DC6288EMT User Manual

Rev1.1



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Document Revision 1.1

April, 2018

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1 Introduction

This document briefly describes the details of the development tool 'Emulator for DC6288 Family (DC6288EMT)'.

1.1 Supported Products

Part Number	Supported Products
DC6288EMT-FT	DC6288FT

1.2 Package

- 1) Emulator
- 2) USB Cable
- 3) User Manual

1.3 Useful Links

- 1) DC6288EMT Emulator <u>http://www.dragonchip.com/TechDoc/DC6288/DC6288FT/DevTools/EMT</u> .htm
- 2) DC6288 Technical Website http://www.dragonchip.com/TechDoc/DC6288.htm

2 Hardware

2.1 Control Interface



2.2 Connector

Connect the emulator to target board through the POD. The POD pin assignments are listed below:





3 Software Installation

Install the following components

- 1) Keil PK51 Professional Developers Kit (<u>v9.55 or later</u>)
- 2) Dragonchip development tools package 'DragonICE Installer' Rev3.0.5 or later:
 - a. Source Code Template
 - b. DragonICE Driver
 - c. Software SLP

Note: After installing the DragonICE driver, connect the emulator to PC USB port, the driver will be installed automatically. In case the PC fails to locate the driver, select the driver path "C:\WINDOWS\system32" manually.

3.1 Source Code Template

This software can help to generate Keil project templates for various 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.

🔇 Source Code Template						
Device						
Family DC6388						
Series DC6388FD -						
Part No. DC6388FD32A4						
Language type C Assembly Keil Template Entry point to start your project: 1) Whole Flash Memory: ".uvproj' 2) Customer information: "CustomInfo bin'						
About Version 1.2.1 Copyright 2014 Dragonchip Ltd. All rights reserved.						
Ready .::						

3.2 Keil Project Settings

1) Enter 'Options for Target'



- Rev1.1
- 2) 'Device' Tab Select DC6288 part number from the list.

Coptions for Target 'Target_2'							
Device Target Output Listin	ag User C51 AX51 LX51 Locate LX51 Misc Debug Utilities						
Dragonchip Products Vendor: DC6288FT Device: DC6288FT32 Toolset: C51	<u> </u>						
Search:	✓ Use Extended Linker (LX51) instead of BL51						
	✓ Use Extended Assembler (AX51) instead of A51						
	 Enhanced 8051 8-bit Core with on-Chip Debugger(OCD). Its architectu 12 times faster compared to legacy 80C51, area optimized, and low pc Main features and peripherals: up to 31KB on-chip FLASH (CODE+DATA), 256B+2KB on-chip RAM, 8-bit stack pointer, 2 DPTRs, four-level priority levels, up to 21 I/O lines, 3 Timers/Counters, 1 24-bit Timer/Counter, Watchdog timer, 1 UARTs, SPI - Serial Peripheral Interface (Master) I2C - Inter-Integrated Circuit (Master/Slave) 						
	OK Cancel Defaults Help						

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

Options for Target 'Target_2'							
Device Target Output Listing User C51 AX	K51 LX51 Locate LX51 Misc Debug Utilities						
DC6388FD DC6388FD32A4							
Xtal (MHz): 12.0	Use On-chip ROM (0x0-0x7BFF)						
Memory Model: Large: variables in XDATA	•						
Code Rom Size: Large: 64K program	▼ Use On-chip XRAM (0x200-0x3FF)						
Operating system: None	▼						

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:

🗓 Options for Target 'Target_2'						
Device Target Output Listing User C51 AX51 LX51 Locate LX51 Misc Debug Utilities						
Configure Flash Menu Command						
 Use Target Driver for Flash Programming 						
	DragonICE Driver Settings Update Target before Debugging					
	Init File: Edit					
C Use External Tool for Flash Programming						
	Command:					
	Arguments:					
		F Run Independent				

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

	♦ Programming Settings ▲ About DragonFLASH TM
Select Device and Clock Frequency	Device Family DC6288 Product DC6288FT Part No. DC6288FT32 SLP Board DC6688EDP-USE Rev2.0 II.2000 MHz
Select paths of Firmware files (All these files should be put in the Keil project folder)	Firmware Program Flash Size (KB) 31 Program File Compiler Output- Fill Unused Byte: C 0x00 © 0xFF C Restart Read Lock Data File -Not Specified (Optional)- Fill Unused Byte: C 0x00 C 0xFF Read Lock Custom Info -Not Specified (Optional)- Example C 0x00 C 0xFF Read Lock Custom Info -Not Specified (Optional)- Fill Unused Byte: C 0x00 C 0xFF Read Lock Custom Info -Not Specified (Optional)- Fill Unused Byte: C 0x00 C 0xFF Read Lock Custom Info -Not Specified (Optional)- Fill Unused Byte: C 0x00 C 0xFF Read Lock Custom Info -Not Specified (Optional)- Fill Unused Byte: C 0x00 C 0xFF Read Lock
	Model (2 bytes) – configure by Custom Info file

Version (2 bytes) – configure by Custom Info file Checksum (2 bytes) – generate automatically from Program file

4 View Memory Content

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

Memory	Size	Memory Type	Start Address	End Address	Example
Program/ Data Flash	Up to 31KB	code	0x00000	0x7BFF	C:0x00000
Internal SRAM	256 bytes	idata	0x00	0xFF	l:0x00
Expanded SRAM	1KB	xdata	0x0200	0x05FF	X:0x0200
	1.5KB	xdata	0x0200	0x07FF	X:0x0200
	2KB	xdata	0x0200	0x09FF	X:0x0200
SFR	128 bytes	data	0x80	0xFF	D:0x80
XFR 256 bytes		xdata	0x00	0xFF	X:0x0000

5 Write Trim value

At the beginning in function main(), trim value have to be loaded to the designated registers. Every emulator board have an unique value as hown below:



6 Limitations

1) Keil IDE debugger:

a) DragonICE does not support these peripheral features.



b) Debug 'Step', 'Step over' will fail if the instruction is entering stop mode while RTC interrupt already enabled before.

- 2) Voltage Supply: The voltage supply to emulator chip is 3.3V (VDD pin voltage). User should do emulation at this voltage level only.
- 3) Low voltage indicator (LVI) would not be supported.
- 4) Reset pin RSTN would not be supported.
- 5) MCU Peripherals: When the emulator running is stopped in debugging environment, all the running MCU peripherals (e.g. LCD driver, timer) would still keep running. Thus, the MCU peripherals would be out of synchronization with the code instruction.
- 6) Compile Keil Project: Only 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) Debug 'Step' wrongly executed as debug 'Free Run'.

Revision History

Document Rev. No.	Issued Date	Section	Page	Description	Edited By	Reviewed By
1.0	Mar, 2018			First release	Danny Ho	Patrick Li
1.1	Apr, 2018	5		Add section 5	Danny Ho	Patrick Li
		2.2		Revise pin assignment		

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