SN32F700 Series

QUICK START

SN32F707
SN32F706

SONiX 32-Bit Cortex-M0 Micro-Controller

AMENDENT HISTORY

Version	Date	Description
1.0	2012/04/09	First version.
1.1	2012/05/03	1. Add CMSIS-SVD (System View Debug) section.
1.2	2012/08/08	1. Modify CMSIS-SVD (System View Debug) section.
1.3	2013/02/27	1. Modify refer to SN32F707 Starter kit V3.

Table of Content

1   OVERVIEW

The purpose of this document is to make the users be familiar with SONiX SN32F700 Quick Start Development Package and the settings of Keil MDK-ARM.

1.1   SN32F700 QUICK START DEVELOPMENT PACKAGE

SN32F700 Quick Start Development Package includes

H/W

1.   SN32F707 Starter Kit Board

2.   SN-LINK

3.   SN32F700 ISP Board

S/W

1.   SN32F700 CMSIS Files

2.   SN32F700 Flash Algorithm file

3.   SN32F700 FW Library

4.   SN32F700 Tool Installer

1.2   KEIL MDK-ARM

The MDK-ARM is a complete software development environment for Cortex™-M, Cortex-R4, ARM7™ and ARM9™ processor-based devices. MDK-ARM is specifically designed for microcontroller applications, it is easy to learn and use, yet powerful enough for the most demanding embedded applications.

■ Complete support for Cortex-M, Cortex-R4, ARM7, and ARM9 devices

■ Industry-leading ARM C/C++ Compilation Toolchain

■ µVision4 IDE, debugger, and simulation environment

■ Keil RTX deterministic, small footprint real-time operating system (with source code)

■ TCP/IP Networking Suite offers multiple protocols and various applications

■ USB Device and USB Host stacks are provided with standard driver classes

■ Complete GUI Library for embedded systems with graphical user interfaces

■ ULINKpro enables on-the-fly analysis of running applications and records every executed Cortex-M instruction

■ Complete Code Coverage information about your program's execution

■ Execution Profiler and Performance Analyzer enable program optimization

■ Numerous example projects help you quickly become familiar with MDK-ARM's powerful, built-in features

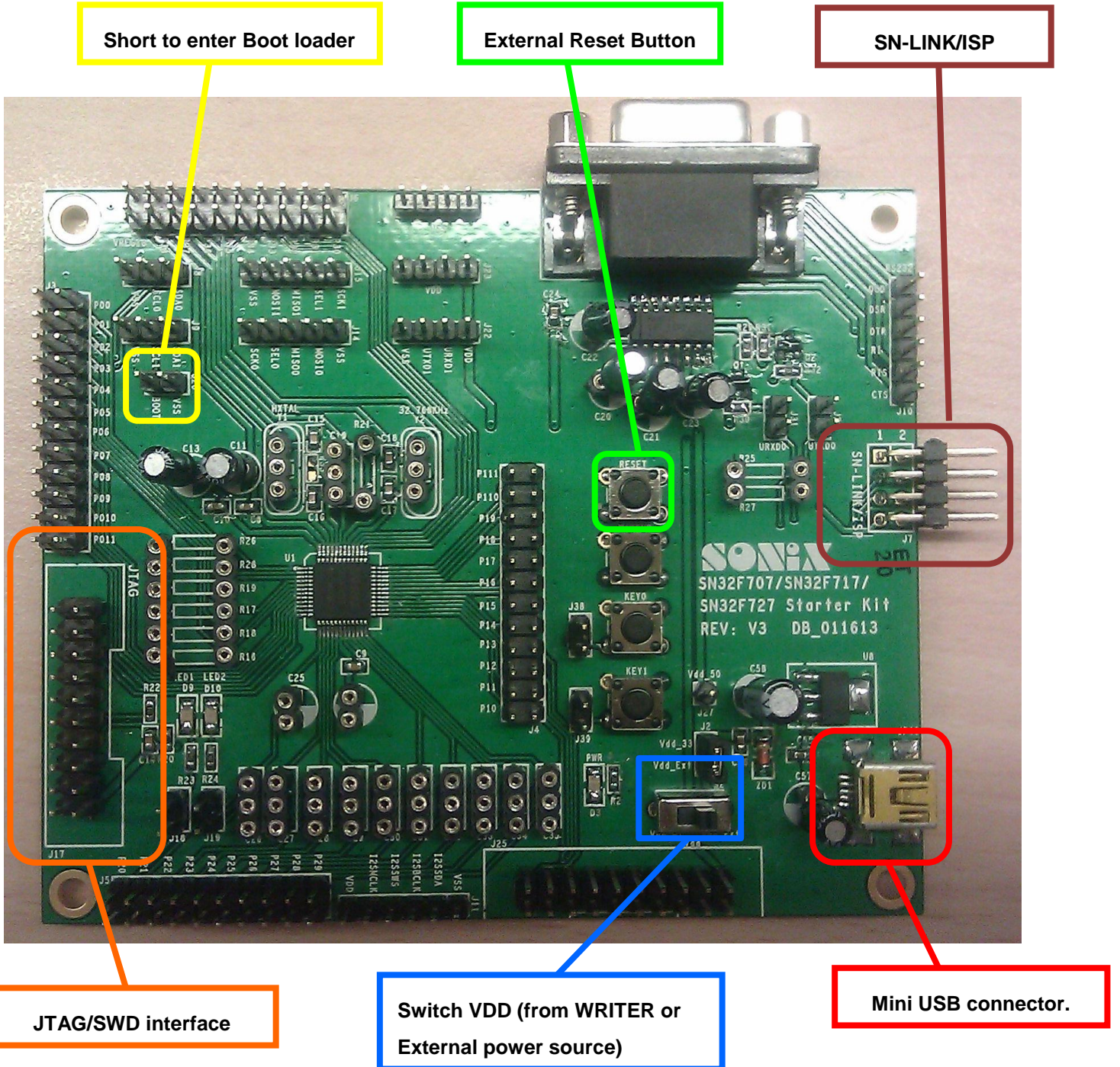■ CMSIS Cortex Microcontoller Software Interface Standard compliant

MDK-ARM is available in 4 editions: MDK-Lite, MDK-Basic, MDK-Standard, and MDK-Professional.

All editions provide a complete C/C++ development environment and MDK-Professional includes extensive middleware libraries. Refer to the Product Selector for more details.

✳ *Note: MDK-Lite (32KB) Edition is available for download. It does not require a serial number or license key.*

Please link to **http://www.keil.com/arm/mdk.asp** to download and see more detail introduction.

2 SETUP

2.1 SN32F700 Starter-kit Board

Short to enter Boot loader

External Reset Button

SN-LINK/ISP

JTAG/SWD interface

Switch VDD (from WRITER or External power source)

Mini USB connector.

JP46→ Mini USB connector.
S1→ AC 7.5 V POWER Switch
S2→ Choose the source of VDD (LDO 3.3V or WRITER). Please switch to VDD_WT if the WRITER is used.
J20→ Short (P0.2 and VSS）)to enter Boot Loader to ISP.
J17→ Connector for JTAG
J7 → Connector for SN-LINK/SN32F700 ISP Board

2.2　ICE

1.　Please execute SN32F700 Tool Installer to install files of CMSIS and SN-LINK

2.　Connect SN-LINK debugger and PC via USB cable

2.3　KEIL MDK-ARM

1.　Please link to http://www.keil.com/arm/mdk.asp to download and install to default path (C:\ARM)

Note: The default path which FW Library provided by SONiX references is C:\ARM, if User changes the path, please modify the project settings according to the new path.
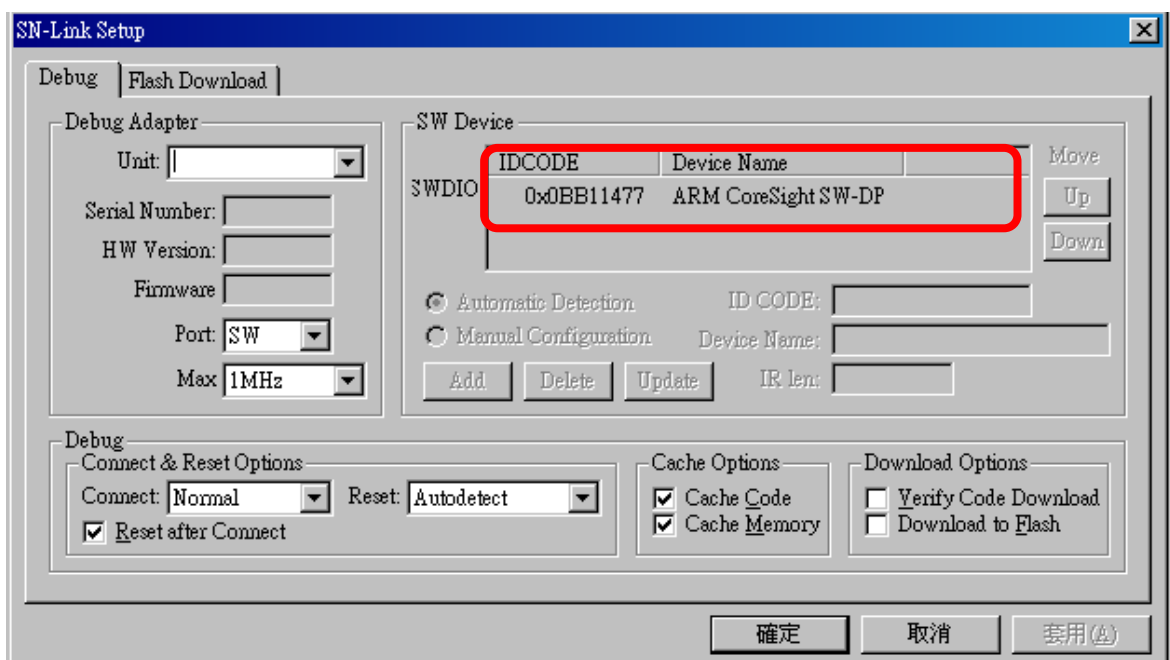

2.　Open any project of SN32F700 FW Library with MRK-ARM, and then click the following button("Target Options")
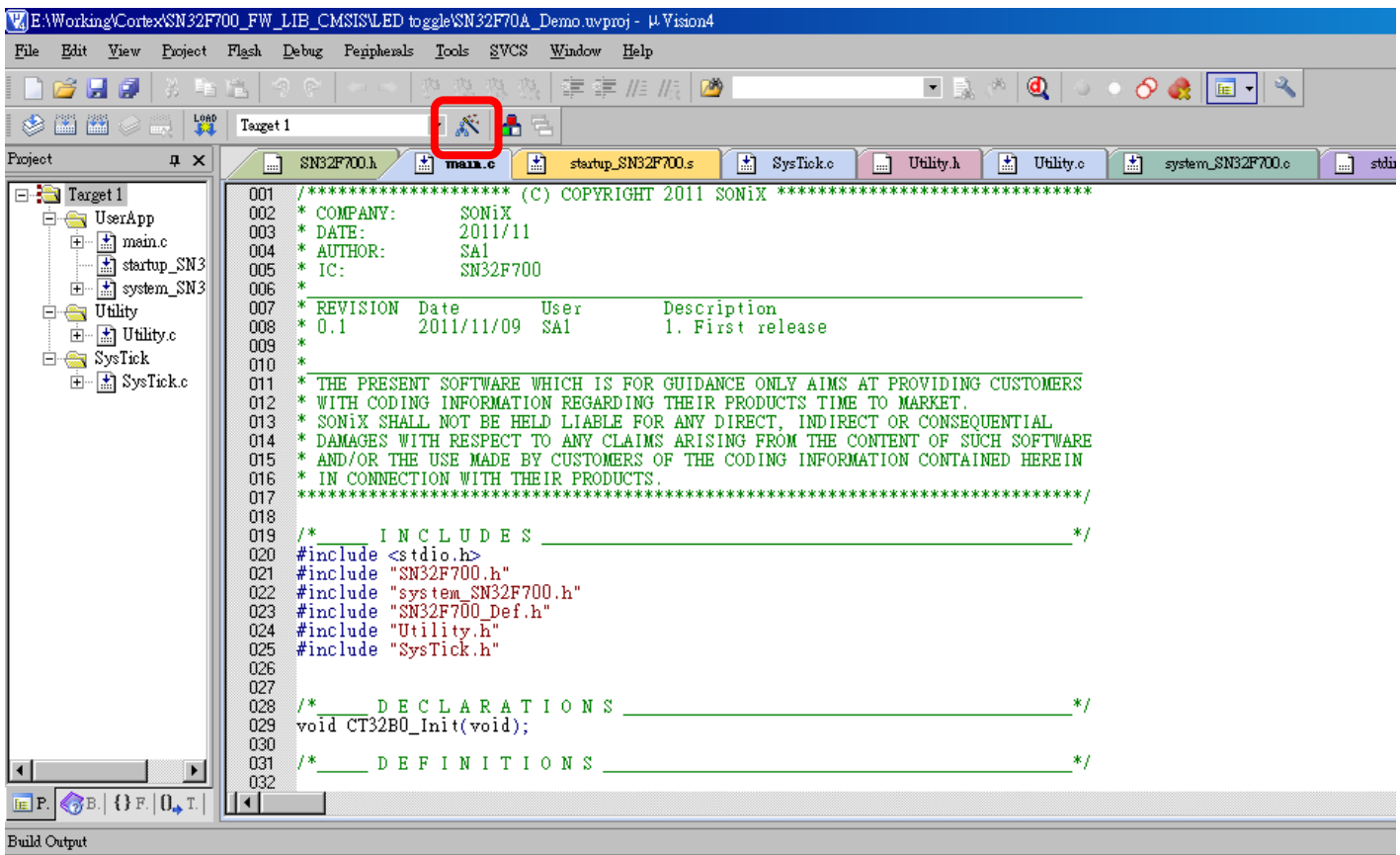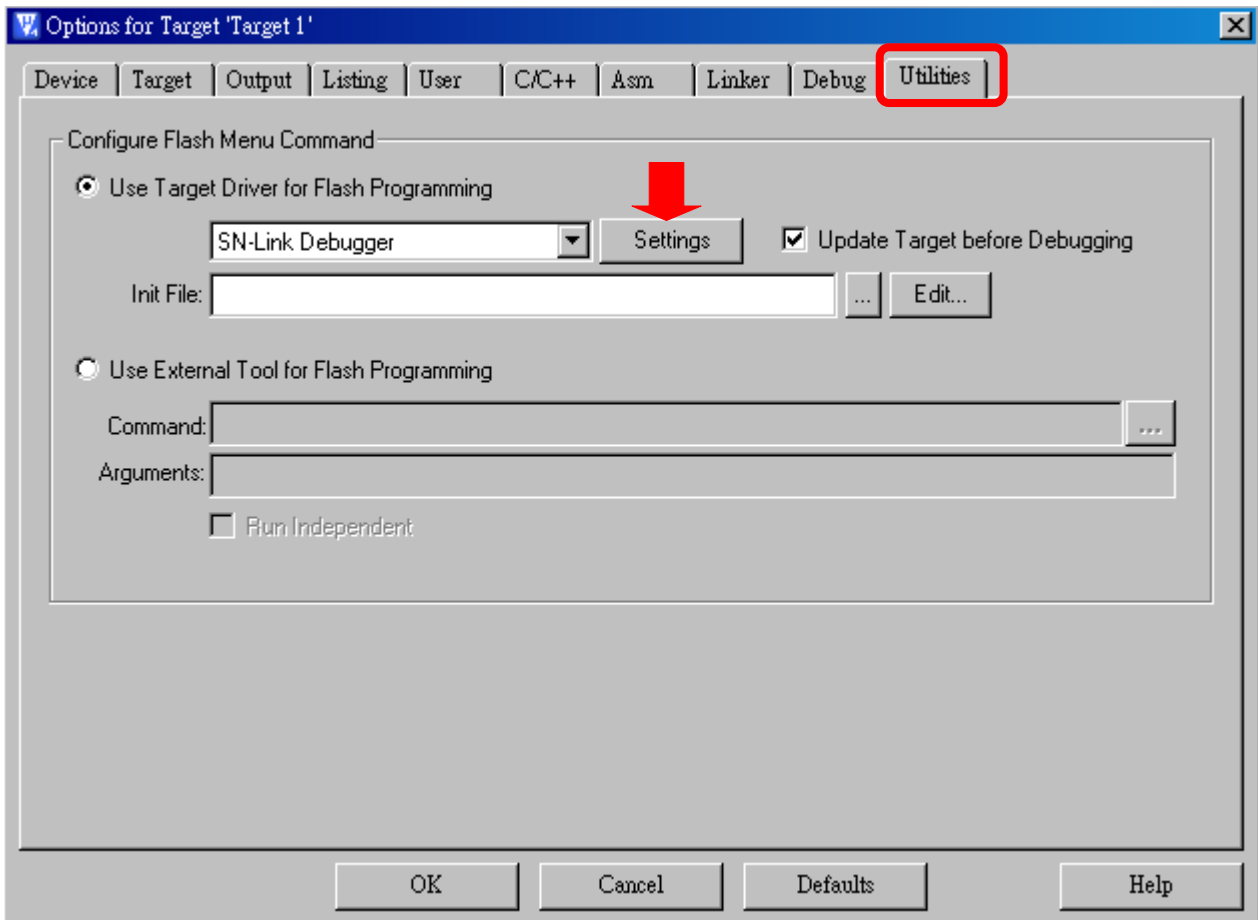
3. Enter "Target Options" page, click "Debug" tab, and set as the following settings, and then click "Settings" button.
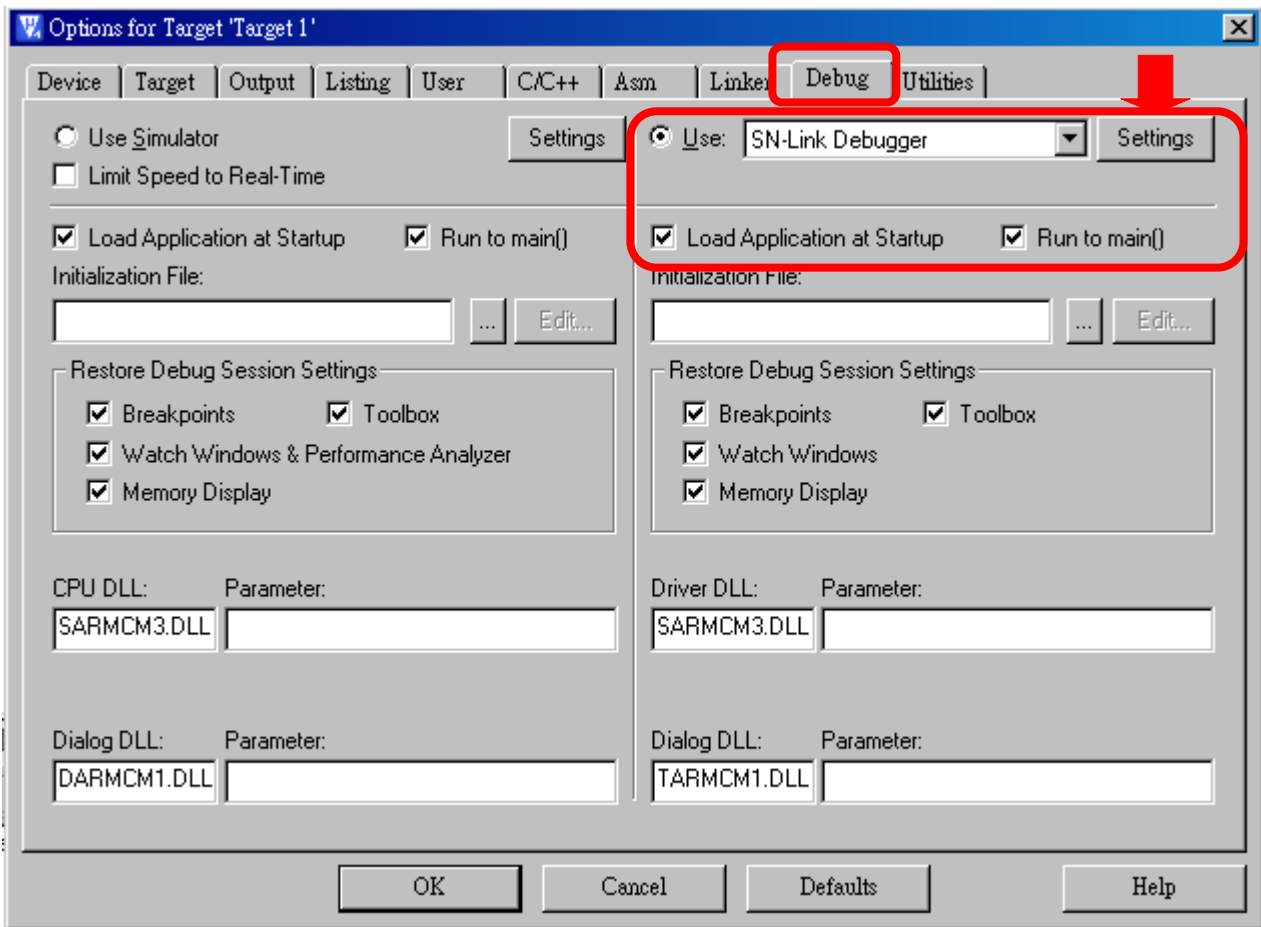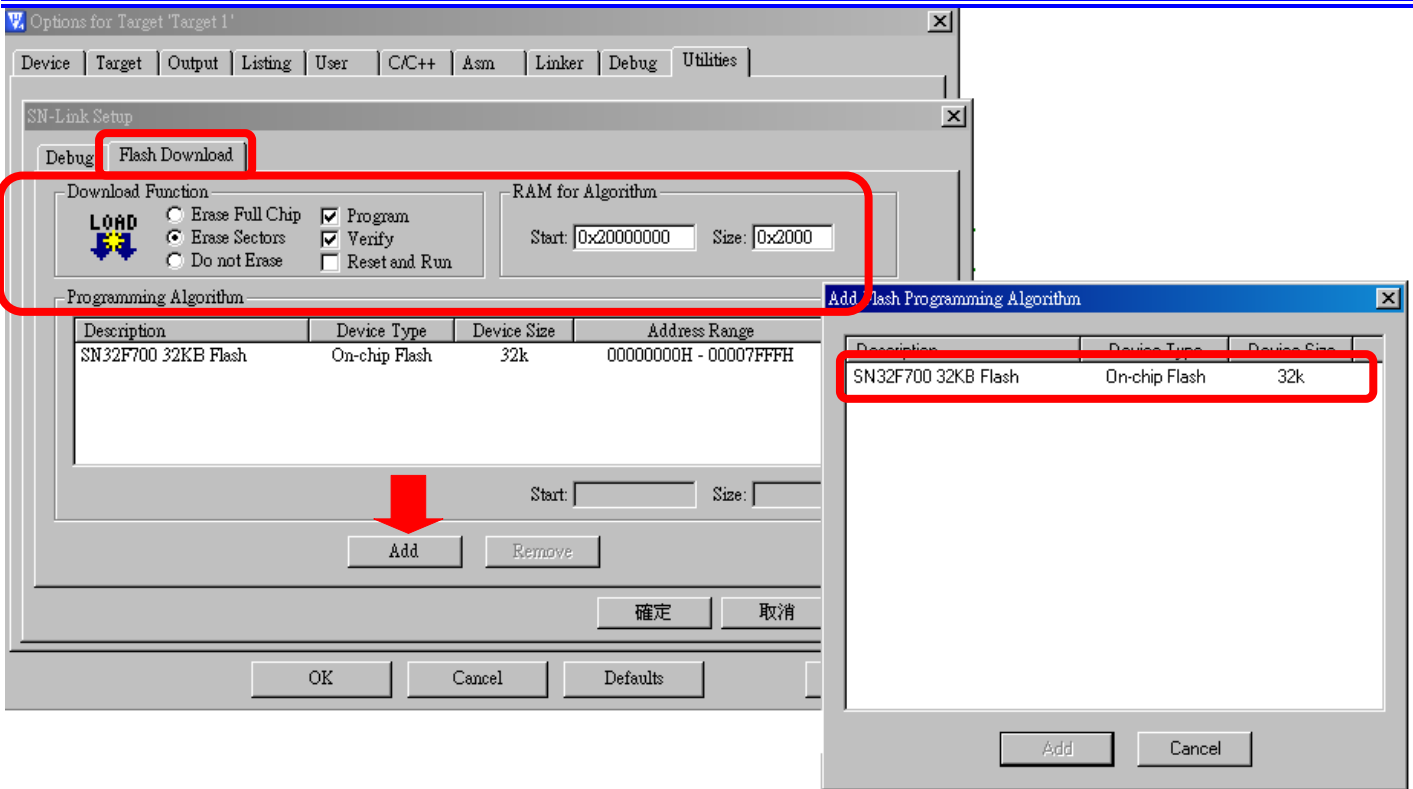

4. Enter Setup page, KEIL shall be able to get and the status of MCU if ICE is connected correctly.

5. Please click "Utility" tab, choose SN-LINK Debugger, and then click "Settings" button.

6. Please set as the following settings, and then click "Add"→ choose "SN32F700 32KB Flash"

✱ *Note: If "SN32F700 32KB Flash" can NOT be found，please make sure the step 2 of 2.3KEIL MDK-ARM completes.*

7.   Please click "OK" to exit "Target Options"

2.4   Debug

The users can develop and debug with MDK-ARM after above settings.

```
E:\Working\Cortex\SN32F700_FW_LIB_CMSIS\LED toggle\SN32F70A_Demo.uvproj - µVision4

File  Edit  View  Project  Flash  Debug  Peripherals  Tools  SVCS  Window  Help

Target 1

Project
  Target 1
    UserApp
      main.c
      startup_SN3
      system_SN3
    Utility
      Utility.c
    SysTick
      SysTick.c

  P.  B.  {}F.  0,T.

  SN32F700.h  main.c  startup_SN32F700.s  SysTick.c  Utility.h  Utility.c  system_SN32F700.c  stdi

001  /******************* (C) COPYRIGHT 2011 SONiX *****************************
002  * COMPANY:        SON1X
003  * DATE:           2011/11
004  * AUTHOR:         SA1
005  * IC:             SN32F700
006  *
007  * REVISION   Date          User          Description
008  * 0.1        2011/11/09  SA1           1. First release
009  *
010  *
011  * THE PRESENT SOFTWARE WHICH IS FOR GUIDANCE ONLY AIMS AT PROVIDING CUSTOMERS
012  * WITH CODING INFORMATION REGARDING THEIR PRODUCTS TIME TO MARKET.
013  * SONiX SHALL NOT BE HELD LIABLE FOR ANY DIRECT, INDIRECT OR CONSEQUENTIAL
014  * DAMAGES WITH RESPECT TO ANY CLAIMS ARISING FROM THE CONTENT OF SUCH SOFTWARE
015  * AND/OR THE USE MADE BY CUSTOMERS OF THE CODING INFORMATION CONTAINED HEREIN
016  * IN CONNECTION WITH THEIR PRODUCTS.
017  *****************************************************************************/
018
019  /*____  I N C L U D E S  _____*/
020  #include <stdio.h>
021  #include "SN32F700.h"
022  #include "system_SN32F700.h"
023  #include "SN32F700_Def.h"
024  #include "Utility.h"
025  #include "SysTick.h"
026
027
028  /*____  D E C L A R A T I O N S  _____*/
029  void CT32B0_Init(void);
030
031  /*____  D E F I N I T I O N S  _____*/
032

Build Output

Cortex-M/R J-LINK/J-Trace                                    CAP NUM SC
```
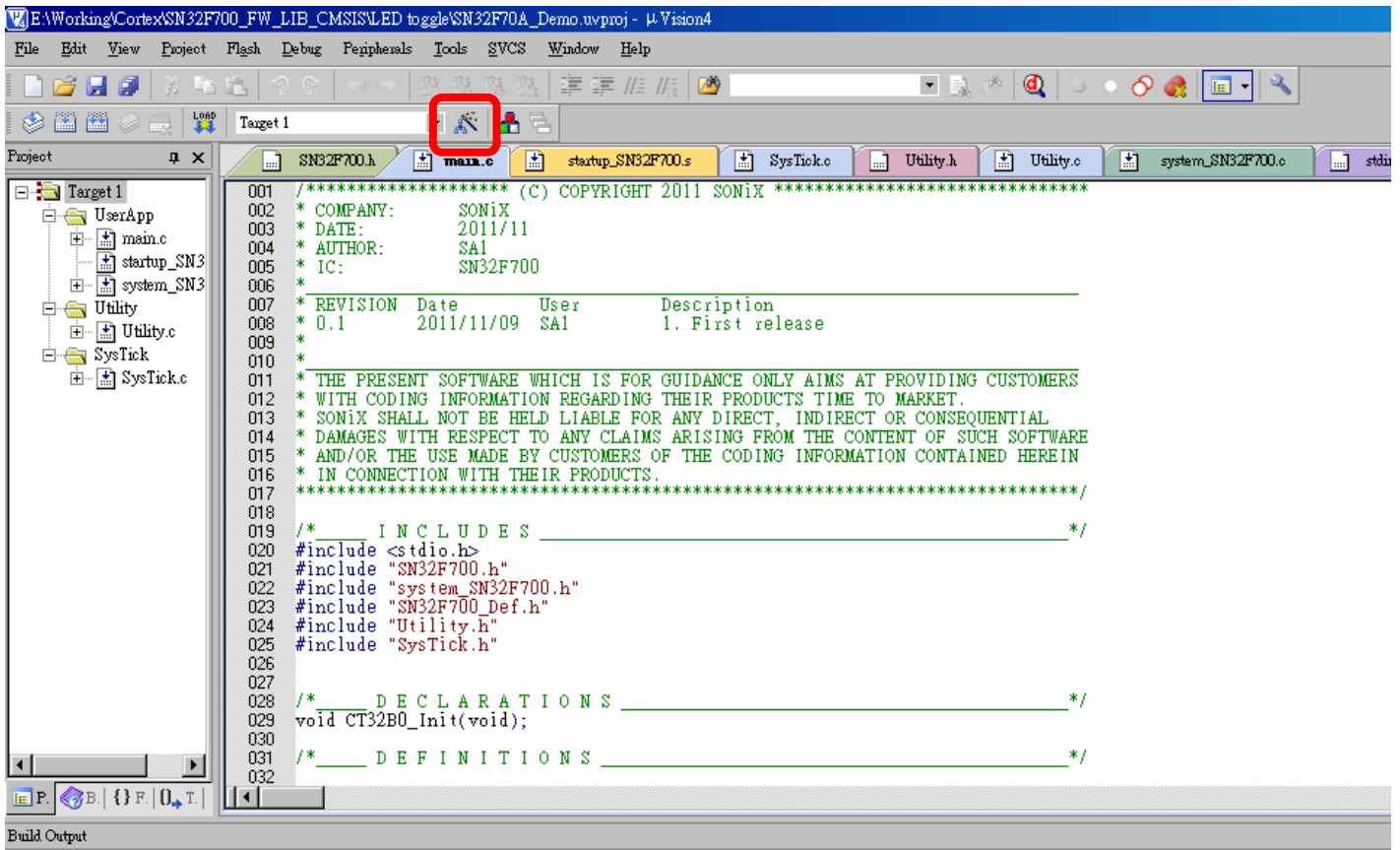
2.4.1 CMSIS-SVD (System View Debug)

SVD is the debug standard of CMSIS, and it is a useless debug tool for users.

1. Please make sure that you had executed SN32F700 Tool Installer to install CMSIS files

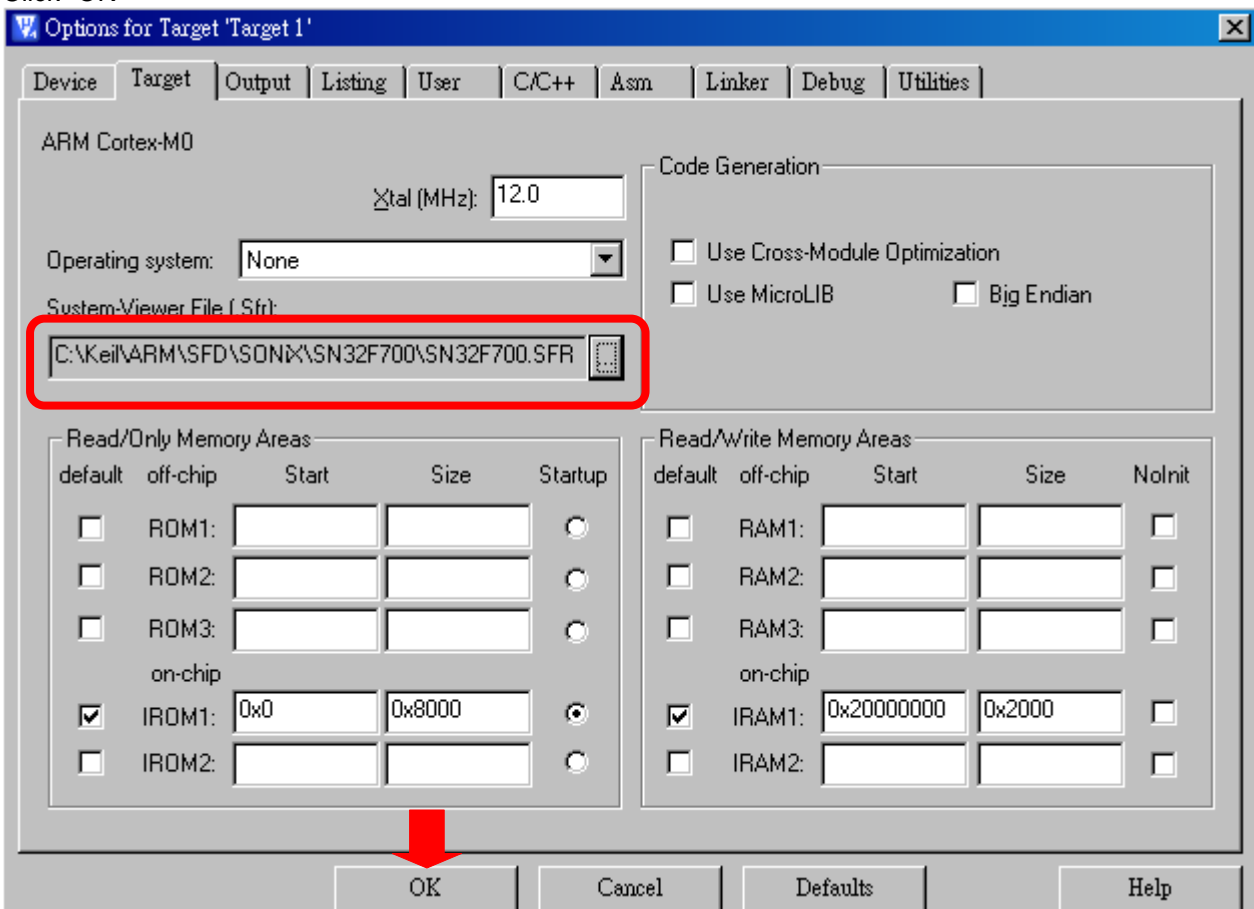2. Open any project of SN32F700 FW Library with MRK-ARM, and then click the following button("Target Options")

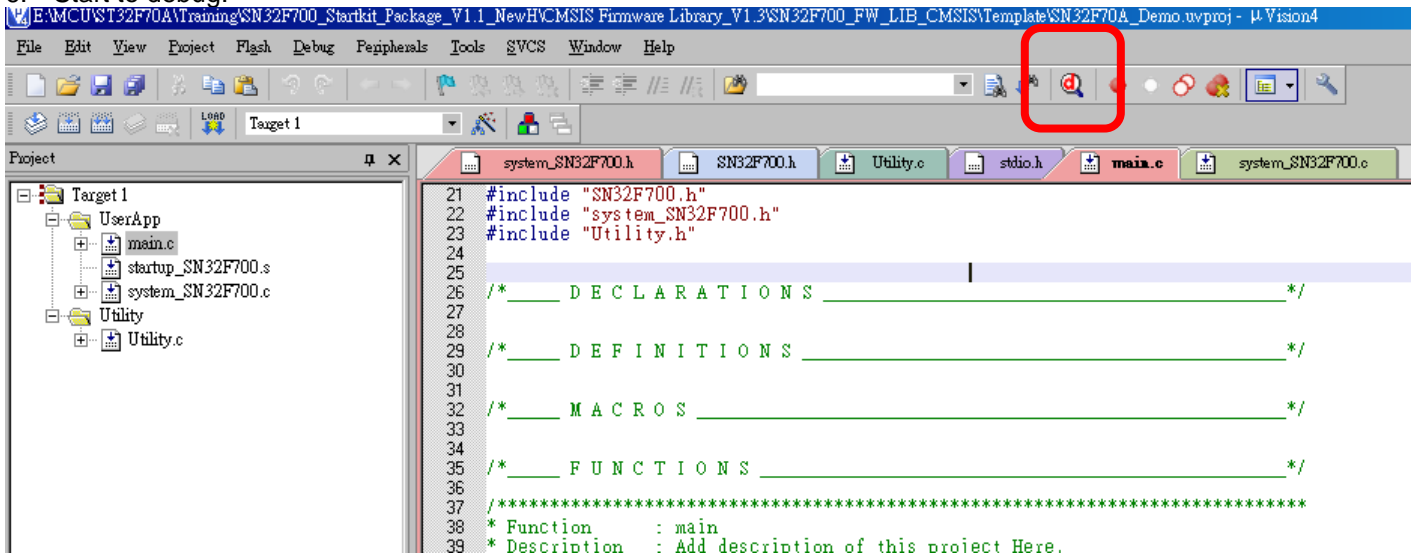3. Enter "Target Options" page, click "Target" tab, and click "…" button of System-Viewer file (.Sfr) setting
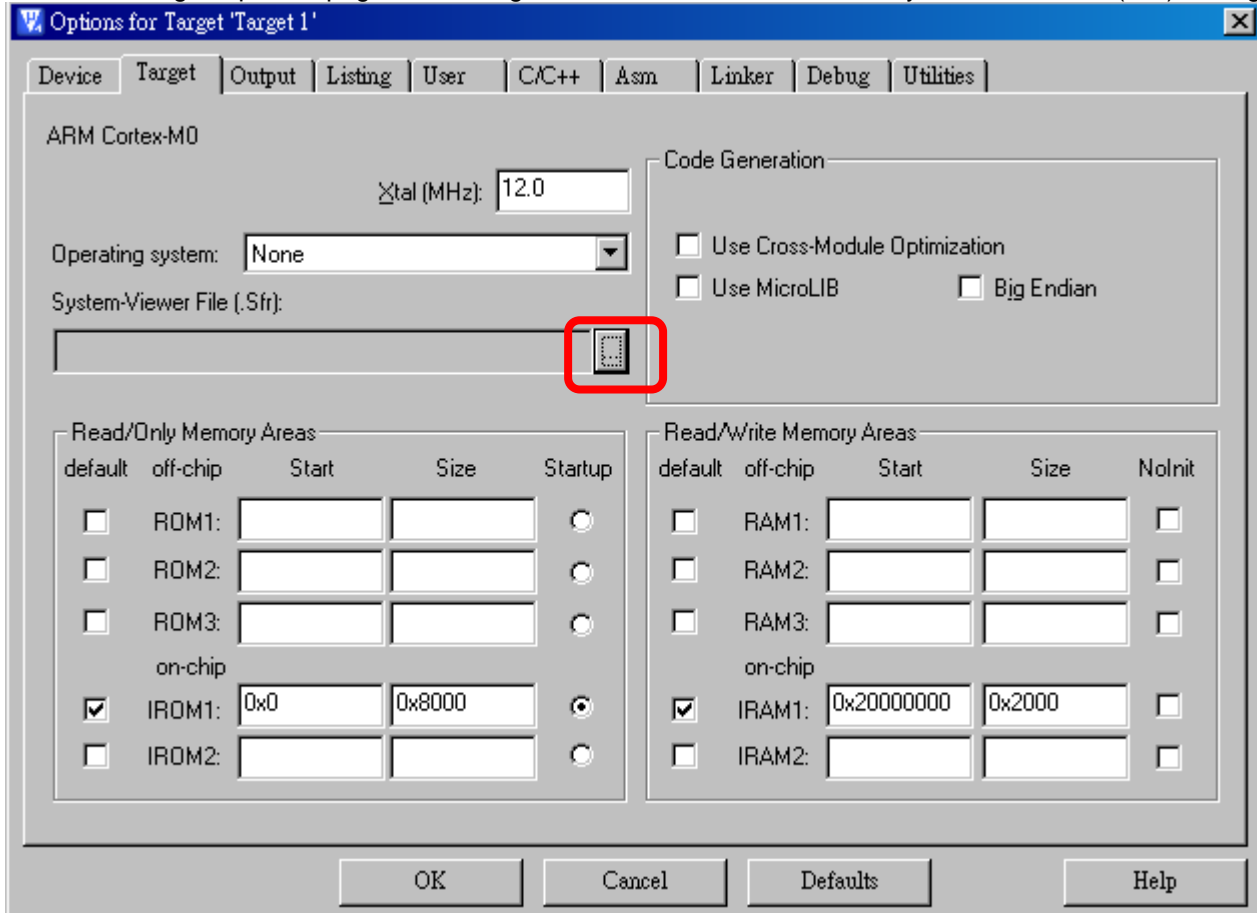
4. Please assign the SN32F700.SFR which locates at C:\Keil\ARM\SFD\SONiX\SN32F700, and then click "OPEN" button.
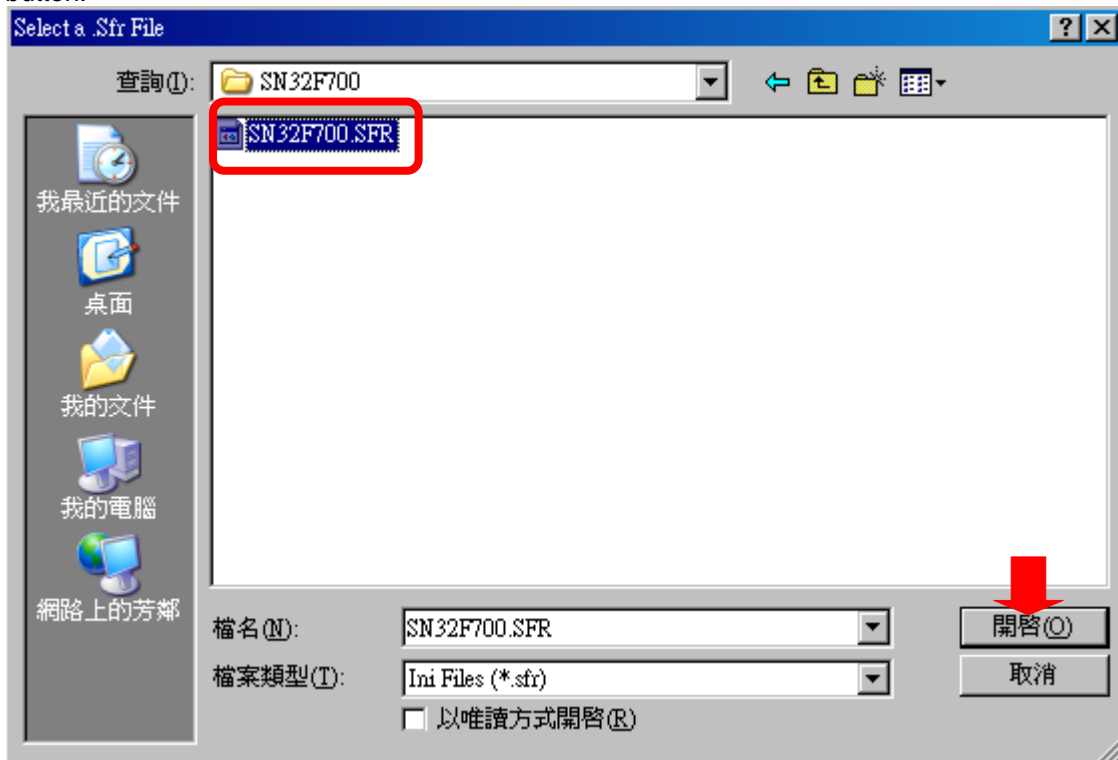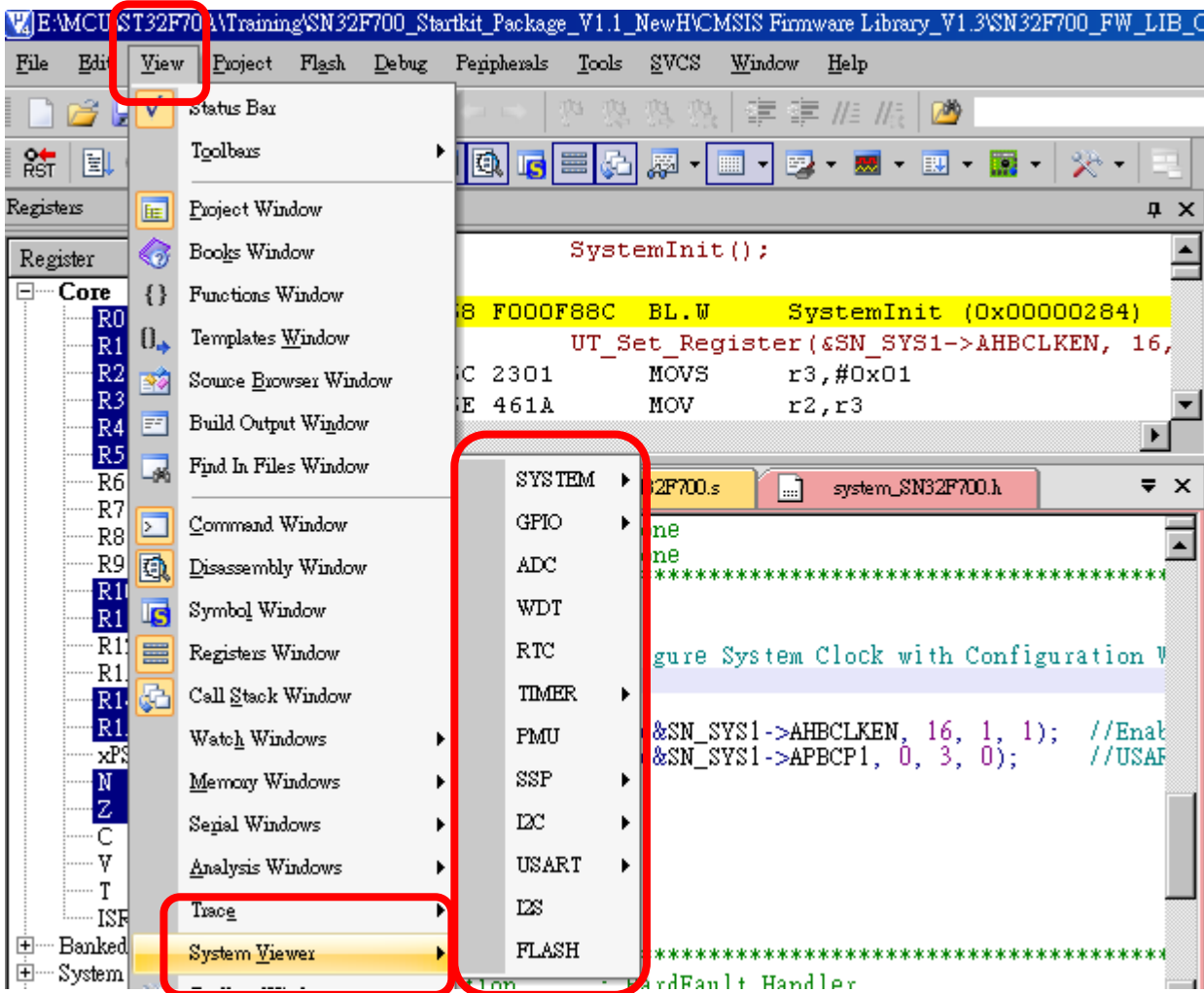
5. Click "OK"

6. Start to debug.

7. Enter debug mode, click "View", and then select the registers which to be watched from the "System Viewer" list.

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8. Take SN_SYS0 as example, 为例, we can see the following messages in KEIL debug window.

SN_SYS0   ⊓ ✕

Property	Value
⊟ ANBCTRL	0x00000001
⋯ IHRCEN	1: Enable = Enable
⋯ ELSEN	0: Disable = Disable
⋯ EHSEN	0: Disable = Disable
⋯ EHSFREQ	0: Low = Less equal than 12MHz
⊟ PLLCTRL	0x00000063
⋯ MSEL	0x03
⋯ PSEL	3: 011 = P=6
⋯ FSEL	0: F=1 = F=1
⋯ PLLCLKSEL	0: IHRC = IHRC
⋯ PLLEN	0: Disable = Disable
⊟ CSST	0x00000001
⋯ IHRCRDY	1: IHRC Ready = IHRC Ready
⋯ ELSRDY	0: ELS XTAL Not Ready = ELS XTAL Not Ready
⋯ EHSRDY	0: EHS XTAL Not Ready = EHS XTAL Not Ready
⋯ PLLRDY	0: PLL unlocked = PLL unlocked
⊞ CLKCFG	0
⊞ AHBCP	0
⊞ RSTST	0x00000019
⊞ LVDCTRL	0

CSST
[Bits 31..0] RO (@ 0x40060008) Offset:0x08 Clock Source Status Register

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