FEATURES

- 16 high-speed digital I/O lines featuring continuous throughput up to 24MB/s
- Capable of 80MB/s bursts
- Flexible internal or external synchronous clock and handshaking capabilities
- 18 additional digital I/O lines
- All outputs buffered with 24mA sink/source capabilities
- Standard 68-pin HD latching connector
- Alternate embedded USB connector
- High-Speed USB 2.0 device
- Custom high-speed function driver
- PC/104 module size and mounting compatibility
- Small (4”x 4”x 1.25”) rugged industrial enclosure

FACTORY OPTIONS

- External power for higher source current
- DIN rail mounting provision
- OEM (board only) version with standoffs for added flexibility in embedded applications
- Extended Temperature Operation (-40°C to +85°C)
- Output only version: USB-DO16A
- Input only version: USB-DI16A

FUNCTIONAL DESCRIPTION

The USB-DIO16-16A is an ideal solution for adding portable, easy-to-install high-speed digital input or output capabilities to any computer with a USB 2.0 port. The USB-DIO16-16A is a USB 2.0 high-speed device, offering the highest speed currently available with the USB bus. The unit is plug-and-play allowing quick connect or disconnect whenever you need additional I/O on your USB port.

The USB-DIO16-16A features 16 bits of TTL-compatible high-speed digital inputs or outputs capable of up to 12MHz (24MB/s) continuous scanning and up to 40MHz (80MB/s) bursts. The board includes a programmable clock capable of 1K-40MHz transfers or you may choose to use your own external clock. In addition to the 16 high-speed I/O's there are 18 standard TTL-compatible digital I/O channels configurable as 4 separate ports for input or output (see block diagram). All required power is normally supplied to the board via the USB cable, however for higher current sourcing capabilities, optional external power may be used. The I/O wiring connections for the USB-DIO16-16A are via an industry standard High-Density pin-in-socket SCSI connector. For external circuits, a jumper selection connects fused +5VDC power to the connector. This resettable fuse is rated at 0.5A.

The USB-DIO16-16A 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 USB port invariably included on-board with embedded CPU form factors such as EBX, EPIC, PC/104 and others. This is especially important since many newer CPU chipsets do not support ISA but have plenty of USB ports. The USB-DIO16-16A-OEM board can also be easily installed using the provided standoffs inside other enclosures or systems.

ACCESSORIES

The USB-DIO16-16A is available with optional cable assemblies and screw terminal boards for easy-to-use, out of the box connectivity.

SOFTWARE

The module utilizes a high-speed custom function driver optimized for maximum continuous data throughput of 10MB/s that is hundreds to thousands of 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 on the advantage of high-speed USB 2.0. The USB-DIO16-16A is supported for use in most USB supported operating systems and includes a free Windows 98se/Me/2000/XP/2003/Vista compatible software package. This package contains sample programs and source code in Visual Basic, Delphi, C++ Builder, and Visual C++ for Windows. Third party support includes a Windows standard DLL interface usable from the most popular application programs. Embedded OS support includes Windows XPe.
SPECIFICATIONS

High-Speed Digital I/O’s (TTL Compatible)
Channels / Groups: 16 / 1
Configured as Inputs:
  Logic High: 2.0 to 5.0 VDC
  Logic Low: -0.5 to +0.8 VDC
Configured as Outputs:
  Logic High: 2.0 VDC minimum, source 24 mA
  Logic Low: 0.55 VDC maximum, sink 24 mA

Standard Digital I/O’s (TTL Compatible)
Channels / Groups: 18 / 4 (see block diagram)
Configured as Inputs:
  Logic High: 2.0 to 5.0 VDC
  Logic Low: -0.5 to +0.8 VDC
Configured as Outputs:
  Logic High: 2.0 VDC minimum, source 24 mA
  Logic Low: 0.55 VDC maximum, sink 24 mA

Internal Clock
Frequency Range: 1KHz-40MHz

External Clock
Frequency: 40MHz maximum

Data FIFO’s
Width: 16-bit
Depth: 1K

Environmental
Operating Temperature Range: 0° to 70°C
Storage Temperature Range: -40° 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
Basic Unit: 100mA typical (no load)
Auxiliary Output: +5VDC via 0.5A resettable fuse
Bus Powered: +5VDC provided via USB bus up to 500mA
Externally Powered: ** Optional on-board external power circuitry with voltage regulator and 9V 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.

ORDERING GUIDE
USB-DIO16A 16 High-Speed Digital I/O’s & 18 standard I/O’s
USB-DI16A 16 High-Speed Digital Inputs & 18 standard I/O’s
USB-DO16A 16 High-Speed Digital Outputs & 18 standard I/O’s

Model Options
- • P External AC/DC adapter (power jack/regulator installed)
- • OEM Board only (no enclosure)
- • DIN DIN rail mounting provision
- • T Extended Temperature Operation (-40° to +85°C)

Accessories
STB-68 Screw terminal board
C68PS18L 68-Pin SCSI 18” shielded cable
MP104-DIN DIN rail mounting provision
CUSB-EMB-6 6’ USB Cable with Type A to mini connector