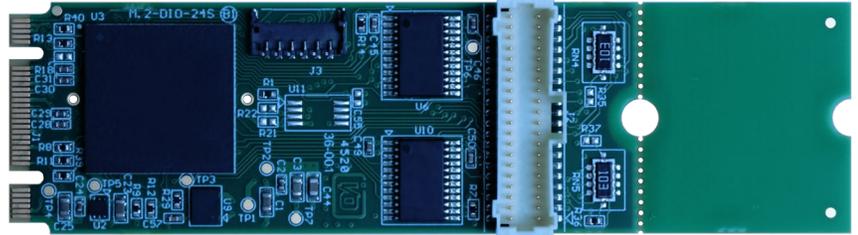


FEATURES

MODELS M.2-IDIO-8, M.2-IDO-8 AND M.2-IDIO-4

- M.2 CARD 2260/2280 SIZE, WITH B & M KEYS AND LATCHING I/O CONNECTORS
- CHANGE-OF-STATE (CoS) DETECTION IRQ GENERATION
- 9" CABLE (228MM), STANDARD
- PANEL-MOUNTABLE DB-37F ISOLATION MODULE
- 8 OR 4 OPTICALLY-ISOLATED NON-POLARIZED INPUTS UP TO 31VDC/AC
- ROHS STANDARD
- 8 OR 4 FULLY PROTECTED HIGH-SIDE FET OUTPUTS SWITCH FROM 5VDC TO 34VDC AT UP TO 2A
- 8 LVTTTL I/O LINES PROGRAMMABLE AS INPUTS OR OUTPUTS IN GROUPS OF 4 LINES
- ROHS STANDARD
- AVAILABLE INDUSTRIAL TEMPERATURE (-40°C TO +85°C)



FUNCTIONAL DESCRIPTION

The M.2-IDIO-8 consists of a 2260/2280 size M.2 card interface board that connects to a Mobile-ITX-sized, DB-37F 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 M.2-IDIO 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 and high current outputs 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.

The outputs are fully protected High-Side Power MOSFETs capable of switching from 5 to 34VDC at up to 2A continuous-current load with 10A max current allowed (VBB0 = 5A, VBB1 = 5A).

The LVTTTL I/O Lines are pass-through only from the M.2-DIO card, and are pulled up to 3.3V via 10kΩ. For pull-downs, or floating, contact the factory to specify this configuration.

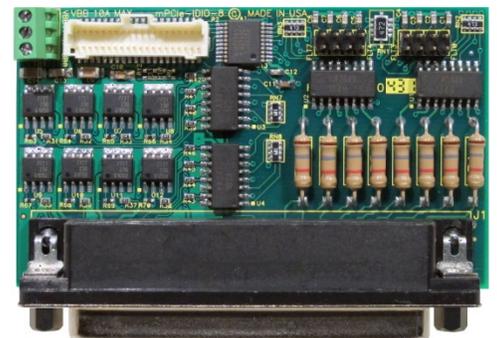
SPECIAL ORDER

Please contact ACCES with your precise requirement. Examples of special orders would be pull-down resistors on the LVTTTL I/O lines, conformal coating, custom software or product labelling, and more. We will work with you to provide *exactly* what is required.

ACCESSORIES

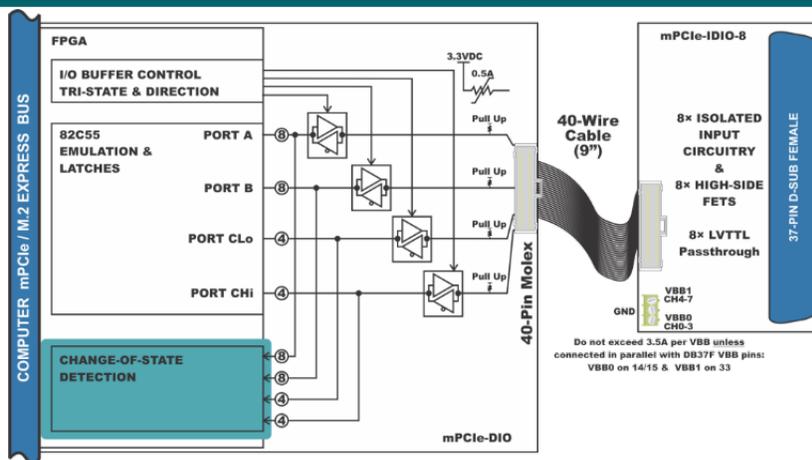
Available accessories include:

- ADAP37M-MIN, STB-37** 37-pin Screw Terminal Accessories
- M.2-HDW-KIT2** Mounting hardware for 2mm
- M.2-HDW-KIT2.5** Mounting hardware for 2.5mm



SOFTWARE

The card is supported for use in most operating systems and includes a free Linux and Windows 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. Embedded OS support includes the family of Windows Operating Systems including IoT. ACCES is also now offering a VxWorks driver/library for the ultimate real-time process monitoring and control solution.



PC Interface

M.2 Card	2260/2280 size with B & M keys
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Isolated Inputs

Number	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	300V channel-to-ground & 150V 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

FET Outputs

Number	8 (or 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 I/O Lines

Digital Inputs 8 or 4 LVTTTL	Logic High 2.0V to VCCIO (3.3VDC, 5VDC tolerant) Logic Low 0V to 0.8V <i>Pulled up to 3.3V via 10kΩ</i>
Digital Outputs 8 or 4 LVTTTL	Logic High 2.0V (min) 24mA source Logic Low 0.55V (max) 24mA sink <i>Pulled up to 3.3V via 10kΩ</i>

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

M.2 board characteristics	
Weight	5.8 grams
Size	Length 60mm/80mm
	Width 22mm
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 Female, D-Sub Miniature, 37-pin Mating Male, 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
OUT +	FET Output pin
RETURN	OUT - for all FETs (0-7)*
VBB 0	Compliance Voltage for FETs 0-3*
VBB 1	Compliance Voltage for FETs 4-7*
LVTTTL I/O	Digital I/O pin (3.3VDC, +5VDC tolerant) pulled up to 3.3V via 10kΩ
GND**	Mandatory Ground return connection for LVTTTL I/O lines

Signals noted with an * are present both on the DB37F connector, *and* a 3 position screw terminal for connecting the external 5 to 34VDC power supply. Total amperage allowed is 10A (VBB0 = 5A, VBB1 = 5A).

** The GND connection in pin 9 is required to use the LVTTTL I/O lines on pins 10-13 and 28-31. Connect this point to the ground reference of the external device. Damage will result if this pin is not connected when trying to use the LVTTTL DIO lines, voiding the warranty.

DB-37 Female Pinout

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

ORDERING GUIDE

M.2-IDIO-8	8 Isolated Inputs, 8 FET Outputs, M.2 Card
M.2-IDO-8	8 FET Outputs, M.2 Card
M.2-IDIO-4	4 Isolated Inputs, 4 FET Outputs, M.2 Card

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