

## Quick Overview

The LPC2478 board is an ARM7TDMI-S Core based, single power and LQFP208 cased LPC24XX series arm evaluation board, with JTAG analog debug and ISP programming functions, etc. It features several common function devices, such as keyboards, nixie tube, LED, speaker. This arm evaluation board also provides RS232 interface circuit, I2C memory circuit, USB OTG and HOST circuit, SD card interface, I2S interface circuit, CAN bus, LCD and 10/100 MB Ethernet circuit. Moreover, users can also replace the MCU which is compatible with the board to perform analog debug, such as LPC2468, LPC2470, LPC2478 Microcontroller, etc. The board provides I/O interface and address and data bus interface, which greatly ease users to perform the 32-bit ARM embedded system development.

The LPC2478 is an ARM microcontroller core based evaluation board produced by Embest, operating at 72MHz, with up to 512KB on-chip flash memory and 98KB on-chip SRAM. The board provides a wide range of functional devices like: Ethernet, USB host and USB OTG circuit, SD/MMC interface, LCD, UART, I2C, CAN, I2S, ADC/DAC circuit, which is especially suitable for the development of industrial control, communication, automation, medical appliance. The LPC2400 platform is compatible with LPC2460, LPC2470, LPC2468, LPC2478, etc. The comprehensive software examples and resources we provide for this board will help you quickly start your project development and personal study.

## Hardware Specifications

### CPU

LPC2478( NXP )??ARM7TDMI-S, the frequency is up to 72MHz.

### Internal Memory

512KB on-chip flash memory, 98KB on-chip SRAM.

### External Memory

64MB Nand Flash, 32MB SDRAM, 2MB Nor RAM, 512KB external SRAM(optional), 16MB SPI Flash Memory(optional).

### Serial Port

Two RS232 interfaces, the serial port 0 includes automatic ISP circuit.

### USB

USB2.0 standard, with status indicator light, one USB HOST interface, one USB OTG interface.

### LCD

Support TFT(5:6:5)LCD interface, with Buffer chip driver;

Support 1602 character LCD(suited for LPC2468 evaluation board)

### CAN

Support two-channel CAN bus

### SD/MMC

One SD/MMC interface

### Audio Interface

Use audio decoding chip HT28V31, be able to play music directly

### Ethernet interface

PHY chip using the DP83848 of American National Semiconductor, three LED connecting indicator light

### Reset Circuit

One reset button, use special reset chip to reset, stable and reliable.

### **Debug and Download Interface**

One 20 pin Multi-ICE standard JTAG interface, support variable JTAG emulators debug online.

### **Power Interface**

5V DC power input with power status indicator light

### **Other**

Three small buttons, eight highlight LED, one buzzer;

Lead out all the external bus, convenient for customers to expand.

### **Block Diagram**

The hardware block diagram displays the input, configuration, power system, and User I/O on the board. This visual presentation helps you to understand the LPC2478 board components.

## **LPC2478 microcontroller**

NXPs Semiconductors designed the LPC2478 microcontroller, powered by the ARM7TDMI-S core, to be a highly integrated microcontroller for a wide range of applications that require advanced communications and high quality graphic displays. The LPC2478 microcontroller has 512 kB of on-chip high-speed flash memory. This flash memory includes a special 128-bit wide memory interface and accelerator architecture that enables the CPU to execute sequential instructions from flash memory at the maximum 72 MHz system clock rate. This feature is available only on the LPC2000 ARM microcontroller family of products. The LPC2478, with real-time debug interfaces that include both JTAG and embedded trace, can execute both 32-bit ARM and 16-bit Thumb instructions.

The LPC2478 microcontroller incorporates an LCD controller, a 10/100 Ethernet Media Access Controller (MAC), a USB full-speed Device/Host/OTG Controller with 4 kB of endpoint RAM, four UARTs, two Controller Area Network (CAN) channels, an SPI interface, two Synchronous Serial Ports (SSP), three I2C interfaces, and an I2S interface. Supporting this collection of serial communications interfaces are the following feature components; an on-chip 4 MHz internal oscillator, 98 kB of total RAM consisting of 64 kB of local SRAM, 16 kB SRAM for Ethernet, 16 kB SRAM for general purpose DMA, 2 kB of battery powered SRAM, and an External Memory Controller (EMC). These features make this device optimally suited for portable electronics and Point-of-Sale (POS) applications. Complementing the many serial communication controllers, versatile clocking capabilities, and memory features are various 32-bit timers, a 10-bit ADC, 10-bit DAC, two PWM units, and up to 160 fast GPIO lines. The LPC2478 connects 64 of the GPIO pins to the hardware based Vector Interrupt Controller (VIC) that means these external inputs can generate edge-triggered interrupts. All of these features make the LPC2478 particularly suitable for industrial control and medical systems.