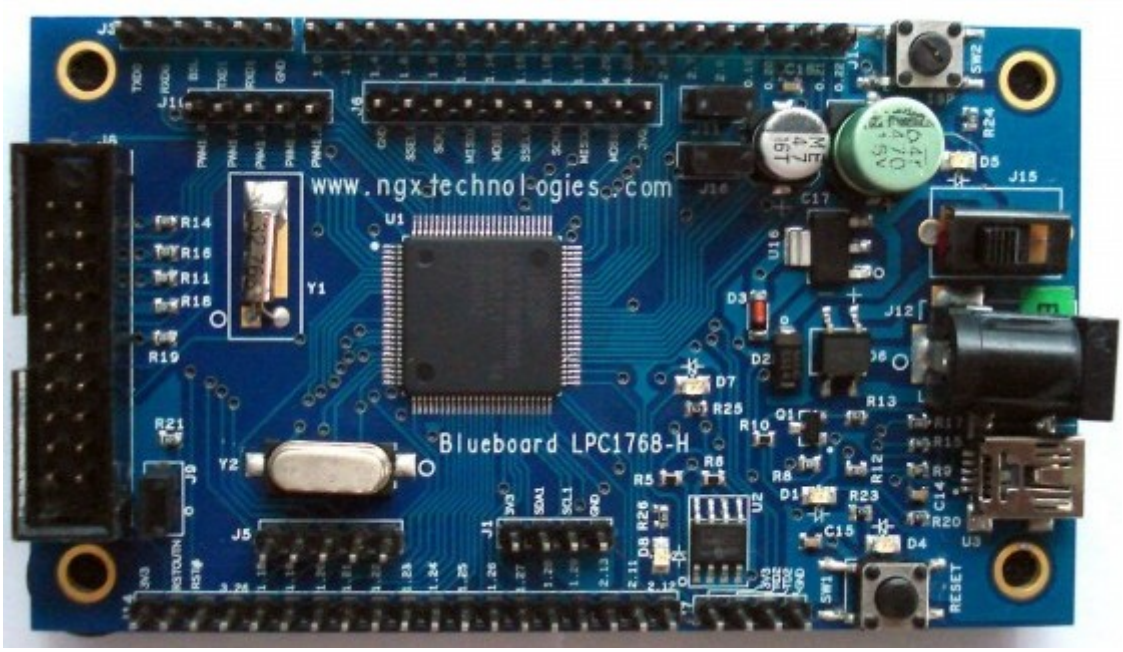
BlueBoard-LPC1768-H



USER MANUAL

Table of Contents

Revision history

BlueBoard-LPC1768-H V2.0

version: v2.0 author: Nagaraj M Baddi

- The mass storage for USB bootloader is enumerated using SW1 and SW2 buttons.
- BlueBoard-LPC1768-H v1.0 schematic is changed to BlueBoard-LPC1768-H v2.0.

BlueBoard-LPC1768-H v1.0

version: v1.0 author: Milind Kakati

- BlueBoard-LPC1768-H v1.0 User manual.

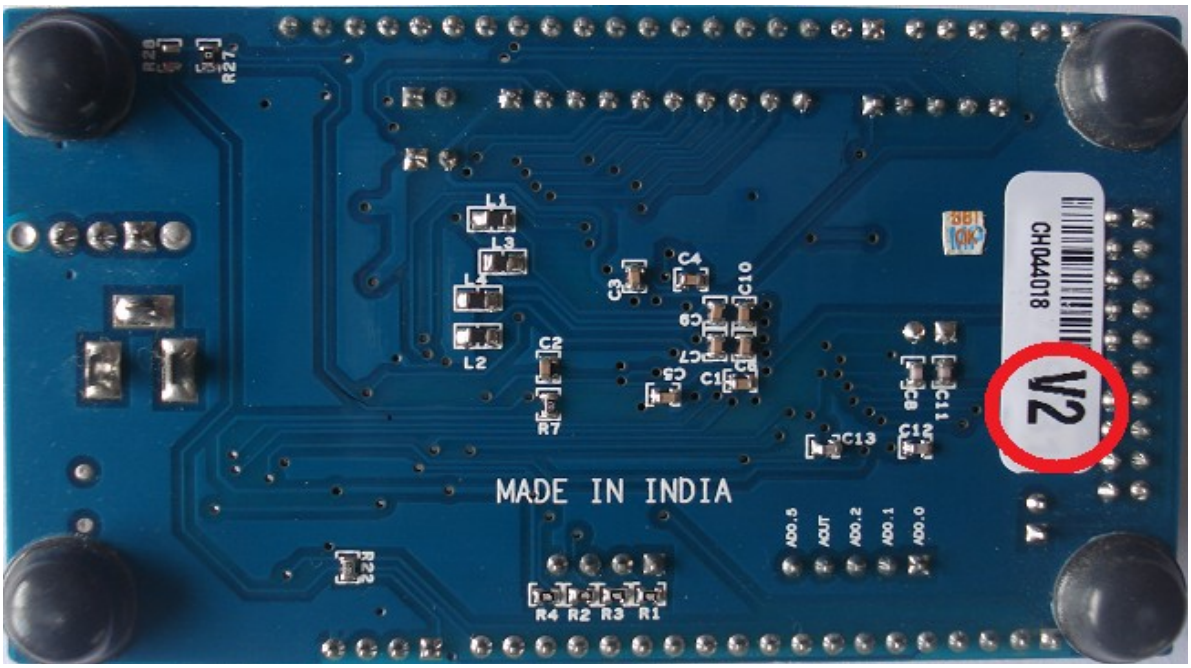
Introduction

The BlueBoard LPC1768-H is header board with LPC1768 from NXP. The LPC1768 is an ARM Cortex-M3 based microcontroller for embedded applications.

Note: Please note that the BlueBoard-LPC1768-H has undergone a minor hardware change. The new version is called Blueboard-LPC1768-H V2. V2 version has the been designed keeping in mind the USB bootloader functionality. User can now use the SW2 for USB bootloading. Whereas in the earlier version the user had to manually connect a wire on P2.12 to GND while powering ON or resetting the board, to enter into the USB bootloader mode.

How do I identify the version of my board?

The Blueboard-LPC1768-H V2 boards have been labelled as <Product Number **V2**>**.** Check the product numbering label at the backside of the board, as shown in the image below. If the board has no V2 in the label then it is the earlier version of the board (and therefore you cannot USB bootload using the SW2 button). In following figure the circle indicates the Blueboard-LPC1768-H V2 board.



Features

The BlueBoard LPC1768-H has most of the pins brought out to the male header.

Hardware

Power

- 7.5V/1A DC female jack / USB mini connector
- Slide switch ON / OFF

Interface

- USB mini
- 20 pin JTAG header
- Reset and ISP button switch

General

- Two layer PCB (FR-4 material)
- 32 MHz crystal for RTC
- 12 MHz crystal for controller
- 256 Kb on board EEPROM chip with I2C interface

Software

Firmware

- Pre-loaded USB boot-loader for programming through USB.
- Pre-loader LED and EEPROM test program

Source

- LED Blink example source code.

Getting Started

Before starting you would need the following.

Requirement

The requirement is put in two sections.

Hardware

- USB cable with type B connector
- 7.5V/1A DC power supply
- USB or Parallel JTAG

Software

- H-JTAG Software
- C Cross compiler(gcc / Keil / Rowley Crossworks for ARM)
- PC / Laptop with Linux / Windows

Validating the BlueBoard LPC1768-H

Once you have all the accessories connect the USB cable and power jack. Switch on the board.

The power LED D5 should glow. The Reset LED D4 should switch OFF when the RESET button is pressed. The test LED D8 should blink 4 times after power up or RESET. If it remains ON after blinking it confirms that EEPROM test was successful. To validate the USB interface get the board into USB bootloader mode. The details of which are mentioned below.

How To Enter USB Boot Loader Mode?

Entering into USB bootloader mode is similar to ISP. If during reset or power up the ISP pin is LOW the controller enters the ISP mode. Similarly to enter USB bootloader mode one needs to hold some pin (as implemented in the USB bootloader program) LOW during reset or power up.

Note: You should have connected the USB cable to the PC.

For Blueboard-LPC1768-H

The USB bootloader program for this version looks for pin P2.12 to be held LOW during reset or power up. To enter the USB bootloader mode connect the P2.12 pin (On connector J14) to GND and press the SW1 (RESET) switch or power up. You should now see the board as a mass storage device. You can now drag and drop your binaries onto this drive, remove the P2.12 connection to GND and then RESET using SW1 to execute the binary.

For Blueboard-LPC1768-H V2

Hold down SW2 (ISP) and SW1 (RESET), then release SW1 first and finally SW2. Now the pre-loaded USB boot-loader allows you to enumerate the board as a Mass Storage Device. Drag the compiled binary file and drop onto the device and reset the board using SW1 and the firmware executes.

Using JTAG with BlueBoard

The BlueBoard LPC 1768-H v2.0 has a 20 pin male box connector. Using the NGX ARM USB JTAG connect with the ribbon cable. Connect to the PC with USB cable.

- OpenOCD
- Keil(refer here)
- Rowley Crossworks 1.7(refer here)
- Rowley Crossworks 2.0 setting for NGX ARM USB JTAG is already present
- CoIDE has NGX ARM USB JTAG listed in its debuggers list

Information

Revision History

version: v2.0 *author:* Nagaraj M Baddi

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