## MO在IAR与MDK环境下的调试/下载教程

一、准备工作:

1、准备好 NUC140-SK 或兼容 M0 开发板一块及配套光盘一个,见下图



下图为 NU-LINK 仿真器,可用于 MO 在 IAR 和 MDK 环境下的仿真及下载,使用前需先安装 NU-LINK 驱动。



- 2、将配套光盘根目录下的"ProductInfo"文件夹复制到电脑硬盘备用。
- 二、安装驱动与软件
  - 1、把 IAR 5.50 版本软件安装在默认路径下并和谐之.(推荐使用正版软件)



2、把 MDK4.10 软件安装在默认路径下也和谐之. (推荐使用正版软件)



3、打开配套光盘的 ProductInfo" 文件夹,将 M-Link 文件夹下的"setup\_MLINK.exe" 安 装在默认路径,如下图。



4、打开配套光盘的"Software"文件夹,把如下几个文件安装在默认路径下:



5、安装 MO 在 MDK 下的插件:安装后会在 MDK 环境下显示 MO 系列型号与及其它信息。



6、如果你要用到 JLINK 进行仿真或下载,那么还要安装 JLINK 驱动:



7、如你需要用到 NU-LINK 仿真器,则需安装下图所示 IAR 或 MDK 的驱动:安装驱动 后,将 NU-LINK 插进 PC 的 USB 接口,NU-LINK 上的 LED 会全部闪亮几次后长亮 一个 LED,否则说明没装驱动或 NU-LINK 有问题。



三、实战

1、首先介绍一下这个 NUC140-SK 的板子:这个板子自带仿真器,名称为"M-LINK"使 用时安装好驱动后将 CN3 的 USB 接口连接至电脑 USB 接口即可,(注意:板上 JP7 跳线必 须插上),如你电脑尚没安装 M-LINK 驱动,则板上的 LD5 双色灯不停闪烁,安装好驱动后 则开机闪几下后长亮绿灯;经测试,这个 M-LINK 只能用于 IAR 5.50 以上版本开发环境, 不能用在 MDK 环境下;如你要在 MDK (即 KEIL UV4)进行 MO 的开发仿真,则只能 选择 JLINK V7 或以上版本仿真器,当然也可以选择芯唐的 NU-LINK 或其它仿真器;经 我们测试,JLINK 可以在 MDK 或 IAR 环境下实现仿真或下载,但有时会造成软件死机, 这也是 JLINK 一直以来都存在的问题。 2、经过以上准备后,就可以开始进行点灯工作了,首先介绍在 IAR 环境下的开发与调试 过程及一些必要的设置。

1) IAR 的介面如下所示:



## 2)按下图方法打开一个工程

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3)在如下类似路径打开一个例子程序,(注意,因软件安装先后顺序或路径选择不同,) 以下路径仅供参考)



4)然后打开: ADC. evv ,介面如下图所示:



5)简要介绍一下要用到的几个工具按钮:如下红圈圈为编译链接

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6)在工程窗口双击下图的勾号,进入设置页面.进行一些必要的设置.



Configuration is up-to-date.

7)各个页面的设置如下:



参见上图,如没有默认打开 icf 文件,则需打开下图路径添加上述 icf 文件(由于软件与例 子包的安装路径不可能完全相同,故路径仅供参考)。

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参见上图:如默认没有打开 MLINK dll 文件,则需打开以下路径添加上述 dll 文件(由于软件与例子包的安装路径不可能完全相同,故路径仅供参考)。



8)设置好后,我们试一下代码下载功能,按如下方法下载程序.

A IAR Embedded Workbench IDE							
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程序下载成功则显示如下图:

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	FlashNUC1xxRAM16K.out
	Thu Jul 22 15:57:03 2010: Target reset
	Thu Jul 22 15:57:04 2010: Change boot mode
	Thu Jul 22 15:57:04 2010: Downloaded C:\Program Files\IAI
	Flash Debug\Exe\ADC.out to flash memory.

9)试一下强大的仿真功能吧:点击下图工具栏小帆船.进入仿真状态.



10)点击工具栏 建运行程序,此时你可以看到目标板上配套的单色 LCD 显示"ADC

DATA 1000 MV"等字样, 拧动板上的 RV1 可调电阻, 可改变 LCD 上的 ADC 读数, 此例 子是 ADC 的典型应用; 当然, 此时你必需保证 ADC 的相关跳线已选择好。

11)至此,在 IAR 环境下的调试与设置就结束了,下面介绍 MO 在 MDK 环境下的调试方法。

## 3、M0在 MDK 环境下的调试介绍

1)首先,你的电脑必须安装好 MDK4.10 或以上版本软件。软件介面如下:

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同时你的 JLINK 须连接上目标板,如目标板为上述 NUC140-SK,则把 JLINK 20P 的排线连上 CN2,且目标板上的 JP7 二个跳线必须接上,如下图:(注:由于市售的 J-LINK 有些没有电源输出,此时目标板指示灯不亮,则目标板需连接 USB 线或外接 5V 电源,否则无法使用)



如你是使用 NU-LINK 进行仿真或下载,需将目标板上的 JP7 二个跳线取下,如下图所示进行 NU-LINK 与目标板的连接:



注意:上图目标板与 NU-LINK 连接时, VCC (红色线)与 GND (黑色线)切记不可反接, 否则会烧坏目标板。

上图的引线颜色及线号对应下图的 NU-LINK 引线:



使用 NJ-LINK 按上述连接目标板后,目标板不用另外供电,由 NU-LINK 直接供电。

2) 按下图所示方法打开一个例子工程:

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3)打开工程后的介面如上述 2)附图所示,下面进行一些使用 JLINK 调试仿真时的必要设置:

点击工具条上的 进入设置介面;如下是针对选用 JLINK (V7) 作为 M0(NUC140-SK) 调试工具时的设置:(选用如 NU-LINK 等其它调试工具时只需作相应选择即可)

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vice   Target Run User Prog Run #1: Run #2: Run User Prog Run #1: Run User Prog Run User Prog Run #1: Run #1: Run #2:	Output   Listing Us grams Before Compilation of rams Before Build/Rebuild grams After Build/Rebuild fromelfbin ''.\obj\@L.a fromelftext -c ''.\obj\@	er C/C++ Asm f a C/C++ File sxf"output ".\obj\@L sxf"output ".\obj\@L	Linker   Debu	g   Utilities	

## ".\obj\<u>@L.axf</u>" --output ".\obj\<u>@L.bin</u>"

Options for Target 'Smpl_UART2PC' Device   Target   Output   Listing   User   C/C++   Use Memory Layout from Target Dialog	Asm Linker Debug   Utilities
Make RW Sections Position Independent Make R0 Sections Position Independent Don't Search Standard Libraries Report 'might fail' Conditions as Errors	B/O Base:         0x0000000           R/ <u>W</u> Base         0x2000000           disable Warnings:
Scatter File	Edit

Options for Target 'Smpl_UART2PC' Device Target Output Listing User C/C++	Asm   Linker Debug   Utilities		
C Use <u>S</u> imulator Settings ☐ Limit Speed to Real-Time	Gettings € Settings		
✓ Load Application at Startup ✓ Run to main() Initialization File:	I Load Application at Startup I Run to main() Initialization File:		
.\Simulator.ini Edit	Edit		
Restore Debug Session Settings Breakpoints Watchpoints & PA Memory Display	Restore Debug Session Settings Breakpoints   Toolbox Watchpoints Memory Display		
CPU DLL: Parameter: SARMCM3.DLL	Driver DLL: Parameter: SARMCM3.DLL		
Dialog DLL: Parameter:	Dialog DLL: Parameter:		

点击上图的红色标记,进入 JLINK 设置,如下图设置,注意 PORT 必须要选 "SW":

SIN: 01000000 VSB#: U V	IDCODE Device Name	Move
Device: J-Link ARM	SWC Ox0BB11477 ARM CoreSight SW-DP	Up
HW: V7.00 dll: V4.11i		Dowr
FW : Jan 28 2010 19:55:25		
Port: Max Clock:	Automatic Detection ID LUDE:	
	* manual configuration Device Name	
_Auto Clk	Add Delete Update IH len:	
Debug		
Connect & Reset Options	Cache Options Download (	Options
Connect: Normal 💌 Rese	t: Autodetect 💽 🔽 Cache Code 🗌 🔤 Verify C	ode Download
and a second sec	I I Downlo	ad to <u>F</u> lash
✓ <u>R</u> eset after Connect		

如果你看见下图所示,说明没连上目标板,请检查硬件及连线。(市售的 JLINK 有些是没有 电源输出,有些有 3V3 电源输出,没有电源输出时目标板需另外通上电源)

SW [	)evice		
	IDCODE	Device Name	Move
SWD	0xFFFFFFFF	no SW-DP found	Up
			Down

ce   Target	Output Listing User C/C++ Asm Linker Debug Utilities	
onfigure Flas	h Menu Command	
Use Targe	et Driver for Flash Programming	
	Cortex-M3 J-LINK	ging
Init File:	Edit	
Use Exter	nal Tool for Flash Programming	
Command	k	

点击上图红色标记,进入FLASH下载一些设置,设置如下图:

z <mark>/jTrace Cortex-I T</mark> z   Trace Flash Downlos	arget Driver d	Setup			
ownload Function C Erase Full Chip Erase Sectors C Do not Erase	<ul> <li>✓ Program</li> <li>✓ Verify</li> <li>✓ Reset and Run</li> </ul>	RAM for A	Algorithm Dx20000000	Size: 0x0800	
ogramming Algorithm Description	Device Type	Device Size	Add	ress Range	
		Start:		Size:	
	Add	Remove	T		

点击上图红色标记,选择 FLASH 类型与属性,设置如下图:

Description	Device Type	Device Size	^
S29JL032H_TOP Flash	Ext. Flash 16-bit	4M	
STM32F10x Med-density Flash	On-chip Flash	128k	
STM32F10x Low-density Flash	<b>On-chip Flash</b>	16k	
STM32F10x High-density Flash	On-chip Flash	512k	
STM32F10x Connectivity Lin	On-chip Flash	256k	
STM32F10x M25P64 SPI Fla	Ext. Flash SPI	8M	
STM32F10x Flash Options	On-chip Flash	16	
TMPM330FWx 128kB Flash	On-chip Flash	128k	
TMPM330FYx 256kB Flash	<b>On-chip Flash</b>	256k	
TMPM330FDx 512kB Flash	On-chip Flash	512k	
TMPM360Fx 2048kB Flash	On-chip Flash	2M	
TMPM36xFx 1024kB Flash	On-chip Flash	1M	
NUC1xx 128kB Flash	On-chip Flash	128k	
NUC1xx 32kB Flash	On-chip Flash	32k	
NUC1xx 64kB Flash	On-chip Flash	64k	4
NUC1xx LD Flash	On-chip Flash	4k	~

点击 ADD 后返回。

4) 好了,经过以上设置后,即可试一下程序下载了,点击工具栏的<sup>2</sup>,开始下载程序至 目标板,几秒钟后,下载完成,如下图显示为成功下载后信息:

Build Output											
*	JLink	Info:	FPUnit:	4	code	(BP)	slots	and	0	literal	slots
Erase Done.											
Programming Done.											
Ve	Verify OK.										

5)测试一下 JLINK 的仿真功能:点击工具栏的 Q ,进入仿真状态,如下图。

Sapi_HART2PC - p.Vizio	a4		
Ble Edit View Broject Fligsh D	ebug Peci	oherals Iaols SVCS Window Help	
000000000000	~	N 🕈 🖻 🕾 🖟 🕼 🙋 👘 🖉 🖌 🖉 🖌 🖉 🖌 🖉 🖌 🖉	
(許) 🖸 🖉 🖗 🖉 👘 🖗		월드 21 월 · 표 · E · 월 · 일 · 월 ·	
Project • a ×		retarget.c  Smpl_UMRTZPC.c  Care_anG.c  MLCLou.h	• X
Supl MANTEPC CHELS files CHELS files CHELS files CHELS files CHELS files CHELS files CHELS files CHELS files	27 28 29 30 31 32	<pre>/* Step 2. Enable and Select UART clock source*/ UNLOCKREG(): SYMCLA-&gt;PURCON.XTL12H_EN = 1; LOCKREG): SYMCLA-&gt;APBCLK.UARTO EN = 1;//Enable UARY clock</pre>	1
Fortarget.c     Fortarget.c     Fortarget.c     Fortarget.c     Fortarget.c     Fortarget.c     Fortarget.c     Fortarget.c     Fortarget.c	33 34 35 36	SYSCLE->CLESELL.UARTS = 0; //Select 12Mhz for UART clock source SYSCLE->CLEDIV.UARTN = 0; //UART clock source = 12Mhz; /* Step 3. Select Operation mode */	

6) 剩下的工作就是使用下图这个工具条了:

7) 至此, M0 在 IAR 和 MDK 环境下的开发调试及程序下载的介绍就告一段落了, MO 有些什么强大的功能在于你的想象力,没有做不到,只有想不到,祝君好运。

<u>http://www.mcu666.com</u> 2010-8-24 V1.1 (转载本文档必须保留以上信息)