PIC32 Host StackableUSB™ Microcontroller with Ethernet & CAN

USB3032

Coming Soon

Features

- ✓ (1) Ethernet, (1) CAN2.0
- ✓ 80MHz system clock
- ✓ 1.56 DMIPS/MHz performance
- ✓ 512KB Flash, 128KB SRAM memory
- ✓ (2) temperature sensors
- ✓ Single-cycle multiply and high-performance divide unit
- ✓ Easy development with Microchip's MPLAB IDE
- ✓ -40° to +85°C operation

StackableUSB

RoHS COMPLIANT

The USB3032 offers a fully integrated embedded system with web hosting, networking, and industrial control in one package. Designed specifically for data-intensive network applications, the USB3032 enables parallel use of multi-protocol embedded networking and control I/O such as CAN and Ethernet. Powered by the Microchip PIC32 microcontroller, this module provides 125 DMIPS performance while using only 100mA of power.

Available onboard is a host of networking features including 10/100 Mbps Ethernet, CAN, RS232, USB, I^2C, and SPI. There are 24 digital I/O lines and 12 channels of 12-bit A/D. Three timers, four programmable LEDs, a battery-backed real-time clock, a watchdog timer, and two temperature sensors allow monitoring and control of user-defined system features. For additional expansion, the StackableUSB bus enables designers to stack up to 10 of the various StackableUSB Client-side industrial I/O boards. PIC32's easy-to-use MPLAB IDE software tools and software stacks enable easy development. The USB3032 can be connected to desktop PCs and laptops via ICSP for development.

The USB3032 is the ideal solution for cost-sensitive control applications requiring supervisory management, high-performance data acquisition (DA), and peripheral control common in industrial automation applications.

Software/Driver Support

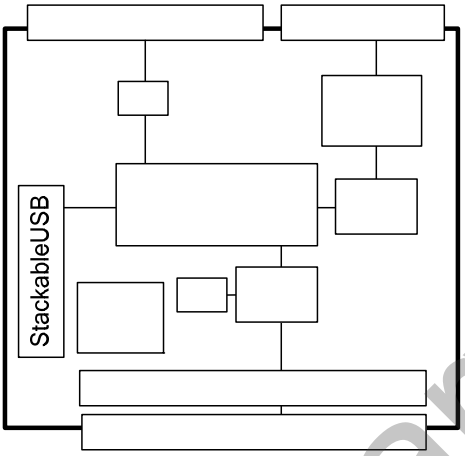
Windows XP, Vista
MPLAB IDE
MPLAB C32 C Compiler
USB Host stack
Graphics & audio library
16- and 32-bit File System
TCP/IP Stack
Sample software

Compatible Hardware

StackableUSB Client devices
ICE
ICD3

Mounting/Packaging

PC 104 Form Factor
Standoffs, STDOFFUSB



Specifications:

Mechanical:
- ❑ PC 104 mounting holes
- ❑ 3.55" (plus I/O region) x 3.775"
- ❑ Ethernet connector on top side has height of .535”

Power Requirements:
- ❑ +5v ±5% at 100mA typical

Environmental:
- ❑ -40 to +85°C operating
- ❑ -40° to +85°C storage
- ❑ 5%-95% relative humidity, non-condensing

Processor:
- ❑ MIPS32® M4K™ 32-bit core
- ❑ 80MHz, 1.56DMIPS/MHz
- ❑ 5-stage pipeline, 32-bit ALU
- ❑ Single-cycle multiply and high-performance divide unit
- ❑ User and kernel modes to enable robust embedded system
- ❑ Prefetch cache module to speed execution from flash
- ❑ 512KB Flash, 128KB SRAM

Ethernet Port:
- ❑ 10/100BASE-T Ethernet port
- ❑ Standard RJ45 connector
- ❑ On-board PHY
- ❑ Factory installed MAC address

Controller Area Network:
- ❑ CAN version 2.0B, 1Mbit/sec
- ❑ Standard and extended data and remote frames
- ❑ Filter-to-buffer mapping with 32 filters and 4 filter masks
- ❑ 1024 messages in 32 buffers

USB:
- ❑ One Full-Speed On-The-Go USB 2.0 Host port, StackableUSB connector
- ❑ Transfers at Full-Speed 12Mbit/sec, or 1.5Mbit/sec

Serial Ports:
- ❑ Two (2) RS232 available from 20-pin header
- ❑ Optional RS485 configuration

Watchdog Timer:
- ❑ Program must refresh watchdog timer periodically, or system will be reset
- ❑ Enabled through software

Real Time Clock:
- ❑ RTC with rechargeable on-board battery

LEDs/Switches:
- ❑ Four (4) programmable user LEDs
- ❑ One (1) reset header

Temperature Sensor:
- ❑ Wide sensing range: -55° to +125°C
- ❑ PT100 sensor, 12-Bit resolution (160ms conversion time)
- ❑ K type thermocouple sensor, 12-Bit resolution (160ms conversion time)

Peripheral Features:
- ❑ 4-channel hardware DMA controller with automatic data size detection
- ❑ One I^2C module
- ❑ One SPI module
- ❑ Two UART modules with:
  - RS232, RS485 and LIN 1.2 support
  - IrDA® with on-chip hardware encoder and decoder
- ❑ Parallel master and slave port
- ❑ Hardware real-time clock/calendar with rechargeable on-board battery
- ❑ Five (5) 16-bit timers/counters (two 16-bit pairs combine to create two 32-bit timers)
- ❑ Five (5) capture inputs
- ❑ Five (5) vompare/PWM outputs
- ❑ Five (5) external interrupt pins
- ❑ High-speed I/O pins capable of toggling at up to 80MHz
- ❑ High-current sink/source (18 mA/18 mA) on all I/O pins
- ❑ Configurable open-drain output on digital I/O pins

Digital I/O:
- ❑ General purpose I/O:
  - 24 TTL bi-directional signals
  - 16 for open drain capable of 200mA
  - 3 high current capable of 500mA.
- ❑ I^2C (on StackableUSB connector)
- ❑ SPI (on StackableUSB connector)
- ❑ Five PWM inputs

Analog Features:
- ❑ 12-channels, 12-bit A/D converter, 6usec with 0 to +10V DC range
- ❑ 4-channels, 12-bit D/A converter

Debug Features:
- ❑ 2-wire ICSP interface with unobtrusive access and real-time data exchange with application

External Connections:
- ❑ 2-pin power terminal
- ❑ StackableUSB
- ❑ 20-pin header for COM1 and COM2
- ❑ 6-pin ICSP debug port
- ❑ 2x40-pin headers for I/O & peripherals

Internal Electrical Interface:
- ❑ StackableUSB
- ❑ USB 1.1 & 2.0 compatible, full-speed
- ❑ I^2C
- ❑ SPI

Development Kit:
- ❑ Base module
- ❑ Complete cable set
- ❑ Documentation, sample software

Ordering Information:

OEM Single Board Computers:

USB3032	PIC32 Host StackableUSB Microcontroller with Ethernet & CAN
CS3032	Complete cable set

Related Products:

STDOFFUSB	StackableUSB standoff kit
CA4142	ICSP programming/ debugging cable

Development Board Kits*

DK3032	PIC32 Host StackableUSB Microcontroller with Ethernet & CAN development kit

**See Development Kit Specifications*