

## FEATURES

- High-speed USB 2.0 device, USB 1.1 compatible
- 8 individually optically isolated digital inputs
- Polarity insensitive discrete AC/DC inputs accept up to 31V DC or AC RMS
- Jumper selectable filtering per input channel for AC or voltage transients
- 4 optically isolated solid state high-side FET outputs
- Each output can switch from 5-34 VDC at up to 3A
- High reliability fully protected FETs for robust systems
- Two single-ended 16-bit A/D inputs of 0-4.096V
- Custom high-speed function driver
- Alternate embedded USB connector
- All required power drawn from USB port, no external power adapter required
- PICO-I/O™ module size (60mm x 72mm) & mounting capability

## FACTORY OPTIONS

- Extended temperature
- 4-20mA for analog inputs
- 0-2.5V analog inputs
- Version without analog inputs



## FUNCTIONAL DESCRIPTION

The USBP-II8IDO4A is an ideal OEM USB solution for adding embedded reliable and robust multi-function I/O capabilities to any computer with a USB port. The USBP-II8IDO4A is a USB 2.0 (1.1 compatible) high-speed device, the highest speed available with the USB Bus.

The unit can be installed in single or multiple stack configurations. It can also be mounted alone near I/O sensors or devices to be controlled in a star configuration away from the USB ports of its host embedded computer. The module is always connected by USB cable to any computer USB port via its external micro B connector or on-board friction-lock micro-fit connector.

Featuring 4 solid state FET outputs, 8 optically isolated digital inputs and 2 high-resolution analog inputs, the unit is the smallest of its kind for multi-function control and monitoring using USB.

The FET outputs can switch customer supplied voltages from 5 to 34V at *UP TO 3A!* The outputs are de-energized at power-up to prevent an unintended control output signal. The output connections are available via a 16-pin IDC vertical header type connector. The digital inputs accept AC or DC signals as high as 31 volts and are interfaced via a 26-pin IDC vertical header. An accessory cable is used to interface to one of the many available external screw terminal boards, or go cable-less and use a direct plug-in screw terminal like our TBK-26. Two analog inputs are also available on the 26-pin connector for a well-rounded multi-function compact solution.

The module draws all required power from the USB port so no external power adapter is required. The small size and easy connection makes it an excellent choice for embedded applications such as mobile, robotics, kiosks, and embedded medical and machine equipment. The USBP-II8IDO4A is designed to be used in rugged, industrial, and mobile environments and also has the option to be upgraded to extended temperature (-40°C to +85°C) specifications for military and defense applications.

## OEM USB/PICO™ FORM FACTOR

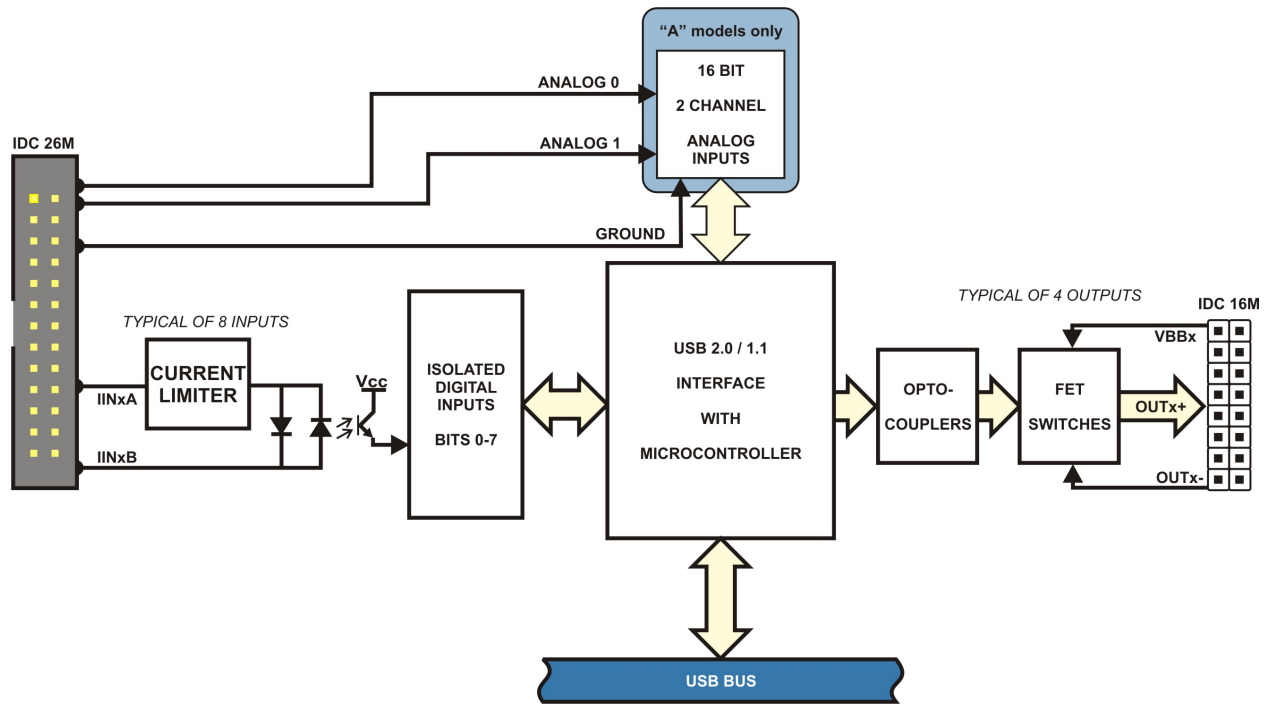
This standard OEM version is perfect for a variety of embedded applications. What makes the USBP-II8IDO4A unique is that its PCB size and mounting holes match the PICO-I/O™ form factor (without the SUMIT A connector). This allows our rugged digital board to be added to any PICO-ITXe stack by connecting it to an available USB port, especially if a SUMIT B only express I/O board was already used with the PICO-ITXe embedded CPU. The USBP-II8IDO4A board can also be installed using standoffs inside other enclosures or systems either stand-alone or in multiple stacks without a CPU in the stack.

## ACCESSORIES

The USBP-II8IDO4A is available with optional cable assemblies, screw terminal boards and external signal conditioning boards.

## SOFTWARE

The USBP-II8IDO4A 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 USBP-II8IDO4A 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 includes Windows Xpe.



**BLOCK DIAGRAM**

**SPECIFICATIONS**

**Digital Outputs**

Number: 4  
 Type: N-Channel smart high-side switch  
 Connector: 16-pin vertical IDC male header  
 Switch levels: 5 to 34V  
 Over-volt protection: 41V  
 Current: 2A steady state, 3A peak for 50ms

**Digital Inputs**

Number: 8  
 Type: Optically Isolated, non-polarized  
 Connector: 26-pin vertical IDC keyed male header  
 Signaling: Powered, off below 3V, on from 3.1 to 31V DC or ACrms  
 Filters: Jumper selectable per input  
 Filter response: 4.7mS with filter, 10uS w/o filter

**Analog Inputs**

Channels: 2, single-ended  
 ADC Type: Successive approximation  
 Sampling Rate: 4k samples per second per channel  
 Resolution: 16-bit  
 Unipolar range: 0-4.096V (0-2.5V factory option)  
 Current mode: 4-20mA factory option

**Bus**

Type(s): USB 2.0 high-speed  
 USB 1.1 full-speed compatible  
 USB Connectors: USB micro-B and micro-header

**Environmental**

Operating Temp.: 0° to 70°C (-40° to +85°C factory option)  
 Storage Temp.: -40°C to +85°C  
 Humidity: Maximum 90% RH, without condensation.  
 Board Dimension: 60mm x 72mm.

**Power**  
 +5VDC

30mA typical with no load, provided via USB port

**Ordering Guide**  
 USBP-II8IDO4A

8 Isolated Inputs, 4 solid state FET outputs and 2 analog inputs module with USB micro-B and micro-header interface connectors

USBP-II8IDO4

8 Isolated Inputs with 4 solid state FET outputs module with USB micro-B and micro-header interface connectors

PICO-II8IDO4A

8 Isolated Inputs, 4 solid state FET outputs and 2 analog inputs module with SUMIT bus interface

PICO-II8IDO4

8 Isolated Inputs with 4 solid state FET outputs module with SUMIT bus interface

**Model Options**

-T  
 -I  
 -2.5

Extended temperature -40°C to +85°C  
 4-20mA analog inputs ("A" versions only)  
 Analog input range of 0-2.5V

**Accessories**

TBK-26  
 STB-26

26-Pin female connector / screw terminal board  
 Cabled termination solution, 26-pin male header connector screw terminal board, DIN-rail mountable using DIN-SNAP-6  
 26-Pin female ribbon cable, 12" to connect USBP board inputs to STB-26  
 6 inch length of snap-track with clips for mounting to DIN-rail, accepts one STB-26

C104-26F-12

DIN-SNAP-6

**Only for use with USBP board versions**

CUSB-EMB-6  
 or  
 CUSB-Micro-B-6

6' USB cable type A to Micro-fit header connector  
 6' USB type A to type Micro B cable

