HY16F Series
IDE Software Instruction Manual

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1. IDE Software Introduction

HY16F IDE(Integrated Development Environment) software developmental instrument has adopted AndeSight RDS as its version, which has integrated and developed an environment for the new generation in Andes Technology. It supports the latest 32 Bit CPU core (N801&E801), which suffices the requirements for MCU clients to develop rapidly. AndeSight IDE Software adopts the interface developed by Andes Technology. The software is based on Eclipse IDE combining external member and module of GCC GNU C Complier and GDB Debugger . Many firmware programmers are already accustomed to develop program through IDE software. For them, it becomes extremely difficult to use GCC compiler and GDB debugger by Command-Line approach only. However, AndeSight IDE possesses a strong and lucid graphical operation interface, which is easy to get started and for further concentrated on product development.

2. IDE System Requirement

Minimum system disposition required by operating AndeSight RDS IDE:

(1) PC/NB Hardware Requirement

(1.1) X86 System CPU Compatible to IBM PC

(1.2) 4 GB DDR Memory

(1.3) 8GB HD Hard Disk Drive Capacity

(2) Supporting Product Model:

(2.1) HY16F18 Series

(2.2) HY16F19 Series

(2.3) HY16F19xB Series

(2.4) HY16F3981 Series

(3) Hardware Supporting Model:

(3.1) HY16F18 Series Developmental instrument, HY16F18X-DK0x series Development

(3.2) HY16F19 Series Developmental instrument, HY16F19X-DK0x series Development

(3.3) HY16F3981 Series Developmental instrument, HY16F3981-DK0x series Development

(4) Software Supporting Version:

(4.1) AndeSight RDSV2.1.1 version

(4.2) Above HY16F_RDSp3_Device_V01

(5) Operation System Requirement:

Windows XP (32-Bit System),Windows 7(32/64-Bit System), Windows 8(32/64-Bit System), Windows 10 (32/64-Bit System).

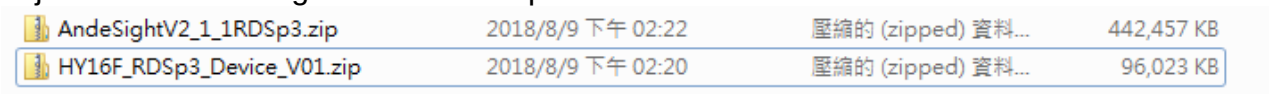
3. IDE Software Installation

3.1. Software Installation

Include major programs of HY16F IDE (AndeSight RDS) and HY16F product model (HY16F_Device). Please install AndeSightV2_1_1RDSp3 in the compact disk first. Upon installation completion, please install additional HY16F_DeviceVx.x.exe program, so as to increase settings in HYCON HY16F developmental environment. Users are asked to execute through following the installation steps.

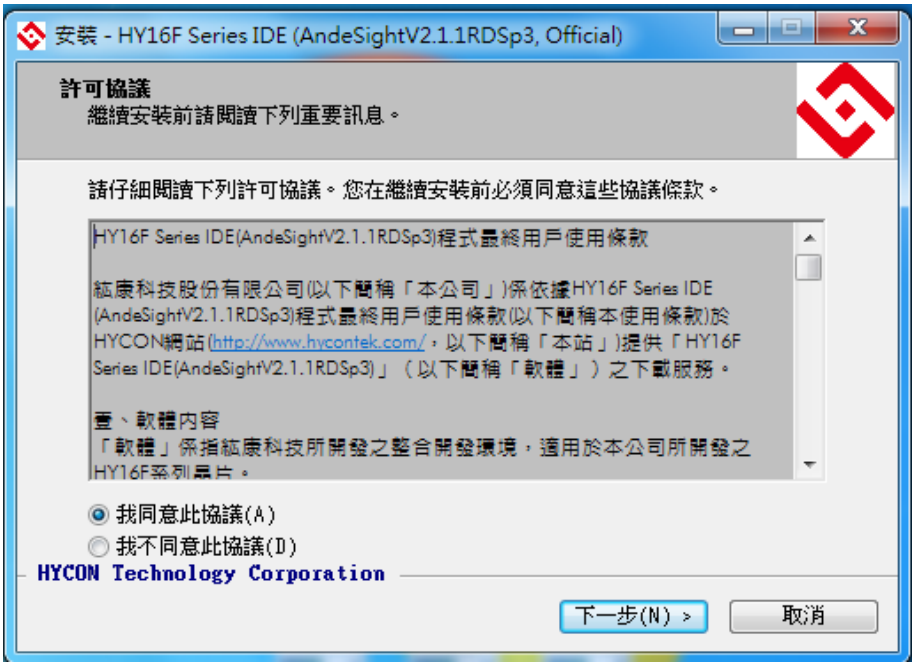
Regarding to access authority in Windows 7 Operating System above, administrator visit permission is required before computer software can be installed.

Major Installation Program in the Compact Disk

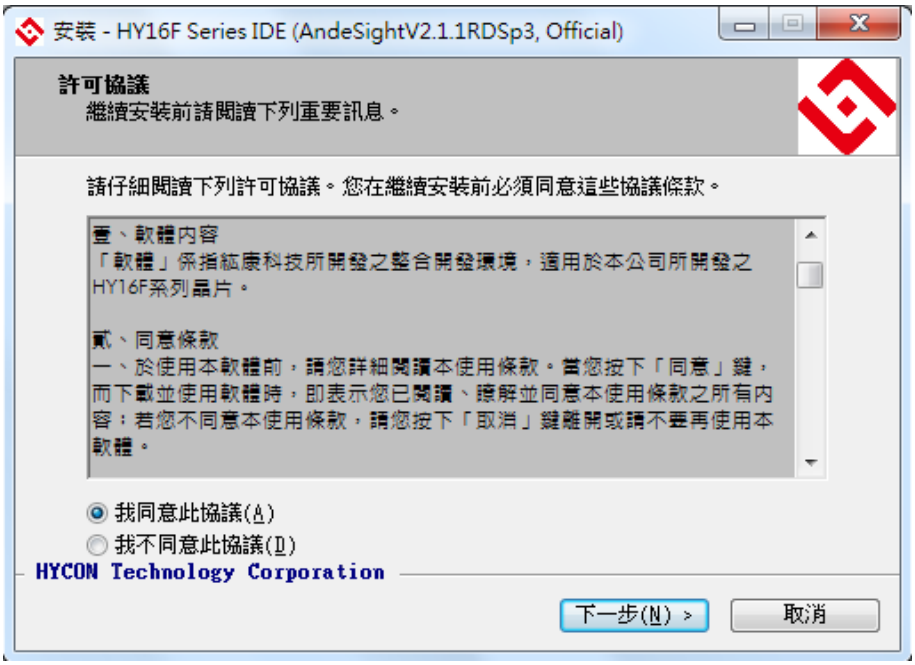


3.2. HY16F Series IDE Installation

※A：HY16F Series IDE Installation,



※B：License Agreement,

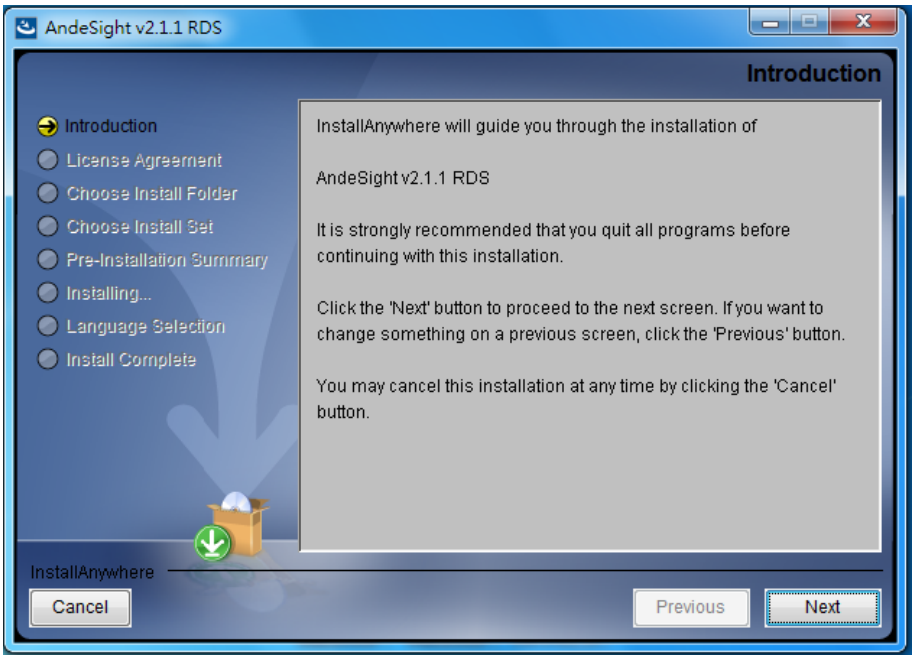


※C：Begin the installation,

※D：Finish, then prepare to install HY16F Series IDE (AndeSight). (wait few seconds)

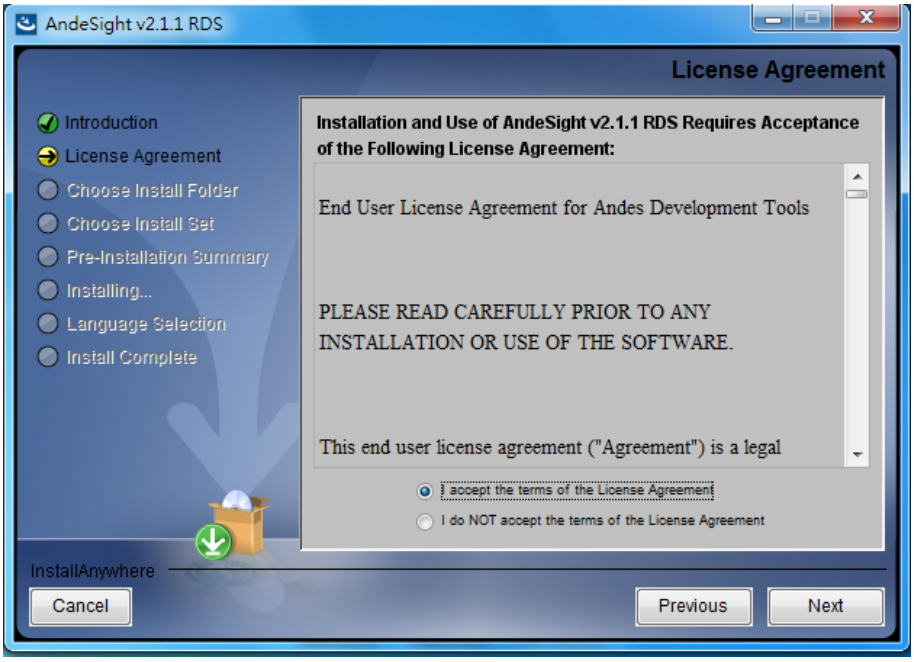
3.2.1. Software Installation Step 1

※01: Enter official insallation,selecting NEXT.



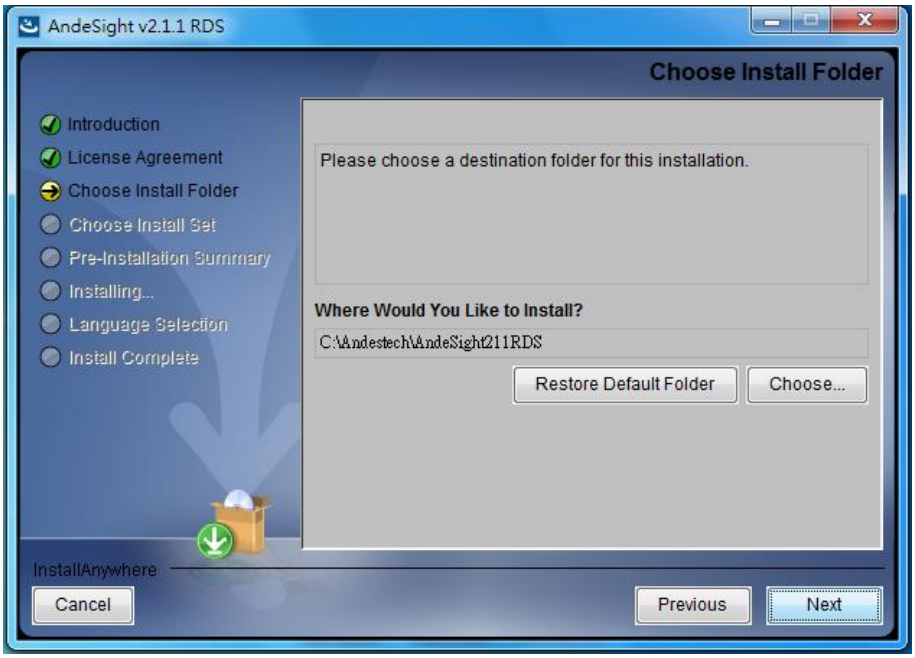
3.2.2. Software Installation Step 2

※02: Click “I accept the terms of the License Agreement” before selecting NEXT.



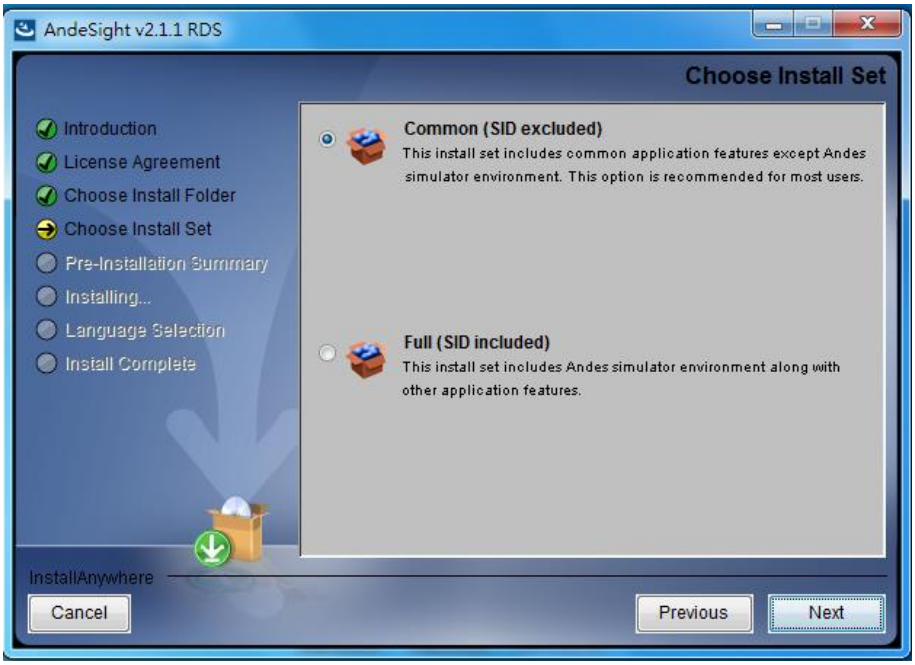
3.2.3. Software Installation Step 3

※03: Choose install folder before clicking NEXT. It is suggested not to change the location.



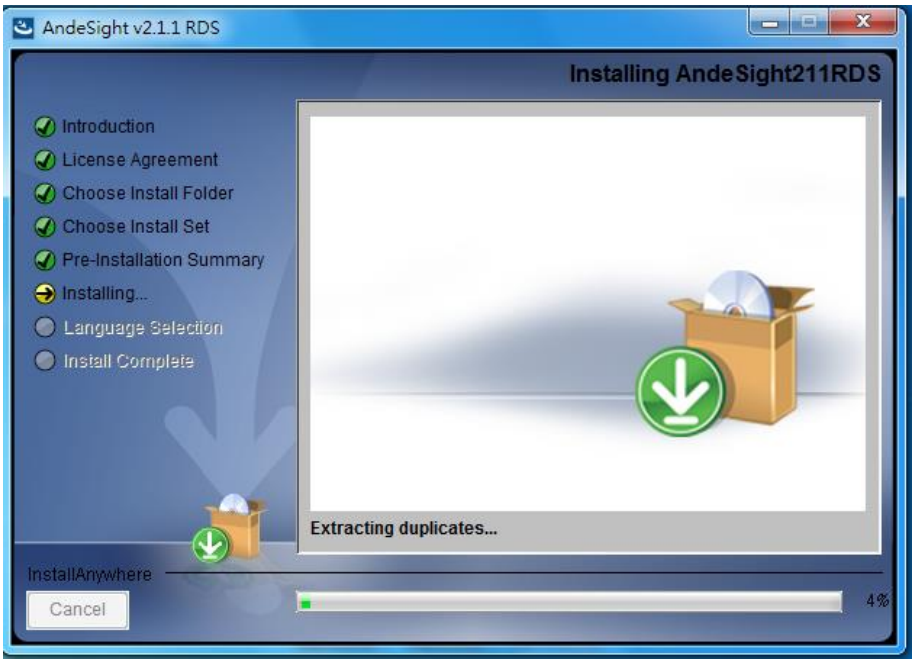
3.2.4. Software Installation Step 4

※04: Read the review of pre-installation summary before clicking NEXT.



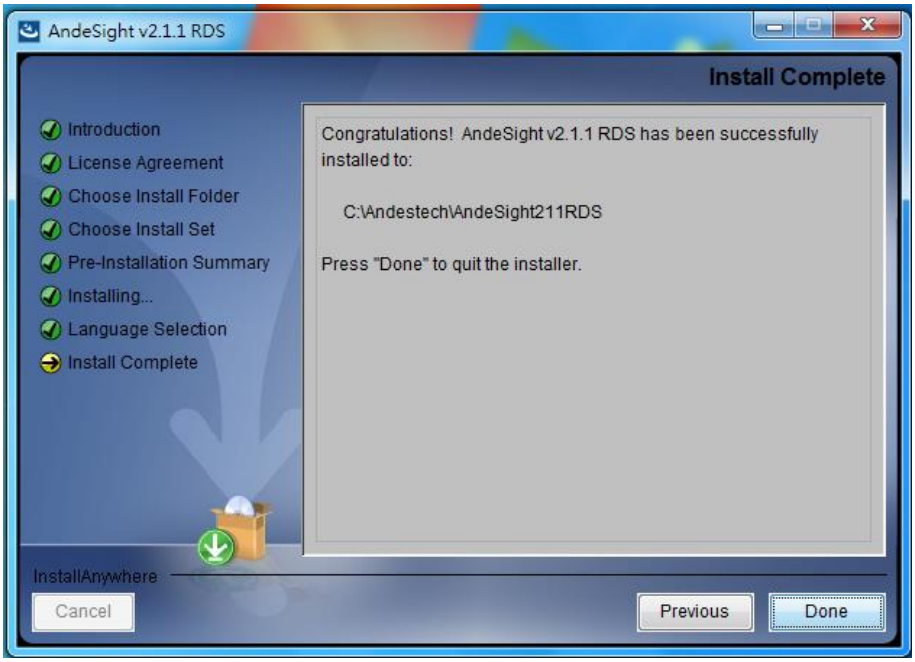
3.2.5. Software Installation Step 5

※05: Document Installation Progress,This screen will be presented for 3 to 5 minutes, depending on computer speed.



3.2.6. Software Installation Step 6

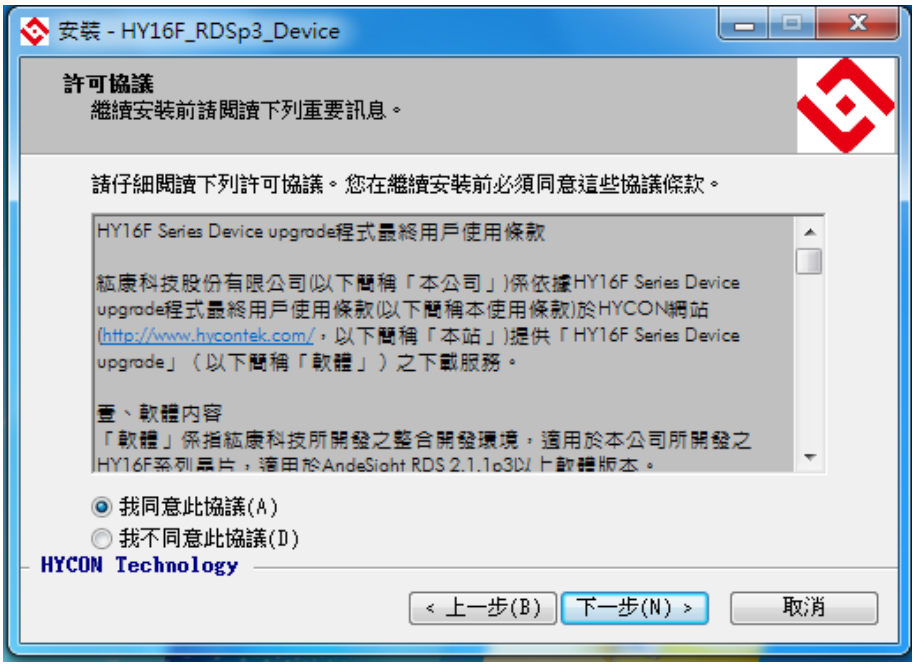
※06: Click Done to complete the installation.



3.3. HY16F Series Device Installation

※A：HY16F Series Device upgrade Installation,

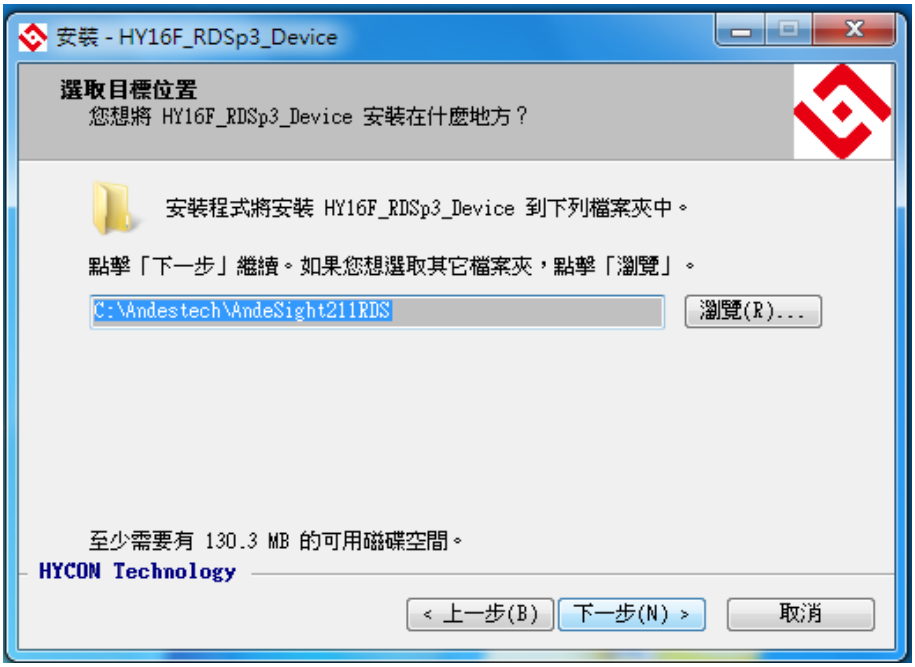
※B：License Agreement,



※C：Destination Folder,

Default: C:\Andestech\AndeSight211RDS

Users can make personal adjustment to install directory according to AndeSight installation route.



※D：Finish, then open document folder.

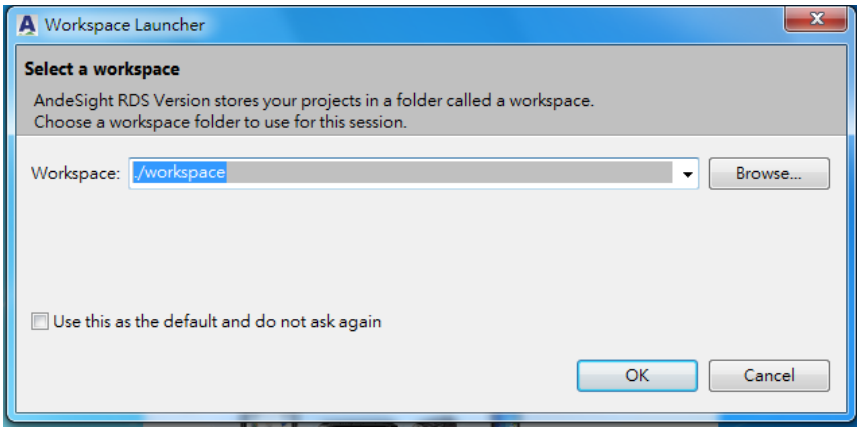
4. IDE Software Registration

Execute AdeSight.exe under AndeSight v2.1.1 RDS Official on the desktop or the start program and it should be noted that some of the above operating systems Windows 7, due to a permissions problem when executed in a computer software, you need administrator access permissions to normal execution.

4.1. Software Opening

※A: This is the opening screen for IDE software.

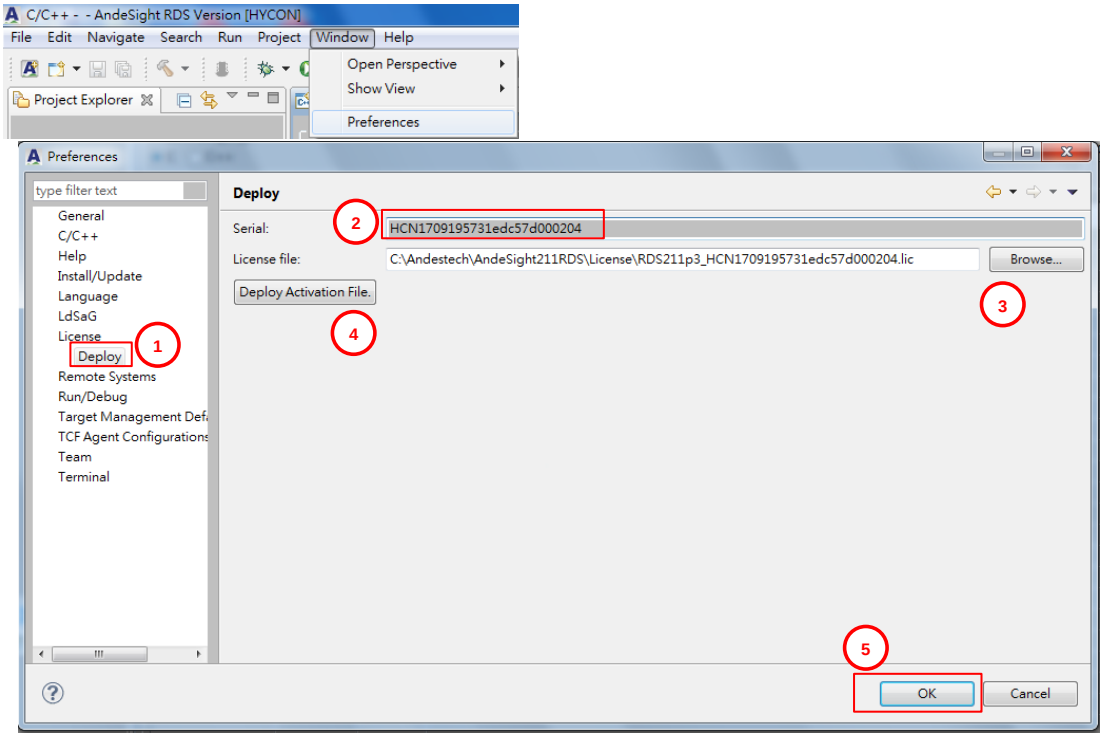
※B: This is the storage path selection for all projects. Users are free to make personal decisions. (Default Path: C:\Andestech\AndeSight211RDS\ide\workspace)



4.2. Software Registration

Find out the registration document RDS211p3_HCN1709195731edc57d000204.lic in the installation path. EX: Install software in the default path C:, the registration document in C:\Andestech\AndeSight211RDS\License

Find out License file and copy the registration document name, only need to copy serial number HCN1709195731edc57d000204. Open up AndeSight RDS software and find out Preferences under Windows. Follow the below registration steps to finish the software registration.



(1) Click License, select Deploy
(2) Input Serial: HCN1709195731edc57d000204
(3) Search for File of license through Browse C:\Andestech\AndeSight211RDS\License\RDS211p3_HCN1709195731edc57d000204.lic
(4) Click Deploy Activation File to execute software certification (please make sure to enforce).
(5) Click OK for confirmation.

5. HY16F Mini Link Driver Connection

After software installation, HY16F Mini Link can be connected,USB drive program in AICE is required to be installed in this moment.

Drive program is to be installed in:

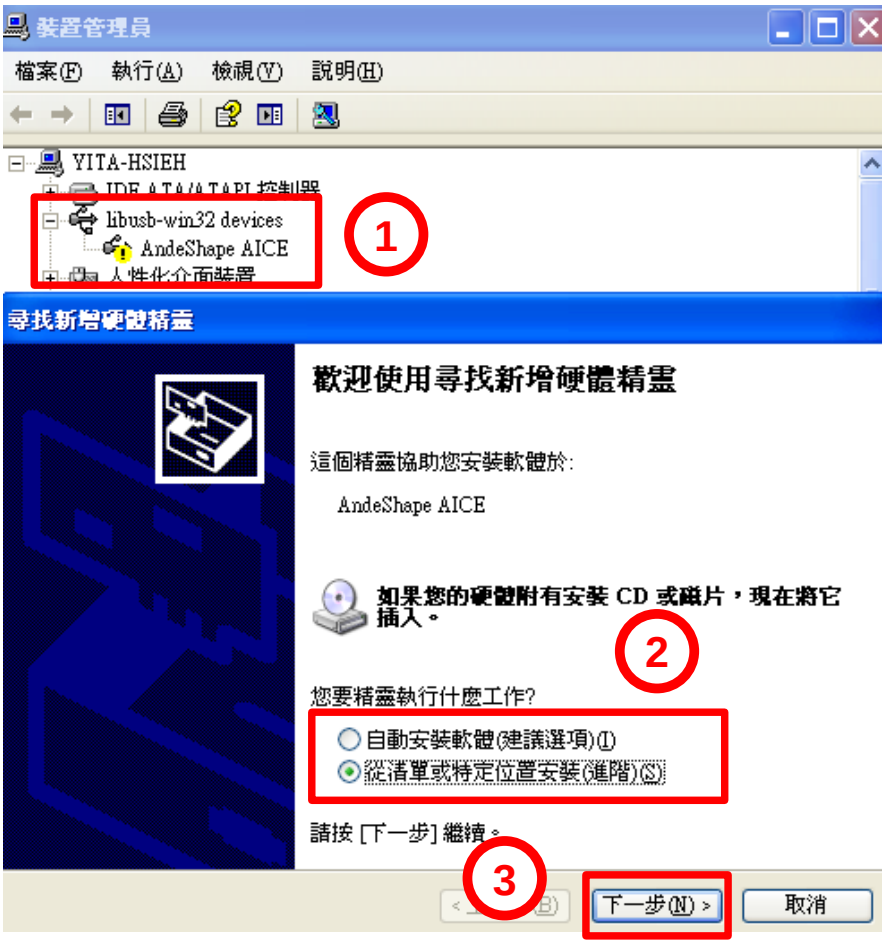
C:\Andestech\AndeSight211RDS\ice\libusb-AICE-driver

5.1. HY16F Mini Link Driver Installation Instructions

※01: As illustrated below, administrator is required to be installed in PC, so as to see the drive success in this item.

※02: Path for installation can be selected, AICE drive program.

※03: Click next step until installation is completed.

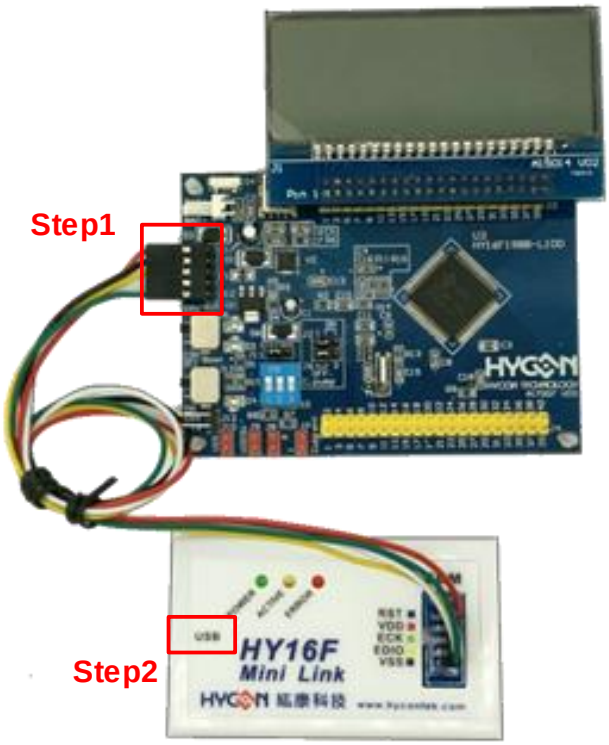


5.2. Connection HY16F Mini Link and target board Development Tools description

Step1: EDM Wire connects to HY16F Mini Link and Target Board.

Step2: PC ’s USB Port connect to Mini Link USB connector.

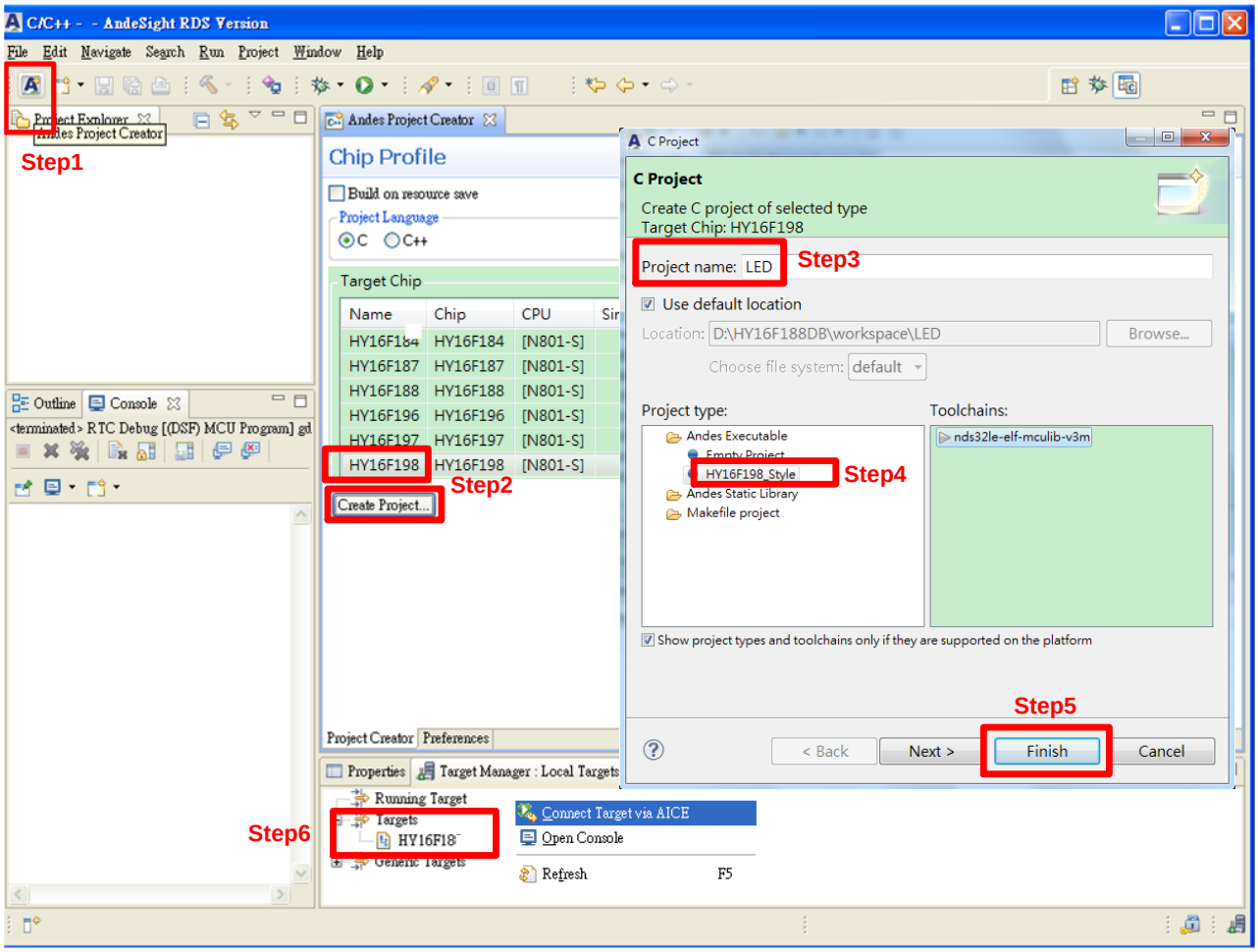
Target in chart below is HY16F198B product connection illustration. Different products have different connection locations.



6. IDE Project Setting

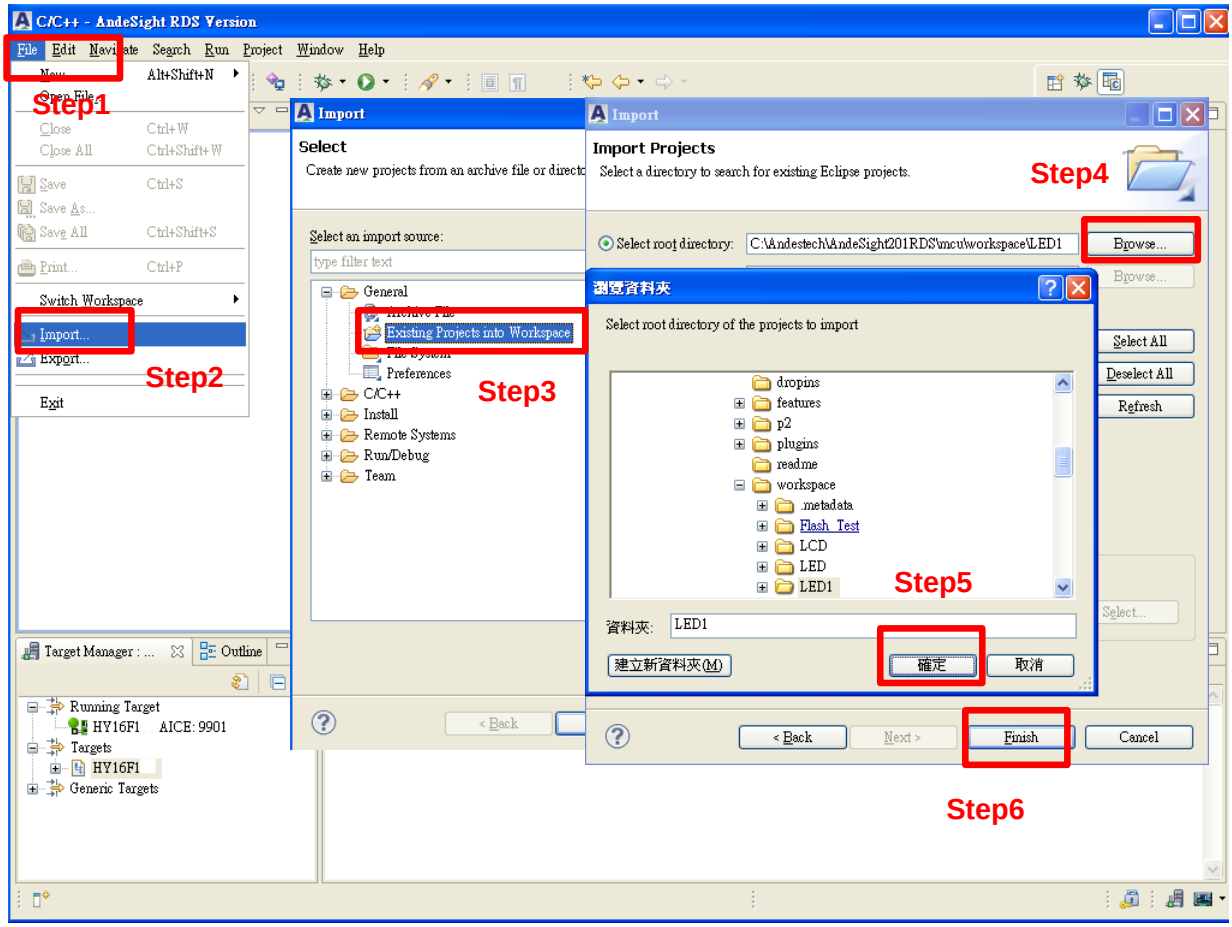
6.1. Newly Established Project

(In HY16F198 project as an example)
Step 1: Click Andes Project Creator.
Step 2: Click Create Project.
Step 3: Denominate the Project Name: LED.
Step 4: Select HY16F198_Style
Step 5: Click Finish after confirmation.
Step 6: Select HY16F198 in the Target and righ click to connect HY16F198.



6.2. Old File Opening

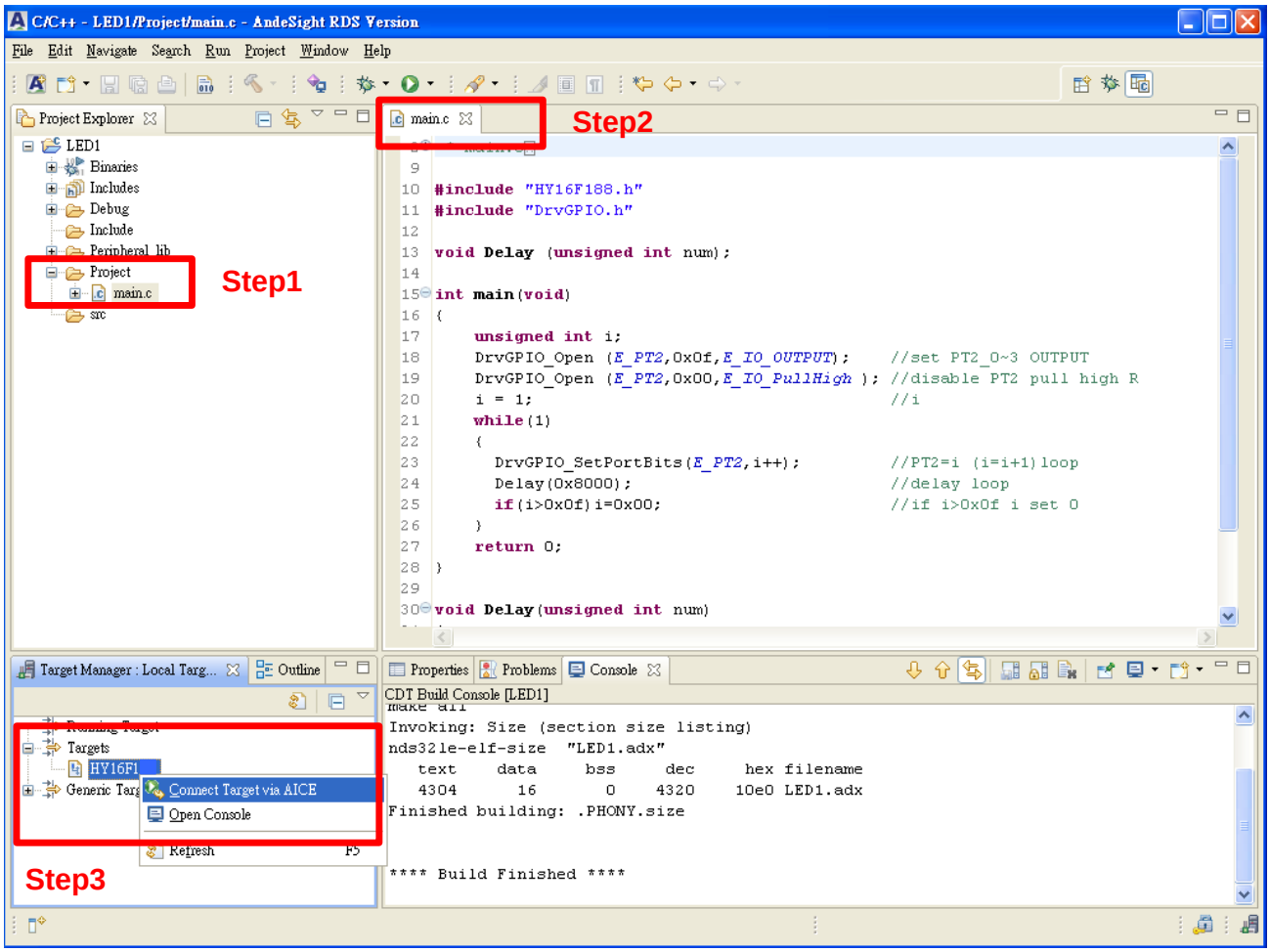
Step 1: Select File.
Step 2: Click Import.
Step 3: Select Existing Projects into Workspace.
Step 4: Click Browse.
Step 5: Choose the old file you want to open below Workspace Folder. Click Okay upon confirmation.
Step 6: Click Finish to complete old project opening.



6.3. Program Writing

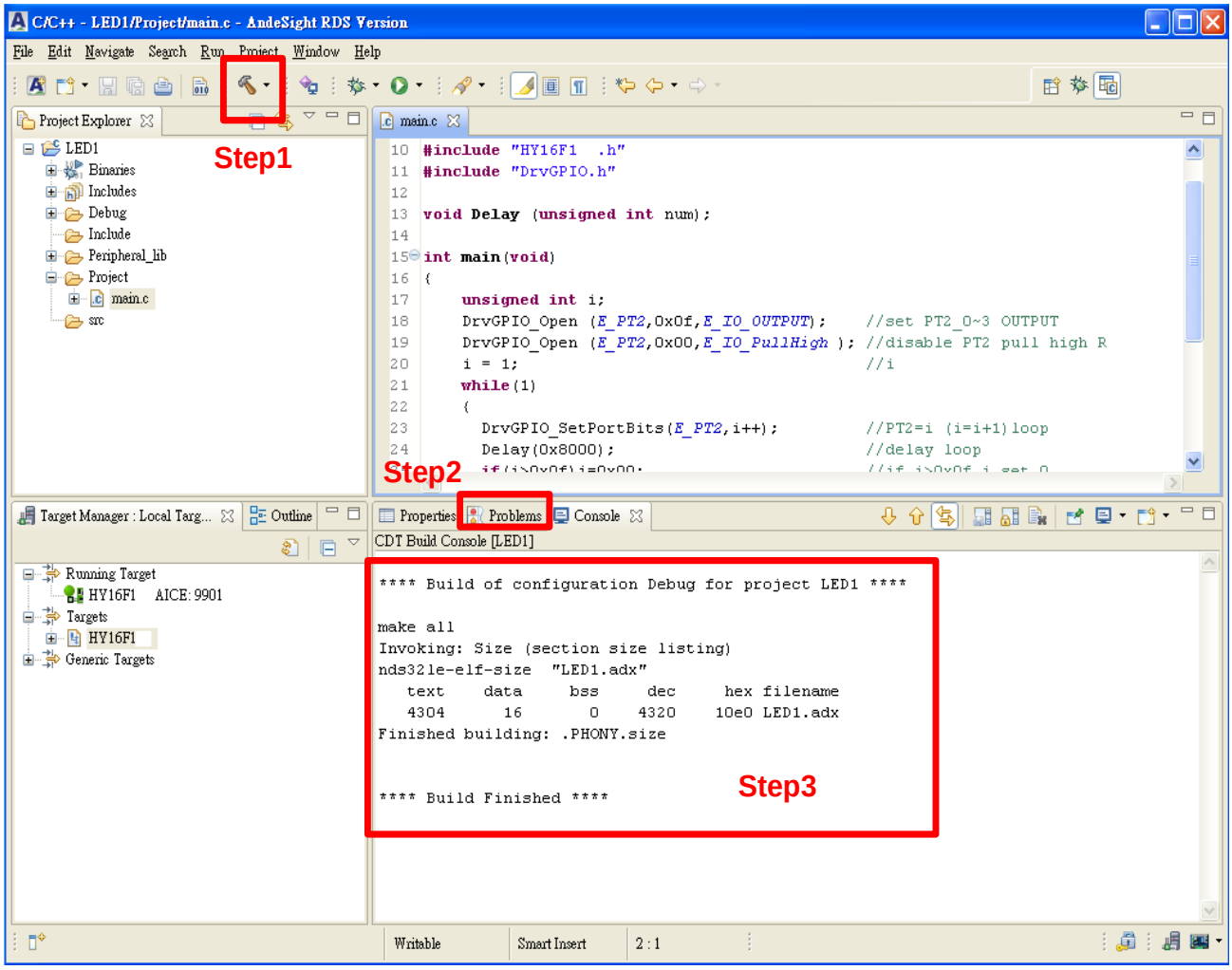
Step 1: Select Project and double click main.c.
Step 2: User can write the C programing language or assembly language under main.c screen.
Step 3: Chip connection can be selected, right click to select Connect Target via AICE.

In addition, the following can be chosen.
(1) From Problem next to Console, user can decide whether there are wrongful messages.
(2) Include file is able to add file .h here.
(3) C programs other than main.c can be put in src folder, such as SWI2C.c.



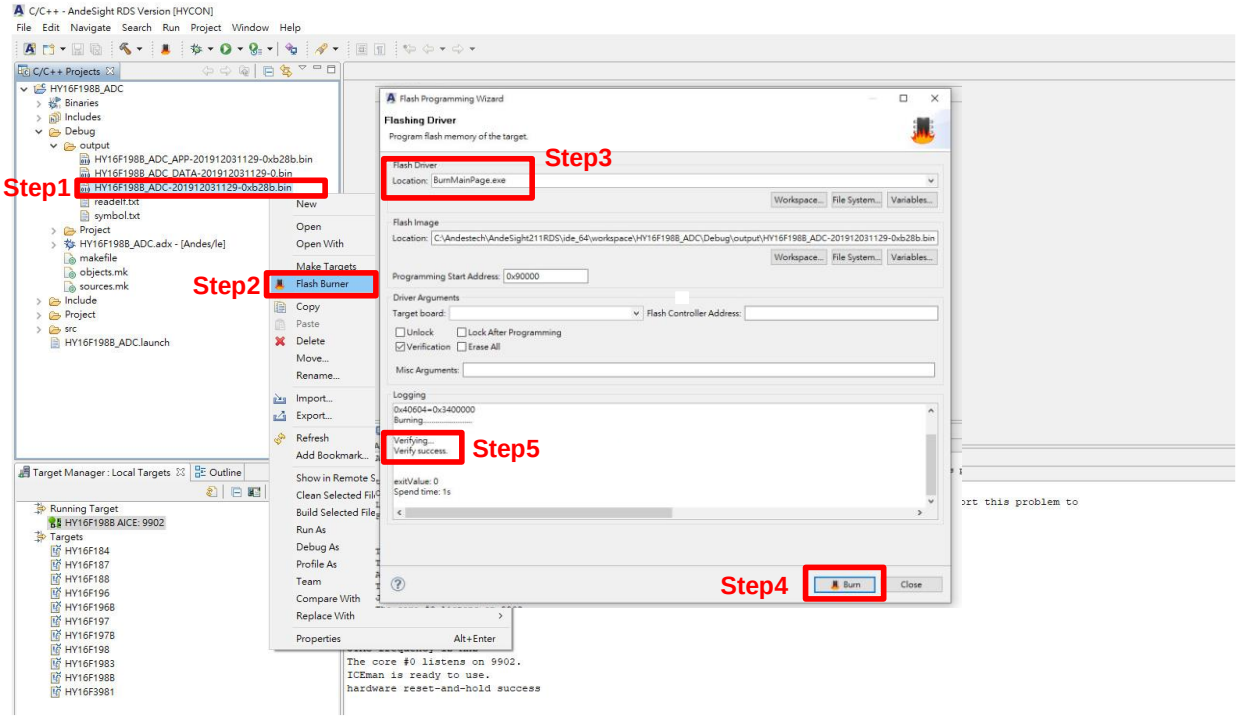
6.4. Program Compiling

Step 1: Select illustration Build All. The same can be selected under Project.
Step2: Problems can be selected to see if there are wrongful messages.
Step 3: By observing Console, users can confirm that Flash usage amount is text=4304 bytes and SRAM usage amount is data=16 bytes.

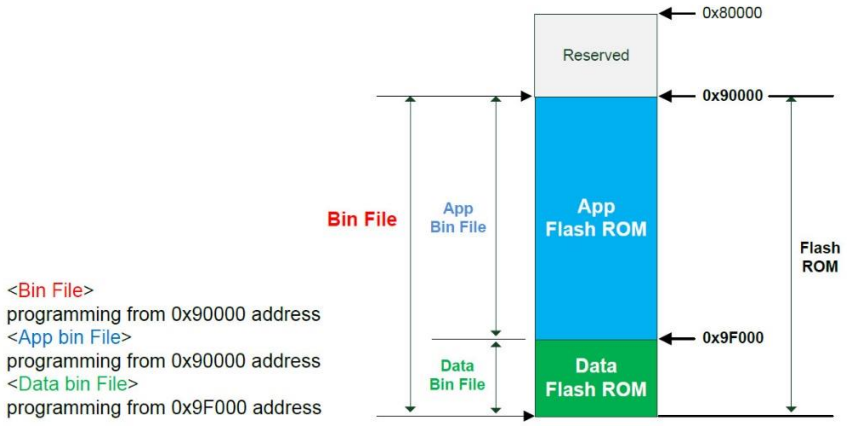


6.5. Chip Burning

Step 1: Select output under Debug before choosing HY16F198B_ADC-201912031129-0xb28b.bin .
Step 2: Select .bin and click on the right button before clicking Flash Burner.
Step 3: Default burner has been set. Don't move unless necessary.
Step 4: Click Burn to conduct immediate burning.
Step 5: By observing Logging screen, users can see if the burning were successful and grasp the total burning time.



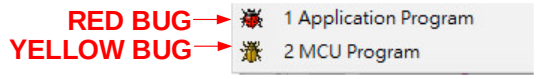
HY16F Series Programming Area Description :



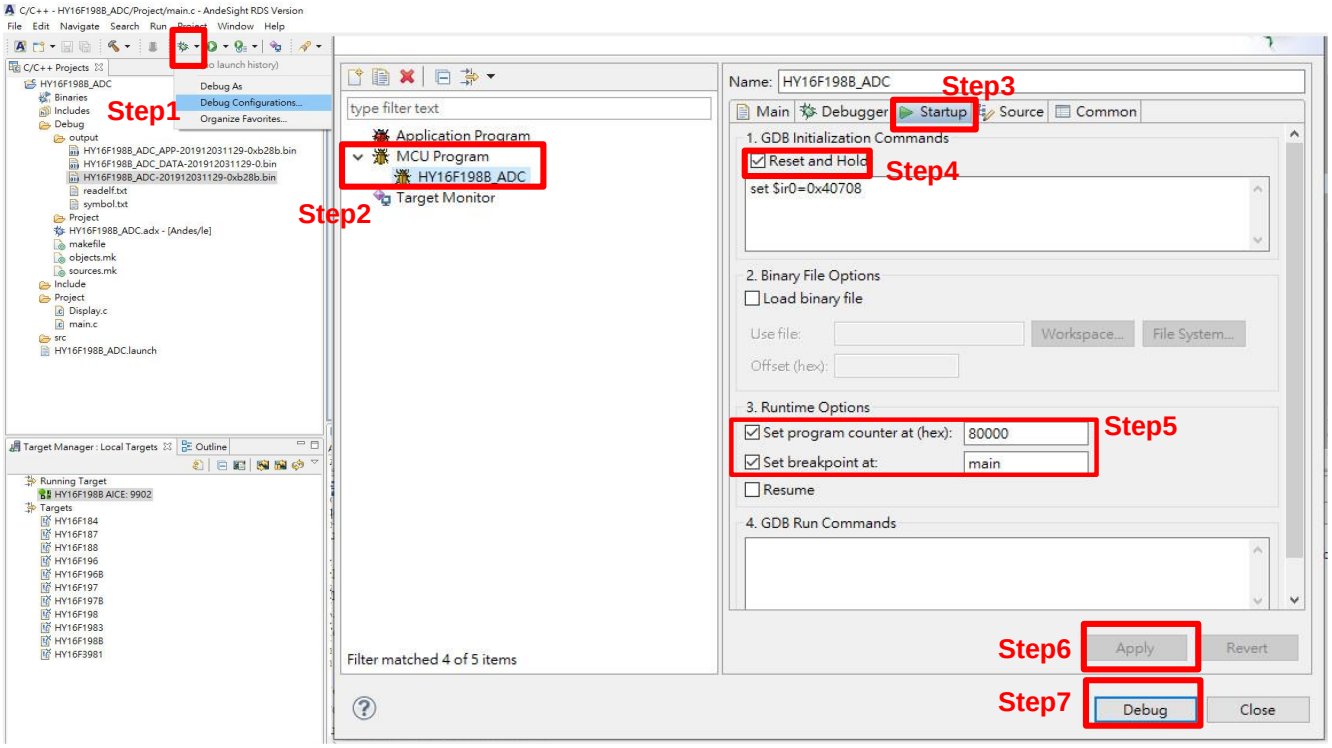
1. App Bin File: This programmed code is generated by the user application program, programmed in the chip's App Flash ROM area, this code is necessary during the programming.
2. Data Bin File: This programmed code is generated by the user own fixed parameters or calibration parameters, programmed in the chip's Data Flash ROM area, this code is nonecessary, depending on the actual needs of customers..
3. App Bin and Data Bin is separated by the BIN File, the purpose is to do the application of partition programming, if you do not need to do partition programming, you can directly use the BIN file to replace the App Bin file.

6.6. Debug Mode

Set default stopping point under Debug mode.
Step 1: Click the droplist before choosing Debug Configuration.
Step 2: Select MCU Program(YELLOW BUG).
Note: Please don't select Application Program(RED BUG), select RED BUG to make debug error.



Step 3: Set Startup.
Step 4: Reset and Hold.
Step 5: Set 80000 and main in "3.Runtime Options".
Step 6: Click Apply agree Option.
Step 7: Click Debug to enter the debug mode.



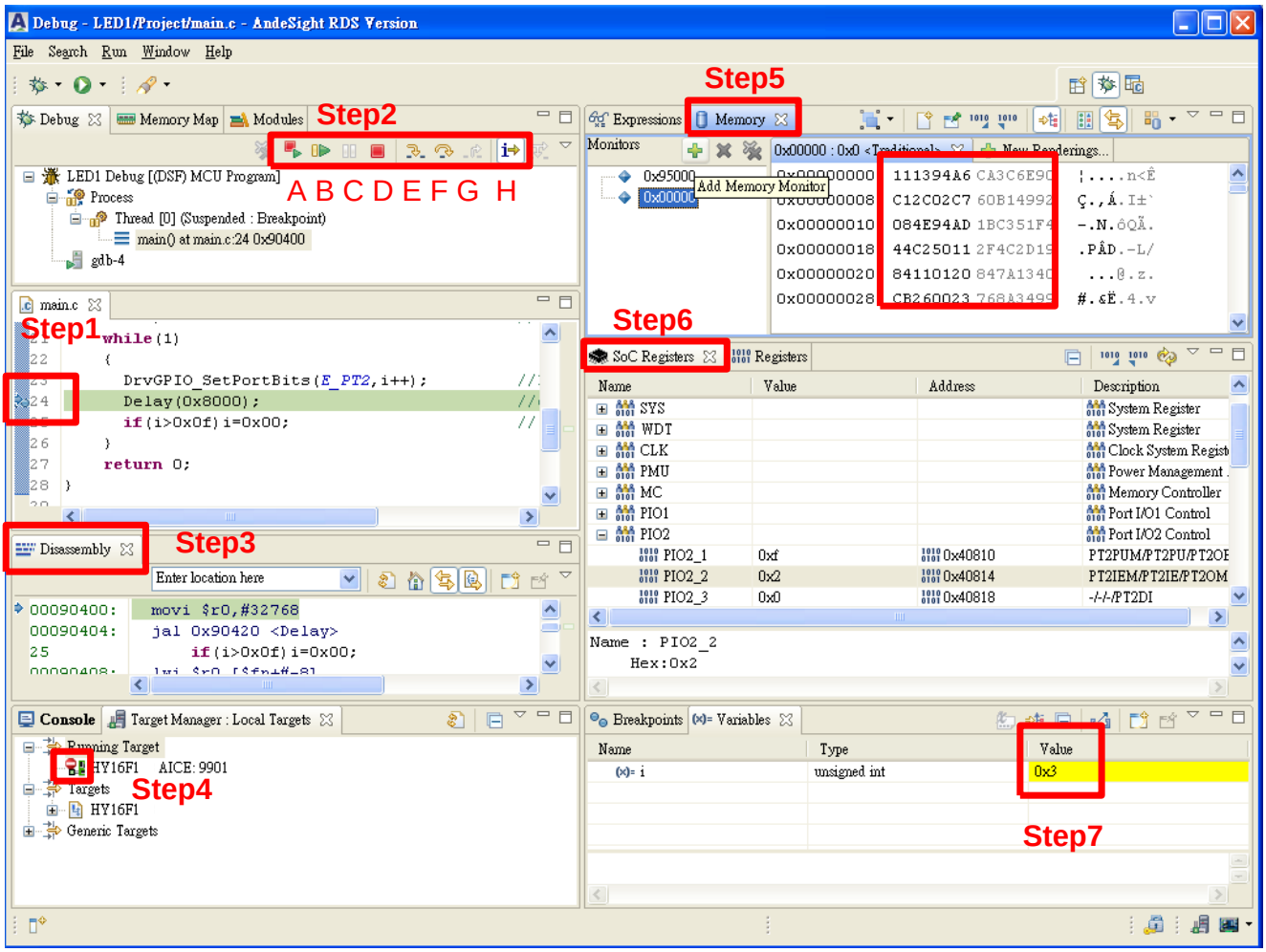
Note1:
If the user performs the rename project function, the Debug Mode will not work properly, and you need to set it again manually (the default stopping point in Debug mode).

Note2:
If user had selected RED BUG to make debug error. Suggest to delete Debug file. And than, re-build project and re-create Debug Configuration, please follow above Step1~7 in detail.

6.7. Function List

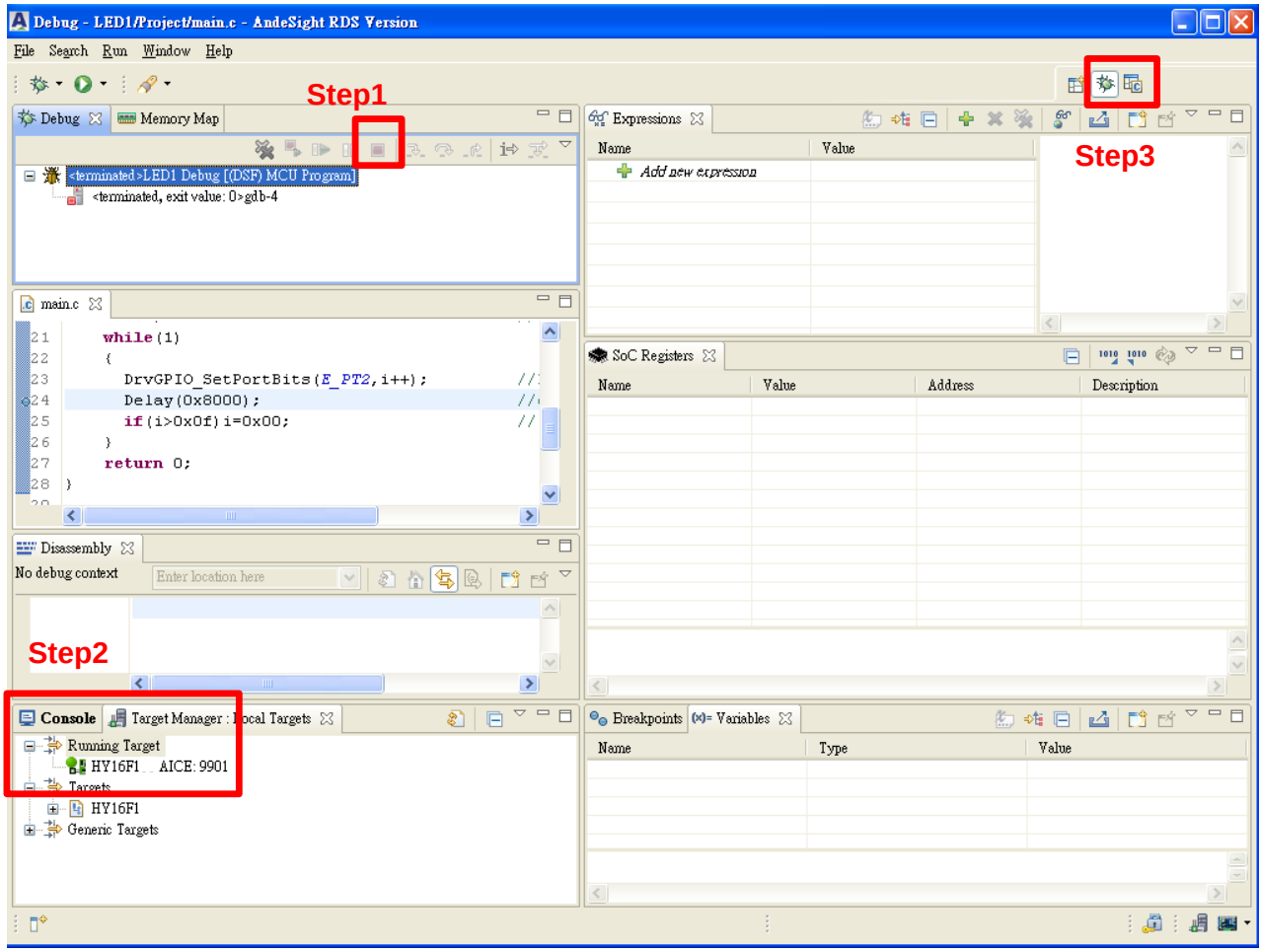
Step 1: Double click the Main program. For example, by double clicking the 24th row, a blue breakpoint can be developed.
Step 2: Regarding to selection ABCDEFGH in the Debug mode: A (Software Resetting) / B (Free Run) / C (Pause) / D (Exit) / E (Step Into) / F (Step Over) / G (Jump Out) / H (Assembly Language can be single executed.) (Only the C Programing Language can be single executed after cancellation.)

Step 3: Observe assembly language instruction.
Step 4: Ensure that the chip is presented in Debug mode, with a stop sign being displayed.
Step 5: SRAM can be observed in the memory screen.
Step 6: All IP Register Screens
Step 7: From variable screen, variables in C language can be observed.



6.8. Offline Function

Step 1: After confirming the correctness in Debug mode, click exit button to leave.
Step 2: Under this moment, chip will exit debug mode. By moving JATG away and power on, program can execute the complied function offline.
Step 3: Debug mode and compiling mode can be switched.



7. IDE Example Program

(1) This is LED simple example program.
(2) Majorly divided into announcement district / main program / secondary program.
(3) Respective explanations are specified as the programs below.

```
00
01 #include "HY16F1XX.h"                          // HY16F18X.H file declare
02 #include "DrvGPIO.h"                           // DrvGPIO.H file declare
03
04 void Delay (unsigned int num);                 // Delay vice program declare
05
06 int main(void)
07 {
08    unsigned int i;                             // Variable i declare
09
10    DrvGPIO_Open(E_PT2,0X0F,E_IO_OUTPUT);       // Set PT2.0~3 as output
11    DrvGPIO_Open(E_PT2,0X00,E_IO_PullHigh );    // Turn off PT2.0~7 internal enhanced resistor
12
13    i=1;                                        // Set initial value of variable i as 1
14
15    while(1)
16    {
17       DrvGPIO_SetPortBits(E_PT2,i++);          // Put variable i to PT2.0~3
18       Delay(0X8000);                           //Delay Loop
19       if(i>0X0F) i=0X00;                       // If i>0X0F, then set i as 0
20    }
21    return 0;
22 }
23
24 void Delay(unsigned int num)                    //Delay LOOP
25 {
26    volatile int a;
27    for(a=0;a<=num;a++);asm("NOP");
28 }
29
```

8. HY16F GUI user's Guide

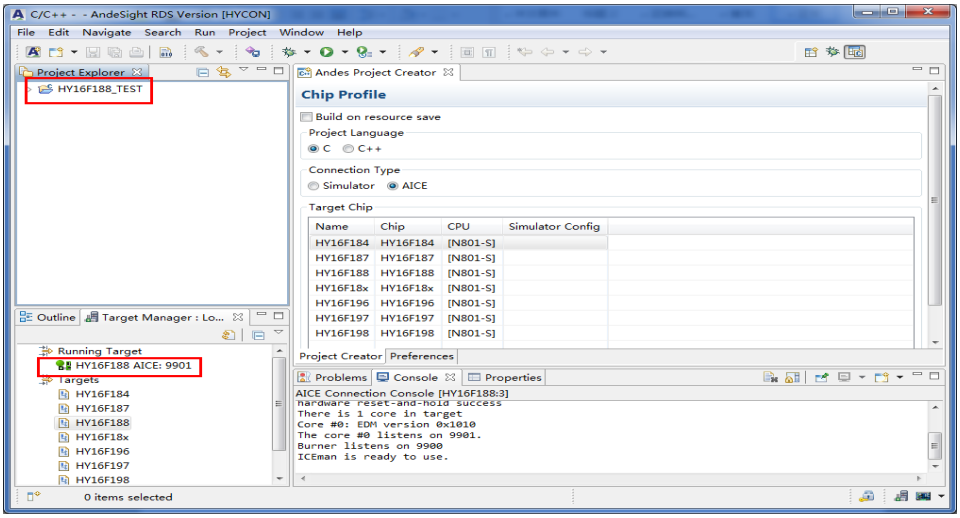
In order to facilitate customers to use HY16F Series products, On AndeSight development platform can be easy to use, the terminal emulator products, Introducing graphic HYCON GUI (Graphical user interface) user interface.

8.1. Enter HYCON GUI

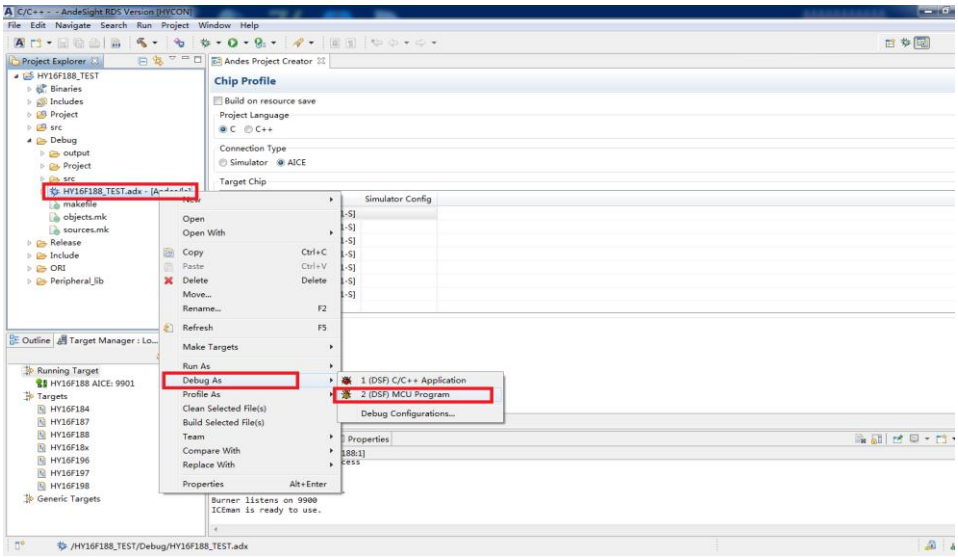
8.1.1. Enter Debug window

(In HY16F188 project as an example)

STEP1：HY16F18X-DK02 Development tools needed to connect PC using HY-Protool, Open AndeSight Software, Connection target：HY16F188 after，Open a project file (HY16F188).



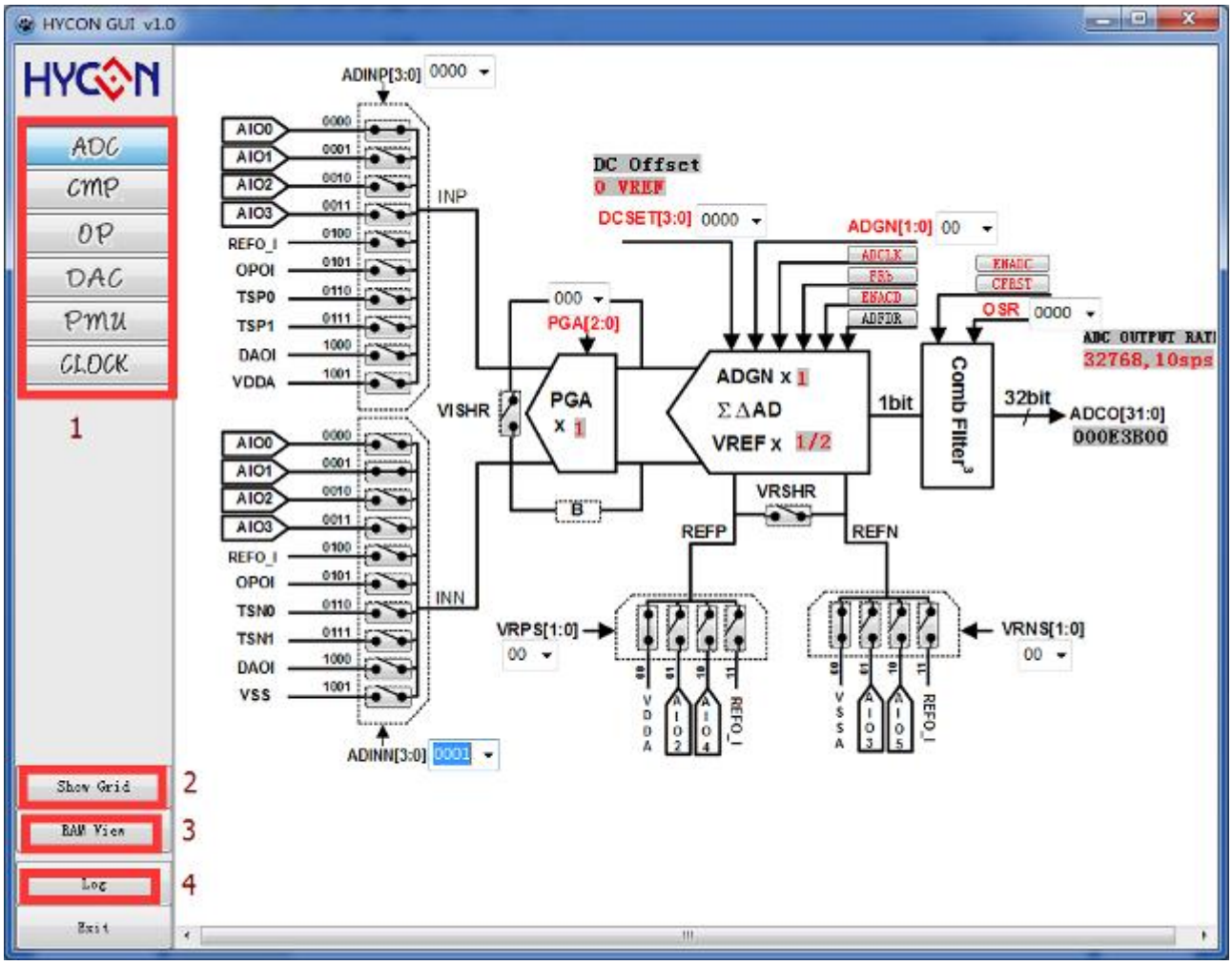
STEP2：Expand the project file (Debug File)，Right-click ”XXX.adx-[Andes/le]”➔”Debug As”➔”click ’2(DSF)MCU Program’”, Automatic pop-Debug window, And minimize.



8.1.2. Open HYCON GUI

In Debug mode, Open task bar HYCON GUI, Move the cursor into the left window，Menu bar appears, as shown below:

Item 1: IC Function control module Photos window option
Item 2: “Show Grid "for the display module register values
Item 3: "RAM View" to display the values of all modules register, and can choose to save the output as ".h" file

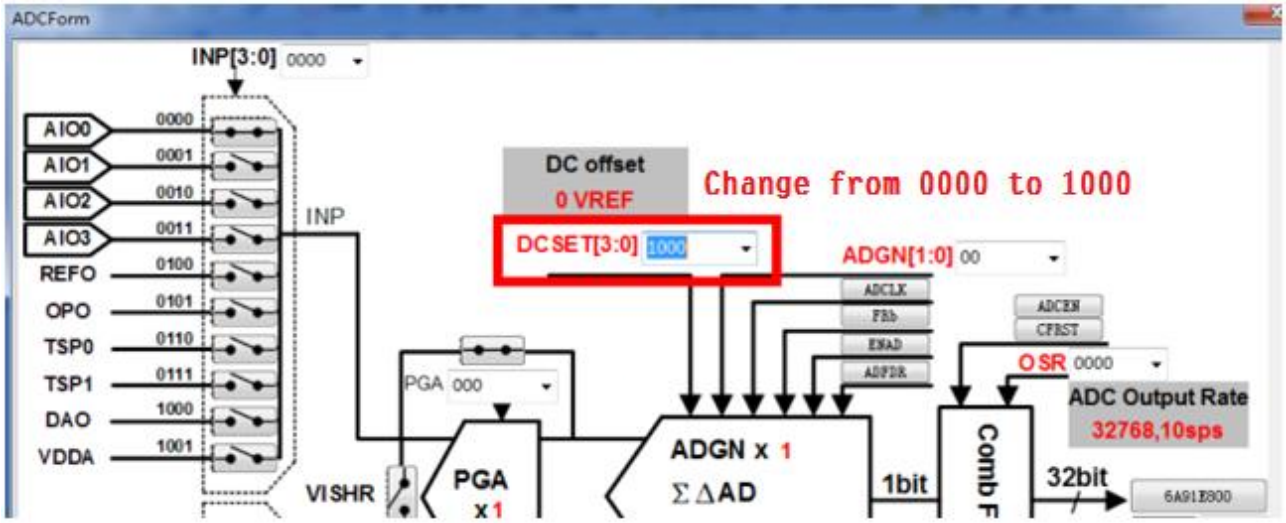


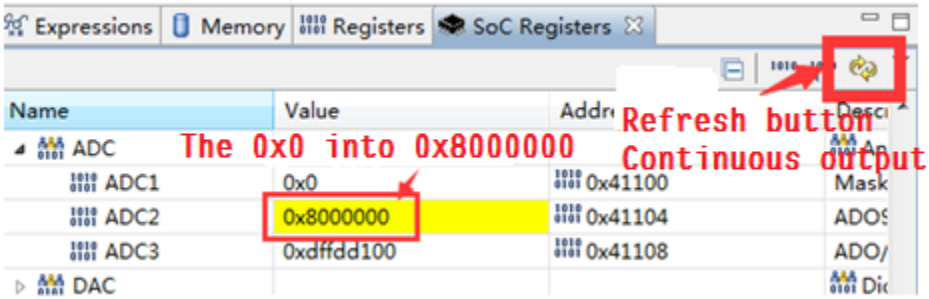
8.2. HYCON GUI IP(Intellectual Property) Features

Move the cursor into the left window, you can select each IP function module graphics window.

8.2.1. ADC (Analog-to-digital converter)

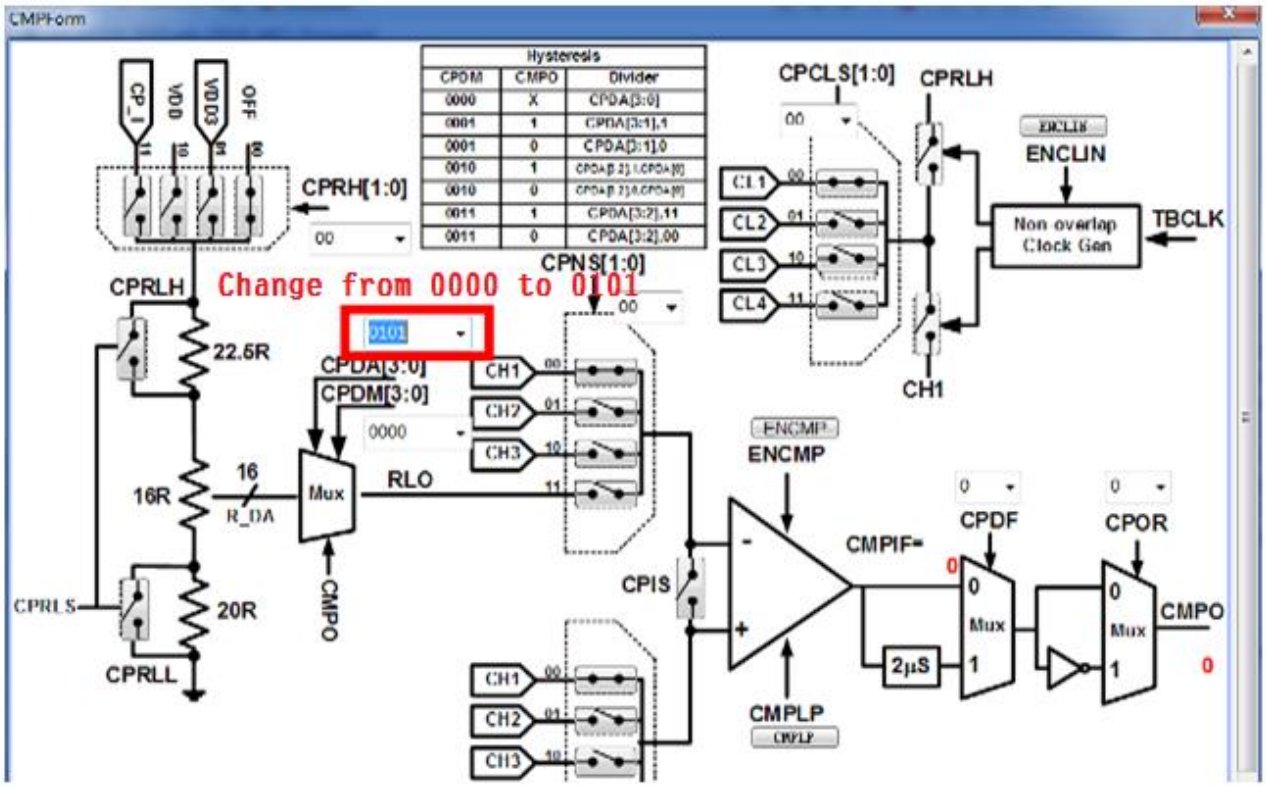
Change ADC window settings(Reference HY16F Series User Manual [17. ADC]), ADC register value will change synchronously，at the same time "SoC Registers" window (with the refresh button)，After pressing the AD will produce a continuous output value, as shown below:



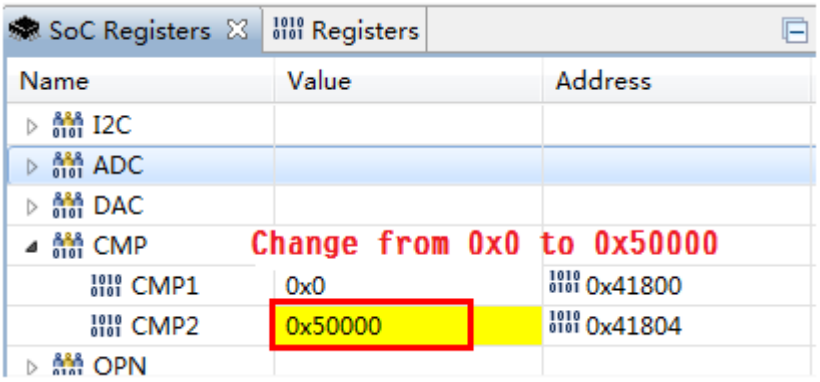


8.2.2. CMP (Comparators)

Change CMP window settings (Reference HY16F Series User Manual [20. CMP]），CMP Register value change synchronously, as shown below:

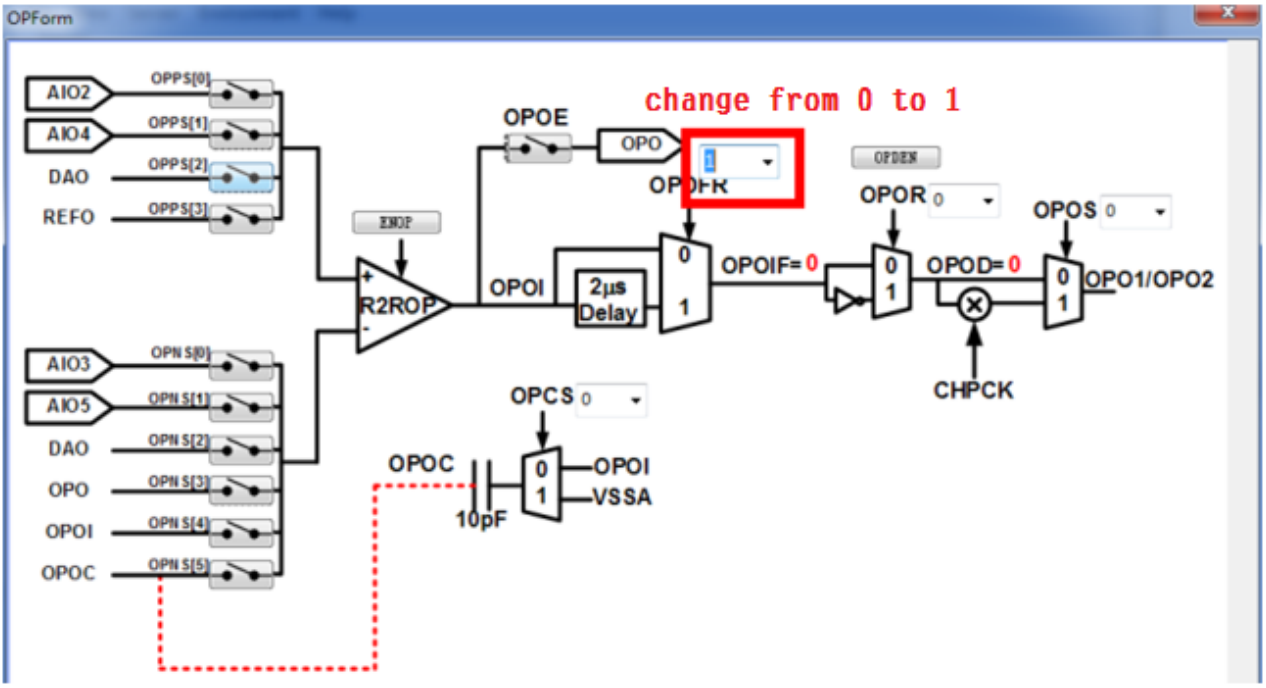


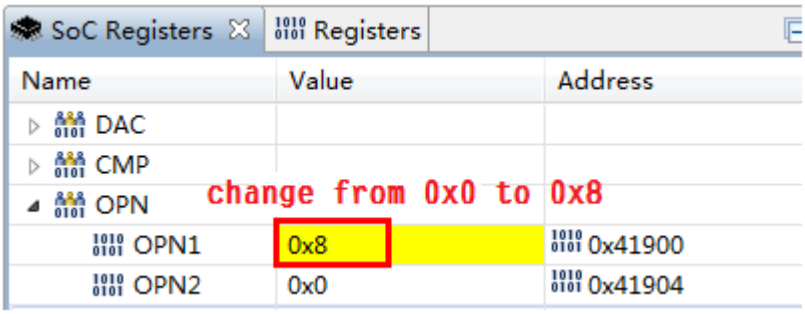
PS: CMP window is only available for HY16F18x Series products.



8.2.3. OPA (Operational Amplifier)

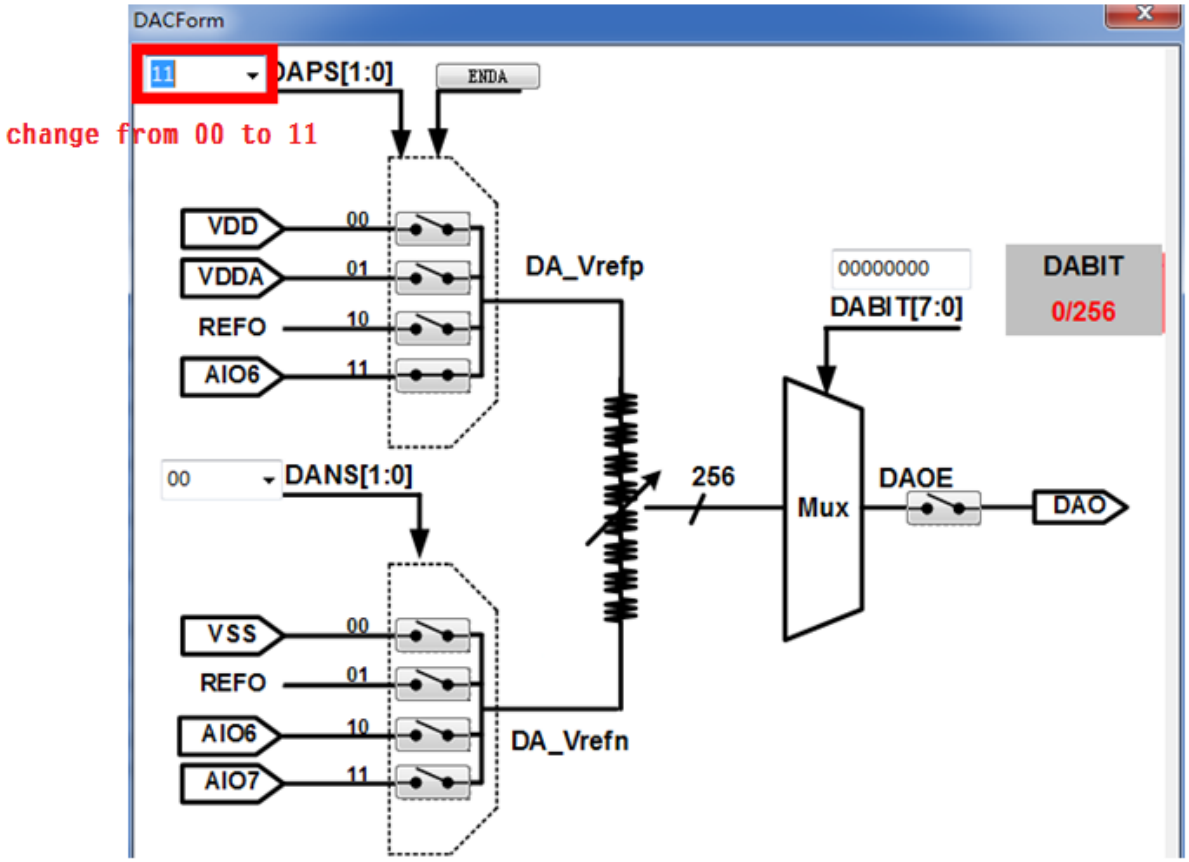
Change OPA window settings(Reference HY16F Series User Manual [18. Rail to Rail OPA]），OPA Register value change synchronously, as shown below:

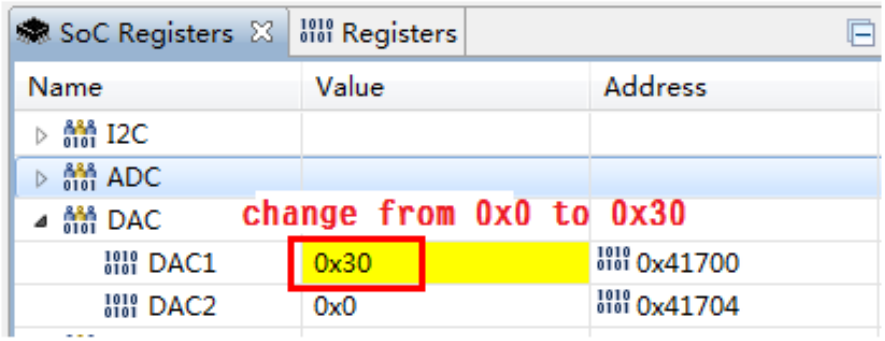




8.2.4. DAC (Digital-to-analog converter)

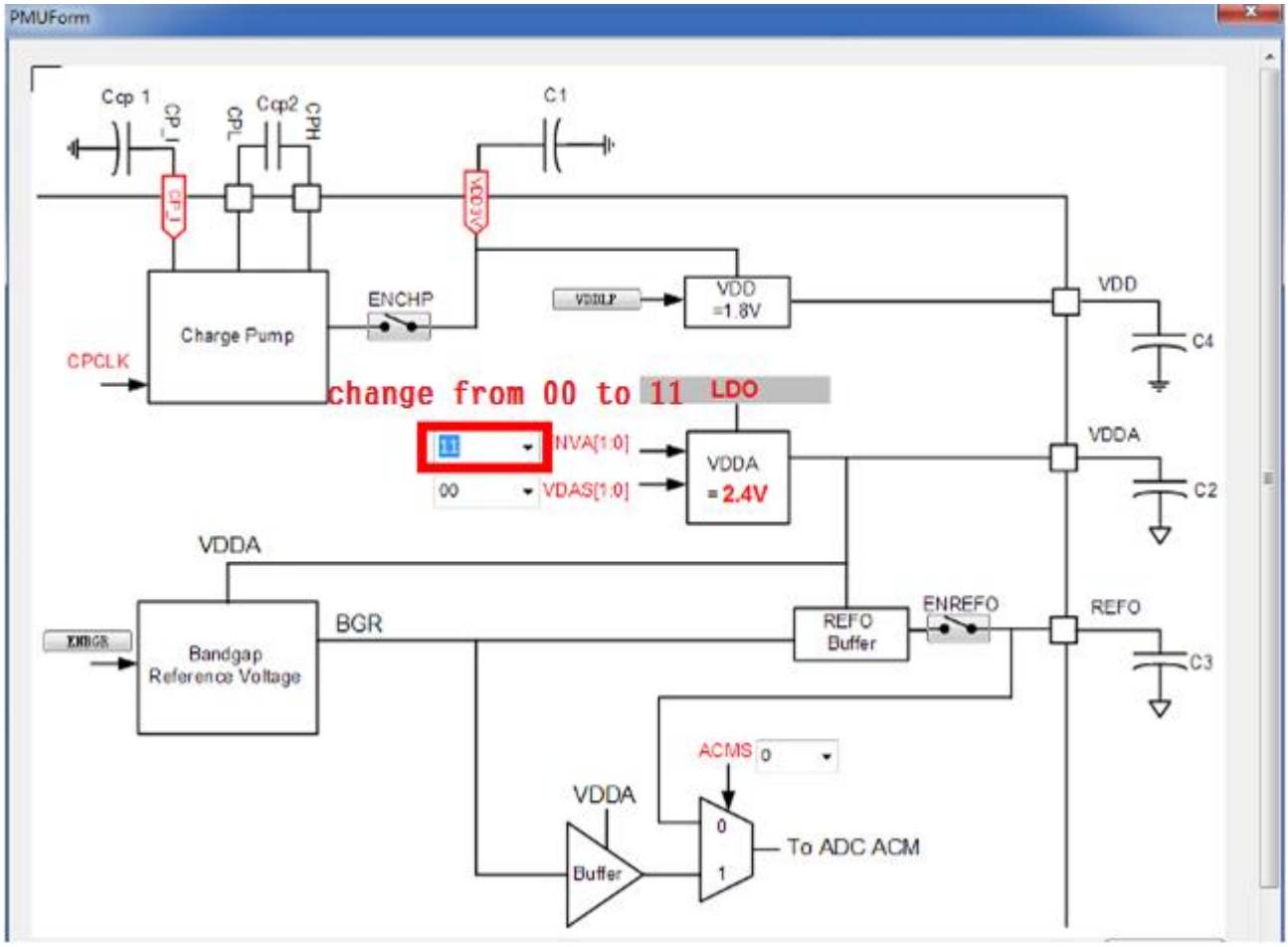
Change DAC window settings(Reference HY16F Series User Manual [19. DAC），DAC Register value change synchronously, as shown below:

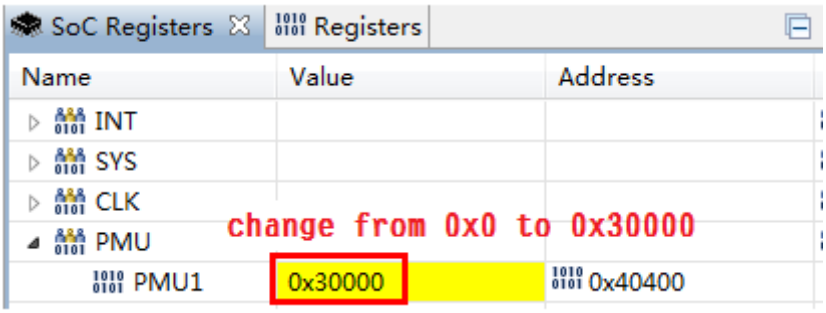




8.2.5. PMU (POWER MANAGEMENT)

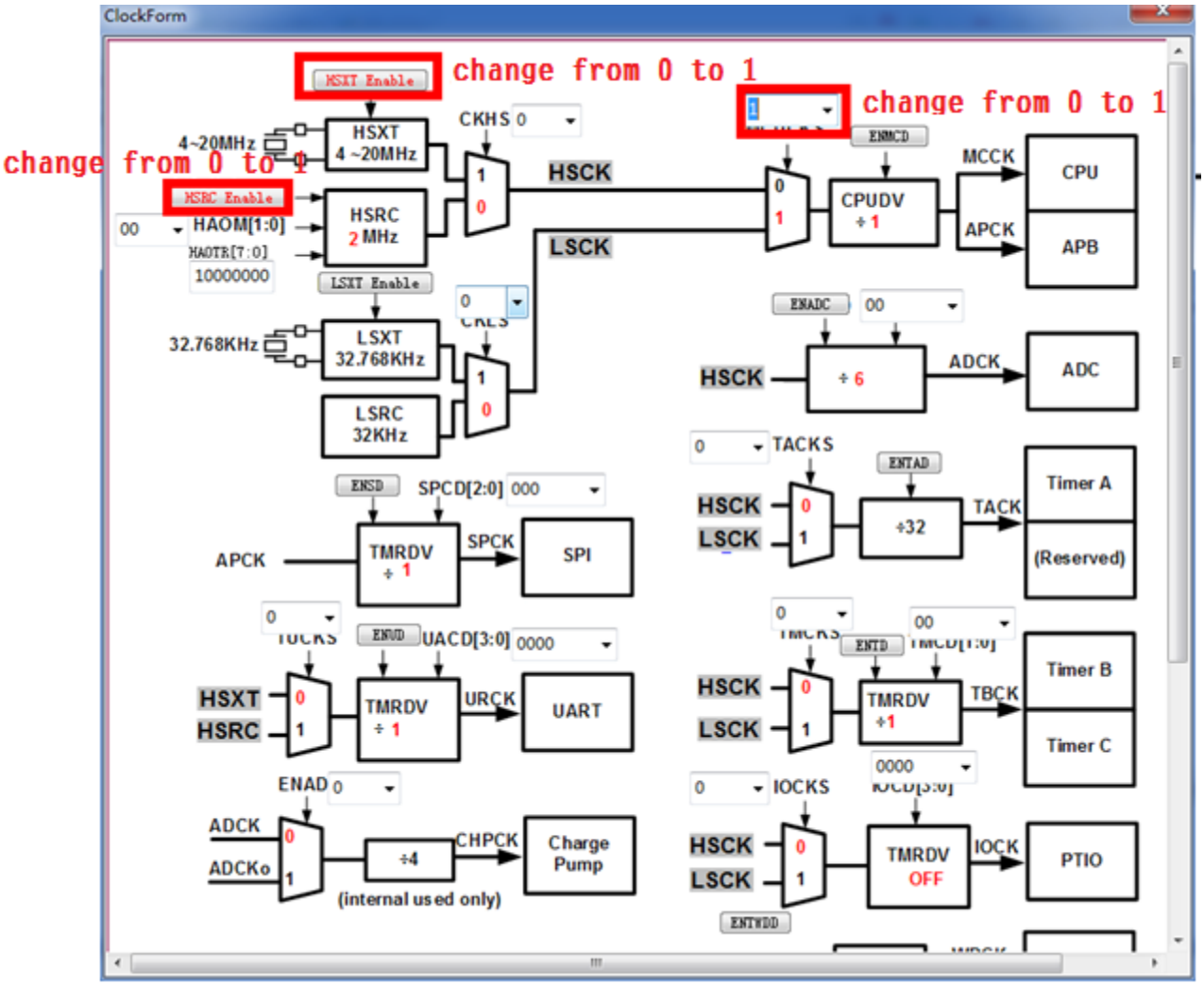
Change PMU window settings(Reference HY16F Series User Manual [05. PMU），PMU Register value change synchronously, as shown below:

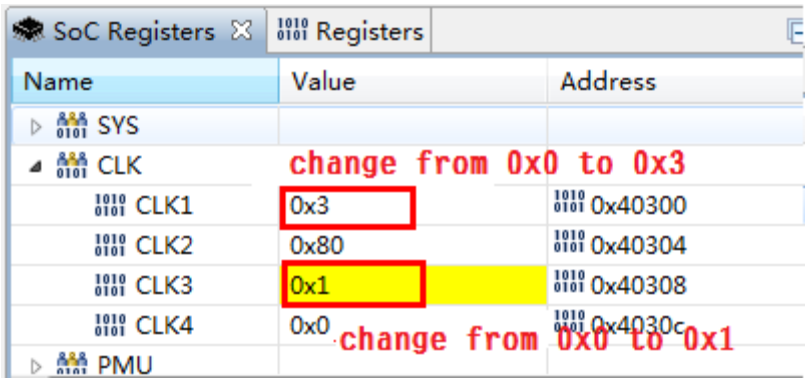




8.2.6. Oscillator, peripheral circuit Clock frequency source

Change clock window settings(Reference HY16F Series User Manual [06. CLOCK SYSTEM),clock Register value change synchronously, as shown below:

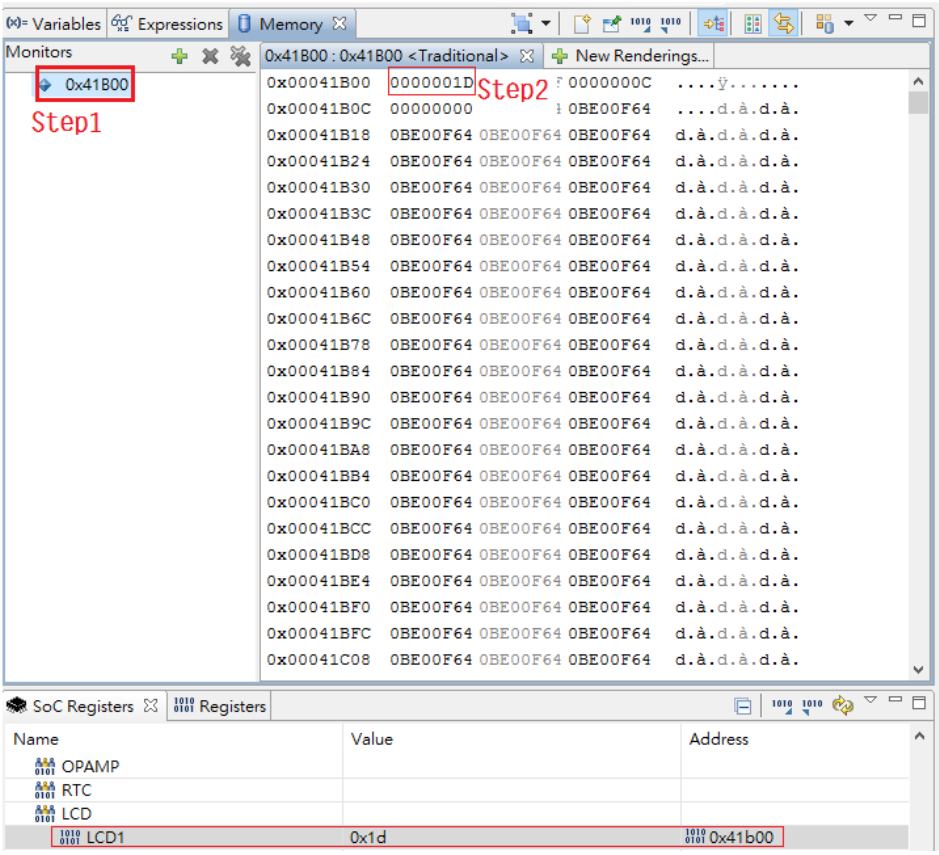




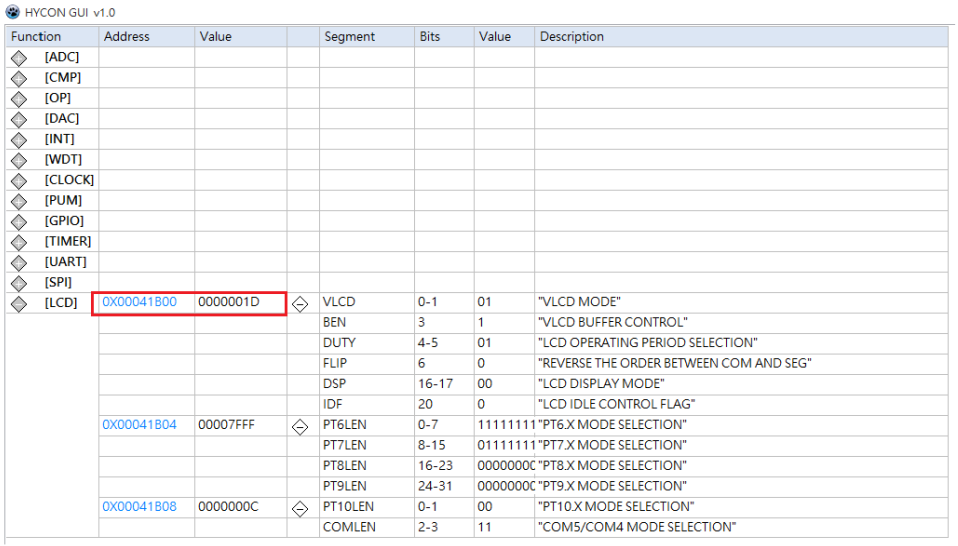
8.2.7. LCD (For HY16F19 series only)

Step1：Enter the address throught memory window.

Step2：Change the value, SoC Registers will immediately become a changed value.



LCD GUI changes immediately changed value.



Function	Address	Value		Segment	Bits	Value	Description
[ADC]							
[CMP]							
[OP]							
[DAC]							
[INT]							
[WDT]							
[CLOCK]							
[PUM]							
[GPIO]							
[TIMER]							
[UART]							
[SPI]							
[LCD]	0X00041B00	0000001D		VLCD	0-1	01	"VLCD MODE"
				BEN	3	1	"VLCD BUFFER CONTROL"
				DUTY	4-5	01	"LCD OPERATING PERIOD SELECTION"
				FLIP	6	0	"REVERSE THE ORDER BETWEEN COM AND SEG"
				DSP	16-17	00	"LCD DISPLAY MODE"
				IDF	20	0	"LCD IDLE CONTROL FLAG"
	0X00041B04	00007FFF		PT6LEN	0-7	11111111	"PT6.X MODE SELECTION"
				PT7LEN	8-15	01111111	"PT7.X MODE SELECTION"
				PT8LEN	16-23	0000000C	"PT8.X MODE SELECTION"
				PT9LEN	24-31	0000000C	"PT9.X MODE SELECTION"
	0X00041B08	0000000C		PT10LEN	0-1	00	"PT10.X MODE SELECTION"
				COMLEN	2-3	11	"COM5/COM4 MODE SELECTION"

8.3. “RAM View”and data output

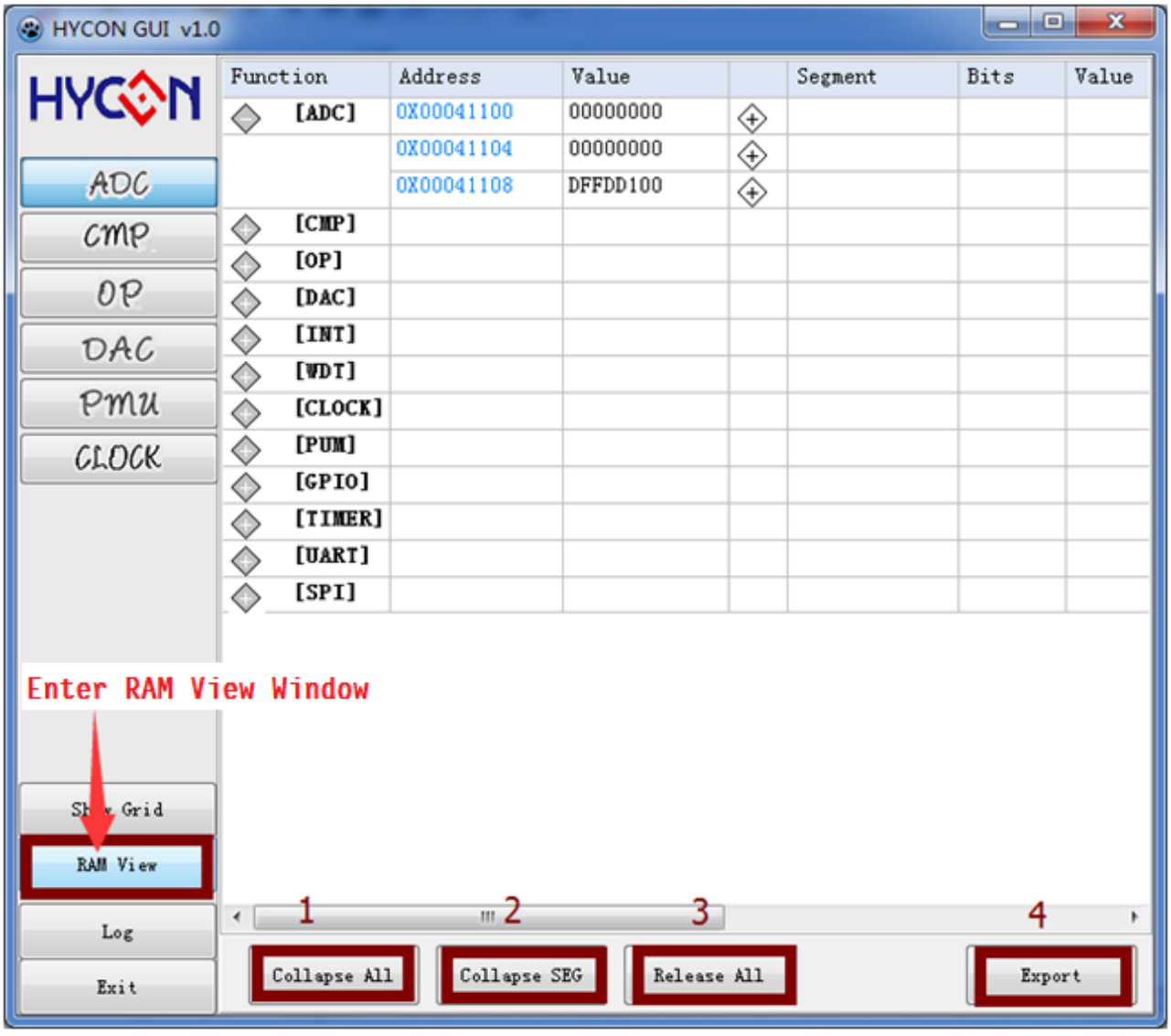
In Debug mode, Open task bar HYCON GUI, Move the cursor into the left window，Click "RAM View" button, "RAM View" window, as shown below.

Item 1: “Collapse All” Collapse display register name.

Item 2: “Collapse SEG” Expand the display register (address and value).

Item 3: “Release All” Expand Show All registers (address, value, Segment, bits ,Value ,Description)

Item 4: “Export” Select the register output is saved as ".h" file, The ".h" file placed in the "include" information on project folder. Include ".h", the program can be called directly in its function "DefineInit ()".



9. IDE Software Uninstalling

Enter “Add/Remove Windows Component” in the control console to remove the programs below.

To remove HY16F Series Device, please select HY16F_RDSp3_Device V0.1.
To remove HY16F Series IDE, please select HY16F Series IDE (AndeSightV2.1.1RDSp3, Offical)V2.1.1.
To remove AndeSight installation program, please select AndeSight211RDS before choosing program removal.

10. Q&A

10.1. How to close Win10 digital signature

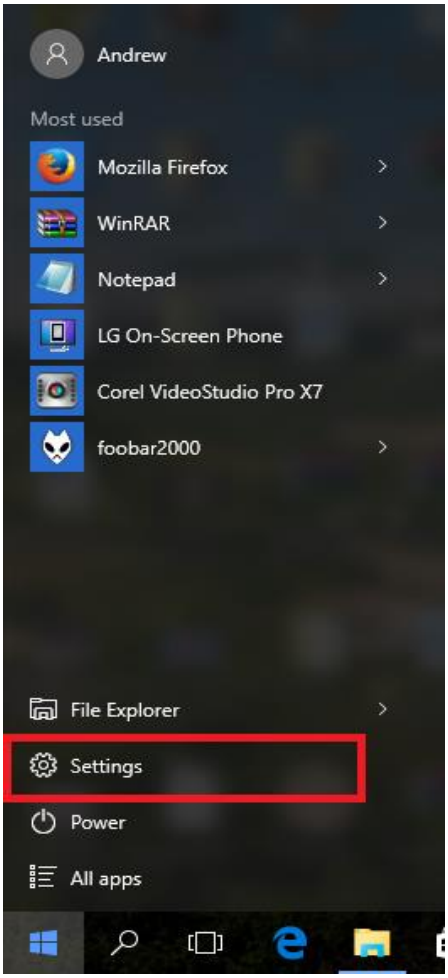
Error Message Record

Building and debugging is OK in Windows 10 64-bit, but there is an issue in the installation, that is, we use lib usb (an open source USB driver) for ICE man, but it is not signed for Windows 10. Before users install AndeSight, they need to disable this check by the following steps:

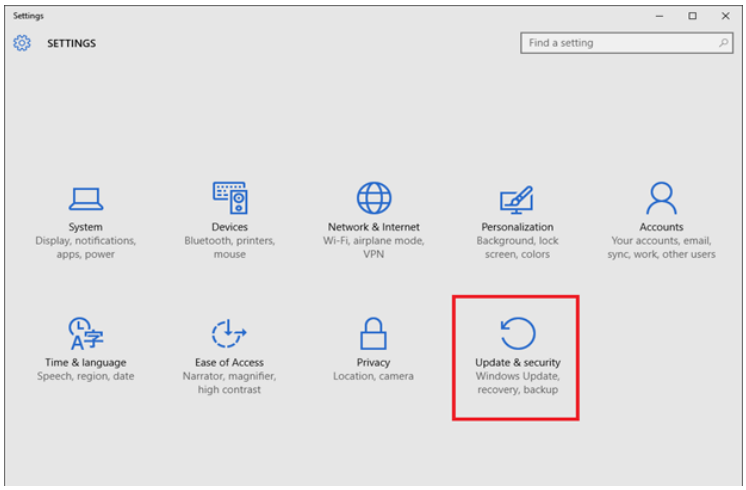
PS: The above message means that when installing AndeShape AICE driver might be failed，you need to manually close the digital signature and then perform driver installation again.

Solution Approach (8 steps):

Step1: Press the lower left corner of the desktop Start menu ,Select "Settings" option.(refer to the figure)

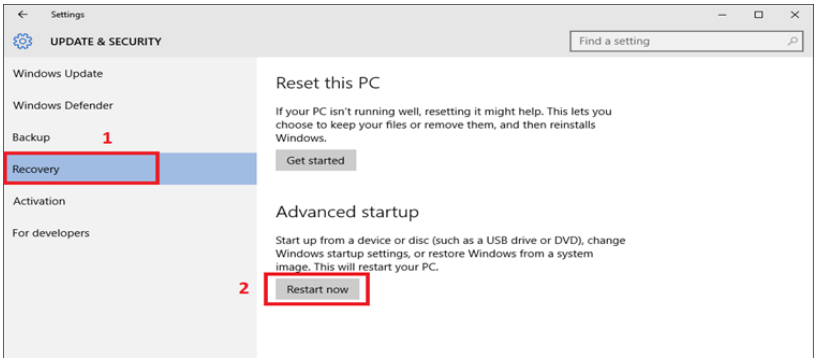


Step2: Click "Update & security" option

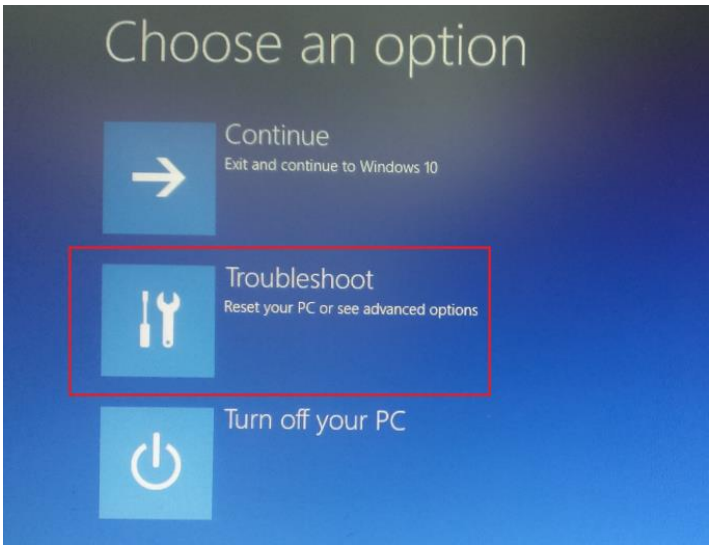


Step3:

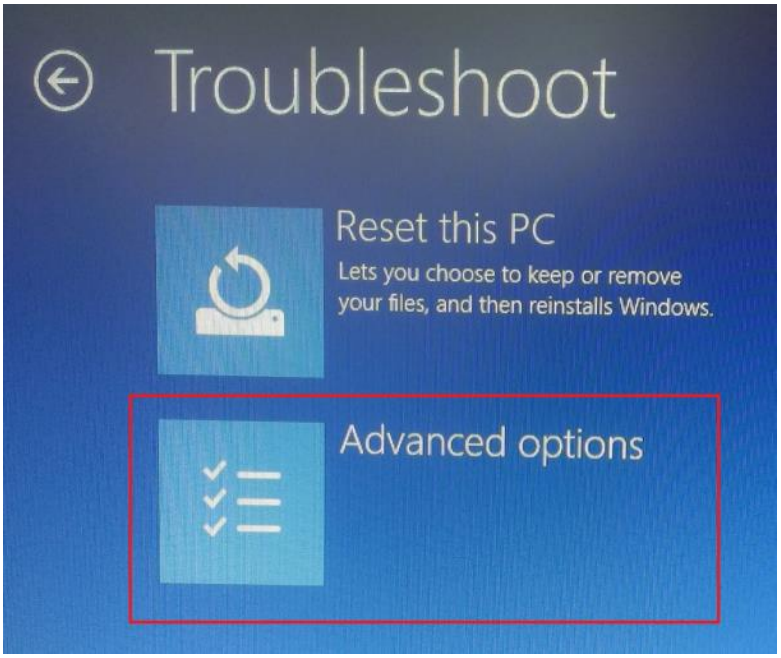
1. First click on the left of the "Recovery" option.
2. Then click to the right of the "Restart now" button.



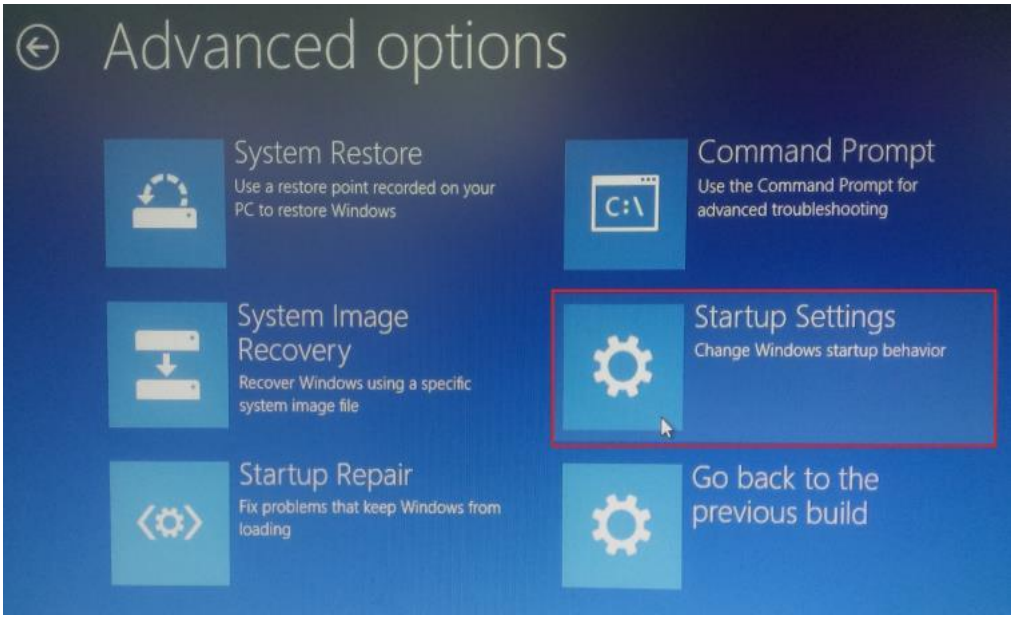
Step4: Select "Troubleshoot" option.



Step5: Select "Advanced options“ option.

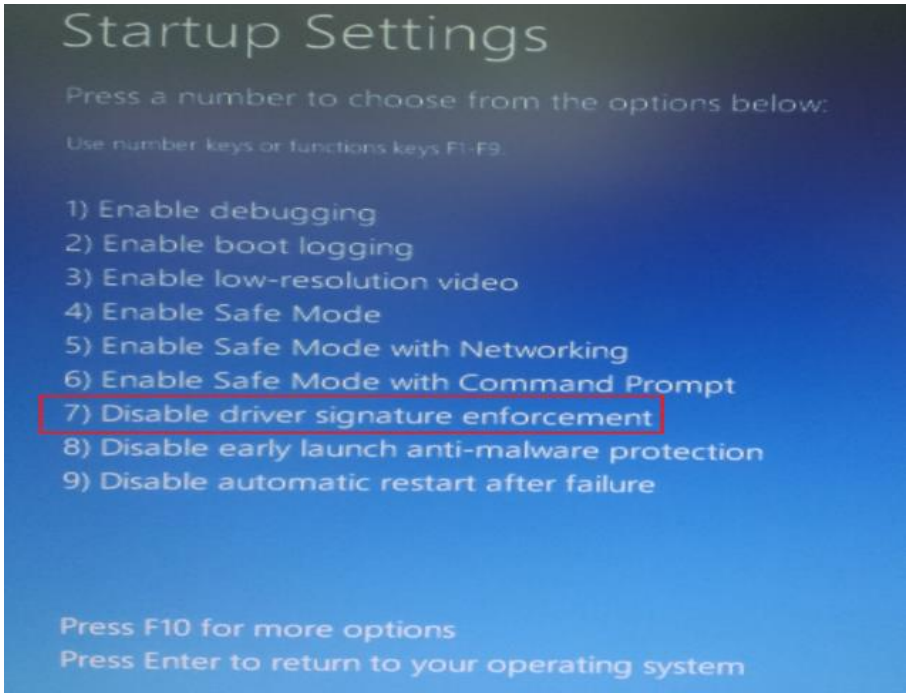


Step6: Select the "Startup Settings" option.



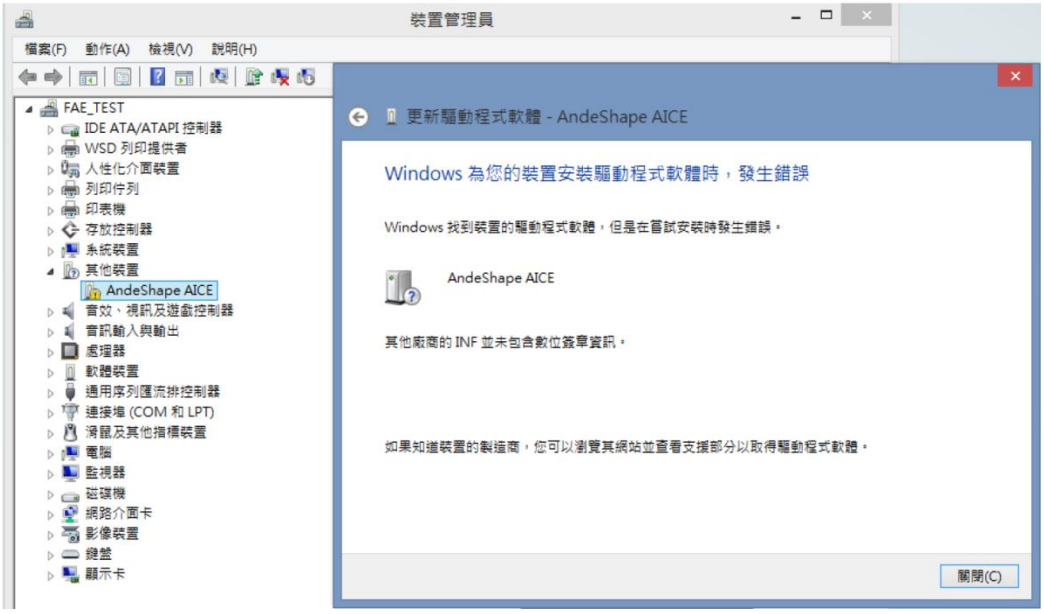
Step7: Press the "Restart" button.

Step8: After the restart, then press the "F7", it means to disable drivers forced signature, then it will enter the desktop, users can refer to the past approaches to update or install Driver.



10.2. How to update AndeShape AICE method

Solve AndeShape AICE driver was not installed successfully:



1. Disable digital signature to install the driver.
2. In AndeShape AICE icon (right-click selected content, as shown below)

- Update AndeShape AICE steps as follows:

- Driver paths are as follows:
  C:\Andestech\AndeSight211RDS\ice\libusb-AICE-driver

10.3. Target can't connect

If Reset and Hold instruction is not set normally, chip cannot be connected. In this case, please refer to the "debug mode" in chapter 6.6 for setting. Additional remarks: User can check HW pin connection(RST/VDD3V/ECK/EDIO/VSS) or click "Connect Target Via AICE" to check RST pin status. In normal case, RST pin have high/low status change. If RST pin keep low always, maybe the HY16F Mini Link was broken. Please contact with HYCON staff.

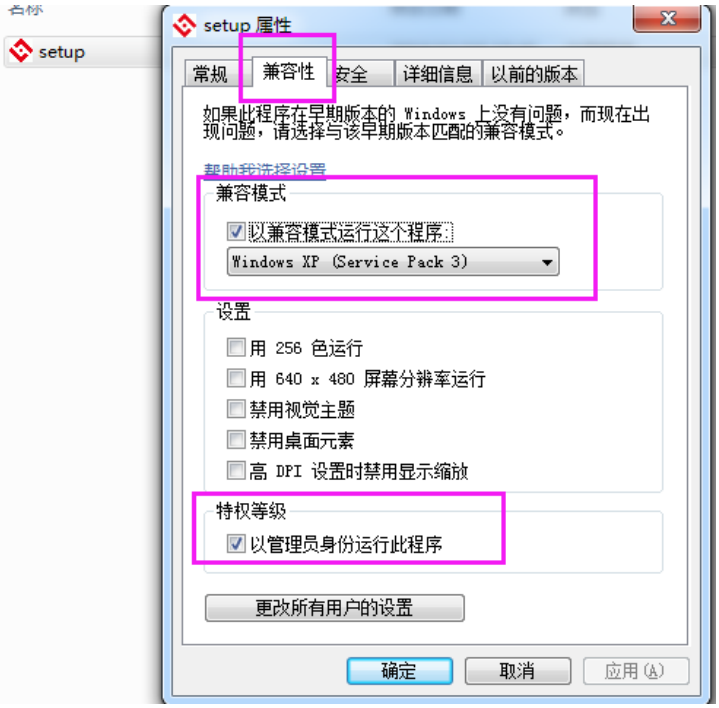
10.4. AndesightRDSV2.1.1 installation notes

Pleaser be noted when install AndesightRDSV2.1.1 in the win7(64bit), win8(64bit), win10(64bit) system. Installing AndesightRDSV2.1.1 might be failed, provide some information for user reference below.

1.Closed the Anti-virus software.

2.Modify the setup property, select windows compatibility mode as"XP SP3 + administrator" . Please refer to the picture below.

3.Remove the old version Andesight.



10.5. License registration issue (first time installation)

please refer to chapter 4.2 in detail. It only occurs on the first time to open Andes

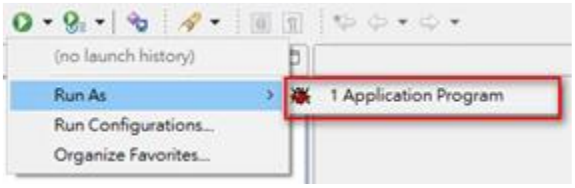
environment.

10.6. WARNING : Couldn’t compute FAST_CWD pointer message(Compiler warning)

As title, it occurs the warning message “Couldn't compute FAST_CWD pointer” in Win10 with AndesightRDSV2.1.1. User can ignore the message. It is warning message only, it don’t effect the product development and chip performance.

10.7. Enter Debug Mode abnormal and select RED BUG issue

Enter Debug mode, the correct selection is YELLOW BUG. Because HYCON HY16F don’t support release mode (Application Program), If select RED BUG and enter release mode (refer to the below pictures). User have to delete Debug file and re-build project and re-create Debug Configurations, the Debug Configurations setting in detail. please refer to the chapter 6.6.



RED BUG, selection ERROR

10.8. Antivirus software to effect the build code speed.

The antivirus software “360 safeguard” may lead to compiler speed lower (over 1 minutes). To finish the build project only takes 3~10 seconds in normal condition. Close or modify the antivirus software setting, that is the reference solution. To solve the compiler speed lower issue.

11. Document Amendment Record

Greater differences in the document are presented below, with variation in punctuation and font excluded.

Version	Page Number	Amendment Summary	Date
V01	ALL	First Version Publication	2013/03/20
V02	ALL	Second Version Publication	2013/05/27
V03	ALL	Third Version Publication	2013/09/10
V04	ALL	Fourth Version Publication	2014/06/13
V05	5-13	With 3.IDE Software Installation Explanation Added	2014/09/05
V06	P31-32	With Installer UI Mode Error resolution approaches under Win8 Driver Added	2015/09/01
V07	P28~46	1. Modify the Chapter 10 Win10 installation AndeSight201p1RDS FAQ & solution. 2. Add Chapter 8 GUI manual.	2016/07/28
V08	P5 P27	1. Enhanced IDE System Requirement Description 2. Add a user to perform the rename project function description	2016/10/26
V10	ALL	1. Remove HY16F18X-DK03 & HY16F19X-DK03 information. 2. Synchronize with Chinese version (V10)	2017/03/14
V11	ALL	1. Added AndeSighRDSV2.1.1 Software Installation description and picture, remove AndeSighRDSV2.0.1 pictures.	2018/08/09
V12	ALL	1. Modify the Chapter 6.5 description 2. Modify the Chapter 6.6 description 3. Added the Chapter 10.5	2019/12/04
V13	ALL	1. Modify the Chapter 2 IDE System Requirement description. Supporting Product Model: HY16F39 series has changed to HY16F3981 series 2. Added Note2 description on the chapter 6.6. 3. Added description on the chapter 10.1. 4. Added description on the chapter 10.4. 5. Add Chapter 10.6~10.9. 6. Chapter 10 “installation Q&A” was renamed “Q&A”, remove AndeSighRDSV2.0.1 information. 7. Modify Chapter 4.2 description.	2021/05/20