



## PICO-II8IDO4A

**8 Isolated Digital Inputs,  
4 Solid State Relay Outputs,  
and two 16-Bit Analog Inputs**

### FEATURES

- Pico-I/O™ USB device featuring SUMIT™ stacking connector 8 individually optically isolated digital inputs
- Polarity insensitive AC/DC inputs accept up to 31VDC or AC RMS
- Jumper selectable filtering per input channel for AC or voltage transients
- Four optically isolated fully protected solid state high-side FET outputs
- Outputs capable of switching from 5-34 VDC at up to 3A each
- Two general purpose 16-bit A/D inputs
- Up to 4 I/O expansion boards in SUMIT™ stack
- Custom high-speed function driver
- PICO-I/O™ module size (60mm x 72mm) & mounting capability

### FACTORY OPTIONS

- Extended temperature
- Microfit B or embedded Micro USB header connector
- 4-20mA for analog inputs



### FUNCTIONAL DESCRIPTION

The PICO-II8IDO4A is an ideal OEM USB solution for adding embedded reliable and robust multi-function I/O capabilities to any embedded computer supporting Pico-I/O™ and the SUMIT™ A connector. The Pico-I/O™ board standard (SFF-SIG: [www.sff-sig.org](http://www.sff-sig.org)) is the latest, smallest, stacking form factor for embedded I/O since the PC/104 standard. Up to four of the PICO-II8IDO4A can be mounted together.

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 32 volts and are interfaced via a 26-pin IDC type vertical header. The pinout allows a simple accessory cable 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 PICO solution.

The module draws all required power from the SUMIT™ connector of the SUMIT based embedded computer. The Pico-I/O™ size specification (4320 sq. mm) is exactly half of the PCB area of the popular PC/104 (8640 sq. mm) embedded board standard. The small size and easy connection makes the unit an excellent choice for a variety of embedded applications such as mobile, robotics, kiosks, and embedded medical and machine equipment.

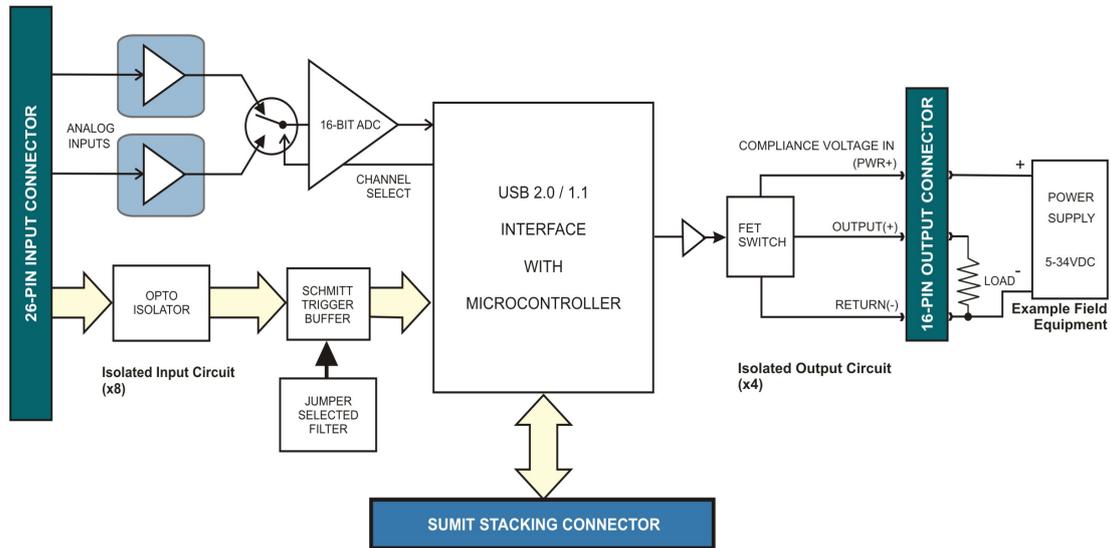
The PICO-II8IDO4A is designed to be used in rugged, industrial, and mobile environments and also has the option to be upgraded to extended temperature (-40°C to +85°C) specifications for military and defense applications.

### ACCESSORIES

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

### SOFTWARE

The PICO-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 PICO-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 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 header  
 Signaling: Powered, off below 3V, on from 3.1 to 31VDC or ACrms

**Analog Inputs**

Number of channels: Two, Single-Ended  
 ADC Type: Successive approximation  
 Sampling Rate: 4k samples per second per channel  
 Resolution: 16-bit  
 Unipolar range: 0-5V  
 Current mode: 4-20mA factory option

**Bus**

Type(s): USB 2.0 high-speed  
 USB 1.1 full-speed compatible  
 Connectors: SUMIT A connector top and bottom  
 Alternate interfaces: USB micro-B or micro-header

**Environmental**

Operating Temp.: 0°C to 70°C  
 (-40°C 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

Provided via SUMIT A connector with USB power switch limiting current to 500mA

**Ordering Guide**

PICO-II8IDO4A  
 USBP-II8IDO4A

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

**Model Options**

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Extended temperature -40°C to +85°C  
 4-20mA analog inputs

**Accessories**

TBK-26  
 STB-26

26-Pin female connector to screw terminal board  
 Cabled termination solution, 26-Pin male header connector screw terminal board, DIN-rail mountable

C104-26F-12

26-Pin female ribbon cable, 12" to connect Pico board inputs to STB-26

DIN-SNAP-6

6 inch length of snap-track with clips for mounting to DIN-rail, accepts one STB-26

**Only for use with USBP-II8IDO4A version**

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



## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

### US

[sales@assured-systems.com](mailto:sales@assured-systems.com)

Sales: +1 347 719 4508  
Support: +1 347 719 4508

1309 Coffeen Ave  
Ste 1200  
Sheridan  
WY 82801  
USA

### EMEA

[sales@assured-systems.com](mailto:sales@assured-systems.com)

Sales: +44 (0)1785 879 050  
Support: +44 (0)1785 879 050

Unit A5 Douglas Park  
Stone Business Park  
Stone  
ST15 0YJ  
United Kingdom

VAT Number: 120 9546 28  
Business Registration Number: 07699660