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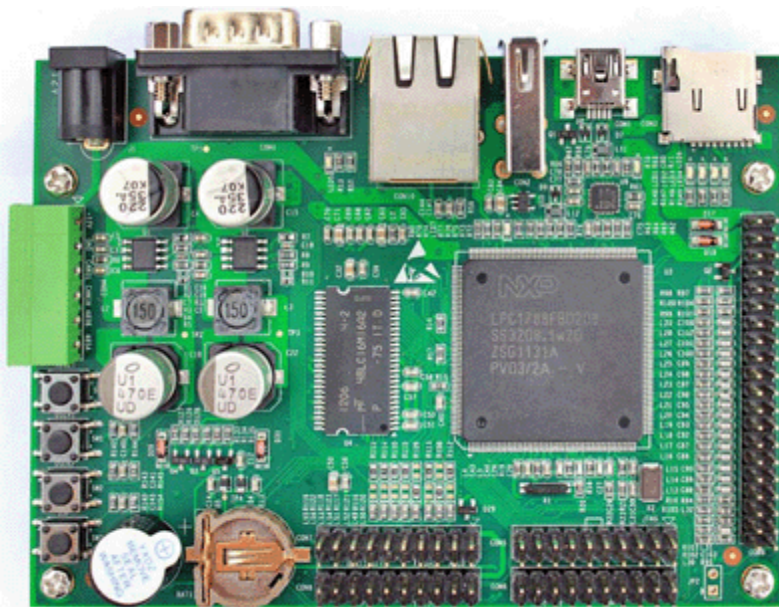
Embedded System Specialist

SBC1788 Single Board Computer

Order#: SBC1788 (T6010184B)

120MHz NXP LPC1788FBD208 ARM Cortex-M3 32-bit Microcontroller

- CPU Internal 512kBytes of Flash, 96 kBytes of SRAM and 4 kBytes of EEPROM
- Onboard 128MBytes Nand Flash and 32MBytes SDRAM
- 1 USB2.0 Host Full-speed Port and 1 USB2.0 OTG Full-speed Port
- UARTs, RS485, Ethernet, CAN2.0B, LCD/Touch Screen, TF, Buzzer, JTAG...
- Supports UCOS II_v2.86 & UCGUI_v3.90a
- Supports FatFs_vR0.08a File System
- Supports LwIP_v1.4.0 Protocol Stack



Embest SBC1788 Single Board Computer is a compact industrial controller board based on NXP's LPC1788FBD208 ARM Cortex-M3 microcontroller which is running up to 120MHz with 512KB of internal Flash memory, 96KB of internal SRAM, 4KB of internal EEPROM, a 10/100 Ethernet Media Access Controller (MAC), a USB full speed device/host/OTG controller, four UARTs, two CAN channels and a collection of serial communications interfaces.

The SBC1788 board also has external 128MB Nand Flash and 32MB SDRAM. It takes full features of the LPC1788 microcontroller and has exposed many hardware features through headers or connectors including UARTs, USB, Ethernet, CAN, LCD, I2C, SPI, PWM, ADC to meet various applications.

Embest has ported uC/OS-II to support their Cortex-M3 SBC1788 board and the software also features the GUI support on uC/OS-II and LwIP_v1.4.0 protocol support. Embest provides the uC/OS-II BSP and plenty of software examples, board schematic and user manual to help customer better understanding this board and develop your own applications.

Hardware Features

Mechanical Parameters

- - Dimensions: 120mm x 87mm
 - Working temperature: -40~85 Celsius
 - Humidity Range: 0% ~ 90%
 - Input Voltage: +12V
 - Power Consumption: 120mA @ 12V (working without LCD)

Processor

- - NXP LPC1788FBD208 Microcontroller
 - ARM 32-bit Cortex-M3 CPU, frequency up to 120MHz
 - Onchip 512kBytes Flash, 96kBytes SRAM, 4kBytes EEPROM
 - Flexible static memory controller that supports Compact Flash, SRAM, PSRAM, Nor and Nand memories
 - LCD controller, supporting up to 24-bit true color mode and 1024*768 pixels resolution
 - USB 2.0 FS Device/Host/OTG
 - 10/100 Ethernet MAC with MII/RMII interface and associated DMA controller
 - 2 CAN 2.0B interfaces, 5 USARTs and 1 I2S, 3 I2C and 3 SSP
 - 4 x 32-bit timers, 2 x standard PWM and 1 motor control PWM with support for three-phase motor control
 - 1 x 12-bit A/D converter, 1 x 10-bit D/A converter
 - up to 165 general purpose I/O pins

External Memory

- - 128Mbytes Nand Flash
 - 32Mbytes SDRAM
 - 4MBytes SPI Flash and 2kBytes EEPROM (Reserved for soldering)
 - Micro SD card slot

Audio/Video Interfaces

- - 4.3 inch (480 x 272-pixel RGB resolution) and 7 inch (800 x 480-pixel RGB resolution) TFT color LCDs for selections, 16-bit RGB565 color format
 - 4-wire resistive touch screen
 - Buzzer

Data Transfer Interfaces

- - 1-channel 3-wire RS232 Serial Port (UART0, DB9)
 - 1-channel 5-wire Serial port, TTL voltage (UART1, RS232 is designable)
 - 1-channel 3-wire RS232 Serial port (UART3, TTL is designable)
 - 1-channel 3-wire Serial port, TTL voltage (UART4, RS232 is designable)

- 1-channel RS485 Serial port (brought out by Phoenix Connector)
- 1 x USB2.0 Host, Full-speed, 12Mbps
- 1 x USB2.0 OTG/Device/Host, Full-speed, 12Mbps
- 10/100 Ethernet interface
- 1 x CAN2.0B interface

Input Interfaces and Other Facilities

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- 2 x USER buttons
- 1 x RESET button
- 1 x ISP button
- 20-pin standard JTAG interface
- RTC battery socket (User needs to prepare battery, CR1220 model is recommended)
- Windowed watchdog timer (WWDT)
- Supports onboard watchdog reset through hardware (reserved function)
- 1 x LED for Power indicator
- 1 x LED for USB Host FS indicator
- 1 x LED for USB OTG FS indicator
- 4 x User LEDs
- 3 x Extension Interfaces (2.54mm pitch 2*10-pin connector)
 - Up to 18 independent GPIO pins are all brought out
 - 5*5 matrix keypad interface
 - 1-channel general purpose PWM with 6 outputs
 - One 3-channel ADC
 - One DAC
 - One SPI
 - One I2C

Software Features

The SBC1788 Single Board Computer software mainly features as below:

- Supports for uC/OS-II_v2.86 operating system
- Supports UCGUI_v3.90a & EmWin5.12
- Supports FatFs_vR0.08a file system
- Supports LWIP_v1.4.0 protocol stack

Development Environment

The SBC1788 development environment supports IAR EWARM and Keil MDK-ARM.

- IAR EWARM

All drivers support IAR EWARM, and the EWARM version should be V6.40 or above. uC/OS-II and uC/GUI Demos do not support IAR EWRAM at present.

- Keil MDK-ARM

All drivers and applications should support Keil MDK-ARM and the MDK-ARM version should be V4.22a or above.

Debug Tools Supports

We suggest you can use below debug tools for SBC1788 development.

- ULINK2

We suggest user using with Keil MDK-ARM.

- JLINK-V8

We suggest user using with IAR EWARM.

Embest has provided complete drivers and software examples for this board. User can demonstrate and test each software example and observe the result from LCD which would be easy to understand.

The software examples mainly include following parts:

- Examples for Basic peripherals drivers

The package contains the following examples: LCD, USB-Device, USBHostLite, Ethernet, UART, EMC, RTC, EEPROM, CAN, DMA, WDT, TIMER, SYSTICK, NVIC, PMR, GPIO, PWM, MCI, SSP, I2C, ADC, DAC, MCPWM, QEI, BOD, CRC, IAP

- Application example for porting LWIP v1.3.2 network protocol stack
- Application example for emWin512 GUI
- Application example for OS porting on UCOSII_v2.86 and UCGUI_v3.90a

Onboard Interfaces and Connectors

