

SONiX 8-Bit MCU

Smart Development Adapter

User Manual

Version 1.1

SONiX 8-Bit Micro-Controller

SONiX reserves the right to make change without further notice to any products herein to improve reliability, function or design. SONiX does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others. SONiX products are not designed, intended, or authorized for use as components in systems intended, for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SONiX product could create a situation where personal injury or death may occur. Should Buyer purchase or use SONiX products for any such unintended or unauthorized application. Buyer shall indemnify and hold SONiX and its officers, employees, subsidiaries, affiliates and distributors harmless against all claims, cost, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use even if such claim alleges that SONiX was negligent regarding the design or manufacture of the part.

Amendment History

Version	Date	Comments
VER 1.0	Oct.2009	First issue
VER1.1	Feb.2010	<ol style="list-style-type: none">1. Add target board power supply description;2. Update SDA figure and cable "pin assignment" description;3. Add SN8 C Studio software installation information.

Table of Contents

Amendment History.....	2
1 Overview	4
1.1 Features.....	4
1.2 Product Appearance	4
2 Installation.....	6
2.1 Installing the Hardware	6
2.2 Installing the Software.....	7
3 Start to Debug.....	8
3.1 Operation Steps.....	8
4 Download SN8 file	12
4.1 Functions	12
4.2 Operation Steps.....	12
5 Notice.....	14
5.1 Limitations.....	14
5.2 Troubleshooting.....	14

1 Overview

Smart Development Adapter (SDA) provides interface with in system debugging and programming function between PC-host and target board. SDA is convenient for users to debug their program and download SN8 file on-line.

- **Note: User must add power for target board;**
- **Note: Power on target board after SDA connected successfully with PC, please refer to figure 2-2.**

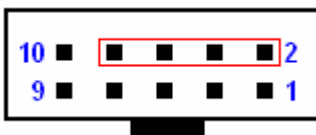
1.1 Features

- USB HID Class driver, Plug-and-Play;
- Power on auto-detecting and complete the link by target board.

1.2 Product Appearance

Symbol	Illustration
A	USB Port
B	Power / Link LED(●)
C	Debug Mode LED(●/●)
D	10 pin cable connect to target board

10 Pin cable "pin assignment" and "pin description"






Pin Assignment	Illustration
1,3,5,7,9,10	Reserved
2	VDD
4	EICK
6	EIDA
8	GND



Figure 1-1 SDA diagram

SDA LED status information

LED Name	Description	LED Color
Power	USB link successfully;	
Run/Stop	1. SDA connects with target board successfully; 2. Leave debug-environment; 3. Download SN8 file completed;	
	1. Enter debug-environment; 2. Download SN8 file.	

2 Installation

2.1 Installing the Hardware

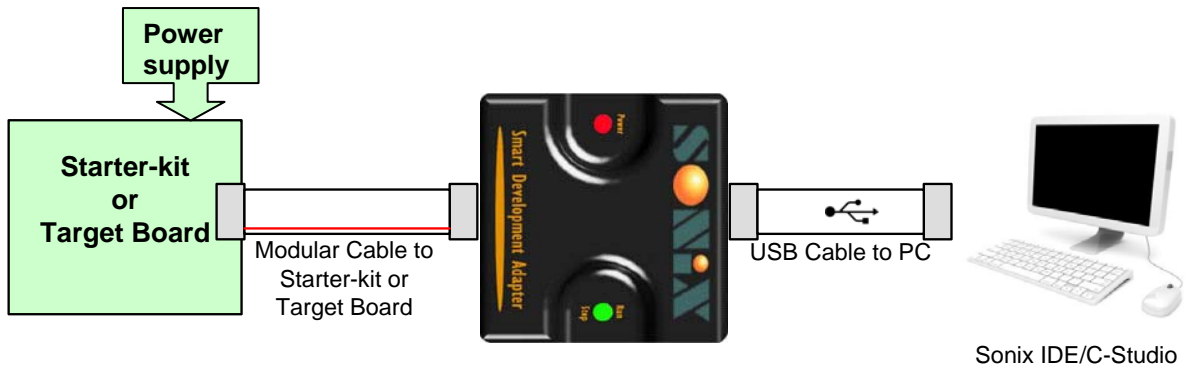


Figure2-1 Hardware connection diagram

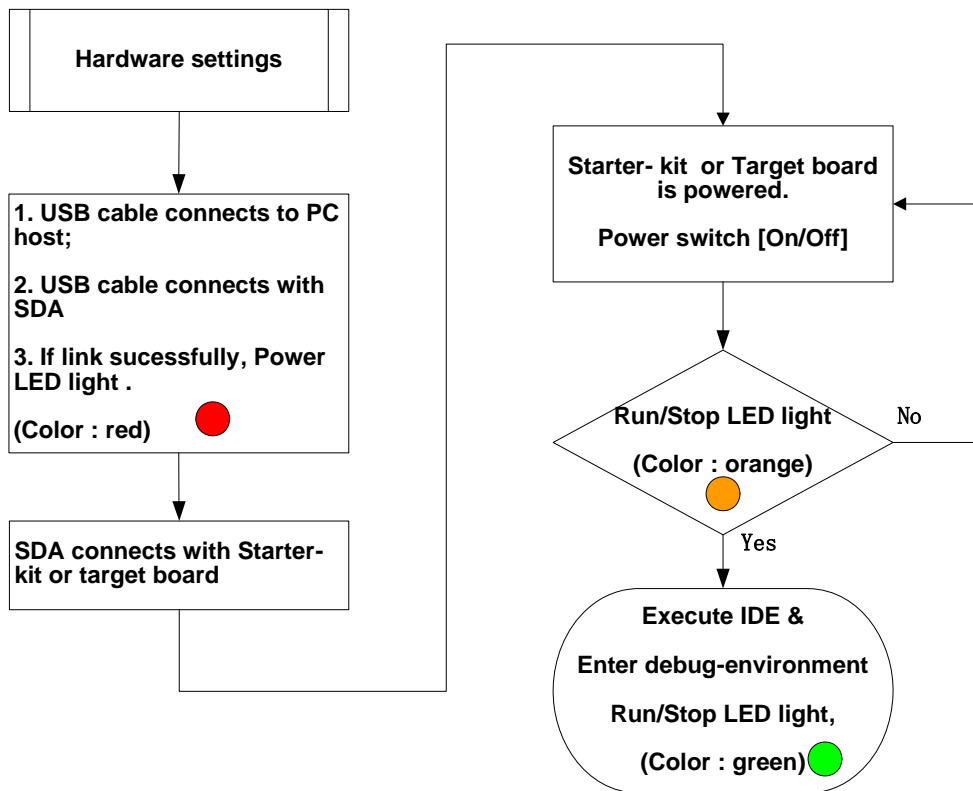


Figure2-2 Hardware installation flowchart

2.2 Installing the Software

- **M2IDE**
 - Download M2IDE_Vxxx.exe from SONiX official website www.sonix.com.tw (M2IDE_V124 or later version) .
 - Run M2IDE_Vxxx.exe to follow the instructions and install the software program.

- **SN8 C Studio**
 - Download SN8_C_Studio_Vxxx.exe from SONiX official website www.sonix.com.tw (SN8_C_Studio_V138 or later version) .
 - Run SN8_C_Studio_Vxxx.exe to follow the instructions and install the software program.

3 Start to Debug

3.1 Operation Steps

➤ Run M2Asmxxx.exe

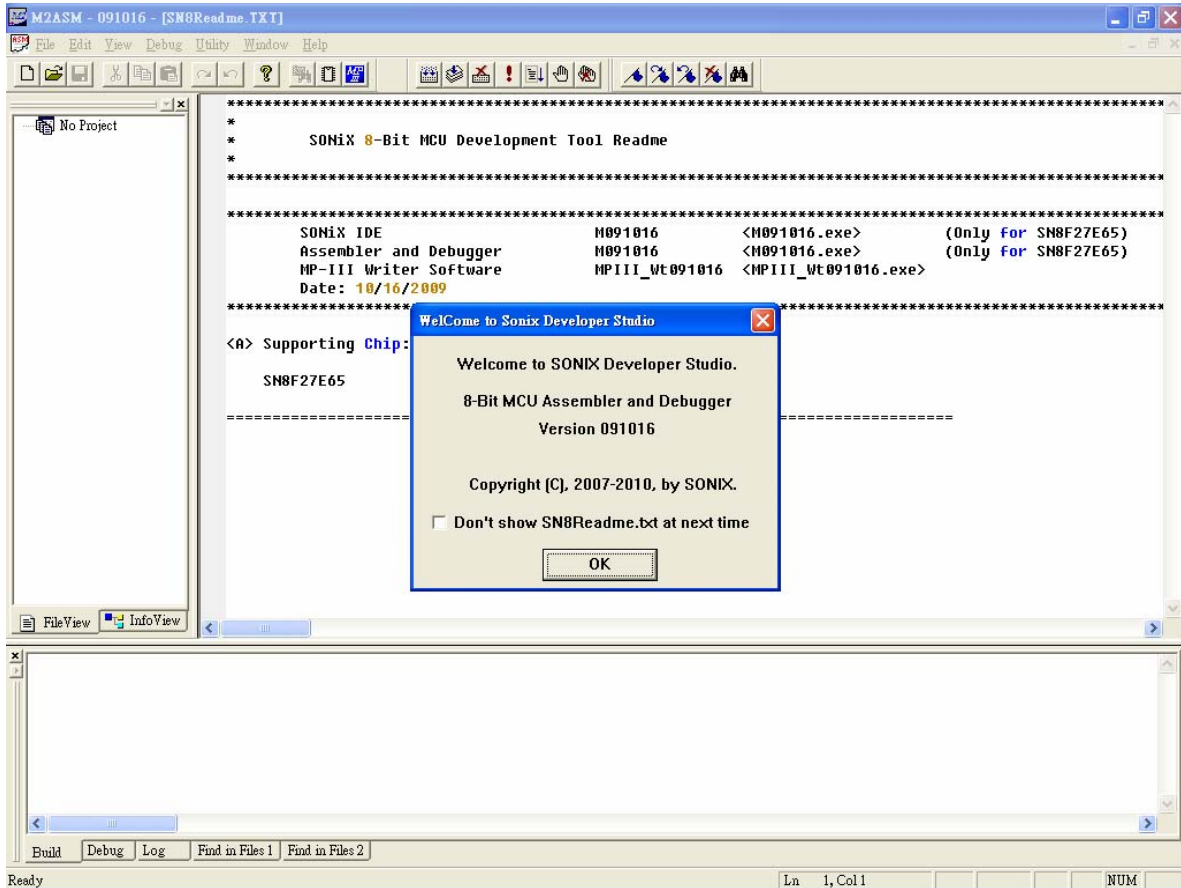


Figure 3-1

➤ IDE debug menus and icon introduction

Debug Menus	Debug Icon	Description
Build (F7)		Compile /link all the files in the module.
Rebuild All		To re-compile/link all the files in the module.
Download (F8)		Download SN8 file to MCU.
Reset (Ctrl+F5)		Start to program from 0x00 address.
Go (F5)		Enter debug-environment; Execute program; (Free Run).
Break (F5)		Stop executing.
Stop Debugging (Shift+F5)		Leave debug-environment.
Single (F11)		Execute program step by step.

Step Over (F10)		Execute program step by step, but execute rapidly when met a function.
Step Out (Shift+F11)		Execute rapidly within the function and withdraw when over.

➤ IDE debug menus and icon introduction

Debug Menus	Debug Icon	Description
Run to Cursor (Ctrl+F10)		Execute program to the cursor pointed to.
PC to Cursor (F12)		Change PC value to the cursor pointed to.
Breakpoint (F9)		Insert or remove the program breakpoint.
Remove All Breakpoints (Ctrl+Shift+F9)		Remove all program Breakpoints.
Fill RAM		Fill RAM Value.
Animate Single		Run the program automatically step by step.
Animate StepOver		Execute program step by step automatically, but execute rapidly when met a function.

➤ Create a new project or build a new item

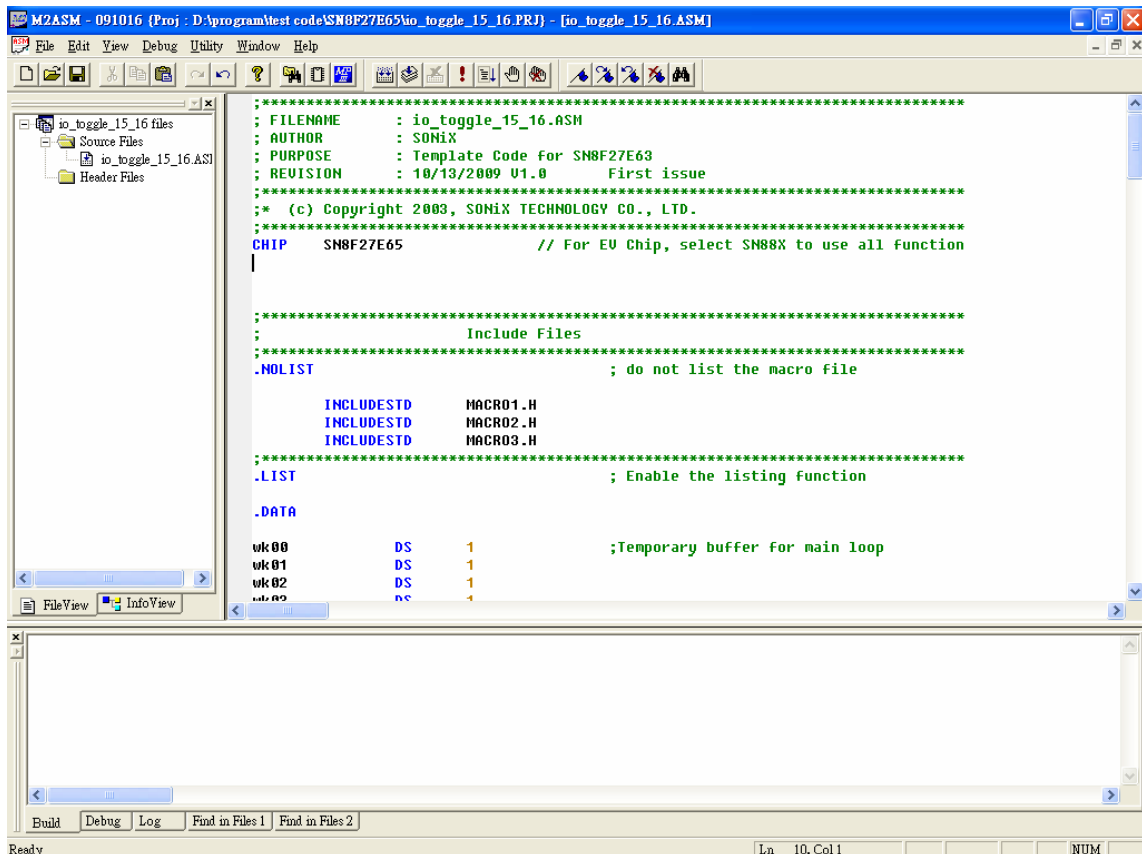


Figure 3-2

➤ Compile (Build : F7) and Code option settings

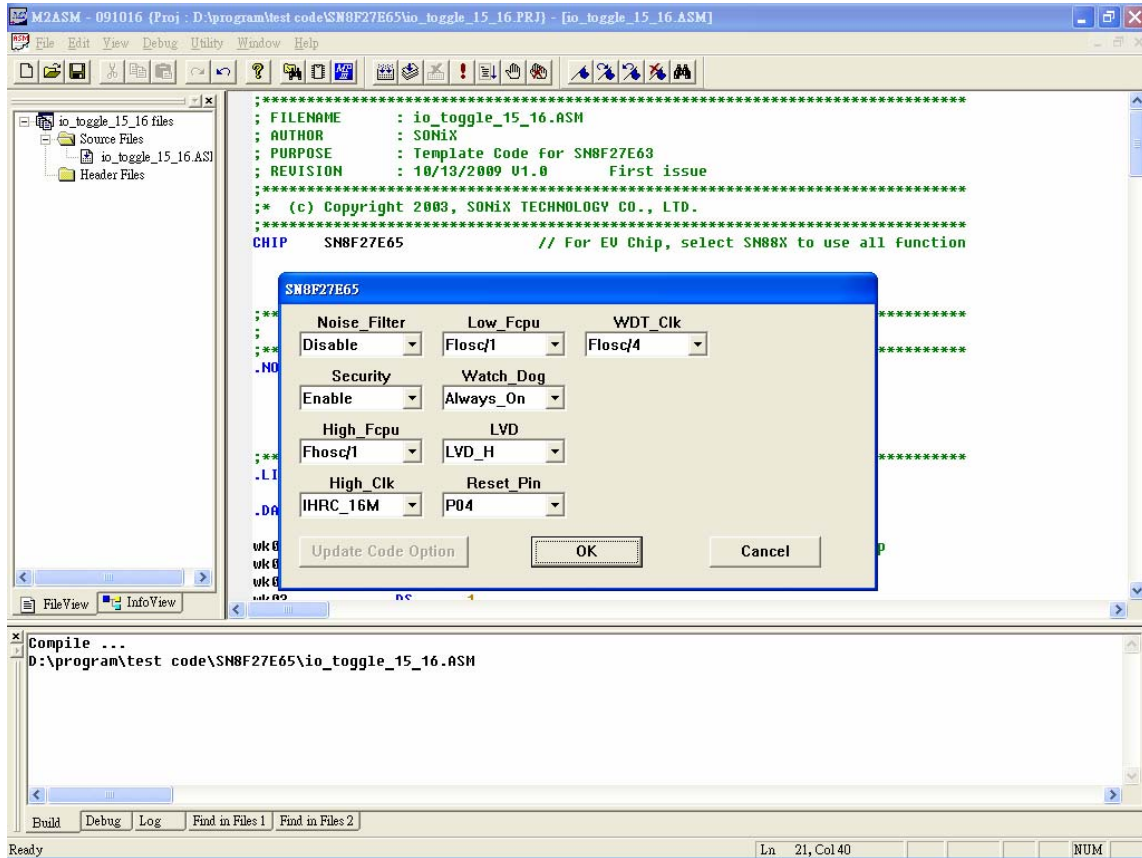


Figure 3-3

➤ Enter debug-environment (Go : F5)

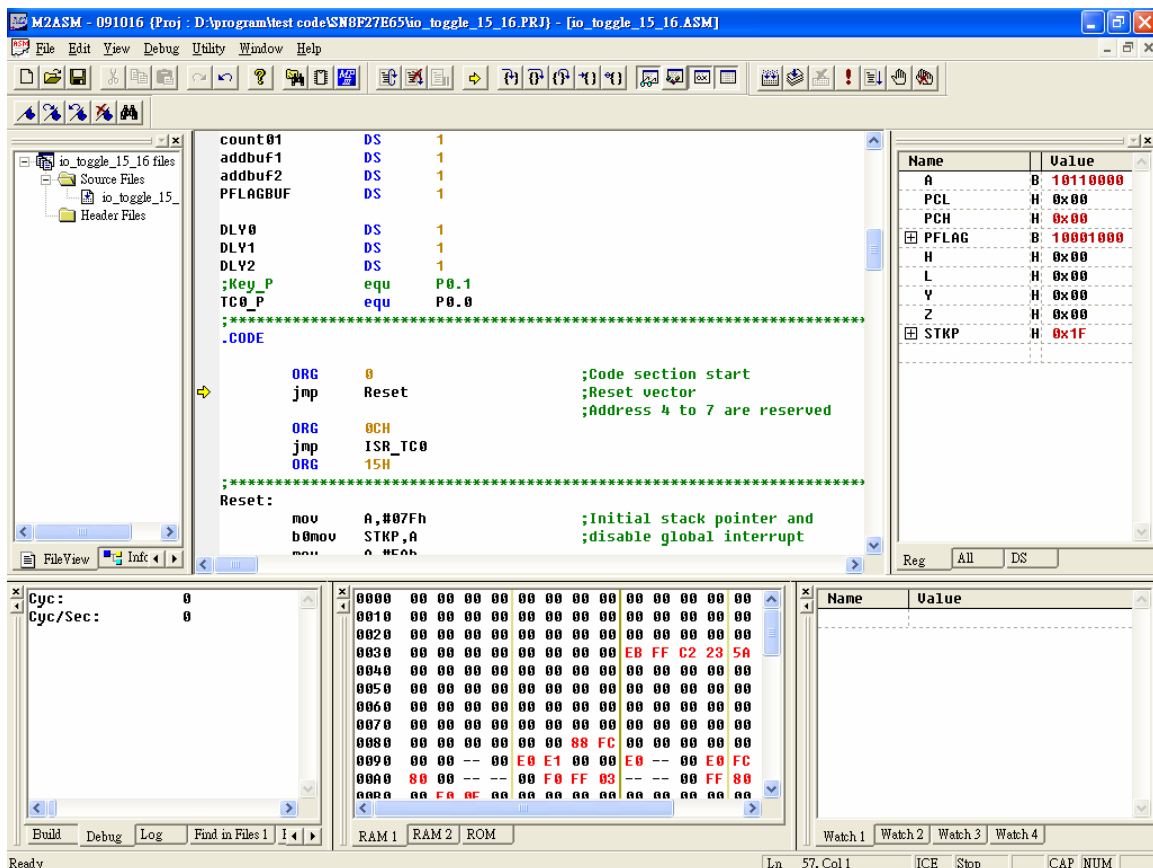


Figure 3-4

➤ Leave debug-environment (Stop Debugging : Shift+F5)

The screenshot displays the M2ASM IDE interface. The main window shows assembly code for a project named 'io_toggle_15_16.ASM'. The code includes variable declarations, a code section with a reset vector, and initialization routines for RAM and system.

```

count01      DS      1
addbuf1      DS      1
addbuf2      DS      1
PFLAGBUF     DS      1

DLV0         DS      1
DLV1         DS      1
DLV2         DS      1
;Key_P      equ     P0.1
TC0_P       equ     P0.0
;*****
.CODE

        ORG      0                ;Code section start
        jmp     Reset            ;Reset vector
                                   ;Address 4 to 7 are reserved

        ORG      0CH
        jmp     ISR_TC0
        ORG      15H
;*****
Reset:
        mov     A,#07Fh          ;Initial stack pointer and
        b0mov  STKP,A           ;disable global interrupt
        mov     A,#5Ah
        b0mov  WDR,A

        call   C1rRAM           ;Clear RAM
        call   SysInit         ;System initial
;*****

```

The bottom window shows the output of the compilation and linking process:

```

Compile ...
D:\program\test code\SN8F27E65\io_toggle_15_16.ASM
Link ...
EPR0M Check Sum is 466D.
Security Check Sum is 2232.
Chip SN8F27E65 has maximum program ROM size : 6140
The program has used size : 115 [0x73]
The program remain free size : 6025 for use

```

The status bar at the bottom indicates 'Ready' and 'Ln 8, Col 1'.

Figure 3-5

4 Download SN8 file

4.1 Functions

SDA can also update MCU program unnecessary ASM or C source code.

If SN8 file downloaded successfully and SDA cable is removed from target board, MCU free run can be executed on target board it's self automatically when user return on the power on target board.

4.2 Operation Steps

- Download (F8)and open SN8 file

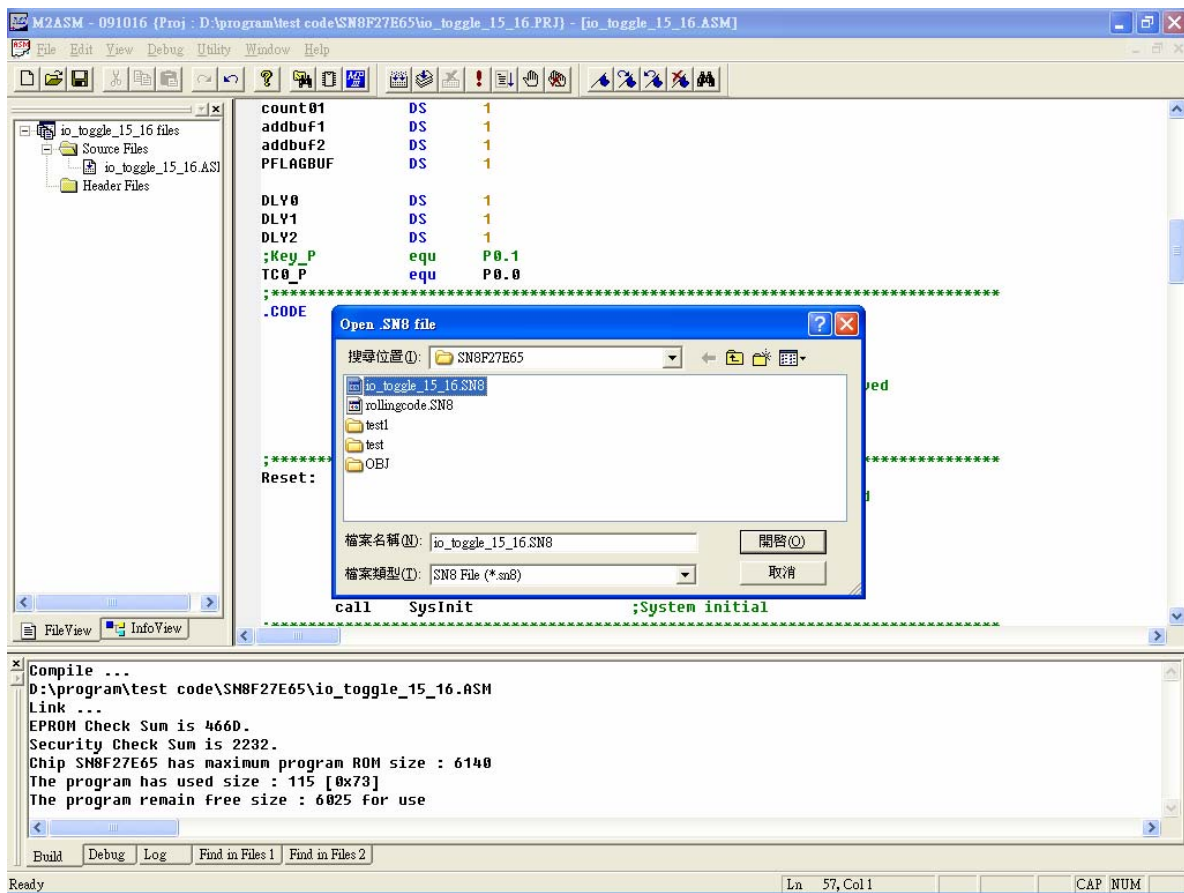


Figure 4-1

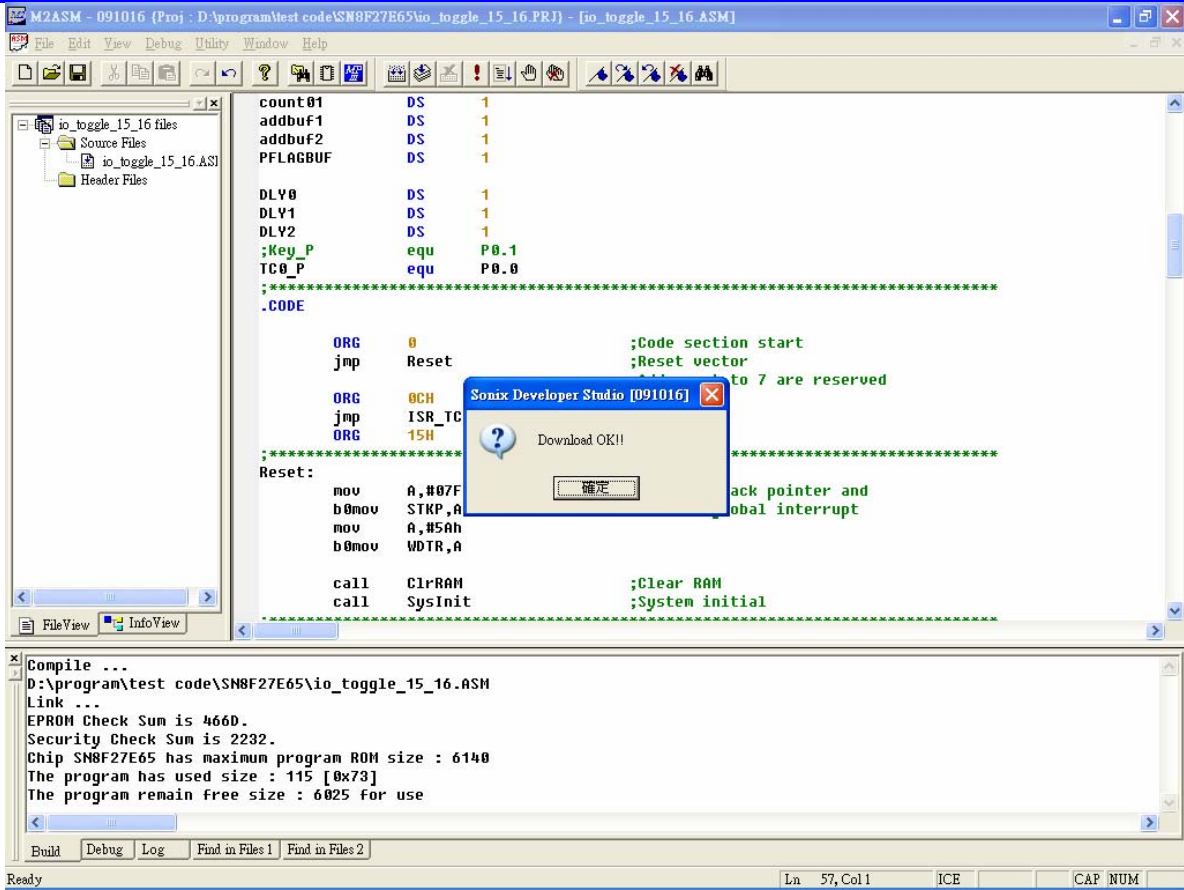


Figure 4-2

5 Notice

5.1 Limitations

- Only support 6 breakpoints in IDE operating.
- Do not support items following as:
 - Cycle display function.
 - Breakpoints...function in debug command menu.
 - Prev Single Trace function in debug command menu.
 - Prev Trace function in debug command menu.
 - Next Trace function in debug command menu.

5.2 Troubleshooting

- When IDE Crashes during debugging, please take following as:
 - Please remove USB cable from SDA and re-plug again;
 - Return on the power of target board.

SONIX reserves the right to make change without further notice to any products herein to improve reliability, function or design. SONIX does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others. SONIX products are not designed, intended, or authorized for use as components in systems intended, for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SONIX product could create a situation where personal injury or death may occur. Should Buyer purchase or use SONIX products for any such unintended or unauthorized application. Buyer shall indemnify and hold SONIX and its officers, employees, subsidiaries, affiliates and distributors harmless against all claims, cost, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use even if such claim alleges that SONIX was negligent regarding the design or manufacture of the part.

Main Office:

Address: 10F-1, No.36, Taiyuan Street, Chupei City, Hsinchu, Taiwan R.O.C.

Tel: 886-3-560 0888

Fax: 886-3-560 0889

Shenzhen Office:

Address: 2F, T2-B Building, GaoXin Ave.7.S, South High-Tech Industrial Park, ShenZhen, China.

Tel: 86-755-26719666

Fax: 86-755-26719786

Taipei Office:

Address: 15F-2, NO. 171, Song Ted Road, Taipei, Taiwan R.O.C.

Tel: 886-2-2759 1980

Fax: 886-2-2759 8180

Hong Kong Office:

Address: Flat 3 9/F Energy Plaza 92 Granville Road, Tsimshatsui East Kowloon.

Tel: 852-2723 8086

Fax: 852-2723 9179

Technical Support by Email:

Sn8fae@sonix.com.tw