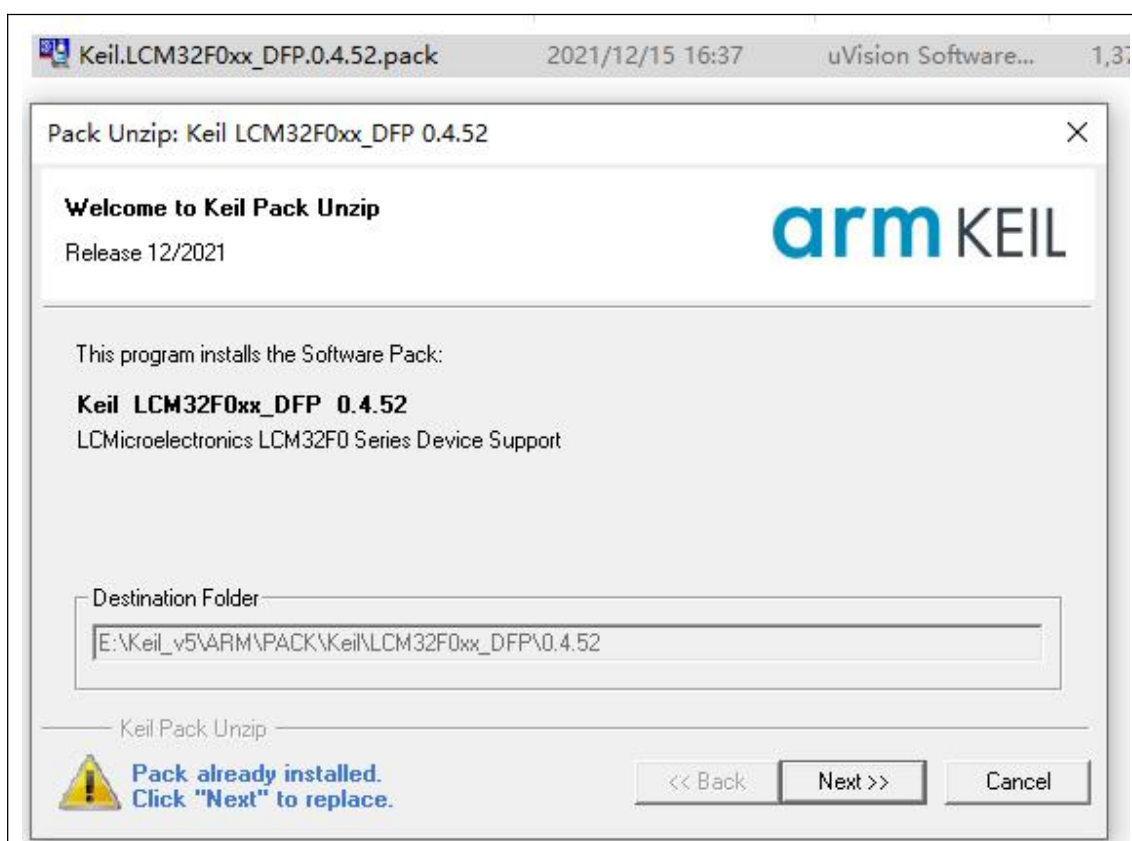


32 位 MCU 环境搭建指南

1. PC 机安装 ARM KEIL MDK5(KEIL5)集成开发环境。

2. 添加微器件包_双击 pack 安装包安装

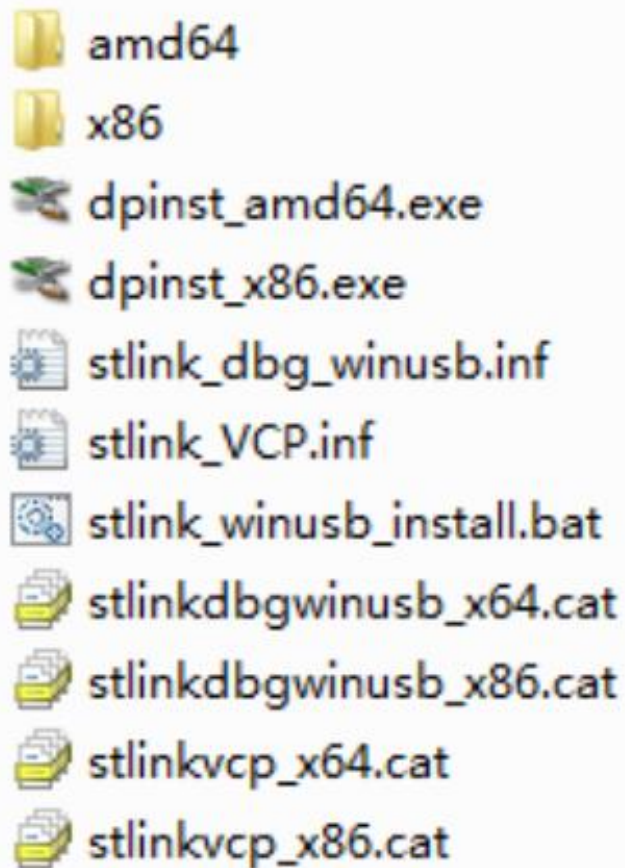


3.32 位芯片采用 SWD 协议。可以使用支持 SWD 协议的 STLINK 和 JLINK 仿真器

3.1STLINK 的使用

3.1.1 安装 STLINK 驱动

两个.exe 文件，根据自己的电脑 cpu 选择一个。amd 的 cpu 装 dpinst_amd64.exe,其他 CPU 装另一个，报错就卸载掉，装另一个。



3.1.2 安装成功后提示



3.1.3 用 STLINK 使用 32 位芯片 SDK

3.1.3.1 打开 SDK 工程



3.1.3.2 STLINK 接口定义

仿真器引脚	目标板引脚
VDD	VDD
GND	GND
SWCLC	SWCLC
SWDIO	SWDIO
常见 STLINK 引脚定义	

ST-Link指定的标准接口

VDD 3.3V	NC	STM32 RESET	TDO	NC	TCK SWCLK	TMS SWIO	TDI	TRST	TVCC
19	17	15	13	11	9	7	5	3	1
20	18	16	14	12	10	8	6	4	2

GND GND KEY SWIM GND SWIM BOOT0 UART UART TVCC
 RST RST TX RX

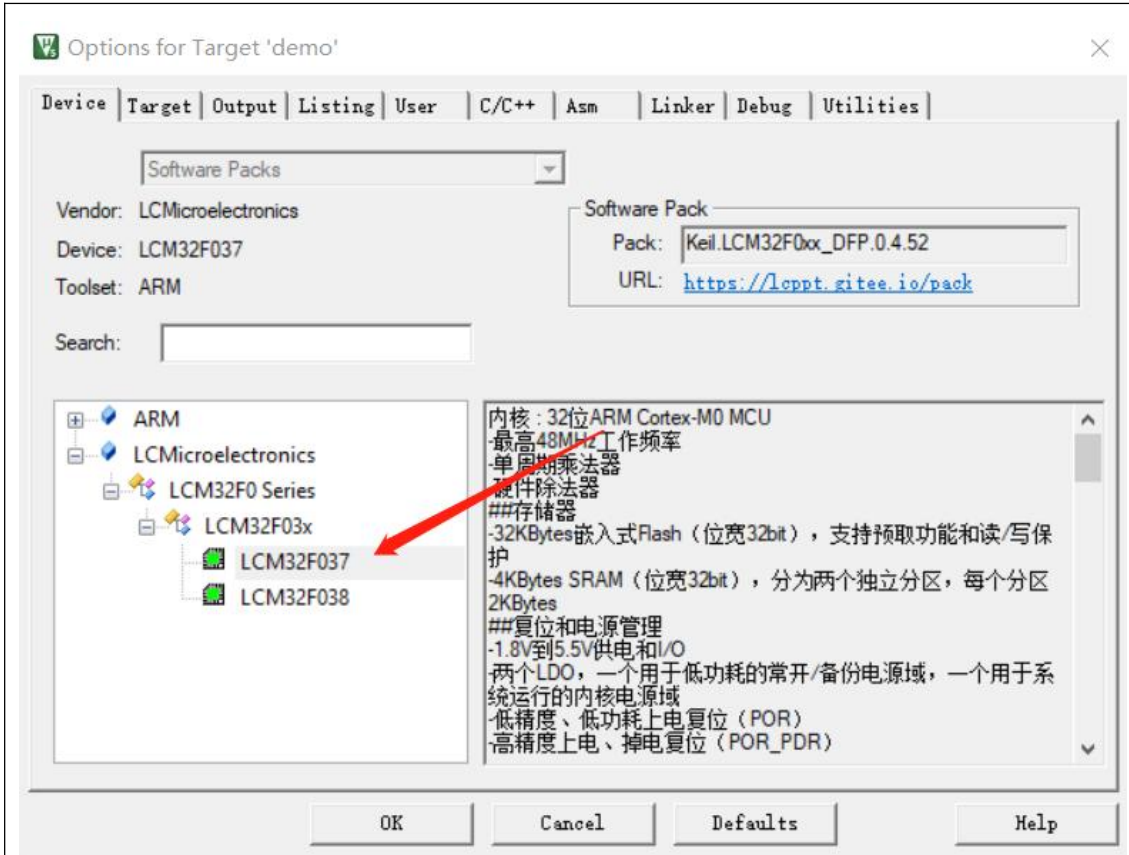




将 4 个接口与目标板接口对应连接。
 注意事项：连接需稳固，换掉松动的杜邦线，
 最好采用转接板，稳固连接。

3.1.4MDK 设置

3.1.4.1 选择目标芯片



Options for Target 'demo'

Device: LCM32F037

Toolset: ARM

Software Pack: Keil.LCM32F0xx_DFP.0.4.52

URL: <https://lcppt.gitee.io/pack>

Device Tree:

- ARM
 - LCMicroelectronics
 - LCM32F0 Series
 - LCM32F03x
 - LCM32F037** (Selected)
 - LCM32F038

内核: 32位ARM Cortex-M0 MCU

- 最高48MHz工作频率
- 单周期乘法器
- 硬件除法器
- ##存储器
- 32KBytes嵌入式Flash (位宽32bit), 支持预取功能和读/写保护
- 4KBytes SRAM (位宽32bit), 分为两个独立分区, 每个分区2KBytes
- ##复位和电源管理
- 1.8V到5.5V供电和I/O
- 两个LDO, 一个用于低功耗的常开/备份电源域, 一个用于系统运行的内核电源域
- 低精度、低功耗上电复位 (POR)
- 高精度上电、掉电复位 (POR_PDR)

3.1.4.2 Debug 设置

The image displays three screenshots of the ST-Link configuration interface, showing various settings tabs and options. Red arrows and text annotations highlight specific features.

Options for Target 'demo'

Device | Target | Output | Listing | User | C/C++ | Asm | Linker | Debug | Utilities

Use Simulator with restrictions Settings

Limit Speed to Real-Time

Load Application at Startup Run to main() Load Application at Startup Run to main() **设置**

Initialization File: ... Edit...

Restore Debug Session Settings

Breakpoints Toolbox Watch Windows & Performance Analyzer Memory Display System Viewer

CPU DLL: Parameter: SARMCM3.DLL -REMAP

Dialog DLL: Parameter: DARMCM1.DLL pCM0

Warn if outdated Executable is loaded

Manage Component Viewer Description Files ...

OK Cancel Defaults Help

Cortex-M Target Driver Setup

Debug Trace Flash Download

Debug Adapter Unit: ST-LINK/V2 **识别到仿真器**

Serial 30FF6064242383114142257

Version: HW: V2 FW: V2J31S7

Check version on start

Target Com Port: SW **选择通信方式**

Clock Req: 4 MHz Selected: 4 MHz

SW Device

IDCODE Device Name

SWDIO 0x0BB11477 ARM CoreSight SW-DP

Automatic Detection ID CODE: Manual Configuration Device Name: Add Delete Update IR lens AP: 0

Connect & Reset Options

Connect: Normal Reset: Autodetect

Reset after Connect Stop after Reset

Cache Options

Cache Code Cache Memory

Download Options

Verify Code Download Download to Flash

确定 取消 应用(A)

Cortex-M Target Driver Setup

Debug Trace Flash Download

Download Function

LOAD

Erase Full Chip Program Erase Sectors Verify Do not Erase Reset and Run

RAM for Algorithm

Start: 0x20000000 Size: 0x1000

Programming Algorithm

Description	Device Size	Device Type	Address Range
LCM32F037 32kB Flash	32k	On-chip Flash	08000000H - 08007FFFH

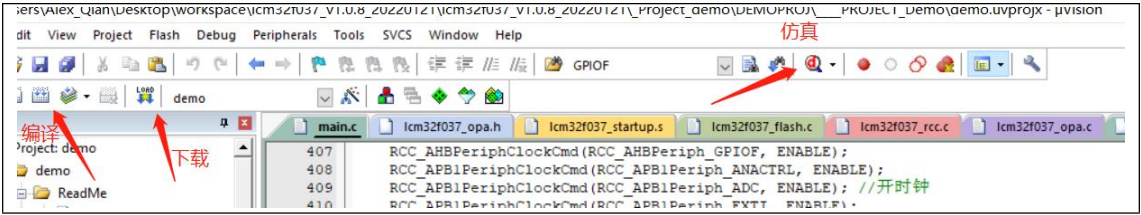
Start: Size:

Add Remove

确定 取消 应用(A)

芯片信息

3.1.4.3 编译、下载、仿真



3.2 JLINK 的使用（必须是支持 SWD 协议的，具体询问购买处的信息，驱动最好由购买处获得）

3.2.1 安装 JLINK 驱动



3.2.2 用 JLINK 使用 32 位芯片 SDK

3.2.2.1 打开 SDK 工程

参见 3.1.3.1 打开领芯 SDK 工程

3.2.2.2 JLINK 接口定义

仿真器引脚	目标板引脚
VDD	VDD
GND	GND
SWCLC	SWCLC
SWDIO	SWDIO
常见 JLINK 引脚定义	

SWD接口

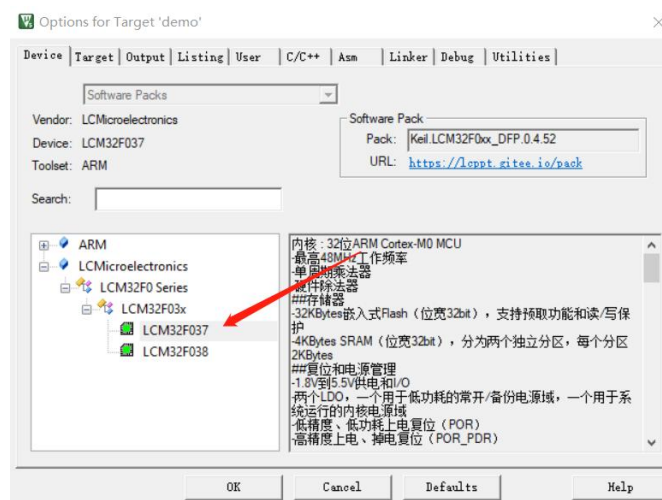
VTref	1 ●	● 2	VOUT
Not used	3 ●	● 4	GND
Not used	5 ●	● 6	GND
SWDIO	7 ●	● 8	GND
SWCLK	9 ●	● 10	GND
Not used	11 ●	● 12	GND
SWO	13 ●	● 14	GND
RESET	15 ●	● 16	GND
Not used	17 ●	● 18	GND
5V-Supply	19 ●	● 20	GND



将 4 个接口与目标板接口对应连接。
 注意事项：连接需稳固，换掉松动的杜邦线，
 最好采用转接板，稳固连接。

3.2.3MDK 设置

3.2.3.1 选择目标芯片



3.2.3.2 Debug 设置

The first screenshot shows the 'Options for Target 'demo'' dialog box, with the 'Debug' tab selected. The 'Use' dropdown is set to 'J-LINK / J-TRACE Cortex'. The 'Load Application at Startup' and 'Run to main()' checkboxes are checked. The 'Initialization File' field is empty. The 'Restore Debug Session Settings' section has 'Breakpoints', 'Toolbox', 'Watch Windows & Performance Analyzer', 'Memory Display', and 'System Viewer' checked. The 'CPU DLL' is 'SARMCM3.DLL' and the 'Dialog DLL' is 'DARMCM1.DLL'. The 'Warn if outdated Executable is loaded' checkbox is unchecked. The 'Manage Component Viewer Description Files ...' button is visible. The 'OK', 'Cancel', 'Defaults', and 'Help' buttons are at the bottom.

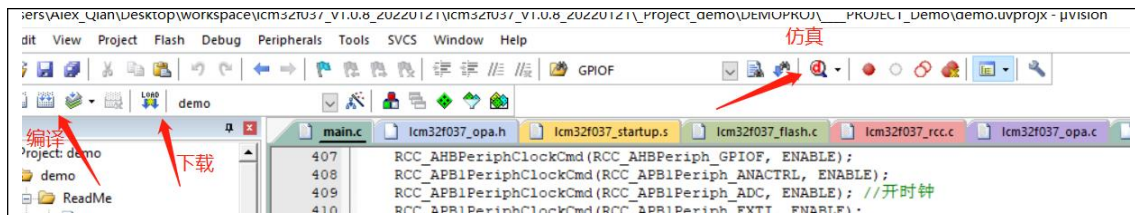
The second screenshot shows the 'Cortex JLink/JTrace Target Driver Setup' dialog box, with the 'Debug' tab selected. The 'J-Link / J-Trace Adapter' section shows 'SN: 59768879', 'Device: J-Link', 'HW: V9.70', 'FW: J-Link V9 compiled May 7 2', 'Port: SW', and 'Max: 5 MHz'. The 'SW Device' section shows 'IDCODE: 0x0BB11477' and 'Device Name: ARM CoreSight SW-DP'. The 'Automatic Detection' checkbox is checked. The 'Connect & Reset Options' section shows 'Connect: Normal', 'Reset: Normal', and 'Reset after Connect' checked. The 'Cache Options' section shows 'Cache Code' and 'Cache Memory' checked. The 'Download Options' section shows 'Verify Code Download' and 'Download to Flash' unchecked. The 'Interface' section shows 'USB' selected. The 'TCP/IP' section shows 'IP-Address: 127.0.0.1' and 'Port (Auto): 0'. The 'Misc' section shows 'Autodetect' and 'JLink Info' buttons. The 'State: ready' label is visible. The '确定', '取消', and '应用(A)' buttons are at the bottom.

The third screenshot shows the 'Cortex JLink/JTrace Target Driver Setup' dialog box, with the 'Flash Download' tab selected. The 'Download Function' section shows 'Erase Full Chip', 'Erase Sectors', 'Do not Erase', 'Program', 'Verify', and 'Reset and Run' options. The 'RAM for Algorithm' section shows 'Start: 0x20000000' and 'Size: 0x1000'. The 'Programming Algorithm' table is shown below:

Description	Device Size	Device Type	Address Range
LCM32F037 32kB Flash	32k	On-chip Flash	08000000H - 08007FFFH

The 'Start' and 'Size' fields are empty. The 'Add' and 'Remove' buttons are at the bottom.

3.2.3.3 编译、下载、仿真



3.2.4 若 Debug 设置，点击 Setting 时弹出如下对话框

