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MCB2470
Quick Start Guide

Getting Started and Blinky Example

This **Quick Start Guide** introduces the MCB2470 board for the NXP (founded by Philips) **LPC2478** device. It shows how to install the ARM software development tools and run a variety of example projects.
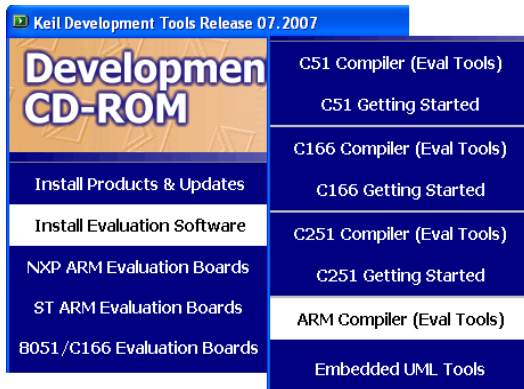
Installing the Software

In order to install the evaluation version of the MDK-ARM Microcontroller Development Kit from a CD-ROM
- Insert the CD-ROM into your PC.

If the opening screen does not appear, run SETUP from the CD root directory
- Click Install Evaluation Software, then ARM Compiler (Eval Tools)
- Follow the setup program instructions

Note: The first MCB2470 boards shipped without a CD-ROM. An evaluation version of MDK is available for download from https://www.keil.com/demo/eval/arm.htm.

Connecting to your Target

Power the target with the USB A to mini-B cable provided by connecting your PC to the mini-USB connector on the board.

This USB connection may be used to program the LPC2478 on-chip Flash serially with the utility Flash Magic.

The MCB2470 provides a number of standard interfaces such as CAN, RS232, 10/100base-T Ethernet, USB OTG/Device and USB Host. Use standard cables to connect the board's interfaces to a PC or other embedded systems.

Using ULINK2

The Keil ULINK2 JTAG-USB Adapter connects the USB port of your PC to the JTAG port of the target board, allowing you to download and debug embedded programs running on your target hardware.

The ULINK2 Adapter connects to the MCB2470 using the 20-pin ribbon cable.

ULINK2 supports the Keil Real-Time Agent for "on-the-fly" debug of running applications via the JTAG port.
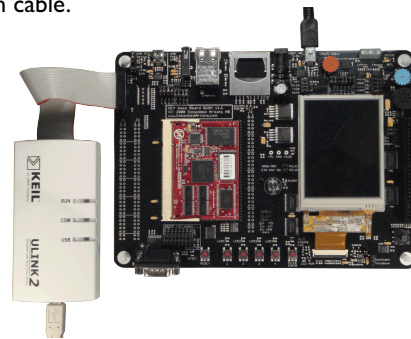
Blinky Example

This example demonstrates the ease of downloading and debugging an application on a target board.

It can be found at:
        C:\Keil\ARM\Boards\Keil\MCB2470\Blinky

To use this example

- Start Vision
- Open the Blinky.uv2 project file
        Project - Open

- Compile and link the Blinky application
        Project - Build

- Program the application into on-chip Flash ROM
        Flash - Download

- The LEDs on the target are controlled by the P0.25-AD0.2 potentiometer. As the setting increases, the LEDs scroll faster.

- Start debug mode

Using the debugger commands, you may:

- Single step through code

- Set breakpoints

- Run the application

- Review variables in the watch window

- Reset the device to re-run the application

- Use the yellow arrow (program counter) to view the current assembler or C statement

www.keil.com/mcb2470

HTTP with Ethernet

DO NOT RECOMPILE THIS EXAMPLE WITHOUT AN RL-ARM LICENSE

This example demonstrates easy networking and control of hardware across a TCP/IP network. It configures the LAN network parameters for the evaluation board automatically if a DHCP server is available in your LAN. Otherwise, configure your PC for fixed IP address as detailed in the example.

It can be downloaded from:
http://www.keil.com/download/docs/379.asp

To use this example:
- Start Vision
- Open the Http_demo.uv2 project file and download to Flash
    Project - Open
    Flash - Download
- Open your web browser and enter the address http://mcb2470
- Log in with the following details:

| Username | admin |
| Password | leave blank |

The web pages allow you to control and monitor various functions of the board such as LEDs and push buttons.

Flash File System

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This example enables you to create, read, copy and delete files from an SD/MMC flash memory card on the evaluation board.

It can be downloaded from:
http://www.keil.com/download/docs/380.asp

To use this example:
- Connect the MCB2470 board's UART RS232 port to the COM1 port on your PC via a serial cable and start a hyperterminal session configured for 115200 baud, 8 bits, no parity, 1 stop bit, XON/XOFF.
- Start Vision
- Install an SD/MMC flash memory card and power up the board
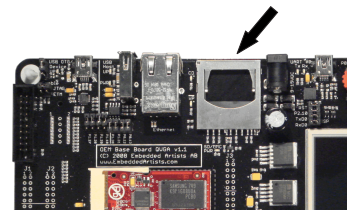
- Open the SD_File.uv2 project file and download to Flash
    Project - Open
    Flash - Download
- The SD/MMC card can now be read or edited from the Debug window using a HyperTerminal via a serial cable from your PC to the evaluation board.

USB - HID Demo

This USB example project implements a Human Interface Device (HID). Connect the PC to the board with a USB A (PC side) to mini-B (board side) cable. Fit jumper on the top position of J37 to configure the USB connection on the board as a Device (B-type).

J37 →

USB mini-B Connector
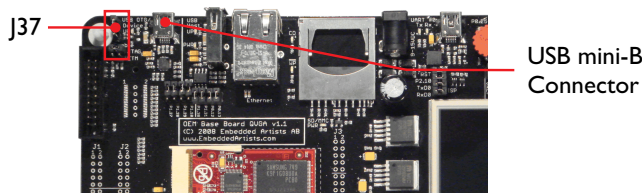
The example can be found at:
    C:\Keil\ARM\Boards\Keil\MCB2470\USBHID
You also need the USB Client application located at:
    C:\Keil\ARM\Utilities\HID_client\Release

To use this example:
- Start Vision, open the HID.uv2 project and download to Flash
- Cycle power the target and run the USB Client application

- Select the evaluation board from the drop-down menu
- Checking or unchecking the boxes in the Output (LEDs) group turns the MCB2470 Board's LEDs 1 to 4 on and off
- Inputs (Buttons) show the status of the on-board buttons 1 to 4

Blinky example with RTX

This example implements a step-motor driver application using the RTX Real-Time Kernel. Four LEDs blink simulating the activation of the four output driver stages.

It can be found at:
    C:\Keil\ARM\Boards\Keil\MCB2470\RTX_Blinky

To use this example:
- Start Vision
- Open the Blinky.uv2 project file
    Project - Open
- Compile and link the application, then program it into on-chip Flash ROM
    Project - Build Target
    Flash - Download
- The LEDs will begin to flash in a controlled manner
- The tasks running in the application may be viewed from the debugger window
    Peripherals - RTX Kernel

TID	Task Name	Priority	State	Delay	Event Value	Event Mask	Stack Load
2	phaseA	1	WAIT_AND		0x0000	0x0001	36%
3	phaseB	1	WAIT_AND		0x0000	0x0001	36%
4	phaseC	1	WAIT_DLY	34			36%
5	phaseD	1	WAIT_AND		0x0000	0x0001	36%
6	led	1	WAIT_DLY	2			32%
255	os_idle_demon	0	RUNNING				0%