



PIC32 on PC/104 Form-Factor with Ethernet, CAN and StackableUSB™ USB3032



Features

- ✓ Microchip PIC32 CPU @ 80MHz
- ✓ 1 Ethernet, 1-CAN 2.0 and 2-RS232
- ✓ 1.56 DMIPS/MHz performance
- ✓ 512KB Flash, 128KB SRAM Memory
- ✓ Optional DC/DC battery operation
- ✓ Analog-in / Analog-out plus 24 DIO and RTC
- ✓ Single-cycle multiply and high-performance divide unit
- ✓ -40° to +85°C operation



Ideal for data collection and data transmission, the USB3032 combines web hosting, networking, and industrial control. Multiple on-board protocols, including 10/100 Ethernet, CAN, RS232, RS485, USB, I²C, and SPI makes protocol conversion a snap. Microchip's PIC32 gives 125 DMIPS performance using under 100mA of power so the USB3202 is battery friendly with the 6-36V DC/DC option installed.

For control there are 24 digital I/O lines and 9 channels of 10-bit A/D standard on the board. Optional are 12 channels, 12-bit A/D performing simultaneous conversions in 6µs with -10V to 10V dc range plus 4 channels of 12, 14 or 16-bit D/A with -10V to +10V DC output range.

Additional system features include three timers, a programmable LED, battery-backed real-time clock, watchdog timer, and a temp sensors.

I/O expansion is available with StackableUSB™ bus which accommodates up to 10 StackableUSB™ client industrial I/O boards

USB3032 connects to desktop PCs and laptops via ICSP for development with Microchip's easy-to-use MPLAB IDE software tools.

USB3032 is the ideal solution for cost-sensitive control applications requiring supervisory management, mid-range data acquisition (DA), and peripheral control common to most industrial automation applications.

Software/Driver Support

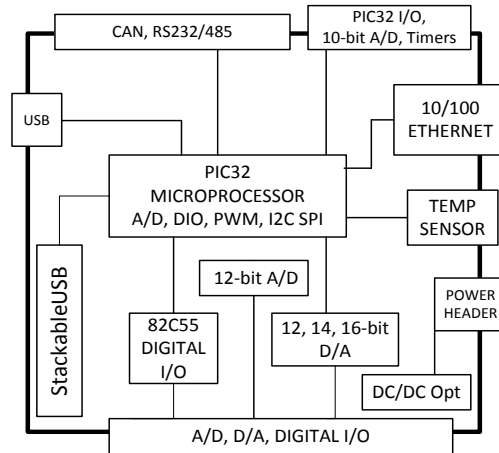
Windows XP, Vista
MPLAB IDE
MPLAB C32 C Compiler
USB Host stack
Graphics & audio library
16- and 32-bit File System
TCP/IP Stack
Sample software

Compatible Hardware

StackableUSB Client devices
ICE
ICD3

Mounting/Packaging

PC 104 Form Factor
Standoffs, STD0FFUSB



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 \pm 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
- Optional StackableUSB, Host / Client

Serial Ports:

- Two RS232 available from 14-pin header
- 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:

- One (1) programmable LED

Temperature Sensor:

- ❑ Wide sensing range: -55° to +125°C
- ❑ ±2°C accuracy on -25°C to +100°C Range

Peripheral Features:

- ❑ 4-channel hardware DMA controller with automatic data size detection
- ❑ One I²C 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
- ❑ Three (3) 16-bit timers/counters (two 16-bit pairs combine to create two 32-bit timers)
- ❑ Three (3) capture inputs
- ❑ Three (3) compare/PWM outputs
- ❑ Three (3) 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

Analog Features:

- ❑ 9-channels, 10-bit A/D converter
- ❑ Optional 12-channels of 12-bit A/D, 6µsec with, -10V to +10V DC range
- ❑ Optional 4-channels, 12, 14 or 16-bit D/A, -10V to +10V DC output range

Reset:

- ❑ One reset header

Eeprom:

- ❑ G256K SPI Bus Serial Eeprom

Debug Features:

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

External Connections:

- ❑ 2-pin power terminal
- ❑ StackableUSB, Host or Client
- ❑ I²C, SPI
- ❑ 14-pin header for COM1 and COM2
- ❑ 6-pin ICSP debug port
- ❑ 2x40-pin headers for I/O & peripherals
- ❑ 50 pin header for I/O, optional A/D and D/A

Development Kit:

- ❑ Base module
- ❑ Complete cable set
- ❑ Documentation, sample software

Ordering Information:

OEM Single Board Computers:

USB3032

PIC32 Microcontroller with Ethernet & CAN

USB3032-Client

With StackableUSB Client

USB3032-Host

With StackableUSB Host

3032OPT11-12

12-bit, 12 channel A/D

3032OPT12-12

12-bit, 12 channel D/A

3032OPT12-14

14-bit, 12 channel D/A

3032OPT12-16

16-bit, 4-channel D/A

3032OPT40

DC/DC converter,

Related Products:

CA4142

ICSP programming/
debugging cable

CS3032

Complete Cable Set

Development Board Kits*

DK3032

PIC32 Host StackableUSB
Microcontroller with
Ethernet & CAN
development kit

*See Development Kit Specifications