FEATURES

- 32 high-speed digital I/O lines feature continuous throughput of 24MB/s
- Digital outputs capable of 132MB/s bursts
- USB 2.0 device, USB 1.1 compatible
- Flexible internal or external synchronous clocking and handshaking capabilities
- Two 16-bit ports (one for inputs, one for outputs)
- All output lines buffered with Sink 64mA / Source 32mA current capabilities
- Standard 68-pin HD connector
- Custom high-speed function driver
- PC/104 module size and mounting compatibility
- Small (4” x 4” x 1.25”) rugged industrial enclosure
- Alternate embedded USB connector

FACTORY OPTIONS

- External power for high current capabilities
- DIN rail mounting provision
- OEM (board only) version with pre-drilled mounting holes for added flexibility in embedded applications

FUNCTIONAL DESCRIPTION

The USB-DIO-32F is an ideal solution for adding portable, easy-to-install high-speed digital I/O capabilities to any computer with a USB port. The USB-DIO-32F is a USB 2.0 high-speed device, offering the highest speed available with the USB bus. The board has 32 high-speed lines of digital I/O and provides up to 12MHz continuous scanning on all digital input/output lines and up to 66MHz bursts on the outputs. It is fully compatible with both USB 1.1 and USB 2.0 ports. The unit is plug-and-play allowing quick connect or disconnect whenever you need additional I/O on your USB port.

The USB-DIO-32F features 32 bits of TTL-compatible digital I/O with high-current capabilities. The board features programmable clocks capable of 1K-66MHz transfers or the user may choose to use their own external clocks. All clock signals are provided on the connector and are synchronous. Power is supplied to the board via the USB cable or for higher current capabilities, external power may be used. The I/O wiring connections for USB-DIO-32F are via an industry standard 68-pin SCSI connector. For external circuits, fused +5VDC power is available at the connector. This resettable fuse is rated at 0.5A.

Output lines are buffered by a type 74ABT245 tristate buffer transceiver capable of sinking 64 mA or sourcing 32 mA. Pull-ups (to +5 VDC) on the board assure that there are no erroneous outputs at power-up until the board is initialized by system software.

The USB-DIO-32F 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 an 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-32F OEM board can also be installed using standoffs inside other enclosures or systems.

ACCESSORIES

The USB-DIO-32F is available with optional cable assemblies and screw terminal boards for easy-to-use, out of the box connectivity.

SOFTWARE

The USB-DIO-32F 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 maximum continuous data throughput of 244MB/s 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-32F is supported for use in most USB supported operating systems and includes a free Linux (including Mac OS X) and Windows 98se/Me/2000/XP/2003 compatible software package. This package contains sample programs and source code in Visual Basic, Delphi, C++ Builder, 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, and includes example LabVIEW VIs. Embedded OS support include Windows Xpe.
**BLOCK DIAGRAM**

**SPECIFICATIONS**

Digital Inputs (TTL Compatible)
- 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

Internal Clock
- Frequency Range: 1KHz - 66MHz

Environmental
- Operating Temperature Range: 0°C to 70°C
- Storage Temperature Range: -40°C to +85°C
- Humidity: 5%-95%, non-condensing
- Board Dimension: 3.550 x 3.775 inches
- Box Dimension: 4.00 x 4.00 x 1.25 inches

Power
- +5VDC provided via USB bus up to 500mA**
- Basic Unit: 100mA typical (no load)
- +5VDC resettable fuse at 0.5A located on connector

** Optional on-board external power circuitry and AC/DC adapter can be ordered ("-P" 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-32F Module installed in enclosure

Options
- -OEM Board only version (no enclosure)
- -DIN DIN rail mounting provision
- -P External power and AC/DC adapter
- -T Extended Temperature (-40°C to +85°C)