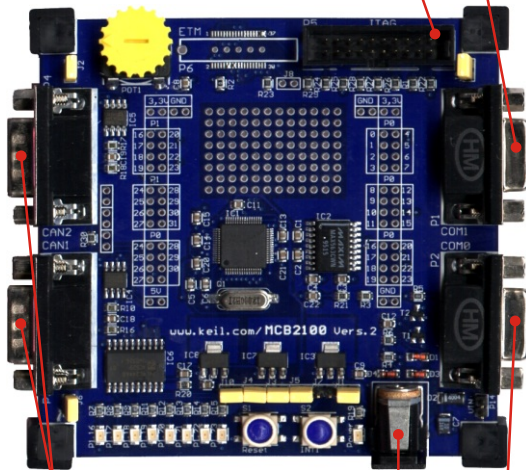


LPC2000 Development Tools

This booklet introduces you to Keil DK-ARM and the Philips LPC2000 device series. DK-ARM comes with example programs for Keil MCB21xx Board. The Keil ULINK Adapter and μ Vision3 support Flash download and program debugging via the JTAG interface.

Serial Connector COM1 for user application

ARM7 JTAG Connector (connects to Keil ULINK)



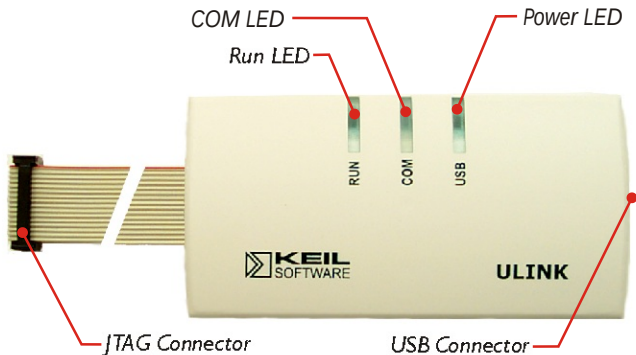
CAN interfaces *Power 6V .. 9V= + -*

Serial Connector COM0 for ISP Programming



ULINK USB-JTAG Connector

The Keil ULINK Interface Adapter connects the USB port of your PC with the JTAG interface of the target hardware. Keil ULINK supports several microcontroller architectures including the ARM core that is used in the Philips LPC2000 device series.



The JTAG connector interfaces the μ Vision Debugger directly to the Embedded ICE of the Philips device. The Keil ULINK supports In-System Debugging as well as Flash ROM programming via the JTAG interface.

Install the Keil DK-ARM

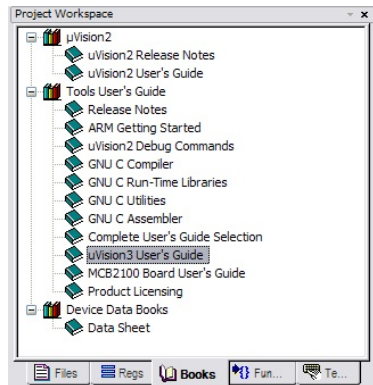
DK-ARM is based on the popular μ Vision IDE/Debugger which combines Project Management, Source Code Editing, Program Debugging, and Flash programming in a single, powerful environment. μ Vision3 interfaces to GNU C Compiler, ARM ADS/RealView, or the Keil ARM Compiler.

The MCB21xx Board comes with code size restricted tools that are available on the included CD-ROM.



Start μ Vision3 and explore the user interface.

The μ Vision3 **Project window - Books tab** lists available manuals for the Keil ARM7 development tools. The **μ Vision3 Getting Started** user's guide contains a step-by-step introduction for the μ Vision3 IDE and debugger functions.



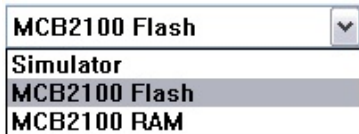
Use the μ Vision3 IDE

Sample applications for the Keil MCB21xx Board are located in the folder **Keil\ARM\GNU\Boards\Keil\MCB2100**. Load one of the following μ Vision project files (*.UV2) with the menu command

Project - Open Project.

- **MCB2100\Blinky** blinks a LED on the MCB21xx Board.
- **MCB2100\BlinkyIRQ** is an interrupt-driven Blinky for MCB21xx.
- **MCB2100\CAN** shows CAN Bus Programming for LPC2129.

Each project is available for several targets that are selected in the **Build Toolbar**. The different targets are described in the *ABSTRACT.TXT* file that opens on double-click in the **Project window - Files tab**.



Use μ Vision3 commands to generate a sample application:



Project - Build target: compile and link the sample application.



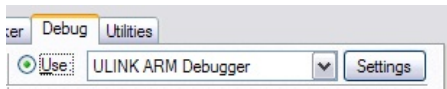
Project - Options for target: review and configure tool options.



Project - Components, Environment, and Books: create File Groups or Project Targets and add documents (Books) to a project.

Configure the JTAG Interface

The JTAG interface of the LPC2000 devices allow Flash programming and program debugging. μ Vision3 interfaces with the **ULINK ARM Debugger** driver selected under **Options for Target - Debug**.



Choose the appropriate driver for ARM devices.

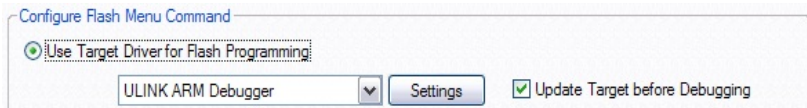


Start the Debug session and connect the μ Vision3 Debugger to the target hardware using the ARM Embedded ICE interface.



Program code into on-chip Flash ROM with **Flash - Download**.

Flash programming is pre-configured for on-chip Flash targets. You may review the settings under **Options for Target - Utilities**.



The **MCB21xx Board Users Guide - Board Setup** in μ Vision3 **Project window - Books tab** gives you detailed information.

Use the μ Vision3 Debugger

Verify the program execution of a sample application with μ Vision3 Debugger commands. Chip specific dialogs simplify testing of peripheral drivers. The μ Vision3 Debugger includes even full device simulation for the LPC2100 series and other standard ARM devices.



Using debugger commands you may single step through code, set breakpoints, and run the application.



Variables can be reviewed in watch windows. And you may reset the device to re-run the application.



The yellow arrow marks the current assembler or C statement.



The Serial Window of the μ Vision3 Simulator acts as a terminal. During JTAG debugging you may connect a terminal emulation like Hyperterm to the COM interface of the MCB21xx (baudrate: 9600 bps).

