ACCES I/O PRODUCTS, INC.

Isolated Digital Input
PCI Express Mini Card Data Sheet

FEATURES

MODELS mPCIe-II-16, mPCIe-II-8, AND mPCIe-II-4

- PCI EXPRESS MINI CARD (mPCIe) TYPE F1, WITH LATCHING I/O CONNECTORS
- CHANGE-OF-STATE (CoS) DETECTION IRQ GENERATION
- 9" CABLE (228MM), STANDARD, CONNECTS ISOLATION MODULE TO mPCIe-DIO CARD
- PANEL-MOUNTABLE DB-37M ISOLATION MODULE
- 16, 8 OR 4 OPTICALLY-ISOLATED NON-POLARIZED INPUTS UP TO 31VDC/AC
- 4 LVTTL I/O LINES PROGRAMMABLE AS INPUTS OR OUTPUTS IN GROUPS OF 2 LINES
- AVAILABLE INDUSTRIAL TEMP (-40°C TO +85°C), RoHS STANDARD

FUNCTIONAL DESCRIPTION

The mPCIe-II-16 consists of a type F1 PCI Express Mini Card (mPCIe) interface board that connects to a Mobile-ITX-sized, DB-37M Isolation Module via an included 9" cable. That module is designed to be easily panel-mounted in any application environment. It uses the high speed PCI Express bus to transfer digital data to and from the card. The digital I/O is compatible with 8255 PPI chips making it easy to program. This allows for simple and trouble-free migration from other ACCES PCI and PCI Express digital I/O cards, but also provides for advanced features enabled by the onboard FPGA logic.

The mPCIe-II family of cards are well suited to complex environments, mitigating otherwise challenging ground-loops, high-common-mode, and transient voltage spikes common in electrically-noisy industrial or factory locations. The broad voltage compatibility allows use in a wide range of applications.

The non-polarized inputs support both AC and DC, and configuration jumpers allow 4.7ms input filters to be enabled per-channel, as desired – required for AC use. The Isolated Inputs support voltages from 3 to 31 VDC/VAC RMS [40Hz to 10000Hz], as well as standard 12/24 AC control transformer signals.

Rounding out the utility of this solution are the 4 LVTTL general purpose I/O lines, programmable as inputs or outputs in groups of 2 lines. These lines are pulled up to VCCIO via 10k ohm resistors, useful for monitoring dry contacts that don't need isolation.

SPECIAL ORDER

Please contact ACCES with your precise requirement. Examples of special orders would be conformal coating, custom software or product labelling, and more. We will work with you to provide *exactly* what is required.

ACCESSORIES

Available accessories include:	
ADAP37M, STB-37	37-pin Screw Terminal Accessory
mPCIe-HDW-KIT2	Mounting hardware for 2mm
mPCIe-HDW-KIT2.5	Mounting hardware for 2.5mm

SOFTWARE

The card is supported for use in most operating systems and includes a free DOS, Linux , and Windows 2000/XP/2003/Vista/7/8/10 compatible software package. This package contains sample programs and source code in Visual Basic, Delphi, and Visual C++ for Windows. Also provided is a graphical setup program in Windows. Linux support includes installation files and basic samples for programming from user level via an open source kernel driver. Third party support includes a Windows standard DLL interface usable from the most popular application programs, and includes LabVIEW 8.5+ VIs. Embedded OS support includes Windows XPe, WES7, WES8, etc. Full register-level documentation of all features ensures easy compatibility in any application environment.
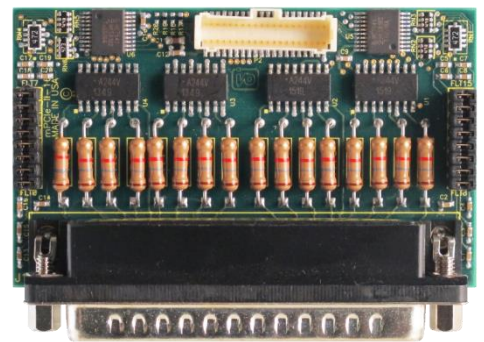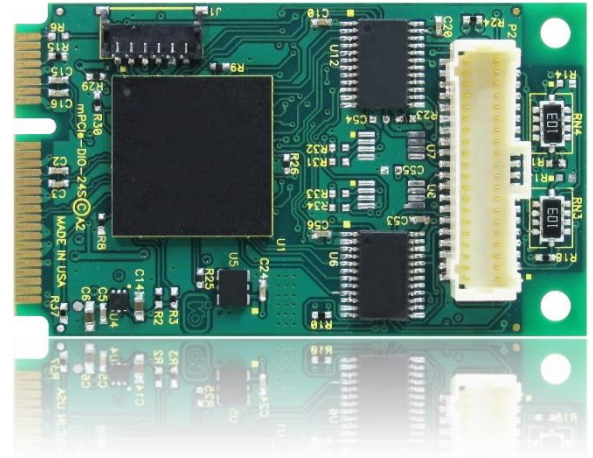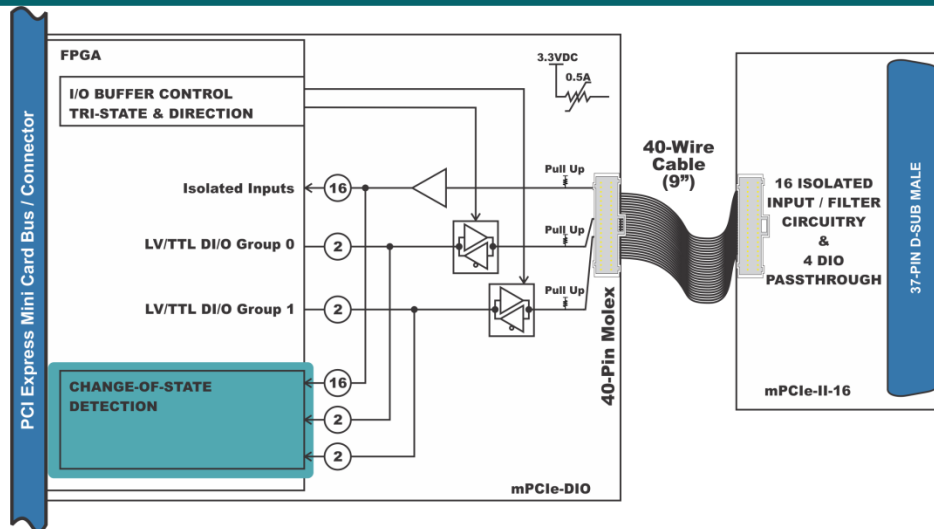
PC Interface

PCI Express Mini Card	Type F1 "Full Length"

Note: Device's connector violates component height restrictions

Isolated Inputs

Number	16 (or 8 or 4)
Type	Non-polarized, optically isolated from each other and from the computer (CMOS compatible)
Voltage	3 to 31 DC or AC RMS (40 to 10000Hz)
Isolation	500V channel-to-ground and channel-to-channel
Resistance	1.8KΩ in series with opto-coupler
Filter Response	Rise-time 4.7 ms
	Fall-time 4.7 ms
No-Filter	Rise-time 10 µs
	Fall-time 30 µs

Digital I/O Lines

Number		4 (all lines pulled up to VCCIO via 10K resistors)
Digital Ins	Logic High	2.0V to VCCIO (3.3VDC, 5VDC tolerant)
4 or 2 LVTTL	Logic Low	0V to 0.8V
Digital Outs	Logic High	2.0V (min) 24mA source
4 or 2 LVTTL	Logic Low	0.55V (max) 24mA sink

Environmental

Temperature	Operating	0°C to 70°C (order "-T" for -40° to 85°C)
	Storage	-65° to 150°C
Humidity		5% to 95%, non-condensing
Power required		+3.3VDC @ 360mA (typical)

Physical

mPCIe board characteristics		
Weight		6.2 grams
Size	Length	50.95mm (2.006")
	Width	30.00mm (1.181")
I/O connector	On-card	Molex 501190-4017 40-pin latching
	mating	Molex 501189-4010

Isolation Module characteristics		
Weight		38.2 grams (+ 11.2 grams for the 9" cable)
Size (Mobile-ITX sized)	Length	2.952"
	Width	1.772"
I/O connector	On-module	Male, D-Sub Miniature, 37-pin
	mating	Female, D-Sub Miniature, 37-pin

Signal Definitions

Signal	Meanings
IN A	Non-Polarized Isolated Input "A" Side
IN B	Non-Polarized Isolated Input "B" Side
LVTTL I/O	Digital I/O pin (3.3VDC, +5VDC tolerant)
GND	Digital Ground for use with LVTTL I/Os

DB-37 Male Pinout

#	Signal	#	Signal
1	IN A 7		
2	IN A 6	20	IN B 7
3	IN A 5	21	IN B 6
4	IN A 4	22	IN B 5
5	IN A 3	23	IN B 4
6	IN A 2	24	IN B 3
7	IN A 1	25	IN B 2
8	IN A 0	26	IN B 1
9	LVTTL 3	27	IN B 0
10	GND	28	LVTTL 2
11	LVTTL 0	29	LVTTL 1
12	IN A 15	30	IN B 15
13	IN A 14	31	IN B 14
14	IN A 13	32	IN B 13
15	IN A 12	33	IN B 12
16	IN A 11	34	IN B 11
17	IN A 10	35	IN B 10
18	IN A 9	36	IN B 9
19	IN A 8	37	IN B 8

ORDERING GUIDE

mPCIe-II-16	16 Isolated Inputs and 4 LVTTL I/O's mPCIe Card
mPCIe-II-8	8 Isolated Inputs and 4 LVTTL I/O's mPCIe Card
mPCIe-II-4	4 Isolated Inputs and 4 LVTTL I/O's mPCIe Card

Add –T to your model # for Industrial Temperature Option (-40° to 85°C)