Dragonchip

DC6688EMT
User Manual

User Manual of DC6688EMT
Emulator for DC6688 Family

User Manual
Document Revision 1.9 Oct, 2014

Contents

1 Introduction

This document briefly describes the details of the development tool ‘Emulator for DC6688 Family (DC6688EMT)’.

1.1 Package

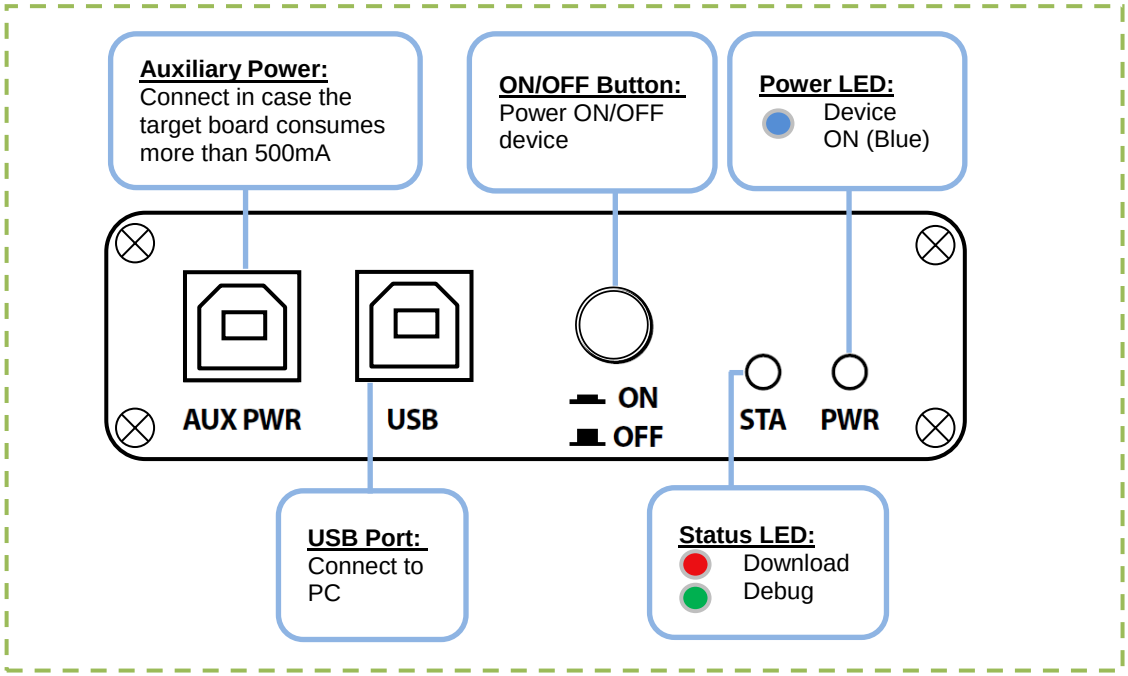
1. Emulator
2. Power Adaptor(5VDC Output) with USB Cable
3. USB Cable
4. User Manual
5. Software Installation CD

1.2 Useful Links

1. EMT Page – download latest software installer and user manual
   http://www.dragonchip.com/TechDoc/DevelopmentTools/EMT.htm
2. Technical Website of DC6688 Product Family
   http://www.dragonchip.com/TechDoc/DC6688.htm

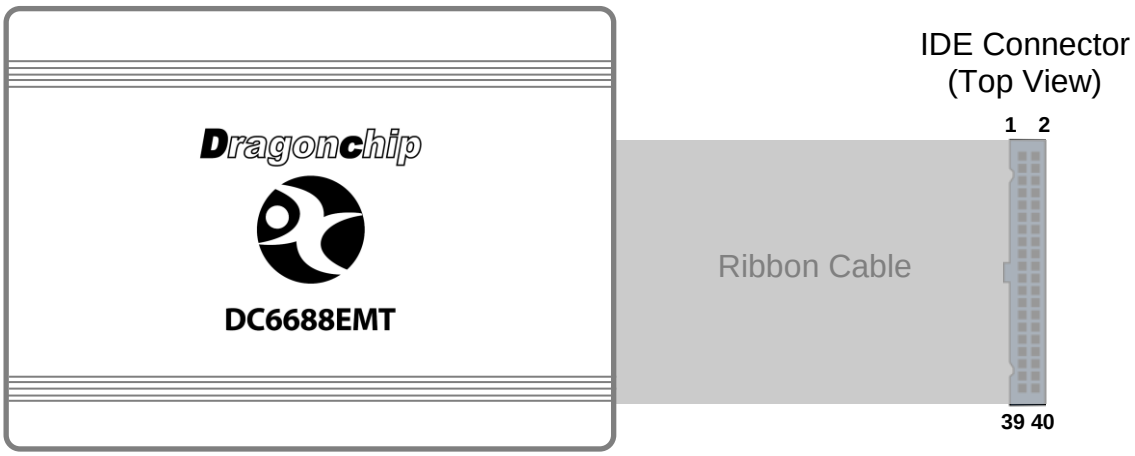
2 Hardware Description

2.1 Control Interface



2.2 IDE Connector

Connect the emulator to the target board through the IDE Connector. A box header/pin header with 20x2 pins and 2.54mm pitch should be put on the target board. Only connect those pins that exist in the part being emulated. The connector pin assignment is listed below:



Warning! Do not supply over 3.6V to VDD pin

Pin	Description	Pin	Description
1	PD3	2	PD2
3	PC3	4	IRI
5	VDD(3.3V)	6	VSS
7	PC2	8	NC
9	PC1	10	NC
11	PC0	12	NC
13	PB7	14	PA0
15	PB6	16	PA1
17	PB5	18	PA2
19	PB4	20	PA3
21	PB3	22	PA4
23	PB2	24	PA5
25	PB1	26	PA6
27	PB0	28	PA7
29	PC5	30	PC4
31	PD1	32	PD0
33	NC	34	PD4
35	NC	36	NC
37	NC	38	NC
39	NC	40	NC

1T/4T Version

Pin	Description	Pin	Description
1	NC	2	NC
3	NC	4	NC
5	VDD(3.3V)	6	VSS
7	PC2	8	NC
9	PC1	10	NC
11	PC0	12	NC
13	PB7	14	PA0
15	NC	16	PA1
17	NC	18	PA2
19	NC	20	PA3
21	PB3	22	PA4
23	PB2	24	PA5
25	PB1	26	PA6
27	PB0	28	PA7
29	NC	30	NC
31	NC	32	NC
33	NC	34	NC
35	NC	36	NC
37	NC	38	NC
39	NC	40	NC

F2R Version

Pin	Description	Pin	Description
1	PD3	2	PD2
3	PC3	4	IRI
5	VDD(3.3V)	6	VSS
7	PC2	8	PD1
9	PC1	10	PD0
11	PC0	12	NC
13	PB7	14	PA0
15	PB6	16	PA1
17	PB5	18	PA2
19	PB4	20	PA3
21	PB3	22	PA4
23	PB2	24	PA5
25	PB1	26	PA6
27	PB0	28	PA7
29	PC5	30	PC4
31	PD6	32	PD5
33	NC	34	PD4
35	NC	36	NC
37	NC	38	NC
39	NC	40	NC

FL32T/1TS Version (F30ST / FL32T / FL64T / FL96T)

Pin	Description	Pin	Description
1	NC	2	NC
3	PC3	4	NC
5	VDD(3.3V)	6	VSS
7	PC2	8	NC
9	PC1	10	NC
11	PC0	12	NC
13	PB7	14	PA0
15	NC	16	PA1
17	NC	18	PA2
19	NC	20	PA3
21	PB3	22	PA4
23	PB2	24	PA5
25	PB1	26	PA6
27	PB0	28	PA7
29	NC	30	PC4
31	NC	32	NC
33	NC	34	NC
35	NC	36	NC
37	NC	38	NC
39	NC	40	NC

F2T Version

3 Software Installation

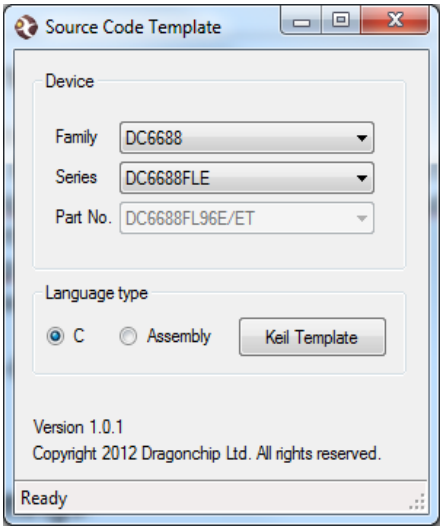
Install the following components in order:

1) Keil PK51 Prof. Developers Kit (recommend v9.05 or v9.06)

2) Dragonchip 'DC_TOOL_Rev2.4.6.exe' or higher which includes the following items:
   a. Source Code Template
   b. DragonICE Driver
   c. Software SLP

3.1 Source Code Template

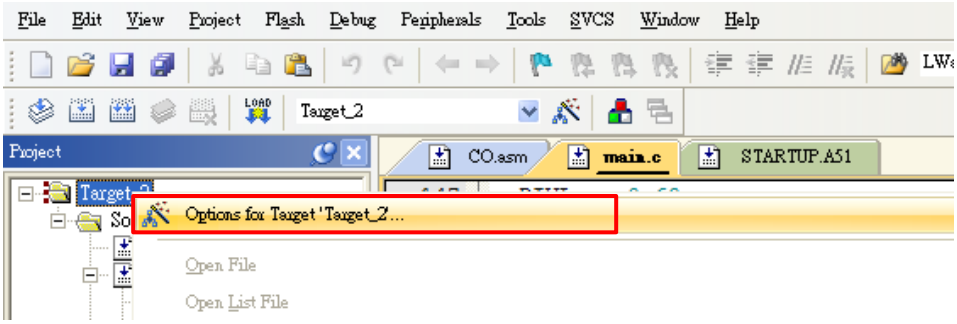
This useful tool can help to generate Keil Project Templates for various DC6688 products with all necessary project settings for using emulators. User can either start the development with the generated source code template or compare the project settings with their existing Keil project.



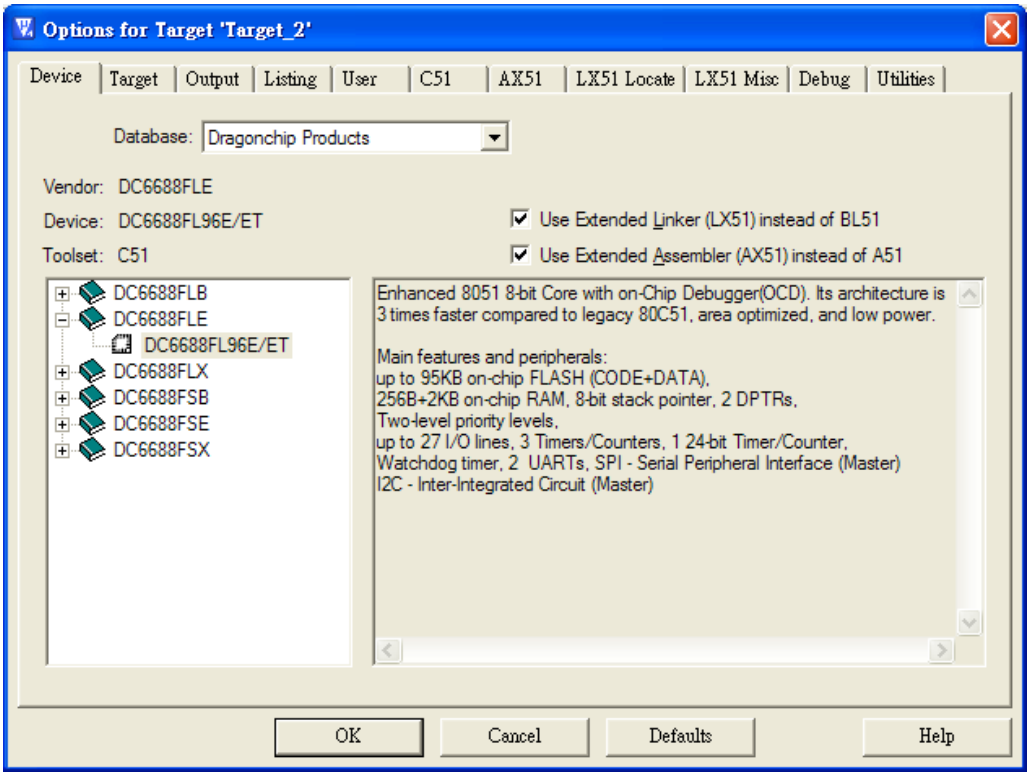
3.2 Keil Project Settings

All necessary Keil Project Settings are listed in this section.

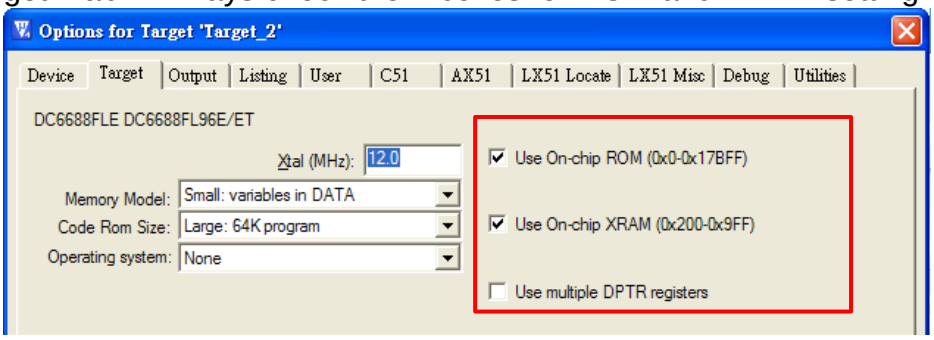
1) Enter 'Options for Target'



2) 'Device' Tab - Select DC6688 part from the list.

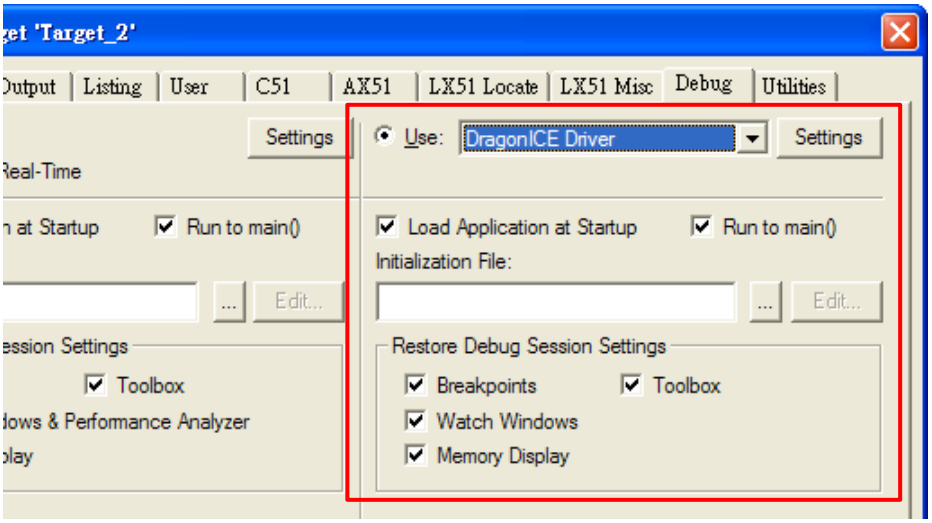


3) 'Target' Tab – Always check the 2 boxes for ROM and XRAM setting.

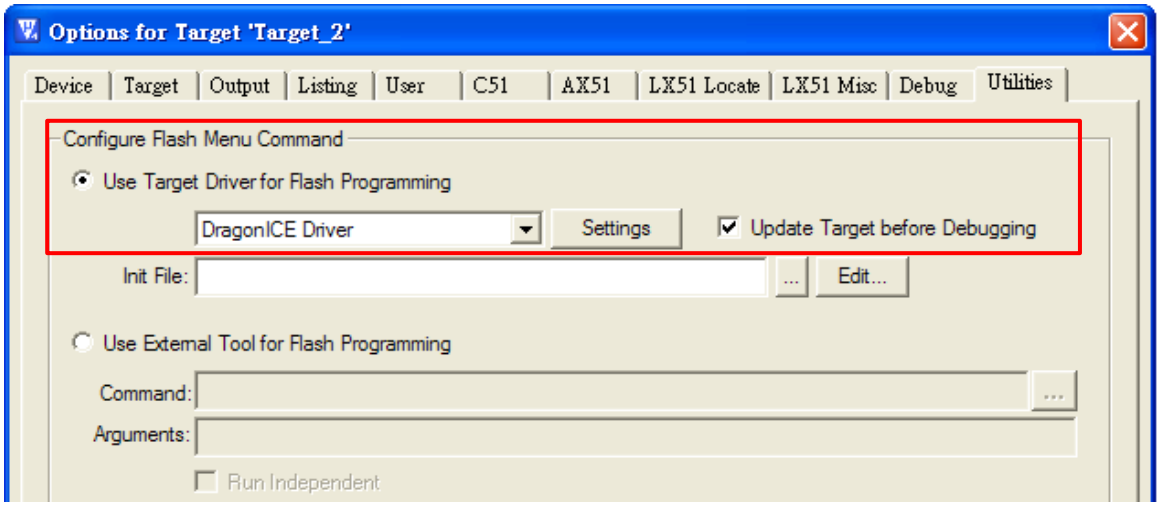


Note: The Clock frequency in this page is invalid setting. The setting should be selected in 'Programming Setting' instead.

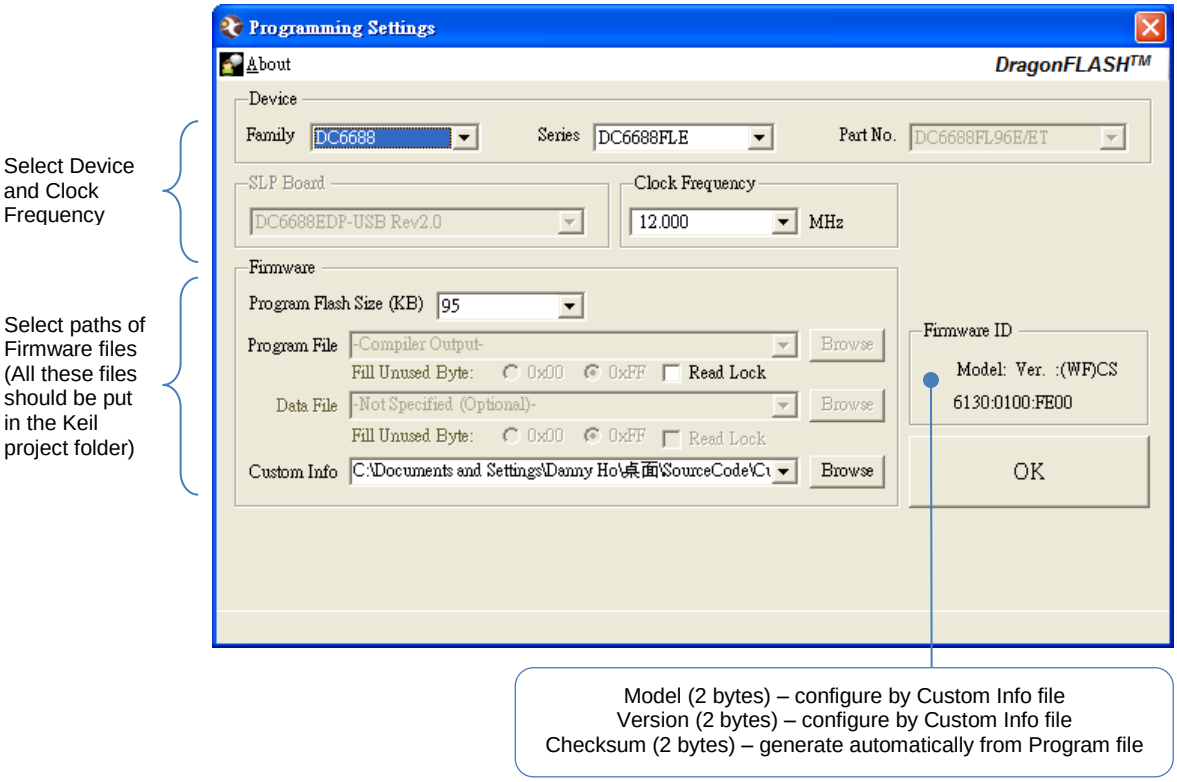
4) 'Debug' Tab - Follow the settings shown below:



5) 'Utilities' Tab - Follow the settings shown below:



6) Click 'Settings' in 'Utilities' tab to enter Programming Setting. Input relevant settings for programming the emulator chip.



Note: Program File does not need to select path.

4 View Memory Content

The memory content can be viewed in the Keil Memory Windows during debug.

DC6688F2SER/F2STR

Memory	Size	Memory Type	Start Address	End Address	Example
Program Flash	Up to 2000B	code	0x0000	0x07CF	C:0x00000
EEPROM	16 bytes	xdata	0x100	0x10F	X:0x0100
Internal SRAM	64 bytes	idata	0x00	0x3F	I:0x00
SFR	128 bytes	data	0x80	0xFF	D:0x80
XFR	256 bytes	xdata	0x00	0xFF	X:0x0000

DC6688FLB

Memory	Size	Memory Type	Start Address	End Address	Example
Program Flash FL16B FL32B	 Up to 12KB Up to 24KB	 code code	 0x0000 0x0000	 0x2FFF 0x5FFF	 C:0x0000 C:0x0000
Data Flash FL16B FL32B	 4KB 8KB	 code code	 0x6000 0x6000	 0x6FFF 0x7FFF	 C:0x6FFF C:0x6000
Internal SRAM	256 bytes	idata	0x00	0xFF	I:0x00
Expanded SRAM	2KB	xdata	0x0200	0x09FF	X:0x0200
SFR	128 bytes	data	0x80	0xFF	D:0x80
XFR	256 bytes	xdata	0x00	0xFF	X:0x0000

DC6688FLX/FLE/FLT/FL96TE

Memory	Size	Memory Type	Start Address	End Address	Example
Program/Data Flash FL32T FLX/FL64T FLE/FL96T FL96TE	 Up to 31KB Up to 64KB Up to 95KB Up to 95KB	code	0x0000	 0x7BFF 0xFFFF 0x17BFF 0x17BFF	C:0x0000
Internal SRAM	256 bytes	idata	0x00	0xFF	I:0x00
Expanded SRAM FLX/FLE FL32T FL64T/FL96T FL96TE	 2KB 2KB 3KB 3KB	xdata	 0x0200 0x0200 0x0200 0x8200	 0x09FF 0x09FF 0x0DFF 0x8DFF	 X:0x0200 X:0x0200 X:0x0200 X:0x8200
SFR	128 bytes	data	0x80	0xFF	D:0x80
XFR	256 bytes	xdata	0x00	0xFF	X:0x0000

DC6688FSB/FSX/FSE/FST

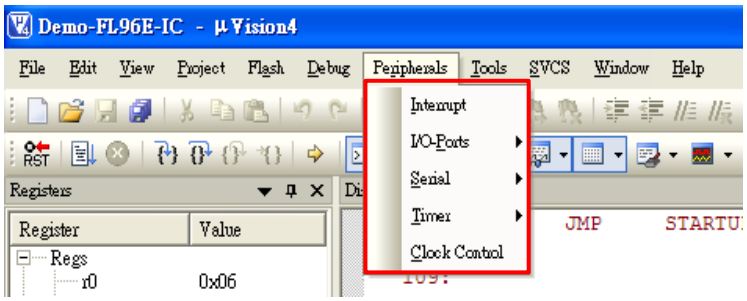
Memory	Size	Memory Type	Start Address	End Address	Example
Program Flash FSB FST FSX/FSE	 Up to 30KB Up to 29.5KB Up to 62KB	code	0x0000	 0x77FF 0x75FF 0xF7FF	C:0x0000
EEPROM	64 bytes	xdata	0x100	0x13F	X:0x0100
Internal SRAM	256 bytes	idata	0x00	0xFF	I:0x00
SFR	128 bytes	data	0x80	0xFF	D:0x80
XFR	256 bytes	xdata	0x00	0xFF	X:0x0000

5 Supplementary Information

5.1 Limitations

5.1.1 Keil IDE

1) DragonICE does not support the following features.



5.1.2 Hardware

1. 4T version emulator
   1.1. Instruction Timing
   The instruction process time in emulator is slightly different from that of IC. If the timing accuracy is critical for specific application, use timer instead of software delay.
   1.2. UART0
   Baud-rate generator cannot use Timer 2.

1.3. No UART1
1.4. I2C interrupt address
Emulator uses interrupt number 11 (0x005B) while IC uses interrupt number 10 (0x0053).

2. Voltage Supply
The voltage supply to emulator chip is at 3.3V (VDD). User should only do emulation at this voltage level.
3. Peripherals
When the emulator is stopped in debugging platform, all the running peripherals (e.g. timer 2) will still keep running. Hence, the peripherals will be out of synchronization with the code instruction.
4. Counter A in one shot mode
In one shot mode (CAM = 0), this bit have to reset to 0 every time before setting CAS = 1.

5.2 Troubleshooting

1) Driver Installation
After installing the DragonICE driver, plug the emulator to PC, the driver will be installed automatically. In case the PC fails to locate the driver, select the driver path “C:\WINDOWS\system32” manually.
2) Upgrade Keil Project
When uv2/ uv3 projects are closed, user can choose to upgrade the project to an uv4 project (*.uvproj).
3) Complie Keil Project
Always compile the code before entering the Keil debugging environment. Otherwise the emulated flash content may not be updated and the debug action may not match with the displayed code.
For example,
a) Cursor jumped to a wrong code location in debugger.
b) ‘Step’ instruction wrong executed as ‘Free Run’ instruction.

6 Revision History

The following table shows the revision history for this document.

Document Rev No.	Issued Date	Section	Page	Description	Edited by	Reviewed by
1.0	Aug, 2012			First release	Celia Ki	Danny Ho
1.1	Oct, 2012			Revised section 5.1.2	Danny Ho	Celia Ki
				Revised section 3.2		
1.2	Apr, 2013	5.1.2		Add item about I2C	Danny Ho	Celia Ki
1.3	Sept, 2013	All		Add F2R emulator	Danny Ho	Celia Ki
1.4	Dec, 2013	1.1 2.2		Revise ordering information Revise IDE connector description	Celia Ki	Danny Ho
1.5	June, 2014	1.1		Remove ordering information	Danny Ho	Celia Ki
		4		Added FL32T / FST		
1.6	July, 2014	2.2		Added FL32T pin assignment	Danny Ho	Celia Ki
1.7	July, 2014	2.2, 4		Added FST description	Danny Ho	Philip Hung
1.8	Oct, 2014	2.2, 4		Added FL64T/FL96T description	Danny Ho	Philip Hung
1.9	Oct, 2014	2.2, 4		Added F2STR	Danny Ho	Philip Hung

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