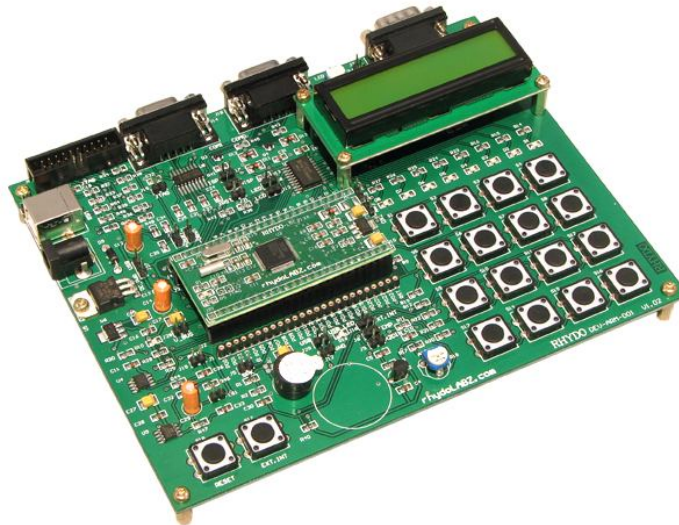




eCee NXP LPC 2129 ARM Development Board Quick Start Guide



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CHAPTER-1: OVERVIEW



The eCee LPC 2129 Development and Evaluation Board from RhydoLabz can be used to evaluate and demonstrate the capabilities of NXP LPC 2129 microcontrollers. The board (with a base board and header board) is designed for general purpose applications and includes a variety of hardware to exercise microcontroller peripherals. The LPC 2129 Board contains all hardware components that are required in a single-chip LPC 2129 system plus 2 COM ports for serial RS232 output, **one CAN port** to test Controller Area Network (CAN) Interface and interfaces like Lcd, Buzzer, Keyboard, Temperature Sensor, Potentiometer, Led's, EEPROM etc .

FEATURES

- Compact and Ready to use design
- Professional EMI/RFI Complaint PCB Layout Design for Noise Reduction

BASE BOARD FEATURES

- Supports LPC2132/38/48 Header Boards
- Includes LPC2129 Header Board with in-built CAN peripheral
- No separate programmer required (On-Chip Boot loader)
- No Separate power adapter required (USB power source)
- Two RS-232 Interfaces (For direct connection to PC's Serial port)
- On Board Two Line LCD Display (2x16) (with jumper select option)
- On Board 8 LED Interface to test Port pin (with jumper select option)
- On Board Pot interface to ADC
- On Board Temperature Sensor Interface (Optional)
- On Board Buzzer Interface
- On Board 4x4 (16 Keys) Matrix Keyboard
- On Board I²C EEPROM
- On Board External Interrupt Button
- On Board Connector for PWM Output
- PWM controlled LCD backlight



- On Board Connector for Analog Output
- On Board Speaker Output
- LF Amplifier LM 386
- Adaptor (any standard 9-12V power supply) option
- On Board Power LED Indicator
- On Board Reset button
- All Port Pins available at Berge Strip
- On Board JTAG Connector for Debugging/Programming
- Power Supply Reverse Polarity Protection
- Controller Area Network (CAN) transceiver
- Three On Board DB9 Connectors (Two for UART and One for **CAN**)
- On Board USB Connector
- On Board 1 Amp Voltage Regulator
- On Board Connector for regulated 3V3 output
- On Board Connector for regulated 5V output
- Can be used as main board for developing applications

HEADER BOARD FEATURES

- Easy to use DIP Package
- Includes NXP LPC 2129 Microcontroller with **in-built CAN** peripheral
- On Board Power LED Indicator
- On Board JTAG Jumper
- On Board 10 MHz Crystal Oscillator
- On Board 32.768 KHz Crystal for RTC
- On Board 1.8V Regulator
- On Board 3.3V Regulator
- On Board Power Supply de-Coupling Capacitors
- All Port Pins available at Berge Strip
- Header Module can be removed for developing your circuit



eCee LPC 2129 PACKAGE INCLUDES

- Fully Assembled and Tested eCee LPC2129 Development board
- Software CDROM with
 - Schematic
 - Programming Software
 - Sample Hex Code
 - Example Codes for
 - Led Blinking LCD Display
 - Matrix Keyboard CAN Communication
 - I²C Protocol RTC Interfacing
 - Led Control with Timer UART Communication
 - PWM Generation Buzzer Interfacing
 - ADC Interfacing



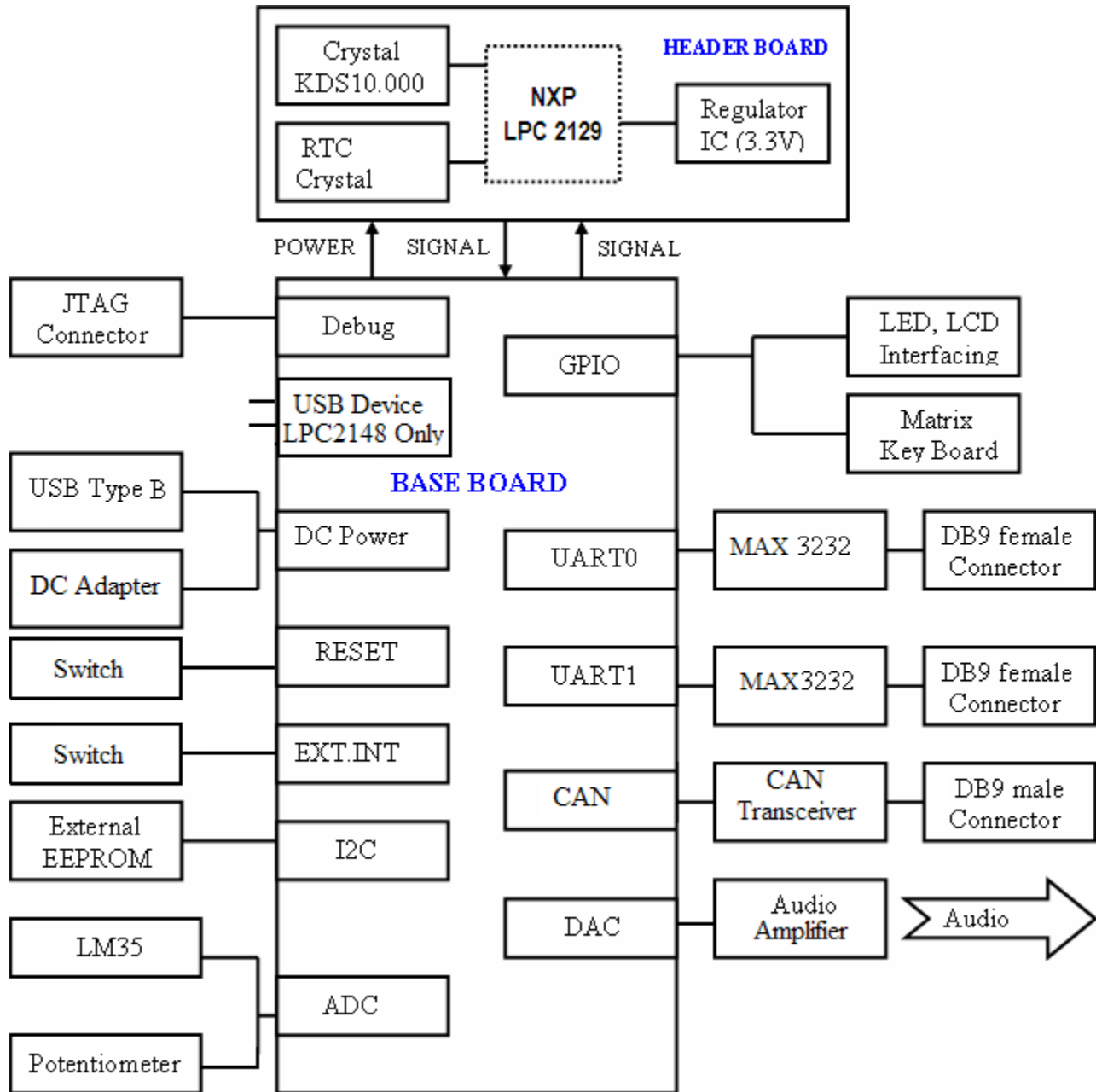
LPC 2129 SPECIFICATION

- High Performance 32-bit ARM7TDMI-S™ CPU
- 256 KB Programmable Flash Memory provides a minimum of 100,000 erase/write cycles and 20 years of data retention.
- 16 KB Data Memory (SRAM)
- In-System/In-Application Programming (ISP/IAP) via on-chip boot-loader software.
- Flash programming takes 1 ms per 512 byte line. Single sector or full chip erase takes 400ms.
- Embedded ICE-RT interface enables breakpoints and watch points.
- Two interconnected **CAN interfaces** with advanced acceptance filters
- Four channel 10-bit A/D converter with conversion time as low as 2.44 us.
- Multiple serial interfaces including two UARTs , Fast I²C (400 kbits/s) and two SPIs
- 60MHz maximum CPU clock available from programmable on-chip Phase-Locked Loop
- Vectored Interrupt Controller with configurable priorities
- Two 32-bit Timers.
- Four Capture and four Compare channels.
- PWM unit with six output pins.
- Real-time clock.
- Watch Dog Timer
- Up to forty-six 5V tolerant general purpose I/O pins.
- Up to nine edge or level sensitive external interrupt pins.
- On-chip crystal oscillator with an operating range of 1MHz to 30MHz.
- Two low power modes - Idle and Power-down.
- Processor wake-up from Power-down mode via external interrupt.
- Individual enable/disable of peripheral functions for power optimization.
- CPU operating voltage range of 1.65V to 1.95V and I/O power supply range of 3.0V to 3.6V

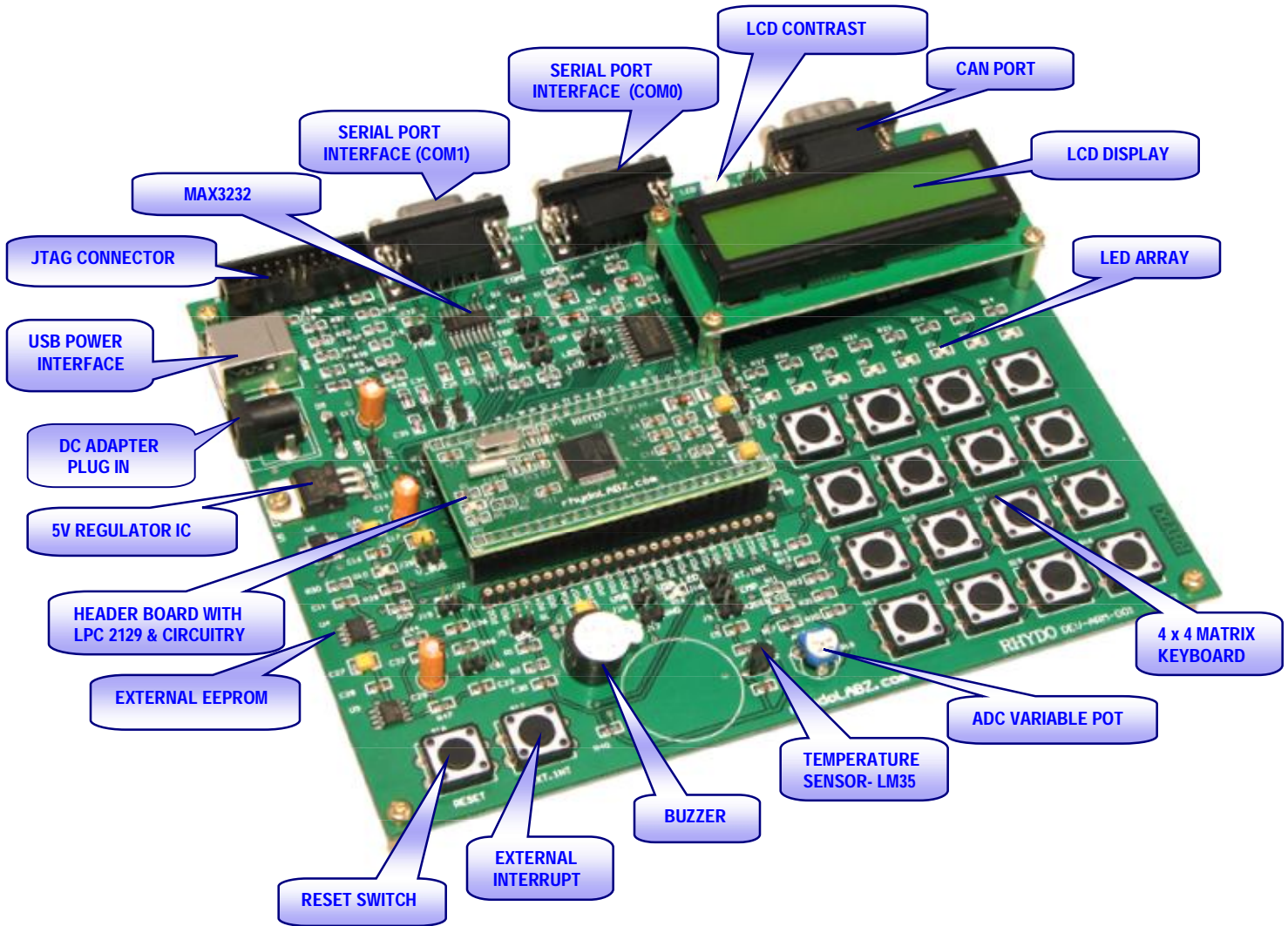


CHAPTER-2: HARDWARE INTRODUCTION

FUNCTION MODULE



INTERFACE OVERVIEW

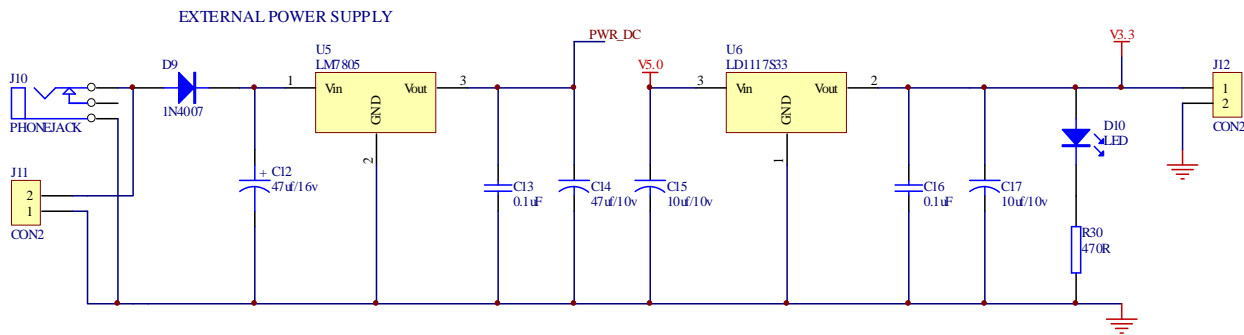


POWER SUPPLY

eCee NXP LPC 2129 Board has two power supplies; you can choose one of the following ways to supply power.

- (1) Through an Adaptor (any standard 9-12V power supply)
- (2) Through the motherboard USB port

The external Power Supply circuit is given below:



CLOCK SOURCE

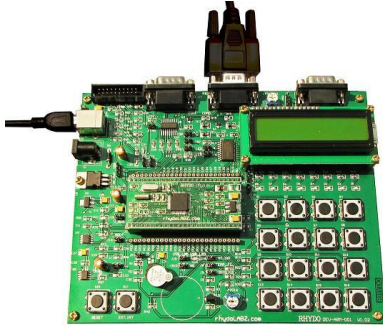
eCee NXP LPC 2129 evaluation board has two clock sources:

- 32.768 KHz as the RTC clock source
- 10 MHz as the MCU clock source



CHAPTER-3 : INTERFACING eCee LPC 2129

CONNECTING THE DEVELOPMENT BOARD

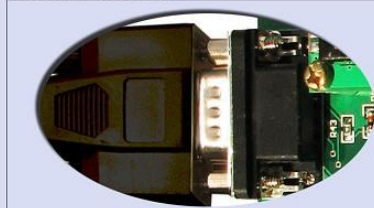


The eCee LPC 2129 requires a 9V-12V adapter or USB connection for power and either a serial connection for In-system programming, or the JTAG connector.

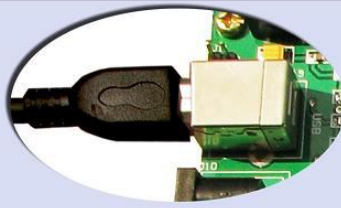
Use LPC2000 Flash Utility Software at the PC side for programming through Serial port. Connect eCee LPC 2129 Development board to your PC using USB cable (for powering it) and serial cable (for In-serial programming) as shown in the figure.

***Note:** Serial cable should be **connected to COM0** Port of the development board for downloading. **Corresponding jumpers** has to be inserted (see circuit diagram) for the functioning of each peripheral.*

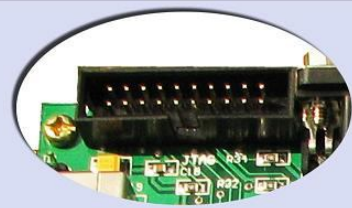
CONNECTIONS



RS232



USB POWER



JTAG

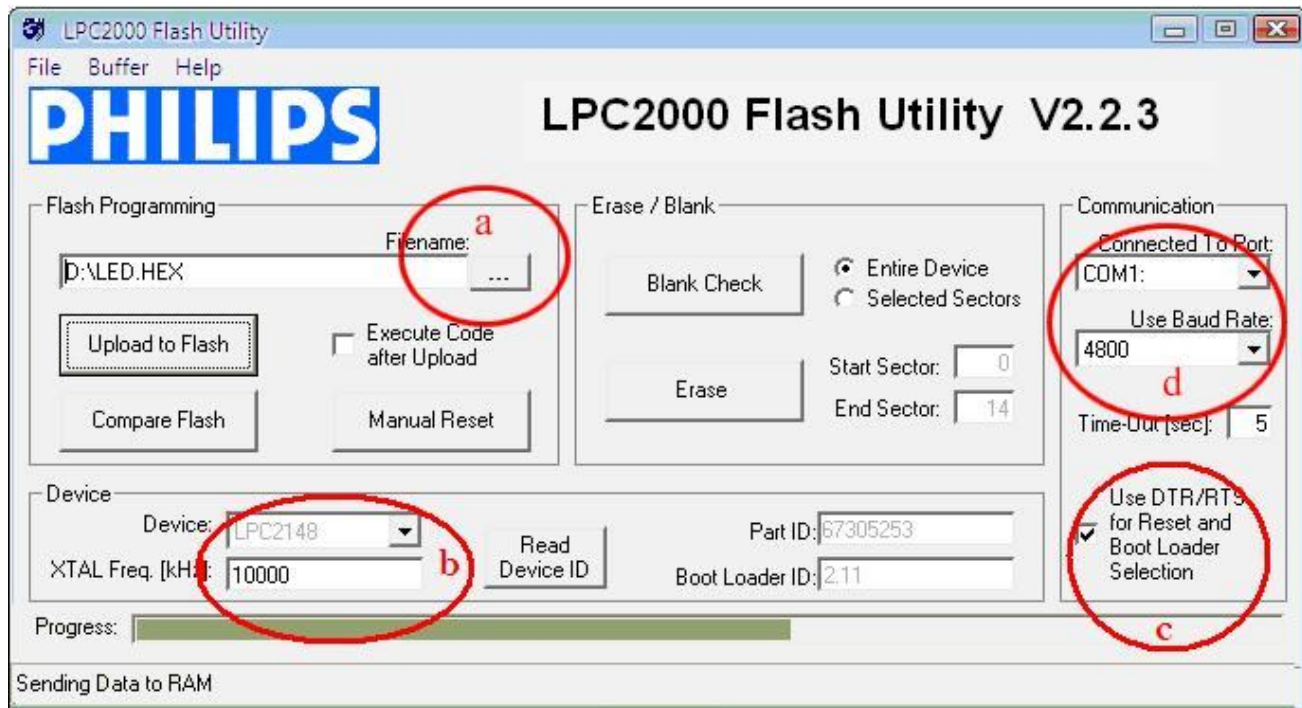


PROGRAMMING STEPS

eCee NXP LPC 2129 development board supports **two modes** of programming

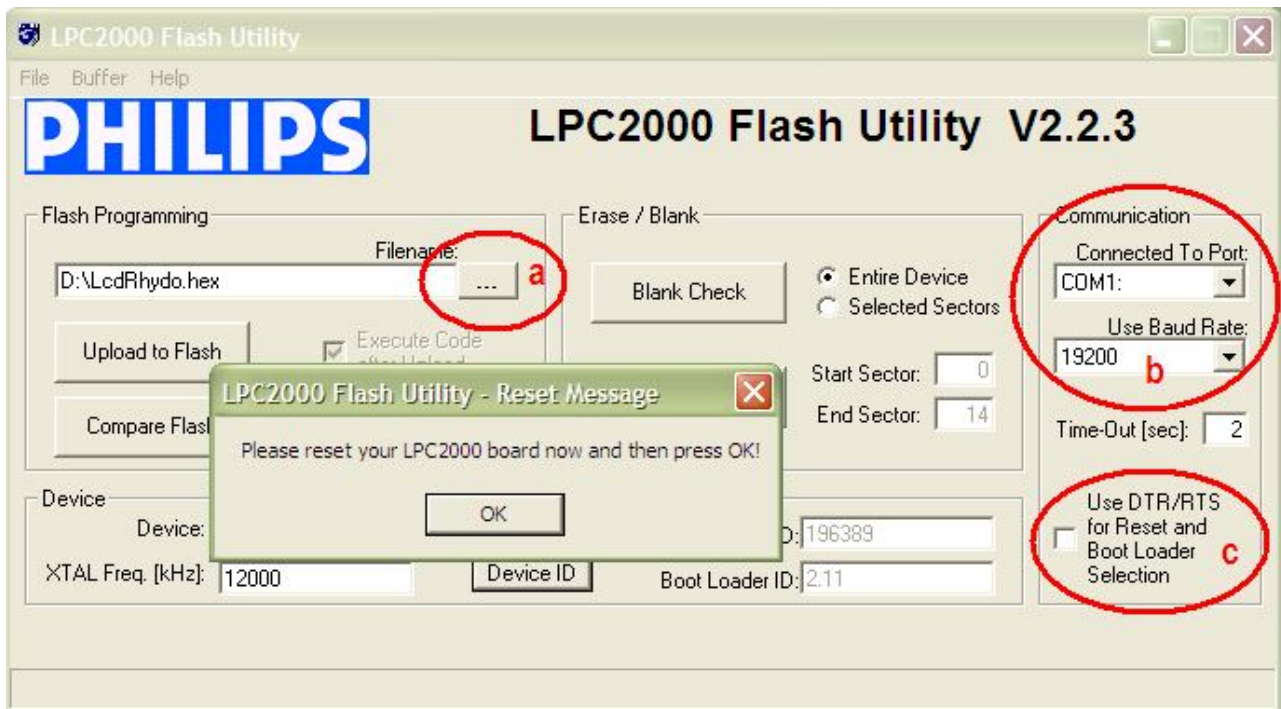
I. AUTOMATIC MODE

1. Configure LPC Flash Utility software at the PC side
 - a. Browse your hex file here.
 - b. Select Crystal frequency here.
 - c. Enable DTR/RTS for Reset and boot loader selection.
 - d. Select your COM port and Set baud rate (9600) here.
2. Connect system serial port to COM port of eCee LPC 2129 .
3. **Put jumper on RST(J21) , ISP(J17) and Reset the board**
4. Click “Read Device ID” and wait till Device Id is shown
5. Click “Upload to Flash” button in the flash utility software and wait till the programming is over.
6. Remove jumper on ISP and RST
7. Now Reset the development board



II. MANUAL MODE

1. Configure LPC Flash Utility software at the PC side
 - a. Browse your hex file here.
 - b. Select your COM port and Set baud rate (9600) here.
 - c. Disable DTR/RTS for Reset and boot loader selection.
2. Connect system serial port to COM port of eCee LPC 2129 .
3. Put jumper on ISP(J17),*ISP(J20)
4. Click "Read Device ID"
5. The software prompts you to reset the development board.
6. Press Reset button (S18) and press OK
7. Wait till Device Id is shown
5. Click "Upload to Flash" button in the flash utility software and wait till the programming is over.
6. Remove jumper on ISP (J17),*ISP (J20)
7. Now Reset the development board





TECHNICAL SUPPORT

If you are experiencing a problem that is not described in this manual, please contact us. Our phone lines are open from 9:00 AM – 5.00 PM (*Indian Standard Time*) Monday through Saturday excluding holidays. Email can be sent to support@rhydolabz.com

LIMITATIONS AND WARRANTIES

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