

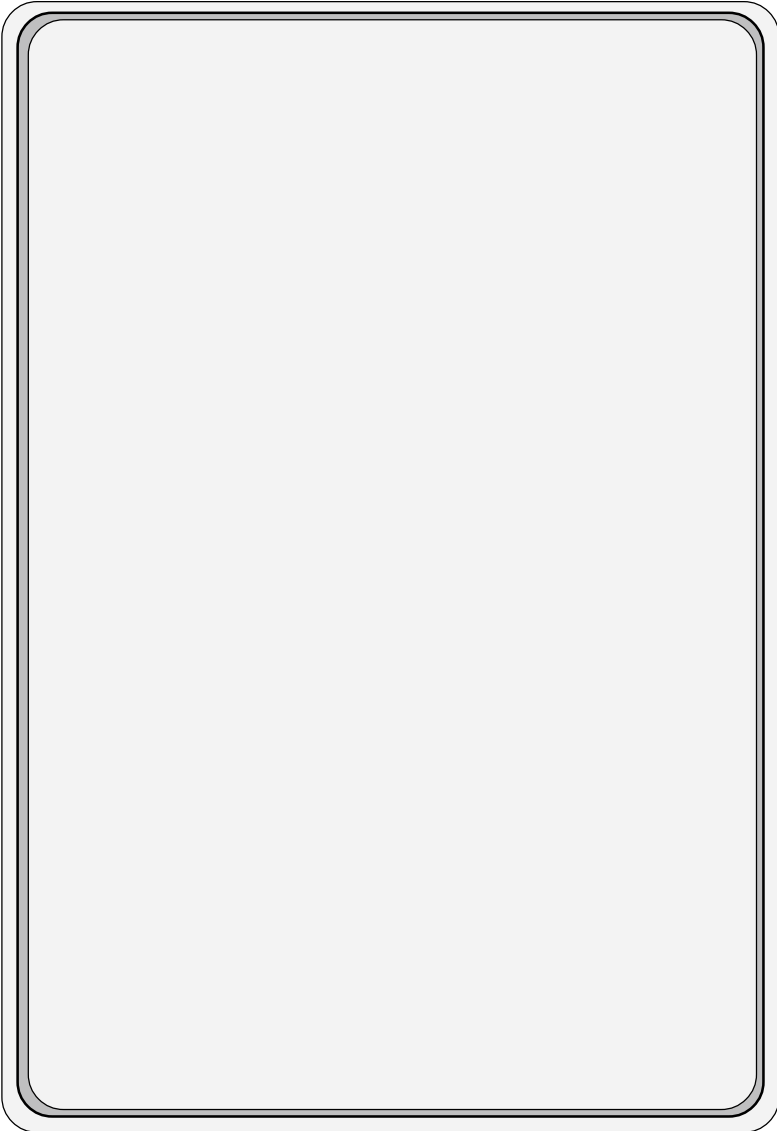


QUICKII: SOFTWARE FOR FAB

QUICK II is programming software for FAB machine to implement programming and simulation on PC. It can not only implement the preparation of control program (function diagram) for FAB, but also simulate the operations of the edited program and display clearly the running results in order to determine the accuracy of the edited program. Besides, QUICK II can execute short-distance and remote communication of FAB, and write edited program into EEPROM of FAB machine.



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Chapter I Brief Introduction to QUICK II

In order to let you have a quick and initial understanding of QUICK II, we will, from this chapter, make a comprehensive introduction of QUICK II under the guidance of visual pictures.

1.1 Operating interface

The operating interface of QUICK II is very friendly and all operations can be completed only by moving the mouse. By clicking Start"Programs"Array"QUICK II in the WINDOWS operating frame, you can enter the main interface of QUICK II, as shown in Fig. 1.2.



Fig. 1.1 Set up QUICK II

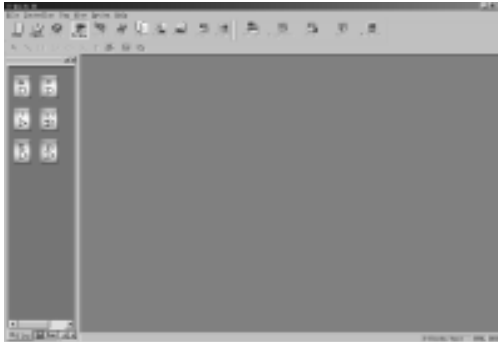


Fig. 1.2 Main Interface of QUICK II

For QUICK II, the operating methods of pull-down Instruction Tools and EXPRESS button are adopted and all function blocks are directly distributed in the window. Operating in the window with the mouse you can finish creation and writing, simulation running and monitoring of a FAB program very quickly.

1.2 Two types of edition windows

As you click “NEW” button by using the mouse, two cascaded edition windows, the Logical Diagram Edition Window and Field simulation Graph Edition Window, will appear in the Operating frame. You may select either one for edition.

1.2.1 FAB Logical Diagram Edition Window

FAB Logical Diagram Edition Window is as shown in Fig. 1.3. In this edition frame, you can click the desired block in the block library on the left to plot the Logical Function Diagram and set the property of the block. After the function diagram is completed, it is also possible to execute emulation run in this frame and then write the program to FAB.

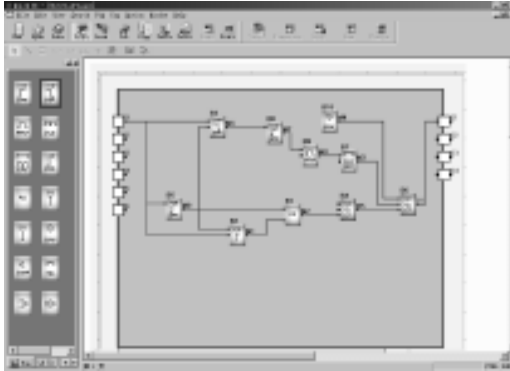


Fig. 1.3 FAB Logical Diagram Edition Window

1.2.2 Simulation Window

QUICK II has two types of simulation window, the Standard simulation Window and Simple simulation Window. The Standard simulation Graph Edition Window is as shown in Fig.1.4. In this edition window, you can plot the Field simulation Graph with “Draw” on the top of the edition window according to the field work. The said Field simulation Graph Edition Window is used to match with the Function Diagram. When the Function Diagram and Field simulation Graph are completed, you may activate simulation to execute real-time simulation of the field conditions on the controlled site. The Simple Emulation Window is as shown in Fig.1.5, through which you can easily view the result of FAB run.

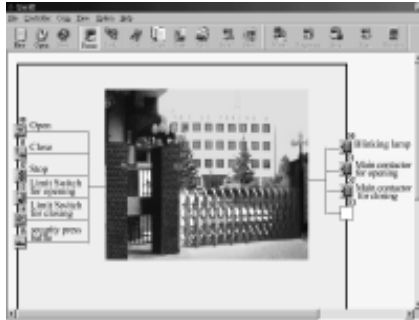


Fig. 1.4 the Standard Simulation Window

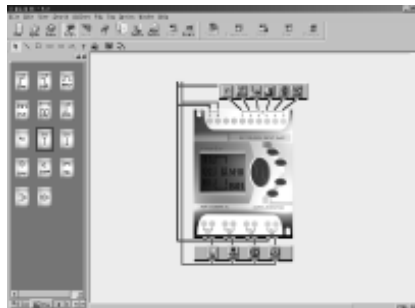


Fig. 1.5 Simple Simulation Window

1.3 Main functions

1.3.1 Editing function

The first function of QUICK II is programming for FAB on a PC. Through the Logical Function Edition Window of QUICK II, you can edit your desired FAB programs by means of various function blocks of FAB and can also do file operations such as save, print, etc.



1.3.2 Simulation running function

After program is edited, you can view the program running result on the computer and conveniently check if the said program meets your control requirements. Here QUICK II provides you with a completely new offline test function, through which you can test the correctness of the program for correctness without installing the controller on site so that many inconveniences of the online test is avoided.

1.3.3 Real-time monitoring

QUICK II has a Real-Time Monitoring Window, through which you can view the process of the control system and the running conditions of all FABs' and conduct control of remote FABs', only by connecting the FAB communication port to the PC.

1.3.4 Communication with FAB

1.3.4.1 Local FAB communication.

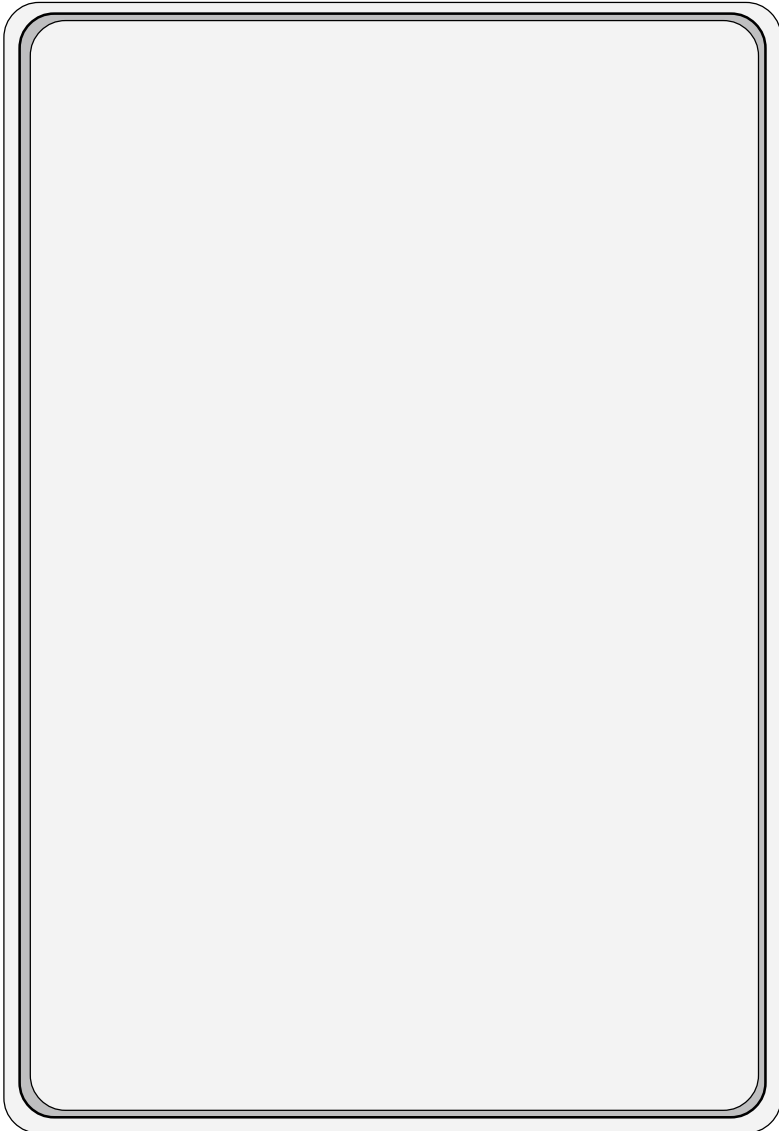
Through RS-232 communication port, communication between FAB and PC can be realized, allowing for easily writing of programs from PC to FAB and reading of programs from FAB to PC and also for monitoring of FAB's running conditions and controlling of FAB.

1.3.4.2 Remote FAB communication

In case that there are several sets of equipments that are distributed a long distance away from each other and that frequent modification or emergency modification, caused by unexpected event, of FAB running program is necessary, the problems can be easily solved only by connecting FAB to the telephone line through MODEM.



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Chapter II Installation and uninstallation

2.1 Installation of QUICK II

Installation of QUICK II is very simple. A Prompt frame will appear automatically and you will finish the installation smoothly on the computer under its guidance. The main steps are as follows:

1. Insert the CD-ROM with QUICK II into the driver and a Installation Guiding will appear automatically. Select “Install QUICK II”,the frame as shown in the figure 2.1will appear: “Waiting for installation”.



Fig2.1 Installation-Grinding Frame

2. Enter the Installation frame of QUICK II, as shown in the figure2.2.

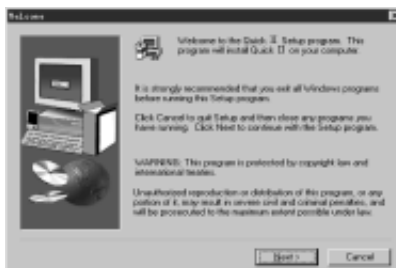


Fig2.2 Installation-Introduction Frame



- If you click “NEXT” button to enter the next step of installation, the User Name and Computer Name will be displayed as shown in Fig.2.3 and you can modify them.
- If you click “CANCEL” with the left mouse button, the installation program will be exited.

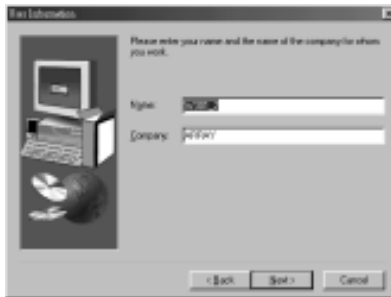


Fig2.3 User Name Setting Frame

3. Enter the Installation Path Setting Dialogue Box as shown in Fig.2.4. By clicking on “Browse” with the left mouse button, you can modify the current installation path (the original installation path is “C:\Program Files\Array\Quick II”) to your desired installation path:

- If you click “NEXT” with left mouse button, it will enter the next step of installation and enter the Setup Type frame for selecting installation type, as shown in Fig.2.5. Installation Type selecting Frame
- If you click “BACK” with left mouse button, the previous installation frame will be returned to, as shown in Fig.2.3.
- If you click “CANCEL” with left mouse button, the installation program will be exited.



Fig2.4 Installation Path Selecting Frame

4. Enter “Setup Type” frame, as shown in Fig.2.5 and select your desired installation type.

- If “Typical” option is selected, QUICK II common program will be installed.
- If “Compact” option is selected, QUICK II mandatory program will be installed.
- If “Custom” option is selected, the user will be allowed to select the QUICK II program components.

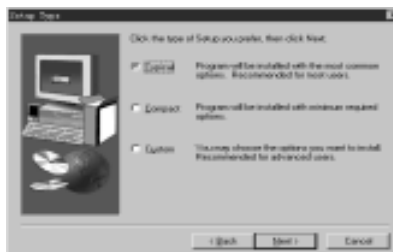


Fig2.5 Installation Type Selection Frame

Note: Selection of “Typical” option is recommended.

5. If “Custom” option is selected, it will enter “Select Components” frame, as shown in Fig.2.6. Select the element you want to install (after it is clicked with the left mouse button, “ ” will appear in the corresponding box and the said element is selected and after being clicked again, it is cancelled; default of QUICK II is installation of all components). When setup is completed:



- If you click “NEXT” with the left mouse button, it will enter to the next step of installation and the Setup Program Set Name frame will appear, as shown in Fig.2.7.
- If you click “BACK” with the left mouse button, the previous installation frame will be returned to, as shown in Fig.2.5.
- If you click “CANCEL” with the left mouse button, the installation program will be exited.

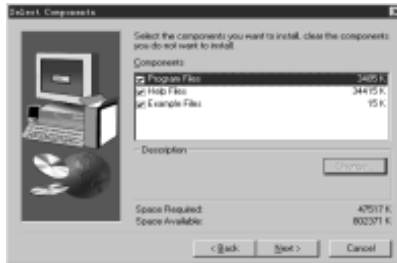


Fig2.6 Installation Components Selection frame

6. Set your desired program set name on the Set Up Program Set Name frame as shown in Fig.2.7 (its original name is ARRAY). When setup is completed:

- If you click “NEXT” with the left mouse button, installation of the program components will be started, as shown in Fig.2.8.
- If you click “BACK” with the left mouse button, the previous installation frame will be returned to, as shown in Fig.2.6.
- If you click “CANCEL” with the left mouse button, the installation program will be exited.



Fig2.7 Program Folder Selection Frame

7. The installation program proceeds to the automatic installation procedure. Please click “CANCEL” button if you want to exit now.



Fig2.8 QUICK II Installation frame

8. When the automatic installation process is completed, the Setup Finished frame is entered, as shown in Fig.2.9. Please press “FINISH” button to finish the whole installation process.

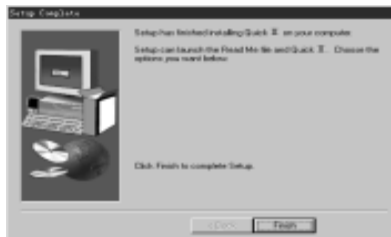


Fig2.9 Setup Finished Frame



2.2 Uninstallation

There are two ways for uninstalling QUICK II:

1. Remove from the program:

- Under the Windows frame, click “start”, “program”, “Array “and select the said program folder.
- Click “UNINSTALL” under the said program folder with the left mouse button, as shown in Fig. 2.10;
- As a Confirm Uninstall dialogue box appears, click “Yes”;
- As a Remove frame as shown in Fig.2.11 appears, remove can be done;

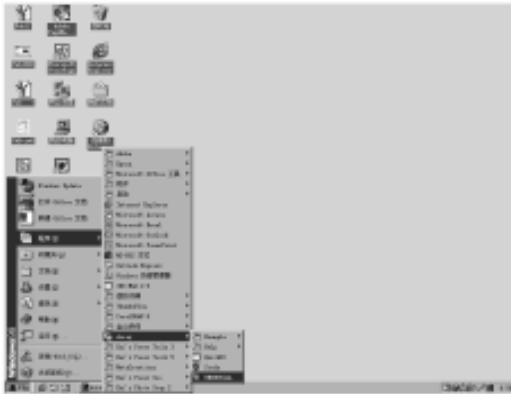


Fig2.10 Remove

This remove method is quite convenient for the users.

2. Remove from the console:

- Under the Windows frame, double click “My Computer” button with the left mouse button to open “My Computer” management archive;
- Double click “CONSOLE” button with the left mouse button to open the Console frame;



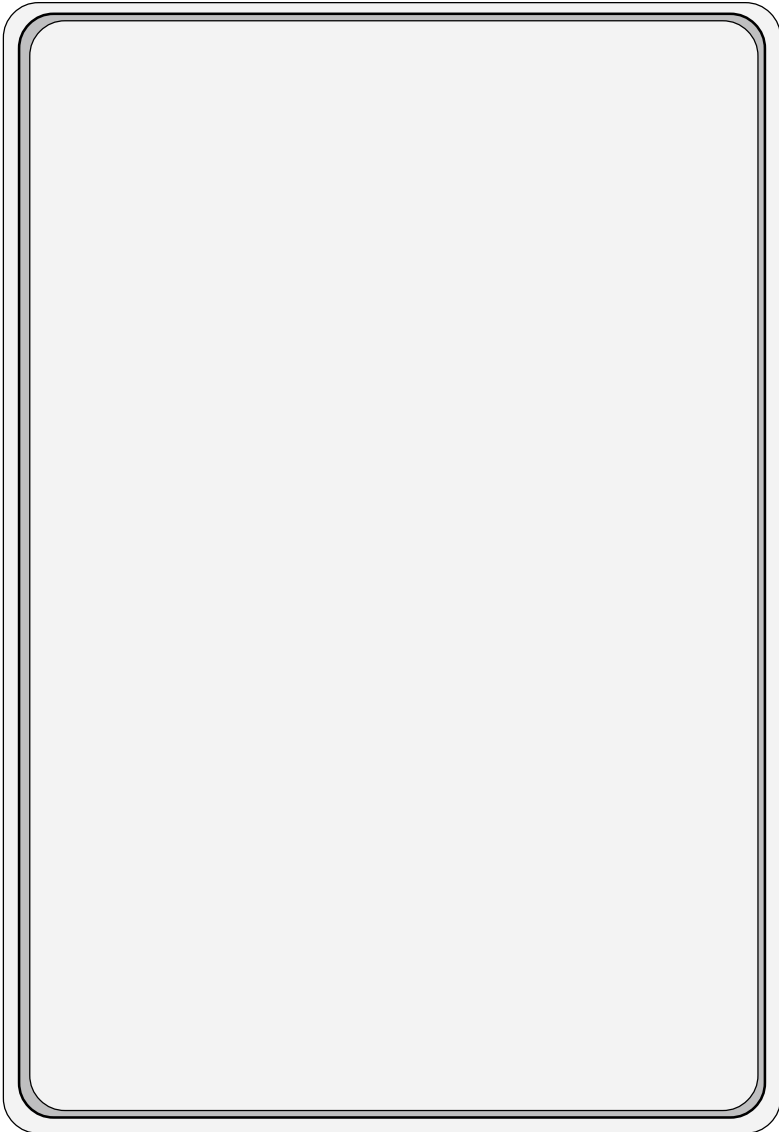
- Double click “Add/Remove Program” with the left mouse button on the Console Component frame and “Add/Remove Program” dialogue box appears;
- After selecting “ARRAY QUICK II” program folder in the said dialogue box, click “Add/Remove Program” button and a dialogue box appears inquiring if you decide to remove. Click “Yes” with the left mouse button and the Remove frame as shown in Fig.2.10 appears.
- Click “OK” button to complete the removal and close “Add/Remove Program” window.



Fig2.11 Remove Frame of QUICK II



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Chapter III Operation Instructions and Block Library

3.1 Function Instructions

When QUICK II is used to edit FAB programs, some basic operations including files management, opening and closing of Tool Bar and Status Bar and Help information are completed by means of pulled-down instructions under File, Controller, Communication, View, Option and Help. The Instruction Function list of QUICK II is characterized by its flexibility and variability. It can be changed according to the current operation for convenience of your various operations.

3.1.1 File

The instruction is mainly used for files management, including creation, opening, saving and printing of files.

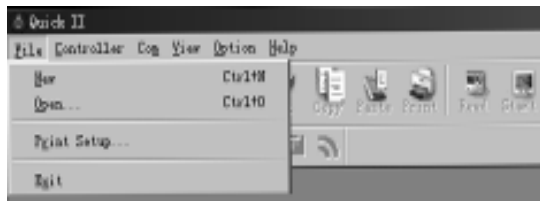


Fig3.1 File Instructions Menu



Instruction Name	Function
New	Open a new file
Open	Open a old file
Close	Close the current active Window
Save	Save a file
Save As	Save current file to a new path & a new file
Print	Print a file
Print Preview	Preview the file printing result
Setup Print	Setup printing format
Exit	Exit QUICK II

3.1.2 Controller

The instruction is mainly used for reading programs from FAB. Start QUICK II. after its operating interface being entered, click Controller Function List with the left mouse button. The following is displayed:



Fig3.2 Controller Instruction Menu

3.1.3 Communication

The instruction is mainly used for online setup of FAB with the upper computer.



Fig3.3 Communication Instruction Menu



- Configure communication: selection of communication mode and setup of communication port.
- Turn off communication: when it is not necessary for FAB to communicate with the upper computer, click this option to disconnect and stop communication.

3.1.4 Display

This instruction is mainly used for selection of opening/closing of the Field Simulation Graph Window and Logical Diagram Window and selection of various Tool Bars.

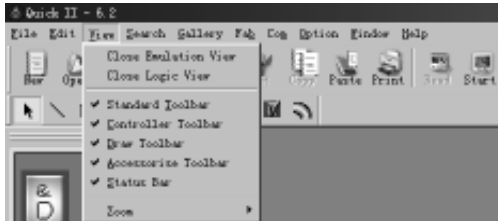


Fig3.4 Display Instruction Menu

Instruction name	Function
Close EmulationView	Close Field Simulation View Window
Open EmulationView	Open Field Simulation View Window
Close Logical View	Close Logical View Window
Open Logical View	Open Logical View Window
Tool Bar	Select Standard Tool Bar
Controller Tool Bar	Select Controller Tool Bar
Emulation View Tool Bar	Select Simulation view Tool Bar
Block Library Tool Bar	Select Block Library Tool Bar
Status Bar	Select Status Bar
Size	Zoom in/out the windows



3.1.5 Options:

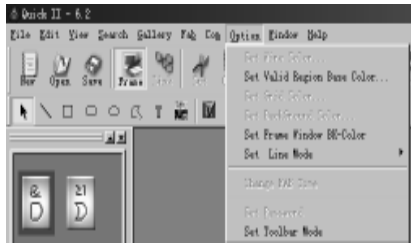


Fig3.5 Options Instruction Menu

Instruction name	Function
Set Wine	Setup block online color
Set Valid Region Base	Setup Function Diagram significant draw zone color
Set Grid Color	Setup Function Diagram grid point color
Setup Frame Windows BK-color	Setup Window background color
Setup Line mode	Setup block online types
Change FAB Time	Modify FAB time
Set FAB Address	Setup FAB address
Setup Password	Setup programming password

3.1.6 Help:

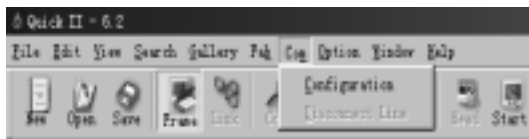


Fig3.6 Help Instruction Menu



- Contents: contents and details of help;
- Search by subjects: index of key words;
- Use help: instructions to help functions;
- About QUICK II: brief introduction to FAB.

3.1.7 Edit:

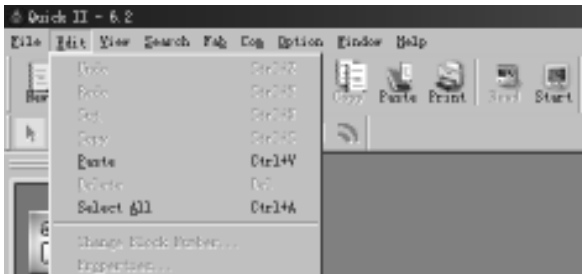


Fig3.7 Edit Instruction Menu

- Undo: undo the previous step operation and support continuous operations;
- Redo: recover the contents undone by the previous step of operation and support continuous operations;
- Cut: cut the contents in the zone highlighted with the cursor;
- Copy: copy the contents highlighted with the cursor;
- Paste: paste the contents cut or copied;
- Delete: delete various draw componeats;
- Select all: select all the contents in the current window edition box and setup the label.



3.1.8 Search:

This instruction is mainly used for finding blocks in the function diagram that meet certain conditions.

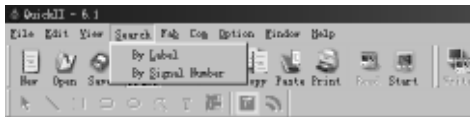


Fig3.8 Search Instruction Menu

- Search by Lable: find according to the comments for the blocks;
- Search by Signal No.: find according to the block number.

3.1.9 Image Library:

This function is mainly used for providing various types of icons for you to plot the Field Simulation Graph.



Fig3.9 Image Library Instruction Menu

- liquid : Storage Tank Icon;
- Pointer :Indicator Icon;
- Flash Text : Flashing Text Icon;
- Flash line :Streamline Icon;
- Curve :Curve Icon.



3.1.10 FAB operation



Fig3.10 Operation Instruction Menu

Instruction name	Function
PC → FAB	Write the program edited on the computer to FAB
FAB → PC	Read the program existing in FAB to the computer
Diagnosis of FAB	Detect the status of FAB
Simulation	Emulate FAB run
Drive FAB	Start/stop FAB
Read FAB Parameters	Read FAB parameters
Write FAB Parameters	Write FAB parameters

3.1.11 Windows

This instruction is mainly used for arranging multiple open windows. When more than two windows are opened, they can be arranged with this instruction;

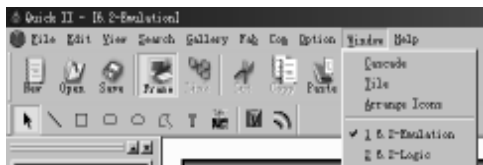


Fig3.11 Windows Instruction Menu



- Cascade: cascade sub-lists;
- Tile: display sub-lists in parallel
- Arrange: arrange the sub-lists in the form of icons.

3.2 Tool Bar

After Tool Bar is activated, the icon buttons of Tool Bar will appear in the Edit Window. You can use these icons directly without trying to find in the Function List. Tool Bar will let you complete your editing and drawing work faster and better.

3.2.1 Standard Tool Bar

Standard Tool Bar			
	New		Copy
	Open		Paste
	Save		Print
	Read Program from FAB		Block Link
	Block Library Display		Stop Simulation
	Cut		Start Simulation



3.2.2 Control Tool Bar:

Control Tool Bar			
	Write Program to FAB		Run FAB
	Stop running FAB		Monitor FAB running status
	Diagnose FAB System Information.		

3.2.3 Draw Tool Bar for Field Simulation Graph

By means of this Draw Bar, you can plot your system control site flow chart according to your actual control requirements and then can view the running conditions of all FABs' during the said control process via communication with FABs.

Standard Tool Bar			
	Cancel Selection		Draw Arbitrary Graph
	Draw Straight Line		Input Text
	Draw Square		Insert Picture
	Draw Round Corner Square		Insert Animation
	Draw Circle		Draw Bend



3.3 Block Library



Fig3.12 Block Library

The LOG, FUN, IN, OUT buttons under the Block Library are used for separating various kinds of blocks. LOG represents logical blocks, which will be displayed when the button is clicked with the mouse. FUN represents the special function blocks, which will be displayed when the button is clicked. IN represents the input blocks, which will be displayed when the button is clicked. OUT represents the output blocks, which will be displayed when the button is clicked. Please refer to Chapter IV for details of different blocks.

3.3.1 Block Library Operation

1. Click LOG, FUN, IN, OUT buttons used for selecting block types under the Block Library ,and corresponding blocks will be displayed in the Block Library Frame.
2. Move the cursor to the desired block and select it by clicking.
3. Click the corresponding edit function block in the Edit Window and the selected block will be placed in the Logical Function Diagram.



3.3.2 Block classification

The blocks are classified into four types: Logical Block, Function Block, Input Block and Output Block. The Input and Output blocks are only used to lively represent the input and output ends of FAB, without any actual functions. The key parts are the Logical Block and Function Block, the combination of which realizes Several types of FAB control.

3.3.3 Setup of block property

It is necessary to setup the properties of the blocks in plotting of logical diagrams. The block properties are divided into General property and Special property.

3.3.3.1 General Property



Fig3.13 Setup of General property

The settings of General property mainly include:

- Comment: for filling of a comment string, no more than 20 characters or no more than 10 Chinese characters.
- Intermediate Relay: for setting of the Intermediate Relay connected with the current block. If the Intermediate Relay is set up, the other blocks can no longer use this Intermediate Relay, which means that usage of a intermediate Relay is unique. The parameter values of the intermediate Relay range from 0 ~ 126, totally amounting to 127.



- Special Input: X represents empty, HI represents high potential and LO represents low potential. When the input is X, it means that this terminal allows connection with a lead from another block. When the input is HI, it means that no lead from any other block can be connected to this terminal and its status is always at high level. When the input is LO, it means that this terminal allows connection with no lead from any other block and its status is always at low level.

3.3.3.2 Setup of Special Propertyies

Among the blocks of FAB, there are some special blocks that have special properties, including RS Relay Block, D/W Clock Switch, TEL Block, Broadcasting Play Block and Voice Recording Block. Setup of the properties of different special blocks is respectively described as follows.

1. Blocks with timers

All blocks with timers, such as MPLR, DPR, DDR, CPG, RPR and so on, have timing function. Their Block properties Setup dialogue box is as shown in Fig. 3.14:



Fig3.14 Setting properties for blocks with Timers

Time type: three time units, namely second, minute and hour, are available for selection;

Input time: input the time value for timing, and the time can be accurated to 0.01 second. The properties of General Blocks shall be referred to for other settings.



2. Blocks with counters

Blocks with counters include UCN and DCN, whose Properties Setup dialog box is as shown in Fig. 3.15:



Fig. 3.15 Setting Properties for Blocks with Counters

Number of counts: setup of the number of the counters, in the range of 1-999999. The properties of General Blocks shall be referred to for other settings.

3. Properties of RS relay

The dialog box of RS relay properties setting is as shown in fig. 3.16.



Fig. 3.16 Setting Properties for RS Relay

Special input: please refer to general properties for X, HI and LO. P0 ~ P9 indicate the dual tone pulse input of 0 ~ 9 digit buttons on the telephone set. Please refer to general properties for other settings.



4. Property of TEL Block

The dialogue box is as shown in Fig. 3.17:

Phone code: telephone number used for dial-up is keyed in here and the “* , #” functions of the telephone are not supported. The length of the telephone number shall be not beyond 25 digits. Please refer to general properties for other settings.



Fig3.17 Setting TEL Block Property

5. Properties of CW Clock Switch Block:

The Setup dialogue box is as shown in Fig.3.18:

Clock setup: In this setting, the status of output can be regularly changed. Two options as “Date style” and “Week style” are provided to meet the requirements of users with different habits.



Fig3.18 Setting CW Clock Switch Block Properties



- If Week Style is selected, and “Set Time”bottom is clicked, the frame of setting time will be on and you can set 127 inter vals of time switch. Please note that you should set the time according to time sequency.And it is very easy to set time point for CW block in QUICKII. Please see the following figure 3.19

In figure3.19, there are some items such as Number,Start Week Time.



Fig.3.19 Setting Clock Mode

Time setting operations:

- ☞ Add: When you need to add a time, please click “ADD” button and a dialogue box will appear, as shown in Fig.3.20. Select the switch state ON/OFF and set the switch time. Then click “OK” button and a time record is added.

Note: They must be set in the sequence of time

- ☞ Insert: When you need to insert a time in the existing time setting combination, please click “INSERT” button and a dialogue box will appear, as shown in Fig.3. 20. Select the switch status ON/OFF and set the switch time. Then click “OK” button and a time record is inserted.



Fig.3.20 Setting Time

- ☞ Delete: When you want to delete a time, put the cursor on the said time record and click “CANCEL” button. As the Confirm Cancel frame appears, click “OK” to cancel the said time record.
- ☞ Modify: When you want to modify a time, put the cursor on the said time record and click “MODIFY” button. As a time setting frame similar to that shown in Fig.3.20 appears, reset the time, click “OK” and the said time record is modified.
- ☞ Print: When you want to print your set time on paper, what you need to do is simply clicking “PRINT” button with the mouse.
- If **Date style** is selected, click “SETUP DATE” button. As the Setup Date frame appears, the date and time can be set, as shown in fig.3.21.

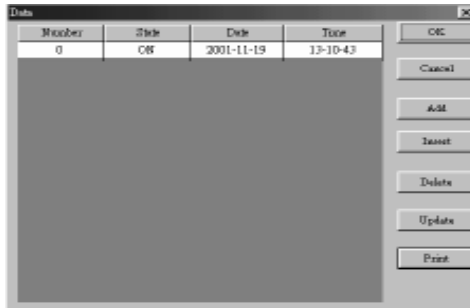


Fig.3.21 Setting Block Property for CW Clock



You can key in a new time or make changes through the keyboard in this box. Number, State, Date and Time items are set in the Setup Time box shown in Fig. 3.21.

The time setting operations are as follows:

- Add: When you need to add a time, please click “ADD” button and a dialogue box will appear, as shown in Fig.3.22. Select the switch state ON/OFF and set the date and time of switch. Then click “OK” button and a time record is added.



Fig3.22 Add A Time Record

It should be pointed out that QUICK II provides you with the best date setting method. You will have a permanent calendar chart appear, as shown in Fig.3.22, only by clicking once the Page Down arrow on the right of the Date box. You may select whatever date you want to set on this permanent calendar and click OK to complete setting of the date. Therefore FAB can realize real-time control without any limitation.

- Insert: When you need to insert a time in the existing time setup combination, please put the cursor on the said time, click “INSERT” button and a dialogue box will appear, as shown in Fig.3.27. Select the switch status ON/OFF and set the time and date of switch. Then click “OK” button to finish the setup.
- Delete: When you want to cancel a time, put the cursor on the said time record and click “CANCEL” button. As the Confirm Cancel frame appears,



click “OK” to delete the time record.

- ☞ **Modify:** When you want to modify a time, put the cursor on the said time record and click “MODIFY” button. As a time setting frame similar to what shown in

Fig.3.26 appears, reset the state, date and time, click “OK” and the said time record is modified.

- ☞ **Print:** When you want to print your set time on paper, what you need to do is simply clicking “PRINT” button with the mouse.

Note:

- (1) The time is arranged in an order earlier to later and the time sequence shall be considered for adding or modifying any time record, for example: AM9:00, AM11:00, PM3:00, PM6:00, etc;
- (2) In case of multiple records, the said block will be divided into multiple blocks when it is written to FAB and you can view the number of blocks used by the current program in the State Bar of the Function Graph Edit Window;
- (3) If the first time is set ON and the second is set OFF, the two times share one common block; if two consecutive time are both set to ON or OFF, each of them should occupy a separate block.

6. Properties of Voice broadcasting and Recording Blocks

The Setup Properties dialogue box of Voice Broadcasting Block and Voice Record Block is as shown in Fig.3.23.

Setting Output: set the ports for voice broadcasting and recording. The port here is a memory space oriented at voice storage. There are totally 1 ~ 98 such ports. In addition, there is a No. 99 port (for record block), whose function is to clear all the voice contents in No. 0 ~ 98 ports, so please be careful in using it.



**Fig.3.23 Setup the Properties of
Voice broadcasting and Recording Blocks**

7. Setup for Analog block.

The diagram of property of analog block COMP is as fig3.24.

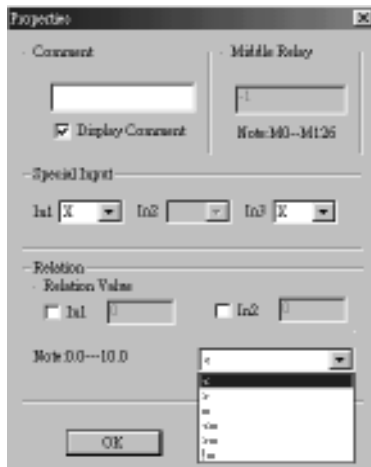


Fig 3.24 Setup of Property of Analog Block



The explanation of option listed in Fig 3.24 is as follows:

(1) comment: Users can add explanation letters in this bar.

(2) Special input: HI,LO,X,LM.

If X has been selected, this said port can be connected to Input port.

If LM has been selected, it means that this said port can be set to a fixed digital value. Please refer the (3) items to know how to set the value.

(3) Relation Value

The range of LM is 0.0~10.0.

(4)Relation

It provides “<,>=,>=,<=,≠” 6 options. And this comparison block is for the comparison between input 1 and input 3.

For example.

When “<” has been selected,

if input 1<input 3,then Q=1. if input 1>input3 , then Q=0.

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Chapter IV Basic operations

This chapter will introduce how to use QUICK II to edit the Logical Function Diagram Program and plot the Field Environment Control Diagram, how to use it to emulate running the edited program and how to make PC communicate with FAB so as to complete writing of the program to FAB.

If you want to make a Function Diagram Program, you should first open a new empty file and put all the blocks required for satisfying the control requirements into the Edit Box. Then set the properties of different function blocks and link them up with lines according to their logical control relations, thus completing a Logical Function Diagram. Moreover, in order to help the user know if the edited function diagram can completely achieve the expected control effects, QUICK II provides the user with an extremely direct emulation function. You can run the emulation function either directly on the Function Diagram or on the Field Emulation Graph. In both cases, the detailed result of FAB running in accordance with the program can be observed. In the following, we will introduce QUICK II with an example

Example: using FAB to compose a multi-function switch for a staircase lighting system Control requirements:

1. Lighting is turned on upon pressing of the switch and automatically turned off after one minute;
2. Lighting flashes 5 seconds before automatically turning off;
3. Lighting is turned on upon twice pressing of the switch and maintained constantly on;
4. Lighting is turned off when the switch is pressed for 2 seconds and more;
5. Lighting is automatically turned on at PM18:30 and off at AM6:30 every day.



4.1 Open File

4.1.1 Open a new file

Operating method

1. To open a new file, click the “New” option under the Function List file or the icon in the Tool Bar with left mouse button, as shown in Fig.4.1.



Fig.4.1. Open a new file

2. Now a dialogue box will appear, as shown in Fig.4.2:



Fig.4.2. Options box for controller type

- In the above figure, controller type options are provided in the left box and you can select your desired FAB controller type by clicking it with left mouse button.
 - a. 4 input 2 output: FAB controller with 4 input and 2 output
 - b. 6 input 4 output: FAB controller with 6 input and 4 output
 - c. 12 input 8 output: FAB controller with 12 input and 8 output
- In the above figure, emulation type options are provided in the right box and you can select your desired emulation type by clicking it with left mouse button.

- a. Standard type: Draw tool or other picture transferring method (e.g. transferring of BMP, TIF or other pictures) can be to plot Field Emulation Graph in this Emulation Window, as shown in Fig.4.3.

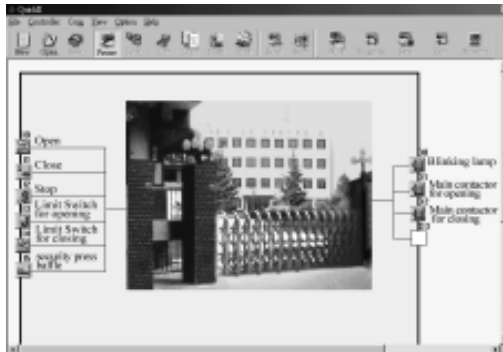


Fig.4.3. Standard Emulation Frame

- b. Simple type: This Emulation Window gives you a clear FAB outline diagram, on which you can view the status of each input and output after the emulation function is activated.

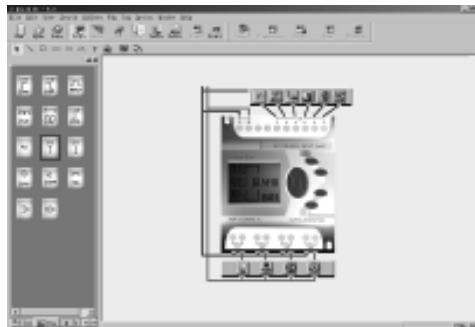


Fig4.4 Simple Emulation Frame



- 3.(1). When the controller type and emulation type are selected, click OK button with left mouse button to open a new group of Function Diagram Editing Window and Control Field Emulation Graph Editing Window, as shown in Fig.4.5.

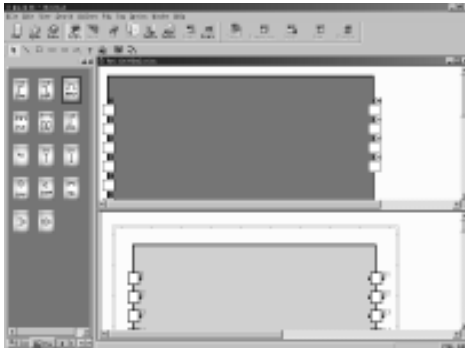


Fig.4.5. Edit Window for new file

4.1.2 Open an existing file

Operating methods:

- 1.To open a file, click the “OPEN” option under the Function List or the icon on the Tool Bar with the left mouse button, as shown in Fig. 4.6.

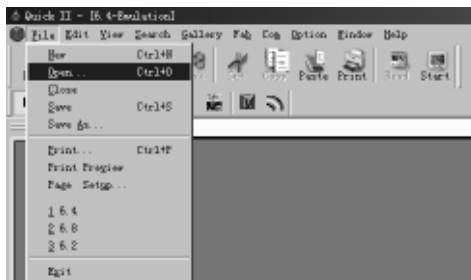


Fig.4.6 open an existing file

- 2.A dialogue box will appear after the open by clicking,as shown in Fig 4.7

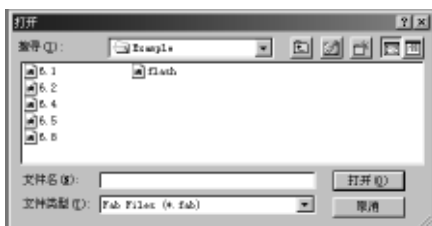


Fig.4.7 open an existing file dialogue box

3. Click the file to be opened and then the OPEN button with the left mouse button and the file is opened. You can execute modification, print or other operations of the file.

4.2 Edit Function Diagram Program

4.2.1 Place blocks

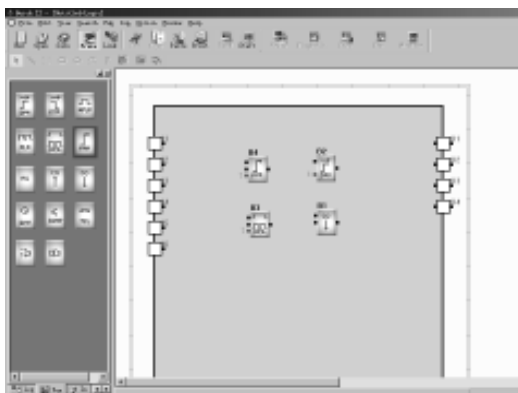


Fig.4.8 Place blocks



The desired block can be directly selected from the Block Library on the left of the Edit Window and dropped in the Editing box with the mouse.

Operating procedure:

1. Select the corresponding block group. To select the Basic Block click LOG button with the left mouse button; to select the Special Block, click FUN button with the left mouse button.
2. Select your desired block by clicking it with the mouse.
3. Move the cursor to the proper position in the Function Diagram Edition box and click the left mouse button ,thus the block is placed.
4. Place all required blocks by repeating the above mentioned operation steps.

Example: There are totally 10 blocks required for the staircase lighting system, as shown in Fig. 4.9. Put all these 10 blocks in the Edit box.

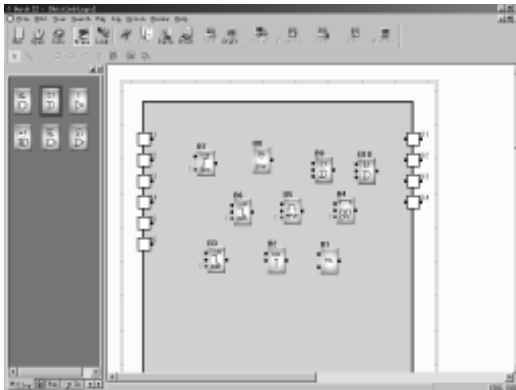


Fig4.9. Put the blocks required in the Edit box

By the way, we would give you a brief description of the Block Library here. The Block Library stores all the Basic Function Blocks, Special Function Blocks and I/O Blocks required for editing the Function Diagram. Click LOG button under the Block Library to display Basic Function Blocks; click FUN button to display Special Function Blocks; click IN button to display Input Blocks and OUT button to display Output Blocks, as shown in Fig. 4.10(A), 4.10(B), 4.10(C) and 4.10(D).



Fig.4.10(A) Special Function Blocks



Fig4.10.(B) Basic Function Blocks



Fig.4.10(C) Input Function Blocks



Fig4.10.(D) Output Function Blocks



The graphs in the In Library and Out Library are only for the user to select the input and output devices corresponding to the real equipment, as shown in Fig. 4.8, so that the emulation run will look more direct, without any actual logical operation function.

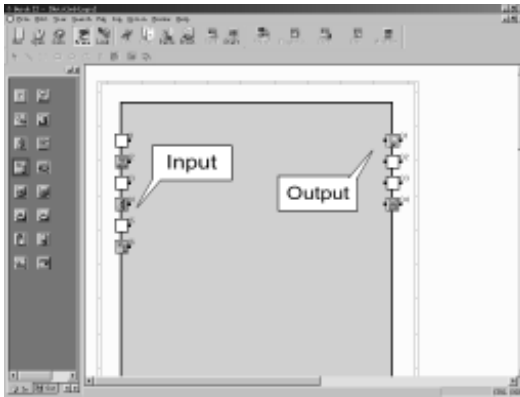


Fig4.11. Usage of Input and Output Function Blocks

Note: The graphs in the In Library can only be put in the Input Ports but not in the Output Ports; vice versa, the graphs in the Out Library cannot be put in the Input Ports.

4.2.2 Edit block properties:

Different blocks have different properties, which may be set according to the control requirements.

Operating methods:

1. Select a function block in the Function Diagram Edition box and click the right mouse button. An Edit Function List appears, as shown in Fig. 4.12. Then select “Properties” in the function list. Or you may double click the said function block directly with the left mouse button.

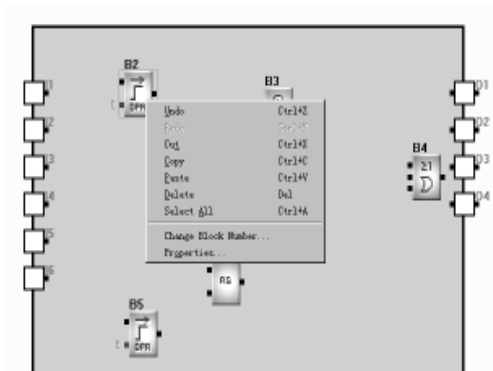


Fig.4.12. Operation Menu of Blocks

2. A Setup Properties dialogue box appears, as shown in Fig. 4.13. Set the attributes according to your requirements.



Fig.4.13 Dialogue box for setting block attributes

Comment: for filling of Comment String, no more than 20 characters and no more than 10 Chinese Characters.

Intermediate Relay: for setting the Intermediate Relay connected with the current block (the value range of the Intermediate Relay is 0 ~ 126).

Special Input: special input, in which X is empty, HI is high potential and Lo is low potential.



3. Click OK button with the mouse to complete the setup.
4. Set the properties of all blocks by repeating the above operating steps.

Note: Different blocks have different properties setup, especially the Special Function blocks. Please refer to Chapter III,Section3.4 for details.

4.2.3 Link:

After the blocks required for plotting the whole Function Diagram are placed and their properties are setup, it is necessary to establish links according to the logical control relations so as to make a complete function diagram. This software provides two link modes, i.e. automatic link and manual link.

Operating method

1. Click the “Set line mode” option under the Option Function List with the left mouse button and then click the “Auto” or “Manual” in the sub-option,as shown in Fig. 4.14. The default mode is automatic link mode.

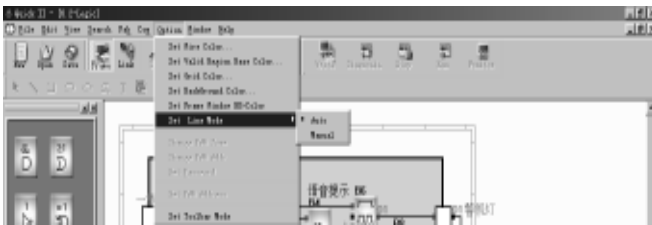



Fig.4.14 Select the link mode

2. After the link mode is set up, click the button  with the mouse and the cursor changes to the shape of a pen, i.e. into the link status.

3. a. With automatic link selected in the first step, as the cursor is moved to the I/O ports of the blocks, its shape will change into a “+”, indicating that an end point can be determined through pressing of the left mouse button. Now click the output ports (or input ports) of a block requiring link with the left mouse button, move to the input ports (or output ports) of the next block and click, thus the link is automatically established by the system;

When the shape of the mouse changes into “+”,click the left bottom of it .This method is suitable for cases in which the program is simple and the block number is small

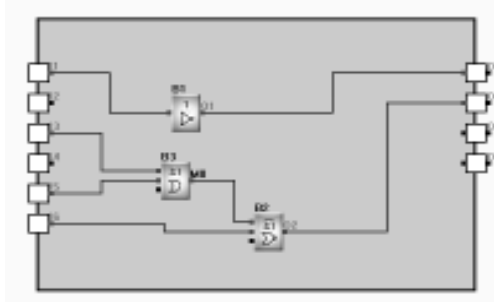


Fig 4.15 Link the line between blocks

b. Whether you select the manual link or automatic link in the first step, you can link the line as follows. Move the cursor to the start point of the connect line(it means that any input or output of a block), its shape will change into a “+”,click the left button of the mouse, and move the cursor to another point, and click left button again. At the ends of the lines,there will appear mark numbers,such as L5,L6 and so on, as shown in Fig 4.16.

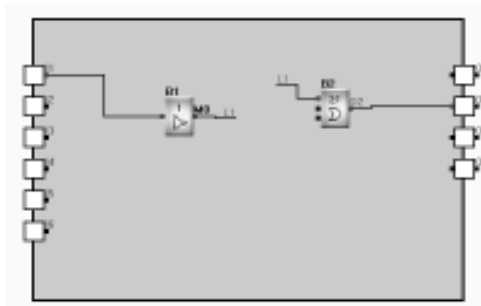


Fig 4.16



The operation is as following.

Move cursor to the mark number which need change, click right button of the mouse, Fig 4.17 will be shown. Select the “change the line number”, then Fig 4.18 will be shown. And you can modify the mark number in Fig4.18.

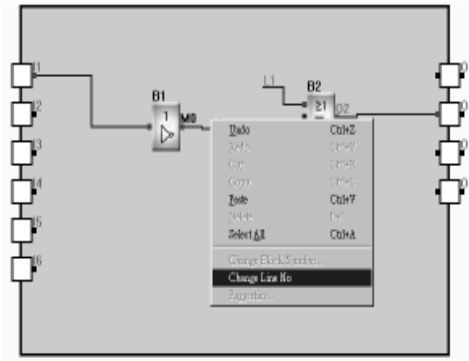


Fig 4.17 Change line No



Fig 4.18 Modify number

C.If the manual link is selected in the first step,click the output port of the former block,moving the mouse according to your desired path,click at turning,thus forming a turning point, and go on moving the mouse to the input port of the nextblock. And the link line can be set in thus way. Click the right button of the mouse,the link state will be cancelled.



4.2.4 Move the link or block:

In case that there are a lot of links and blocks in your Function Diagram the diagram may be difficult to read due to so many crisscrossing lines, you can move some of the links or blocks to make the diagram tidy and beautiful.

Operating method:

1. Click the link or block to be moved with the mouse to turn it red;
2. Put the cursor on the link or block to be moved and drag it to the proper position;
3. Click the left mouse button to complete moving.
4. Move all the links and blocks that need to be moved with the above method to make the whole function diagram tidy and beautiful.

4.2.5 Delete block or link

When you want to delete some unnecessary blocks or wrong links, the operation methods are as follows:

1. Select the link or block to be deleted with the mouse;
2. Press Delete key on the keyboard, or click the right mouse button and select the “Delete” option, thus the link or block is deleted.

4.2.6 Simulation operation

QUICK II has the Emulation Run Function in addition to edition of function diagram. When programming is completed, the Emulation Run Function may be activated for checking if the program meets your control requirements. The operating method is as follows:

1. To activate emulation, Click “Emulation” option under Instruction FAB Operation Menu and then “Start” with the left mouse button, as shown in Fig. 4.19, or directly click the icon in the Tool Bar. Now you can see the result of program running through the input and output status in the frame, as shown in Fig. 4.20.

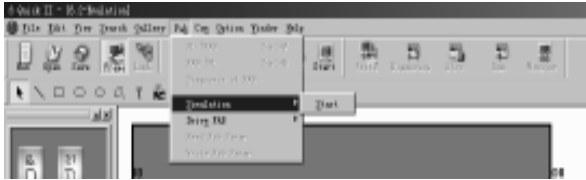



Fig. 4.19. Start the Emulation Instruction

- 2. Please observe your program's running carefully.
- 3. Click the  button again to terminate the emulation function.

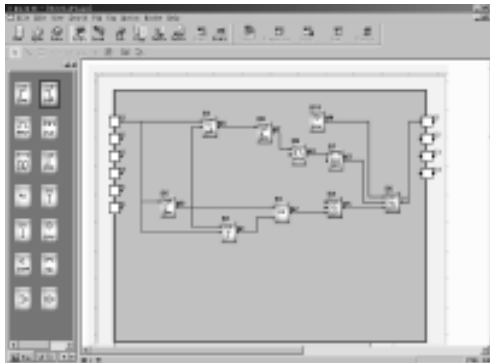


Fig.4.20. The Simulation operation of FAB Program

In the above Emulation Graph, you can see not only the ON or OFF status of all inputs and outputs, but also the input status and the current status of timing and counting of all blocks. So you can easily judge through this Emulation Function if the edited program meets the control requirements.

4.2.7 Save and Print

Operating methods for files saving:

- 1. To save a program, click “Save” or “Save as” under the Function List with

the left mouse button, as shown in Fig. 4.21, or click the icon on the Tool Bar;

2. The next dialogue box appears, as shown in Fig. 4.22, in which you can set the path and file name for save;
3. Click SAVE or SAVE AS button and save is completed.

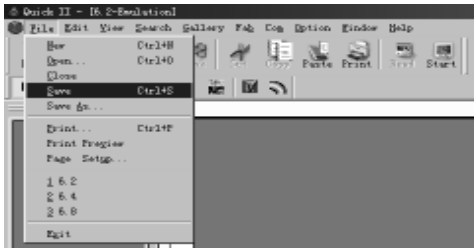


Fig.4.21. Save file



Fig.4.22 Save the dialogue box

Operating methods for files printing:

1. Click “Print” option under File Menu with the left mouse button;
2. A dialogue box appears, as shown in Fig. 4.23. Set your print requirements according to the prompt given on the frame;
3. Click “OK” button with the left mouse button.

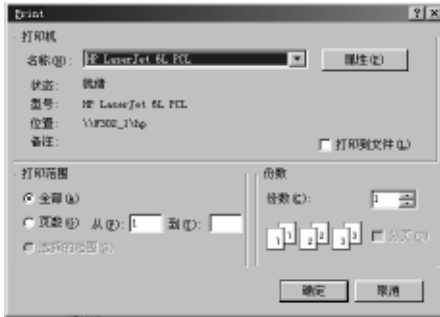


Fig.4.23. Print file

4.2.8 Write/Read:

When the program is edited and has been proved through the emulation test to meet your control requirements, the Com port of the computer can be connected with FAB directly through the programming interface or through MODEM and the metting interface. In this way, remote and local communication between the computer and FAB will be realized so that programs can be written to or read from FAB. All these operations are very simple in QUICK II.



Fig.4.24. FAB Communication Connection Frame

Operating methods are as follows:

1. Click “ Configuration” option under the Communication Instructions Menu with the left mouse button, as shown in Fig. 4.25;



Fig.4.25. Communication Configuration

2. A dialogue box appears, as shown in Fig. 4.26.



Fig.4.26. Communication Configuration

3. Fill in the FAB address.
4. Setup the connection mode:
 - 1) For remote writing, select Modem mode by clicking Modem with the mouse (Note: the Modem here is the Modem already installed in your WINDOWS) and select the telephone number for dial-up.
 - 2) For local writing, select Serial Port and then the Serial Port selection by clicking the mouse to prepare com port.
 - 3) Click OK button to complete the setup.
 - 4) If the communication link is still not established, a Prompt frame will appear for you to reselect another Modem or communication port



5. Write/Read

1) Click “PC → FAB” or “FAB ← PC” option under FAB Operation Menu with the mouse, as shown in Fig. 4.27. A Confirm Password frame will appear, as shown in Fig. 4.28;



Fig4.27 Write/Read

2) After the correct password is keyed in, click OK button with the left mouse button to complete Write/Read.



Fig.4.28. Password Confirm

Note: 1.The communication setup must be completed before communication can be run between PC and FAB so as to complete Write/Read of the program.

2.In “PC → FAB” period,if “Run After Write At Once” is selected,FAB will run the program after writing at once.Otherwise,not running at once,cutting-Off the circuit or click “RUN”under FAB,and then FAB will run the Program.



4.3 Plot Field Emulation Graph

When the Standard Emulation Edit Window of QUICK II is in activated status, you can directly plot in the Edit box using the icons in the Draw Bar or insert BMP or animation Picture using BMP or Animation in the Tool Bar. This makes QUICK II more convenient for you and you can easily plot an ideal Field Emulation Graph with it. If the Draw Bar is not displayed, it can be selected from the Instructions Function List.

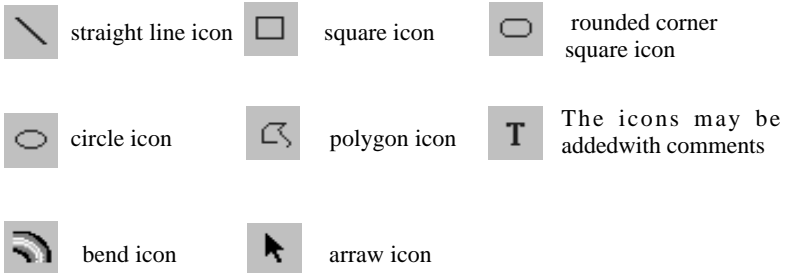


Fig4.29 Draw Bar in Emulation Frame

4.3.1 Plot with Draw Icons:

Operating method:



1. Click the Draw icon corresponding to the field environment in the Draw Bar:



2. Move the cursor into the Edition box, hold the left mouse button pressed and drag the mouse to make the graph in the desired nature and size;
3. Click the left mouse button to fix the graph;
4. If it is necessary to move a graph or change its shape and size, select the graph to be changed and drag the mouse to move the graph or click the boundary of the graph to zoom it.



4.3.2 Insert Graph File directly

 is icon for inserting BMP Files and  is icon for inserting Animation File.
Operating methods:



1. Select the icon  or  with the mouse;
2. Move the cursor into the edition box;
3. Click the left mouse button and a Insert dialogue box appears, as shown in Fig.4.30;



Fig.4.30. Insert BMP file

4. Select the path for and name of the Picture File to be inserted;
5. Click Open Old File button with the mouse to insert the said picture into the Emulation Graph edit box. Plot a complete Field Emulation Graph as shown in Fig. 4.31.

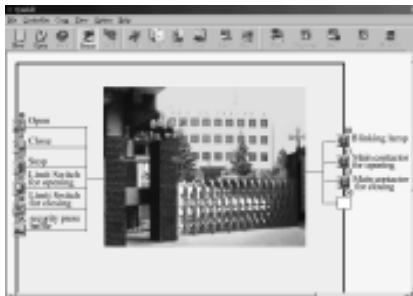


Fig.4.31 Standard Field Emulation Graph



RESUME

