function and operation of the SLCD.

#### **4.7 Instruction of SR-HMI**

After powering on HMI, it must to check if the interface in HMI mates with the program in the main machine. If not, HMI will display the following message to prompt users. And now users should use SUPER CAD to re-write the program.



**Fig. 40**

If the program is mated and the main machine is running, the LCD displaying main interface will be as follows:

In SUPER CAD, this interface cannot be used to program and it is fixed as the first page of the parameter windows.

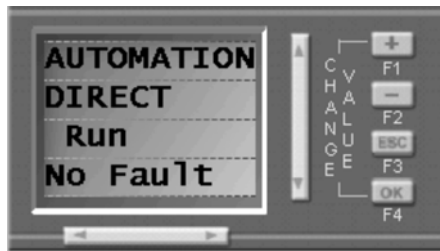


Fig. 4.41

Users can switch the parameter window and the function window by the “←” and “→”keys keys.

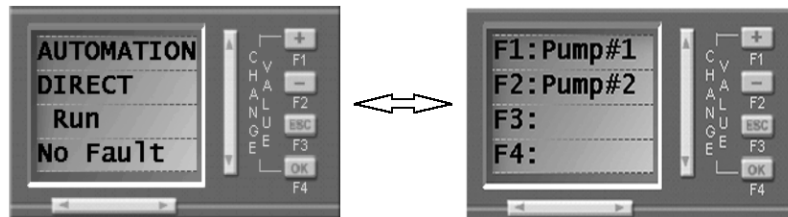


Fig. 4.42

In the HMI Parameter Display Interface or the Function Key Interface, if there is any alarming interface is triggered and HMI is without any pressing in 10 seconds, the LCD will display the triggered alarming interface. If there are more than one alarming interfaces are triggered, the LCD will display all the triggered interfaces in circle every 20 seconds.

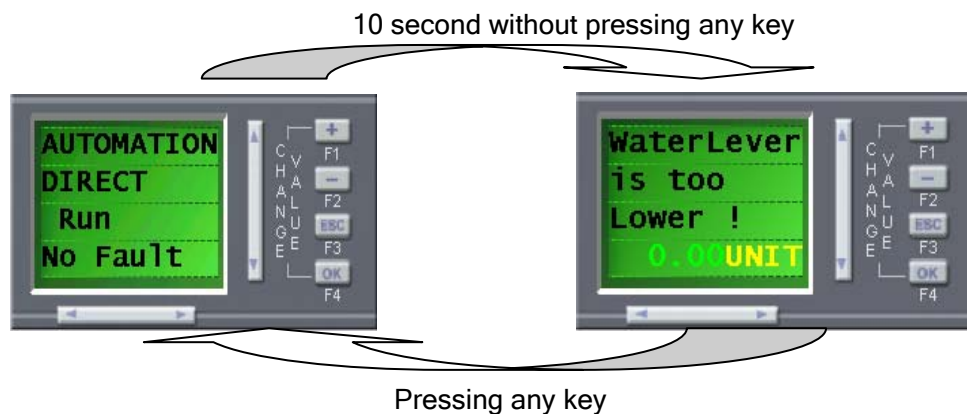


Fig. 4.43

If the parameter display interface is displayed, press ↑ ↓ key to display different parameter display interfaces page after page in circle.

If the function key interface is displayed, press ↑ ↓ key to display different function key interfaces page after page in circle.

#### 4.7.1 Modification Methods of System Time

Press ⇐ ⇒ key to switch to Parameter Display Interface, press ↑ ↓ key to switch to Super CAD system time display interface.



Fig. 4.44

Press F1+F4 key, if there is password protection function, the LCD will display the password input interface and require the user to enter the password. Otherwise the system time modification interface will be displayed.

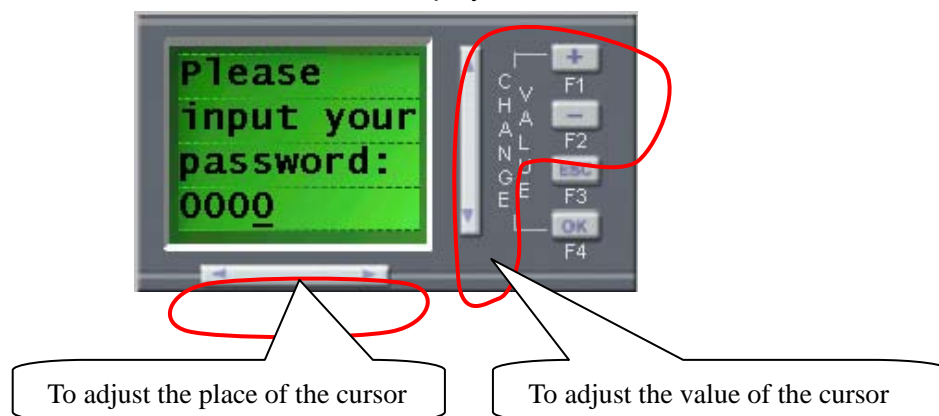


Fig. 4.45

If the correct password is entered, the system time modification interface will be displayed.

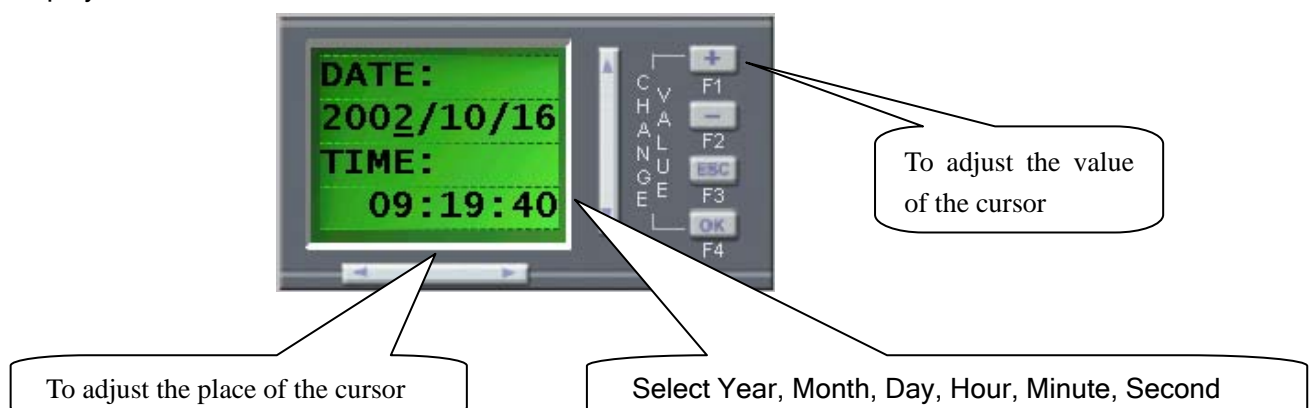


Fig. 4.46

After modification pressing OK key, the system time display interface will be displayed and the modified time will be displayed.

#### 4.7.2 Modify the Parameter Value of the Counter

Press ⇐⇒ key to switch to parameter display interface; press ↑↓ key to switch to counter parameter display interface; and press F1+F4 key to display counter parameter modification interface.

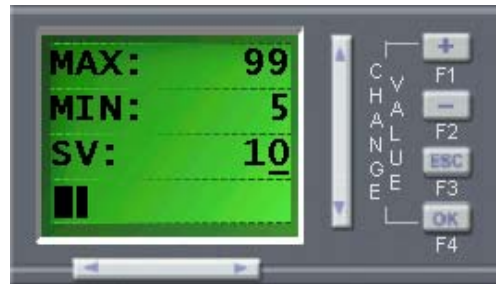


Fig. 4.47

Press ⇐⇒ key to move the cursor to digit needed to be modified and press ⇐⇒ + - keys to adjust the parameter. After modification press OK key to return to the counter parameter display interface.

#### 4.7.3 Modify the Parameter Value of the Timer

Press ⇐⇒ key to switch to parameter display interface; press ↑↓ key to switch to timer parameter display interface and press F1+F4 key to enter timer parameter modification interface. Modifying methods are as in 4.7.2.

#### 4.7.4 Modify the Parameter Value of the Analog

Press ⇐⇒ key to switch to parameter display interface; press ↑↓ key to switch to analogue parameter display interface and press F1+F4 key to enter analogue parameter modification interface. Modifying methods are as in 4.7.2.

#### 4.7.5 The Usage of the Function Key

Press ⇐⇒ key to switch to function key interface and press ↑↓ key to switch to the correspondence interface of the triggered key.

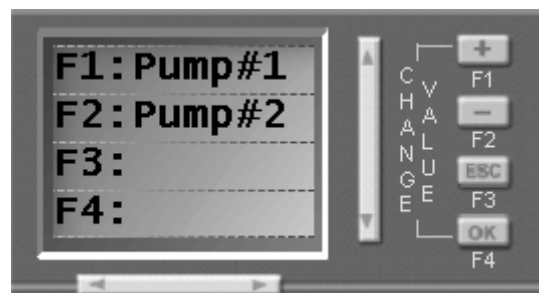


Fig. 4.48

Press the triggered key. If BUMP#1 is needed to be triggered, press F1 key. To avoid misaction, there will be a confirmation interface in the LCD to require the user to press OK key to confirm.

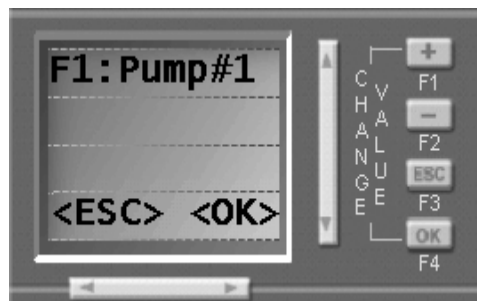


Fig. 4.49

#### 4.7.6 The Switch Over between Running & Stop Modes of the Main Machine

Press ⇐ ⇨ key to switch to parameter display interface and press ↑ ↓ key to switch to main machine running mode interface.



A. if the main machine being running mode

Fig. 4.50

Press F1 key to control the main machine to stop mode. To avoid misaction, there will be a confirmation interface in the LCD to require the user to press OK key to confirm.



Fig. 4.51

A. if the main machine being stop mode



Fig. 4.52

Press F1 key to control the main machine to running mode.



Fig. 4.53

#### 4. 8 Error Message Meanings and Methods in SR-HMI

ERROR 01: Means the ROM components destroyed in HMI internal.

Solution: Return to factory to repair.

ERROR 02: Means SR main machine reading or writing program and not being able to connect with HMI or the connection breakdown caused by other reasons.

Solution: 1. First check if SR main machine is reading or writing program. If so, after finish of the reading or writing of the program it will be OK.

2. If not so, there may be some communication breakdown between SR main machine and HMI or other modules. Please check the wiring parts.

ERROR 03: Means the HMI displaying program be different to the internal program in SR main machine. (The internal programs in HMI and SR are not written at the same time.)

Solution: Connecting HMI and SR, write the SR application program into SR main machine and HMI again via SUPER CAD.

ERROR 13: Means SR main machine not detect the Voice Module.

Solution: Check if the voice module working well and being connected with the main machine well. If the voice module not used, the voice module should not be chosen in the hardware configuration page in SUPER CAD. If the voice module is chosen, the voice module should be ensure to work properly and being connected with SR main machine when SR main machine is working.

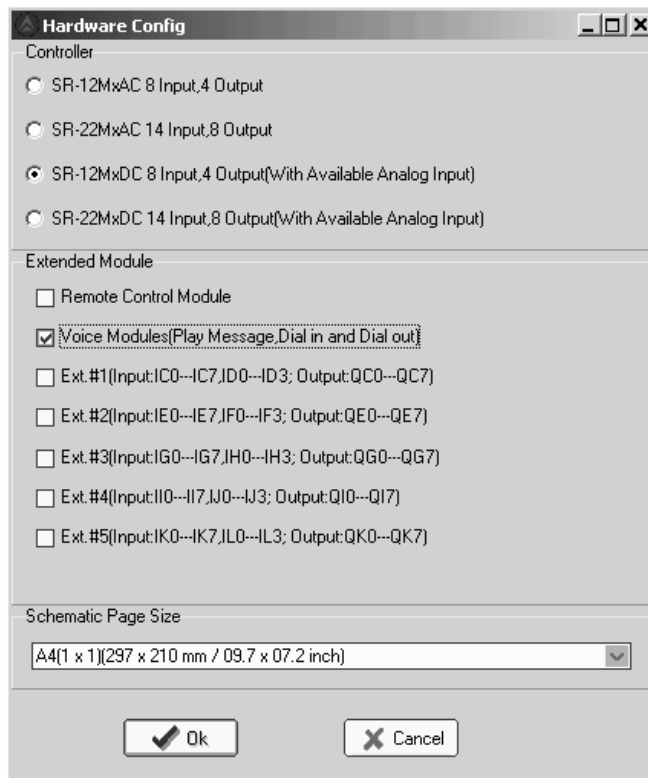
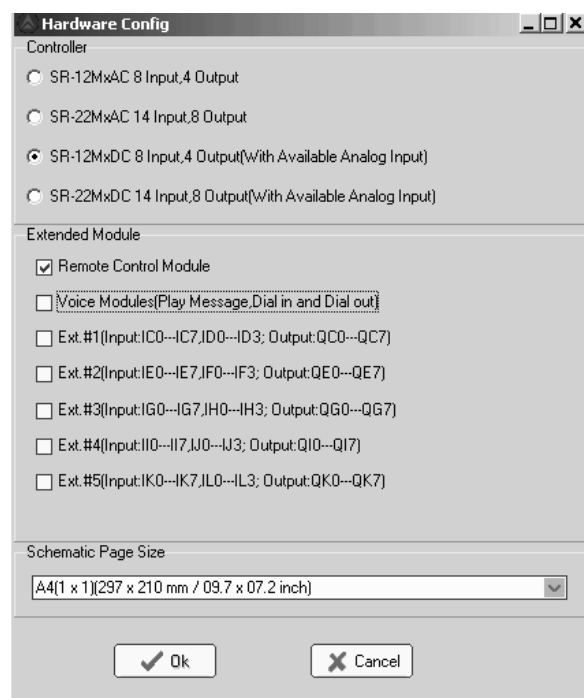


Fig. 4.54

ERROR 15: Means SR main machine not detect the Remote Control Module.

Solution: Check if the remote control module working well and being connected with the main machine well. If the remote control module not used, the remote control module should not be chosen in the hardware configuration page in SUPER CAD. If the remote control module is chosen, the remote control module should be ensure to work properly and being connected with SR main machine when SR main machine is working.





**Fig. 4.55**

ERROR 19: Means SR main machine not detect the No 1 Extension Module.

ERROR 20: Means SR main machine not detect the No 2 Extension Module.

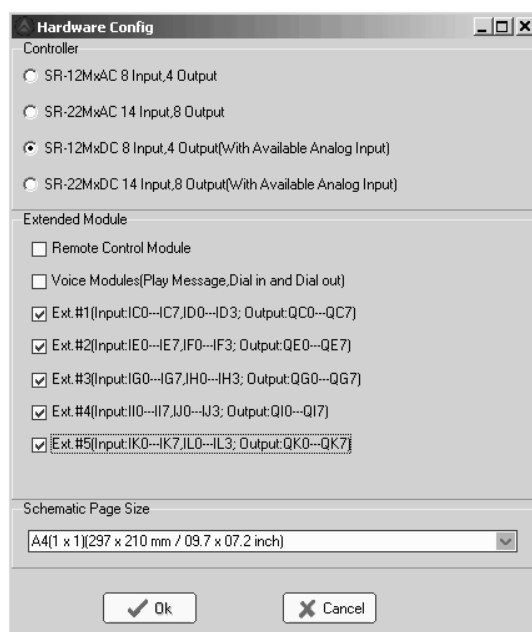
ERROR 21: Means SR main machine not detect the No 3 Extension Module.

ERROR 22: Means SR main machine not detect the No 4 Extension Module.

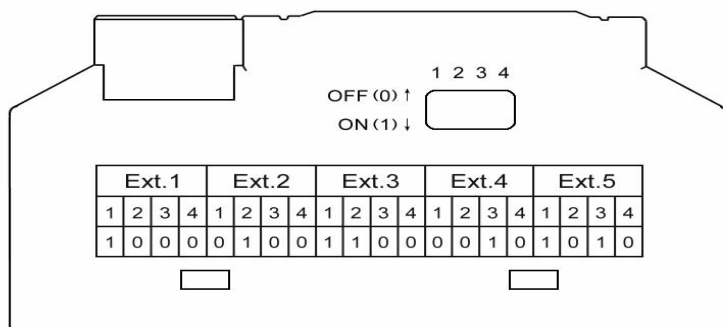
ERROR 23: Means SR main machine not detect the No 5 Extension Module.

Solutions for ERROR 19–ERROR 23: Check if each extension module working well and being connected with the main machine well. If any extension module not used, the extension module should not be chosen in the hardware configuration page in SUPER CAD. If the extension module is chosen, the extension module should be ensure to work properly and being connected with SR main machine when SR main machine is working.

(Notes: The address of the extension module is decided by the place of the coding switch at the side of the module.)



**Fig. 4.56**



**Fig. 4.57**

**Notes:**

In SR series, the extension module, the voice module, the remote control module and the front communication module and so on modules, should be powered on before the main machine is powered and at least no later than the main machine being powered. Otherwise the main machine cannot detect the module when carrying out the system configuration, thus the system cannot work properly.

The address of the extension module should be set before being powered on. The address set after being powered on should be ineffective.