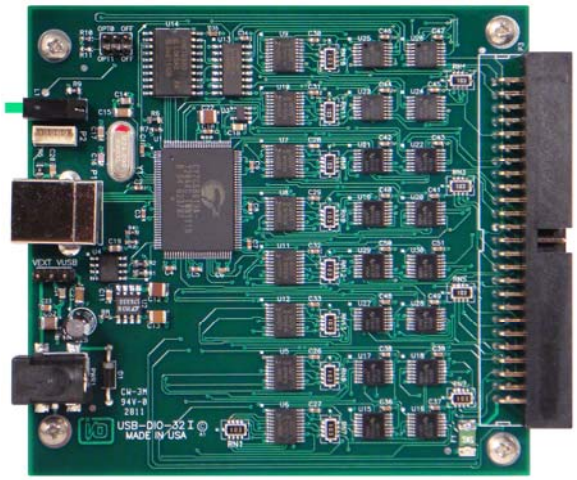
# USB-DIO-32I

32-Channel Digital I/O Module
Independently Selectable I/O

## FEATURES



- High-speed USB 2.0 device, USB 3.0 compatible
- Small (3.5 x 3.7 in.), portable, 32-channel USB digital I/O module
- 32 individual I/O lines, each independently selectable for inputs or outputs
- All 32 I/O lines buffered with Sink 64mA / Source 32mA current capabilities
- Removable screw terminal adaptor for easy wiring
- USB/104 form-factor for OEM embedded applications
- Standard 50-pin IDC connector with key
- Alternate micro-fit embedded USB header connector
- Type B USB connector features industrial strength and high-retention design
- Custom high-speed function driver (non-HID)
- OEM version (board only) features PC/104 module size and mounting compatibility
- Small (4" x 4" x 1.25") rugged industrial enclosure

## FACTORY OPTIONS

- Extended temperature
- External power for high current capabilities
- Screw terminals for power input provide high retention connection
- OEM (board only) version with PC/104 mounting holes and PCB footprint for added flexibility in embedded applications
- RoHS Available. Please contact us for ordering information

## FUNCTIONAL DESCRIPTION

The USB-DIO-32I is an ideal solution for adding portable, easy-to-install digital I/O to any computer with a USB port. The USB-DIO-32I is a USB 2.0 high-speed device (USB 3.0 compatible), offering the highest speed available with the USB 2.0 bus. The unit is plug-and-play allowing quick connect or disconnect whenever you need additional I/O on a USB port.

The USB-DIO-32I features 32 bits of TTL-compatible digital I/O with high-current capabilities. Each digital bit can be programmed to accept an input or to drive an output. Power is supplied to the board via the USB cable or for higher source current capabilities, external power may be used. The I/O wiring connections for USB-DIO-32I are via an industry standard 50-pin connector. For external circuits, fused +5VDC power is available at the connector. This resettable fuse is rated at 0.5A.

All I/O lines are buffered by a type ABT tri-stateable buffer transceiver capable of sinking 64 mA or sourcing 32 mA. The buffers are configured under program control for input or output. 10K ohm pull-ups (to +5 VDC) on the board allow for contact monitoring, and ensure a known signal level at power-up.

The USB-DIO-32I is designed to be used in rugged industrial environments but is small enough to fit nicely onto any desk or testing station. The board is PC/104 sized (3.550 by 3.775 inches) and ships inside a steel powder-coated enclosure with anti-skid bottom.

## OEM USB/104 FORM FACTOR

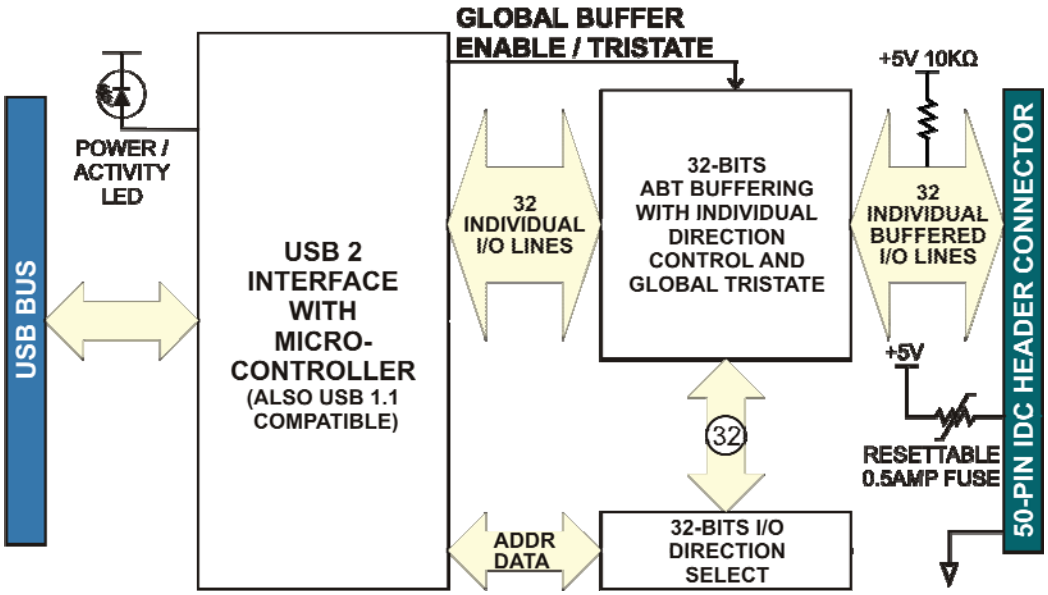
The OEM (board only) version is perfect for a variety of embedded applications. What makes the OEM option unique is that its PCB size and mounting holes match the PC/104 form factor (without the bus connections). This allows our rugged digital board to be added to any PCI-104 or PC/104 stack by connecting it to a simple USB port usually included on-board with embedded CPU form factors such as EBX, EPIC, and PC/104. This is especially important since many newer CPU chipsets do not support ISA and have plenty of USB ports. The USB-DIO-32I OEM board can also be installed using standoffs inside other enclosures or systems.

## ACCESSORIES

The USB-DIO-32I is available with optional cable assemblies and screw terminal boards. The pin connections are also compatible with industry standard I/O racks such as ACCES A24A, OPTO22, Gordos, Potter & Brumfield, etc. with optional cable.

## SOFTWARE

The USB-DIO-32I is plug-and-play which allows quick connect or disconnect whenever you need additional I/O on your USB port. The module utilizes a high-speed custom function driver optimized for a maximum data throughput that is 50-100 times faster than the USB human interface device (HID) driver used by many competing products. This approach maximizes the full functionality of the hardware along with capitalizing the advantage of high-speed USB 2.0. The USB-DIO-32I is supported for use in most USB supported operating systems and includes a free Linux and Windows XP/2003/7/Vista compatible software package. This package contains sample programs and source code in Visual Basic, Delphi and Visual C++ for Windows. Also incorporated is a graphical setup program in Windows. Third party support includes a Windows standard DLL interface usable from the most popular application programs. Embedded OS support includes Windows Xpe.




**BLOCK DIAGRAM**

## SPECIFICATIONS

| | |
|---|---|
| Digital Inputs | (TTL Compatible, @ 4kHz) |
| Logic High: | 2.0 to 5.0 VDC |
| Logic Low: | -0.5 to +0.8 VDC |
| Digital Outputs | |
| Logic High: | 2.0 VDC minimum, source 32 mA |
| Logic Low: | 0.55 VDC maximum, sink 64 mA |
| Pull-Up Resistor: | 10k ohms (to +5V) |
| Bus Type: | USB 2.0 High-speed, USB 1.1 Full-speed compatible |

**Environmental**

| | |
|---|---|
| Operating Temp: | 0° to 70°C |
| Storage Temp: | -40° to +85°C |
| Humidity: | 5%-95%, non-condensing |
| Board Dim.: | 3.550 x 3.775 inches |
| Box Dim.: | 4.0 x 4.0 x 1.25 inches |

**Power**

| | |
|---|---|
| +5VDC: | 60mA (All inputs, no load)<br>150mA (All outputs low, no load)<br>provided via USB bus at up to 500mA** |

+5VDC resettable fuse at 0.5A located on connector

**Optional on-board external power circuitry and AC/DC adapter can be ordered ("-PR" option) if current use is expected to be greater than what can be supplied by the USB bus. Please check to see how much current your USB port can supply and how much current you anticipate using.

**Ordering Guide**

| | |
|---|---|
| USB-DIO-32I | Enclosure, module and screw terminal board |

**Options**

| | |
|---|---|
| -OEM | Board only (no enclosure or screw terminal board) |
| -E | Economy model (no screw terminal board) |
| -PR | +5VDC external power jack and regulated AC/DC adapter |
| -ST | High retention screw terminals for external power connections (instead of DC power jack) |
| -T | Extended operating temperature (-40°C to +85°C) |
| -RoHS | RoHS compliant version |

**Optional Accessories**

The USB-DIO-32I is available with optional cable assemblies, DIN-rail mountable screw terminal boards, and an external AC/DC power supply. Also available is our low cost IIB-24 which will add optical isolation to any standard 24-channel digital I/O port on a 50 pin connector. To make use of the miniature embedded USB header connector, we offer a type A to micro-fit USB input header cable. Call for details.

ACCES I/O PRODUCTS, INC.

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August 30th 2011