



Arch Pro

Arch Pro is an mbed enabled development board for rapid prototyping. It is a variant of mbed LPC1768 with built-in Ethernet, USB Host/Device, Grove connectors and Arduino form factor. With a variety of Shield and Grove modules and lots of software libraries for Arch Pro, you can implement Ethernet, USB Host/Device and NFC applications rapidly and easily.

Features

- mbed enabled
- O Online development tools
- O Easy to use C/C++ SDK
- O Handy libraries
- Arduino form factor with two Grove connectors
- Drag-n-drop programming
- Debug using CMSIS-DAP
- USB virtual serial for communication

Specifications

Parameter	Value/Availability
MCU	NXP LPC1768 variant (with ARM Cortex-M3 core)
Clock Speed	100 MHz
Flash	512 KB
RAM	64KB
UART	4 No.s
I2C	3 No.s
SPI	2 No.s
Ethernet	Yes
USB Host/Device	Yes

Platforms Supported

• mbed.

Application Ideas

- Ethernet
- USB Host or Device
- NFC
- RTOS
- Lua

Hardware Overview



There is a monochrome version for you to print.

Note

The Arch Pro silkscreen for the Grove connectors is labeled 3V3 on top of the PCB and 5V on the underside. Grove Vcc is by default 3V3, but can be changed to 5V by moving R50 to R51. SPI Vcc pin can be set by populating R52 (3V3) or R53 (5V) with 0R - neither populated by default.

Getting Started

As the Arch Pro is compatible with mbed LPC1768, one can use the mbed C/C++ SDK, libraries and online development tools to rapidly build a prototype. Here we show how to light up an LED. This can be done in less than 10 minutes.

Step one : Sign up for an mbed account.

• Open mbed.org, click Login or signup. If you have already registered, please click login directly.

Step two : Enter online development tools.

Click Compiler, it opens the online mbed IDE. Before programming, it is better to read the mbed Complier Getting started.

rogram Workspace	Help				
My Programs Hello HelloWorld HelloWorld HelloWorld USBMSD_MINI Wifly_HelloWorld	Compiler Help Choose a category				
	Getting Started Importing Collaboration API Documentation Publishing Exporting Shortcuts				
	mbed Compiler Getting Started				
	Interface basics The mbed Compiler interface consists of five key components - <u>Main toolbar</u> , <u>Navigation tree</u> , <u>Browser panel</u> , <u>Editor</u> and <u>Or</u> Main toolbar The buttons on the Main toolbar are accessible at all times, though they may not always be active as their state depends on "Undo", "Redo", "Print" and "Format" buttons won't be active, as their function is relative to text editing, thus a file has to be "Compile", "Commit", "Revision History" and other buttons, and which function is relative to program and library contents is working on, you can always look at the top blue bar that shows your location.				
	Most of the Main toolbar buttons have a keyboard <u>shortcut</u> , allowing you to easily invoke them, saving a mouse click or tw "New" etc. While editing a file, the Main toolbar looks like the image below (click to enlarge)				
	mbed Compler - /Textt.CD_ttelloWork/man.cpp				
	🕐 New 👻 El Sanor II 🔄 Sanor II 🔄 Comple 🗸 🛞 Commit 👻 🖓 Revisions 🖙 🕫 👫 🍪 🔨 Format 🛛 mbed NOP LPC12NB 🔻 🗋 Guide				
	On the right side of the Main toolbar you can find the device selection dropdown which lets you change the device you are				
	Navigation tree				
	The Navigation tree lets you browse your workspace, but more importantly it defines the context you are working on.				
	mbed Compiler - /TextLCD_HelloWa				
	Pour Drevet L Flam F				

Step three : Edit code.

Click "New" in the left top corner to create a Program and edit a blink program in main.cpp file. .

```
1#include "mbed.h"
 2
3DigitalOut led1(LED1);
4
5int main() {
    while(1) {
 6
7
         led1 = !led1;
8
          wait(0.5);
9
      }
10}
```

Step four : Add a device.

Click "No device selected" in the top right corner, then click "Add a device" button in the bottom left as seen in the picture below. .

Note If you have already used an mbed device, it will be seen in the top right corner instead of "No device selected".

Select a Platform			Select Platform
	Description	Pinout	
Your registered platforms			
Add a device			

• A pop-up page appears with a list of devices as shown below. Select "mbed LPC1768".



• Enter mbed LPC1768 page and click "Add to mbed Compiler". Now you have successfully added Mbed LPU1768. Return to mbed compiler page and click "No device selected". After you click "LPC1768" in the bottom left corner, a screen appears as shown below.

Select a Platform					
Click the "Select" button to compile for the	e mbed LPC1768 platform.				
	Description Pinout Rapid Prototyping for general microcontroller applications, Ethernet, USB and 32-bit ARM®				
	Cortex [™] -M3 based designs Overview E				
	The mbed Microcontrollers are a series of ARM microcontroller development boards designed for rapid prototyping. * Find out more about <u>all mbed Microcontrollers</u>				
	The mbed NXP LPC1768 Microcontroller in particular is designed for prototyping all sorts of devices, especially those including Ethernet, USB, and the flexibility of lots of peripheral interfaces and FLASH memory. It is packaged as a small DIP form-factor for prototyping with through-hole PCBs, stripboard and breadboard, and includes a built-in USB FLASH programmer.				
More Info	OND Ov Store Stor				
Your registered platforms					
mbed LPC11U24 LPC1768 Add a device					

• You can see the selected board in mbed online compiler after clicking "Select Platform".

Step five : Compile, download.

Click "Compile". On successful compilation, the mbed IDE generates a bin file. Save the bin file on your PC.

Step six : Update firmware.

- Connect the USB interface (next to 'BUTTON') of Arch Pro to your PC using a USB Micro B cable; It automatically appears as a USB device named MBED.
- Copy the generated bin file to MBED device (on your PC). Now the USB device disappears and reappears.
- Press BUTTON of Arch Pro, you will see an LED flashing.

Debug

To enable SWD debug or to get debug message through USB Virtual serial, please install the driver from mbed.

Update or Restore Firmware

The latest firmware version for the Arch Pro is v0221 built on Jan 28 2015. To check your firmware version and build date, open the MBED.HTM or DETAILS.TXT of your MBED disk in a text editor.

- [Firmware v221 2015-01-28 for Arch Pro] Fix Mac OS X 10.10 Yosemite read only file system bug
- [Firmwarev02032014-09-02forArchPro](https://github.com/xiongyihui/CMSIS-DAP/raw/archpro/interface/mdk/lpc11u 35/lpc11u35ipc1768ifmbedbootloader.bin)[Firmwarev02032014-09-02forArchPro](https://github.com/xiongyihui/CMSI S-DAP/raw/archpro/interface/mdk/lpc11u35/lpc11u35lpc1768ifmbedbootloader.bin)

To update:

- A Windows or Linux computer is needed.
- Download the latest firmware.
- Press and hold the Arch Pro's BUTTON and power it ON.
- A disk named MBED LOADER will appear.
- Drag-n-drop the downloaded firmware into the disk.

Notes

- LocalFileSystem does not work: As the Arch Pro does not have external flash to store files, the LocalFileSystem is not available for this board.
- P0_27 & P0_28 do not work with DigitalOut: P0_28 & P0_27 are open-drain digital I/O for compatible with I2C. External pull-up resistors are needed to provide output functionality.
- USB Serial Communication: In Windows, install the mbed Windows serial port driver to use USB Serial Communication. Have a look at Windows Serial Configuration

Resources

- Arch Pro V1.0 Schematic PDF
- Arch Pro V1.0 EAGLE Files
- LPC1768 datasheet
- LPC17xx User Manual

Tech Support

Please submit any technical issue into our forum