FEATURES

- High-speed USB 2.0 device, USB 1.1 compatible
- Up to 125K conversions per DAC per second
- Streaming waveform data at over 400,000 DAC outputs per second total
- 128K Sample buffer on-board, or infinitely long streaming waveforms!
- Buffered waveforms at up to 1 million DAC conversions per second total
- ILDA compatible
- Small, portable 8-channel, 12-bit, digital to analog outputs
- Double-buffered allowing simultaneous update of all DACs
- Analog output ranges of 0–2.5V, 0–5V, 0–10V, ±2.5V, ±5V, ±10V
- Single-ended and differential outputs on separate connectors
- PC/104 module size and mounting compatibility
- Small (4" x 4" x 1.25") rugged industrial enclosure

FACTORY OPTIONS

- Resistors in series with differential connector for impedance matching
- DIN rail mounting provision
- Economy “E” version available without the screw terminal board
- OEM (board only) version with PC/104 mounting holes and PCB footprint for added flexibility in embedded applications

DESCRIPTION

The USB-DA12-8A is an ideal solution for adding portable, easy-to-install analog outputs to any computer with a USB port. The USB-DA12-8A is a USB 2.0 device, offering the highest speed available with the USB bus. It is fully compatible with both USB 1.1 and USB 2.0 ports. The board is plug-and-play allowing quick connection whenever you need additional I/O on a USB port.

The USB-DA12-8A features 8 digital-to-analog converters (DACs) with both differential and single-ended outputs on separate connectors. The board features a variety of unipolar and bipolar ranges for each DAC giving the user a variety of options. The DACs can be updated individually or simultaneously. To ensure that there will not be excessive outputs to external circuits when the board is plugged in, automatic circuits limit analog outputs to zero volts. The USB-DA12-8A supports Arbitrary Waveform Generation with an on board 256K-byte FIFO. Power is supplied to the board via an external power supply which powers on board DC/DC converters which provide ±12V to the operational amplifiers on the board. The I/O wiring connections for USB-DA12-8A are via an industry standard, IDC type 26-pin, 16-pin, and 10-pin connectors.

The USB-DA12-8A 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-DA12-8A OEM board can also be installed using standoffs inside other enclosures or systems.

ACCESSORIES

The USB-DA12-8A is available with optional cable assemblies and screw termination boards.

SOFTWARE

The USB-DA12-8A 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-DA12-8A is supported for use in most USB supported operating systems and includes a free Linux 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. Embedded OS support include Windows Xpe.
**ANALOG OUTPUTS**
- **Number of Outputs**: 8 channels
- **Type of Outputs**: Single-ended or differential
- **Resolution**: 12-bit resolution
- **Unipolar Ranges**: 0-2.5V, 0-5V, 0-10V
- **Bipolar Ranges**: ±2.5V, ±5V, ±10V
- **Conversion Rate (preliminary)**:
  - 125Ks x 8 channels (non-streaming)
  - 25Ks x 8 channels (streaming)
- **Relative Accuracy**: ±2 LSB typical
- **Differential Non-linearity**: ±0.2 LSB typical
- **Settling Time**: 8us typical, 10us max.
- **Output Current**: See manual

**BUS TYPE**
- **USB2.0 high-speed, USB1.1 full-speed compatible**

**ENVIRONMENTAL**
- **Operating Temperature Range**: 0°C to 70°C
- **Storage Temperature Range**: -40°C to +85°C
- **Humidity**: 5% to 95% non-condensing
- **Board Dimension**: 3.550 x 3.775 inches
- **Box Dimension**: 3.8L x 1.8H x 4.2W

**POWER**
- Power supplied by +5VDC regulated AC/DC power supply
- +5VDC: 520mA, typical (no load)
- +/-12VDC supplied from +5VDC through DC/DC Converters

**ORDERING GUIDE**
- USB-DA12-8A Enclosure, module and screw terminal board
- OEM Board only version (no enclosure and screw terminal board)
- E Economy model (no screw terminal board)
- DIN DIN rail mounting provision
- PR External power and AC/DC +5VDC regulated adapter