PIC32™ with Ethernet, CAN and 82C55 I/O on PC/104 Form Factor USB3032

Features

- ✓ Microchip PIC32 CPU, 80MHz
- ✓ 1.56 DMIPS/MHz performance
- ✓ 512KB Flash, 128KB SRAM Memory
- ✓ (1) Ethernet, (1) CAN 2.0, (1) RS232
- ✓ MPLAB® IDE software development
- ✓ RTC, Timers, and Temp Sensor
- ✓ 8 channels 12-bit A/D, 8 channels 12-bit D/A, plus 24 DIO
- ✓ DC/DC battery operation
- ✓ -40° to +85°C operation

Ideal for data collection and data transmission, the USB3032 combines web hosting and networking with industrial control. Multiple on-bard protocols, including 10/100 Ethernet, CAN, RS232, RS485, USB, I^2C, and SPI make protocol conversion a snap. Microchip's PIC32 gives 1.56 DMIPS/MHz performance using under 100mA of power, making the USB3202 battery friendly.

For control, there are 24 digital I/O lines and 9 channels of 10-bit A/D standard on the board. An additional 8 channels of 12-bit A/D and 8 channels of 12-bit D/A are available.

Additional system features include three timers, a programmable LED, battery-backed real-time clock, watchdog timer, and a temperature sensor. I/O expansion is available via StackableUSB™, which accommodates up to ten 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 industrial automation applications.
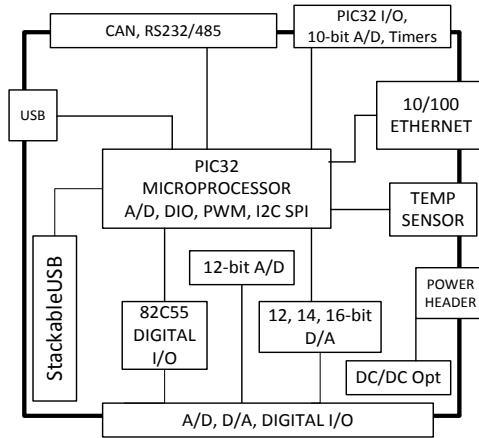
Software/Driver Support	Compatible Hardware	Mounting/Packaging
Windows XP, Vista MPLAB IDE MPLAB C32 C Compiler USB Host stack Graphics & audio library 16- and 32-bit File System TCP/IP Stack Sample software	StackableUSB Client devices ICE ICD3	PC 104 Form Factor Standoffs, STDOFFUSB

A block diagram showing: CAN, RS232/485 | PIC32 I/O, 10-bit A/D, Timers | USB | 10/100 ETHERNET | PIC32 MICROPROCESSOR A/D, DIO, PWM, I2C SPI | TEMP SENSOR | StackableUSB | 12-bit A/D | POWER HEADER | 82C55 DIGITAL I/O | 12, 14, 16-bit D/A | DC/DC Opt | A/D, D/A, DIGITAL I/O

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 (1) Full-Speed On-The-Go Mini-AB USB 2.0 Host port, transfers at 12Mb/s or 1.5Mb/s
- ❑ StackableUSB, Host or Client (option)

Serial Ports:
- ❑ One (1) RS232
- ❑ RS485 configuration (option)

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

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

LEDs/Switches:
- ❑ One (1) programmable LED

Peripheral Features:
- 4-channel hardware DMA controller with automatic data size detection
- One (1) I^2C module
- One (1) SPI module
- One (1) UART module with:
    - RS232, RS485 and LIN 1.2 support
    - IrDA® with on-chip hardware encoder and decoder
- Parallel master and slave port
- Three (3) 16-bit timers/counters (two 16-bit pairs combine to create two 32-bit timers)
- Three (3) capture inputs
- Three (3) PWM outputs
- Three (3) external interrupt pins
- High-speed I/O pins capable of toggling at up to 80MHz

Digital I/O:
- (24) TTL bi-directional signals

Analog Features:
- 9-channels, 10-bit A/D converter
- 8-channels of 12-bit A/D, 6usec with -10V to +10V DC range (option)
- 8-channels of 12-bit D/A, -10V to +10V DC output range (option)

Reset:
- One reset header

Eeprom:
- 256K SPI Bus Serial Eeprom

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

External Connections:
- One (1) 2-pin power terminal
- One (1) 10-pin header for COM1
- One (1) RJ45 Ethernet
- One (1) 6-pin ICSP debug port
- One (1) USB OTG Mini-AB
- One (1) 40-pin header for I/O & peripherals
- One (1) 50-pin header for I/O, A/D, and D/A
- StackableUSB, Host or Client (option)

Development Kit:
- Base module
- Complete cable set
- Microchip MPCLAB ICD3 Debugger
- Documentation, sample software

Ordering Information:

OEM Single Board Computers:

USB3032	PIC32 Microcontroller with Ethernet, CAN, & 82C55 I/O
3032OPT8	RS485 Configuration
3032OPT11	12-bit, 8 channel A/D
3032OPT12	12-bit, 8 channel D/A
3032OPT60-1	StackableUSB Client
3032OPT60-2	StackableUSB Host

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