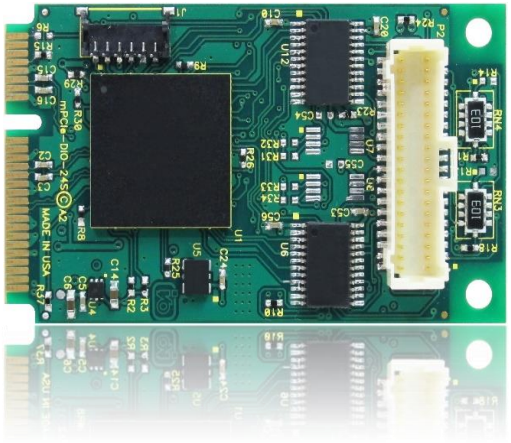
ACCES I/O PRODUCTS, INC.

# 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.

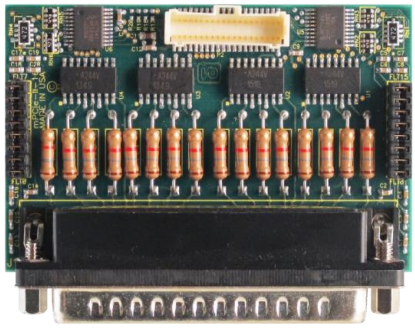
The mPCIe-II family of cards are well suited to complex environments, mitigating otherwise challenging ground-loops, high-common-mode, and transient voltage spikes common in electrically-noisy industrial or factory locations. The broad voltage compatibility allows use in a wide range of applications.

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.

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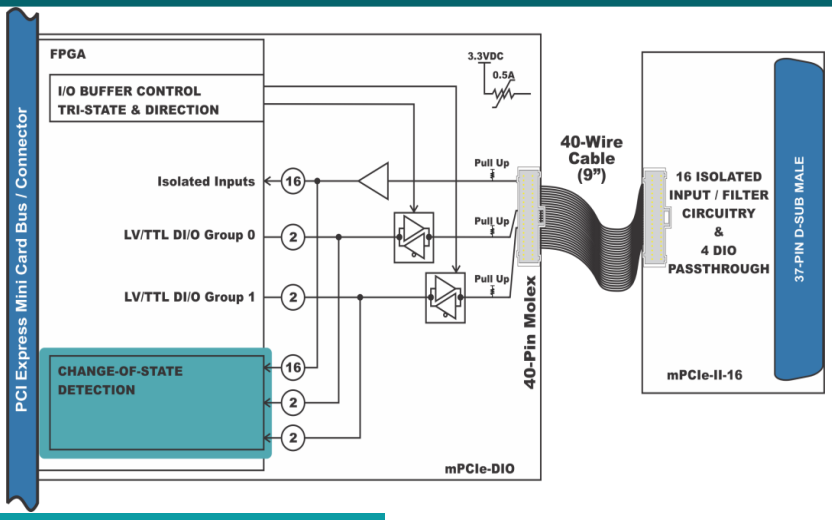
# Isolated Digital Input
# PCI Express Mini Card Data Sheet




## 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 |
| Type | | High Side Power MOSFET Switch. Protected against short-circuit, over-temp, ESD; drives inductive loads. |
| Voltage Range | | 5-34VDC recommended (customer supplied) for continuous use, 40VDC absolute maximum |
| Current Rating | | 2A maximum |
| Turn On time | | 90µsec (typical) |
| Turn Off time | | 110µsec (typical) |
| Digital Ins 4 or 2 LVTTL | Logic High | 2.0V to VCCIO (3.3VDC, 5VDC tolerant) |
| | Logic Low | 0V to 0.8V |
| Digital Outs 4 or 2 LVTTL | Logic High | 2.0V (min) 24mA source |
| | 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 | | | |
|---|---|---|---|
| 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)*

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