



10分钟启动TI M4F项目开发

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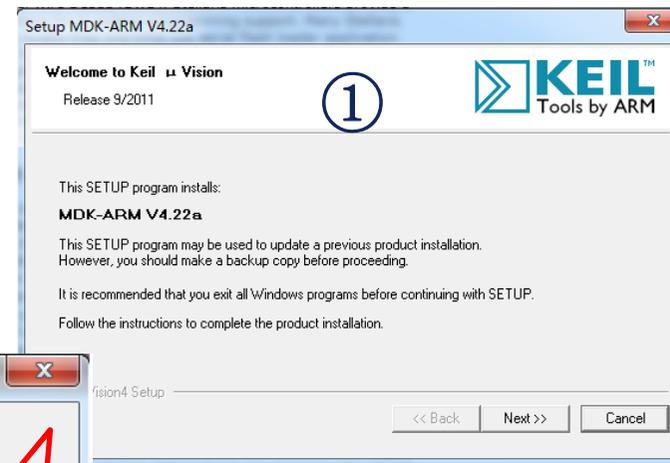
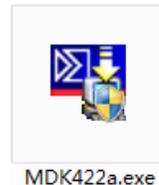
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Keil集成开发环境安装

MDK-ARM V4.22 下载地址

<https://www.keil.com/download/product/>

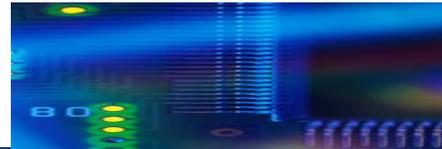


②



4.22以上版本才能支持TI M4器件





Stellaris软件库下载

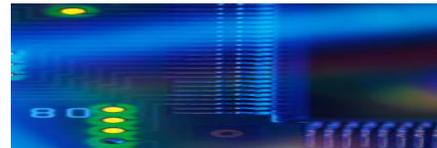
下载地址:

<http://www.ti.com/product/lm4f232h5qd#toolssoftware>

Software and Development Tools

TI Software and Development Tools

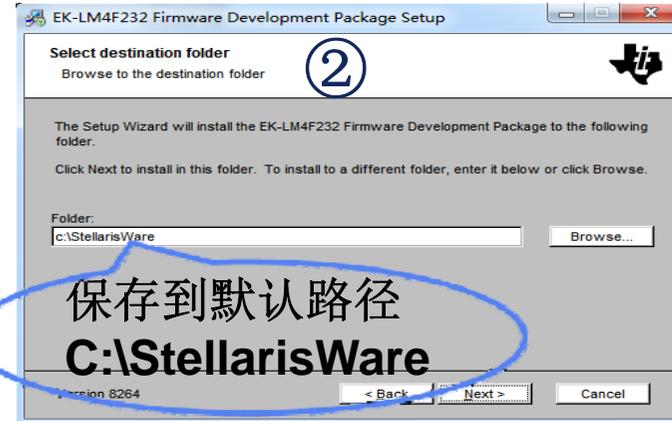
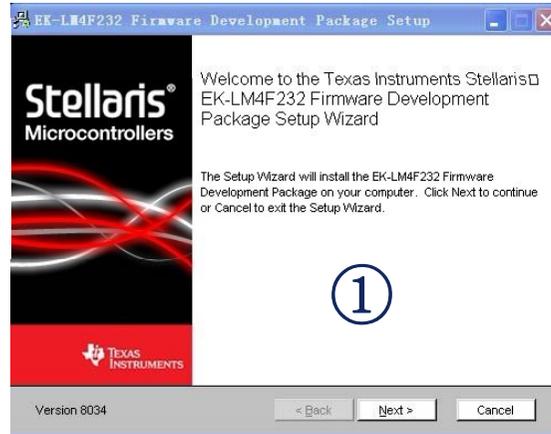
Name	Part Number
EK-LM4F232 Firmware Development Package	SW-EK-LM4F232
Keil debug interface DLL	LMIDK-AGDI
Serial Flash Loader	SERIAL_FLASH_LOADI
Stellaris® FTDI driver	LM_FTDI_DRIVER
Stellaris® Flash Programmer, GUI and command line	LMFLASHPROGRAMME
StellarisWare® Driver Library Standalone Package	SW-DRL
StellarisWare® Graphics Library Standalone Package	SW-GRL
StellarisWare® IQ Math Standalone Package	SW-IQMATH
StellarisWare® USB Library Standalone Package	SW-USBL
StellarisWare® Windows-side USB examples	SW-USB-WIN
CAD Libraries for Stellaris MCU packages	STELLARIS_PCB_LIB

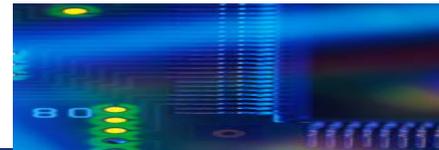


Ti Cortex-M4 Stellarisware 安装

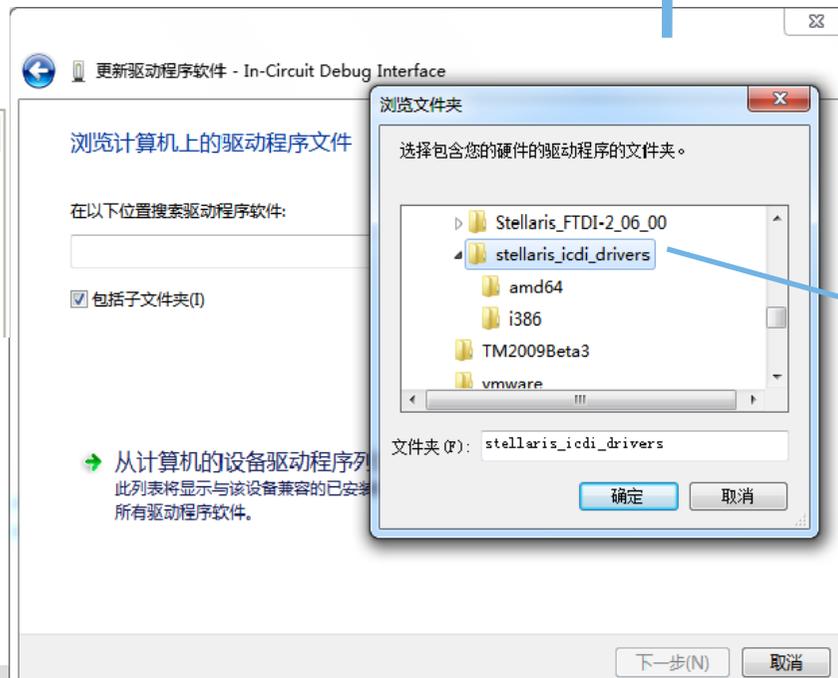
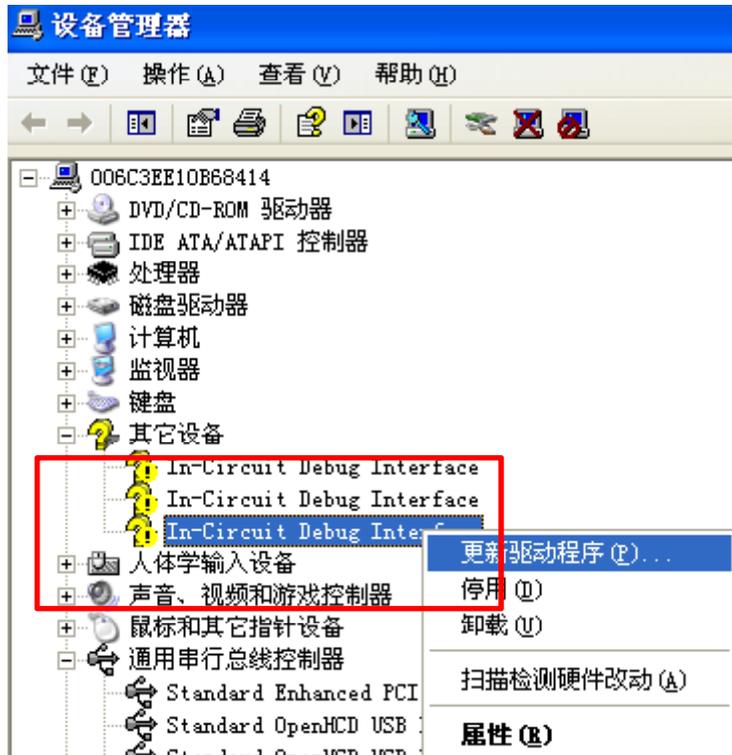


SW-EK-LM4F2
32-8034





S-link仿真器的驱动安装



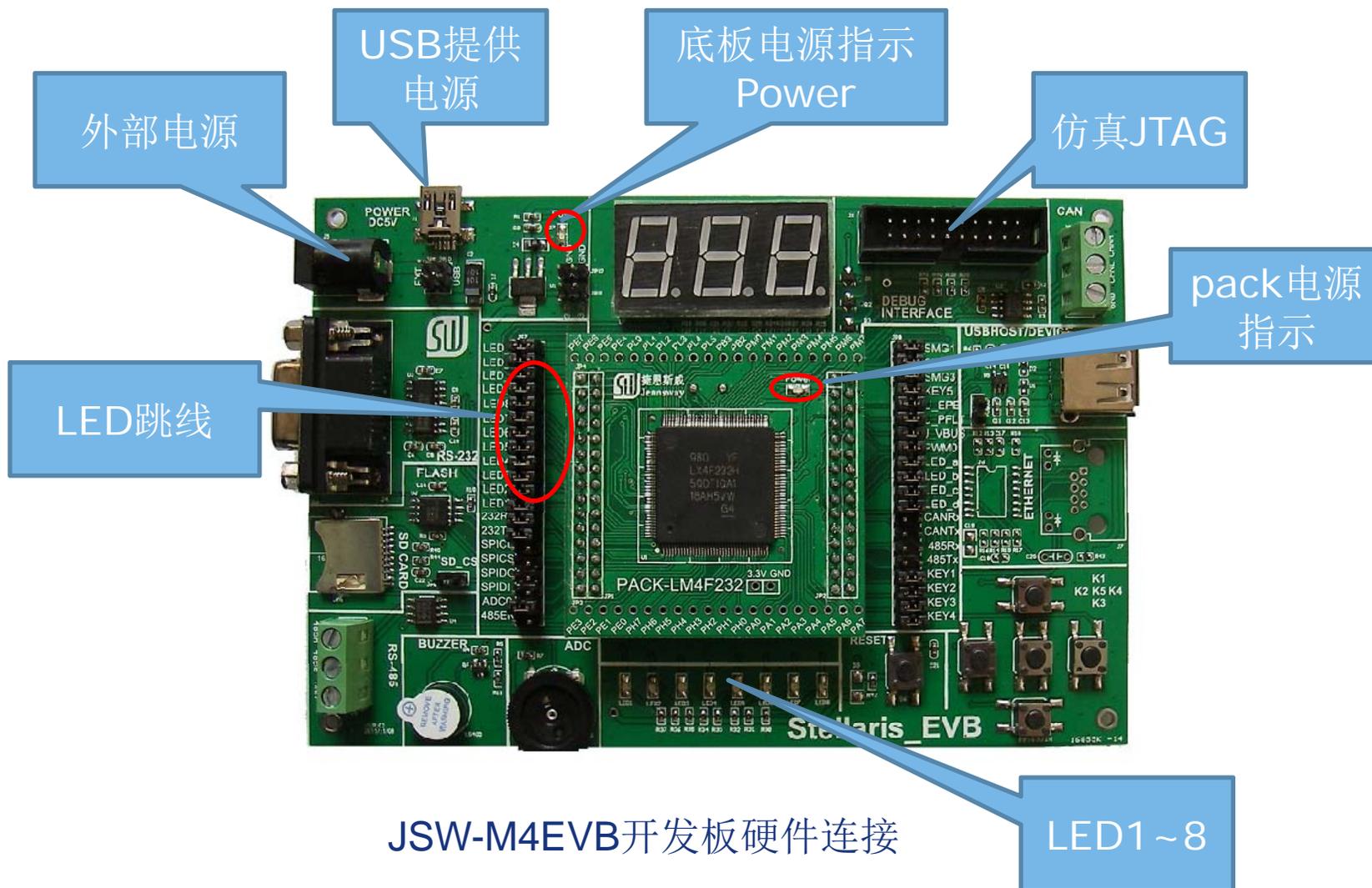


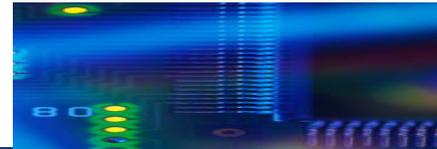
10分钟启动项目开发

- Step1: 硬件连接
- Step2: 新建工程
- Step3: 添加外设驱动库
- Step4: 添加外设驱动库驱动库头文件
- Step5: 编写代码
- Step6: 编译工程
- Step7: 配置调试工具
- Step8: 仿真调试

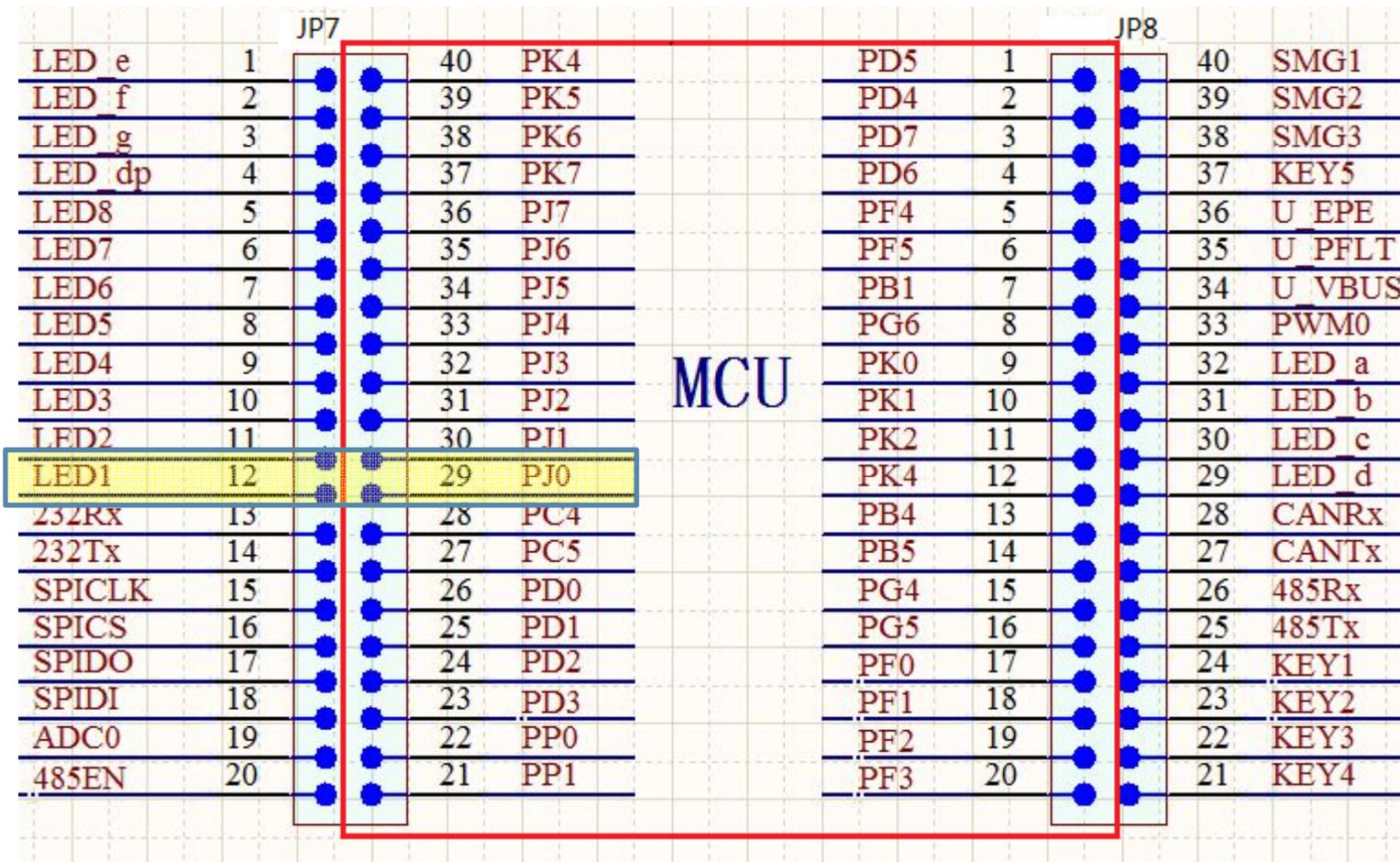


Step1: 硬件连接





Step1: 控制PJ0点亮LED1

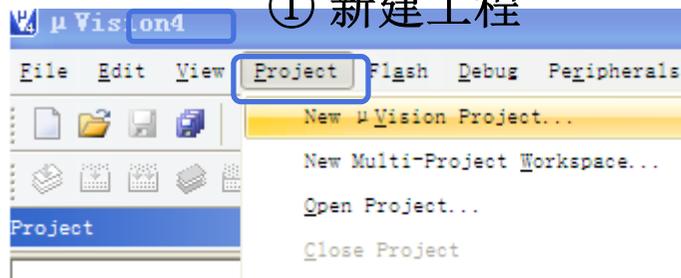




Step2: 新建工程

设定项目名称 LED，工作目录设置为: <D:\workform4>

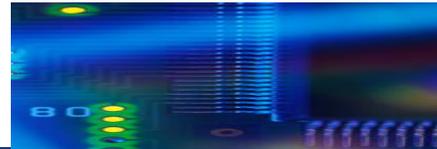
① 新建工程



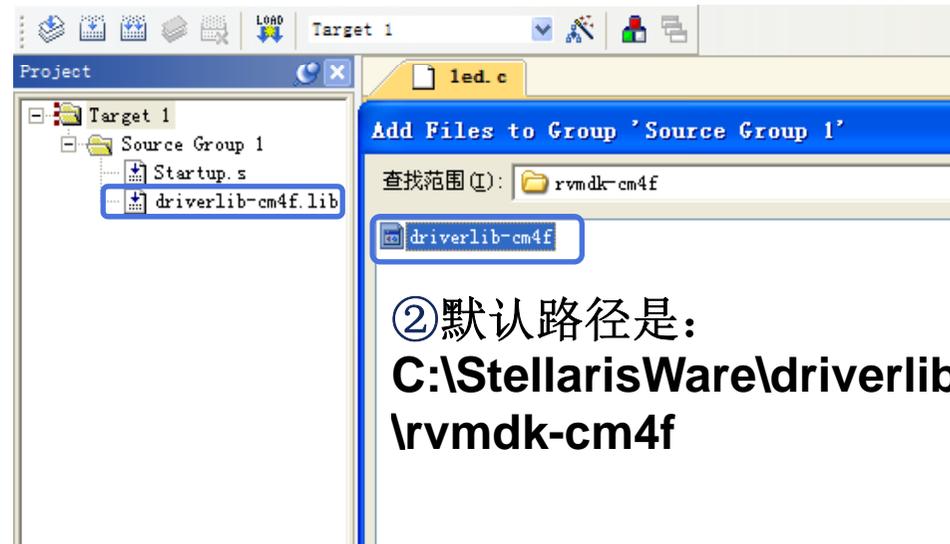
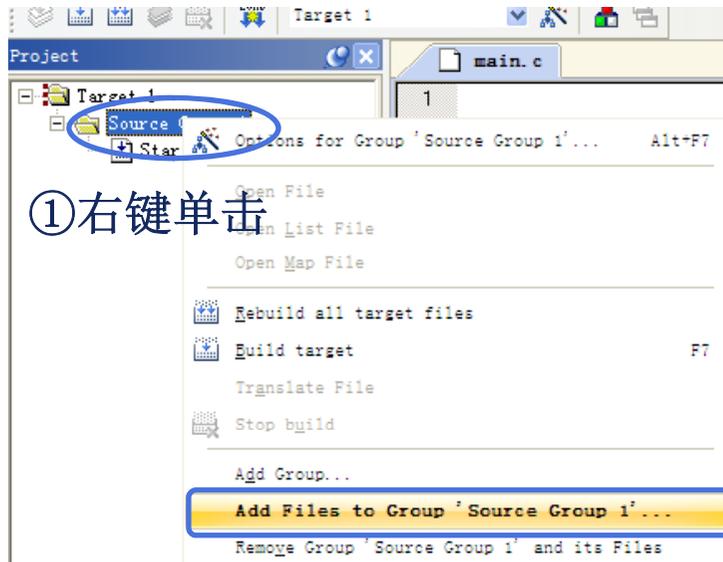
③点击“是 (Y)”按钮。保留默认启动文件 **startup.s**

② 选择器件





Step3: 添加外设驱动库文件





Step4: 添加外设驱动库头文件

① 右键选择第一项

② 输入以上内容

③ 选择该路径

rvmdk PART_LM4F232H5QD TARGET_IS_BLIZZARD_RA1



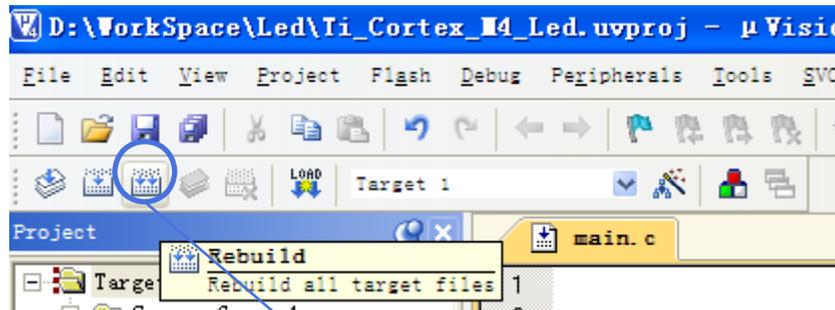
Step5: 编写main函数

```
Target 1
Source Group 1
  Startup.s
  1led.c
  driverlib-cm4f.lib

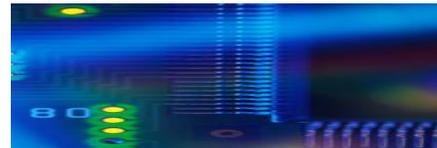
12 #include "inc/hw_types.h"
13 #include "driverlib/gpio.h"
14 #include "inc/hw_sysctl.h"
15 #include "inc/hw_memmap.h"
16 #include "driverlib/sysctl.h"
17 #include "driverlib/rom.h"
18
19 /*****
20 函数原形: int main(void)
21 功能描述: 主函数 (程序入口)
22 参数说明: 无
23 返回值: 无
24 *****/
25 int main(void)
26 {
27
28
29     ROM_SysCtlPeripheralEnable(SYSCTL_PERIPH_GPIOJ); //使能PJ
30     ROM_GPIOPinTypeGPIOOutput(GPIO_PORTJ_BASE, GPIO_PIN_0); //设PJ0口为输出模式
31     while(1)
32     {
33         ROM_GPIOPinWrite(GPIO_PORTJ_BASE, GPIO_PIN_0, ~GPIO_PIN_0); //灭LED1;
34         ROM_SysCtlDelay(SysCtlClockGet()/6); //延时500ms
35         ROM_GPIOPinWrite(GPIO_PORTJ_BASE, GPIO_PIN_0, GPIO_PIN_0); //亮LED1
36         ROM_SysCtlDelay(SysCtlClockGet()/6); //延时500ms
37     }
38 }
39 /*****
40 END FILE
41 *****/
```



Step6: 编译工程

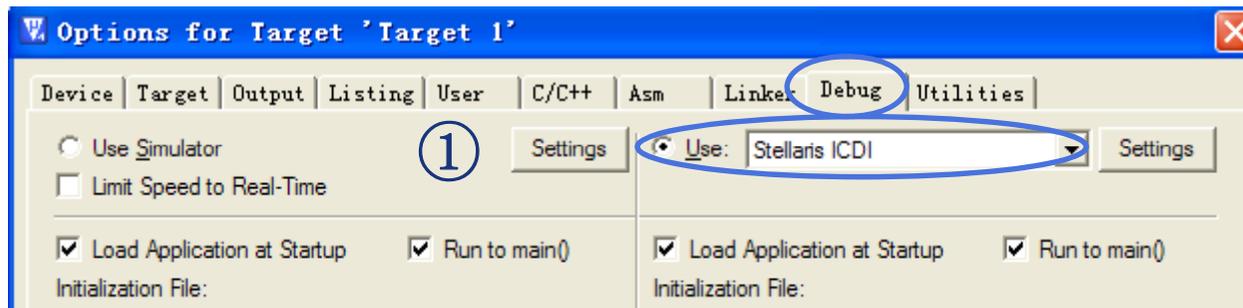


```
Build Output
Build target 'Target 1'
assembling Startup.s...
compiling main.c...
linking...
Program Size: Code=928 RO-data=16 RW-data=0 ZI-data=352
"Ti Cortex_M4_Led.axf" - 0 Error(s), 0 Warning(s).
```

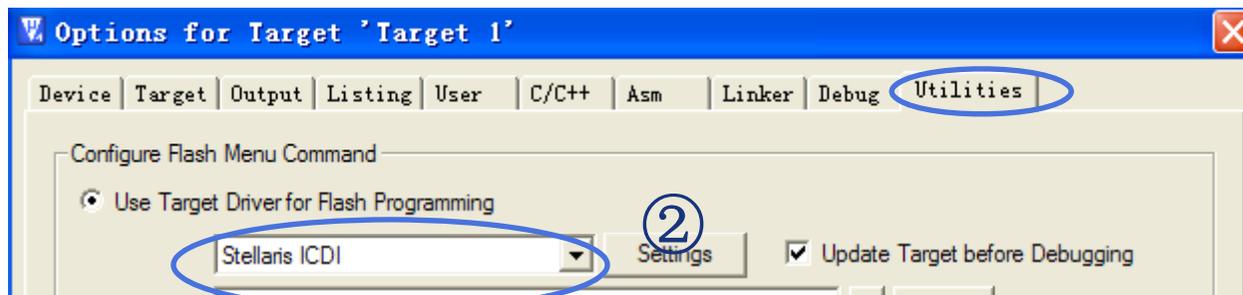


Step7: 配置调试工具

设置调试工具



设置下载工具

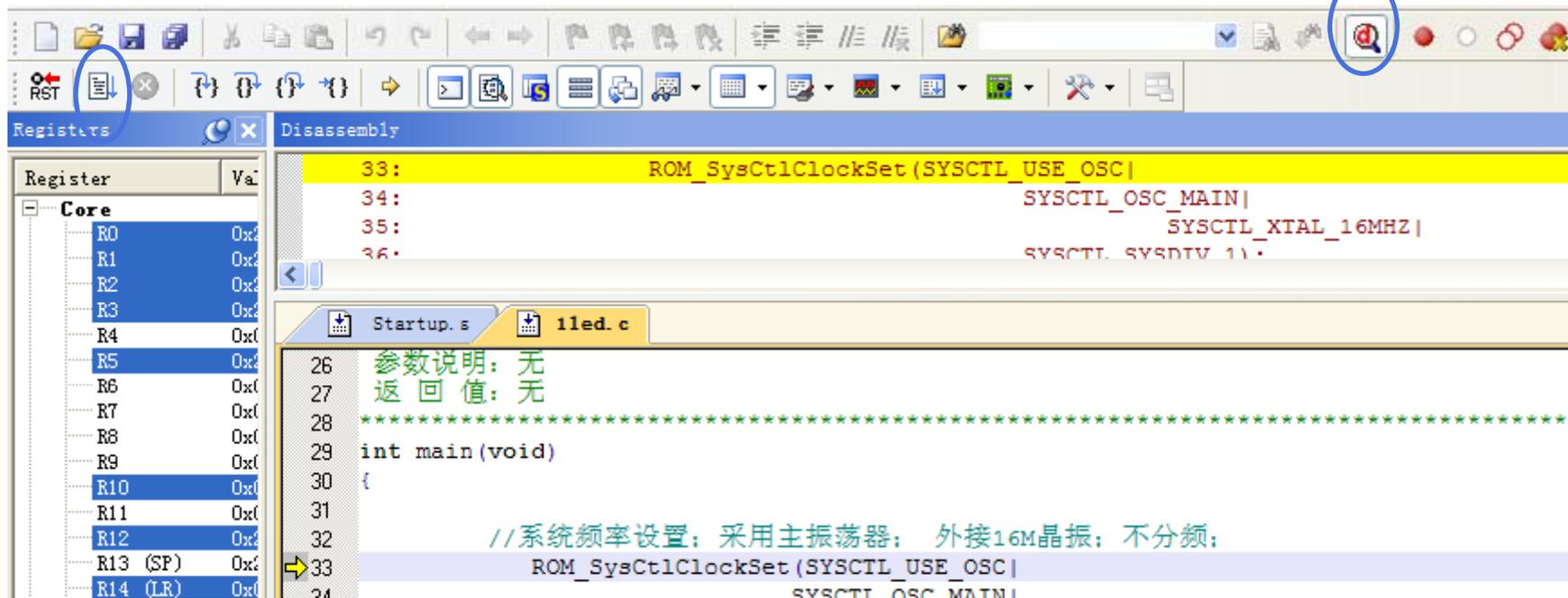




Step8: 仿真调试

②全速运行

①Debug

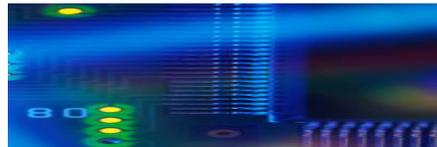


The screenshot shows an IDE interface with two main windows. The top window is the Disassembly window, showing instructions for the function ROM_SysCtlClockSet. The bottom window is the C code editor, showing the main function with a comment about system frequency settings.

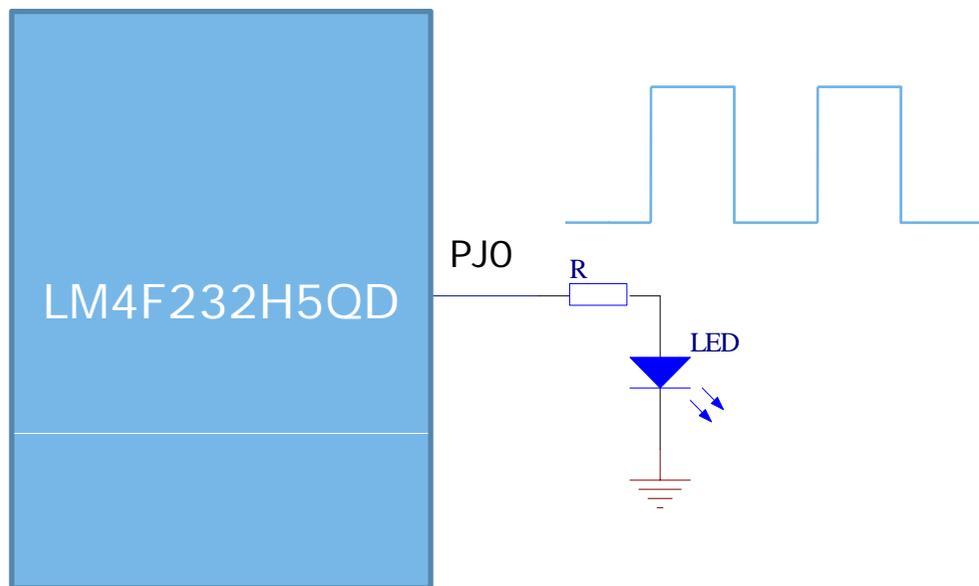
Register	Value
R0	0x2
R1	0x2
R2	0x2
R3	0x2
R4	0x0
R5	0x2
R6	0x0
R7	0x0
R8	0x0
R9	0x0
R10	0x0
R11	0x0
R12	0x2
R13 (SP)	0x2
R14 (LR)	0x0

```
33: ROM_SysCtlClockSet (SYSCTL_USE_OSC |
34: SYSCTL_OSC_MAIN |
35: SYSCTL_XTAL_16MHZ |
36: SYSCTL_SYSDIV_1)

Startup.s 1led.c
26 参数说明: 无
27 返回值: 无
28 *****
29 int main(void)
30 {
31
32 //系统频率设置; 采用主振荡器; 外接16M晶振; 不分频;
33 ROM_SysCtlClockSet (SYSCTL_USE_OSC |
34 SYSCTL_OSC_MAIN |
```



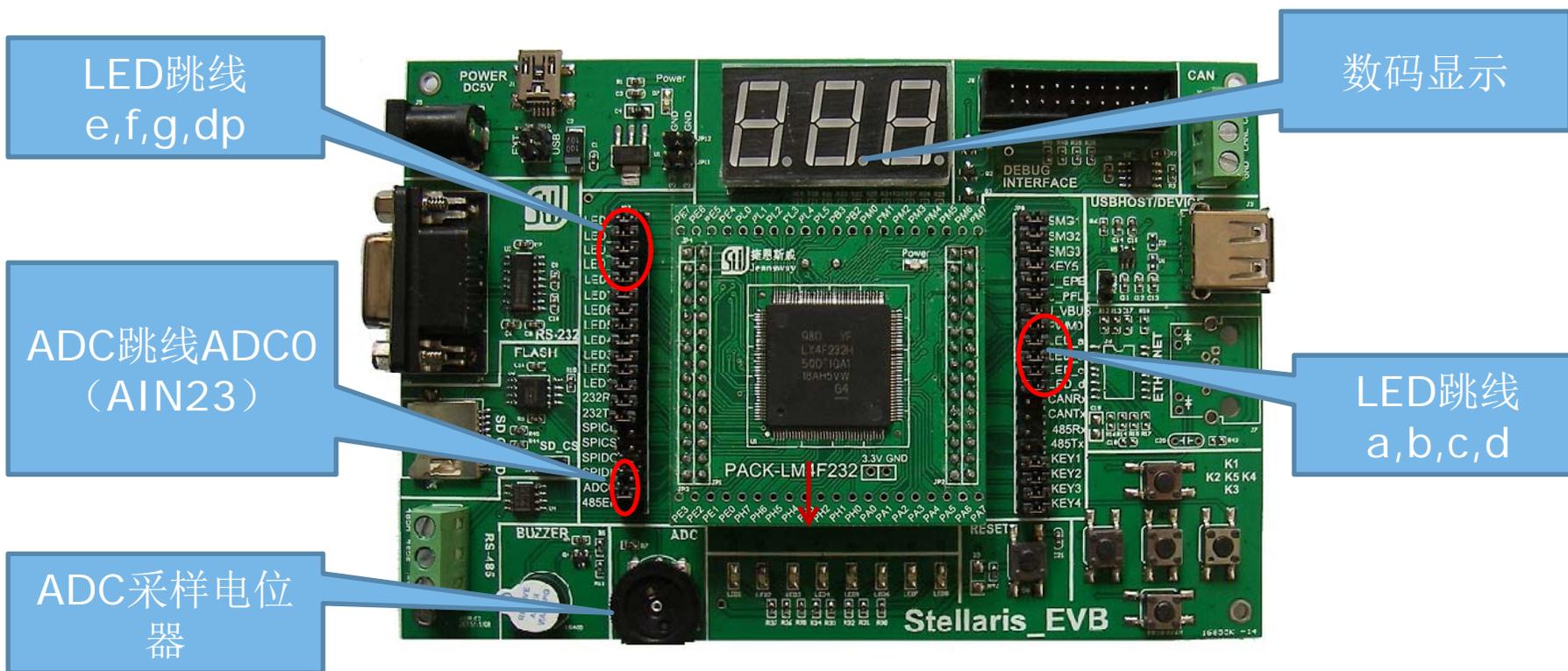
程序运行示意图





动手操作环节：ADC采样实验

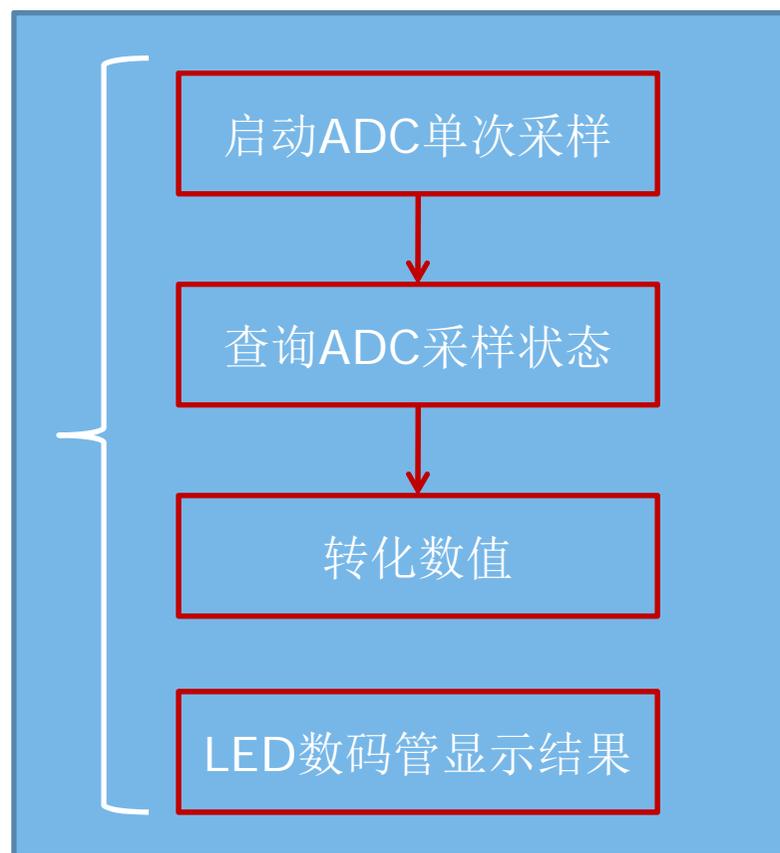
实验内容：用ADC实时采样电位器的电压，并将结果显示在数码管上。要求达到以下效果：调节电位器，数码管上显示的电压数据马上变化。

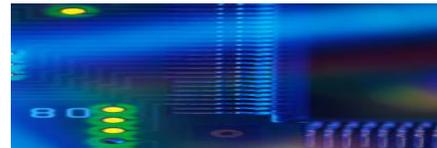


完成后请马上举手示意，最快完成者，经现场确认合格后可获得奖品一个。



实操实验参考





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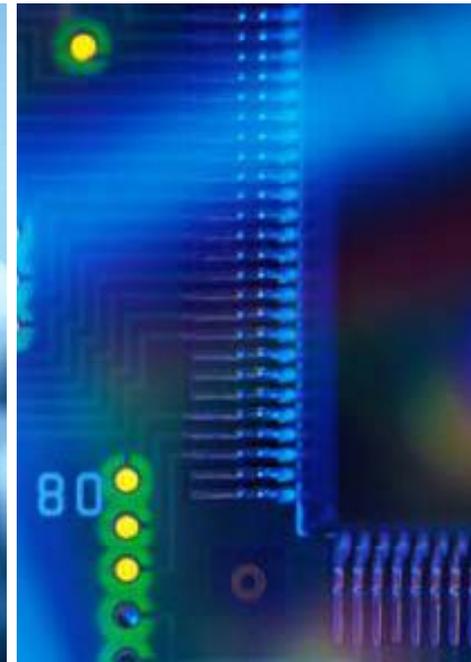
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 - 放大器
 - 数据转换器
 - 接口时钟
 - 无线连接
 - 电源管理

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Thank You !

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