HY-IDE Software User's Manual

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1. HY-IDE Overview

1.1 Introduction

To facilitate the process of product development, HY-IDE development environment is provided to deploy HYCON's full range of MCUs. Customers can implement the end-product's in-circuit emulation on this platform and program the code onto HY series' OTP products.

1.2 HY-IDE Installation and System Requirement

The minimum requirement of system configuration to operate HY-IDE：

- PC hardware request

  PC compatible machine with PENTIUM® CPU

  128 MB Memory（256MB is recommended）

  10 GB Hard Disk Space

- OS

  Windows 98SE

  Windows 2000

  Windows XP

  Windows Vista

  Windows 7

- Applicable interface

  USB Port

1.3 Installation and Uninstallation

1.3.1. Installation

Note that some Windows operating system may request the HY-IDE to be installed in the Supervisor Privilege.

- Insert the HY-IDE CD into the CD ROM drive and find the file in the CD ROM or file to execute Setup.exe.
- Following the dialog step by step to continue setup procedures. As shown in
- Figure 1-1.
- First-time installation must initiate USB driver program, the setup procedures are as Figure 1-2 shown.

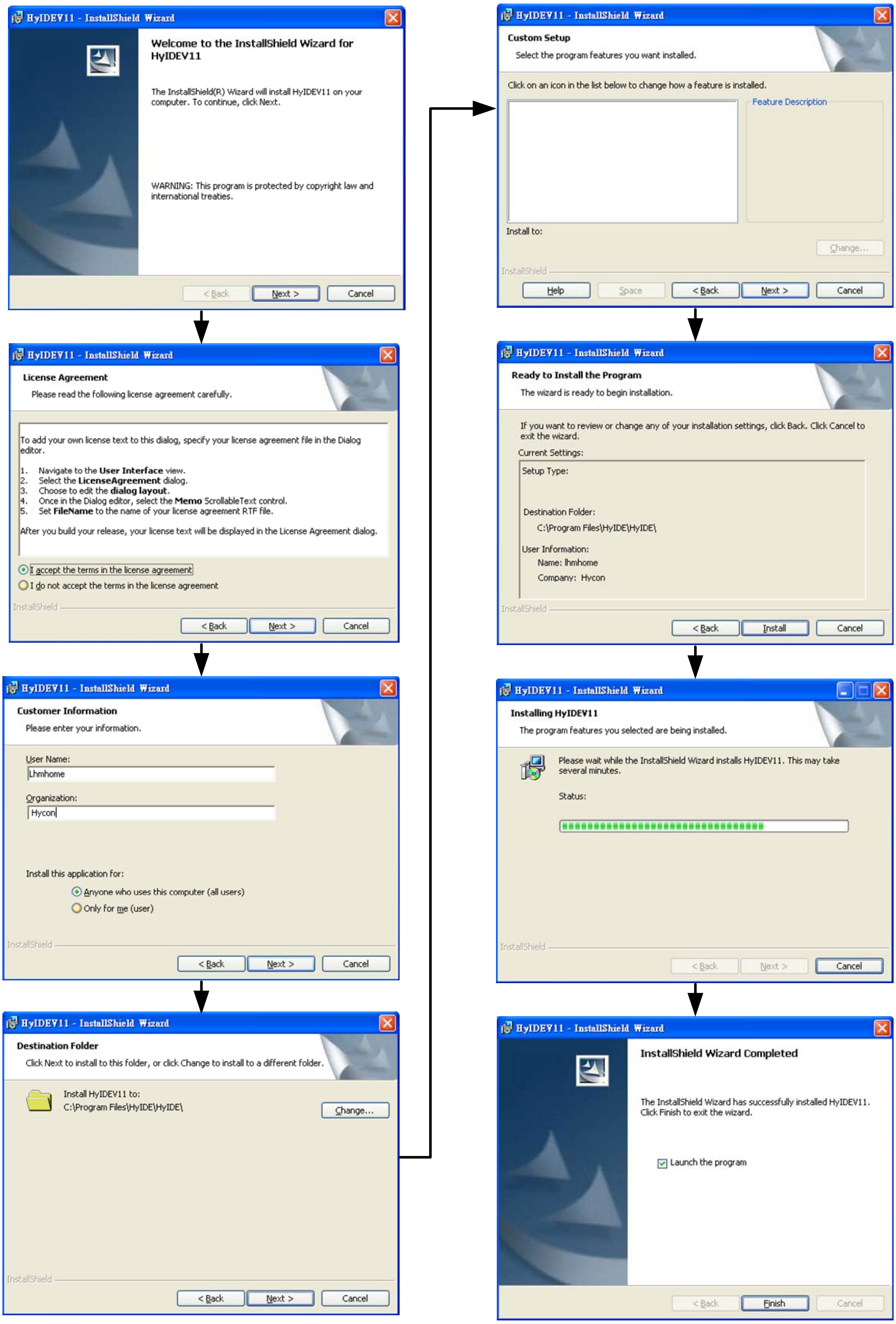

HyIDEV11 - InstallShield Wizard
Welcome to the InstallShield Wizard for HyIDEV11
The InstallShield(R) Wizard will install HyIDEV11 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel
License Agreement
Please read the following license agreement carefully.
To add your own license text to this dialog, specify your license agreement file in the Dialog editor.
1. Navigate to the User Interface view.
2. Select the LicenseAgreement dialog.
3. Choose to edit the dialog layout.
4. Once in the Dialog editor, select the Memo ScrollableText control.
5. Set FileName to the name of your license agreement RTF file.
After you build your release, your license text will be displayed in the License Agreement dialog.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
Customer Information
Please enter your information.
User Name:
Lhmhome
Organization:
Hycon
Install this application for:
Anyone who uses this computer (all users)
Only for me (user)
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install HyIDEV11 to:
C:\Program Files\HyIDE\HyIDE\
Change...
Custom Setup
Select the program features you want installed.
Click on an icon in the list below to change how a feature is installed.
Feature Description
Install to:
Help
Space
Ready to Install the Program
The wizard is ready to begin installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
Current Settings:
Setup Type:
Destination Folder:
C:\Program Files\HyIDE\HyIDE\
User Information:
Name: lhmhome
Company: Hycon
Install
Installing HyIDEV11
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs HyIDEV11. This may take several minutes.
Status:
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed HyIDEV11. Click Finish to exit the wizard.
Launch the program
Finish

Figure 1-1

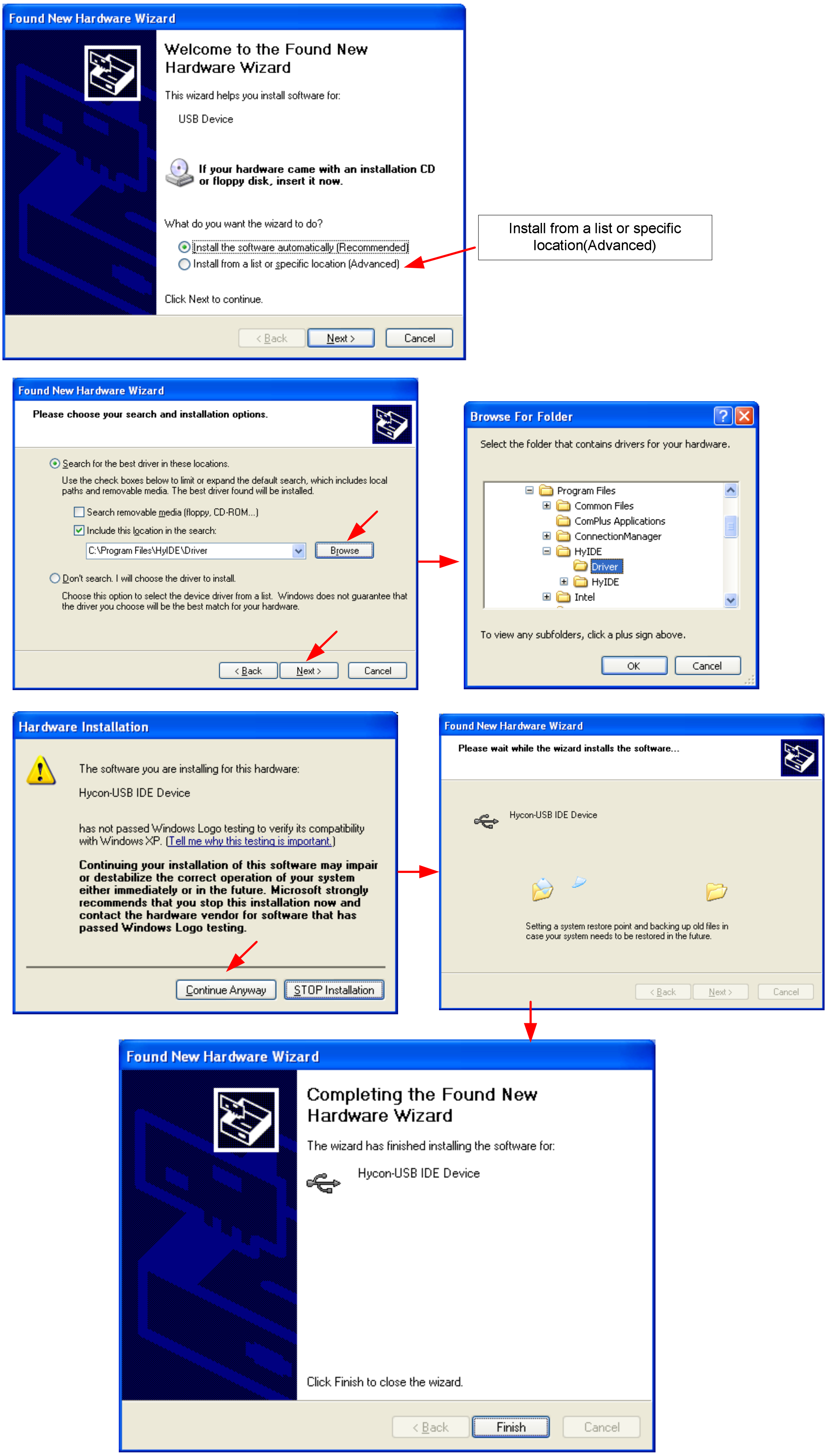

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel
Install from a list or specific location(Advanced)
Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\Program Files\HyIDE\Driver
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel
Browse For Folder
Select the folder that contains drivers for your hardware.
Program Files
Common Files
ComPlus Applications
ConnectionManager
HyIDE
Driver
HyIDE
Intel
To view any subfolders, click a plus sign above.
OK
Cancel
Hardware Installation
The software you are installing for this hardware:
Hycon-USB IDE Device
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation
Found New Hardware Wizard
Please wait while the wizard installs the software...
Hycon-USB IDE Device
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel
Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Hycon-USB IDE Device
Click Finish to close the wizard.
< Back
Finish
Cancel

Figure 1-2

1.3.2. Uninstallation

Please remove the file "HyIDEV11" in"Add/Remove" under Control Panel.

1.4 Register

1. Customers use ICE hardware emulation or OTP programming for the first time.
2. If the dialog appeared or abnormal IDE crash occurred, customers must conduct re-register action.

Figure 1-3

Register Procedures

1. Please check the HyIDE Machine Number (HyIDE Code) on the parcel and send the number by e-mail or on-line register. HYCON will send back another customer register code to you. Connect the HyIDE Control Board to PC through USB interface.
2. Execute HyIDEV10 software (HyIDE.exe). Go to"Option" and press"Register".
3. Fill in the customer code in "Register Number" and click"Write" to start.

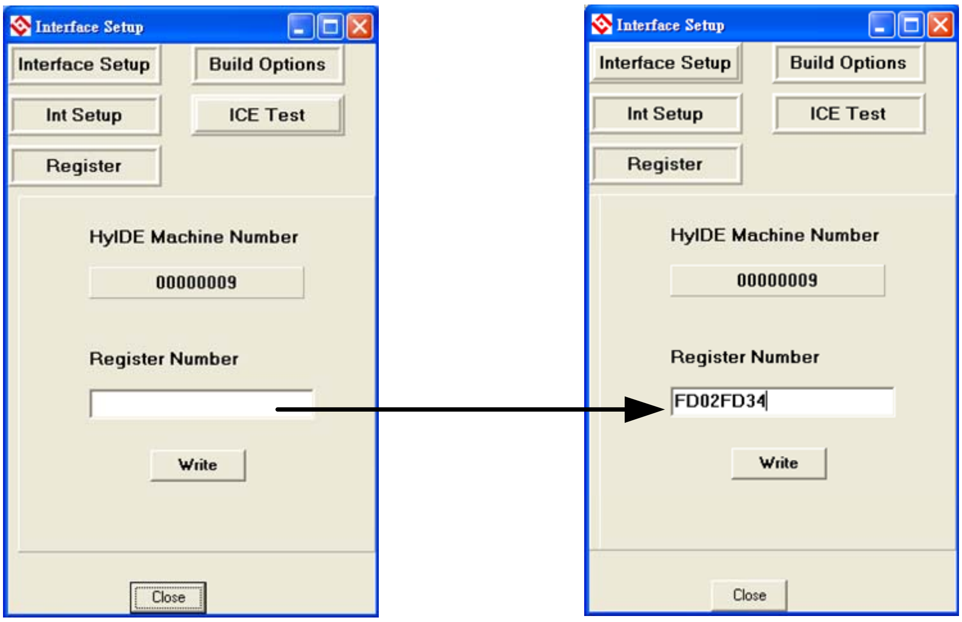


Figure 1-4

4. If the process is successful, a dialog will be shown.

Figure 1-5

5. If the process is fail, a dialog will be shown as Figure 1-6.

Figure 1-6

6. Once the register is succeeded, Customers do not have to worry that other numbers may be written into the "Register Number".

1.5 Use Demo Code to Guide User Manual

- Start KitchFor11P13.asm
- Set the file as assembly main file
- Assembly start to progress program debug

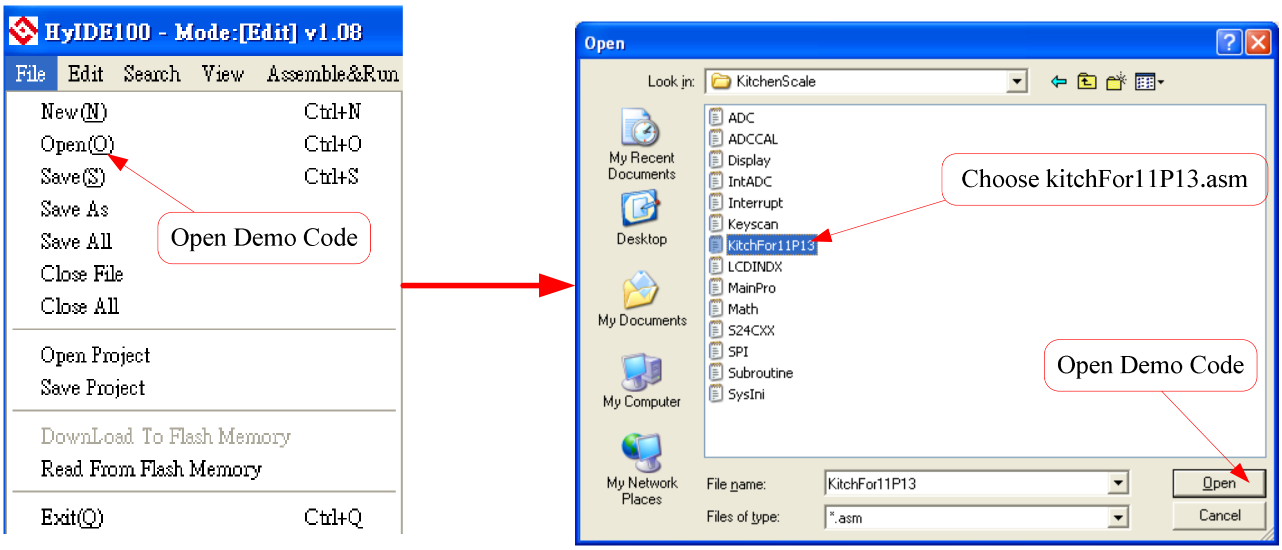


Figure 1-7

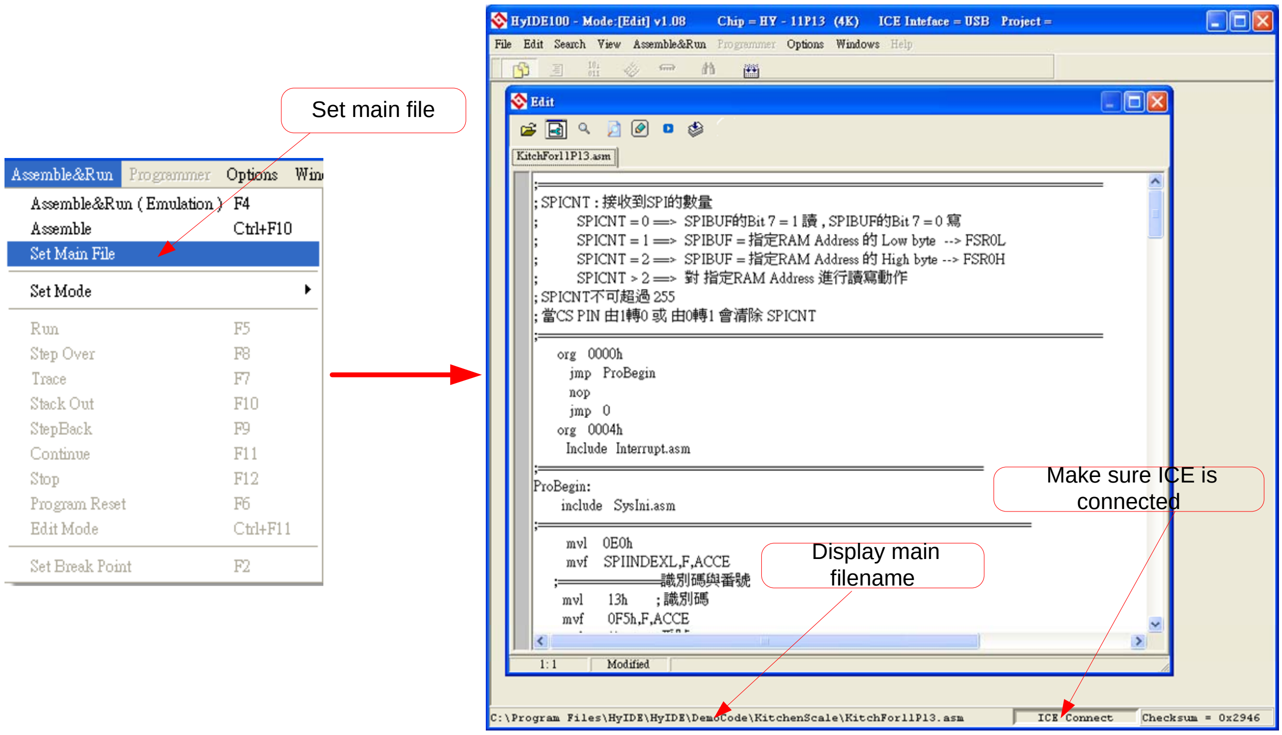


Figure 1-8

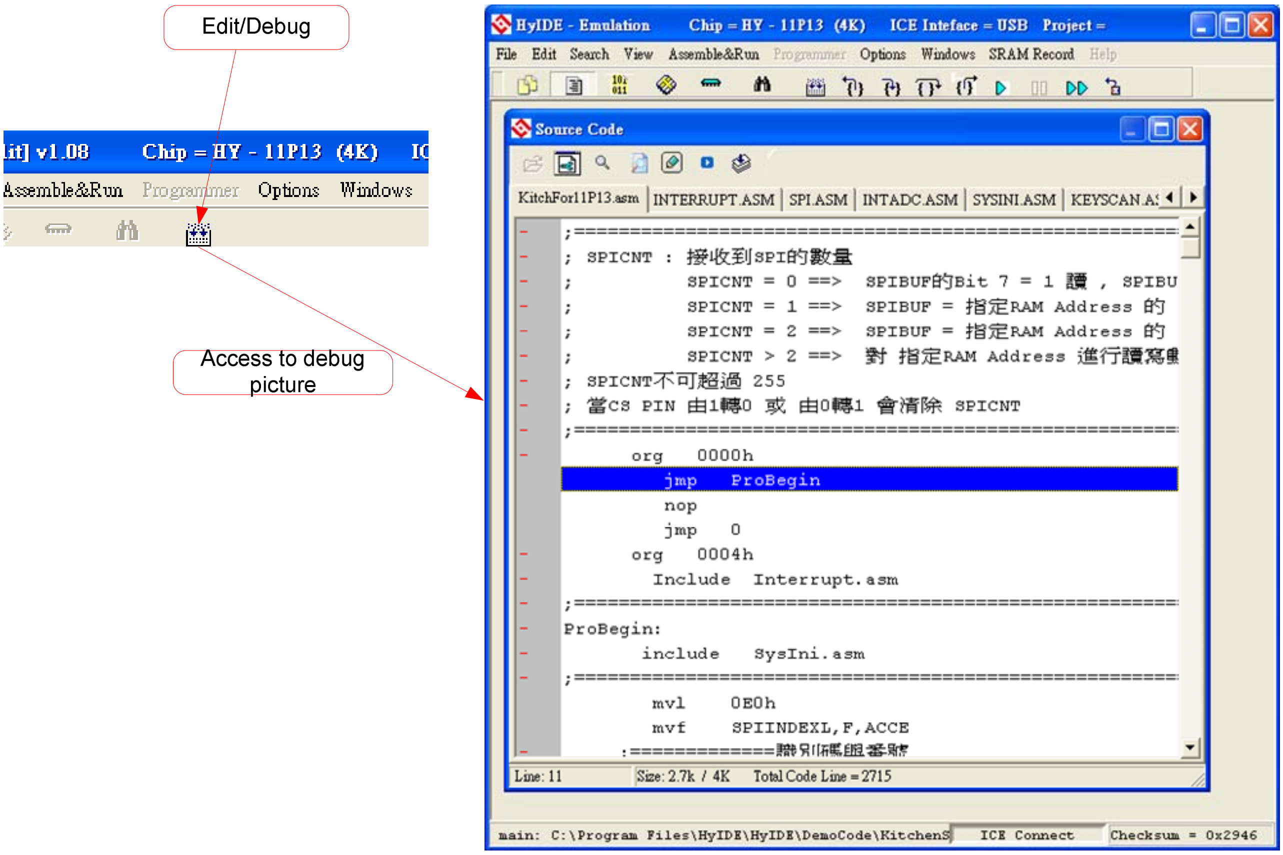


Figure 1-9

Any editor can be used to edit Source Code, as long as it can be stored as ASCII Code format.

Debug and edit function will be elaborated in next Chapter.

1.6 Demo Code Operaiton

- After executing HYIDE software installation, a Demo code is provided for user's reference under: C:\Program Files\HyIDE\HyIDE\DemoCode.
- Related document of Demo Code is provided on: http://www.hycontek.com/page2.html Product Application Notes. Below listed corresponding documents for reference:
  - Kitchen Scale: APD-SD18007 (Kitchen Scale Application Note)
  - Kitchen Scale-SINC3: APD-SD18003 (50/60Hz Rejection Solution)
  - HY11P32 Demo code: APD-SD18004 (Auto On Measurement Application)

2. HY-IDE Interface Description

2.1 HY-IDE Edit Interface

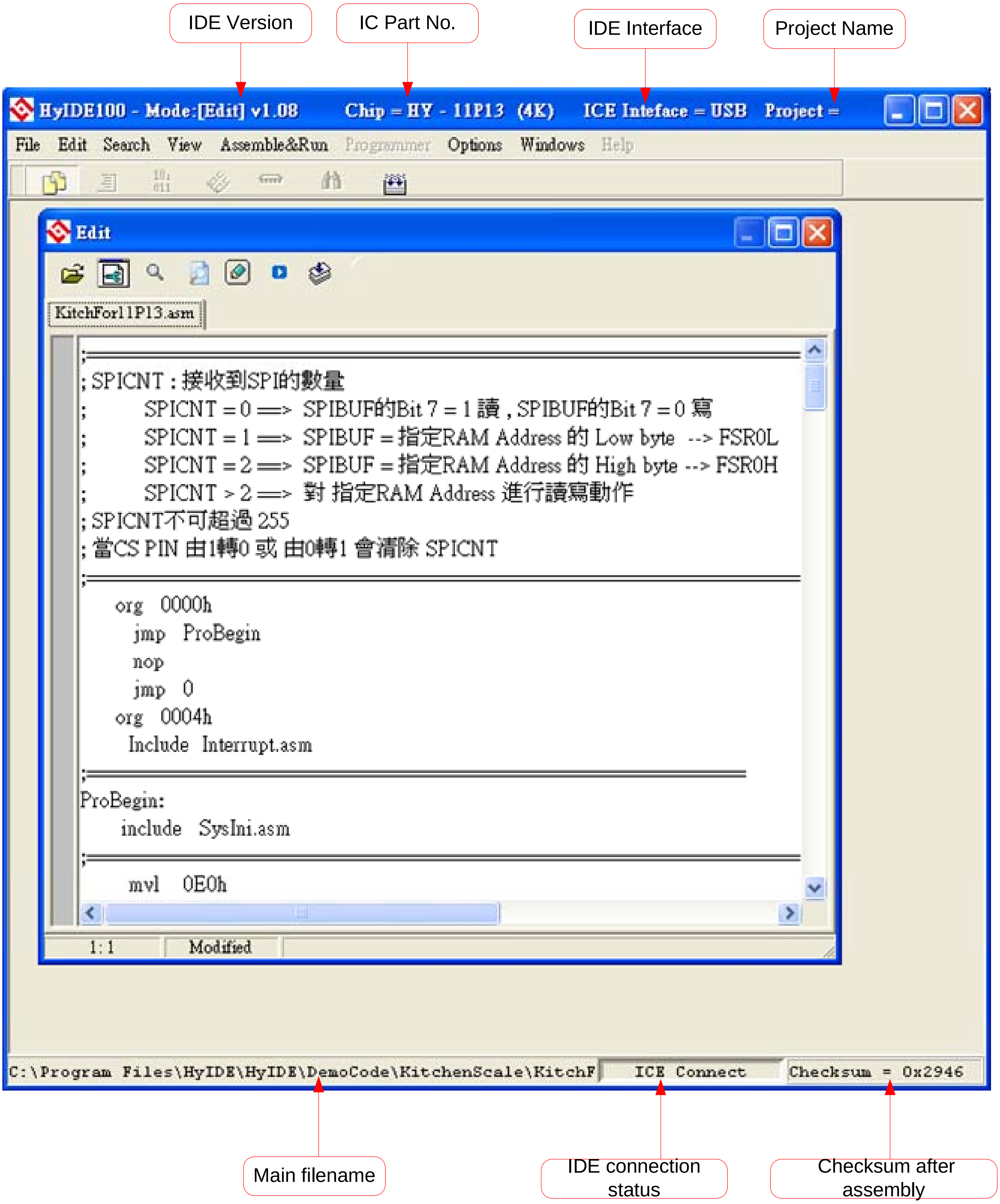


Figure 2-1

- New
  Create a new file
- Open
  Open an existing file
- Close
  Close the current active file

2.1.1 Edit Window

- Open

  Open an existing file.
- Label Setting

  Set label. When open too many files, this icon helps to return to the label setting place quickly.
- Jump to Label

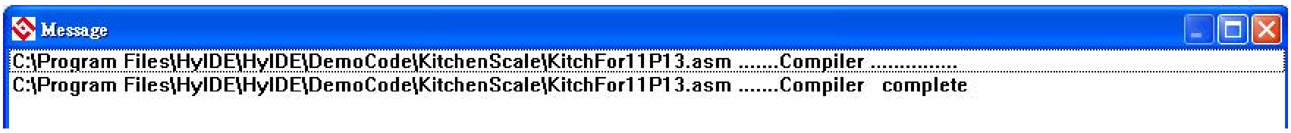
  Jump to where to label has been placed.
- Find

  Search the entered word.
- Search the specified word.
- Switch Display Window

  When too many files are opened, this icon helps to command file switching.
- Edit

  Only editor is executed. It will not get into program debug status.

  The information dialog may pop up after edit accomplished.



2.1.2 File Menu

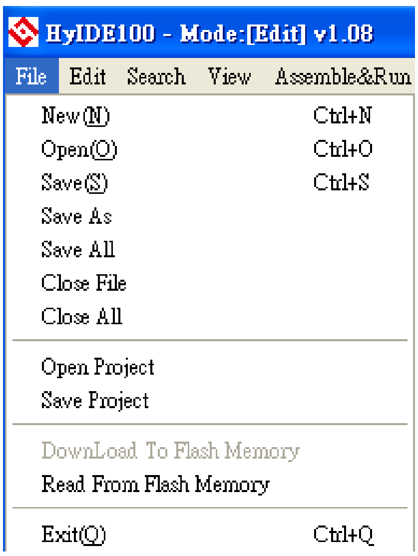


Figure 2-2

- New → Create a new file.
- Open → Open an existing file.
- Save → Write the active window data to the active file.
- Save As → Write the active window data to the specified file.
- Save All → Write all windows data to the corresponding opened files.
- Open Project → Project includes IC part no., IDE interface, Edit main filename, Active opened status, and Checksum. Project status will be loaded in after the project is opened.
- Save Project → Write the active project to the active project file.
- Close → Close the current active HyIDE program.

2.1.3 Edit Menu

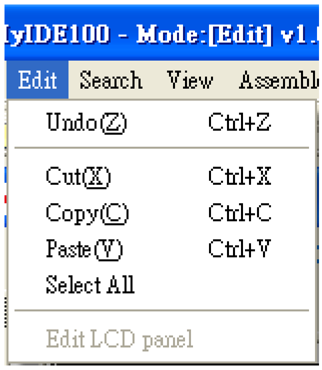


Figure 2-3

Under editing the file:

- Undo → Cancel the previous editing operation.
- Cut → Remove the selected lines from the file.
- Copy → Place a copy of the selected lines.
- Paste → Paste the copy lines to the present insertion point.
- All → Select all lines in the active file.

2.1.4 View Menu

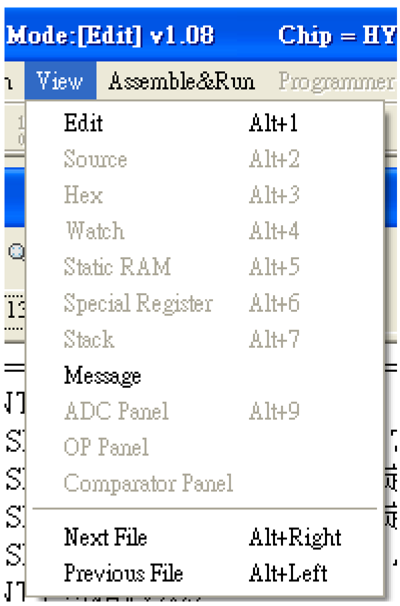


Figure 2-4

- Edit Window → Appoint the edit window as the present active window.
- Next file → Appoint the next file as the present active window.
- Previous file → Appoint the previous file as the present active window.

2.1.5 Edit & Execution Menu

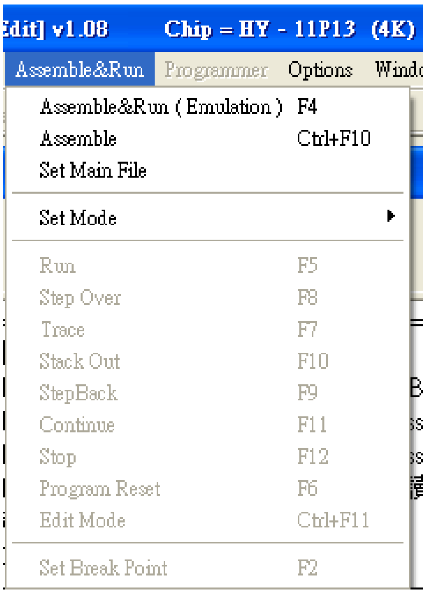


Figure 2-5

- Edit & Execution → Edit Source Code and execute program debug mode.
- Edit → Only program is edited, program debug is not executed. This assembler will not generate error message according to IC part no. Error message will show up when the lines is error. It is usually used in generating OBJ Code (Object).
- Set Edit Main File → Set the file as edit main file. Files will be named after compiler generated file name, such as Hex, MAP, ASC…etc.
- Debug → Debug through software or hardware is selective.

2.1.6 Options Menu

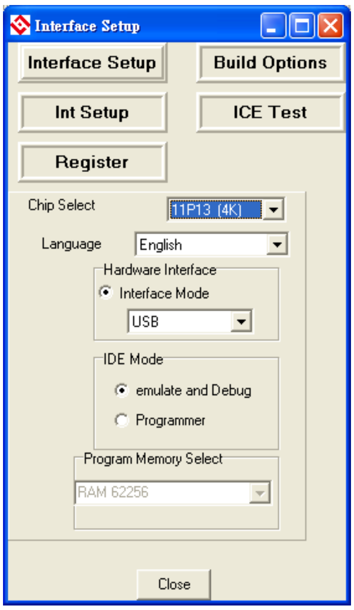


Figure 2-6

There are five options:

(1) Interface Setting

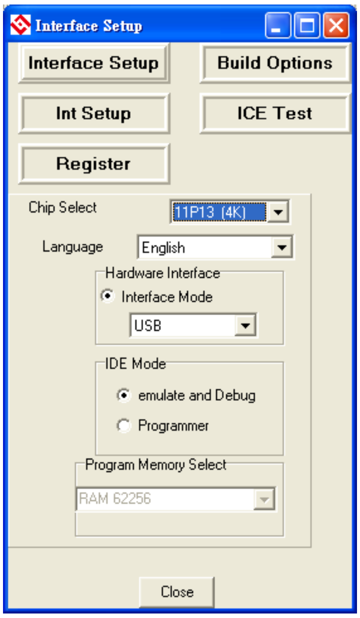


Figure 2-7

- IC option: Select IC part no. Compiler will assemble the selected part no.'s program file. It will determine whether there is any misuse or non-existing Register or SRAM, or has the program exceeded the ROM Size.
- Language option: English and Chinese interface are selectable.
- Communication interface option: Select IDE communication interface.
- Mode option: Two choices, Emulate and debug and program.

(2) Edit Item

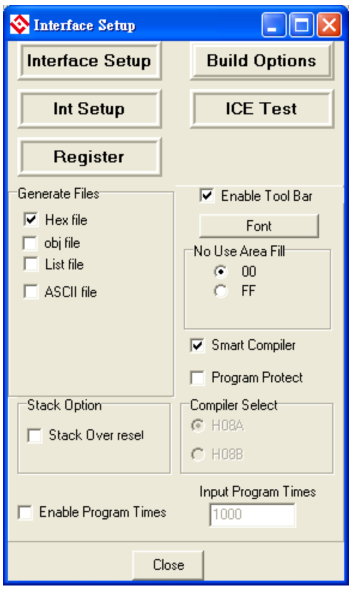


Figure 2-8

- Assembler generated extension: it is selectable to produce below file format.
  1. binary file : Hex
  2. obj file : obj
  3. List file : lst
  4. ADCII file : asc
- Stack operation: Choose to replace the program after stack overflow. When this option is chosen, Compiler will add to Hex, it will be programmed in to OTP.
- Program number of times limit: Please refer to the program Chapter.
- Font option: Choose editor's fonts.
- Fill unused zone: Fill the unused zone with 0x0000 or 0xFFFF in the program.
- Simplified assemble: Simplified assemble function is selectable. When JMP or CALL is smaller than 2K, it will automatically transform to RJ or RCALL. If the arguments of CALL are set, it will not transform to RCALL.
- Program protection: Please refer to the program Chapter.

(3) Interrupt Setting

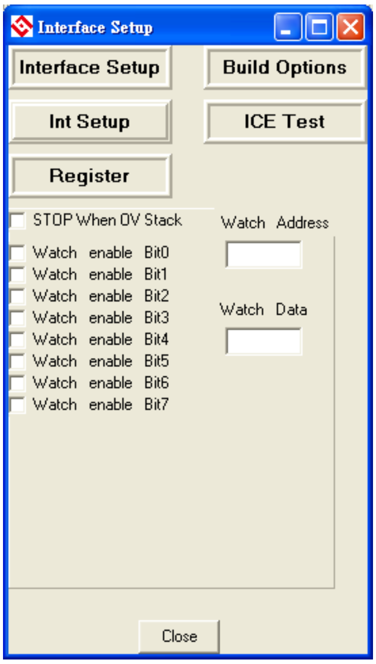


Figure 2-9

- Stop operation when Stack overflow: IDE will stop when Stack overflow.
- Monitor address: Select the monitored Register or RAM. The program will stop when the program executed RAM or Register value equals to the monitored Data.
- Monitor Data: Monitor value is set when the monitor Data is filled up.
- Monitor RAM bit: Monitor function will be activated if the monitor bit is marked on. The program will stop when the bit of Data value equals to the marked on bit.

(4) ICE Test

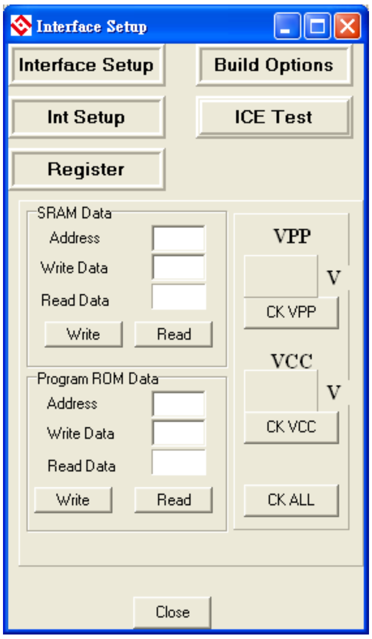


Figure 2-10

2.1.7 Window

The window can be displayed horizontally or vertically.

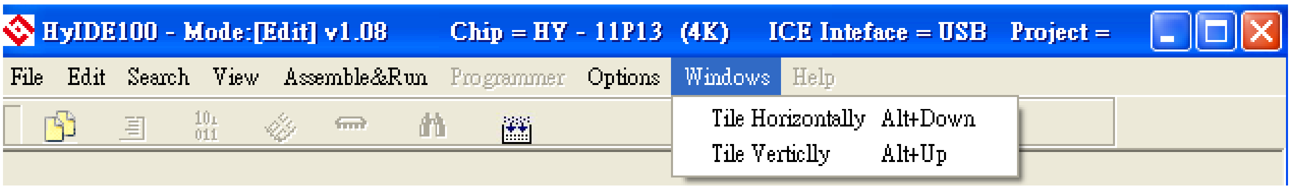


Figure 2-11

2.1.8 Program Structure

Before editing new program, user must select IC part number through interface setup;

Different IC will have different Instruction Set, according to IC part number definition; it is classified as H08A and H08B instruction set;

User can refer to the appendix software demo code, Chapter 1.6 gives illustration of demo code usage.

Users can refer to following program structure to start writing program. Basic structure description is listed as below:

- Program Name Definition as: ***.ASM
- Register Name or RAM Definition as: ***.INC
- Many program contents are listed below:
  - "Main.asm", "Initial.asm", "Interrupt.asm", "Sub.asm", "Mian.inc", "H08.inc"

- "Main.asm" structure: ;Program name can be any name

```
ORG      00H             ;Declare program start
JMP      BEGIN           ;Jump to main program

ORG      04H             ;Declare interrupt flag address
Include  Interrupt.asm   ;Cite "Interrupt.asm" interrupt vice program ;
```

```
                          ;Include file max. 100

BEGIN:                    ;Start Main program. Label name definition can be any word
Include   Initial.asm     ;Cite "Initial.asm" hardware initial vice program
JMP        T1             ;Jump to T1 vice program
…
T1:
NOP

Include   Sub.asm         ;Cite "Sub.asm" vice program


Include   H08.inc         ;HY11P series special register name, address definition
Include   Main.inc        ;RAM name, address definition
END                       ;Program end
```

- Reference Document:
  IP User Manual: User's Guide
  Instruction Set User Manual: H08A Instruction Set Manual or H08B Instruction Set Manual
  HYIDE Complier User Manual: HY-MCU COMPILER

2.1.9 Self-Defined Instruction

- HYIDE included user self-defined instruction function since V1.6. This function provides user to self-define HY11P series instruction as the familiar MCU instructions.
- Usage description:
  1. All self-defined instruction function is installed under: Inst.txt file. It is separately as two rows. The first instruction (first row) of every row is origin HYCON instruction name; users can not make amendment to it. The second instruction (second row) is "User" self-defined instruction name.
  2. First and second instruction can only be separated by space, multi-space or Tab.
  3. Second instruction can be followed by semicolon (;) as remark.
  4. Second instruction name can be the same as the first one.
  5. The name of second instruction can not be defined as any of HYCON origin instruction name except the instruction in the same row. Otherwise, it is deemed as invalid and will adopt the origin instruction name to compile program.
  6. After users self-define the second instruction name, the first or second instruction name can be used when program compiling.
  7. Every row can only has one self-defined instruction name, any repeated instruction name will be deemed as invalid.
- Example:
  JMP JUMP JMM JPP JU ;╳ error define method
- Repeated defined instruction or self-define instruction will be deemed as invalid.
  Example:
  JMP JUMP
  JMP JPP ;╳ instruction name redefine. JUMP will be deemed as invalid instruction, only JPP is valid.
  JPP JU ;╳ cannot use self-defined name to redefine

JMP JN ;╳ cannot be defined as HYCON origin existed instruction name

Correct definition is:

JMP JUMP

3. HY-IDE Debug Interface

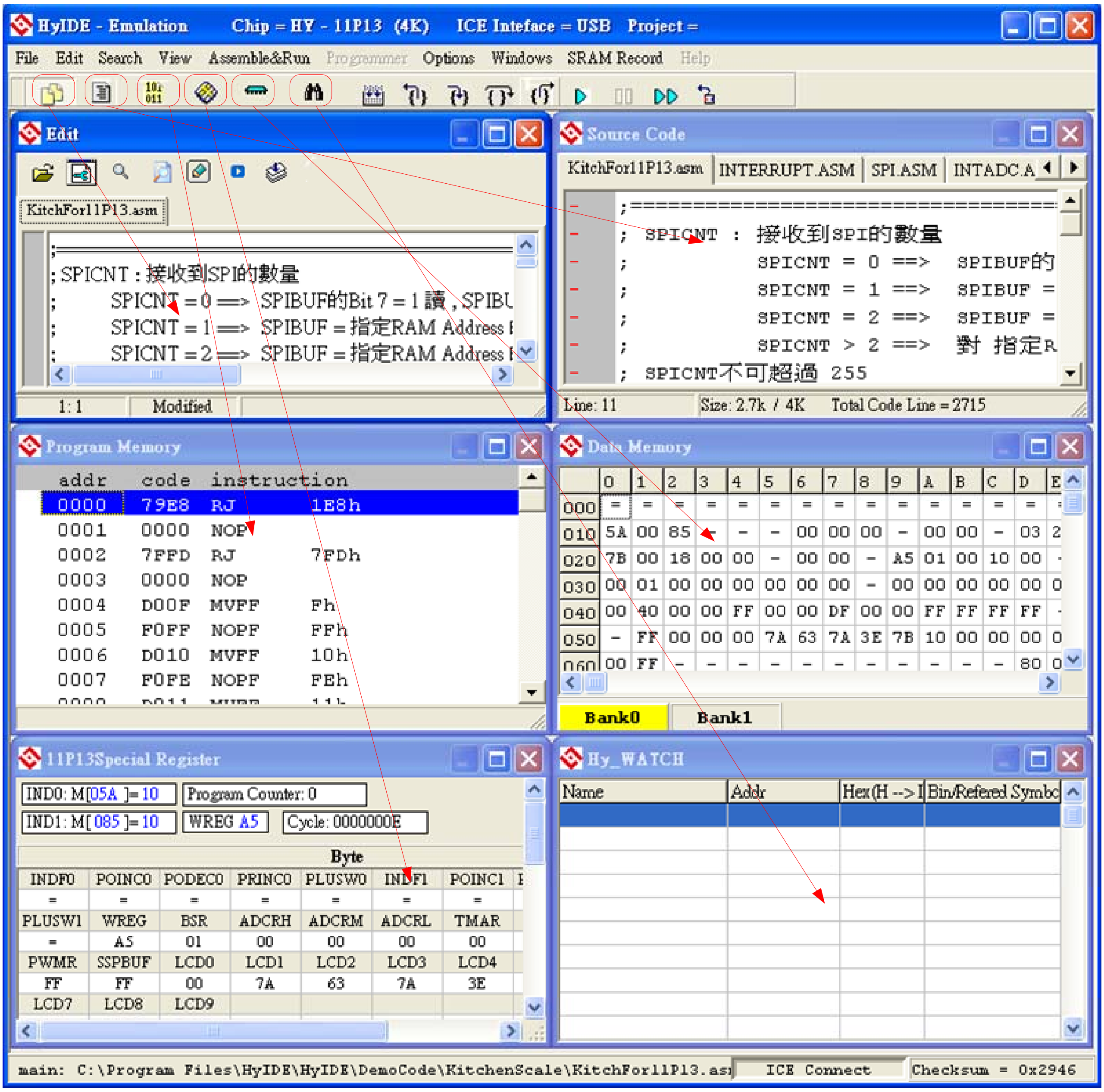
It can be classified into hardware debug and software debug.

- Hardware debug

  The indication column is blue

- Software debug

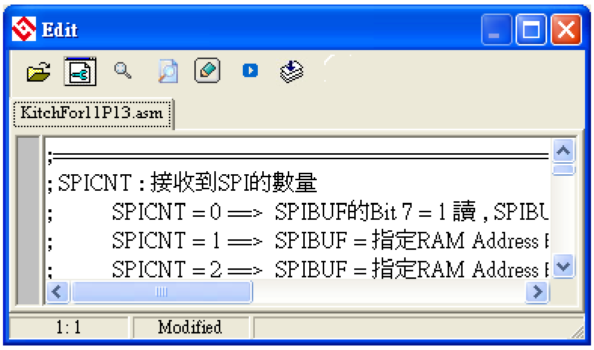
  The indication column is green



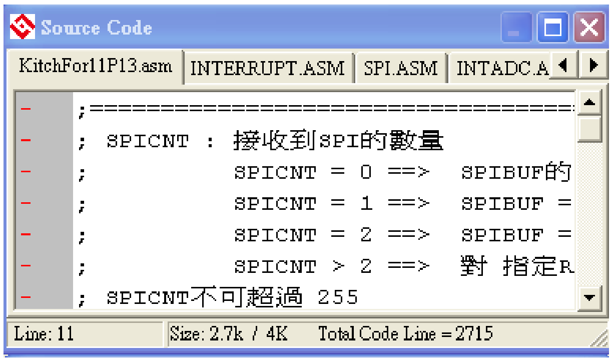
3.1 Fast Execution

Fast Window Switch

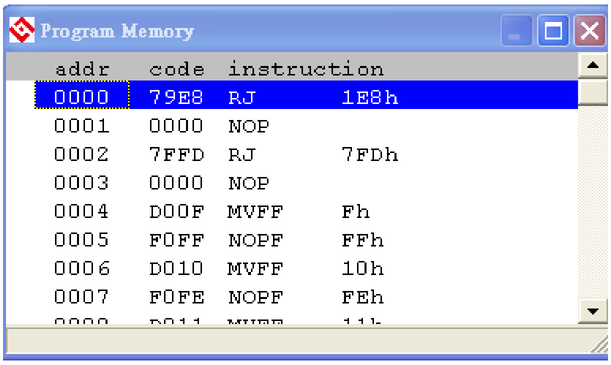
(2) Switch to Edit window



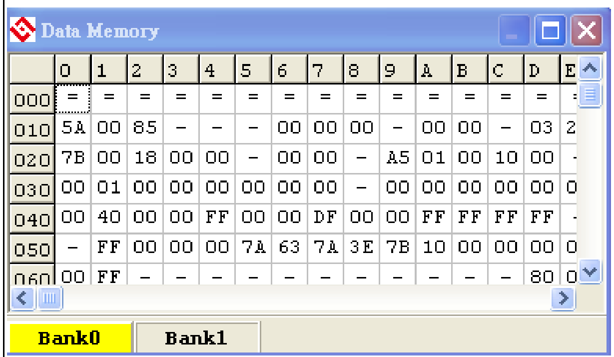
(3) Switch to Source window



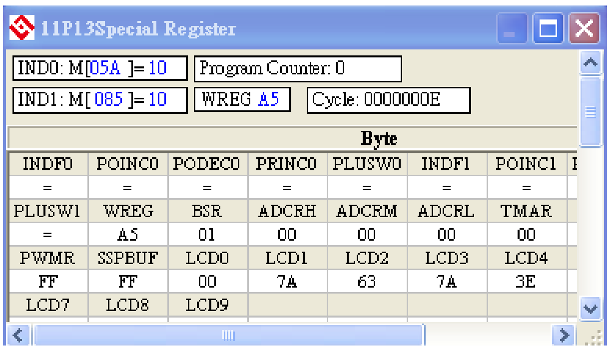
(4) Switch to Hex window



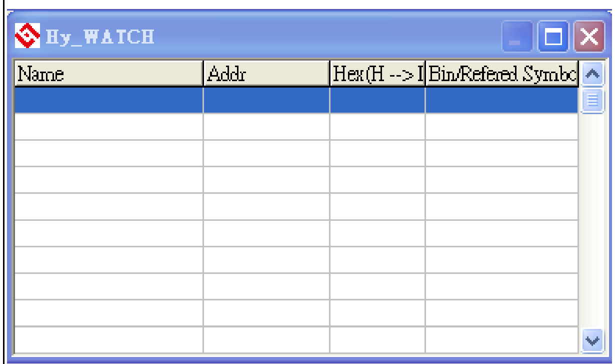
(5) Switch to Ram window



(6) Switch to Reg window



(7) Switch to Watch window



Fast Debug

(1) Step back

(2) Trace (Enter into Macro/vice program)

(3) Step over (Not enter into Macro/vice program)

(4) Skip Call

(5) Execute (Free RUN)

(6) Pause

(7) Continue

(8) Program replace

(9) Back to edit mode

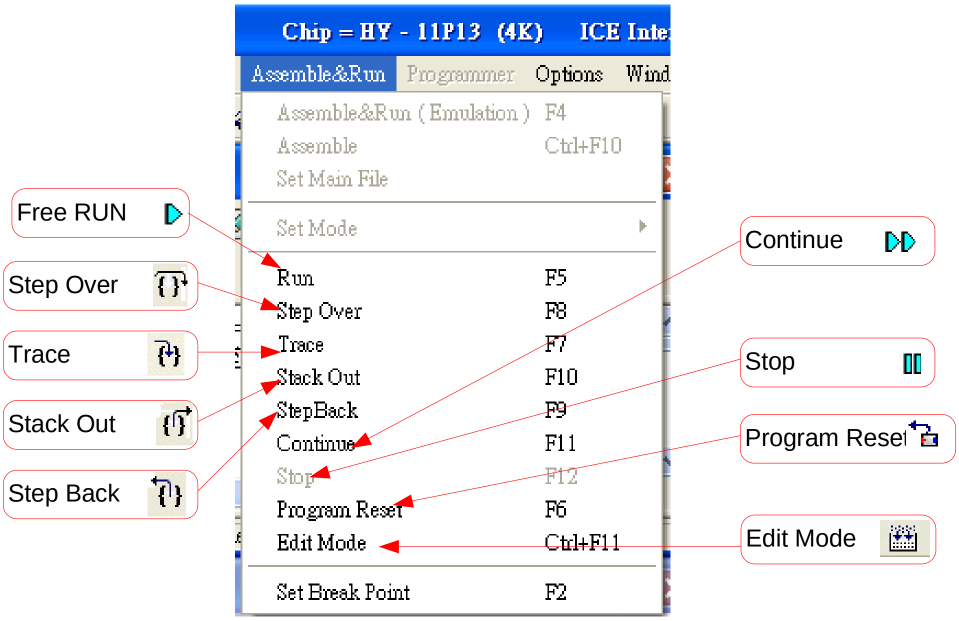


Figure 3-1

Two methods to set or remove interrupt:

1. Use mouse to select interrupt place in program code window or machine code window, press "F2" button to set to remove interrupt.
2. Use mouse to select interrupt place in program code window or machine code window, double click the left key to set or remove interrupt

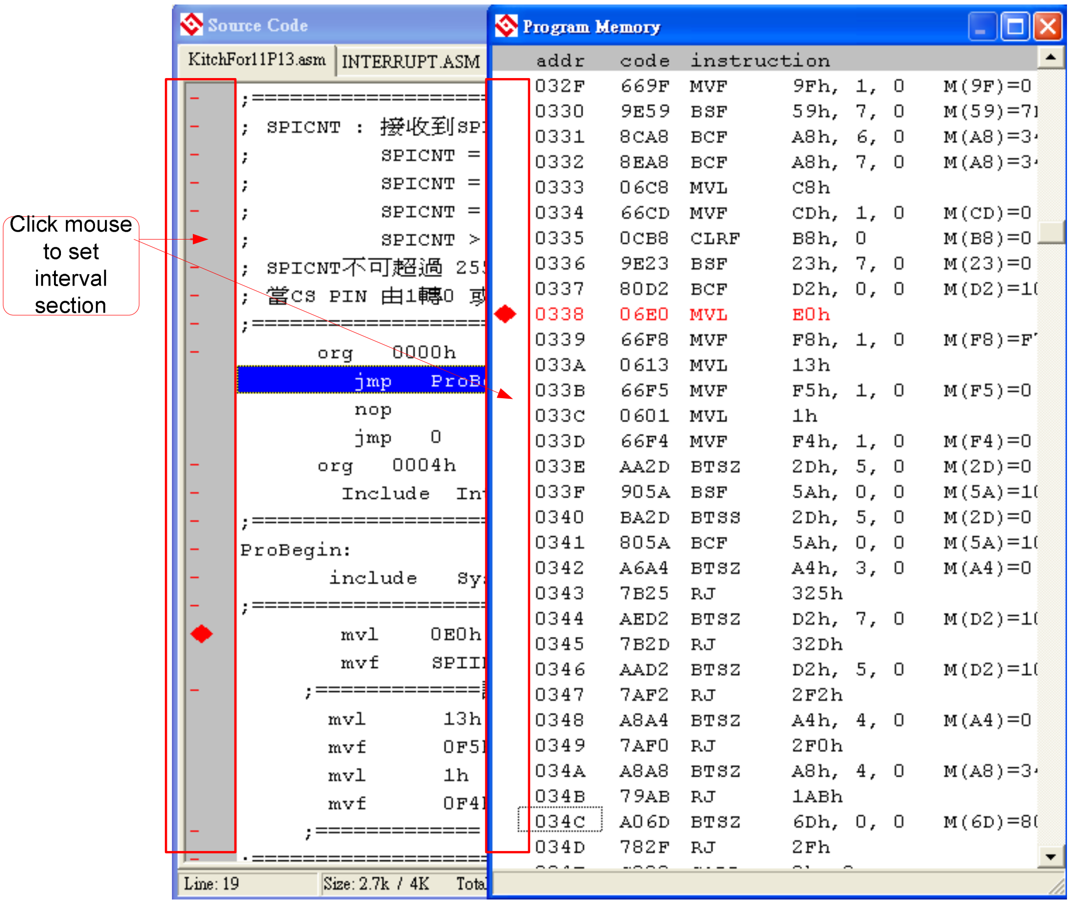
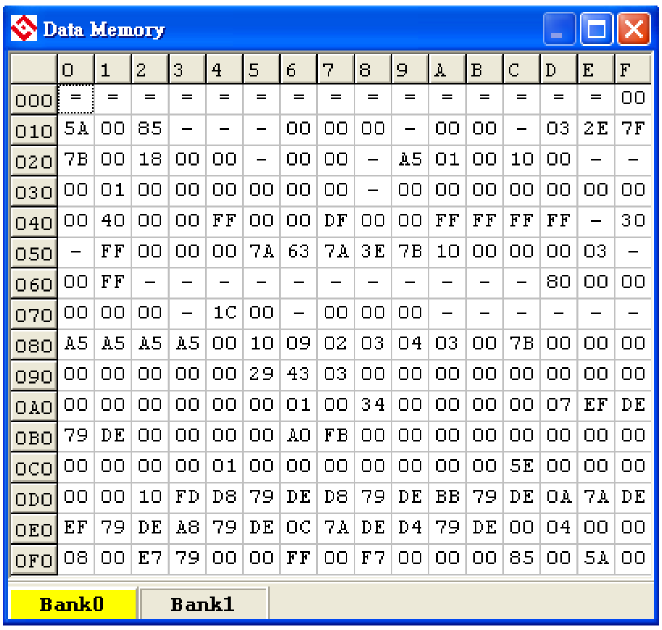


Figure 3-2

3.2 RAM Window



	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
000	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	00
010	5A	00	85	-	-	-	00	00	00	-	00	00	-	03	2E	7F
020	7B	00	18	00	00	-	00	00	-	A5	01	00	10	00	-	-
030	00	01	00	00	00	00	00	00	-	00	00	00	00	00	00	00
040	00	40	00	00	FF	00	00	DF	00	00	FF	FF	FF	FF	-	30
050	-	FF	00	00	00	7A	63	7A	3E	7B	10	00	00	00	03	-
060	00	FF	-	-	-	-	-	-	-	-	-	-	-	80	00	00
070	00	00	00	-	1C	00	-	00	00	00	-	-	-	-	-	-
080	A5	A5	A5	A5	00	10	09	02	03	04	03	00	7B	00	00	00
090	00	00	00	00	00	29	43	03	00	00	00	00	00	00	00	00
0A0	00	00	00	00	00	00	01	00	34	00	00	00	00	07	EF	DE
0B0	79	DE	00	00	00	00	A0	FB	00	00	00	00	00	00	00	00
0C0	00	00	00	00	01	00	00	00	00	00	00	00	5E	00	00	00
0D0	00	00	10	FD	D8	79	DE	D8	79	DE	BB	79	DE	0A	7A	DE
0E0	EF	79	DE	A8	79	DE	0C	7A	DE	D4	79	DE	00	04	00	00
0F0	08	00	E7	79	00	00	FF	00	F7	00	00	00	85	00	5A	00

Figure 3-3

After opening RAM window, Bank will show the volume of the selected IC. Every Bank has 256 byte. Bank0 starts from 0x00 to 0xFF. Bank1 starts from 0x100 to 0x1FF…etc.

If the address does not exist, it will display" -".

If users intend to switch Bank display, use cursor to point to the desired Bank zone, and then click the left key of the mouse to confirm.

If Hint is set, the address will display numbers and will be underlined.

Notice: The Address 0x00 ~ 0x0Eof Bank0 is indirect addressing register, it cannot be revised directly, the displayed value is not referable. If revise is required, please refer to Chapter 3.3: Revise indirect addressing Data or Address.

Function Display

Click the mouse selection key (right key)

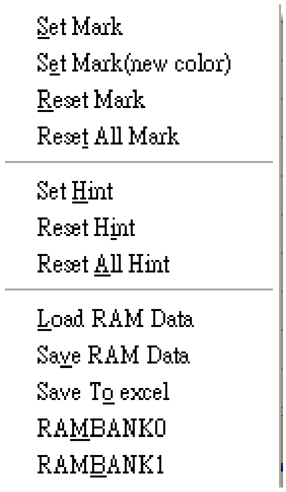


Figure 3-4

(1) Set Mark

(2) Set Mark (new color)

(3) Reset Mark

(4) Reset All Mark

(5) Set Hint

(6) Reset Hint

(7) Reset All Hint

(8) Load RAM Data

(9) Save RAM Data

(10) Save To excel

(11) RAMBANK0

(12) …

Hint

Use DS defined SRAM; Hint will be automatically generated in corresponding window address. When cursor point to the address, it will show the defined string.

Ex: Program definition SRAM

```
MEMAR   080h
MD1      DS   1
MD2      DS   1
MD3      DS   1
MDL1     DS   1
MDL2     DS   1
MDL3     DS   1
```

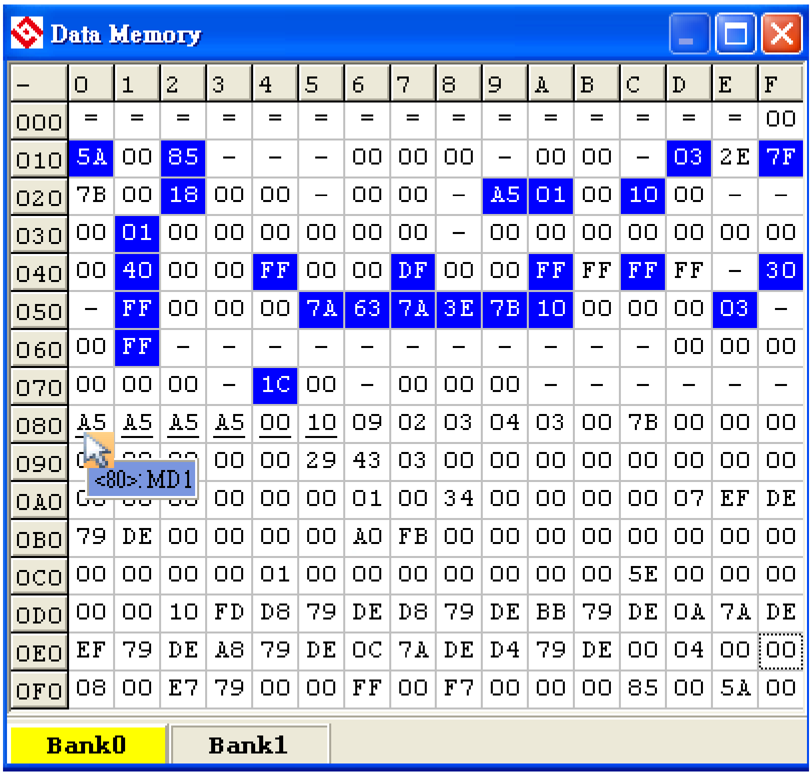
MD4	DS	5
S_REG	DS	1
r_Len	DS	1
SQRTmp	DS	4
Temp	DS	16

After assembling, it will enter into debug status, displaying memory window.

When cursor points to 80h address, <80>:MD1 will be shown.

When cursor points to 86h address, <86>:MD4[0] will show up.

When cursor points to 87h address, <87>:MD4[1] will show up.



-	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
000	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	00
010	5A	00	85	-	-	-	00	00	00	-	00	00	-	03	2E	7F
020	7B	00	18	00	00	-	00	00	-	A5	01	00	10	00	-	-
030	00	01	00	00	00	00	00	00	-	00	00	00	00	00	00	00
040	00	40	00	00	FF	00	00	DF	00	00	FF	FF	FF	FF	-	30
050	-	FF	00	00	00	7A	63	7A	3E	7B	10	00	00	00	03	-
060	00	FF	-	-	-	-	-	-	-	-	-	-	-	00	00	00
070	00	00	00	-	1C	00	-	00	00	00	-	-	-	-	-	-
080	A5	A5	A5	A5	00	10	09	02	03	04	03	00	7B	00	00	00
090	[illegible]	[illegible]	[illegible]	00	00	29	43	03	00	00	00	00	00	00	00	00
0A0	[illegible]	[illegible]	[illegible]	00	00	00	01	00	34	00	00	00	00	07	EF	DE
0B0	79	DE	00	00	00	00	A0	FB	00	00	00	00	00	00	00	00
0C0	00	00	00	00	01	00	00	00	00	00	00	00	5E	00	00	00
0D0	00	00	10	FD	D8	79	DE	D8	79	DE	BB	79	DE	0A	7A	DE
0E0	EF	79	DE	A8	79	DE	0C	7A	DE	D4	79	DE	00	04	00	00
0F0	08	00	E7	79	00	00	FF	00	F7	00	00	00	85	00	5A	00

Figure 3-5

There are two ways to revise SRAM value:

1. Point the cursor to the selected revised lines, click mouse’s left key and Key IN directly.
2. Point the cursor to the selected revised lines, double click the mouse’s left key, a window will pop up as Figure 3-6 shown. Users can key in on keyboard or press the button by mouse.

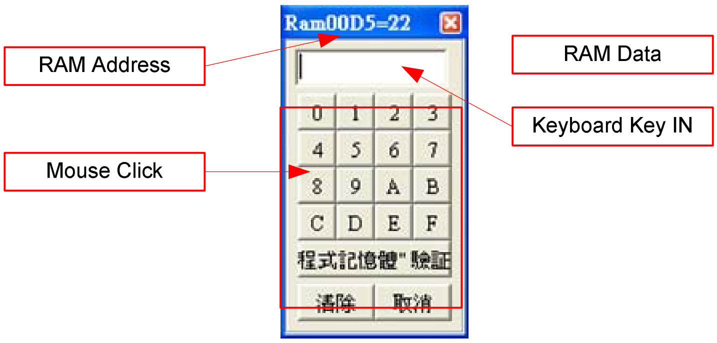


Figure 3-6

3.3 Register Window

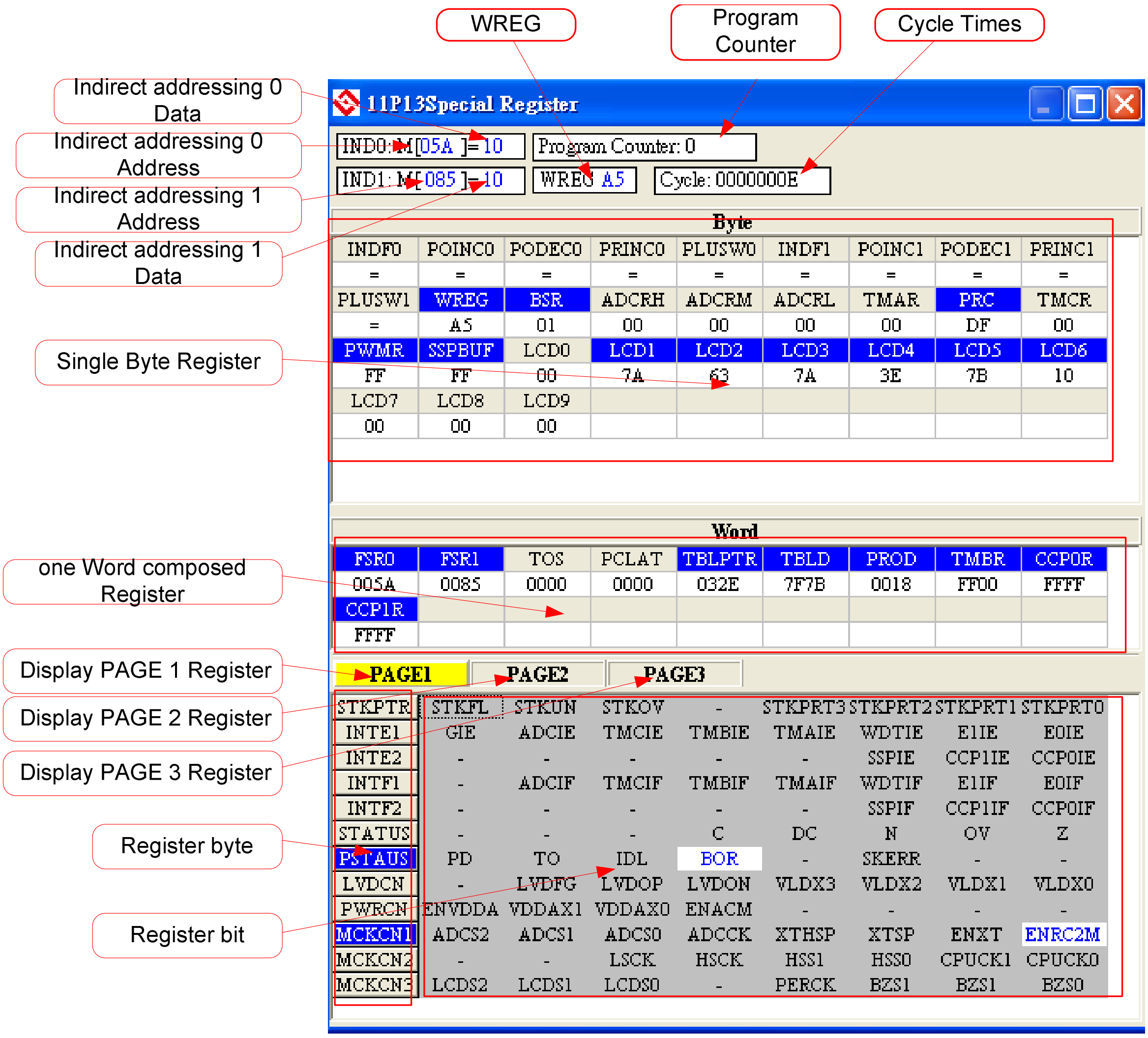


Figure 3-7

➢ Revise Indirect Addressing Data or Address

After setup as Figure 3-8 illustrated, Address can be revised through typing on the keyboard or by pressing the value by mouse.

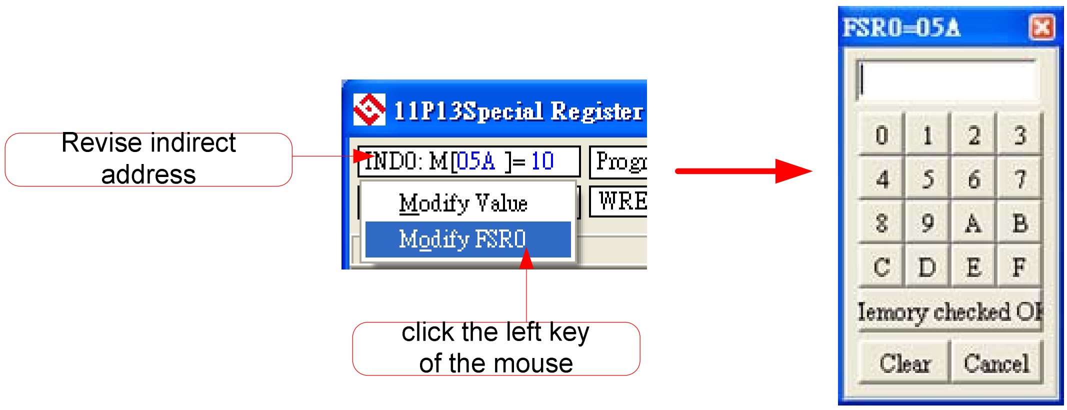


Figure 3-8

After setup as Figure 3-9 illustrated, Data can be revised through typing on the keyboard or by pressing the value by mouse.

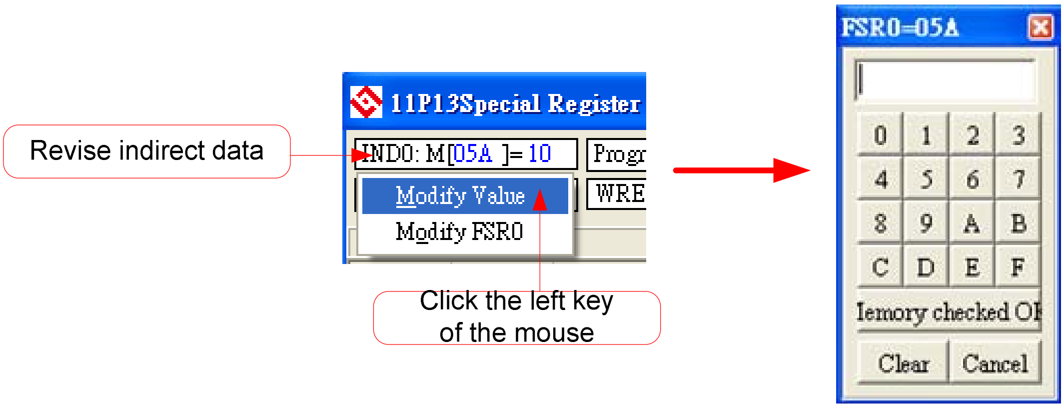


Figure 3-9

➢ Revise WREG Data

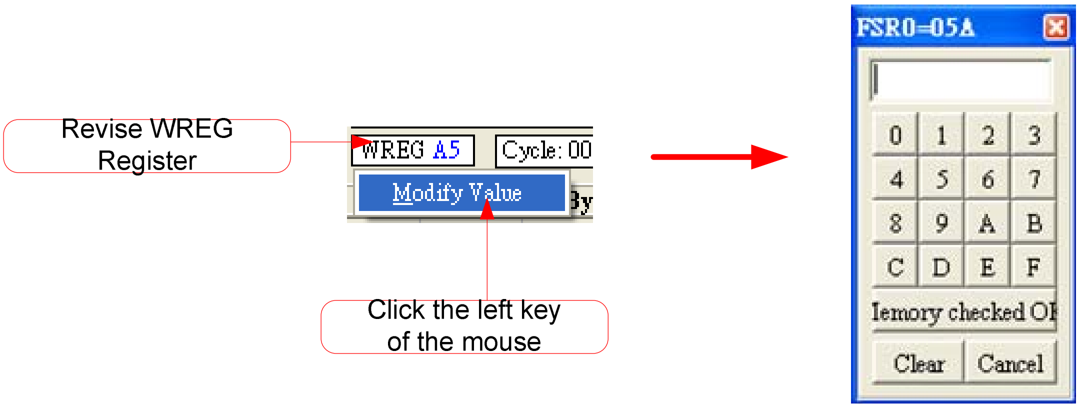


Figure 3-10

➢ Revise single 1 byte or Word Register Data

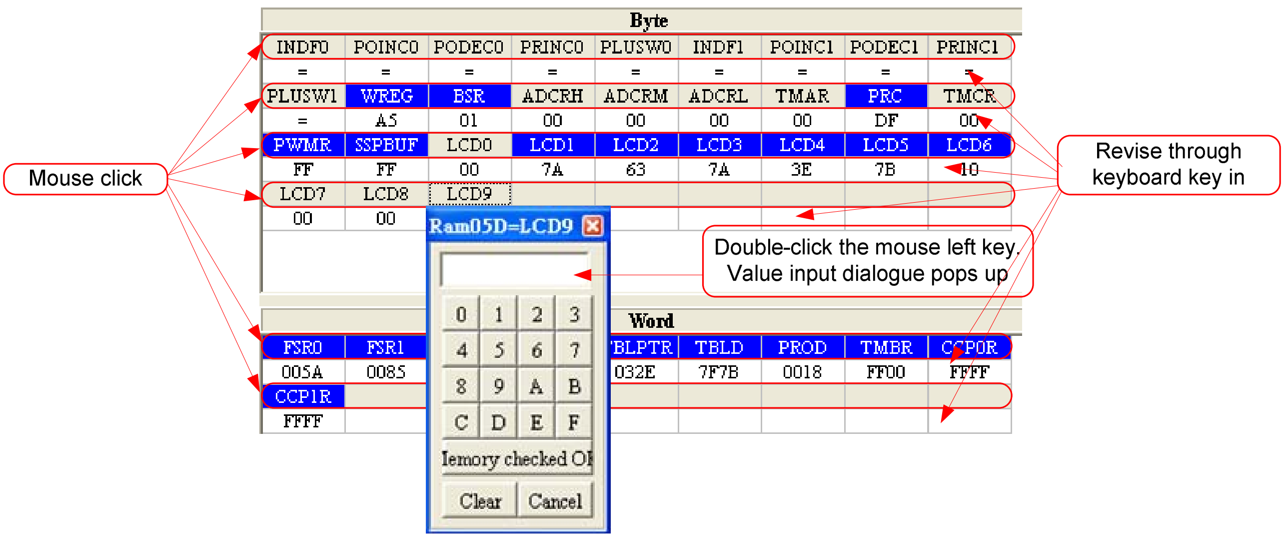


Figure 3-11

➢ Revise Register single 1 byte or single 1 bit

After Bit is configured as 1, its value will be highlighted in blue font.

After Bit is configured as 0, its value will be shown in black font.

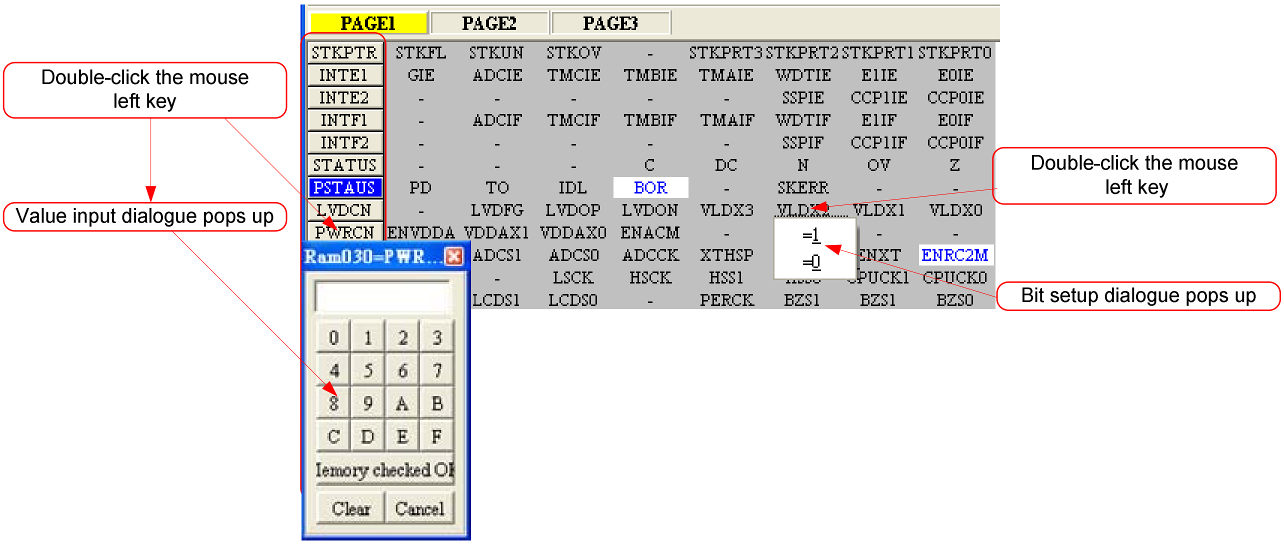


Figure 3-12

3.4 Watch Window

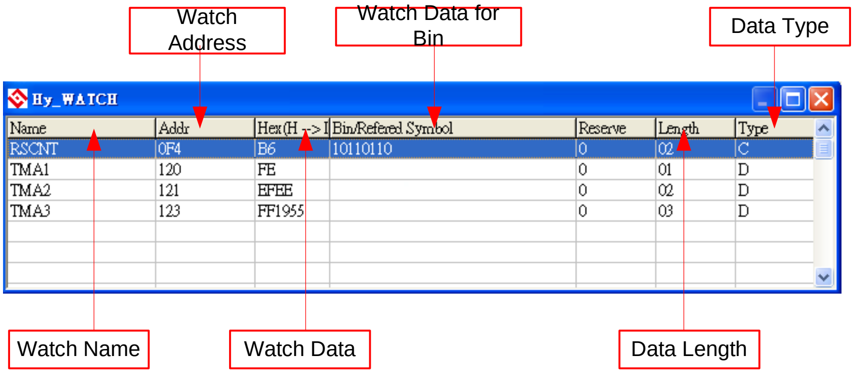


Figure 3-13

- Watch Name → Monitored Data name, program uses EQU or DS defined name.
- Watch Address → Monitored Data Address
- Watch Data → Reveal data. It is selectable to be arranged from right to left or from left to right. It can also display decimal or hexadecimal system.

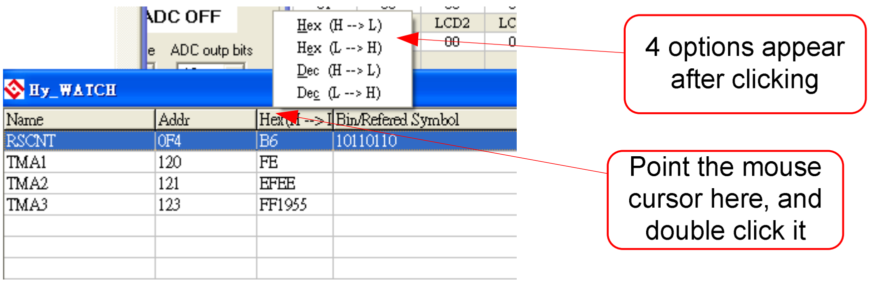


Figure 3-14

Hex (H → L): Hexadecimal display, address H/L shows from low to high

Hex (L → H): Hexadecimal display, address L/H shows from high to low

Dec (H → L): Decimal display, address H/L shows from low to high

Dec (L → H): Decimal display, address L/H shows from high to low

- Watch Data for Bin → Data display in binary system, only for those EQU defined Address.
- Data Length → Data length, showing DS definition length; if EQU definition is applied, this value will show "2".
- Data Type → Data type; D = DS definition; C = EQU definition.

Monitor EQU defined Register or RAM, click the right key of mouse to select add-in monitored Register or RAM as Figure 3-15 described.

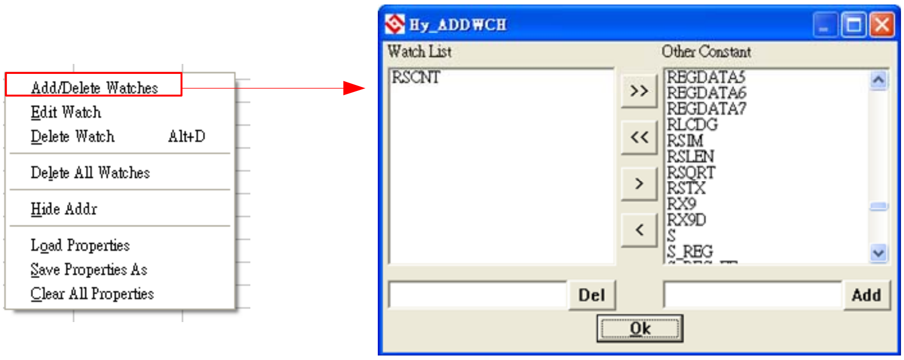


Figure 3-15

3.5 Stack Window

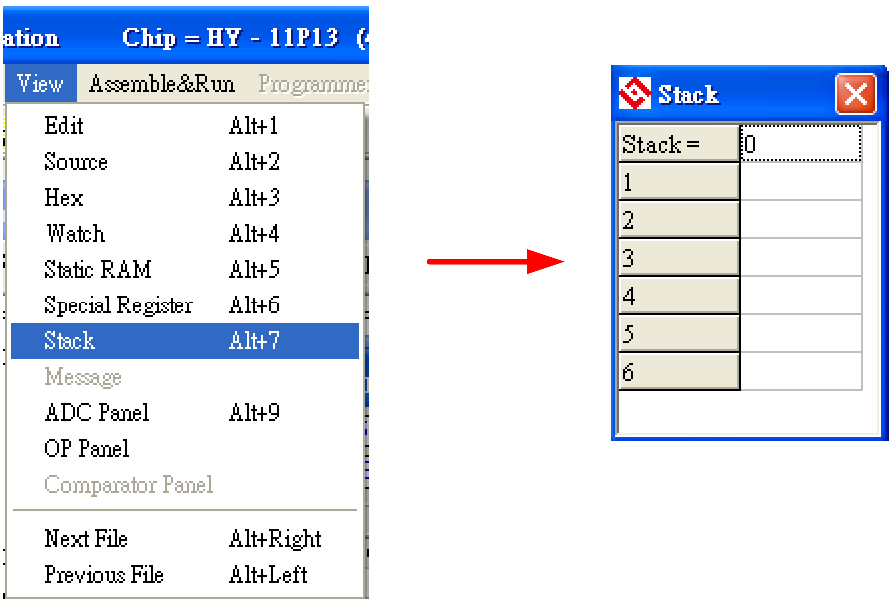


Figure 3-16

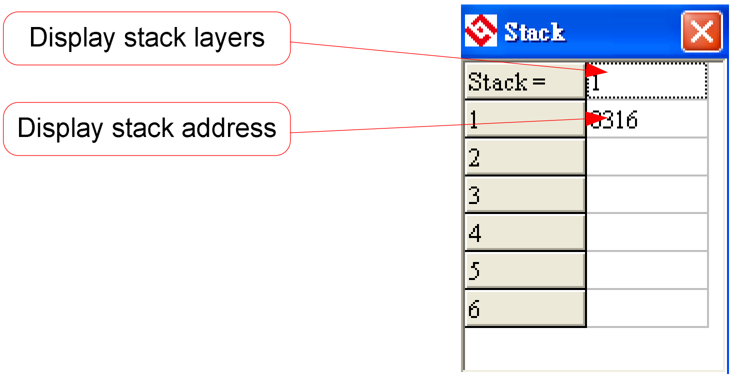


Figure 3-17

3.6 ADC Window

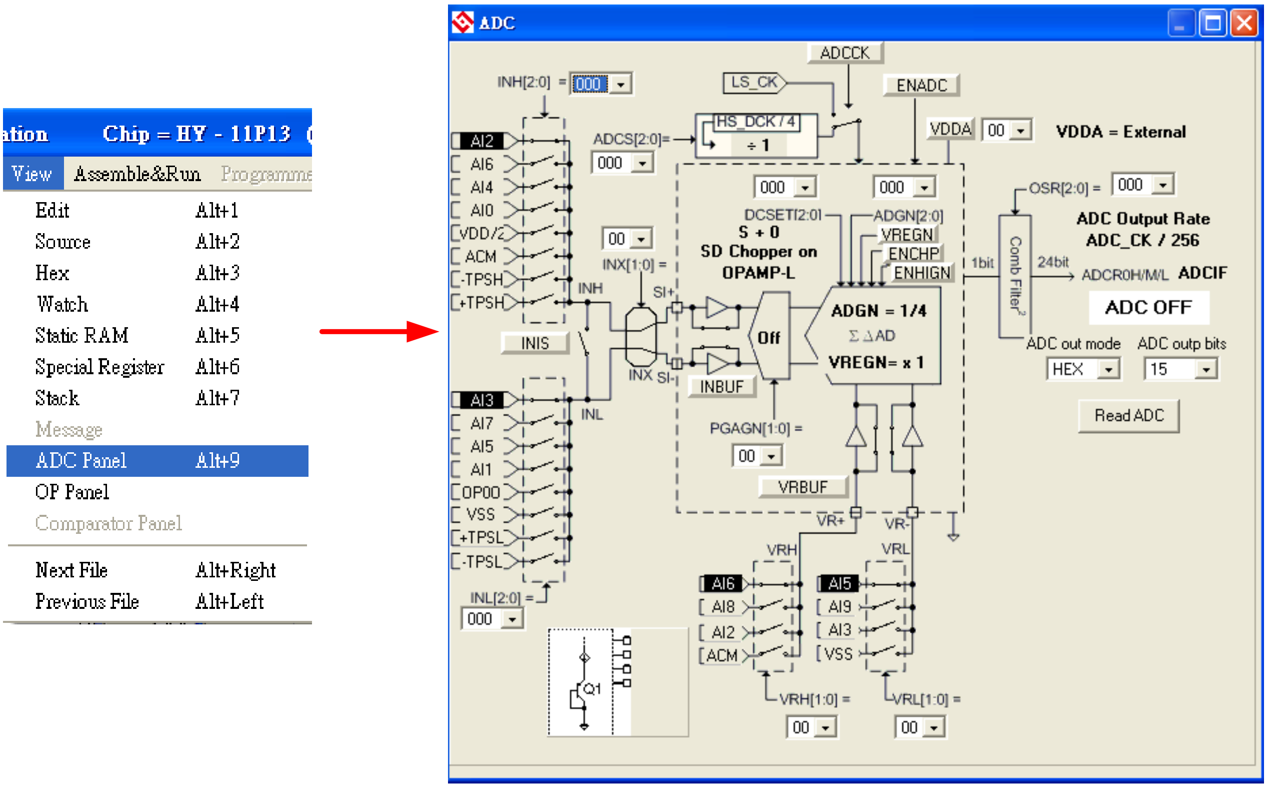


Figure 3-18

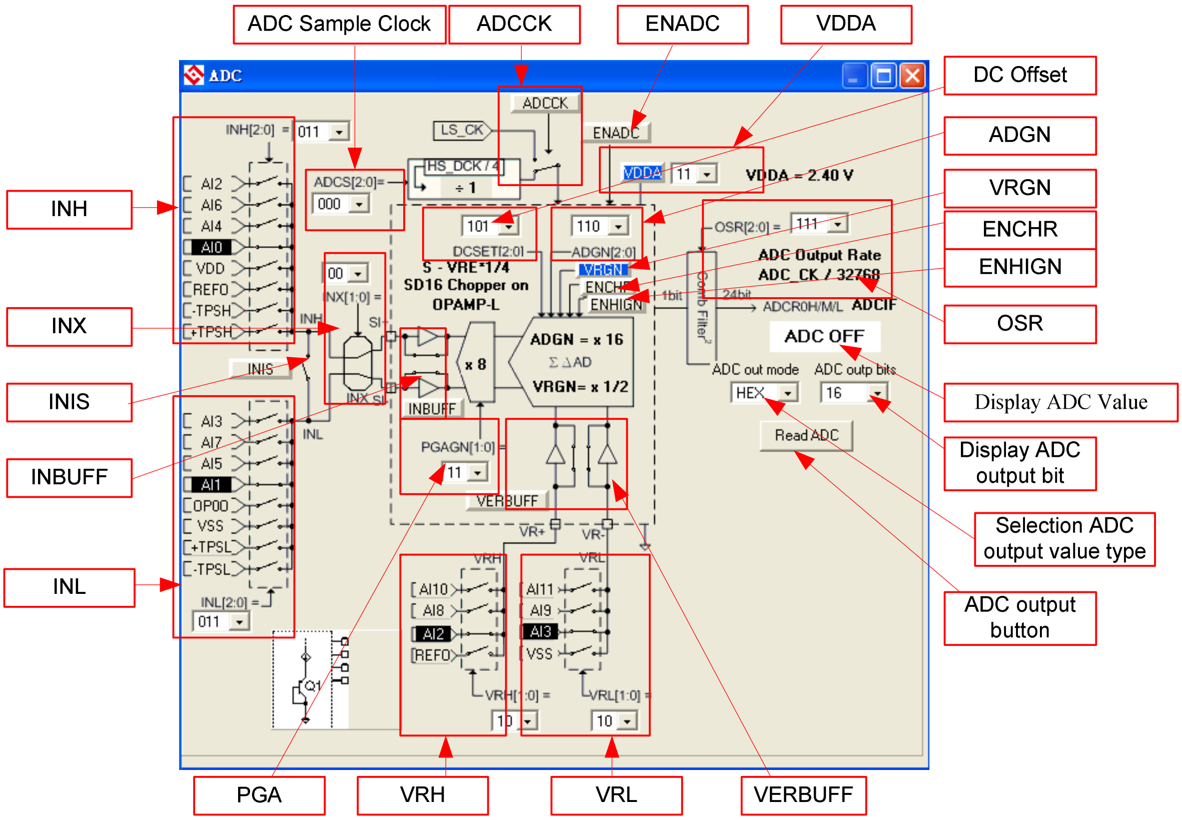


Figure 3-19

➢ INH Network

(1) Click the network by mouse, INH can select the specified network.

(2) Click the network switch by mouse, INH can select the specified network.

(3) Click the mouse, a menu as Figure 3-20 will appear and users can select the switch network.

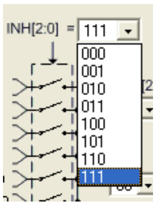


Figure 3-20

➢ INL Network

(1) Click the network by mouse, INL can select the specified network.

(2) Click the network switch by mouse, INL can select the specified network.

(3) Click the mouse, a menu as Figure 3-21 will appear and users can select the switch network.

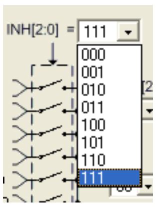


Figure 3-21

- INIS Switch
  (1) Click the specified network by mouse, INIS switch will turn ON/OFF.
  (2) Click the specified network switch by mouse, INIS switch will turn ON/OFF.
- INX Network Switch
  (1) Click the specified network by mouse, 4 switches are shown as Figure 3-22.

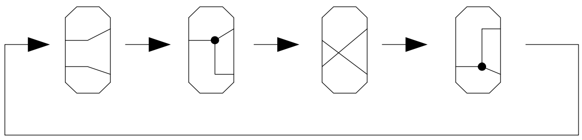


Figure 3-22

(2) Click the mouse, a menu as Figure 3-23 will appear and users can select the switch network.

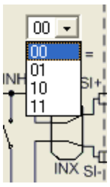


Figure 3-23

- INBUFF Switch
- Click the specified network by mouse, INBUF switch will turn ON/OFF.
- Click the specified network switch by mouse, INBUF switch will turn ON/OFF.INL network.
  (1) Click the network by mouse, INL can select the specified network.
  (2) Click the network switch by mouse, INL can select the specified network.
  (3) Click the mouse, a menu as Figure 3-24 will appear, and users can select the specified switch network.

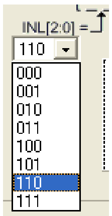


Figure 3-24

- ADC Sample Clock

  Click the mouse, a menu as Figure 3-25 will show up, users can select the specified switch network.

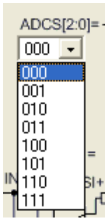


Figure 3-25

- ADCCK Selection
  (1) Click the specified network by mouse, ADCCK will switch selection.

(2) Click the specified switch by mouse, ADCCK switch will switch selection.

- ENADC

Click the specified network by mouse, ENADC will turn ON/OFF. When ENADC = ON, display ADC zone will output value.

- VDDA Net work

ENVDDA enable control

(1) Select ENVDDA switch ON/OFF.

(2) Select VDDA voltage.

Click the mouse, a menu as Figure 3-26 will show up. Users can select to specified mode.

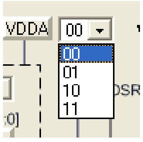


Figure 3-26

(3) Display VDDA Voltage

When ENVDDA = 0, the zone will show VDDA = External

When ENVDDA = 1, the zone will show VDDX selected voltage.

- PGA Network

Click the mouse, a menu as Figure 3-27 will appear. Users can choose the specified network.

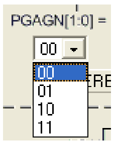


Figure 3-27

- VRH Network

(1) Click the network by mouse, VRH can select the specified network.

(2) Click the network switch by mouse, VRH can select the specified network switch. VRH can choose the specified network.

(3) Click the network by mouse, a menu as Figure 3-28 will appear. Users can select the specified switch network.

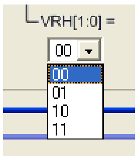


Figure 3-28

- VRL Network

(1) Click the network by mouse, VRL can select the specified network.

(2) Click the network switch by mouse, VRL can select the specified network.

(3) Click the mouse, a menu asFigure 3-29 will appear. Users can select the specified switch network.

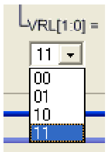


Figure 3-29

- VERBUFF

  (1) Click the network by mouse, VERBUFF switch will turn ON/OFF.

  (2) Click the network switch by mouse, VERBUFF switch will turn ON/OFF.

- DC Offset Network

  Click the mouse, a menu as Figure 3-30 will show up. Users can select the specified network.

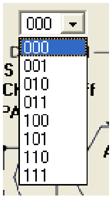


Figure 3-30

- ADGN Network

  Click the mouse, a menu asFigure 3-31 will appear. Users can select the specified network.

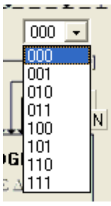


Figure 3-31

- VRGN

  Click the network by mouse, VRGN can select the specified network.

- ENCHR

  Click the network by mouse, ENCHR can select the specified network.

  Notice: ENCHR lightening up means ADC Chopper is closed.

- ENHIGN

- Click the network by mouse, ENHIGN can select the specified network.

- OSR Network

  Click the mouse, a menu as Figure 3-32 will show up. Users can select the specified network.

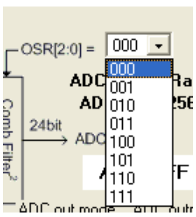


Figure 3-32

➢ ADC Display Zone

(1) Select ADC value output type → Hex or Dec output is selectable.

(2) Select ADC value output Bit → selectable 8 ~ 24 Bit output.

(3) Display output button → Click this button can immediately display ADC value.

3.7 OP Window

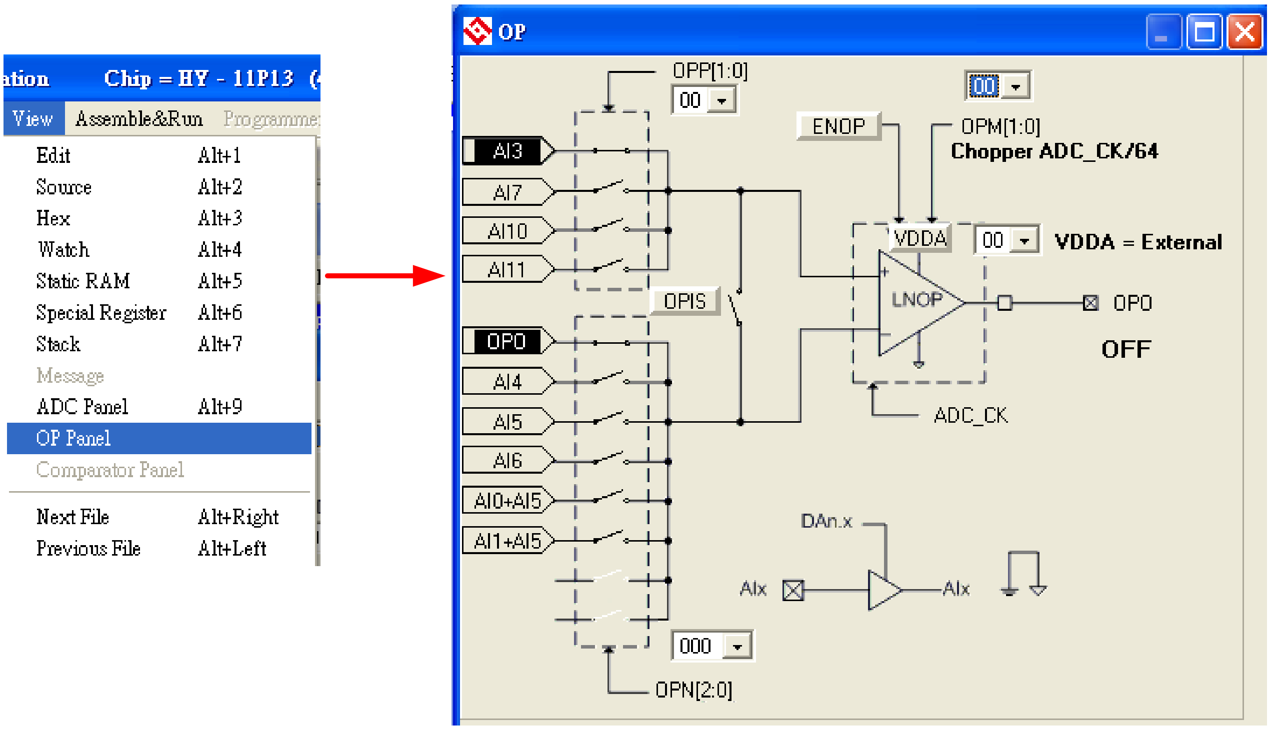


Figure 3-33

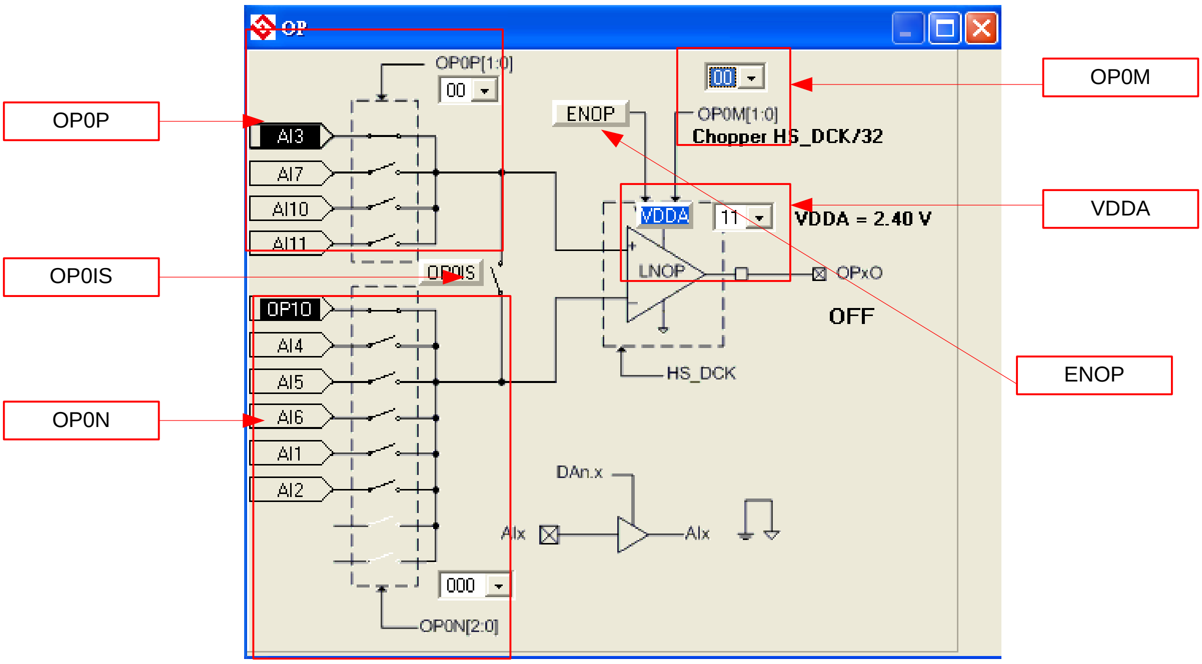


Figure 3-34

➢ OP0P Network

(1) Click the network by mouse, OP0P can select the specified network.

(2) Click the network switch by mouse, OP0P can select the specified network.

(3) Click the mouse, a menu asFigure 3-35 will appear. Users can select the specified switch network.

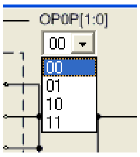


Figure 3-35

➢ OP0N Network

(1) Click the network by mouse, OP0N can select the specified network.

(2) Click the network switch by mouse, OP0N can select the specified network.

(3) Click the mouse, a menu as Figure 3-36 will appear. Users can select the specified switch network.

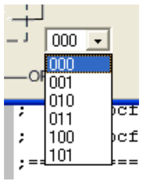


Figure 3-36

➢ ENOP

Click the network by mouse, ENOP will turn ON/OFF.

ENOP status display

When ENOP = 1, it will display ON

When ENOP = 0, it will display OFF

➢ VDDA Network (Please refer to VDDA network of ADC window)

➢ OP0M Network

Click the mouse, a menu as Figure 3-37 will show up. Users can select the specified switch network.

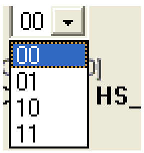


Figure 3-37

3.8 Comparator Window

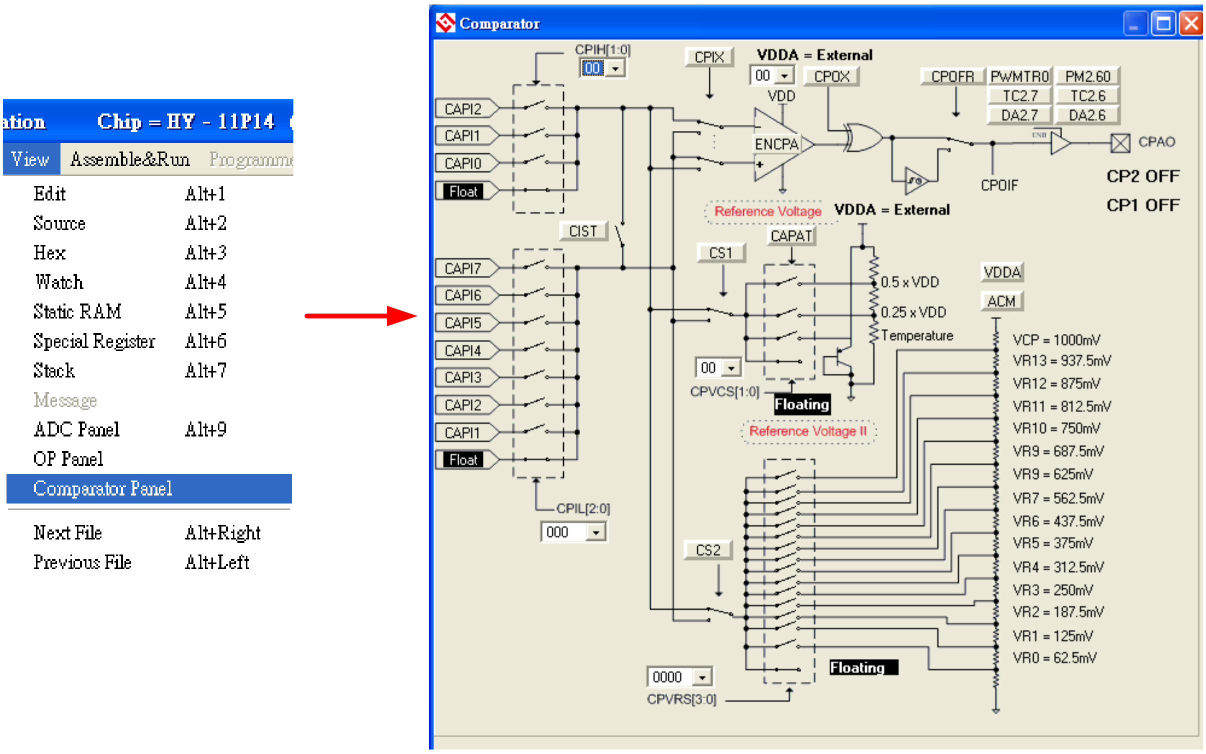


Figure 3-38

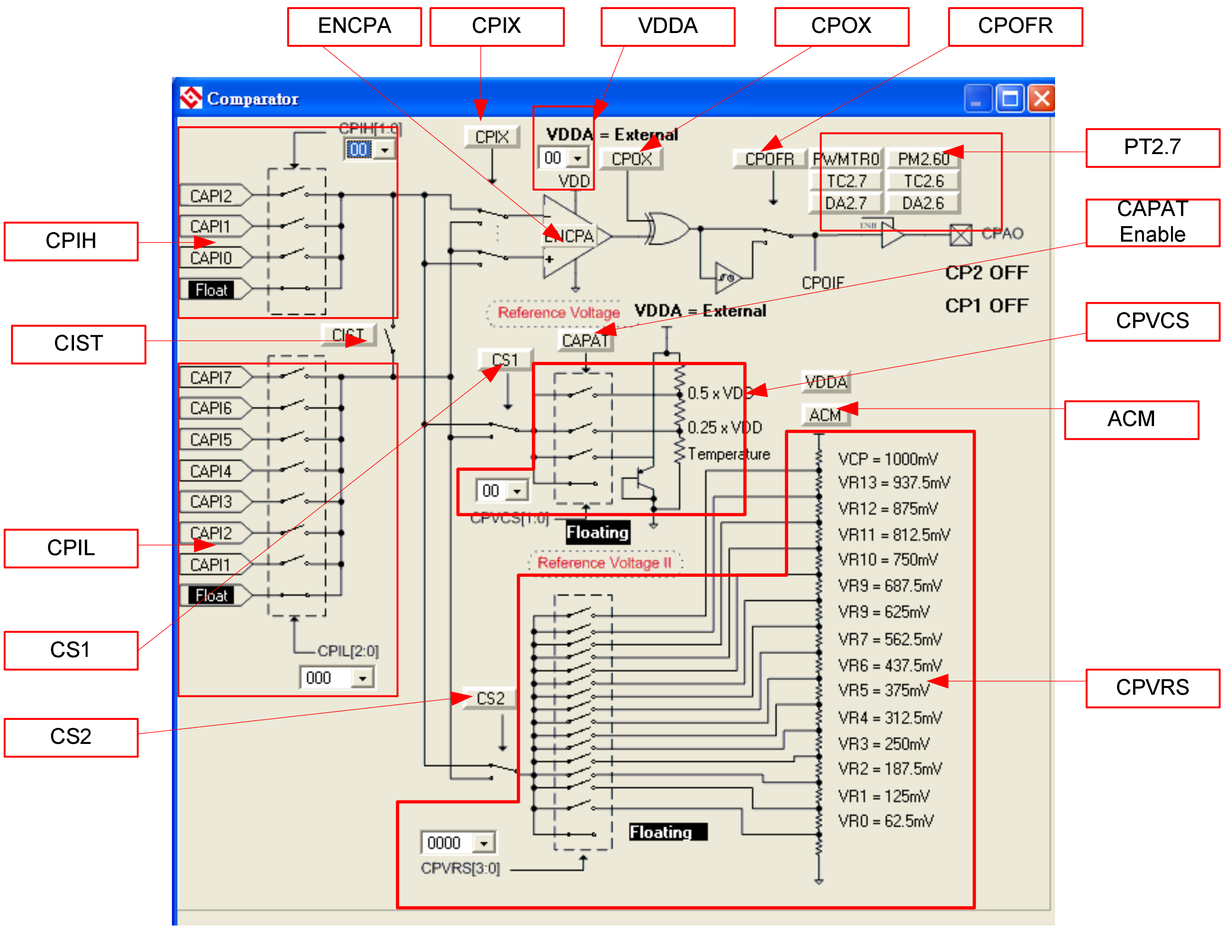


Figure 3-39

- CPIH Network
  (1) Click the network by mouse, CPIH can select to the specified network.
  (2) Click the network switch by mouse, CPIH can select to the specified network.
  (3) Click the mouse, a menu as Figure 3-40 will show up. Users can select the specified switch network.

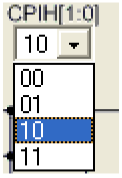


Figure 3-40

- CPIL Network
  (1) Click the network by mouse, CPIL is select to the specified network.
  (2) Click the network switch by mouse, CPIL is select to the specified network.
  (3) Click the mouse, a menu as Figure 3-41 will appear. Users can select to the specified switch network.

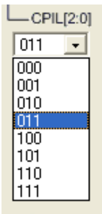


Figure 3-41

- CPVCS Network
  (1) Click the network by mouse, CPVCS can select to the specified network.
  (2) Click the network switch by mouse, CPVCS can select the specified network.
  (3) Click the mouse, a menu as Figure 3-42 will show up. Users can select the specified switch network.

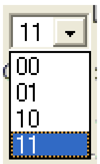


Figure 3-42

- CPVRS Network
  (1) Click the network by mouse, CPVRS can select to the specified network.
  (2) Click the network switch by mouse, CPVRS can select the specified network.
  (3) Click the mouse, a menu as Figure 3-43 will show up. Users can select the switch network.

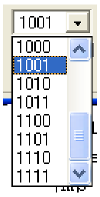


Figure 3-43

- VDDA Network (Please refer to the VDDA network of ADC window)
- CPIX Switch

  Click the network by mouse, CPIX will switch.
- CIST

  Click the network by mouse, CIST will turn ON/OFF.

  CIST status display:

  When CIST = 1, display ON

  When CIST = 0, display OFF
- CS1 Switch

  Click the network by mouse, CS1 will switch up and down.
- CS2 Switch

  Click the network by mouse, CS2 will switch up and down.
- ENCPA

  Click the network by mouse, ECPA will be activated.

  ENCPA status display:

  When ENCPA = 1, comparator is enabled.

  When ENCPA = 0, comparator is disabled.
- CPOX

  Click the network by mouse, CPOX will turn ON/OFF.
- CPOFR

  Click the network by mouse, CPOFR will switch up and down.
- CAPAT enable

  Click the network by mouse, CAPAT module will be activated or inactivated.

  CAPAT status display:

  When CAPAT = 1, CAPAT module is activated.

  When CAPAT= 0, CAPAT is inactivated.
- REFO Switch

  Click the network by mouse, REFO will turn ON/OFF.

  REFO status display:

  When REFO = 1, REFO is activated.

  When REFO = 0, REFO is inactivated.
- PT2.7

  CAPO will output only when PT2M.7 = 1, TC2.7 = 1 and DA2.7 = 1,.

3.9 Register & SRAM Revise Record

If the register or SRAM has been revised manually after access to emulation window (hardware emulation or software emulation), the data will be recorded (despite the RAM, Register, ADC, OP and CMP is revised through any kind of window). The data will be revealed after pressing the button "RAM revise record". At this time, windows will suspend until it is closed to execute other commands.

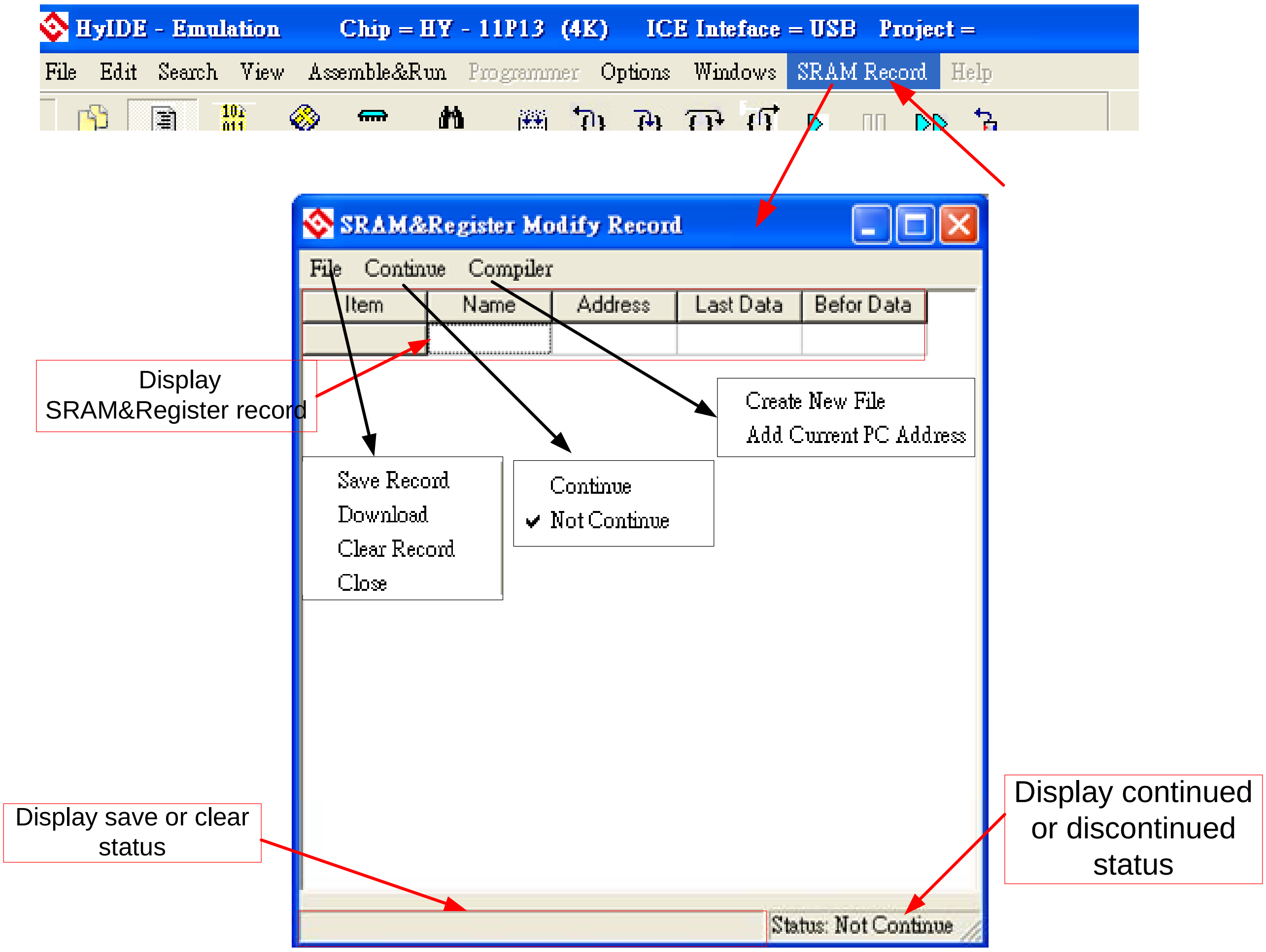

HyIDE - Emulation Chip = HY - 11P13 (4K) ICE Inteface = USB Project =
File Edit Search View Assemble&Run Programmer Options Windows SRAM Record Help
SRAM&Register Modify Record
File Continue Compiler
Item Name Address Last Data Befor Data
Display SRAM&Register record
Create New File
Add Current PC Address
Save Record
Download
Clear Record
Close
Continue
Not Continue
Display save or clear status
Display continued or discontinued status
Status: Not Continue

Figure 3-44

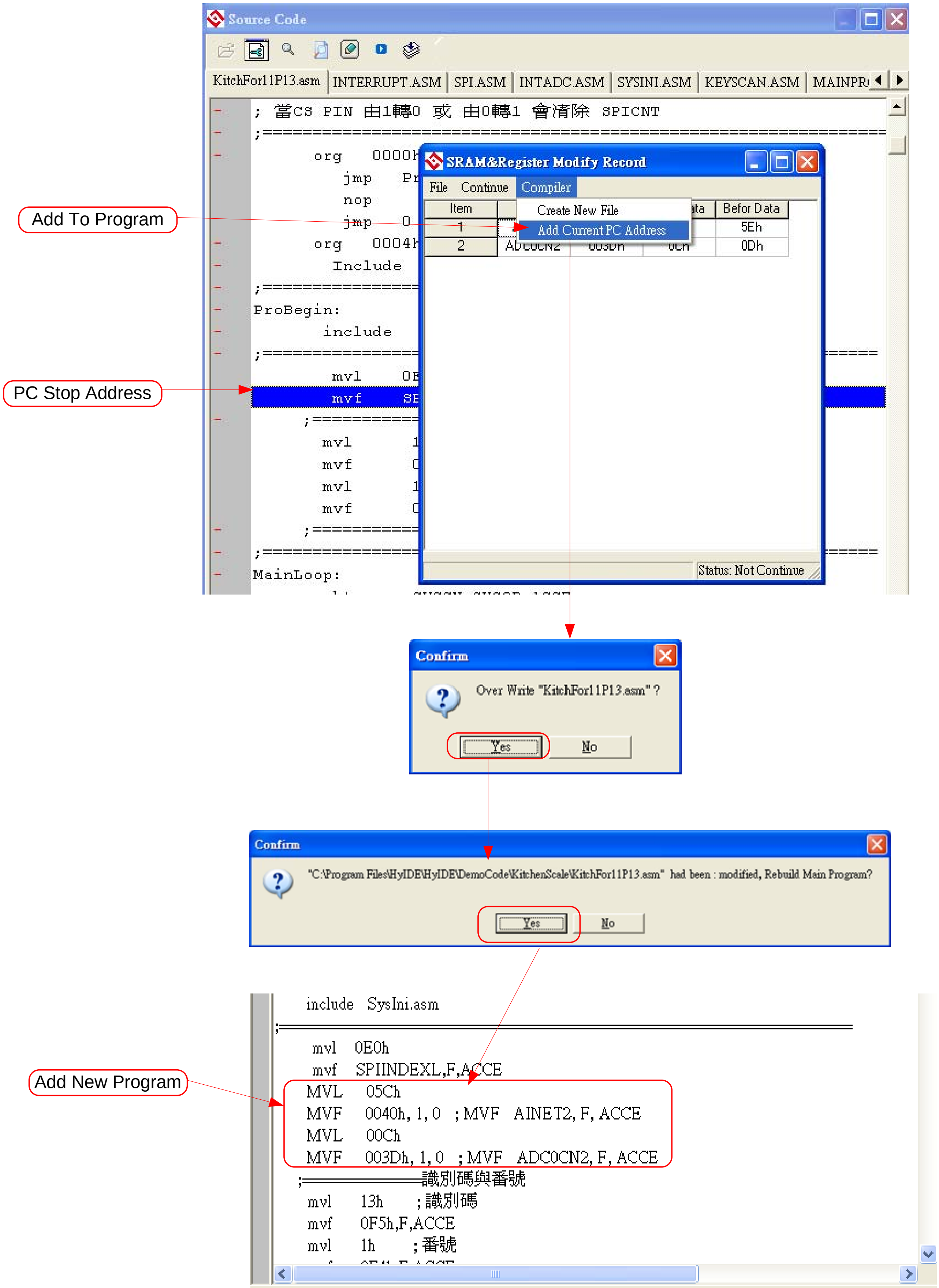

Source Code
KitchFor11P13.asm | INTERRUPT.ASM | SPI.ASM | INTADC.ASM | SYSINI.ASM | KEYSCAN.ASM | MAINPR
; 當CS PIN 由1轉0 或 由0轉1 會清除 SPICNT
SRAM&Register Modify Record
File Continue Compiler
Item
Befor Data
Create New File
Add Current PC Address
5Eh
0Dh
Status: Not Continue
ProBegin:
MainLoop:
Add To Program
PC Stop Address
Confirm
Over Write "KitchFor11P13.asm" ?
Yes No
Confirm
"C:\Program Files\HyIDE\HyIDE\DemoCode\KitchenScale\KitchFor11P13.asm" had been : modified, Rebuild Main Program?
Yes No
include SysIni.asm
mvl 0E0h
mvf SPIINDEXL,F,ACCE
MVL 05Ch
MVF 0040h, 1, 0 ; MVF AINET2, F, ACCE
MVL 00Ch
MVF 003Dh, 1, 0 ; MVF ADC0CN2, F, ACCE
;=============識別碼與番號
mvl 13h ; 識別碼
mvf 0F5h,F,ACCE
mvl 1h ; 番號
Add New Program

Figure 3-45

3.10 Hint Function of Source Code Window

If users intend to know Register or SRAM value and Address in source code window, point the cursor to register or SRAM, the name, address and data can be revealed.

This function is only applicable to the instructions below:

CLRF, ADDF, INF, INSZ, DCF, DCSZ, SUBF, COMF, ADDC, ANDF, IORF, XORF, SUBC, RRF, SETF, MULF, RLF, JZ, RRFC, RLFC, SWPF, DAW, INSUZ, DCSUZ, ARLC, ARRC, CPSG, CPSL, CPSE, TFSZ, BTFG BSF, BCF, BTSS, BTSZ, MVFF(not Macro).

- Only the first followed argument is effective as Figure 3-46 described.
- When command is BCF, BSF, BTSS, BTSZ and BTGF, Byte value will be revealed if the cursor points to the first argument. If the cursor points to the second argument, it will display the specified Bit value (1 or 0) as Figure 3-47 illustrated.
- When command is MVFF (not Macro), first argument value will appear if the cursor points to the first argument. If the cursor points to the second argument, argument value will show up as shown in Figure 3-48.
- If the argument is INDF0, POINC0, PODEC0, PRINC0, INDF1, POINC1, PODEC1and PRINC1, the Data will be FSR0 or the address Data of FSR1 as
- Figure 3-49 described.
- If the argument is PLUSW0 or PLUSW1, the Data is FSR0+WREG or the address Data of FSR1+WREG as illustrated in Figure 3-50.

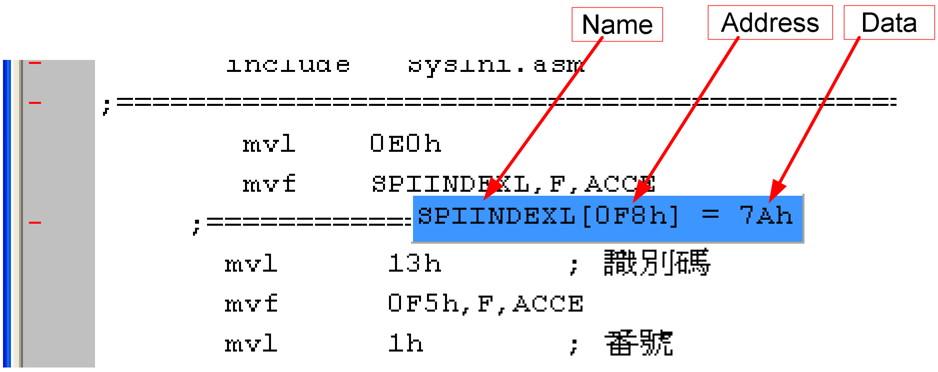


Figure 3-46

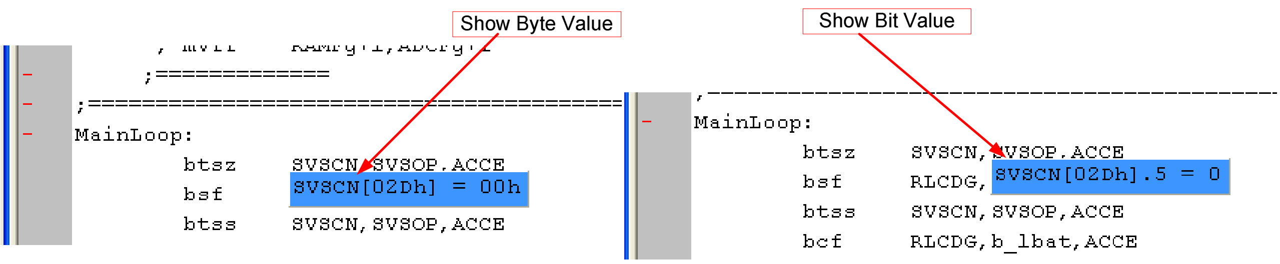


Figure 3-47

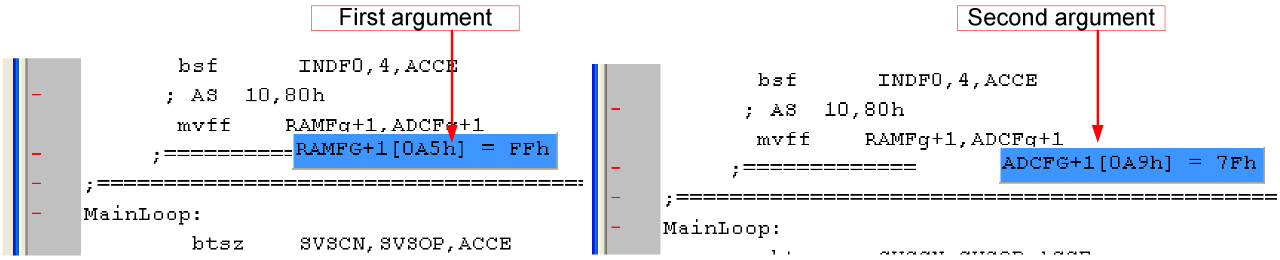


Figure 3-48

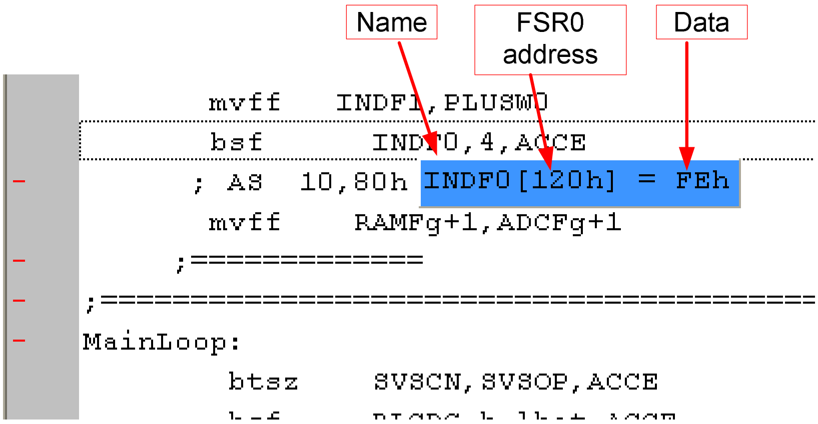


Figure 3-49

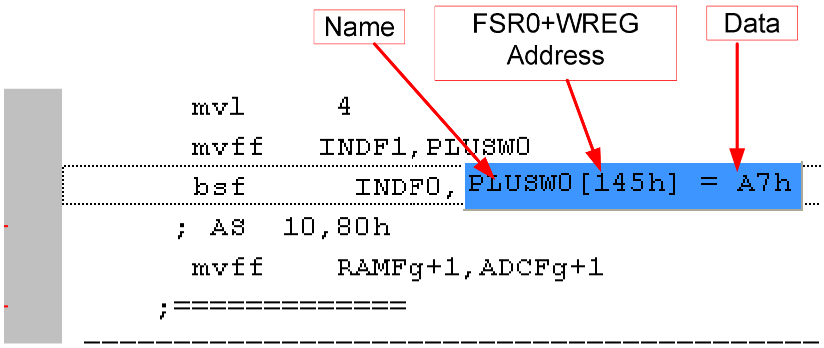


Figure 3-50

4. Programming Window

4.1 Interface setting

Click "Option" button and select interface setting to get access to programming window as

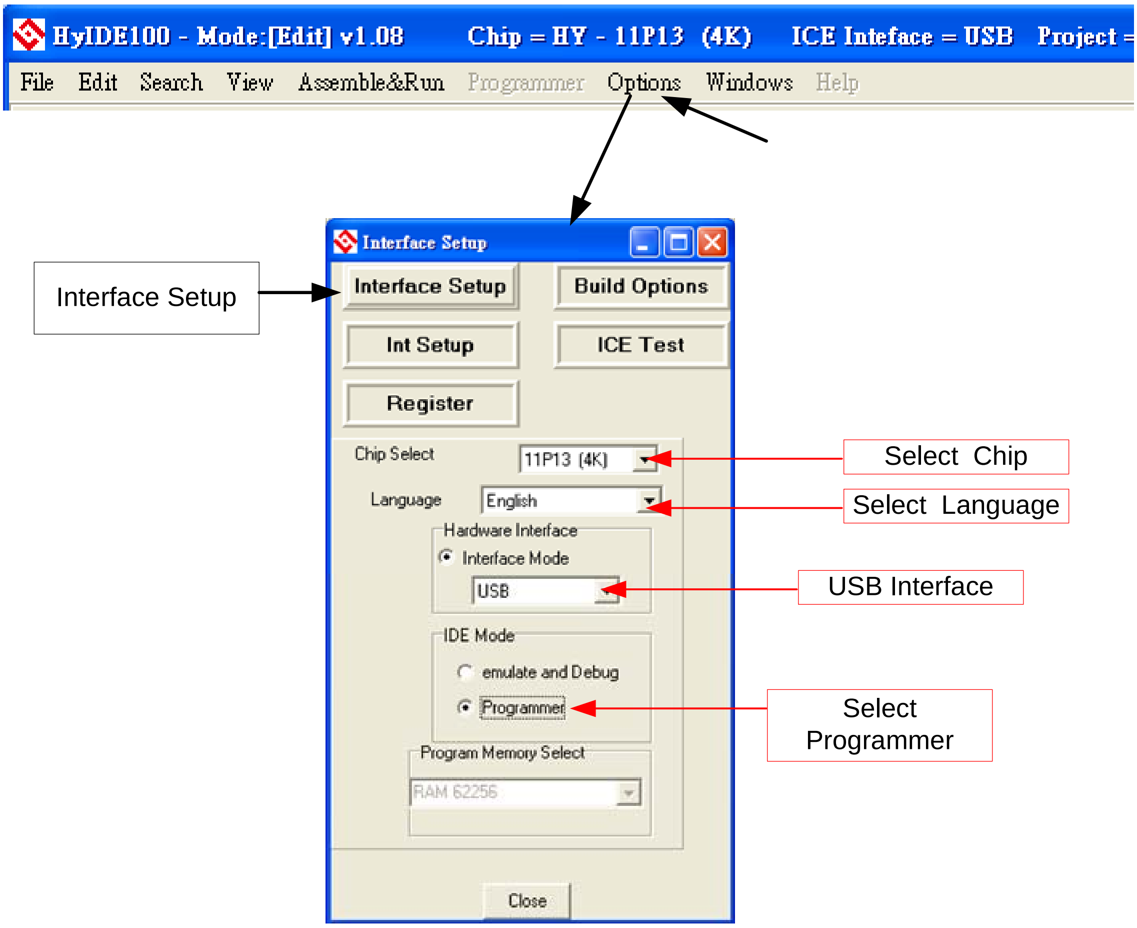


Figure 4-1 described.

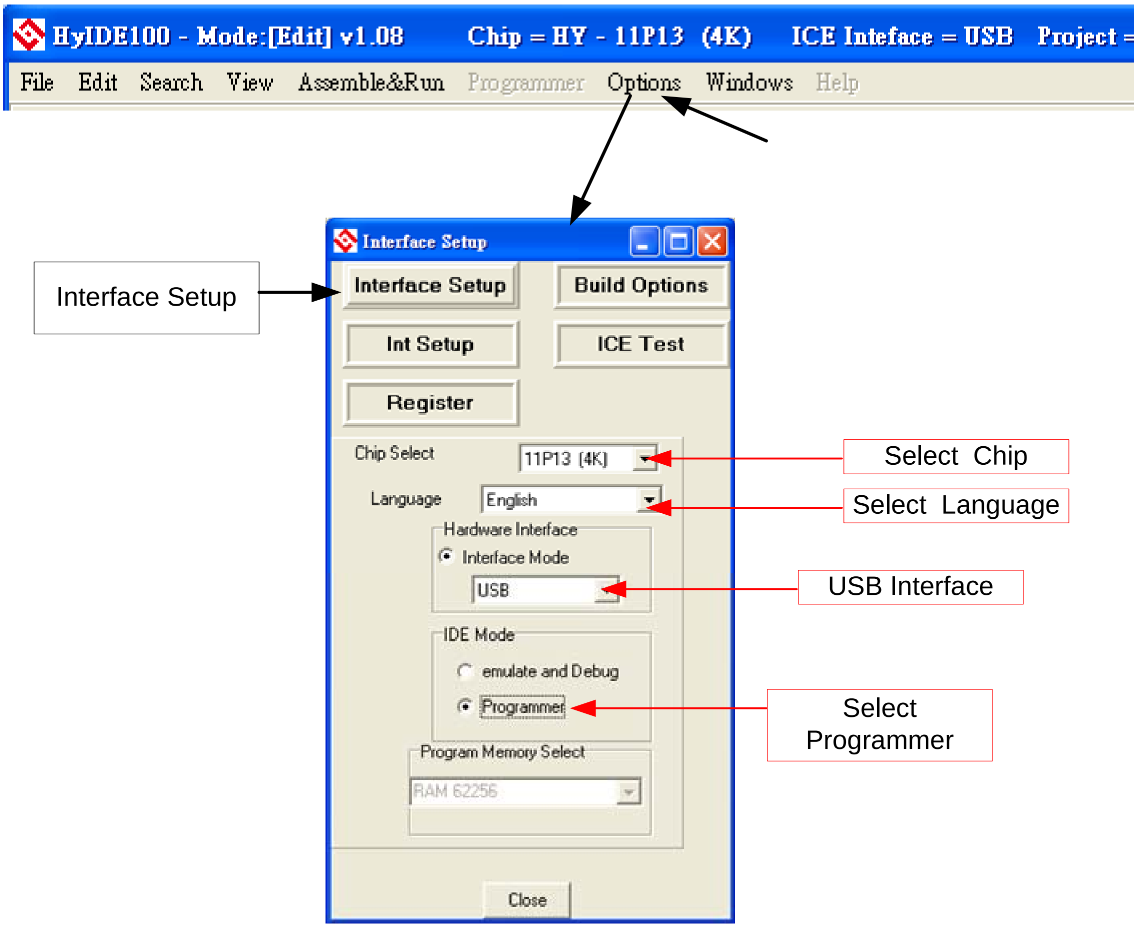


Figure 4-1

IC Selection → Select the IC part no. If the programming IC differs from the selected part no., Blank Check, Program and Verify will fail.
Language → Select the language of operating interface, either Chinese or English.
Hardware Setting → USB or Parallel Port interface is selectable.
IDE Mode → Select programming.

When the interface setting is accomplished, click"Assemble Option" to select programming setting as Figure 4-2 indicated.

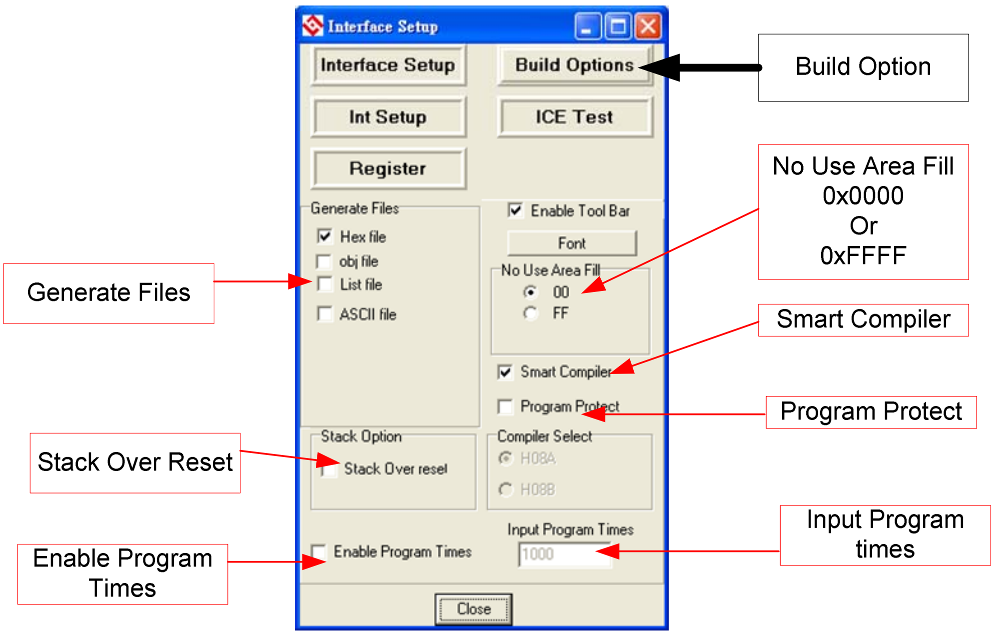


Figure 4-2

Assemble Generated Extension → The generated file after selecting the programming program.

Stack Operation → Select whether to replace when stack overflow/underflow occurred after OTP program operation.

Fill Unused Zone → Fill the unused zone with 00 or FF in the program after programmed.

Simplified Assemble → Select whether to simplify assemble.

Enable Programming Times → Select whether to enable Download program's programming times.

Input Programming Times → Fill in Download program's programming times. (Maximum is 2147483646, minimum is 1).

After assembling finished, click "ICE Test" to evaluate testing voltage as Figure 4-3 described (Connect IDE and insert 9V power before clicking"Option").

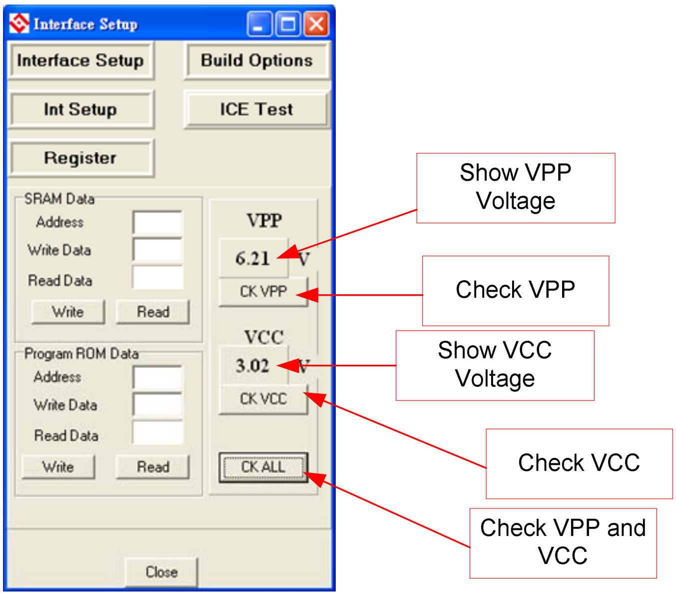


Figure 4-3

Click "Close" after the interface setting is done. All arguments will be recorded. When the setting is opened next time, default value will be written in automatically and the selected programming IC part no. will be shown in topic window as Figure 4-4 described.

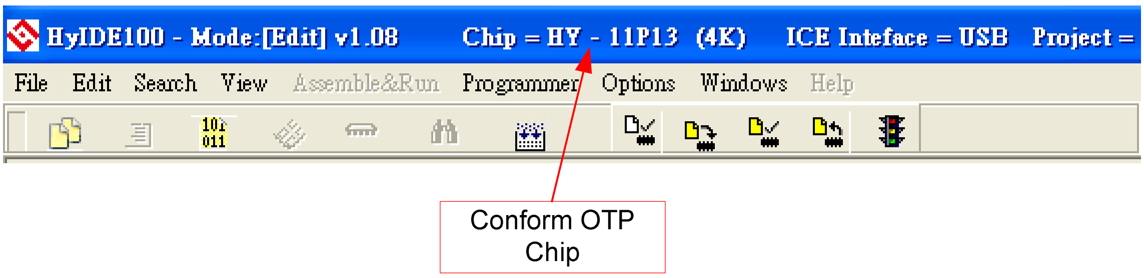


Figure 4-4

VPP voltage while programming: 5.6<VPP<6.6.

VDD voltage while programming: 2.7<VPP<3.6.

4.2 Operation Procedures

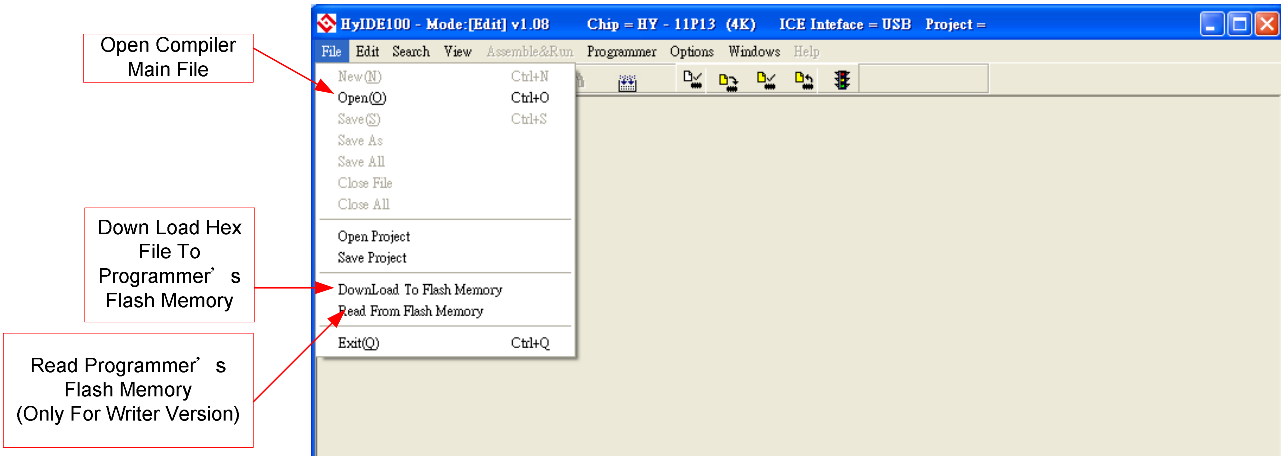


Figure 4-5

Open → Open the programmed source code main file.
Open Project → Open the saved project.
Save Project → Save the finished project.
Download file to Flash Memory → Download the finished Hex file after assembly to programmer or IDE Flash Memory.

4.2.1 Open File and Assemble

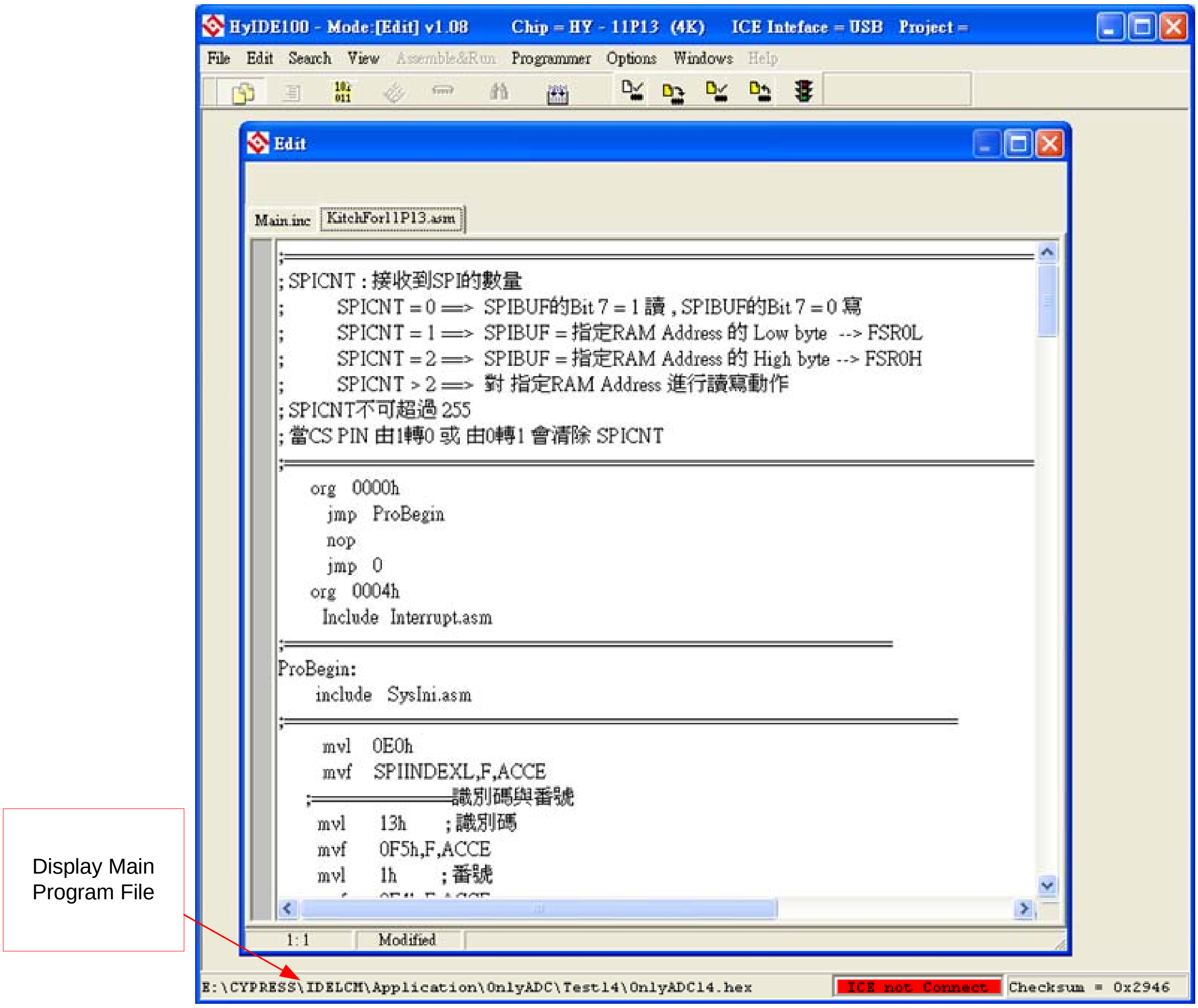


Figure 4-6

Open source code main file and display the assembly file. If the displayed name differs from main file, point the cursor to the file and press mouse right key. Set this file as the assembling main file as shown in Figure 4-7.

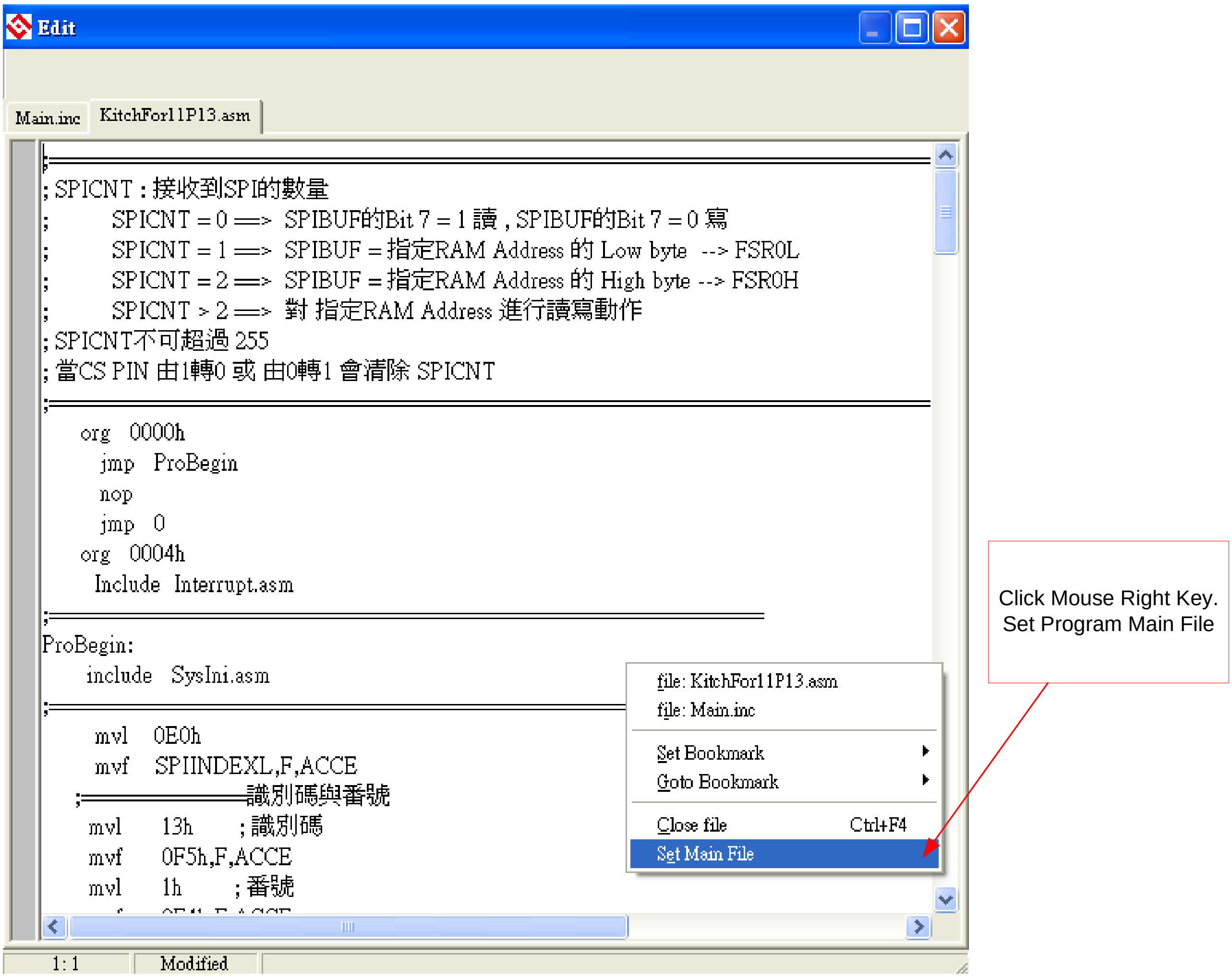


Figure 4-7

Assemble Source Code and Download it to programmer or IDE Flash Memory as Figure 4-8 described.

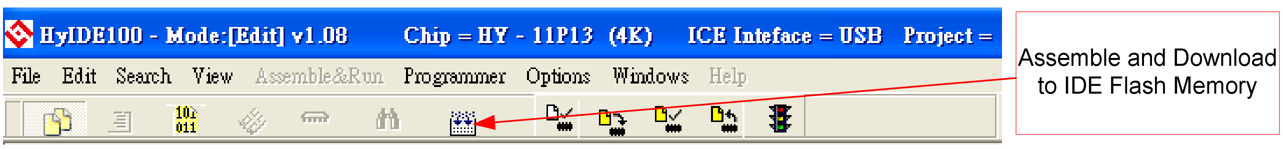


Figure 4-8

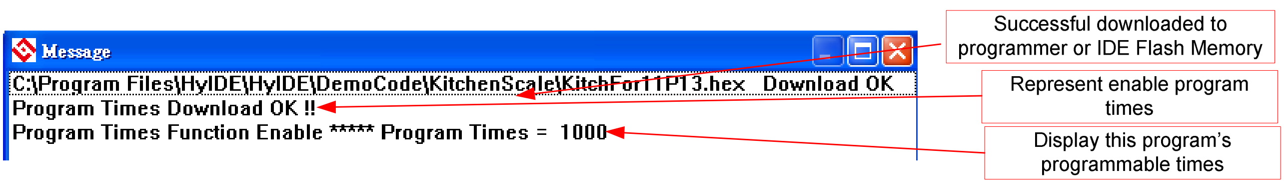


Figure 4-9

1. When using USB interface, the finished program code will be loaded into programmer or Flash Memory of IDE for mass production programming.

2. If there is programming times in the assemble option, information column will display the times of programming times as shown in Figure 4-9.

3. After assemble completed, Hex filename and Checksum will display in underneath part, as Figure 4-10 illustrated.

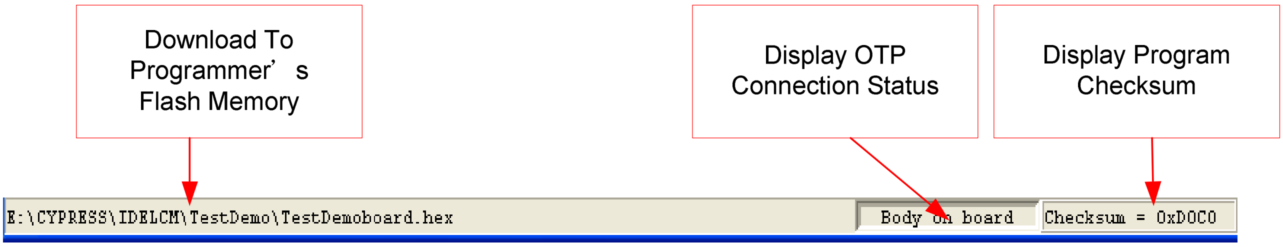


Figure 4-10

4.2.2 Download Hex File to Programmer or IDE Flash Memory

To program an assembled Hex file, click "File", select "Download to Flash Memory". Choose the specific Hex file to conduct programming. The option of last step varies by compiling option. If the file is protected, program will not ask whether to protect the file. If not, a window will pop up and ask whether users would like to protect or not, as described in

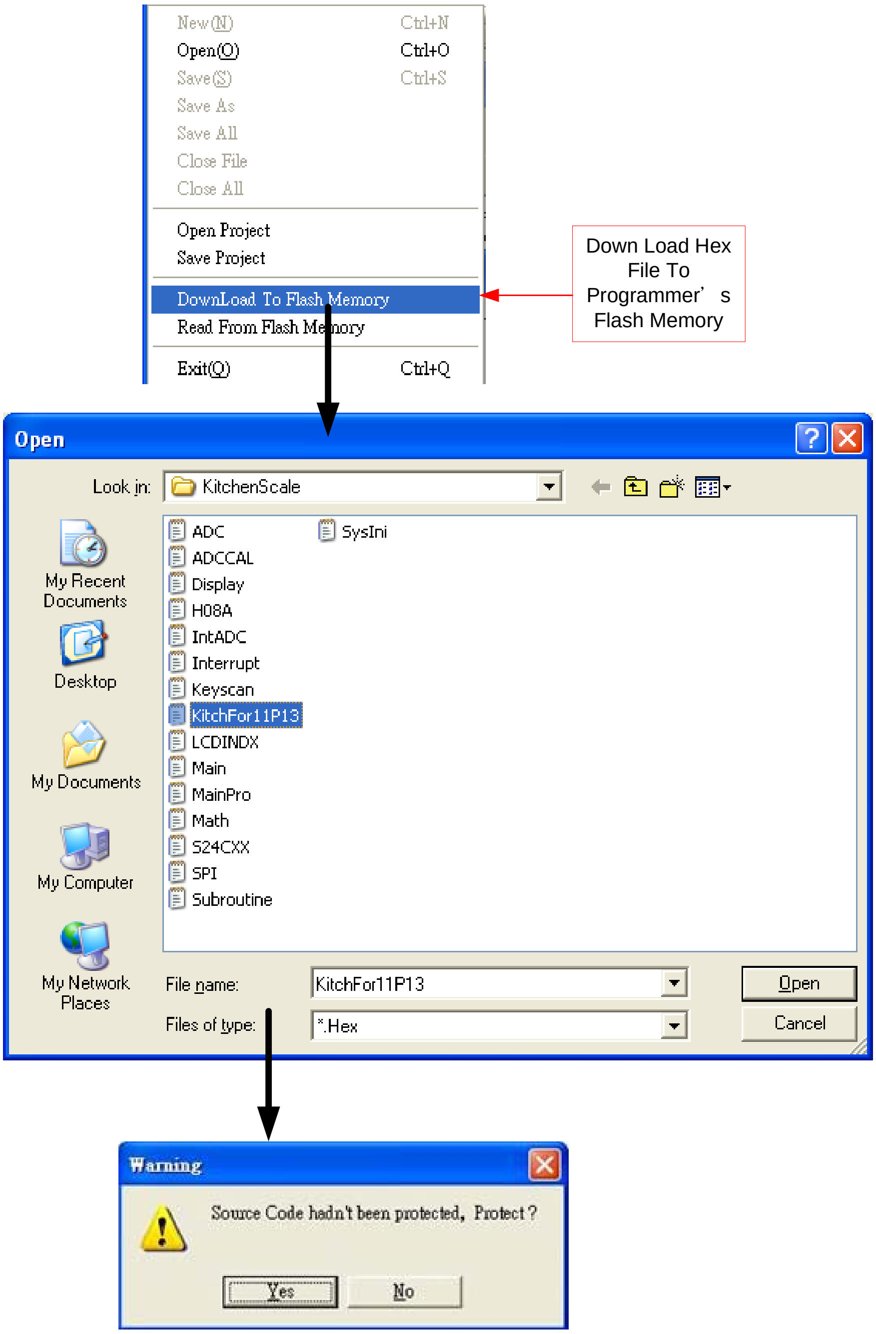


Figure 4-11.

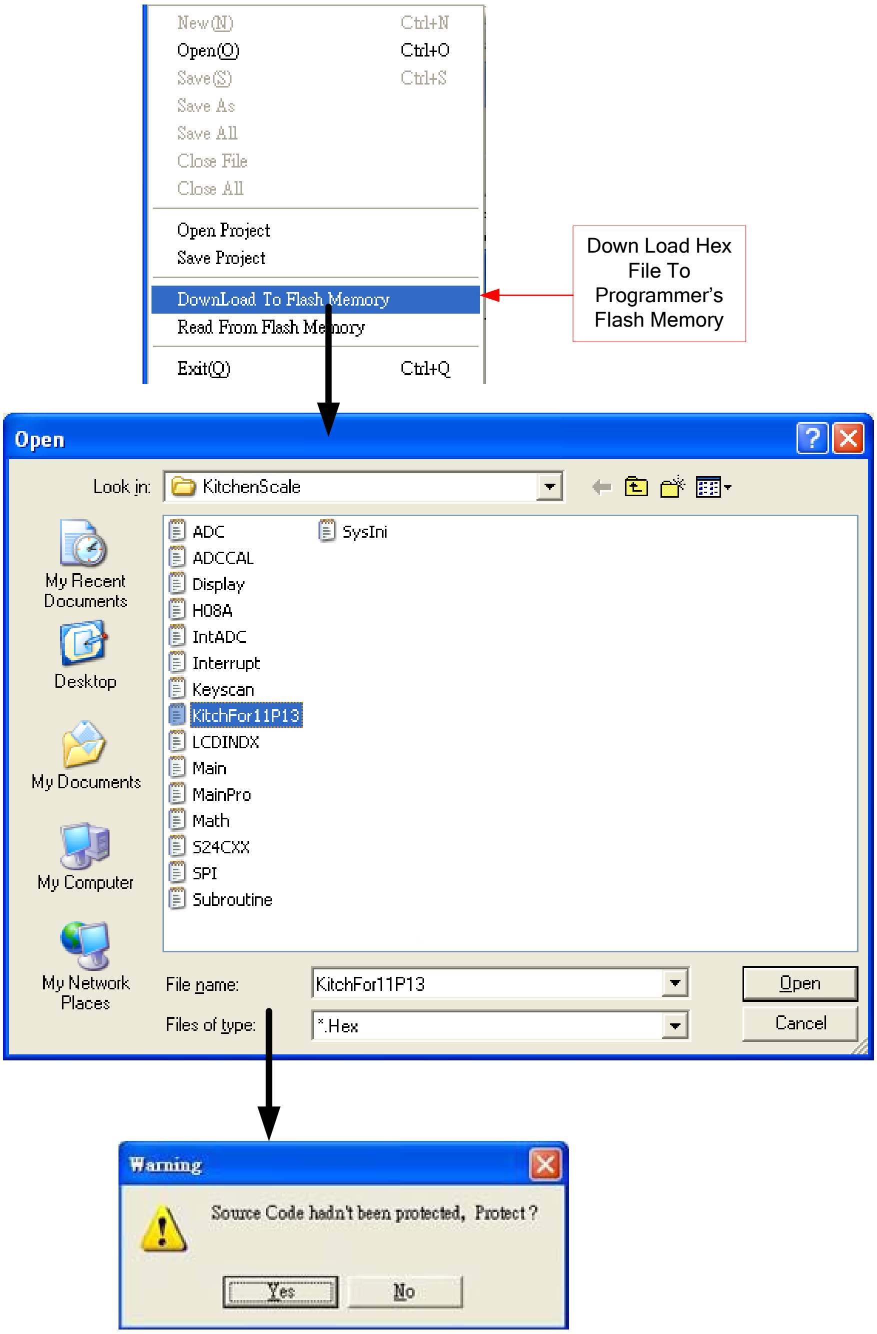


Figure 4-11

Information column will show success message after programming succeed, as shown inFigure 4-9. The Downloaded Hex file and Checksum will also be revealed in the indication column asFigure 4-10 illustrated.

4.3 PC Online OTP Programming

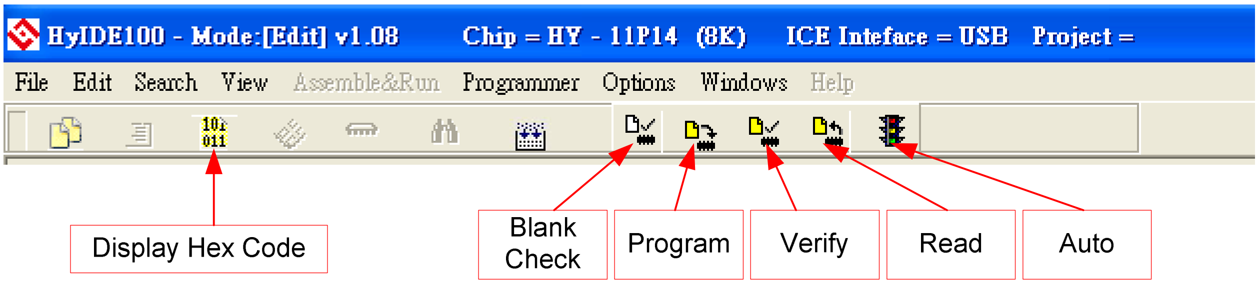


Figure 0-12

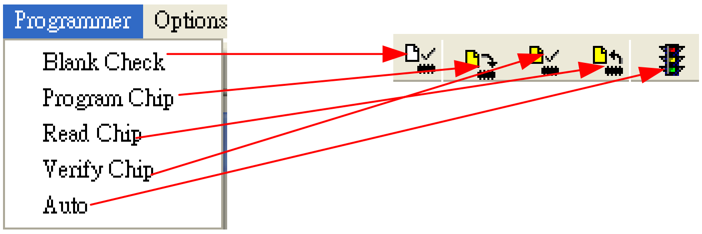


Figure 4-13

Blank Check, Programming, Verify and Read command can be implemented when the programmed file being successfully loaded into programmer or IDE Flash Memory. On the contrary those commands will not be activated if the download is malfunctioned.

Figure 4-14

Figure 4-15

Figure 4-16

Make sure the selected programming IC part no. is the same with the OTP part no. in topic window as Figure 4-4 described. When programmer executes Blank Check, Programming and Verify commands, Program will check whether the IC part no. and OTP programming part no. are identical. If the part no is different, the data will not be written into OTP and an error message will display in information column

as

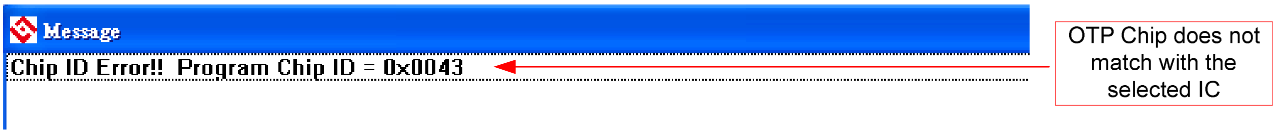


Figure 4-14 described.

If users intend to find out whether the part no. is correct before programming, point the cursor to "IC Connection Status Display" and click the mouse left key. If the IC part no. is correct, a message will show up as Figure 4-15. If it is incorrect, the message will display as Figure 4-16. If "Enable Program Times" is ticked, the spare program times will display in the message column as illustrated Figure 4-17.

Figure 4-17

4.3.1 Blank Check

The internal code of Blank ICs that have not yet been programmed is 0xFFFF. The purpose of checking the IC is to assure the OTP address content is 0xFFFF.

If the IC selection is correct and the content is empty, a message will appear as Figure 4-18.

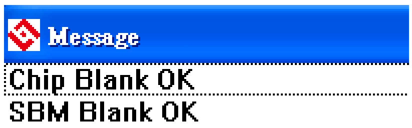


Figure 4-18

If the IC selection is incorrect or the content is not empty, a message will show up as Figure 4-19 described.

Figure 4-19

4.3.2 Program

The purpose of programming is to write Compiler accomplished program into IC OTP. When programming is completed and the IC is assembled as finished goods, it can operate the program as users commanded.

Program the downloaded or assembly finished Hex file (displayed at the bottom of the column) in the selected IC and verify the correctness of the programming content (please refer to Chapter 4.2.1 or 4.2.2 for programming procedures).

If the selected IC is correct and the programming succeeds, message will appear at the information column asFigure 4-20 illustrated. If “Enable Program Times” is ticked up, the enable program times will minus 1 and the remaining program times will be revealed in the message column.

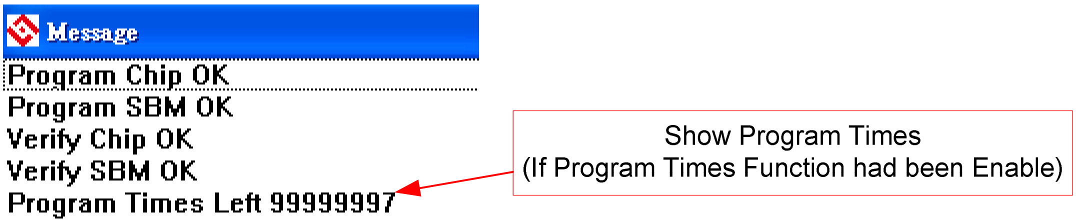


Figure 4-20

If the IC selection is incorrect or the programming fails, a message will show up as Figure 4-21).

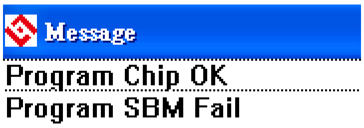


Figure 4-21

4.3.3 Verify Program

The purpose to verify program IC is to compare if the program written into IC OTP is equal to the program downloaded to programmer or IDE Flash Memory.

Verify program IC content consistency with the downloaded or assembled Hex file (displayed at the bottom of the column). If the IC is protected by program, this verification is ineffective or the comparison fails.

If IC selection and program verification is success, a message will appear asFigure 4-22.

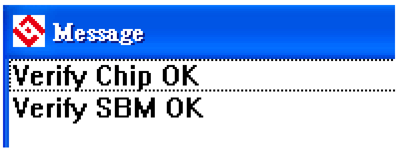


Figure 4-22

If IC selection is incorrect or the program verification miscarries, a message will pop up as Figure 4-23.

Figure 4-23

4.3.4 Read

The purpose to read the IC is to verify the consistency of OTP Checksum and programmed Hex file. To read IC content, the procedures are illustrated as Figure 4-24. Its content will reveal at ”Display Code” window.

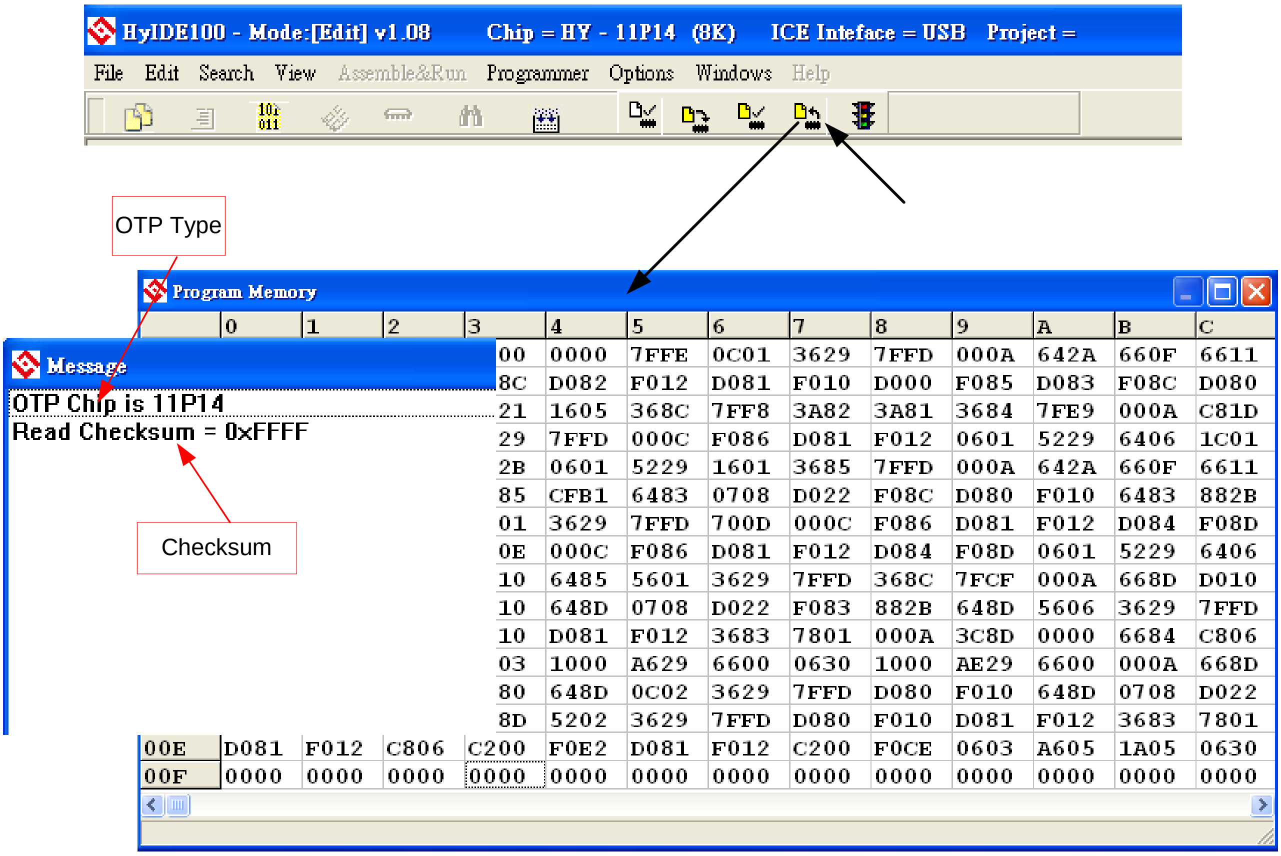


Figure 4-24

4.3.5 AUTO

Auto integrates the functions of Blank Check, Program and Verify. If user selects Auto, it will first check whether the IC is blank, then to program and verify.

After the execution succeeded, a message will be displayed asFigure 4-25 displayed. If the option, ”Enable Program Times” is ticked up, the program permitted times will reduce 1 and the remaining program times will be shown in the message column.

Figure 4-25

If any function fails, the whole process will stop and display an error message in the message column.

4.4 Offline Programming

4.4.1 Program Description

As the development process evolves to mass-production, the programmer can be used alone when programming on the production line. There is not necessary to connect the programmer to the PC.

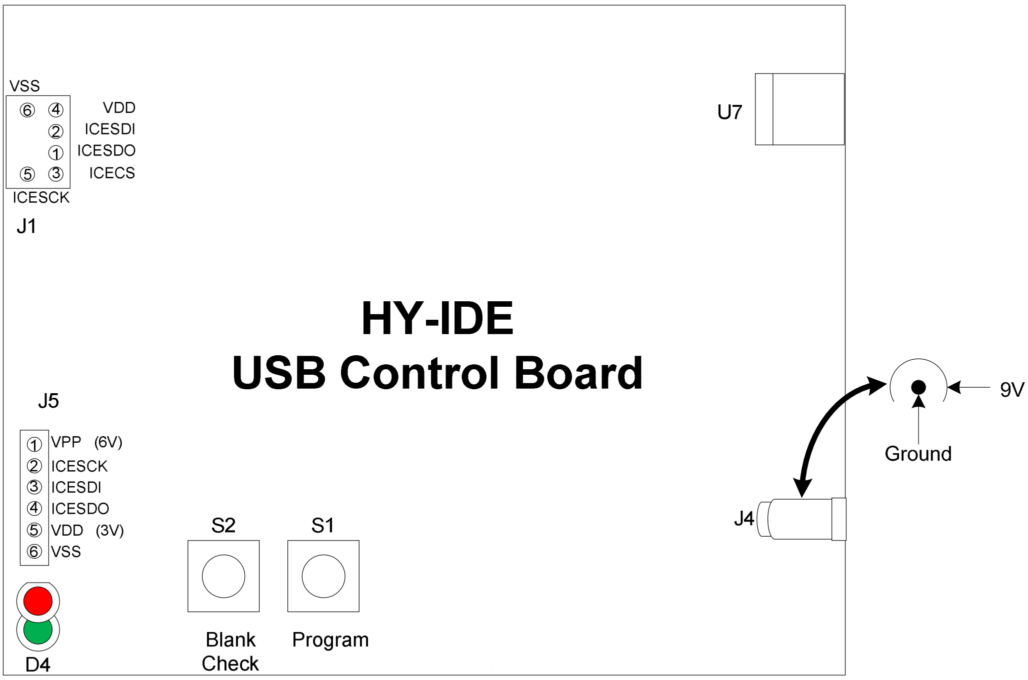


Figure 4-26

- J4: Adapter 9V input.

Internal negative, external positive, supplying power source for programming (power supply must be connected when programming OTP).

- U7: USB port. Users use this port to connect to PC.

Download program for emulation debug.

Download program for writing HY11P series products.

- J5 : Programming control port for HY11P series

PIN1	VPP (6V)	connecting VPP of the IC
PIN2	ICECK	connecting PSCK of the IC
PIN3	ICESDI	connecting PSDI of the IC
PIN4	ICESDO	connecting PSDO of the IC
PIN5	VDD (3V)	connecting VDD of the IC
PIN6	VSS	connecting VSS of the IC

- S1 : Program, IC program button
- S2 : Blank Check, IC blank check button
- D4 : Double color LED；

Red LED: OTP program, Blank Check…execution error display light

Green LED: OTP program, Blank Check…execution success display light
Green LED: USB or Adapter power on display

Figure 4-27 the control board programming pin connected way when PC is connected, downloading program and on-line IC programming.

Figure 4-27

Figure 4-28 the control board programming pin connected way when PC is disconnected, program download completed and off-line IC programming.

Figure 4-28

- To implement offline operation, Hex file must be firstly downloaded to programmer Flash Memory. Please refer to Chapter 4.2.1 or 4.2.2 for procedures
- S2 Button can check if the IC is blank. D4 green light will be lightening up after verifying.
- S1 Button is programming button. Its procedures are: Blank Check → Program → Verify.
  If "Program Protection" of "Assemble Option" is ticked up before downloading data to Flash Memory, program protection will be executed after Verify completed. If "Program Protection" is not ticked up, D4 green light should be lightening up after programming completed.

- After programming completion, users can press S2 button to check if the IC is blank. At this time, D4 red LED should be lightened up, representing program completed.
- If any failure or error happened during execution procedures, D4 red LED will be lightened up. On the contrary, D4 green LED will be lighted up if success.

4.4.2 Program Times Restriction

The menu of ”Assemble Option” in interface setup has an option of ”Enable Program Times” as described Figure 4-2. This option restrict the times of the permitted program times of download program.

This is a safety mechanism that restrains permitted program times, preventing it from over-programming on the production line.

After ticking up ”Enable Program Times”, key in program times in the filed below ”Input Program Times” (maximum is 99999999, minimum is 1). This argument will be written into EEPROM of the programmer after the compiler programmed file is downloaded to Flash Memory. Afterwards, the enabled program times will reduce 1 each time when programming completed. If the value reduced to 0, the programming action may not be executed. At this time, an error signal (red LED) will be lighted up and Blank Check still operates normally.

5. Revision History

Major differences are stated thereinafter:

Version	Page	Revision Summary
V01	ALL	First edition
V03	4	Add software support: Vista & Win7
	10	Add Demo Code operation way
	17~19	Add program structure description and program reference document.
		Add Self-defined instruction function
	49	Revise program protection description
	54~56	Add online programming and offline programming description