HY12S65

HYCON-IDE Software

User Manual

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1. HYCON-IDE Overview

1.1 Introduction

To facilitate customers of using HYCON MCU series products,developed HYCON-IDE platform to make Customers can implement emulation of the end-products on this platform and program the code onto OTP of HY series products,and make customers' products develop fast and sale in the market.

1.2 HYCON-IDE Installation and System Requirement

Minimum requirements for operating HYCON-IDE:

- PC Hardware Request:

PC compatible machine with PENTIUM® CPU

128 MB Memory (256MB is recommended)

10 GB Hard Disk Space

- Supporting Products:

-HY12P65

- Supporting Hardware Model No.:

-HY12S65-DK01 development kit

- Supporting Software Version:

HY-CON IDEDMM V1.1 and above

- Compatibility of Program Version:

N/A

- OS:

Windows 98SE

Windows 2000

Windows XP

Windows Vista

Windows 7

Support x86, 32bit system, 64bit system not in support.

- Applicable Interface:

USB Port

1.3 Install and Remove

1.3.1 Install

Note: For some Windows OS, it may require to have administrator identity to install the software to the computer.

- Find and execute the file Setup.exe in the CD ROM or file.
- Following the instruction window figure 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 2 shown.

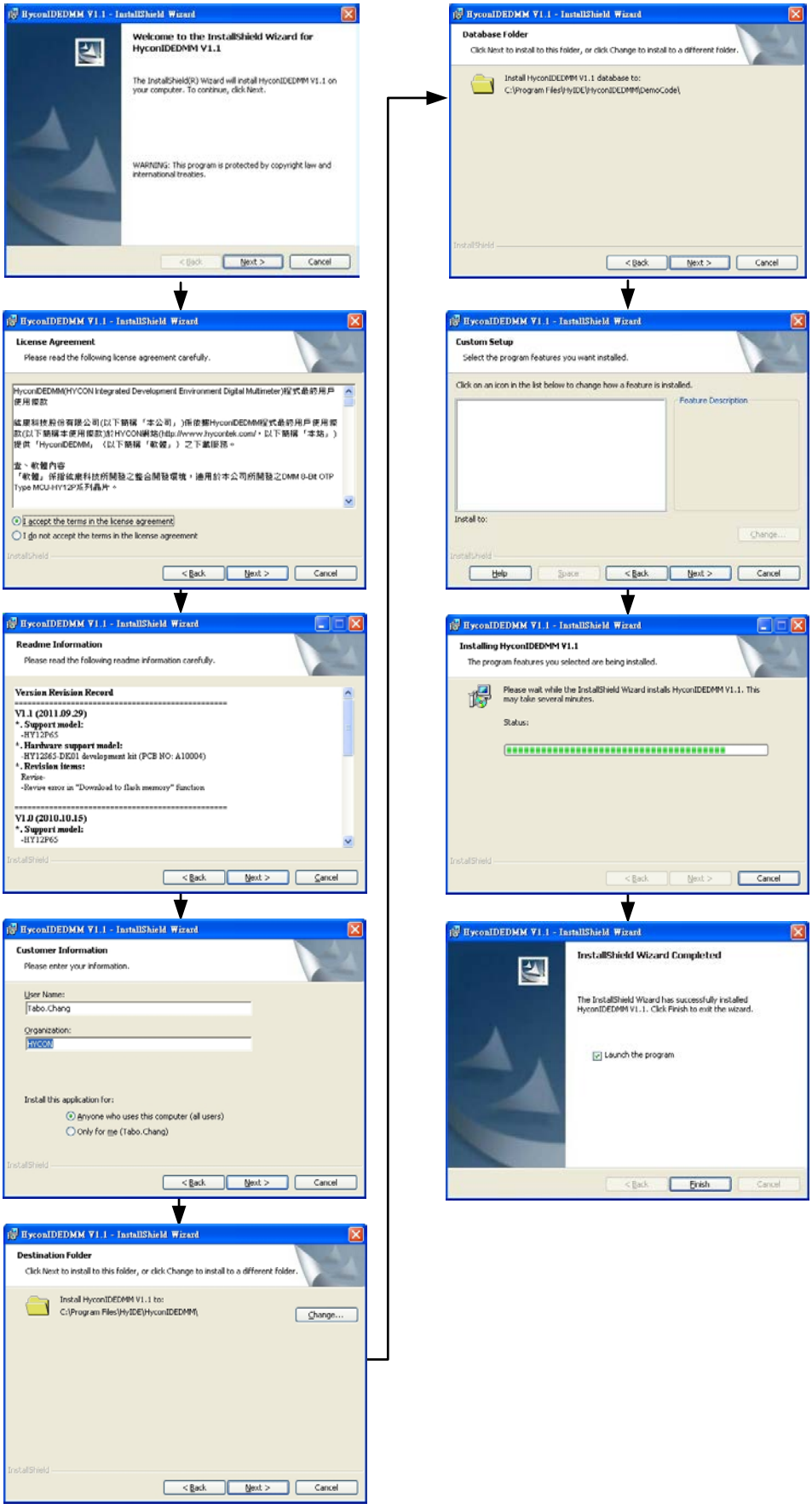

HyconIDEDMM V1.1 - InstallShield Wizard
Welcome to the InstallShield Wizard for HyconIDEDMM V1.1
The InstallShield(R) Wizard will install HyconIDEDMM V1.1 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel
Database Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install HyconIDEDMM V1.1 database to:
C:\Program Files\HyIDE\HyconIDEDMM\DemoCode\
License Agreement
Please read the following license agreement carefully.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
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:
Change...
Help
Space
Readme Information
Please read the following readme information carefully.
Version Revision Record
V1.1 (2011.09.29)
*. Support model:
-HY12P65
*. Hardware support model:
-HY12S65-DK01 development kit (PCB NO: A10004)
*. Revision items:
Revise:
-Revise error in "Download to flash memory" function
V1.0 (2010.10.15)
*. Support model:
-HY12P65
Installing HyconIDEDMM V1.1
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs HyconIDEDMM V1.1. This may take several minutes.
Status:
Customer Information
Please enter your information.
User Name:
Tabo.Chang
Organization:
HYCON
Install this application for:
Anyone who uses this computer (all users)
Only for me (Tabo.Chang)
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed HyconIDEDMM V1.1. Click Finish to exit the wizard.
Launch the program
Finish
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install HyconIDEDMM V1.1 to:
C:\Program Files\HyIDE\HyconIDEDMM\
Change...

Figure 1

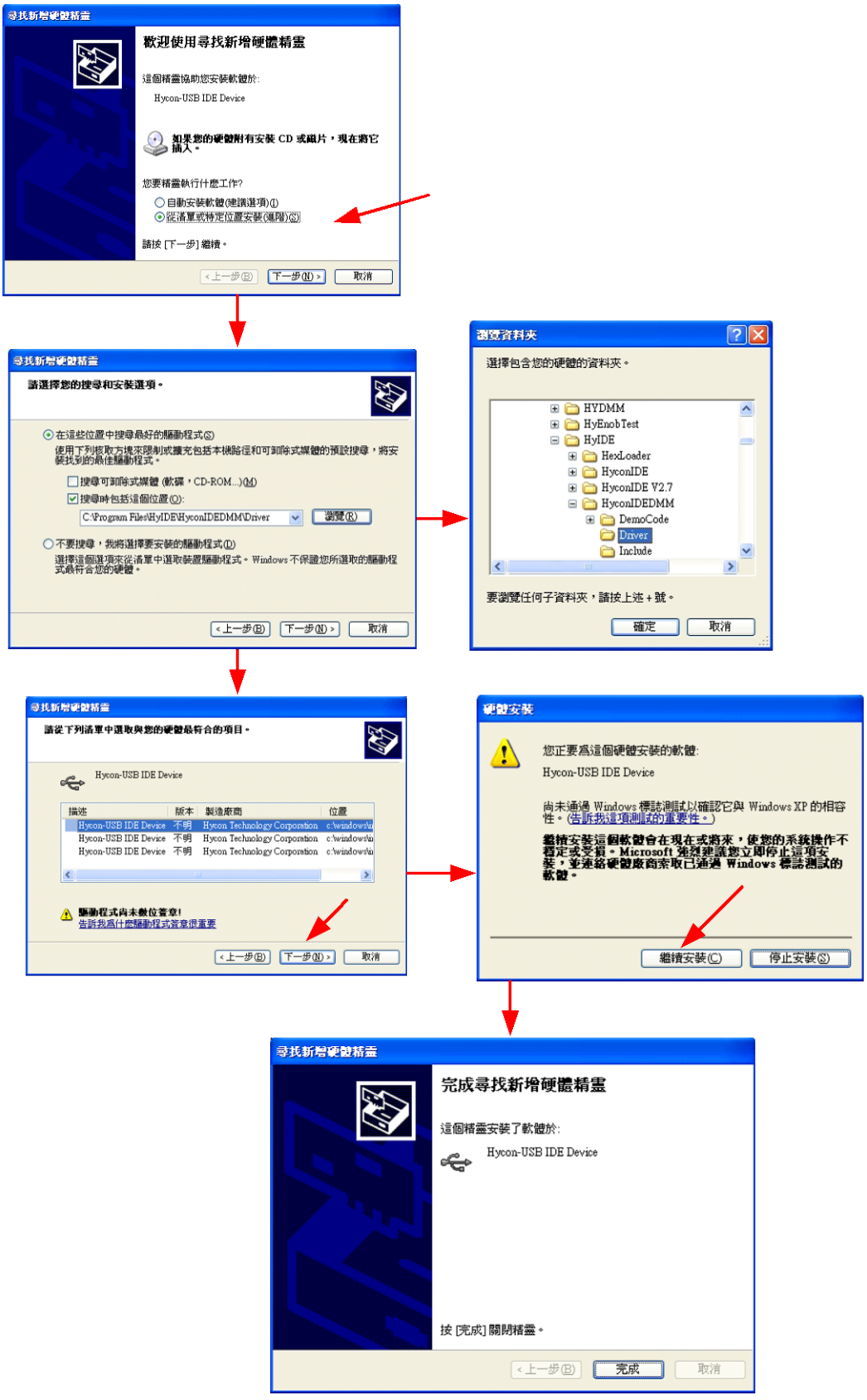


Figure 2

Remove

Please remove the file of “HYCON-IDEDMM V1.1” in “Add/Remove Program” under Control Panel.

1.4 Registration

For first time using ICE for simulation or programming OTP chip, if information below appear or IDE using abnormally,users must log in..

Figure 3

Registration Procedures:

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

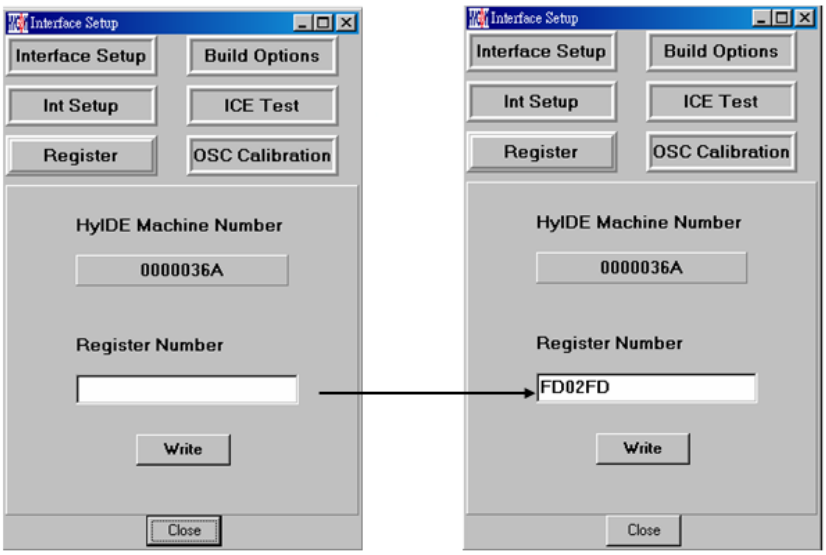


Figure 4

5. If the process is successful, a dialog will be shown as follows.

Figure 5

6. If the process failed, a dialog will be shown as Figure 6.

Figure 6

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

1.5 Demo Code Description

- Starting C:\Program Files\HyIDE\HyconIDEDMM\DemoCode\Ref Code\Test.asm
- Set the file as assembly main file
- Assembly start and proceed program debug

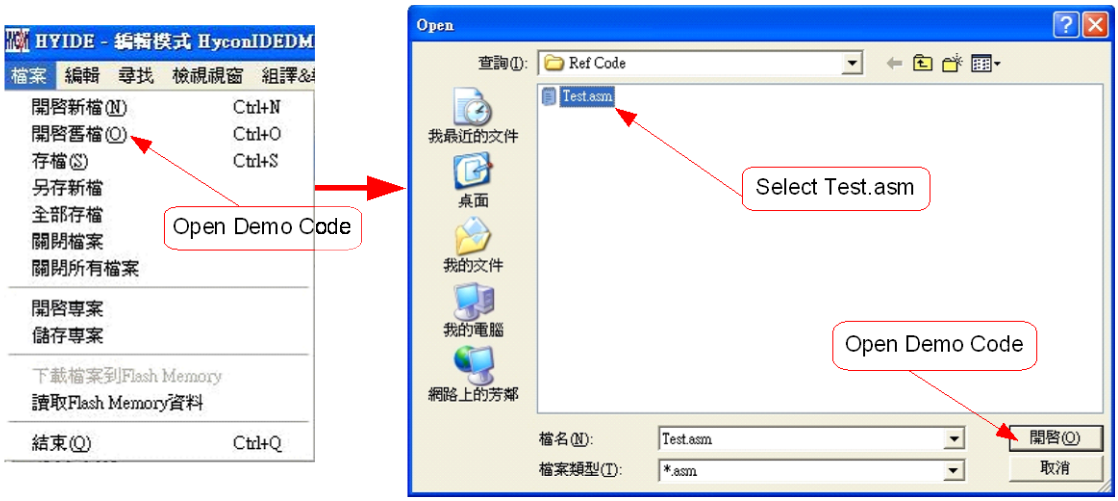


Figure 7

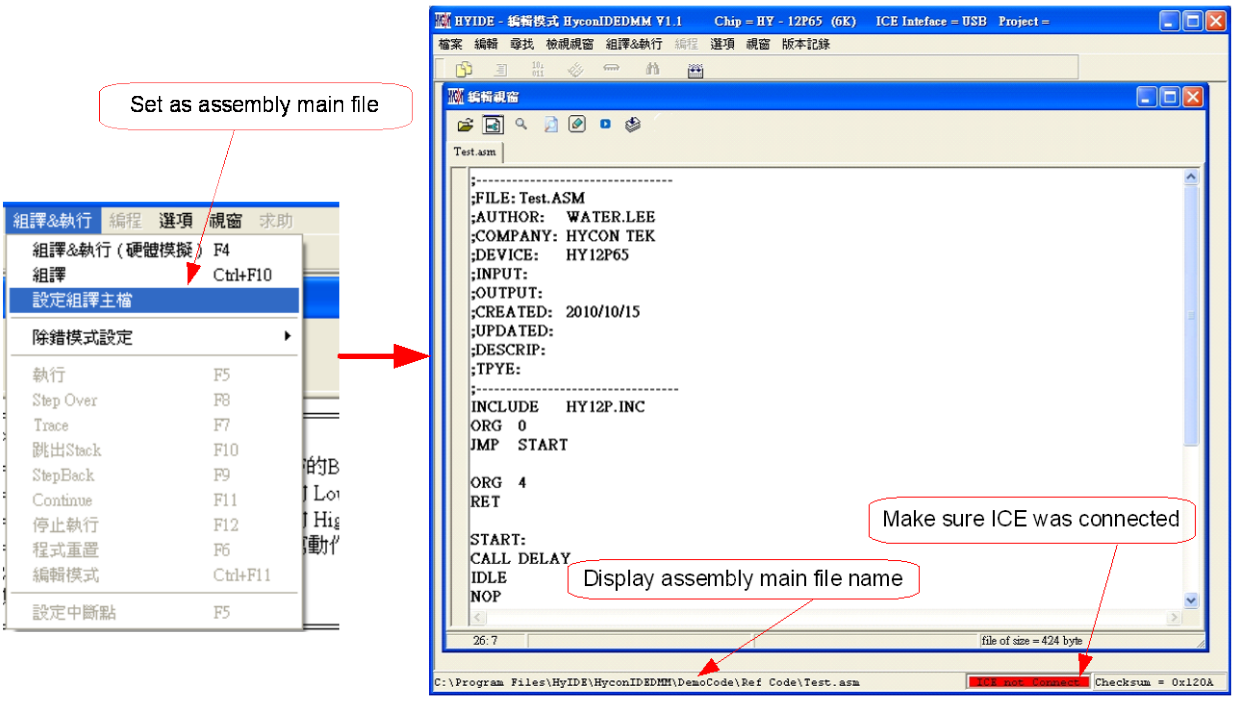


Figure 8

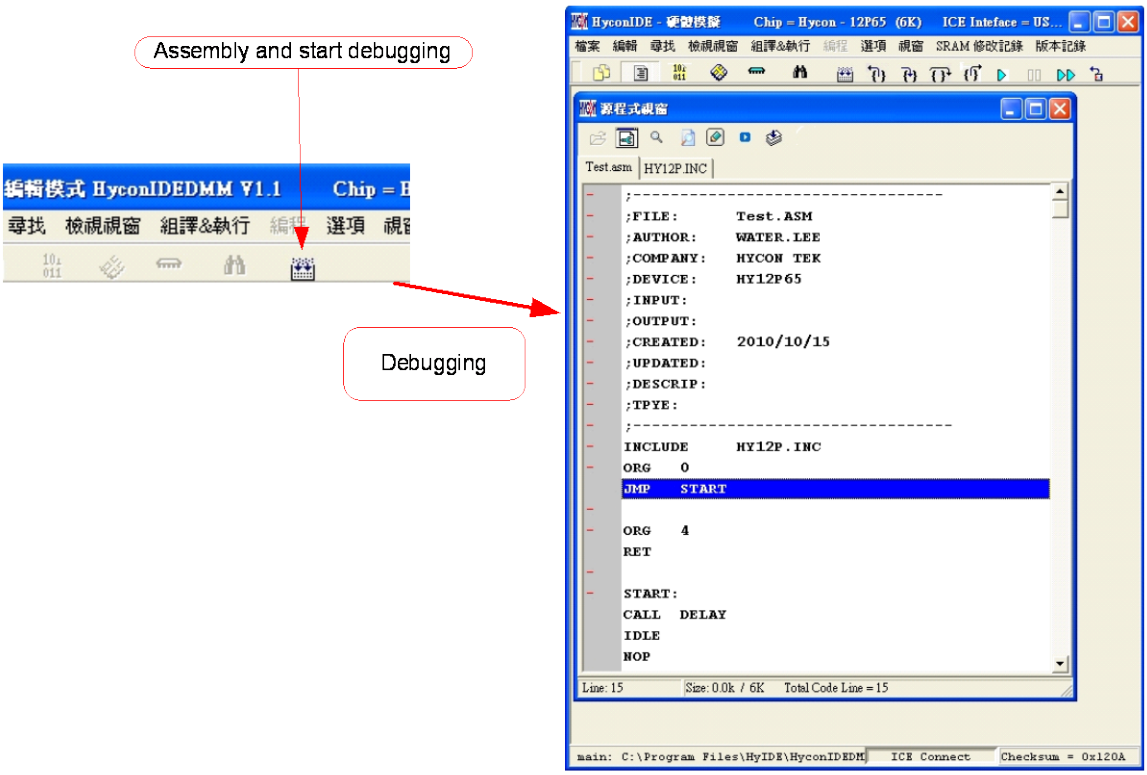


Figure 9

- Users can use any compiler to edit Source Code, as long as it can be stored in ASCII Code format. Source code will be reloaded when program compiles to ensure its correctness. Debugging and edit function will be depicted respectively in the following chapters.

2. HYCON-IDE Interface Description

2.1 HYCON-IDE Edit Interface

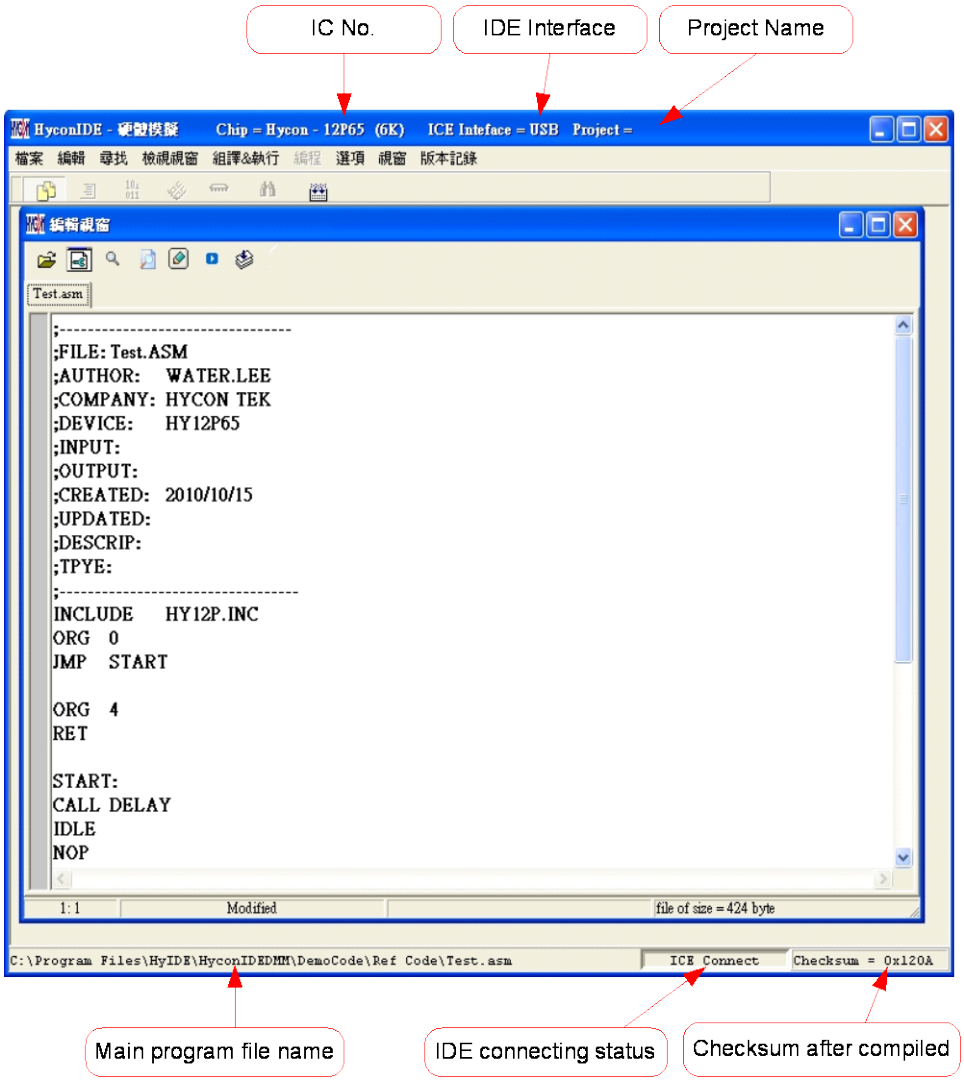


Figure 10

Edit Window

- Open file 

  Open the existing edited file in the disk
- Set bookmark 

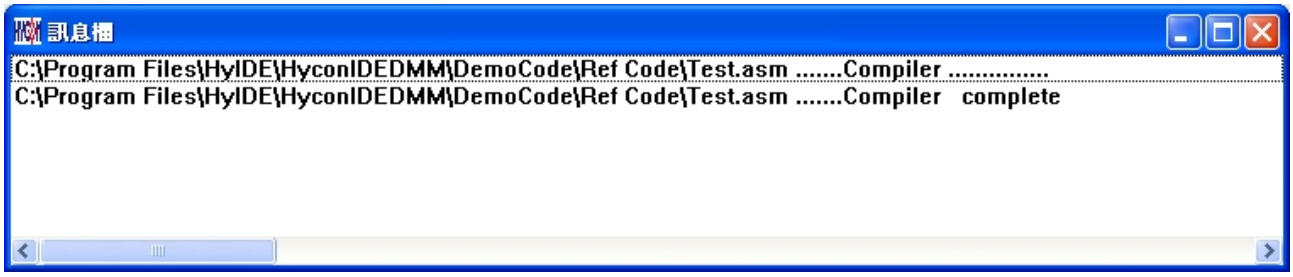
  Using this function to go back to the bookmark instantly when many files were opened
- Go to bookmark

  Jump to the default bookmark
- Find string 

  Find input string
- Find next string 
- Go to page 

  Using this function to switch files
- Assemble 

  Only acting assemble function not debug status. After assembled, a message window will show up



2.1.2 File

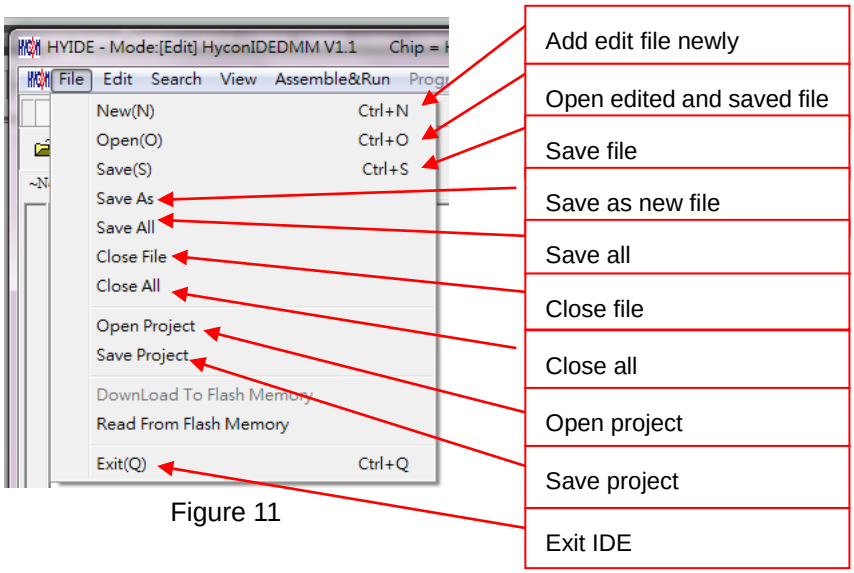


Figure 11

- New(N)→Add edit file newly
- Open(O)→Open edited and saved file
- Save(s)→Save file
- Save as→Save as new file
- Save All→Save all files
- Close File→Close current file
- Close All→Close all files
- Open Project → Project includes, IC No., IDE interface, main program file name, current status and checksum. The project status will be loaded once this function is activated.
- Save Project→Save project
- Exit→Exit Hycon-IDE program

2.1.3 Edit

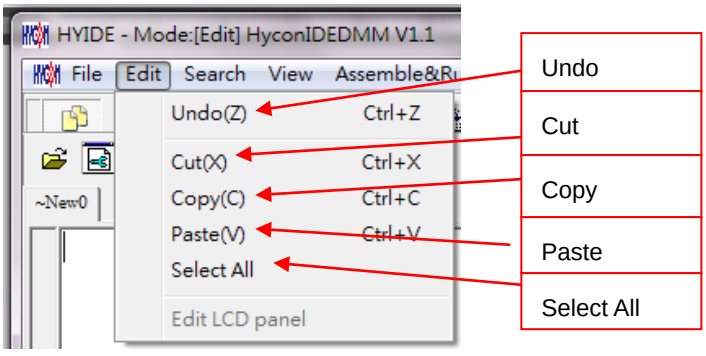


Figure 12

- Undo→Undo last input or cancel

·Cut→Cut selected area

·Copy→Copy selected area

- Paste→Paste copied area

·Select All→Select all

2.1.4 View

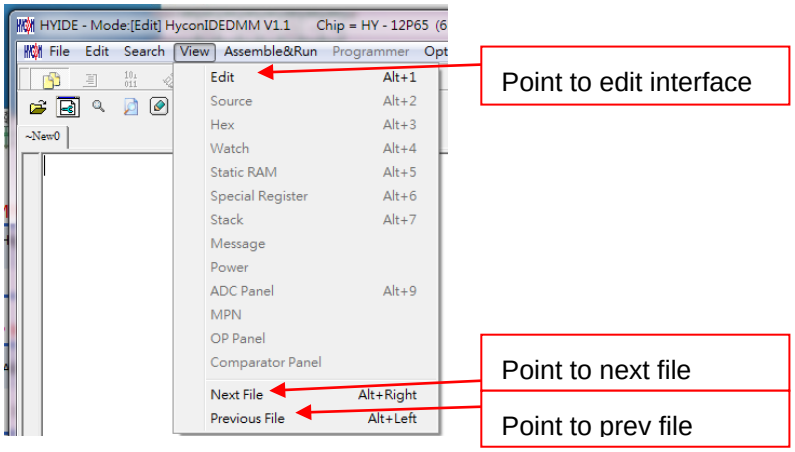


Figure 13

·Edit→Point edit interface to current used interface

- Next File→Point next file to current used interface

·Previous File→Point prev file to current used interface

2.1.5 Assemble & Run

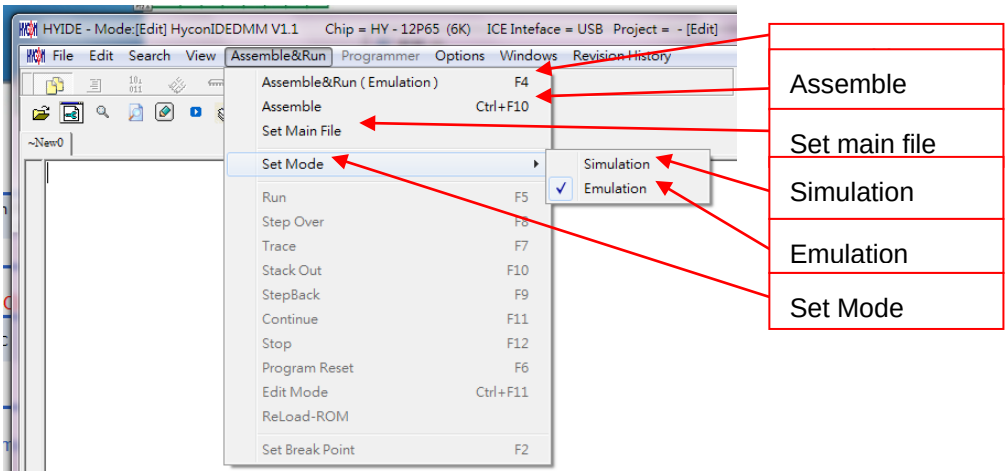


Figure 14

Assemble & Run (Emulation) → Assemble Source Code and execute debug mode

Assemble → Only executing assemble, not debugging. This assemble 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 Main File → Set the file as assembly main file. Files will be named after compiler generated file name, such as Hex, MAP, ASC…etc.

Set Mode (Debug mode) → Debug through software or hardware is selective.

2.1.6 Interface Setup

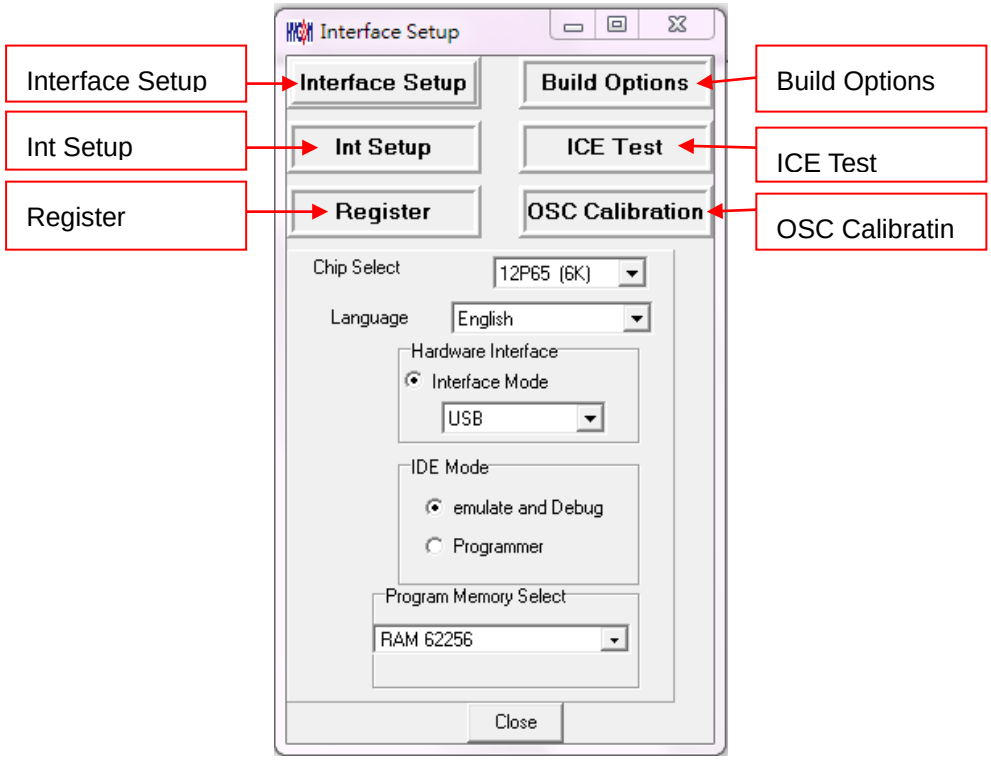


Figure 15

Interface Setup (select from option)

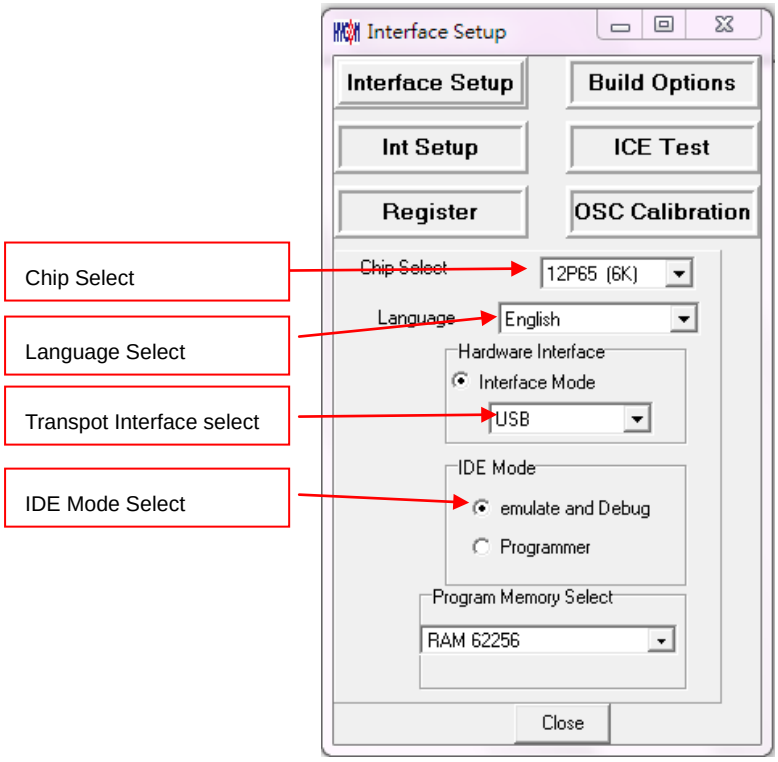


Figure 16

Chip Select: Select IC part no. Compiler will assemble the selected part no.'s program file. It will determine whether there is any misuse,like using 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 programming.

Build Option

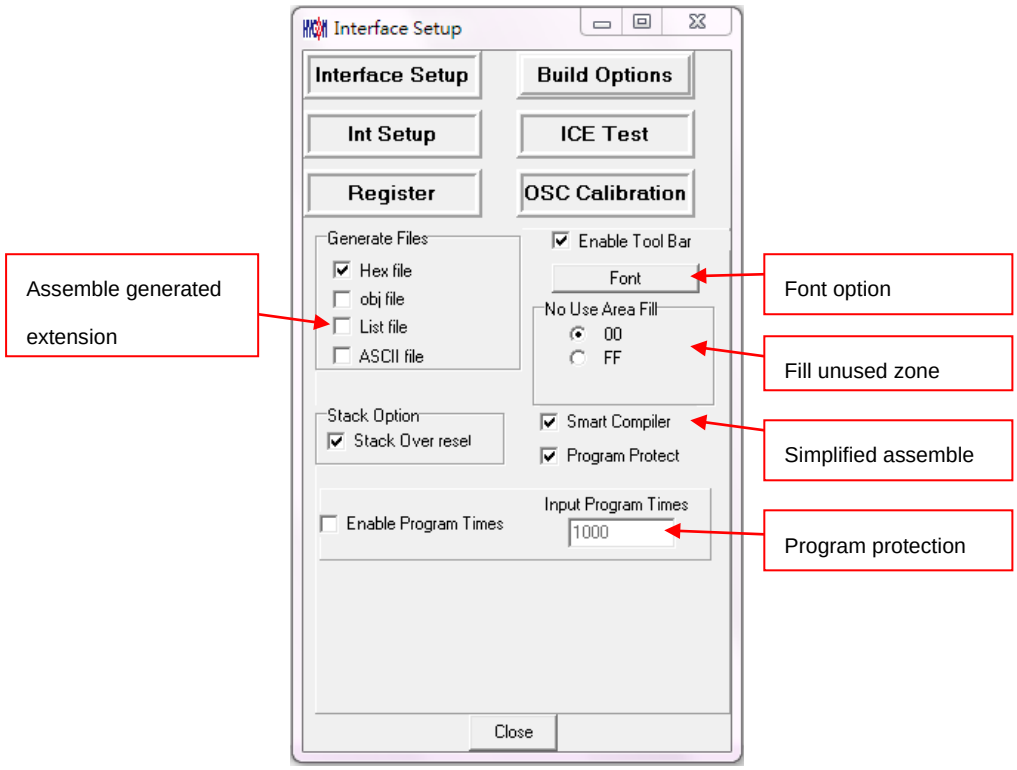


Figure 17

Assembler generated extension: it is selectable to produce below file formats.

1. Binary file : Hex
2. Obj file : obj
3. List file: lst
4. ADCII file: asc

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 "Interface Setup" under Programming Window chapter.

Interrupt Setup

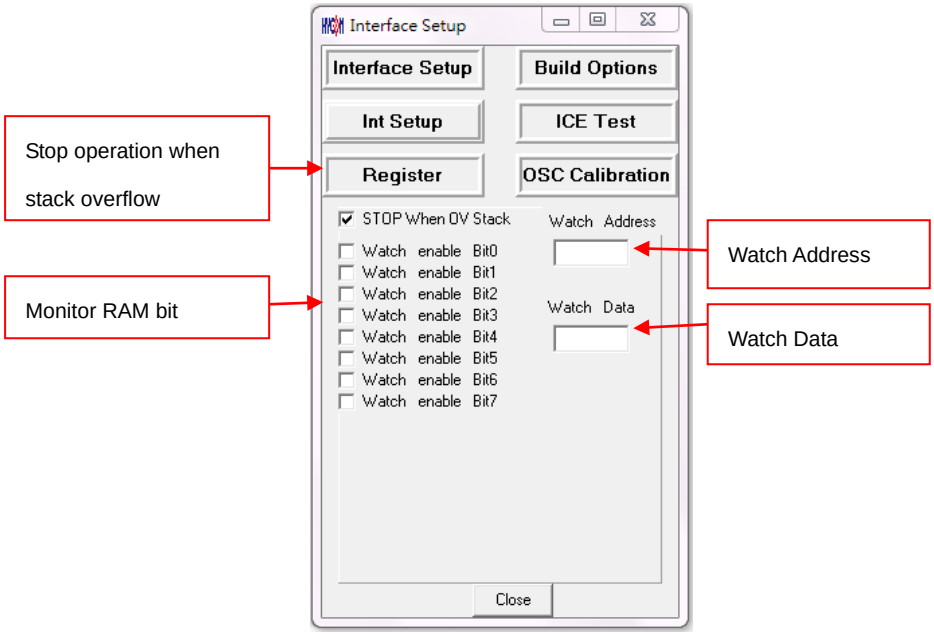


Figure 18

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 ticked. The program will stop when the bit of Data value equals to the marked on bit.

ICE Test

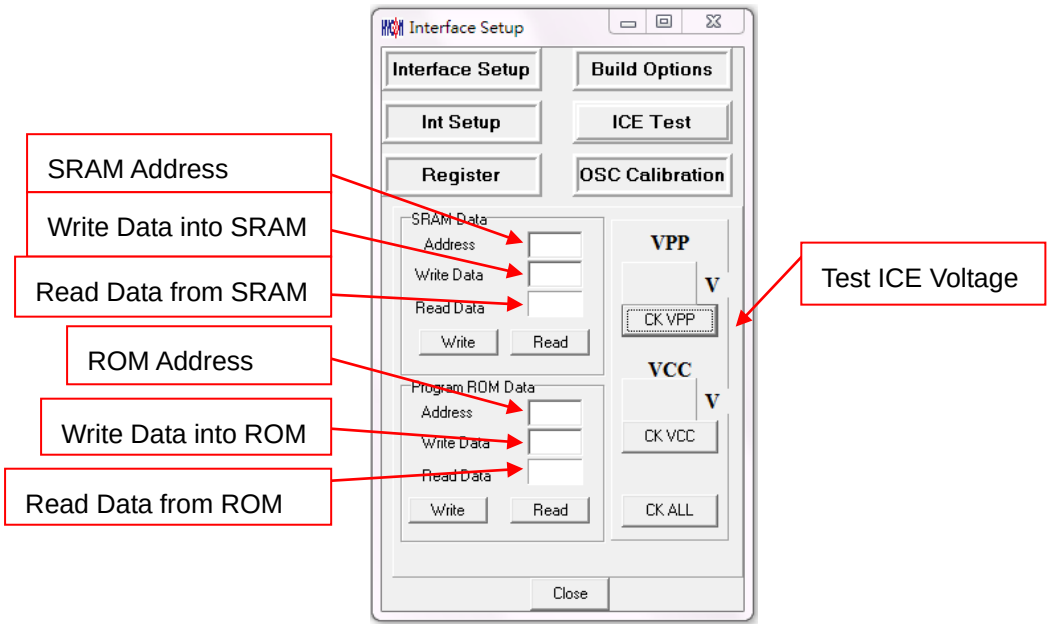


Figure 19

2.1.7 Windows

All the windows opened can be displayed horizontally or vertically.

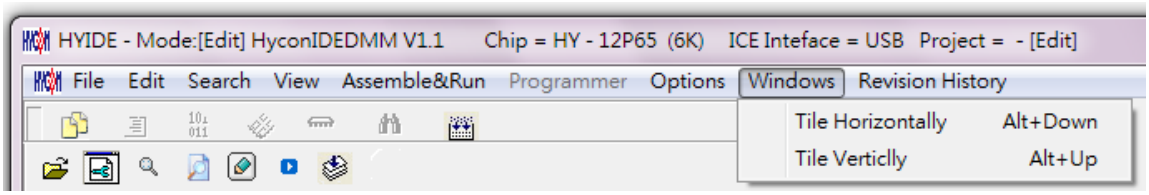


Figure 20

2.1.8 Program Structure

Before editing new program, users 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 software appendix 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

Two program contents are listed below:

“Test.asm” & “H08.inc”

```
“Main.asm” structure:          ; Program name can be any name
Include   H12P.inc             ; Special register names and address definition of HY12P series
ORG       00H                  ; Declare program start
JMP       START                ; Jump to main program

ORG       04H                  ; Declare interrupt flag address
          NOP                       ; Interrupt program
RET

START:                         ; Start Main program. Label name definition can be any word
CALL      DELAY
IDLE
NOP

DELAY:
.
.
.
RET
END                            ; End Program
```

Reference Document:

IP User Manual: User's Guide

Instruction Set User Manual: H08A Instruction Set Manual

HYCON-IDE Complier User Manual: HY-MCU COMPILER

2.1.9 Self-defined Instruction

HYCON-IDE adds user self-defined instruction function from DMM version. This function provides user to self-define their familiar MCU instructions to be same with HY12P series instruction..

Usage description：

All self-defined instruction function is installed under Inst.txt file. It is separated into two rows. The first instruction (first row) of every row is HYCON origin instruction name; users cannot make amendment to it. The second instruction (second row) is "User" self-defined instruction name.

First and second instruction can only be separated by space, multi-space or Tab.

Second instruction can be followed by semicolon (;) as remark.

Second instruction name can be the same as the first one.

The name of second instruction cannot be defined as any 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.

After users self-define the second instruction name, the first or second instruction name can be used when program compiling.

Every row can only has one self-defined instruction name, any repeated instruction name will be deemed as invalid.

For example：

JMP　JUMP　JMM　JPP　JU　;╳wrong definition way

Repeated defined instruction or defined self-defined 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. HYCON-IDE Debug Interface

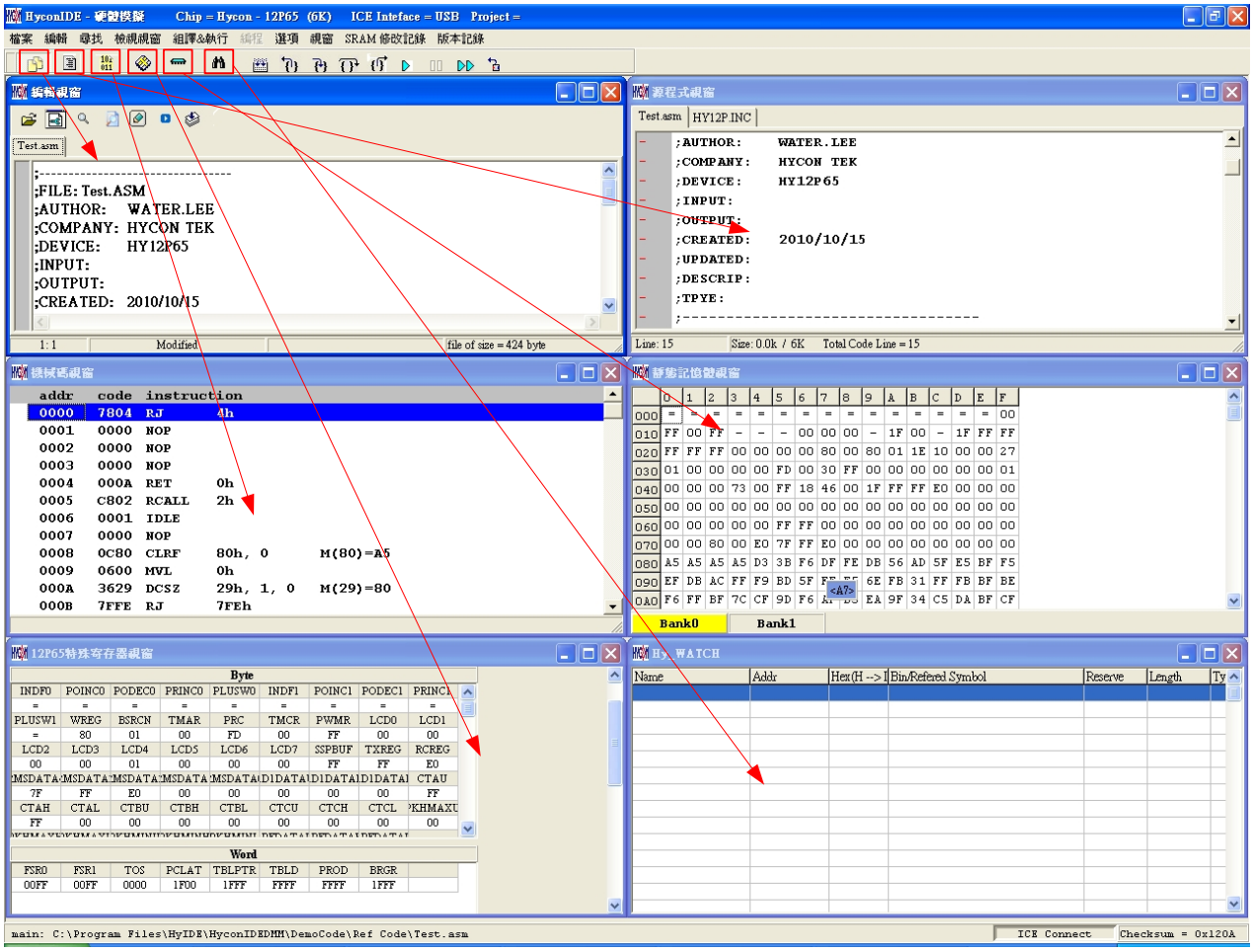
It can be classified into hardware debug and software debug.

- Hardware debug

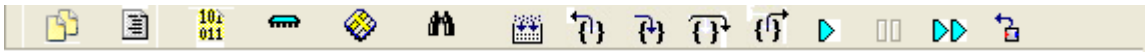
  The indication column is blue

- Software debug

  The indication column is green

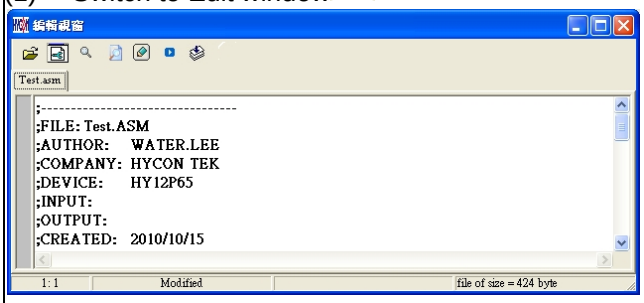


3.1 Fast Execution

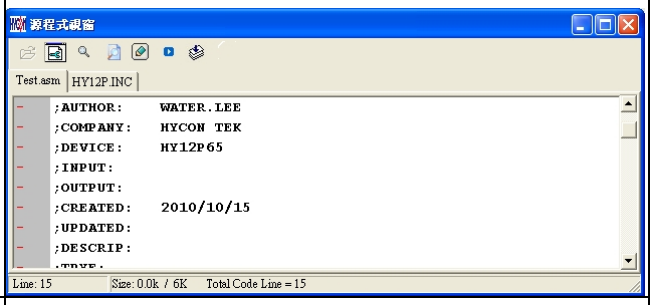


- **Fast window switch**

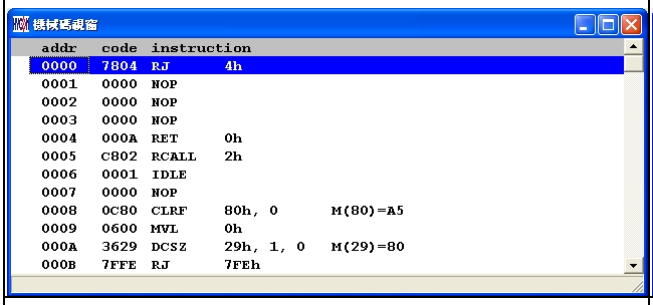
(1) Switch to Edit window 



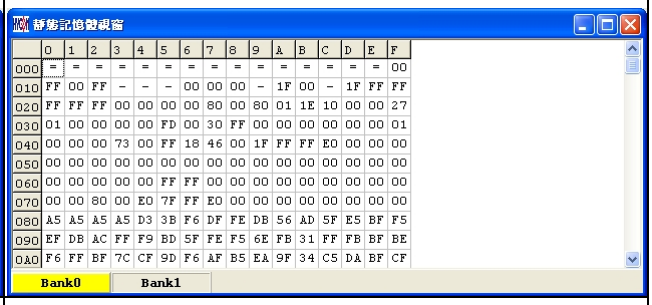
(2) Switch to Source window 



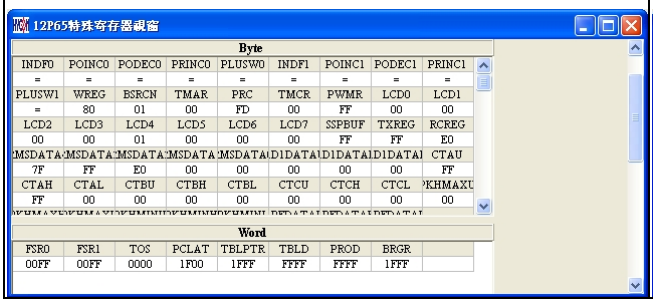
(3) Switch to Hex window 



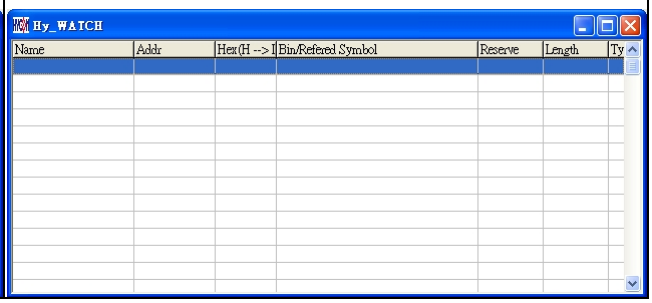
(4) Switch to Ram window



(5) Switch to Reg window 



(6) 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

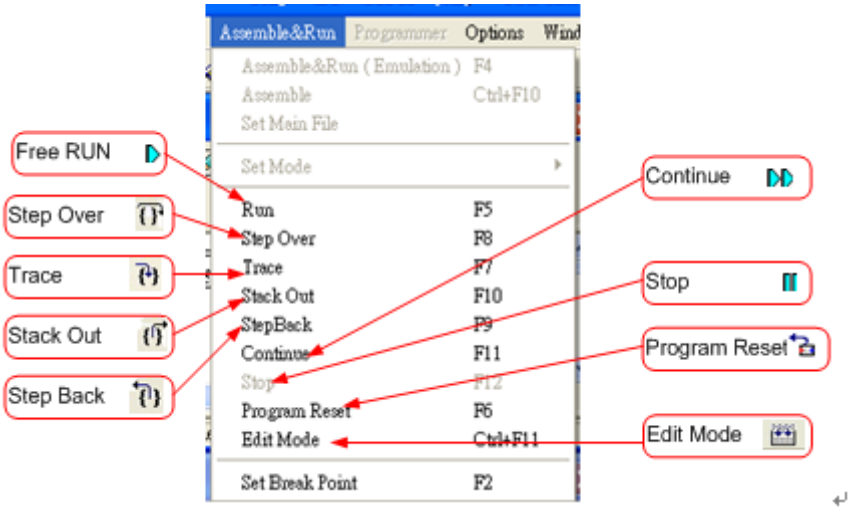


Figure 21

- **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 or 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.

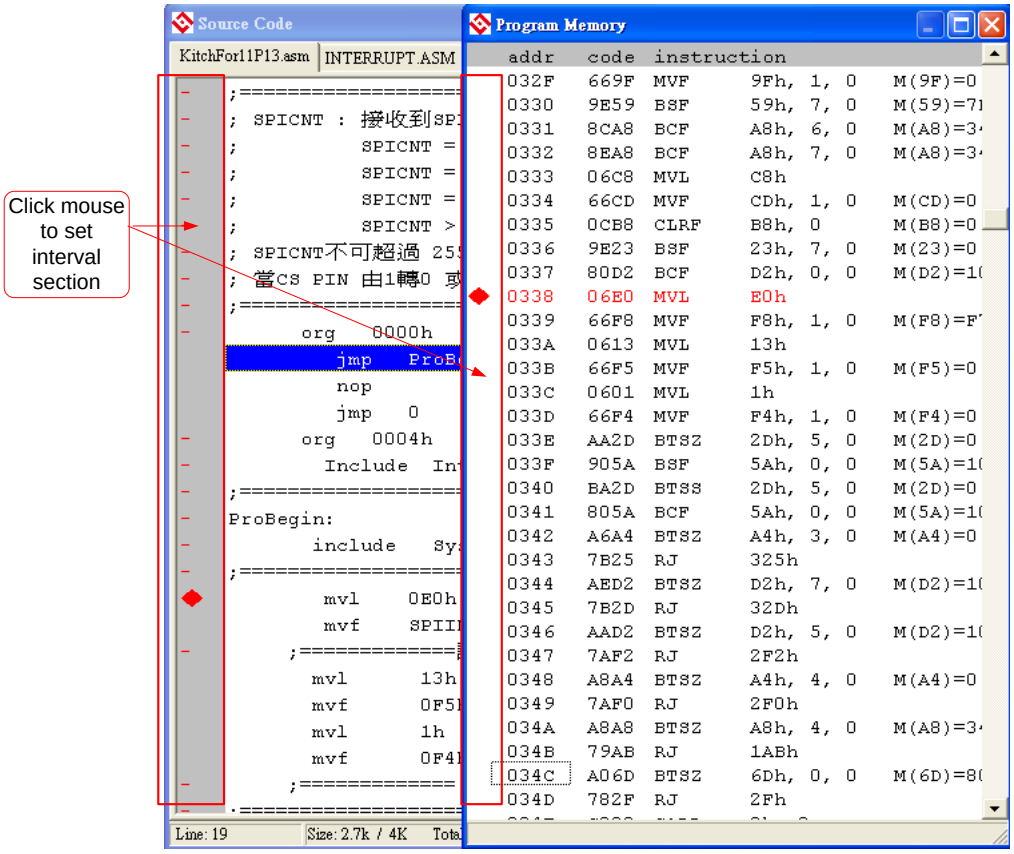
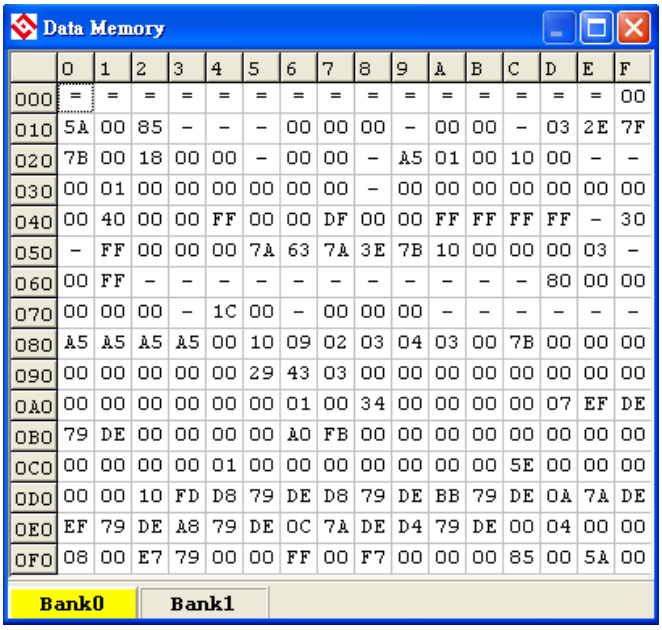

Click mouse to set interval section
Source Code
KitchFor11P13.asm
INTERRUPT.ASM
org 0000h
jmp ProBe
nop
jmp 0
org 0004h
Include Int
ProBegin:
include Sy
mvl 0E0h
mvf SPII
mvl 13h
mvf 0F5I
mvl 1h
mvf 0F4I
Line: 19
Size: 2.7k / 4K
Program Memory
addr code instruction
032F 669F MVF 9Fh, 1, 0 M(9F)=0
0330 9E59 BSF 59h, 7, 0 M(59)=7
0331 8CA8 BCF A8h, 6, 0 M(A8)=3
0332 8EA8 BCF A8h, 7, 0 M(A8)=3
0333 06C8 MVL C8h
0334 66CD MVF CDh, 1, 0 M(CD)=0
0335 0CB8 CLRF B8h, 0 M(B8)=0
0336 9E23 BSF 23h, 7, 0 M(23)=0
0337 80D2 BCF D2h, 0, 0 M(D2)=1
0338 06E0 MVL E0h
0339 66F8 MVF F8h, 1, 0 M(F8)=F
033A 0613 MVL 13h
033B 66F5 MVF F5h, 1, 0 M(F5)=0
033C 0601 MVL 1h
033D 66F4 MVF F4h, 1, 0 M(F4)=0
033E AA2D BTSZ 2Dh, 5, 0 M(2D)=0
033F 905A BSF 5Ah, 0, 0 M(5A)=1
0340 BA2D BTSS 2Dh, 5, 0 M(2D)=0
0341 805A BCF 5Ah, 0, 0 M(5A)=1
0342 A6A4 BTSZ A4h, 3, 0 M(A4)=0
0343 7B25 RJ 325h
0344 AED2 BTSZ D2h, 7, 0 M(D2)=1
0345 7B2D RJ 32Dh
0346 AAD2 BTSZ D2h, 5, 0 M(D2)=1
0347 7AF2 RJ 2F2h
0348 A8A4 BTSZ A4h, 4, 0 M(A4)=0
0349 7AF0 RJ 2F0h
034A A8A8 BTSZ A8h, 4, 0 M(A8)=3
034B 79AB RJ 1ABh
034C A06D BTSZ 6Dh, 0, 0 M(6D)=8
034D 782F RJ 2Fh

Figure 22

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 23

- 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 the address display numbers and is underlined,it means Hint is set.
- **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)

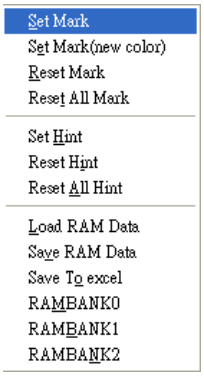


Figure 24

- Set Mark
- Set Mark(new color)

- Reset Mark
- Reset All Mark
- Set Hint
- Reset Hint
- Reset All Hint
- Load RAM Data
- Save RAM Data
- Save To excel
- RAMBANK0

- Hint

  SRAM defined by DS will automatically generate Hint 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.

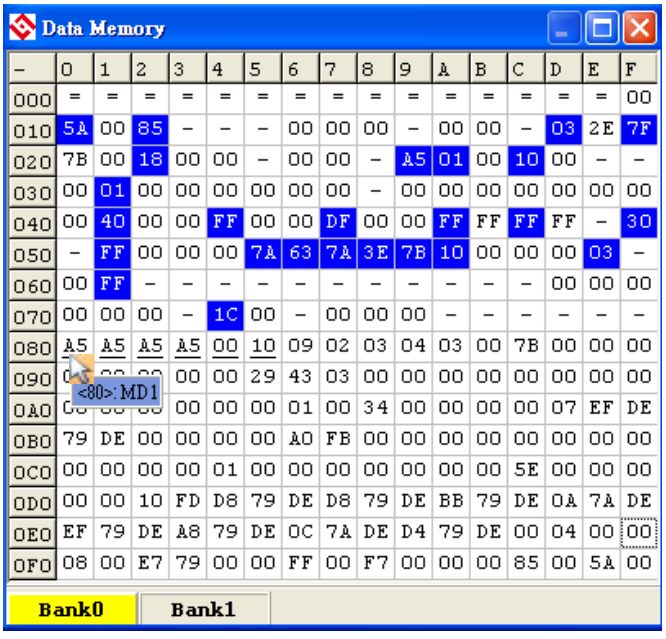


Figure 25

- **There are two ways to revise SRAM value**

  1. Point the cursor to the selected revised lines, click mouse left key and Key IN by keyboard directly.
  2. Point the cursor to the selected revised lines, double click mouse left key, a window will pop up as Figure 26 shown. Users can key in on keyboard or press the button by mouse

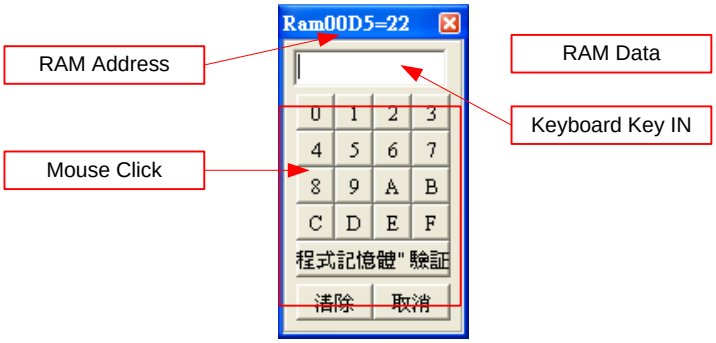


Figure 26

3.3 Register Window

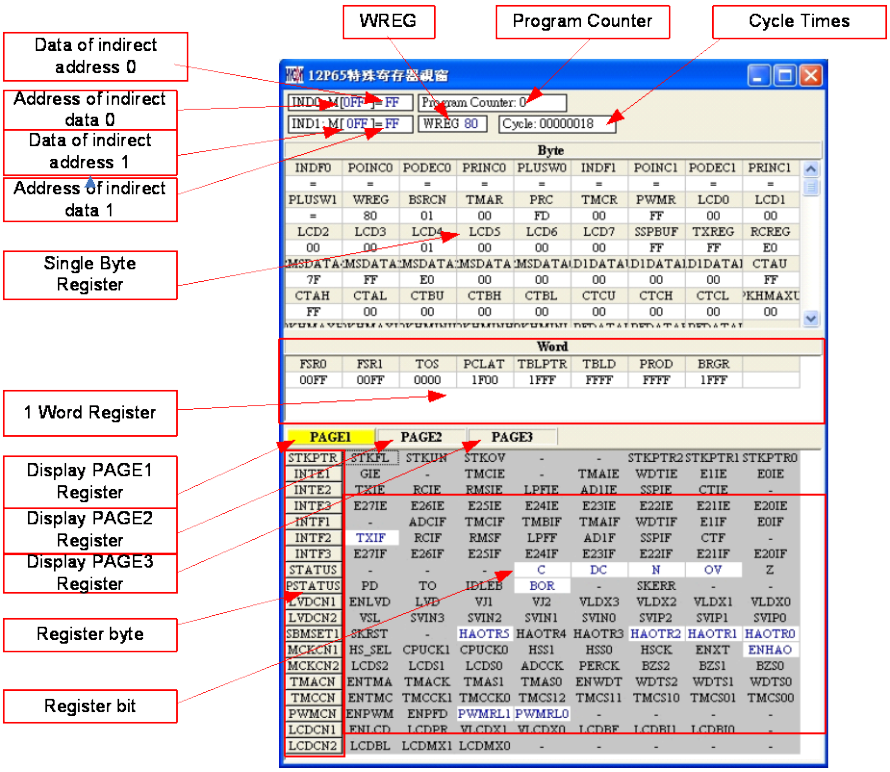


Figure 27

- Modify Data or Address of indirect address

As Figure 28 configures, using keyboard to Key IN or using cursor to click data ,then Address can be modified.

Figure 28

As Figure 29 configures, using Key IN of the keyboard or using cursor to click data ,then Data can be modified.

Figure 29

- Modify WREG Data

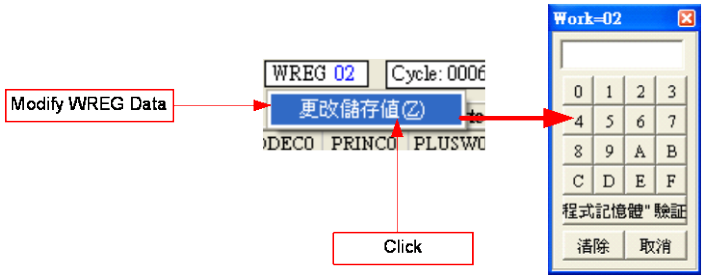


Figure 30

- Modify Data of single 1byte or Word Register

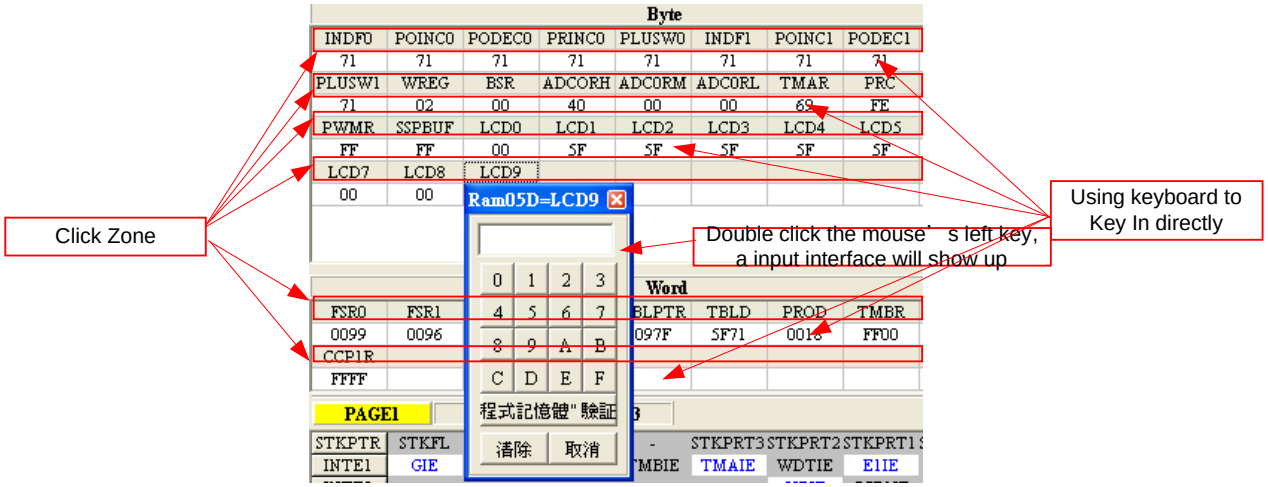


Figure 31

- Modify Register single 1 byte or single 1 bit

  After configuring Bit as 1, it will be highlighted in white, blue digit

  After configuring Bit as 0, it will be marked in backcolor ,black digit

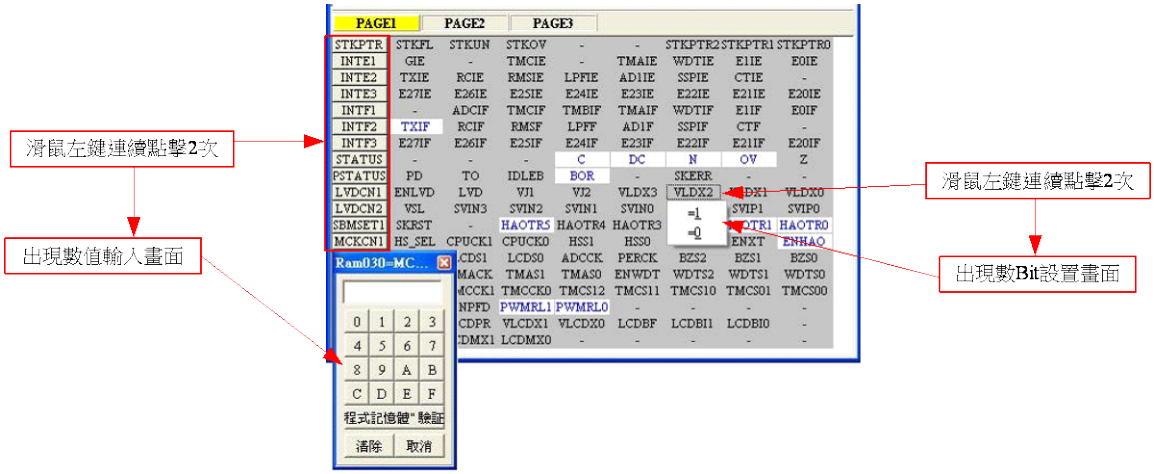


Figure 32

3.4 Watch Window

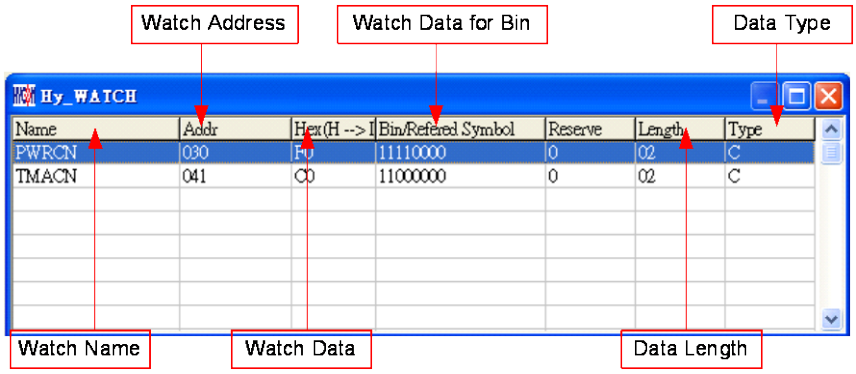


Figure 33

- Watch Name → Monitor Data name, program uses EQU or DS defined name
- Watch Address → Monitor Data Address
- Watch Data → Display value, can select display arrangement from right to left or from left to right,and display in decimal or hexadecimal.

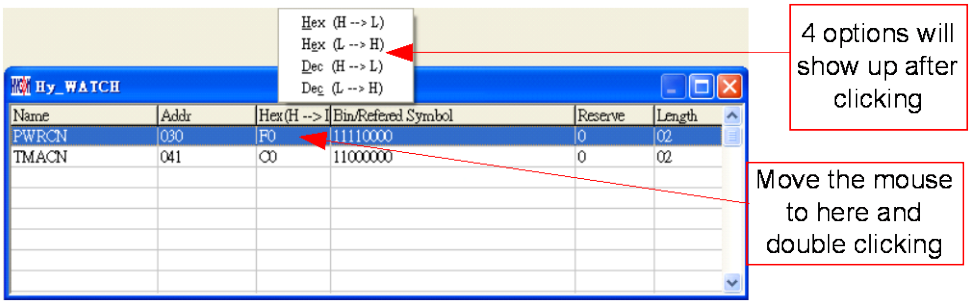


Figure 34

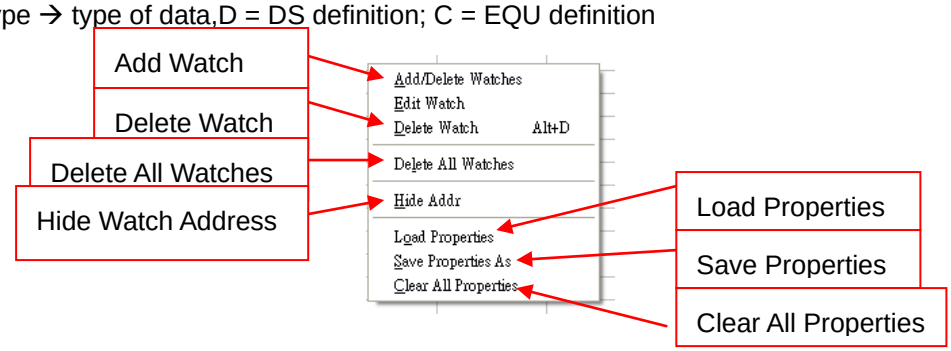
Hex (H → L): Hexadecimal display, address H/L from low to high

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

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

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

- Watch Data for Bin → Data ,display in binary system, only show up when using EQU defined address
- Data Length → Data length, display DS definition length; it will display 2 when using EQU definition
- Data Type → type of data,D = DS definition; C = EQU definition



- Monitor EQU defined Register or RAM, click right key of the mouse and select the register or RAM to be monitored, as shown in Figure 35.

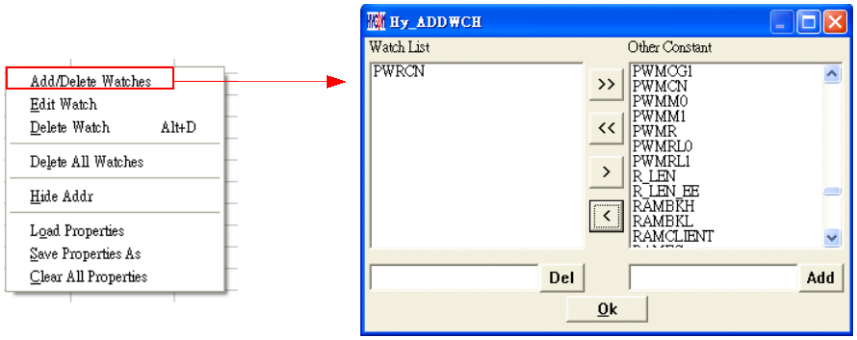


Figure 35

3.5 Stack Window

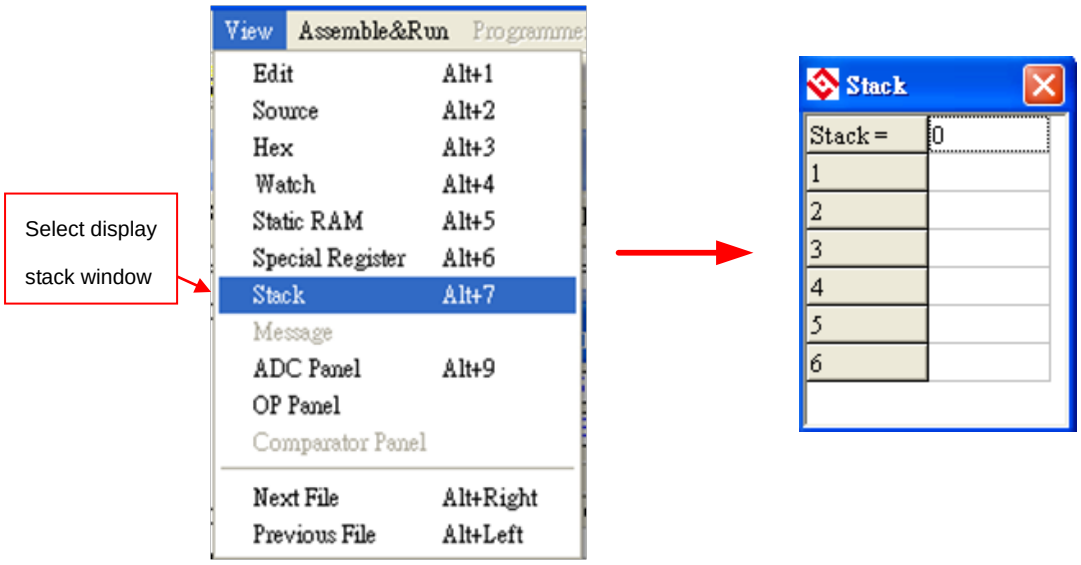


Figure 36

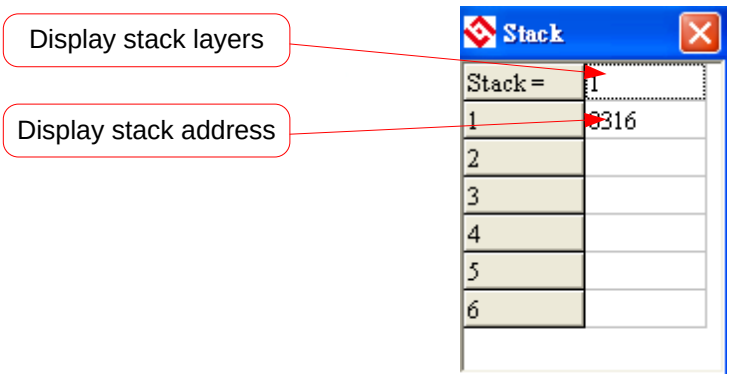


Figure 37

3.6 ADC Window

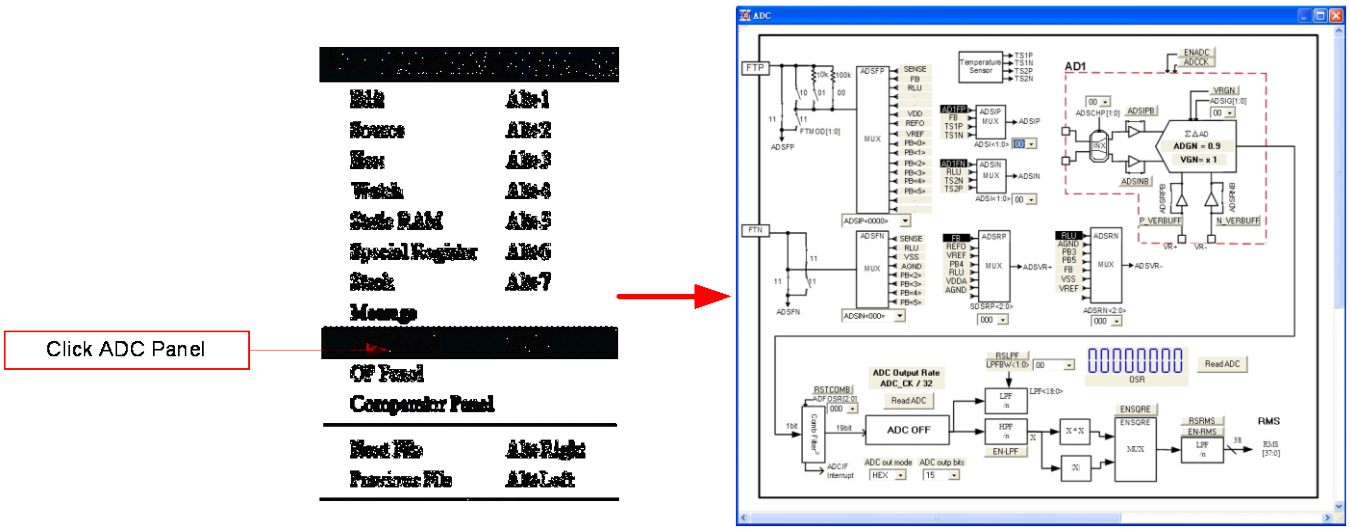


Figure 38

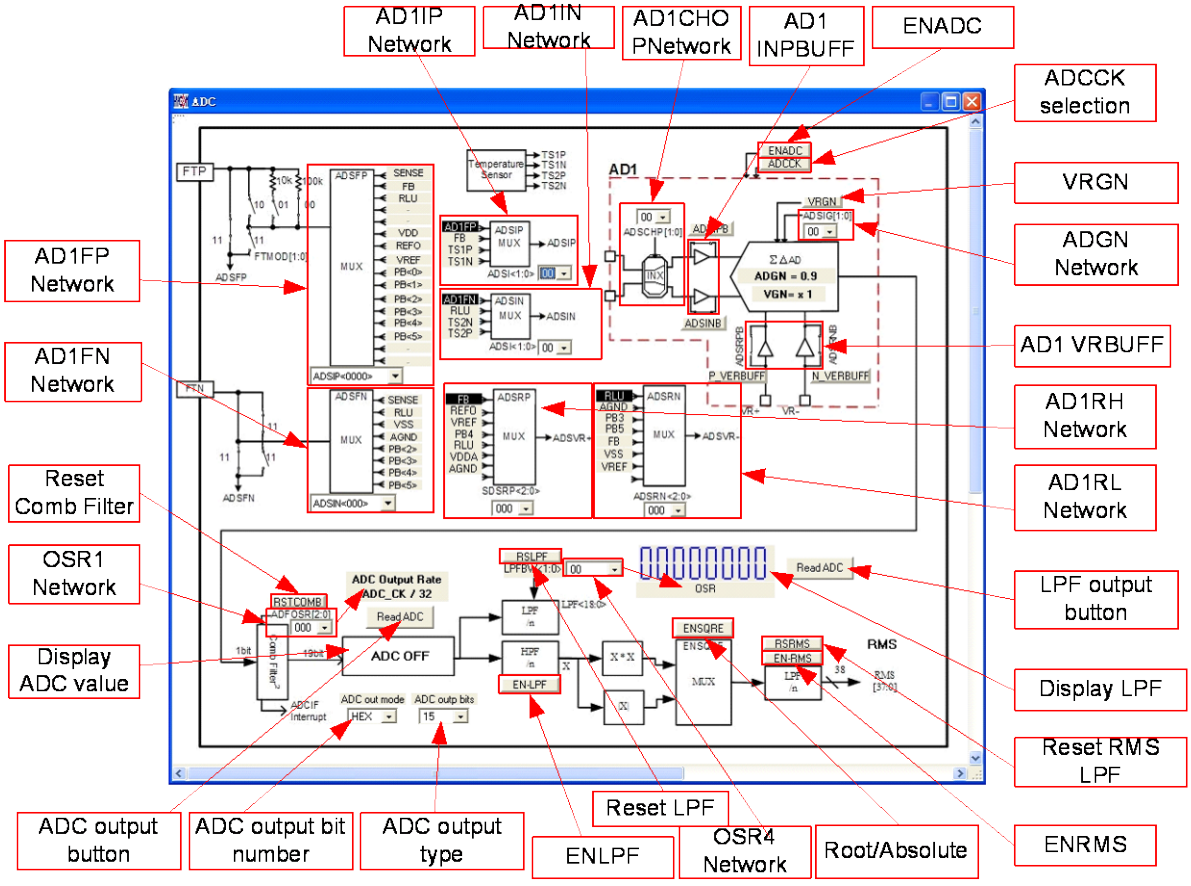


Figure 39

- AD1IP Network (ADSIP)
  (1) Click the network name with mouse left key, then AD1IP can go to the specified network
  (2) Click mouse left key and Figure 40 will be displayed,then on-off network can be selected

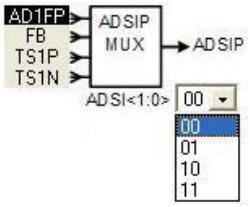


Figure 40

- AD1IN Network (ADSIN)
  (1) Click the network name with mouse left key, then AD1IN can go to the specified network
  (2) Click mouse left key and Figure 41 will be displayed,then on-off network can be selected.

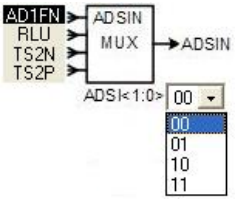


Figure 41

- AD1FP Network (ADSFP)
  (1) Click the network name with mouse left key, then AD1FP can go to the specified network
  (2) Click mouse left key and Figure 42 will be displayed,then on-off network can be selected.

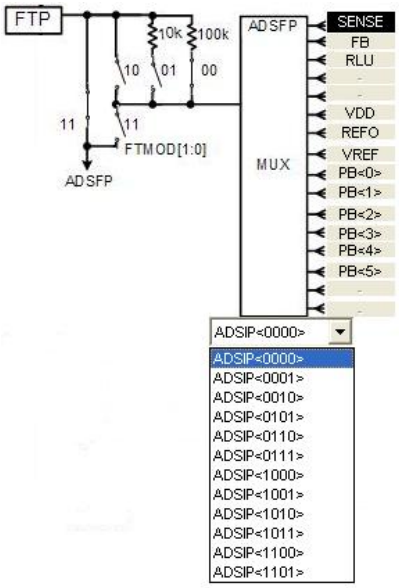


Figure 42

- AD1FN Network (ADSFN)
  (1) Click the network name with mouse left key, then AD1FN can go to the specified network
  (2) Click mouse left key and Figure 43 will be displayed,then on-off network can be selected.

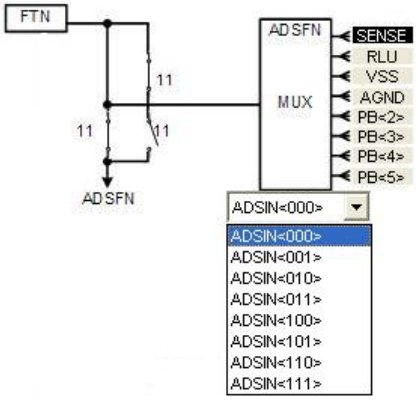
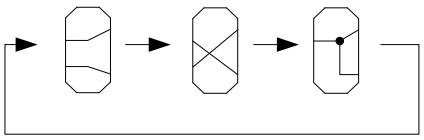


Figure 43

- AD1CHOP Network switch (ADSCHP)
  (1) Network is switchable by clicking mouse left key, 3 types are selective



  (2) Figure 44 will show up by clicking mouse left key, then users can select the switch network

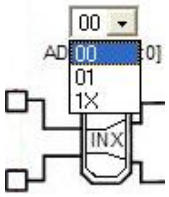


Figure 44

- AD1 INPBUFF switch
  (1) Click the specified network name with mouse left key, ADSIPB/ADSINB switch will be ON/OFF
  (2) Click the specified network switch with mouse left key, ADSIPB/ADSINB switch will be ON/OFF
- ADCCK option
  Click the specified network name with mouse left key, ADCCK will switch options. When ADCCK = OFF, HAO_OSC/10. When ADCCK = ON, HAO_OSC/20.

- ENADC

  Click the specified network name with mouse left key, ENADC will be ON/OFF. When ENADC = ON, ADC zone will display value

- AD1RH Network (ADSRP)

  (1) Click the specified network name with mouse left key, AD1RH can select to that network

  (2) Click the specified network switch with mouse left key , AD1RH can select to that network

  (3) Figure 45 will show up by clicking mouse left key, then users can select the switch network

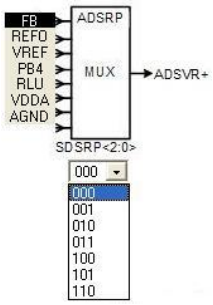


Figure 45

- AD1RN Network (ADSRN)

  (1) Click the specified network name with mouse left key, AD1RN can select to that network

  (2) Click the specified network switch with mouse left key, AD1RN can select to that network

  (3) Figure 46 will show up by clicking mouse left key, then users can select the switch network

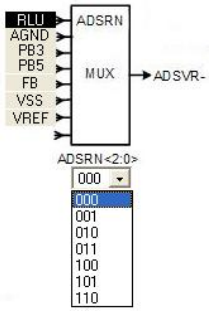


Figure 46

- AD1 VRBUFF Switch

  (1) Click the specified network name with mouse left key, P_VERBUFF/N_VERBUFF switch will be ON/OFF

  (2) Click the specified network switch with mouse left key, P_VERBUFF/N_VERBUFF switch will be ON/OFF

- ADGN Network

  Figure 47 will show up by clicking mouse left key, then users can select the network

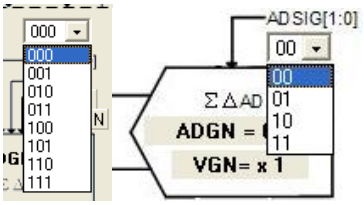


Figure 47

- VRGN

  Click the specified network name with mouse left key, VRGN can select to that network

- Reset Comb Filter

  Click the specified network name with mouse left key, RSTCOMB can select to that network.

  When RSTCOMB changed from OFF to ON, Comb Filter can be reset.

- OSR1 Network(ADFOSR)

  Figure 48 will show up by clicking mouse left key, then users can select the network

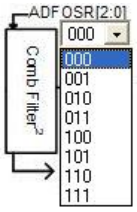


Figure 48

- ADC Display zone

  (1) Select ADC data output type → Hex or Dec output

  (2) Select ADC data output Bit → From 8 ~ 19 Bit output

  (3) Display output button → ADC output value will be displayed by clicking this button

- ENLPF

  Click the specified network name with mouse left key, ENLPF will be ON/OFF. When ENADC = ON, LPF zone will display value

- Reset LPF

  Click the specified network name with mouse left key, RSLPF can select to that network.

  When RSLPF changes from OFF to ON, LPF can de reset.

- OSR4 Network (LPFBW)

  Figure 49 will show up by clicking mouse left key, then users can select to the network

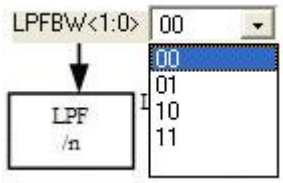


Figure 49

- ENSQUE

  Click the specified network name with mouse left key, ENSQUE will be ON/OFF. When ENSQUE = OFF, $RMS<37:0>=\sum\frac{X^2}{N}$. When ENSQUE=ON,

  $$RMS<37:0>=\sum\frac{|X|}{N}.$$

- ENRMS

  Click the specified network name with mouse left key, ENRMS will be ON/OFF.ON/OFF.

  When ENADC = ON, RMS zone will display value.

- Reset RMS LPF

  Click the specified network name with mouse left key, RSRMS can select to that network.

  When RSRMS changes from OFF to ON, RMS LPF can be reset.

3.7 Power Window

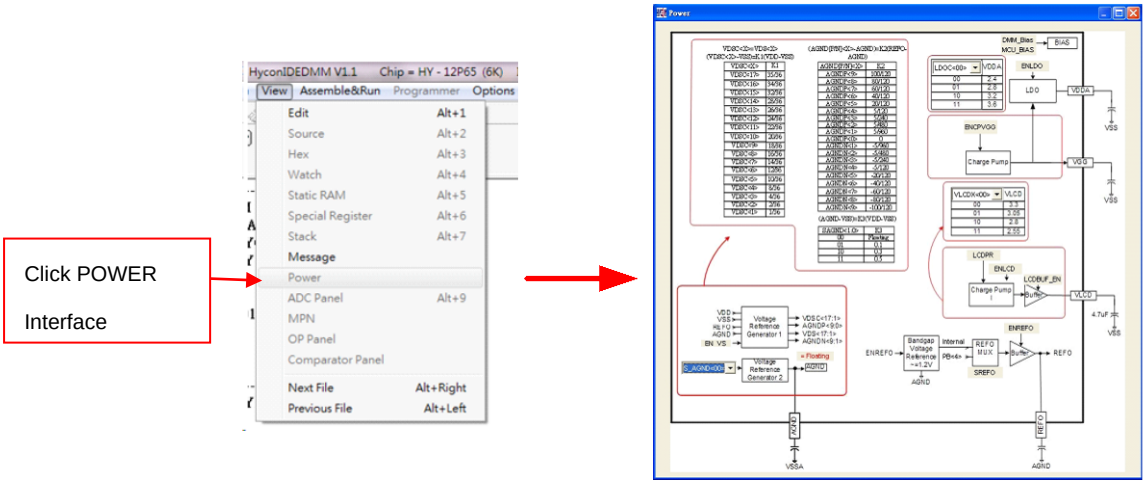


Figure 50

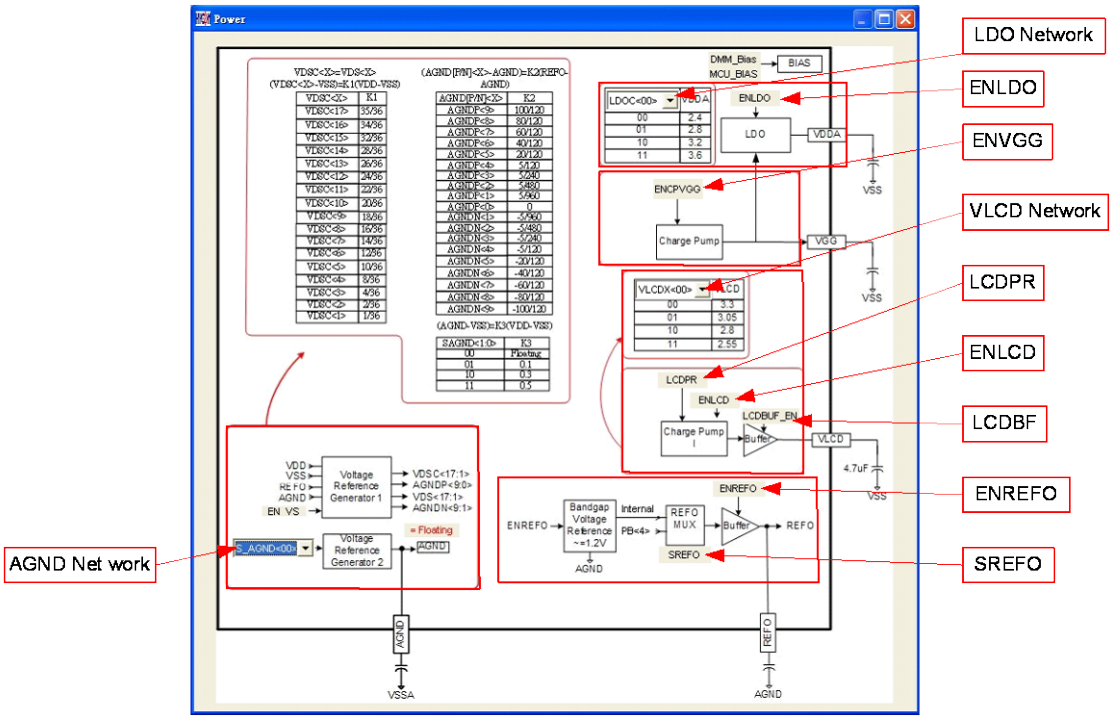


Figure 51

- ENLDO

  Click the specified network name with mouse left key, ENLDO will be ON/OFF. ENLDO display status, when ENLDO = 1, VDDA output voltage.

- LDO Network

  Figure 52 will show up by clicking mouse left key, and then users can select the switch network

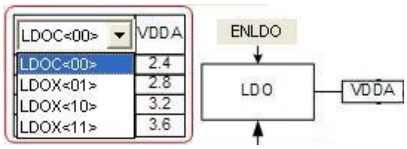


Figure 52

- ENVGG

  Click the specified network name with mouse left key, ENVGG will be ON/OFF. ENVGG display status, when ENVGG = 1, VGG output voltage

- ENLCD

  Click the specified network name with mouse left key, ENLCD will be ON/OFF. ENLCD display status, when ENLCD = 1, start LCD

- LCDPR

  Click the specified network name with mouse left key, LCDPR will be ON/OFF. LCDPR display status.

  when LCDPR= 1, VLCD power sauce is generated from internal IC.

  When LCDPR= 0, VLCD power sauce is generated from external input pin

- LCDBF

  Click the specified network name with mouse left key, LCDBF will be ON/OFF. LVDBF display status.

- VLCD Network

  Figure 53 will show up by clicking mouse left key, and then users can select the switch network

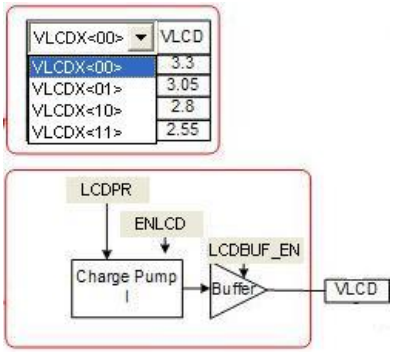


Figure 53

- ENREFO

  Click the specified network name with mouse left key, ENREFO will be ON/OFF. ENREFO display status, when ENREFO = 1, REFO output voltage

- SREFO

  Click the specified network name with mouse left key, SREFO will be ON/OFF, SREFO display status.

  When SREFO= 1, REFO power sauce is generated from internal IC.

  When SREFO= 0, REFO power sauce is generated from external PB< 4 > pin

- AGND Network

  Figure 54 will show up by clicking mouse left key, and then users can select the switch network

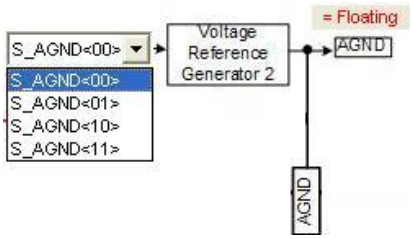


Figure 54

3.8 MPN Window

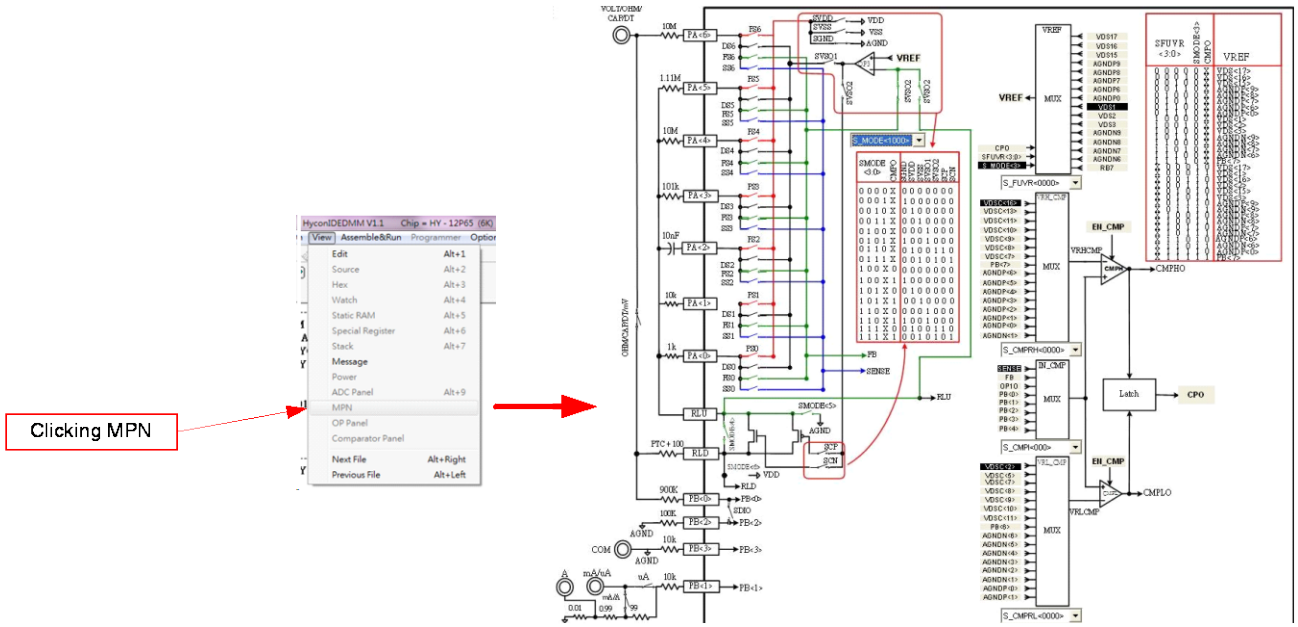


Figure 55

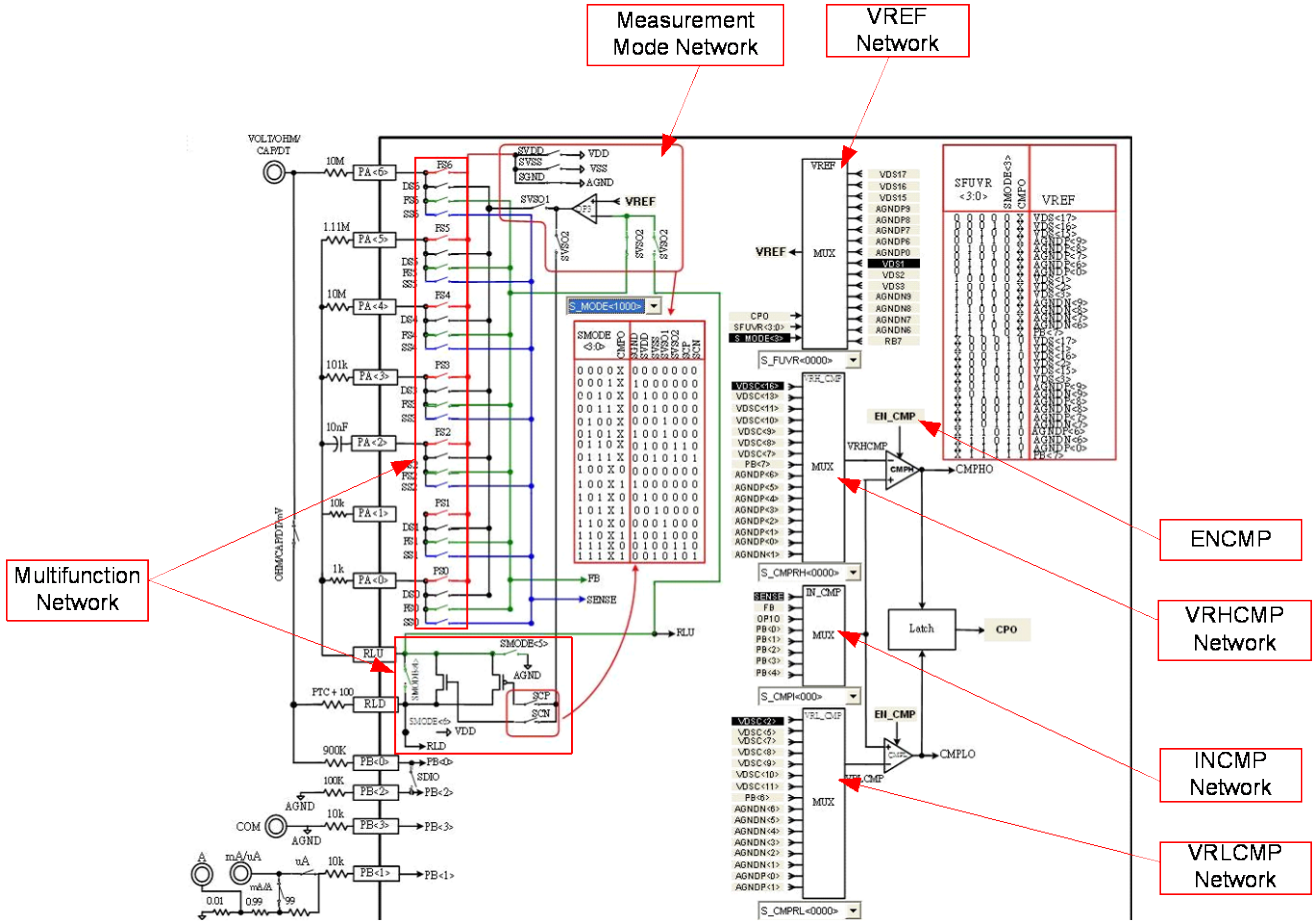


Figure 56

- ENCMP

  Click the specified network name with mouse left key, ENCMP will be ON/OFF, ENCMP display status.

- INCMP Network

  (1) Click the specified network name with mouse left key, INCMP can select to that network

  (2) Click the specified network switch with mouse left key, INCMP can select to that network

  (3) Figure 57 will show up by clicking mouse left key, and then users can select the switch network

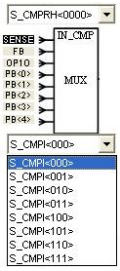


Figure 57

- VRHCMP Network

  (1) Click the specified network name with mouse left key, VRHCMP can select to that network

  (2) Click the specified network switch with mouse left key, VRHCMP can select to that network

  (3) Figure 58 will show up by clicking mouse left key, and then users can select the switch network

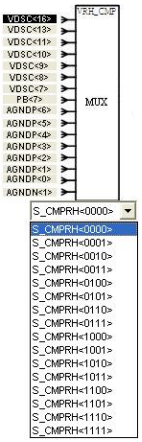


Figure 58

- VRLCMP Network

  (1) Click the specified network name with mouse left key, VRLCMP can select to that network

(2) Click the specified network switch with mouse left key, VRLCMP can select to that network

(3) Figure 59 will show up by clicking mouse left key, and then users can select the switch network

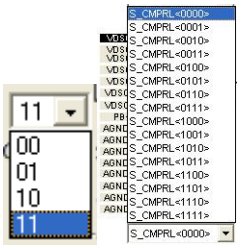


Figure 59

- VREF Network

(1) Click the specified network name with mouse left key, VREF can select to that network

(2) Click the specified network switch with mouse left key, VREF can select to that network

(3) Figure 60 will show up by clicking mouse left key, and then users can select the switch network

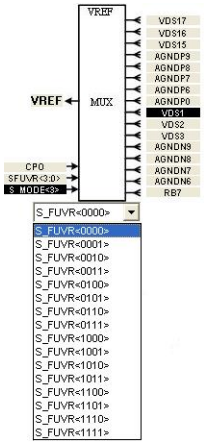


Figure 60

- Measurement Mode Network

(1) Click the specified network name with mouse left key, users can select to that network

(2) Click the specified network switch with mouse left key, users can select to that network

(3) Figure 61 will show up by clicking mouse left key, and then users can select the switch network

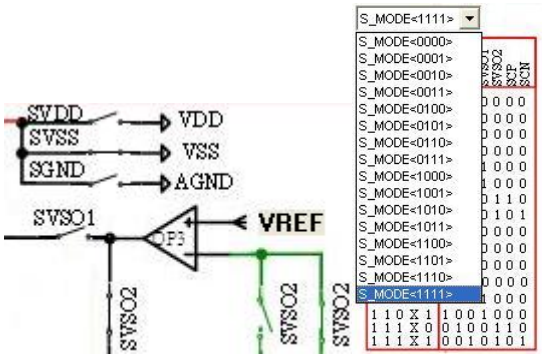


Figure 61

- Multi-function Network
  - (1) Click the specified network switch with mouse left key, users can select to that network
  - (2) Figure 62 will show up by clicking mouse left key, and then users can select the switch network

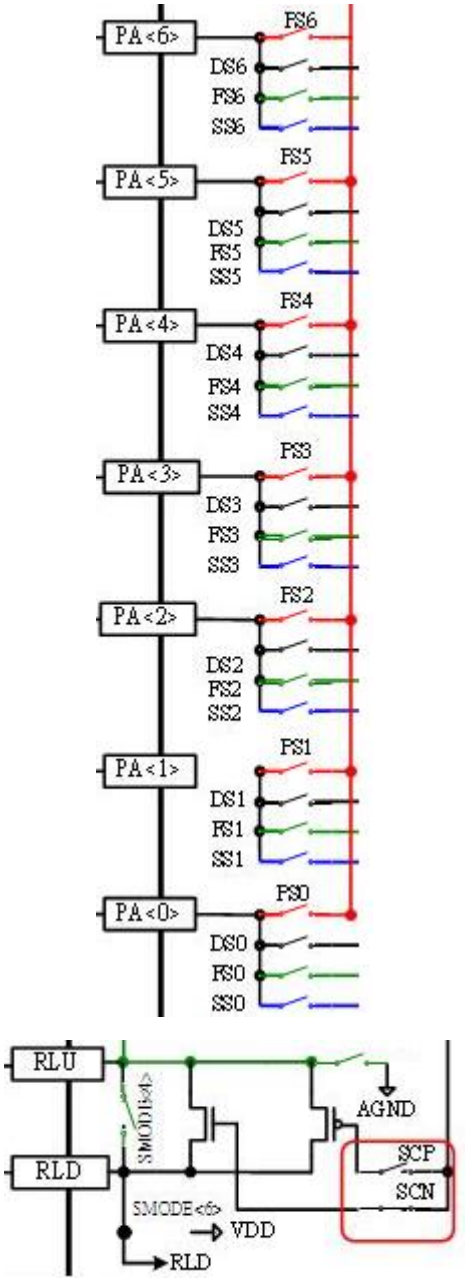

PA<6>
PA<5>
PA<4>
PA<3>
PA<2>
PA<1>
PA<0>
FS6
DS6
FS6
SS6
FS5
DS5
FS5
SS5
FS4
DS4
FS4
SS4
FS3
DS3
FS3
SS3
FS2
DS2
FS2
SS2
FS1
DS1
FS1
SS1
FS0
DS0
FS0
SS0
RLU
RLD
SMODE<4>
AGND
SCP
SCN
SMODE<6>
VDD
RLD

Figure 62

3.9 Register Record

If the register or SRAM has been revised manually after access to simulation window (hardware emulation or software simulation), the data will be recorded (no matter the RAM, Register, ADC, OP and CMP was revised by any window). The data will be revealed after pressing the button “SRAM record”. At this time, windows will suspend until it is closed to execute other commands.

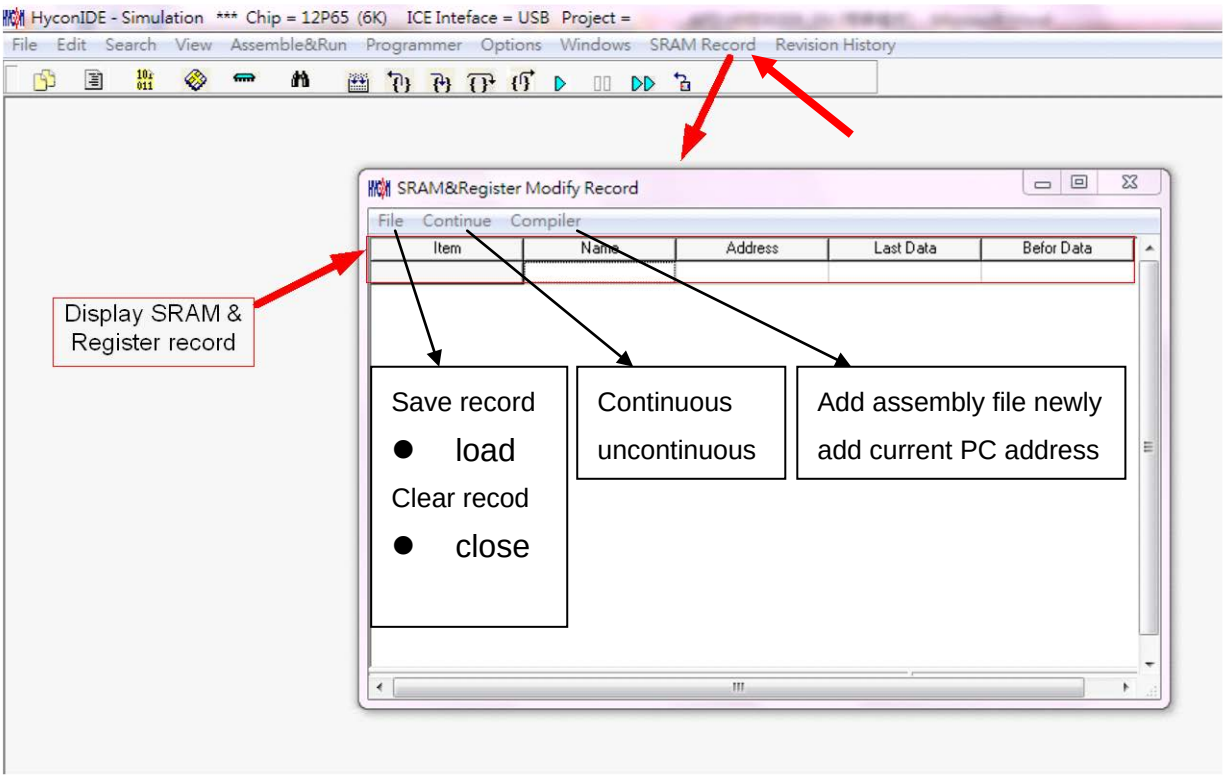


Figure 63

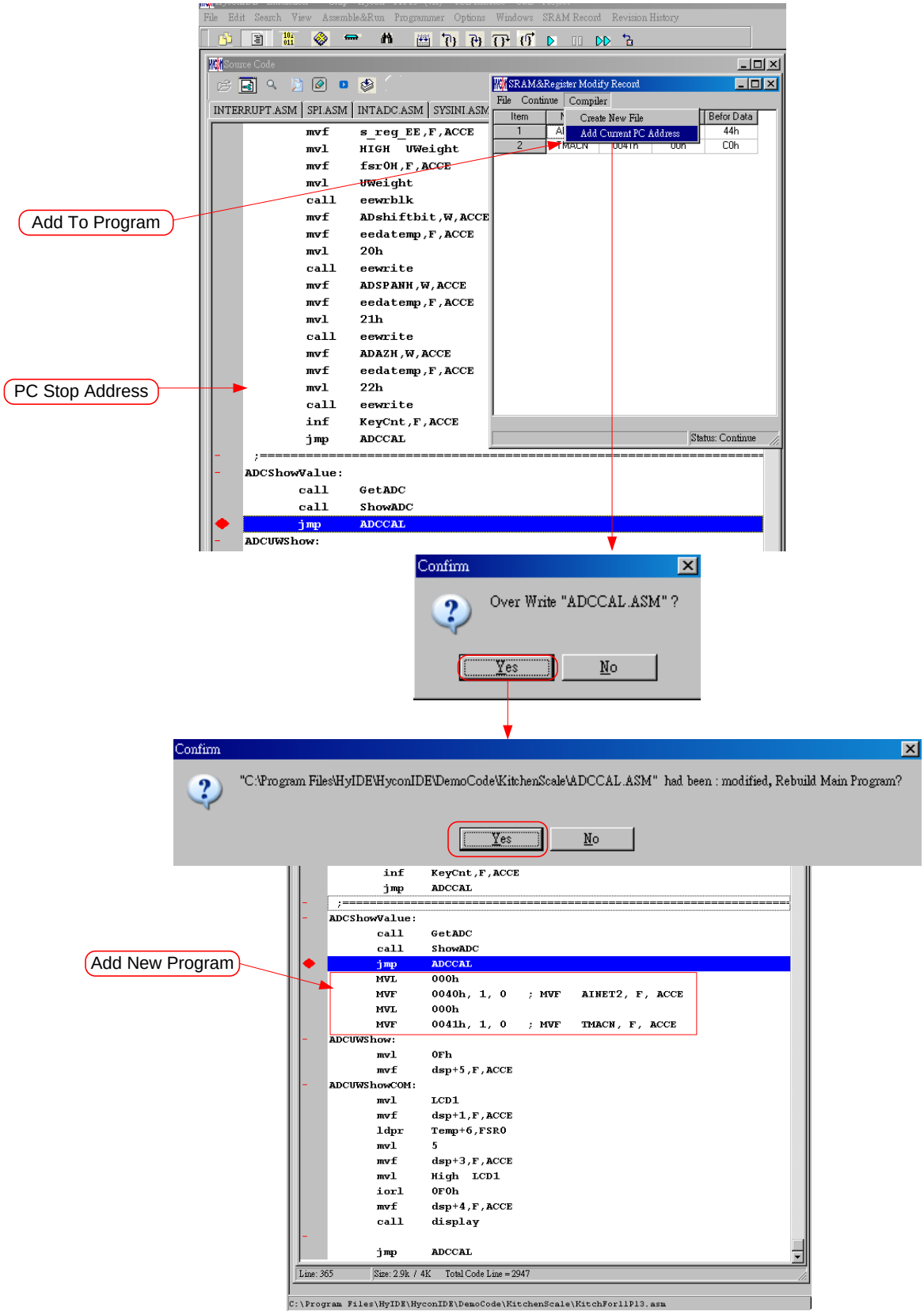

Add To Program
PC Stop Address
Add New Program
SRAM&Register Modify Record
Create New File
Add Current PC Address
Confirm
Over Write "ADCCAL.ASM" ?
Yes
No
Confirm
"C:\Program Files\HyIDE\HyconIDE\DemoCode\KitchenScale\ADCCAL.ASM" had been : modified, Rebuild Main Program?
Yes
No

Figure 64

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 arguments of 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 when the instruction is bit as Figure 65 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 66 illustrated.
- When command is MVFF (not Macro), the first argument value will appear if the cursor points to the first argument. If the cursor points to the second argument, the second argument value will show up as shown in Figure 67.
- If the argument is INDF0, POINC0, PODEC0, PRINC0, INDF1, POINC1, PODEC1 and PRINC1, the Data will be FSR0 or the address Data of FSR1 as Figure 68 described.
- If the argument is PLUSW0 or PLUSW1, the Data is FSR0+WREG or the address Data of FSR1+WREG as illustrated in Figure 69.

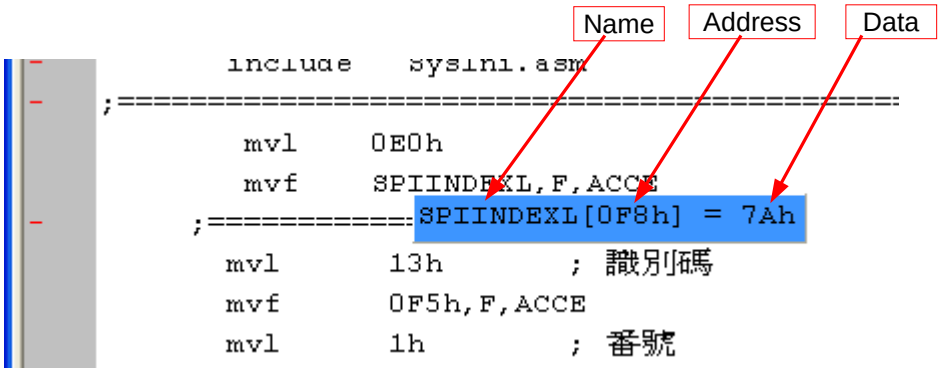


Figure 65

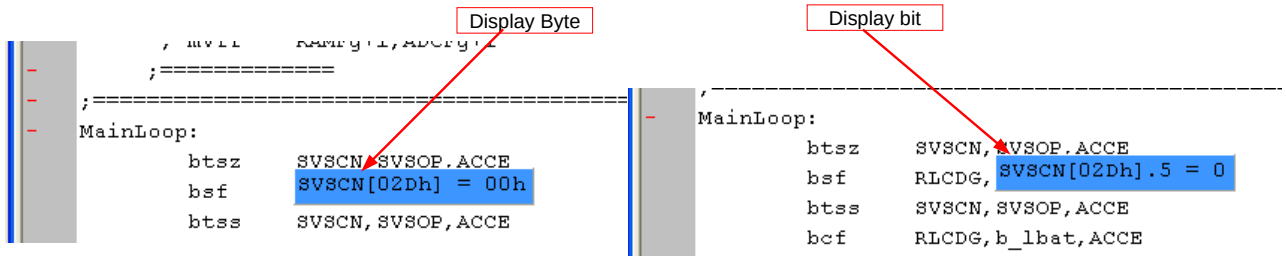


Figure 66

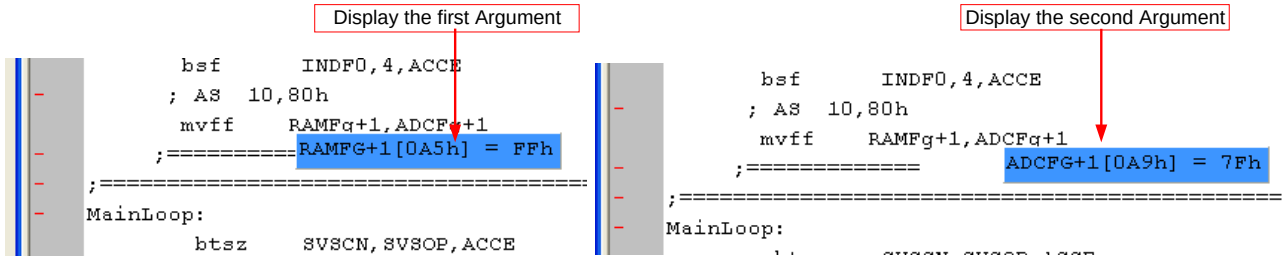


Figure 67

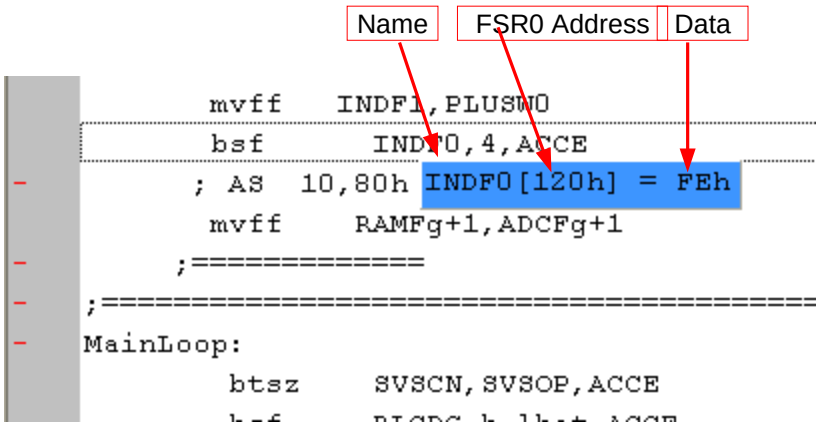


Figure 68

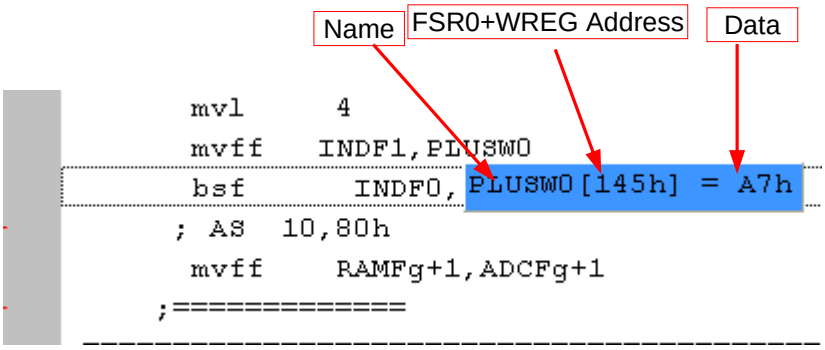


Figure 69

4. Programming Windows

4.1 Interface Setup

To enter into programming windows Click “Options”, a option window will appear. Click the interface setup, as shown in Figure 70.

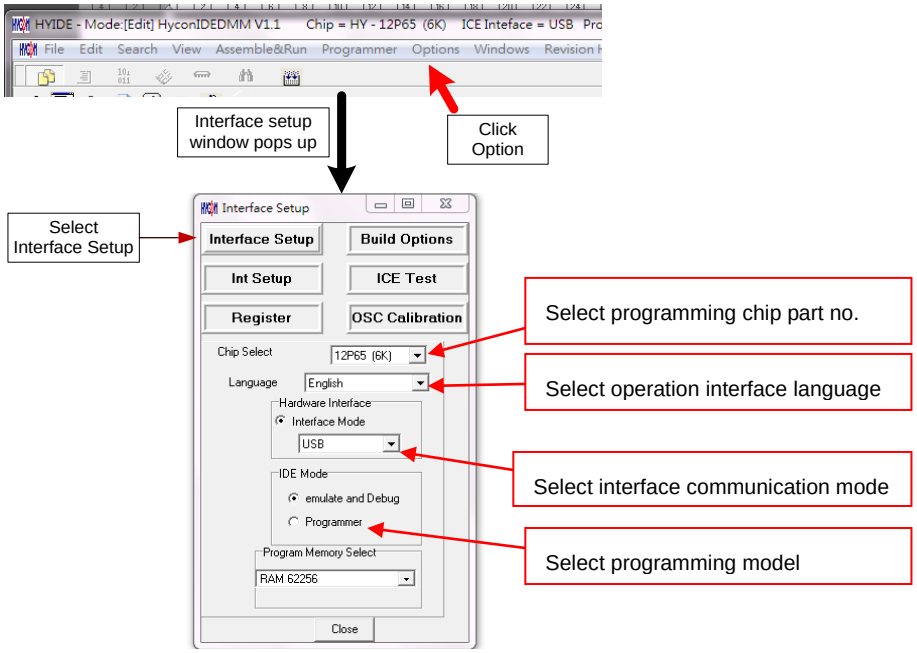


Figure 70

Chip Select → Choose the specific programming IC part no. If programmed IC differs from the selected IC, Blank Check, Program and Verify will fail.

Language → Choose operation interface language, like Chinese or English.
Hardware Interface → USB interface or Parallel Port interface is selectable.

IDE Mode → Programmer or emulate and Debug is selectable.

When interface setup finished, click Build Options to select programming configuration. As described in Figure 71.

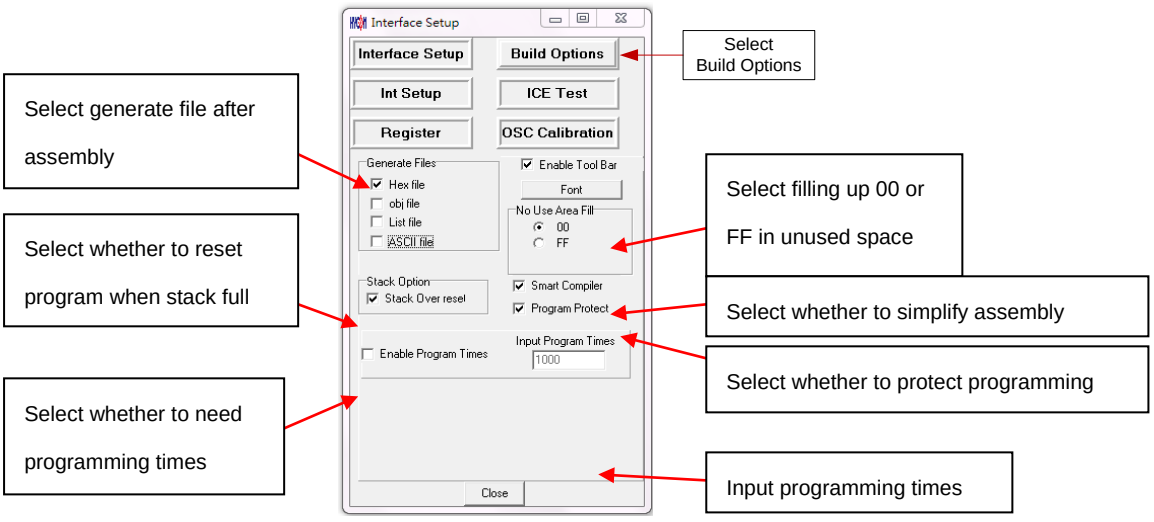


Figure 71

Generate Files → Choose generated file after assembly

Stack Option → Choose whether to reset when stack overflow or stack full after OTP program operation.

No Use Area Fill → Fill up 00 or FF in unused program space after assembly.

Smart Compiler → Choose whether to simplify assembly.

Enable Program Times → Choose whether to enable Download program times.

Input Program Times → Input Download program times (Maximum: 2147483646. Minimum: 1).

After assembly finished, click “ICE Test” to test whether ICE operation voltage is normal as Figure 72 (Connect Adapter 9V and connect USB Line to ICE. Make sure the ICE is connected, and then click “Option”).

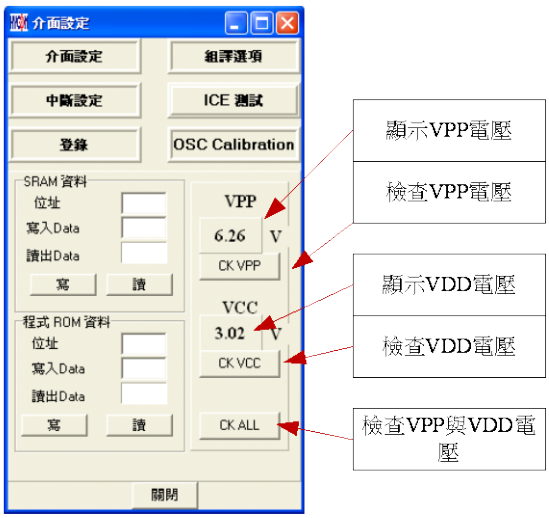


Figure 72

VPP voltage when programming: 5.6<VPP<6.6

VDD voltage when programming: 2.7<VDD<3.6

4.2 Operation Procedures

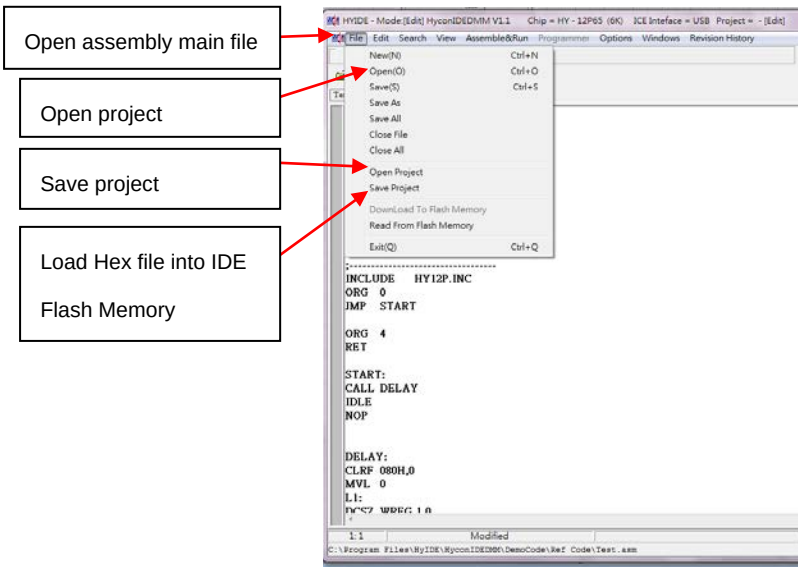


Figure 73

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 Assembly

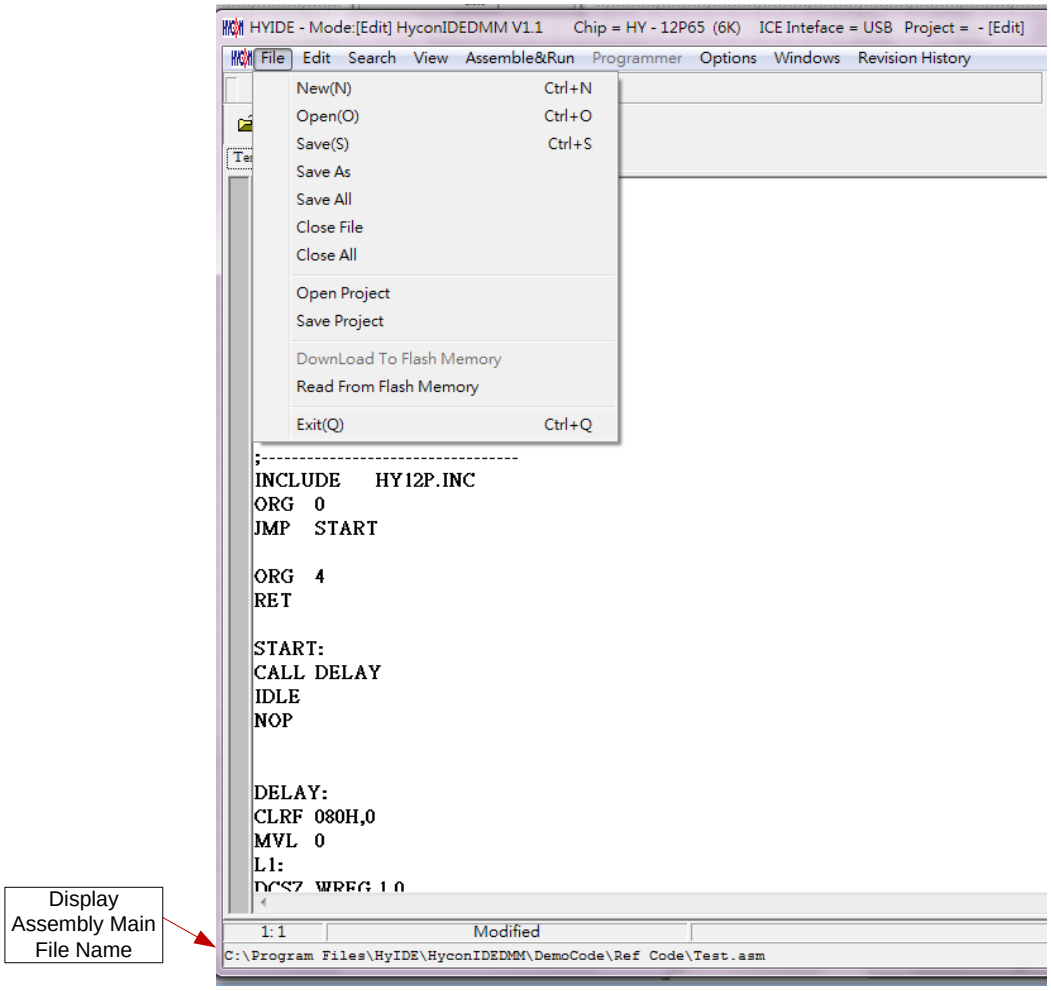


Figure 74

Open source code main file and it will be displayed under assembly main file name. If the displayed name differs from main file, points the mouse to the specific file and presses mouse right key. Set this file as the assembly main file as shown in Figure 75.

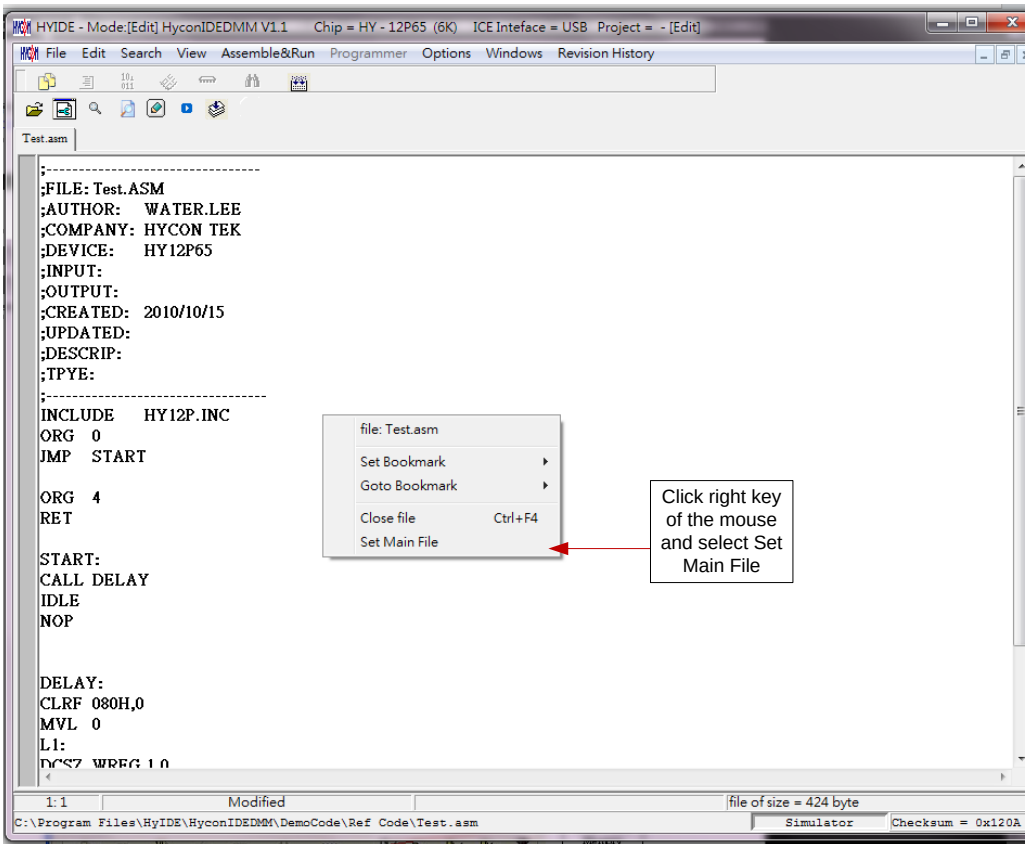


Figure 75

Assembles Source Code and download the file to programmer or IDE Flash Memory, as Figure 76 illustrated.

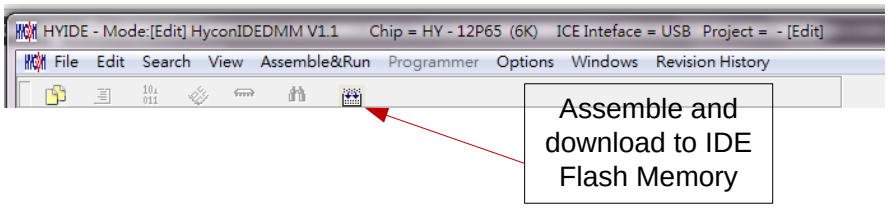


Figure 76

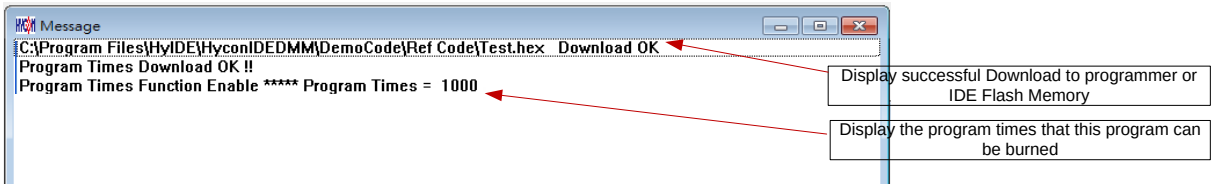


Figure 77

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

If there is enabled program times in the assembly option, information column will display the programming times as shown in Figure 77.

After assembling completed, Hex filename and Checksum will be displayed underneath, as Figure 78 illustrated.

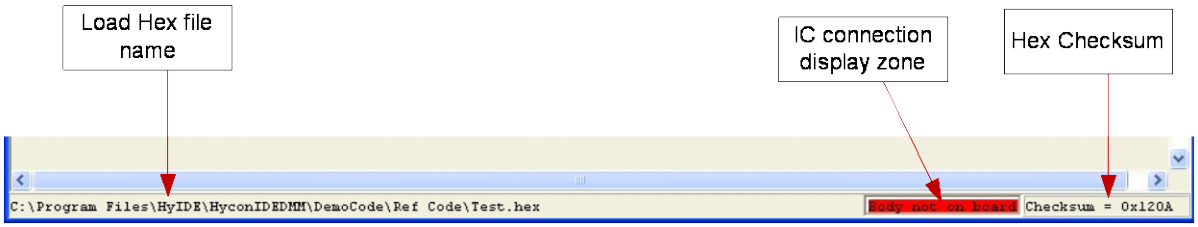

Load Hex file name
IC connection display zone
Hex Checksum
C:\Program Files\HyIDE\HyconIDEDMM\DemoCode\Ref Code\Test.hex
Body not on board
Checksum = 0x120A

Figure 78

4.2.2 Download HEX File

This function is no longer support since HyconIDEDMM V3.0 vervison.

If you would like to download Hex File, please conduct as the way of Compier Source Code .

4.3 PC Online OTP Programming

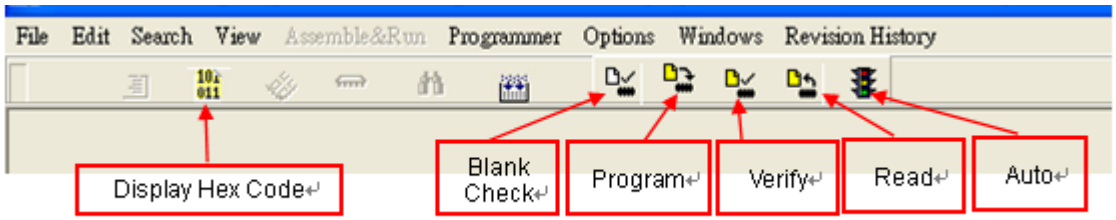


Figure 79

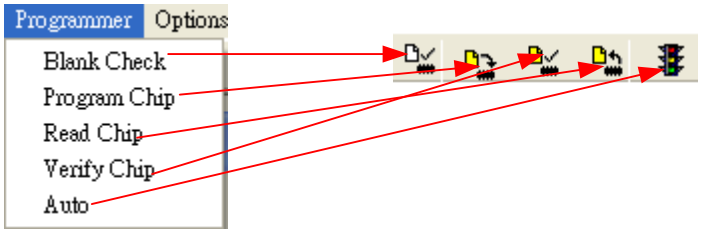


Figure 80

Blank Check, Programming, Verify and Read Commands 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 failed.

Figure 81

Figure 82

Figure 83

Make sure the selected programming IC part number is the same with the OTP part number in the topic window as Figure 70 described. When programmer executes Blank Check, Programming and Verify

commands, program will check whether the IC part number and OTP programming part number are identical. If the part number is different, the data will not be written into OTP and an error message will be displayed in information column as 81 described.

If users intend to find out whether the part number is correct before programming, point the cursor to ”IC Connection Status Display” and click the mouse left key. If the selected IC is correct, a message will show up as Figure 82. If it is incorrected, the message will be displayed as Figure 83. If “Enable Program Times” has been marked up, the spare program times will be displayed in the message column as Figure 84 illustrated.

Figure 84

4.3.1 Blank Check

Blank Check icon is  . The internal code of Blank ICs that have yet not been programmed is 0xFFFF. The purpose of checking the IC is to make sure the OTP address content is 0xFFFF. Blank Check means whether the OTP addrss content is 0Xffff.If the IC selection is correct and the content is empty, a message will appear as Figure 86.

Figure 85

If the IC selection is incorrect or the content is not empty, a message will show up as Figure 86.

Figure 86

4.3.2 Program

The icon of Program is  . 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, programmer can operate the program as user 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 programming succeeds, message will appear at the information column as Figure 87 illustrated. If “Enable Program Times” is ticked up, the enable program times will minus 1 and the program times left will be revealed in the message column.

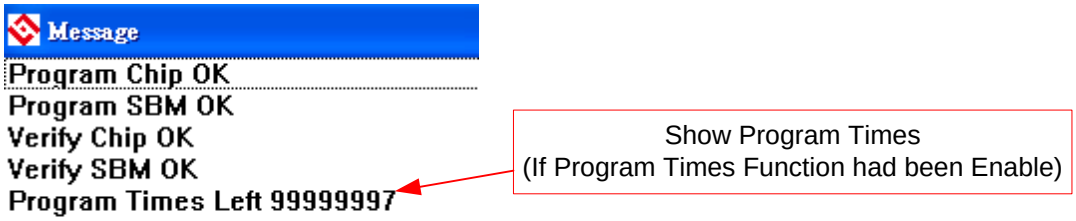


Figure 87

If the IC selection is incorrect and the programming fails, a message will show up as Figure 88.

Figure 88

4.3.3 Verify

The icon of Verify is . The purpose to verify programming IC is to compare if the program written into IC OTP equals to the program downloaded to programmer.

Verify programming 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 failed.

If IC selection and program verification is successful, a message will appear as Figure 89.

Figure 89

If IC selection is incorrect or the program verification miscarries, a message will pop up as Figure 90.

Figure 90

4.3.4 Read

The icon of Read is . 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 91. Its content will reveal at ”Display Code” window.

If the IC is protected by program, this function is ineffective or the comparison failed.

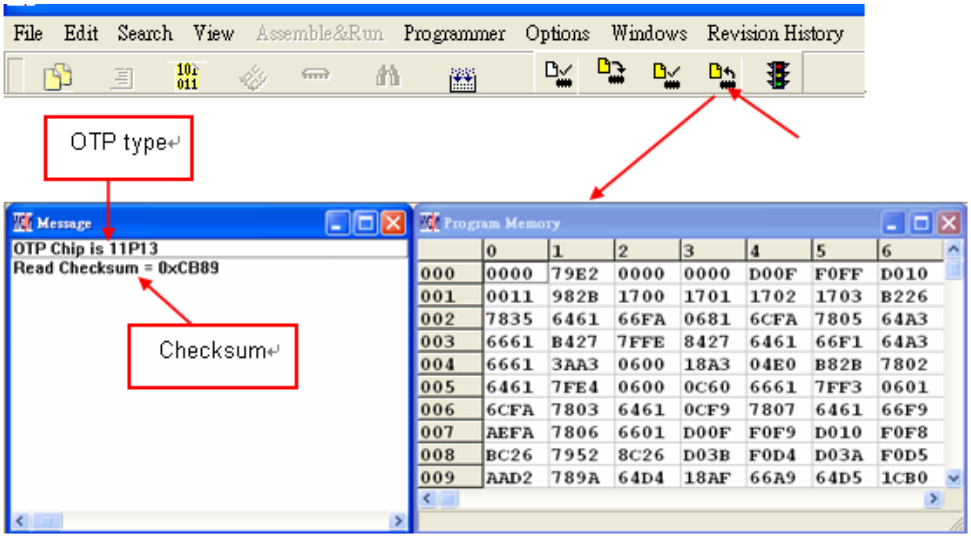

File Edit Search View Assemble&Run Programmer Options Windows Revision History
OTP type
Message
OTP Chip is 11P13
Read Checksum = 0xCB89
Checksum
Program Memory
0 1 2 3 4 5 6
000 0000 79E2 0000 0000 D00F F0FF D010
001 0011 982B 1700 1701 1702 1703 B226
002 7835 6461 66FA 0681 6CFA 7805 64A3
003 6661 B427 7FFE 8427 6461 66F1 64A3
004 6661 3AA3 0600 18A3 04E0 B82B 7802
005 6461 7FE4 0600 0C60 6661 7FF3 0601
006 6CFA 7803 6461 0CF9 7807 6461 66F9
007 AEFA 7806 6601 D00F F0F9 D010 F0F8
008 BC26 7952 8C26 D03B F0D4 D03A F0D5
009 AAD2 789A 64D4 18AF 66A9 64D5 1CB0

Figure 91

4.3.5 AUTO

The icon of Auto is . Auto integrates Blank Check, Program and Verify function. 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 as Figure 92 displayed. If the option, ”Enable Program Times” is ticked up, the program permitted times will reduce 1 and the program times left will be shown in the message column.

Figure 92

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

4.4 PC Offline Programming

4.4.1Programming Description

As the development process evolves to engineering trial production, the programmer can be used alone. It is not necessary to connect programmer to PC.

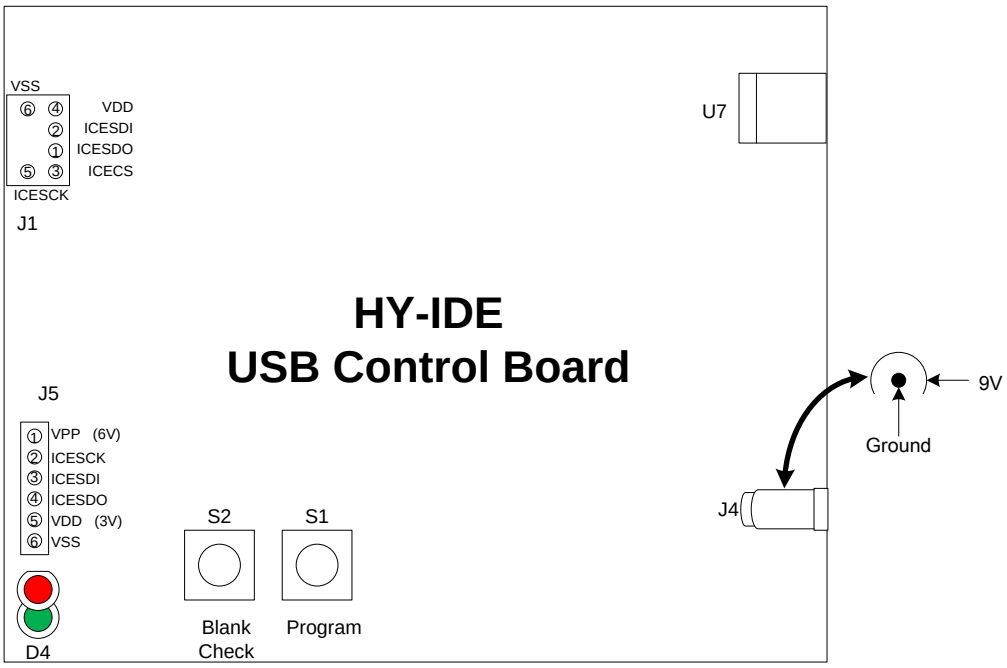


Figure 93

J4 : Adapter 9V input

 supply programming power source, connected when programming OTP

U7 : USB connector to PC

Downloading program for emulation and debug

Downloading programming code for HY12P series

J5 : HY12P series programming control port

PIN 1 VPP(6V) connects to VPP of the IC

PIN 2 ICESCK connects to PSCK of the IC

PIN 3 ICESDI connects to PSDI of the IC

PIN 4 ICESDO connects to PSDO of the IC

PIN 5 VDD(3V) connects to VDD of the IC

PIN 6 VSS connects to VSS of the IC

S1 : IC programming button

S2 : Blank Check key

D4 : Two-color LED；

Red LED: OTP programming, Blank Check…failure signal.

Green LED: OTP programming, Blank Check…success signal.

Green LED: USB/Adapter power-on signal.

Figure 94 shows the connection way of connecting programming IC to control board programming pin when PC online.

Figure 94

Figure 95 shows the connection way of connecting offline programming IC to control board programming pin after program finish download when PC offline.

Figure 95

To implement offline operation, Hex file must be firstly downloaded to programmer Flash Memory. The procedure can refer to chapter 4.2.1 or chapter 4.2.2.

To implement offline operation, press S2 button to check if the IC is blank and the D4 Green LED should be lighted up.

S1 Button is programming button. Its procedures are: Blank Check → Program → Verify. If ”Program Protection” of “Assemble Option” is ticked before downloading data to Flash Memory, program protection will

be executed after Verify completed. If ”Program Protection” is not picked up, it will stop after Verify accomplished and D4 Green LED will be lighted up.

When Programming finished, please press S2 to check if the IC is blank. At this moment, the D4 Red LED should be lighted up, which means the programming is successful (data has been programmed into IC, so Blank Check failed).

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

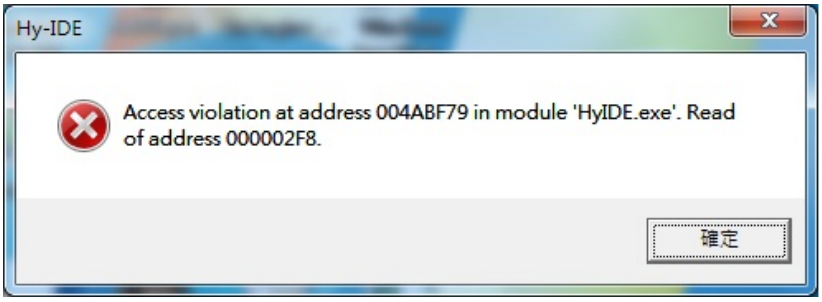
The menu of ”Assemble Option” in interface setup has an option of ”Enable Program Times” as described Figure 71. This option restricts the permitted program times of download program.

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

After ticking up ”Enable Program Times”, key in the program times in the column 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 but Blank Check still operates normally.

5. Troubleshooting

5.1HYCON-IDE Execution Problem



The problem might be happened under Microsoft Vista or Windows 7 system environment. To avoid the problem, the limit of authority for HYCON-IDE execution has to be set as system administrator to execute HYCON-IDE by administrator status.

6. Revision History

Major differences are stated thereinafter:

Version	Page	Revision Summary
V01	ALL	First Edition
V02	CH4.2.2	Remove ”Download Hex File” function description