

应用手册 基于 EWARM 新建 M0+工程指南

适用范围: SYM32 系列 Cortex-M0+内核所有 MCU



1 文档说明

本应用手册将详细介绍如何使用 EWARM 新建工程的流程,以 SYM32F030 为例。



2 开发环境准备

2.1 IAR 下载

请从 IAR 官网下载并安装 IAR 软件,建议版本不低于 IAR 8。

2.2 文档准备

Step1. 例如在 F 盘新建夹 NewProject, 用于存放新建 EWARM 工程所有文件

- Step2. 将 SYM32xxxx_Firmware_Library\IdeSupport\EWARM 文件夹拷贝到 Step1 新建的 NewProject 文件夹下;
- Step3. 将 SYM32xxxx_Firmware_Library\Libraries 文件夹拷贝到 Step1 新建的 NewProject 文件 夹下;
- Step4. 将 SYM32xxxx_Firmware_Library\Examples\GPIO\GPIO_Blink\USER 文件夹拷贝到 Step1 新建的 NewProject 文件夹下;

NewProject 的文件目录如下:





3 建立工程

打开 EWARM 软件,点击菜单栏 Project > Create New Project 弹出如下对话框,选择如下:

Create New Project			×
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Project templates:			
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asm			
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c project using uch	suit toor settings men	uning an empty man	i.c mc.
		UK	Cancel

点击【OK】,弹出另存为对话框,选择保存路径为 F: \NewProject\EWARM,输入工程 名 Sym32Project,点击【保存】。



图 1 新建 Sym32Project 工程



这时工程会自动生成一个 main.c 文件,存放在 F: \NewProject\EWARM 文件夹里,由于 USER 文件夹里的 src 文件夹内已经有 main.c 文件了,所以这里删除自动生成的 main.c 文件,同时移除 EWARM 工程里的 main.c

Step5. 添加文件组,在左侧工程名上右键 >Add >Add Group 依次添加 Librares、Startup、User



Libraries:用于存放驱动库文件;

Startup: 用于存放启动文件;

User: 用于存放用户 C 语言文件;

Step6. 给各组添加文件

在 Libraries 组名上右键 > Add > Add Files, 选择路径 F: \NewProject\Libraries\src, 添加 需要的库文件,其中 sym32f030_hal_sysctrl.c 和 sym32f030_hal_systick.c 是系统必须添 加的驱动文件,此外,该工程用到 GPIO 驱动 LED,所以还需要添加 sym32f030_hal_gpio.c



在 Startup 组名上右键 > Add > Add Files;

添加 F: \NewProject\Libraries\src|system_sym32f030.c 文件;

添加 F: \NewProject \EWARM\startup_sym32f030.s 文件;

在 User 组名上右键 > Add > Add Files,添加 F: \NewProject\USER\src\interrupts.c 文件和

main.c	文件	

Template - IAR Embedded Workbench IDE - Arm 8.40.1		-		×
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经过上面操作,基础文件已经添加完毕,在工程名上右键 > Rebuild All,编译时弹出对 话框 Save Workspace As,输入工程名 Sym32Project,保存路径为 F: \NewProject\EWARM。 点击【保存】,但此时仍然不能编译通过,还需要对工程进行设置。



4 工程设置

Step1. 在工程名上右键 > Options > General Options 选项卡下:

在 Target	> Processor	variant >	Core	选项T	「选择	Cortex-M0+
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Options for node "Template"

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I-Link/J-Trace	Endian mode	Floating point	t settings	
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ST-LINK Third-Party Driver II MSP-FET T VDS	○ <u>B</u> ig ○ BE <u>3</u> 2	D <u>r</u> egisters	- ~	
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在 Libraries Configuration > CMSIS 选项卡下勾选 Use CMSIS

Options for node "Template"					×
Category: General Options Static Analysis Runtime Checking C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator CDT	Library Target Library: Normal	Options 2 Output V	MISRA-C:2004 Library Configuration Description: Use the normal configurati runtime library. No locale i no file descriptor support,	MISRA-C:1998 Library Options 1 on of the C/C++ nterface, C locale, no multibytes in	
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				ОКС	ancel

点击【OK】,保存以上设置。



在工程名上右键 > Options > C/C++Compiler > Preprocessor 选项卡下添加头文件路径, 按照下图标注顺序进入:

Options for node "Template"	×
Category: General Options Static Analysis	Factory Settings Multi-file Compilation Discard Unused Publics
C/C++ Compiler	MISRA-C:1998 Encodings Extra Options
Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator CADI CMSIS DAP GDB Server I-jet J-Link/J-Trace TI Stellaris Nu-Link PE micro ST-LINK Third-Party Driver TI MSP-FET	Language 1 Language 2 Code Optimizations Output List Preprocessor Diagnostics MISRA-C:2004 2 Ignore standard include directorie: Additional include directories: (one per line) Preinclude Defined sumbols (see ees line)
TI XDS	Demice symbols. (one per line) Preprocessor output to file Preserve comments Generate #line directives OK



添加驱动库头文件路径 F:\ NewProject\Libraries\inc 添加用户头文件路径 F:\ NewProject\USER\inc

Edit Include Directories	
Include directory	
<pre>\$PR0J_DIR\$\\Libraries\inc</pre>	
\$PROJ_DIR\$\\USER\inc	
<click add="" to=""></click>	
	OK Cancel

添加完成后如下图所示:

Options for node "NewProject"

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Category:					Factory	Settings
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Third-Party Driver TI MSP-FET TI XDS	Defined symb	ools: (one per line		eprocesso Preserve <u>(</u> <u>G</u> enerate	r output comment #line dir	to file ts ectives



点击【OK】,保存设置,这时在工程名上右键 > Rebuild All,可以编译通过:

Template - IAR Embedded Workbench IDE - Arm	3.40.1	- 🗆 X
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Build Debug Log		
Ready	Errors 0, Warnings 0 Ln 15, Col 4	System 大写 数字 改写 💻 💡



5 在线仿真设置

Step1. 在工程名上右键 > Options > Output Converter > Output 选项卡下:

勾选 Gennerate additional output.

Output format 选项选择 intel Extended hex.

Output file 选项勾选 Override default.

设置之后,在 EWARM 编译后可生成.hex 执行文件。点击【OK】后保存生效。

Options for node "Sym32Project"

Factory Settings Category: General Options Static Analysis Runtime Checking 2 C/C++ Compiler (1) Output Assembler Output Converter Generate additional output Custom Build **Build Actions** Output format: Linker Debugger Intel Extended hex 3 Simulator CADI Output file CMSIS DAP ✓Override default (4) GDB Server I-jet/JTAGjet Sym32Project.hex J-Link/J-Trace TI Stellaris Nu-Link PE micro ST-LINK Third-Party Driver TI MSP-FET TI XDS 0K Cancel

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Step2. 在工程名上右键 > Options > Linker > Config 选项卡下:

勾选 Override default.

下图中④路径选择 F:\NewProject\EWARM\SYM32F030.icf. 建议把绝对路径更改为相对路径,以免工程文件移动时需重新配置路径。把路径更改为\$PROJ_DIR\$\SYM32F030.icf. 如下图所示,点击【OK】后保存生效。

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neral Options tic Analysis time Checking C++ Compiler issembler issembler itput Converter ustom Build ild Actions indla Actions ind



Step3. 在工程名上右键 > Options > Debugger > Setup 选项卡下:

Driver 根据实际使用的仿真器选择,例如 J-Link,则选择 J-Link/J-Trace.

勾选 Override default.

下图中⑤路径选择 F:\NewProject\EWARM\SYM32F030_PV.svd.

建议把绝对路径更改为相对路径,以免工程文件移动时需重新配置路径。把路径更改为 \$PROJ_DIR\$\SYM32F030_PV.svd.如下图所以,点击【OK】后保存生效。

ptions for node "Sym32Project"		2
Category:		Factory Settings
General Options Static Analysis Runtime Checking C/C++ Compiler Assembler Output Converter Custom Build	2 Setup Download Images Extra Options Multicore Driver 3	Plugins
Build Actions Linker 1 Debugger Simulator	J-Link/J-Trace v main	
CADI CMSIS DAP GDB Server I-jet/JTAGjet J-Link/J-Trace TI. Stellaris	Use macro file(s)	
NU-LINK PE micro ST-LINK Third-Party Driver TI MSP-FET TI XDS	Device description file Override default (4) \$PROJ_DIR\$\SYM32F030.svd (4)	5
	⑥ 更改为相对路径	OK Canc



Step4. 在工程名上右键 > Options > Debugger > Download 选项卡下:

勾选 Verify download.

勾选 Override default .board file.

下图中⑤路径选择 F:\NewProject\EWARM\flashloader\FlashLoader_SYM32F030.board.

使用相对路径,更改为\$PROJ_DIR\$\flashloader\FlashLoader_SYM32F030.board





在工程名上右键 > Options > J-Link/J-Trace > Connection 选项卡下勾选 SWD.

Category:			Factory Settings
eneral Options tatic Analysis untime Checking			
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J-Link/J-Trace		TAP number: 0	
11 Stellaris Nu-Link	<u> S</u> WD	Scan chain contains non-Arm de	vices
PE micro ST-LINK		Preceeding bits: 0	
Third-Party Driver TI MSP-FET TI XDS	Log <u>c</u> ommuni	cation	
11,000	\$PROJ_DIR\$	cspycomm.log	

Step5. 在线仿真

以上设置都需要点击【OK】确认,保存生效,连接好电脑-仿真器-目标板,并且给目标 板供电,在工程名上右键 > Rebuild All 编译整个工程,编译通过后,使用快捷键 Ctrl+D 进入 Download and Debug. 第一次下载仿真会弹出对话框,选择 Cortex-M0+ 如下图所 示:

* V Core Manufact Device Core Num Flash size Unspecified Cortex-A17 Cortex-A17 1 - Unspecified Cortex-A53 Cortex-A53 1 - Unspecified Cortex-A57 Cortex-A57 1 - Unspecified Cortex-M0 Cortex-M0 1 - Unspecified Cortex-M0+ Cortex-M0 1 - Unspecified Cortex-M0+ Cortex-M0 1 - Unspecified Cortex-M1 1 - - Unspecified Cortex-M3 Cortex-M1 1 - Unspecified Cortex-M3 Cortex-M4 1 - Unspecified Cortex-M23 Cortex-M3 1 - Unspecified Cortex-R4 Cortex-M3 1 - Unspecified Cortex-R5 1 - - Unspecified Cortex-R8 Cortex-R5 1 - Unspecified Cortex-R8 Cortex-R8 1 -	le endian	Little		<u>C</u> ore	<u>D</u> evice	er	Manufacture
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Select a device for J-Link. Selecting a device is not required for most devices, but allows more efficient peration of J-Link as well as flash download.modification of flash memory	-	-	1	MIPS	4X	PIC32N	Unspecified
uring a debug session as well as unlimited breakpoints in flash memory (Flas		re efficient memory emory (Flash	llows mo n of flash in flash m	st devices, but a load,modification ted breakpoints	Link. not required for mo well as flash down on as well as unlimi	e for J-l vice is i -Link as	Select a device Selecting a de peration of J
Breakpoints).	<u>C</u> ance						



点击【OK】,进入仿真调试。

Sym32Project - IAR Embedded Workbench IDE - Arm 8.32.1

Vorkspace 🔻 🖣	× main.c ×		 Disassembly 	▼ ₽ 1
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Ready

Ln 70, Col 38 UTF-8 大写 数字 改写 🔜



6 版本记录

版本	修订日期	修订说明
Rev1.0	2022-07-05	初始版本