

WICE-8052

USER'S MANUAL



LEAP ELECTRONIC



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THE WICE-8052 GENERAL GUIDE

I. Overview

The WICE-8052 is a time-saving developing emulator for 8051/8052 chip. The following various features have greatly increased the WICE-8052 a value-added and intelligent test instrument.

- ~ Speedy download
- ~ Stable emulation
- ~ Small size and light weight
- ~ Protects reversed insertion
- ~ Provides 128K program memory
- ~ DOS and Windows 3.1/95/98 user interface

II. Device Support

80(C)31/32 ¶ 80(C)51/52 ¶ 87(C)51/52 ¶ 89(C)51/52

III. Accessories

1. Standard

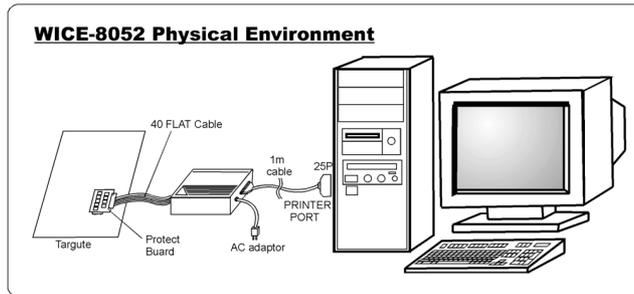
- ~ WICE-8052 mainframe x 1
- ~ 26-pin cable x 1
- ~ 40-pin module + 40-pin flat cable x 1
- ~ 2-pin signal line hook x 1
- ~ 40-pin IC socket x 1
- ~ System software disk
- ~ User's manual x 1
- ~ DC power adaptor x 1
- ~ EXT CRYSTAL x 1



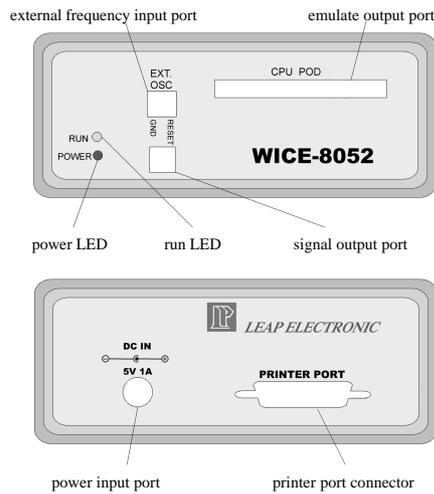
2. Option

~ PLCC adaptor

IV. Physical Environment



IV. Hardware Appearance



**VI. System Requirements**

IBM AT 386 (or above) or 100% compatible
MS-DOS 6.22 or later, Microsoft Windows 3.1/95/98
system

VII. Set Up The WICE-8052 Hardware

1. Connect one end of the cable to your WICE-8052 and the other end of the cable to your printer port of your PC.
2. Connect one end of the 40-pin flat cable to your WICE-8052 and the other end of the cable to 40-pin module.
3. Connect 40-pin module on your target board.
4. Plug on power and set up the WICE-8052 software program.
5. Run the WICE-8052 software program.

VIII. Specification

- ~ 128K RAM (program memory up to 64K; external
~ memory up to 64K)
- ~ 32K frames x 16bit wide of execution trace buffer
- ~ Real time transparent emulation up to 40MHz
- ~ Parallel/printer port interface to the host
- ~ Operating voltages: AC100 to 240V
- ~ Frequency range: 47 to 63Hz
- ~ Power consumption: 8W

**IX. Physical & Environmental Specifications**

- ~ Dimension: 14 cm x 11 cm x 4.6 cm
- ~ Weight: 0.38 kg
- ~ Temperature: +5°C to +45°C
- ~ Humidity: to 90% noncondensing
- ~ Altitude: 5000 m

X. External Oscillating Frequency:

According the following BOM to weld component to the Exe Crystal Adaptor. You may weld either in DIP or SMD way.

CRYSTAL	C 1	C 2	R
16MHZ	30P	30 P	—
24MHZ	15 P	15 P	—
33MHZ	10 P	10 P	6.8 K
40MHZ	5 P	8 P	6.8 K

Insert the finished Exe Crystal Adaptor to the target board.

XI. Synchronized RESET Operation:

- ~ Plug 2-pin signal line hook in WICE-8052, and place RESET hook on the RESET circuit of the target board.
- ~ When you reset WICE-8052, the target board will simultaneously transmitting RESET signal.



The WICE-8052 Windows Operating System User's Guide

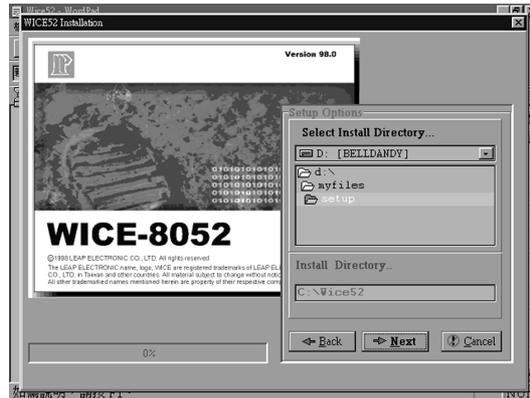
I. Setting Up The WICE-8052 Windows Operating System

(1) Basic systems requirement

- ~ IBM AT 386 above or compatible
- ~ 10M byte hard disk
- ~ Windows 3.1/95/98

(2) Installation:

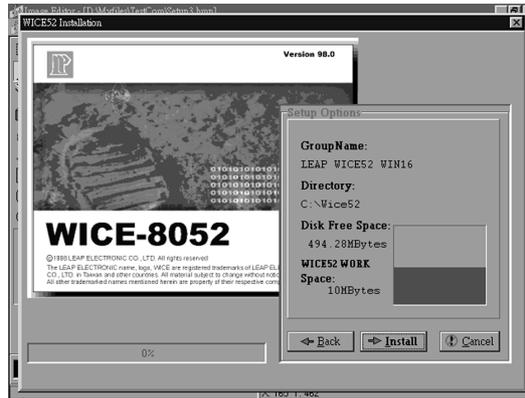
1. Please back-up the WICE-8052 Setup Disk before you setting up.
2. Set your computer on Windows system, insert the WICE-8052 Setup Disk in a floppy disk drive.
3. If you are in Windows 95, use the Start button and then click Run. If you are in Windows 3.1, in File Manager or Program Manager, click File and then click Run.
4. Type the drive letter, followed by a colon (:), and a backslash(\), and the word "setup.exe".
5. Follow the instructions on your screen. Click "Next" to continue through the Setup process. Use "Cancel" to undo the process.
6. It shows the Dialog which is about set-up path. Systems define for the WICE-8052 is C:\WICE52, you may change the path wherever you like. Click "Next" to continue the process.



7. “Group Name” option Dialog define for “ LEAP WICES2 WIN16”. You may type the name whatever you like. Click “Next” to continue the process.



8. The set-up condition is showing as following picture. Click “INSTALL” to proceed the set-up.



9. You will find a new program group in the File Manager.

After you set up The WICE-8052 Windows Operating System, LEAP WICE-8052 icon will appear on your screen. Also you can find your program groups by clicking Start Button and pointing to Programs.

(3) Connecting the WICE-8052 hardware with PC

1. Connect one end of the cable to your WICE-8052 unit and the other end of the cable to your printer port of your PC.
2. Let your WICE-8052 plug on power and run the WICE-8052. (Please refer to Starting and Quitting a Program)
3. While you get into LEAP WICE-8052 system, select WICE-8052 on menu bar and click on "WICE-8052 Connection".



4.If connection is successful, the information of the Status bar will turn “DISCONNECTED” into “CONNECTED”.

5.If connection is failed, it will show you a failed message. Please repeat Step 1-4 or you can find the problems in FAQ of this user’s manual.

(4) Starting and Quitting a Program

To get started with The WICE-8052 Windows Operating System, move the mouse over “LEAP WICE-8052”, quickly press the left button twice. Or press Start, click program group and click “LEAP WICE-8052” to start the system. To shut down the system, you can click the Close button in the upper-right corner of the window, next to the Minimize and Maximize buttons. Or you can move the mouse over the menu, click File and select the Exit commands.



II. Introduction of the Menu Bar

1. File

NEW: You can open the Editor Window and edit your text files.

OPEN: Open files

Three sub-commands display:

(1) BIN FILES: Binary files

It will show you the Open File Dialog box, click OK if you want to open a Binary file. When another Dialog box is showing, please click OK to download to the hardware. When it shows 100% on the proceeding bar, the file has been downloaded.

(2) HEX FILES: INTEL HEX files

It will show you the Open File Dialog, click OK if you want to open an INTEL HEX file. Click OK and the system will examine the CHECKSUM. If the examined result is wrong, a Question Dialog box displays the following message: select ABORT to give up download, or select IGNORE to ignore the wrong message, or select RE-TRY to download.

(3) ASM/C/TEXT FILES: Original file or text file

It will show you the Open File Dialog, click OK if you want to open an original file, the program is capable of downloading up to 6 text files simultaneously.



SAVE: Save the file

SAVE AS: Save as a new file name

GET INFO: Show the system's related information

EXIT: quit the system



2. EDIT

UNDO: Back to former operating window

COPY: Copy a selected text and move it onto the Clipboard

PASTE: Paste text onto the cursor indicates

CUT: Delete the selected text

CLEAR: Clear the selected text

3. RUN

RUN: Run the program

STOP: Stop the program

PROGRAM RESET: Reset the WICE-8052



STEP INTO: Single step to get into the sub-program

STEP OVER: Single step to run the sub-program

RUN UNTIL: Run the program and stop as the cursor is indicated

GO TO ADDRESS: A dialog box displays as you click this button. Key in address will change your current address.

SLOW RUN INTO: Slow run automatically into the sub-program.

SLOW RUN OVER: Slow run automatically and run over the sub-program.

4. DEBUG

SET BREAKPOINT:

Set the breakpoint where the cursor currently located. If it is already the breakpoint, this command will cancel the breakpoint setting. The set breakpoint address and disassembler's program are displayed in red color. The removed breakpoint location gets back to former color.

BREAKPOINT LIST:

It will open a Breakpoint Viewer Dialog box which will show you the currently setting breakpoints and its value.

BREAKPOINT OPTIONS:

It offers three options to you to set the breakpoint.

**CLEAR ALL BREAKPOINTS:**

Clear all the breakpoints which has been set.

DISABLE ALL BREAKPOINTS:

Disable the breakpoints set

ENABLE ALL BREAKPOINTS:

Enable the breakpoints set

SPECIAL FUNCTION REGISTERS:

There are four functions in this selection. These register windows not only allow user conveniently to observe but also equip bit modification and special function bit displaying functions.

~ PORT REGISTERS:

I/O control registers

~ GENERAL PURPOSE REGISTERS:

General purpose registers

~ SERIAL REGISTERS:

Serial communicated registers

~ TIMER/COUNTER REGISTERS:

Timer and Counter registers

These windows are not only providing for you to examine and edit on every register but also offering the function with bit editing and special function bit showing.



SET TRACE BUFFER

WICE-8052 stores up to 32K TRACE BUFFER, you can observe the program execution by start and end address. The trace is equipped the ability to analysis and debug.

Note: Start and end address must be set for of TRACE BUFFER.

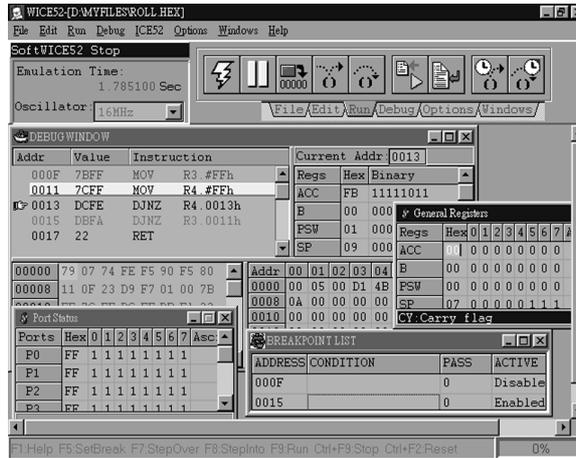
(1)SET TRACE BUFFER OPTIONS: It will show you the Dialog box which let you type the start and end address. Click OK if you finish setting.

(2)WATCH TRACE BUFFER DATA: It will show you the TRACE STATUS Dialog box. Please refer to the introduction of TRACE WINDOW.

5. ICE52

WICE52 Connection: You can use this command to make sure the connected status between hardware and software. You can reconnect by click this command as well.

Software Simulation: Allow you to shift to software Simulation mode. There are two information in the main window.



Emulation Time: The total current software emulated execution time.

Oscillator: The oscillation frequency of emulation. When you use software simulation, the functions and approach are same as WICE-8052 hardware emulation.

6.OPTIONS

SET SLOWRUN TIMER: Four sub-commands are available in this selection.

- (1)TRRIGER PER 0.1 SECOND
- (2)TRRIGER PER 0.5 SECOND
- (3)TRRIGER PER 1.0 SECOND



(4)TRRIGER PER 3.0 SECOND

You may set on of the above. The system define trigger is per 0.5 second.

7. WINDOWS

NEXT: Shift to next sub-windows

TILE: Arrange all sub-windows in tile way

CASCADE: To arrange all sub-windows in cascade way

ARRANGE ICONS: To minimize all sub-windows

VIEW: View the windows which you selected

CLOSE ALL: Close all the windows

8. HELP

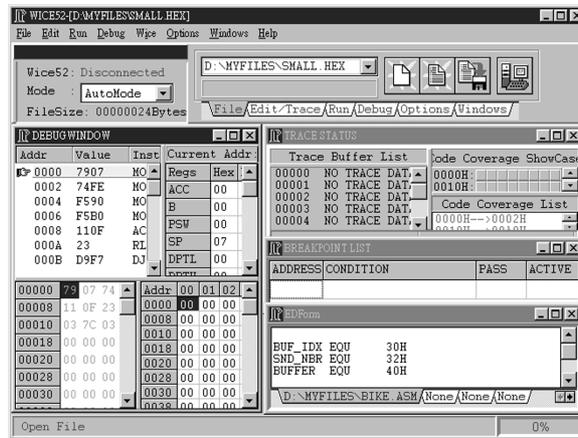
CONTENTS: Show the HELP sub-menu

ABOUT: The information about WICE-8052

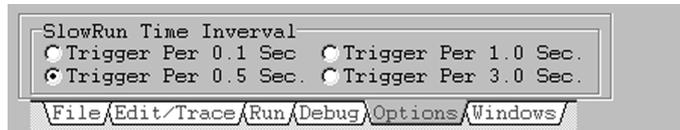
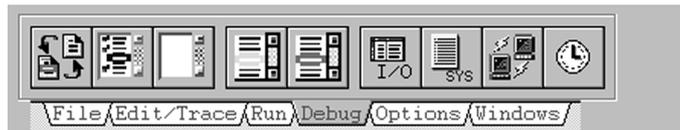


III. INTRODUCTION OF WINDOWS

1. MAIN WINDOW



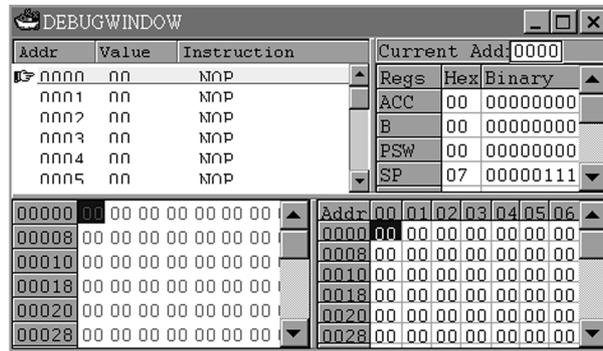
- (1) WICE-8052 Working Status: Showing the current status of the WICE-8052
- (2) Hardware Connection Status: It shows ENABLED while the hardware is connected well. It shows DISABLED while the hardware is not connected well.
- (3) The file name of the current program: The file name of the downloaded file
- (4) The length of the current file: The file length of the downloaded file
- (5) WICE-8052 Working Mode: The working modes include 8031, 8051, 8032, 8052...etc.
- (6) The shifting working label: quickly shift the 6 working windows.





- (7) Function Keys window: displays the hot keys and the introductions for the interface
- (8) Proceeding Status: displays the proceeding of downloading.

2.DEBUG WINDOW



- (1) Disassembler and Running window: This area show the program code after disassembling. The finger indicating point the WICE-8052 current execution point. The red color represents breakpoints and blue color is invalid breakpoints. You can browse all the program by press keyboard # \$ or move the scroll box by using mouse.
- (2) The current running address edit window: You can key in the address where you want to go and change the program's procedures. (invalid address will be neglected)
- (3) Internal Registers Status: Showing the registers' value of the WICE-8052. REGS indicates the name of the registers. HEX indicates the hexadecimal value and BINARY indicates the binary value. You can edit them directly.

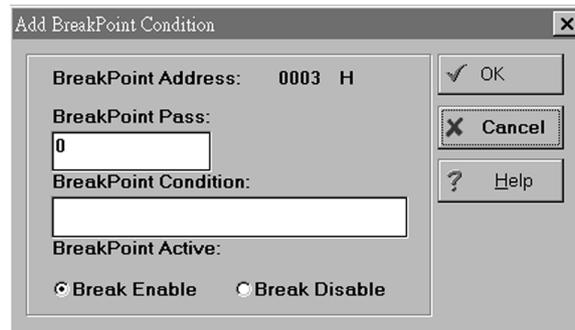


- (4) Loading Program Code Status: Showing the hexadecimal value of the program code. You can key in the value and edit the current program. (WICE-8052 will trigger the reset function if you change the program code.)
- (5) Internal Memory Status: Showing the overall hexadecimal data in WICE-8052. You can browse and edit by moving the cursor.
- (6) Split Line: Move the mouse over the split line, click the left button of your mouse and change the size of the browsing area.

3.BREAKPOINT LIST WINDOW

ADDRESS	CONDITION	PASS	ACTIVE
FFFFFFF	20H AND #FFH = 0	4	Enabled

- (1) Breakpoint Address: Showing the current address of the setting breakpoint. It will not be changed until you change the setting in DEBUG WINDOW.
- (2) Setting the condition of the breakpoint: You can set the triggering condition of the breakpoint, the approach is like following:
 - ~ Select SET BREAKPOINT CONDITION and click the left button of the mouse.
 - ~ An Dialog box of ADD BREAKPOINT CONDITION shown as following.



BREAKPOINT PASS WINDOW: You can set the pass times while the Breakpoint will be triggered after the times you set.

BREAKPOINT CONDITION: You can set the breakpoint condition in the address. The two kinds of syntax of this system is as follows:

- ~ **[register/address/constant] [operator] [register/address/constant] [judge operator] [register/address/constant]**
- ~ **[register/address/constant] [judge operator] [register/address/constant]**

Note: It is not allowed to let the operand equal to the constant.

Register: The address like ACC, B, DPL, DPH, SP, PSW, P1, P2, P3, P4, R0...R7 can be sort out to direct address and indirect address.



Direct address:

- (1) Integer: 00, 01, 10, 20...max = 255
- (2) Hexadecimal: 00H, 01H, 10H, 20H...max = FFH

Indirect address:

- (1) Integer: @00, @01, @10, @20...max = 255
- (2) Hexadecimal: @00H, @01H, @10H, @20H...max = FFH

(3) Constant:

Integer: #00, #01, #10, #20...max = 255

Hexadecimal: #00H, #01H, #10H, #20H...max = FFH

(4) Operator:

AND: Put the two operands into AND operation.

OR: Put the two operands into OR operation.

(5) XOR: Put the two operands into XOR operation.

(6) =: Put the two operands into equal judge operation.

(7) <>: Put the two operands into unequal operation.

EXAMPLE:

(1) ACC OR #10H = 31H

Putting Accumulator ACC and Constant #10H into OR operation. If it equals to Constant address 31H, this syntax is correct.

(2) B <> R1

Putting register B and register R1 into unequal comparison. If it is unequal, this syntax is correct.



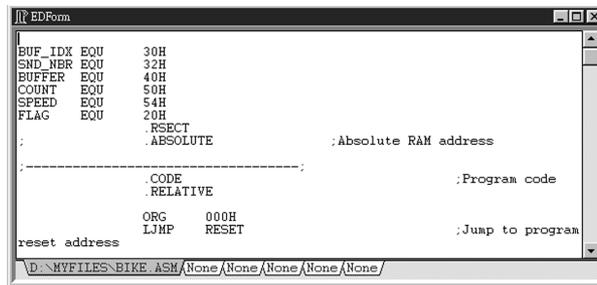
(3)#10OR#10H=31H

This is not a correct syntax. It should place space between the operand and operator.

(4)#10H OR #31 <> #22

This is not a correct syntax. It is not allowed to have operands equal to Constant.

4. EDITOR WINDOW



The label of shifting pages: If you have not downloaded any file, it will show you NONE. After you download files you can shift maximum six pages by using your mouse.

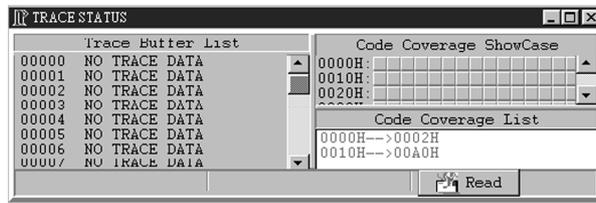
5. INTERNAL RAM WINDOW

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	12	00	00	00	00	00	00	13	00	00	00	00	00	49	00
0010	00	00	00	33	00	44	00	00	00	00	00	00	00	00	00	00
0020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0030	00	00	00	00	00	00	00	00	00	56	00	00	00	00	00	00
0040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0050	00	00	00	00	77	00	00	00	00	00	00	00	00	00	00	00
0060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00



- (1) The value of the address: The value is corresponding to the internal memory.
- (2) The contents of the internal memory: The hexadecimal value that you can browse and edit.

6. TRACE WINDOW



Showing the information from TRACE BUFFER in WICE-8052. After setting the start and end address, you can use the RUN command to run the program. WICE-8052 will record the procedures of the program, and you can use the information of the TRACE WINDOW to debug. WICE-8052 will read back the TRACE data from hardware if you click the READ.

Note: WICE-8052 hardware should not in the working status if you are reading data. Or the reading will be canceled.

- (1) TRACE BUFFER Data: According to loading program, showing the complete program procedures. It allows you to debug conveniently.



- (2) The coverage of the data: Show you the coverage of the current download program in a graphical way.
- (3) Analyze the procedures of the program: Analyze the TRACE data and show the section of the running.

IV . OPERATION EXAMPLE:

1.Run a Hex file

- (1) Click FILE, and click Open, then select Hex FILE for open a dialog box. Key in the file name or click the file name which you would like to open and click OK.
- (2) After opening, a dialog box will show, make sure if you would like to download the file to the hardware. Click OK, downloading is beginning.
- (3) Click RUN on the RUN menu or key in the hot key of F9. The program is running.

2.Set breakpoint

- (1) After program downloaded to hardware, set-breakpoint is able to use for debugging. (Set-breakpoint only can be processed when hardware is not working.
- (2) Click DEBUG, click in the disassembler which you would like to set. Or press hot key of F5 to set. At the meantime, the program black letters change to red. It means the breakpoint has been set successfully. If you would like to clear, just click the point, or press F5.



- (3) Begin to run the program. When run to the breakpoint, the breakpoint will let the WICE-8052 stop.

3. Software Simulation

- (1) Open a file which you would like to run.
- (2) Click ICE52, click WICE, click SOFTWARE SIMULATION.
- (3) Main menu change to software simulation status. Click Oscillator and select frequency.
- (4) All of the function and approach are same as hardware emulation.

IX. FAQ

1. Q: How come it can not connect to WICE-8052 hardware?
A: Please check the power cable and connected cable. If they are connected well, check the power is on or not, and check the LED on WICE-8052 is flash or not. Then run the main program of WICE-8052, click ICE52, and click WICE52 Connection.
2. Q: Why can I not set the breakpoint while running the program?
A: When the system is under the command like RUN, STEP INTO, STEP OVER, SLOW RUN INTO, SLOW RUN OVER, you have to select STOP to stop the program first and then breakpoints can be set.



3. Q: How can I re-open the closed window?

A: Select Windows on the menu bar. Click View command, click the windows which you want to open.

4. Q: How can I change the running point in the program?

A: There are two different ways for it:

(1) Select Run on menu bar, and click GO TO ADDRESS.

Then it will show you a GO To Address Dialog, key in the address you want you go. So that, you have changed the running point.

(2) Select DEBUG WINDOW and click on "Current Addr". Then it will show you a Jump To Address Dialog box, key in the address you want you go. So that, you have changed the running point.

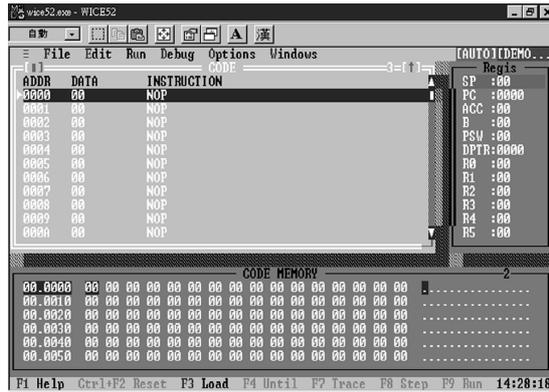
5. Q: Why the system appears the message "HARDWARE CONNECTION BREAK" while software running?

A: There is Automatic Detective Function in WICE-8052 system. If the connection is cut or the hardware is breakdown, it will appear "HARDWARE CONNECTION BREAK". Please check the connection condition, then WICE52 CONNECTION in ICE52 menu bar. After it connected, click RUN and click PROGRAM RESET for reset hardware.



THE WICE-8052 DOS OPERATING SYSTEM

I. MENU



1. FILE





- (3) Save: Save an edited file
- (4) Save as: Save an edited file in another name. The dialog box is display as follow.



- (5) Chang dir: In the following dialog box, you may switch current program directory.



- (6) DOS shell: Shift to DOS command line temporarily.
- (7) Exit: Quit the WICE-8052 program.



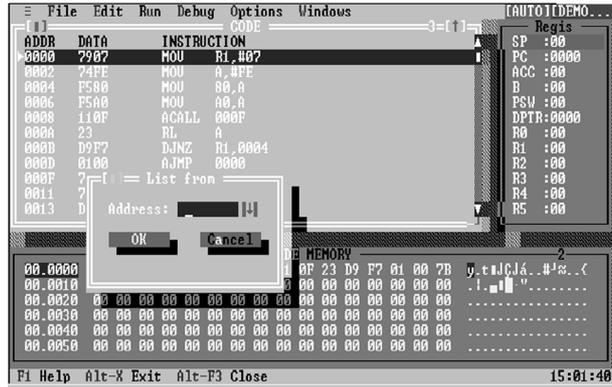
2. Edit



(1) If you load a text file, click Find and you can search the text which you want to edit.



(2) If you click List program, you can type the start address where you want to edit.



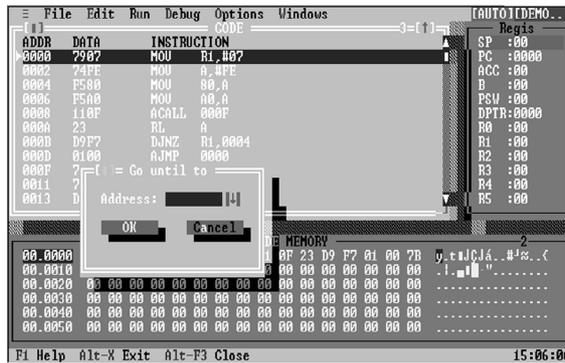
3. Run:



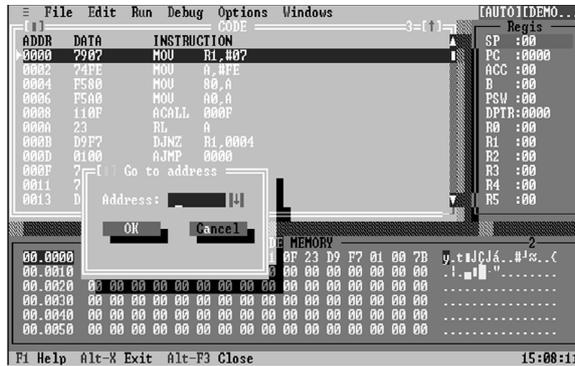
- (1) Run: Run the loaded file from the current Program Counter.
- (2) Stop: Stop the program's execution.
- (3) Program reset: Reset the hardware and software of WICE-8052



- (4) Trace into: Stop the program's execution after running a single instruction
- (5) Step over: Stop the program's execution after running a single instruction and it's sub-program.
- (6) Run until: Stop the program's execution at the position where you set.



- (7) Go to address: key in the following dialog box for editing the current Program counter.





(8) Slow run: Run the program in a slow speed.



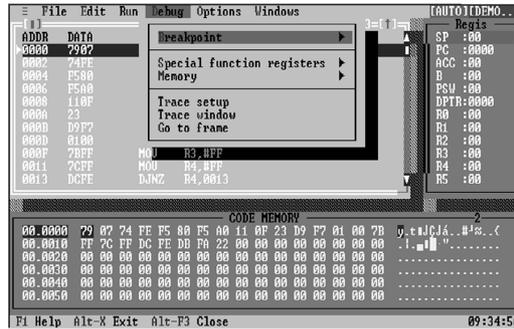
Delay (10ths of sec): Set the delay time for the program running. The minimum is 1 and the maximum is 50.

Select mode:

Trace into: Execute Slow run by the way of “Trace into”.

Step over: Execute Slow run by the way of “Step over”.

4.Debug





(1) Breakpoint

Toggle: Program code address where cursor indicates on CODE window, you may set or remove breakpoint. You may press F2 or couple click mouse to remove and set breakpoint.

Delete all: Clear all the breakpoints in the CODE window.

(2) Special function registers



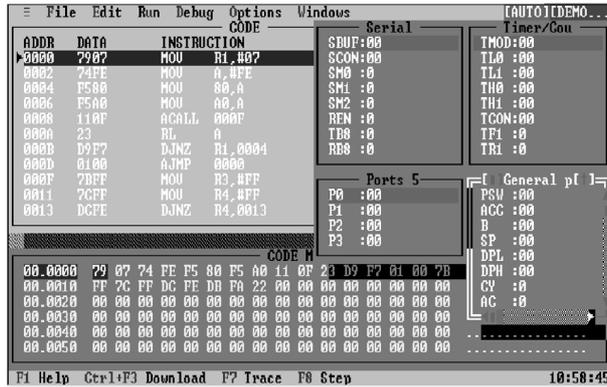
All: displays all of the following four registers windows

Ports: Displays the Port register window

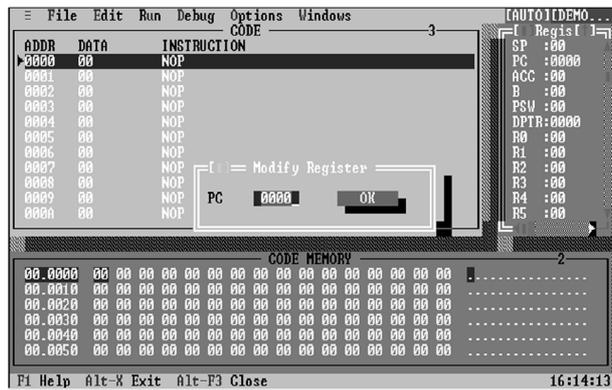
General purpose: Displays the general purpose register window.

Serial: Displays the Serial register window.

Timer/Counter: Displays Show the Timer/Counter register window.



Note: For editing Registers windows, you may press Enter at the item you want to edit. Take Program Code (PC) editing as an example like follow, the system shows the dialog box which allow you to edit PC:





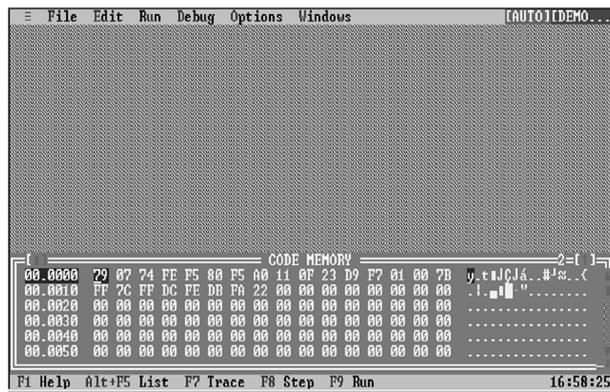
(3) Memory



From address: Key in the start address

CODE: Displays program's HEX code

IDATA: Show the HEX code of the internal memory. You may use Insert key to edit the program.

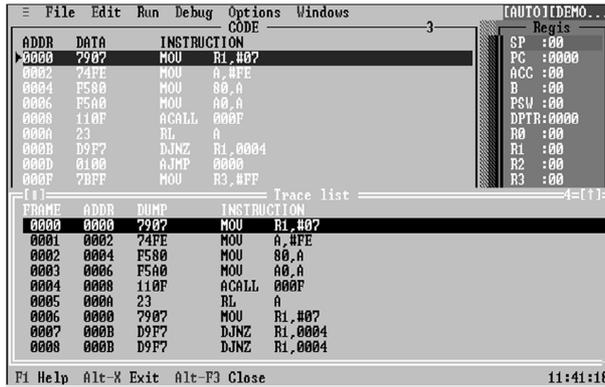




(4) Trace setup: Set the start and end address of tracing.

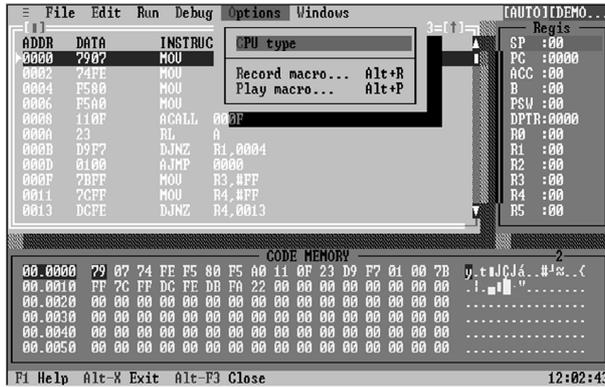


(5) Trace window: The trace contents can be viewed from the Trace windows

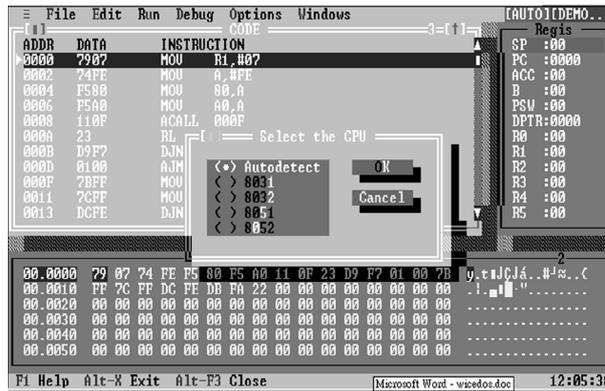




5.Option



(1) CPU type: Select the CPU type which you want to emulate. If no indication is provided, the system will automatically detect the CPU type.





(2) Record macro: In the following dialog box, key in the file name for recording marco.

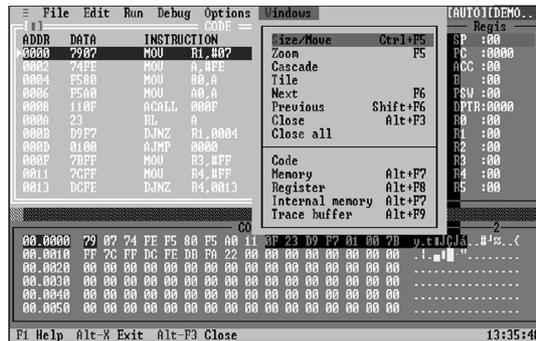


(3) Play macro: In the following dialog box, select the macro file which you want to play.





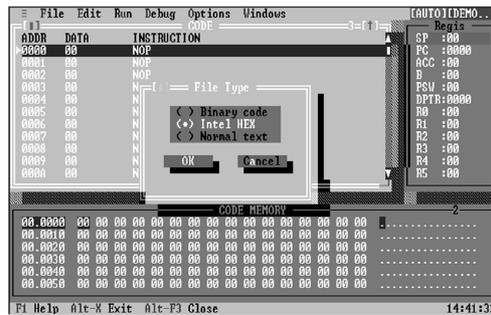
6.Windows



- (1) Size/Move: There are two ways, keyboard and mouse, to change the size of windows and move the windows.
 - ~ Keyboard: To shift the position of the windows, you can press Ctrl + F5 then press # \$ f g . To change the size of the windows, you can press Shift + # \$ f g
 - ~ Mouse: To shift the position of the windows, you may move onto the title of the window and drag it. To change the size of the windows, you may move onto the right-down corner of the window and drag it.
- (2) Zoom: Enlarge or diminish the current window
- (3) Cascade: Display all windows in cascade way
- (4) Tile: Display all windows in tile way
- (5) Next: Move to the next window
- (6) Previous: Move the previous window



- (7) Close: Close the current window
- (8) Close all: Close all the windows
- (9) Code: Show the CODE window, CODE MEMORY window, and Registers window together
- (10) Memory: Please refers to 4. Debug concerning Display/Edit
- (11) Registers: Open the Registers window or move to the Registers window.
- (12) Internal memory: Open the internal memory window or move to the internal memory window.



- (13) Trace buffer: Open the Trace buffer window or move to the Trace buffer window

**II. OPERATION EXAMPLE:**

~ How to open a file?

1. In the file menu, select open, the following figure will show. There are 3 kinds of format. Every single one will show the dialog box. Then, select the file which you would like to load in.
 - (1) Binary Code
 - (2) Intel Hex
 - (3) Normal Text
2. If download is successful, a dialog box will show for inquiring if you would like to download to hardware. Press yes for auto download.
3. Press F9 for running

~ How to set breakpoint?

1. After download the machine code, the breakpoint is able to set.
2. In the disassembler, select the address which you would like to set, double-click, or press F2. The address will change to red. If double-click or press F2 again, the breakpoint will be canceled.