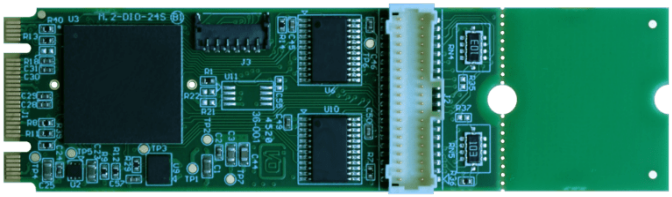
24 Digital I/O with Digital∫Integration Features for M.2 Datasheet

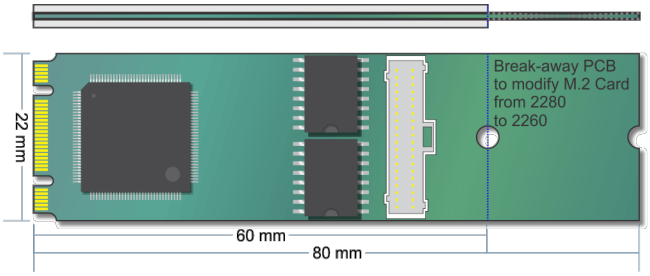
Features — Model M.2-DIO-24X and M.2-DIO-24A

- With Digital Integration Features!
  - Outputs with Pulse, Pulse-Train, PWM, Frequency, and Quadrature generation
  - Inputs with digital filtering and flexible measurement of pulse duration
  - Frequency and event counting, IRQ generation and more
- M.2 B&M Key 2280 or 2260, with latching I/O connector
- 24 high-current DIO lines (24mA source/sink)
- Change-of-State (CoS) detection IRQ generation
- 10k ohm Pull-Up resistors
- Four- and eight-bit ports independently selectable for use as inputs or outputs
- All signals brought out to optional panel-mountable 37-pin male dsub connector
- RoHS standard
- Available Industrial Temp (-40°C to +85°C)
- Also Available in mPCIe form!



Functional Description

The M.2-DIO-24X/A is a 2280 or 2260 (via break-away) M.2 PCI Express card (*works in your computer's NVME socket!*) and optional cable assembly (DSub 37-pin Male connector) designed to be easily panel-mounted in any application environment. The digital I/O is compatible with 8255 PPI chips making it easy to program. It provides three 8-bit I/O ports designated A, B and C. Port C can be further divided into two 4-bit nybbles. Each port can be programmed as inputs or outputs.



Advanced Change of State (COS) detection and interrupt capabilities are designed to relieve software from polling routines that consume valuable processing time. Each input bit can be programmed for detecting various changes on their lines, can count the enabled types of input change, and can be enabled to generate an IRQ when the desired number of these events have been detected. In addition to the classic COS IRQ, in which each individual change of the enabled ports' bits (both low-to-high and high-to-low on any bit of the enabled COS-group) will generate an IRQ, Advanced Digital∫Features lets you enable only rising- or falling-edges to generate events, or even high-or-low-side pulses within some range of duration, and the IRQ will only be generated when enough events have accumulated — all of this configurable on a per-bit basis.

Digital∫Features

Digital∫Features (read as "Digital Integration Features") are front and center on this card, such as memory mapped registers for low-latency operation. Output channels support pulse, pulse-train, PWM, frequency, and quadrature generation. Inputs channels support flexible measurement of pulse duration, frequency, and event counting, with optional debouncing, IRQ generation, and more.

Special Order

Please contact ACCES with your precise requirement. Examples of special orders would be pull-down resistors, conformal coating, a CMOS version with user supplied 5VDC VCCIO, custom software or product labelling, and more.

Accessories

	Available accessories include:
CAB-M.2-DB37M	40-pin to DB37-pin Male cable
ADAP37F-MINI	37-pin Screw Terminal Adaptor

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

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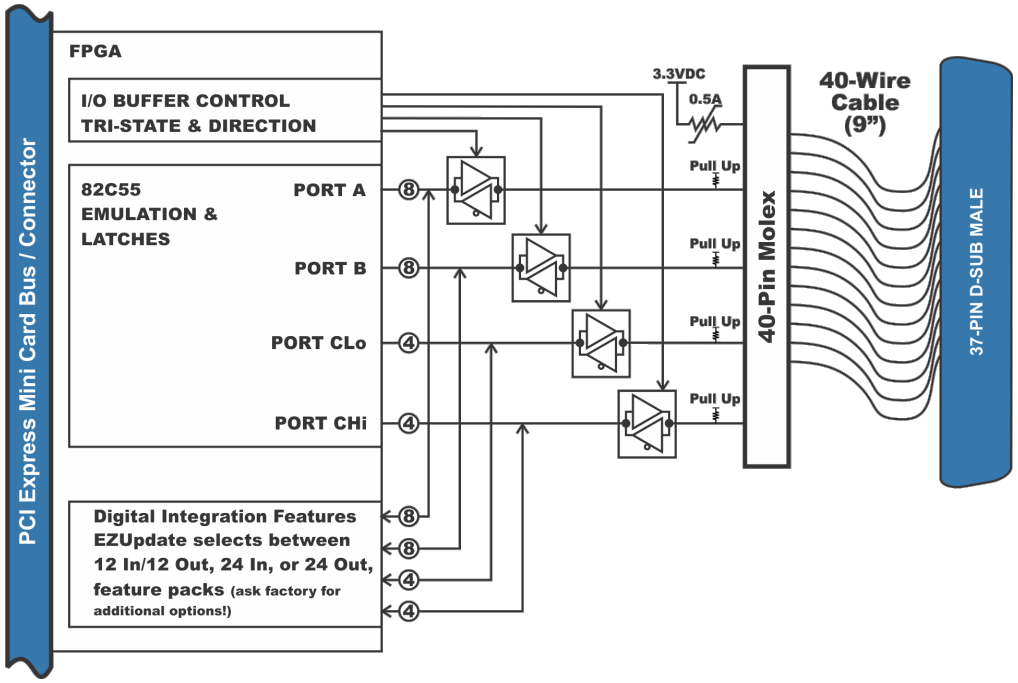

includes the family of Windows Operating Systems including IoT. ACCES is also now offering a VxWorks driver/library for the ultimate real-time process monitoring and control solution.

PC Interface

2280/2260 M.2 Card	2280 with break-away to be 2260

Digital Input / Output Interface

Digital Bits		24
Compatibility		8255 Mode 0
Performance		1 µs per 32-bit transaction max ~3.5µs in Windows
Digital Inputs	Logic High Logic Low	2.0V to VCCIO (3.3VDC, 5VDC tolerant) 0V to 0.8V
Digital Outputs (Standard Version)	Logic High Logic Low Power Output	2.0V (min) 24mA source 0.55V (max) 24mA sink +3.3 VDC via 0.5A polyfuse (resetting)
CMOS w/user VCCIO	1.65V to 5.5V	At DB37M, via polyfuse
Digital Outputs (-TTL Option)	Logic High Logic Low	3.8V (min) 32mA UVCCIO = 4.5V 0.55V (max) 32mA UVCCIO = 4.5V
Debounce Feature	-24X: all bits -24A: Bits 0-7 and 16-23 only	Enabled per-bit Global filter configuration between ms and µs scale filtering
Pulse Measurement	-24X: all bits -24A: Bits 0-7 and 16-23 only	Measured using an 8ns, 16-bit clock. Narrowest pulse 8ns, longest 524.28ms
Frequency Measurement	-24X: all bits -24A: Bits 0-7 and 16-23 only	Measured using an 8ns, 32-bit clock. Fastest frequency 62.5MHz
Quadrature Counter	Bits 20 and 21 Opt. Index bit 22	32-bit 2's complement counter at up to 62.5MHz, X1 mode only
Motor Control	Bits 16 and 17	Quadrature output forwards or backwards up to 2^31 steps at speeds between 62.5MHz and 119.2Hz
Event Counter	-24X: all bits -24A: Bits 0-7 and 16-23 only	Count up to 255 enabled events with 8-bit counter threshold IRQ per bit.
Pulse Generation	-24X: all bits -24A: Bits 8-15 only	Generate a high or low pulse using 8ns resolution, 16ns to 524.280ms duration
Pulse Train Generation	-24X: all bits -24A: Bits 8-15 only	Generate between 2 and 255 pulses with 8ns to 524.280ms between them
PWM Generation	-24X: all bits -24A: Bits 8-15 only	Specify high and low side pulse durations with 8ns resolution.

Environmental

Temperature	Operating	0° 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 @ 330mA (typical)

Physical

Weight		5.8 grams (+ 22.2g for the cable)
Size	Length	60mm/80mm
	Width	22mm
I/O connector	On-card mating	Molex 501190-4017 40-pin latching
	On cable mating	Molex 501189-4010 Male, D-Sub Miniature, 37-pin Female, D-Sub Miniature, 37-pin

Ordering Guide

M.2-DIO-24A	24 Digital I/O w/Digital Integration Features mPCIe Card
M.2-DIO-24X	24 Digital I/O w/Digital ∫ Features on all bits mPCIe card

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

Add -TTL for flexible signal levels w/user supplied VCCIO (+1.65 to +5V)

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MADE IN THE USA

11/05/20