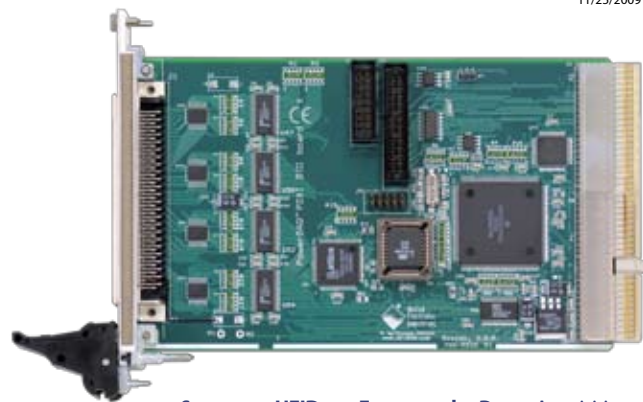


# PowerDAQ PDXI-DIO

## cPCI/PXI Digital I/O Boards

- 64 lines (5V/TTL) of I/O in 16-bit ports
- Generate interrupts on any line
- Four separate high-speed IRQ lines (100 ns)
- Two Enhanced Synchronous Serial Interface (ESSI) ports for high-speed devices such as codecs
- High-speed pattern generation and digital streaming (2 MS/s upstream/downstream to and from disk)
- Custom logic chip replaces obsolete 8255s and equivalents
- User-defined power-up state in 16-bit groups (High, Low, Tri-stated)
- Onboard 16-bit FIFO: 2k samples
- Ideal for solid-state relays
- Optional 192 kB on-board SDRAM memory
- Three 24-bit counter/timers
- Port scan list
- High-speed events counts streaming (2 Mwords/s)
- Start/stop external trigger line



Supports **UEIDaq Framework** Data Acquisition Software Library for Windows. Linux and QNX drivers available. Visit our website for more details.

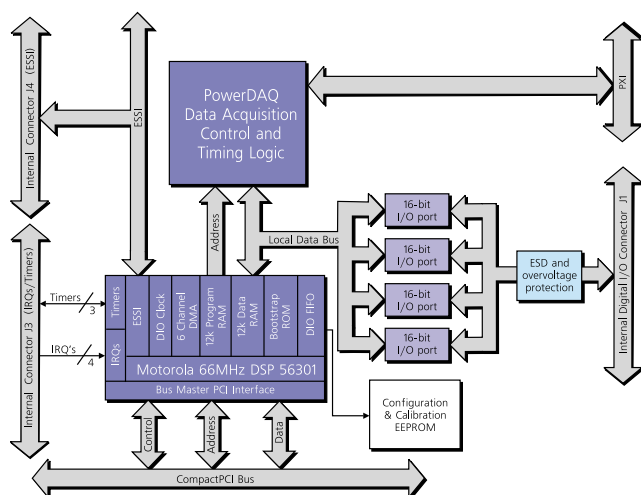
## General Description:

For applications that involve a high number of digital I/O lines, UEI offers three models in the PDXI-DIO family with 64 lines. Instead of following the industry trend of implementing discrete I/O with cumbersome and limiting 8255-type devices, we work with 16-bit line drivers under control of a DSP and custom logic.

Besides digital I/O, the board features three 24-bit counter/timers as well as two high-speed ESSI (Enhanced Synchronous Serial Interface) ports. The onboard DSP and optimized cPCI-bus interface also allow the card to optionally stream digital data to or from disk at rates as high as 2 Mbytes/s and count events up to 16.5 MHz

Distribution panels make all the board's I/O capabilities available for field connection. Further, an optional accessory (PDXI-DIO-CONN64-4) distributes 64 of the digital I/O points into four sets of 16 lines through industry-standard 50-pin IDC connectors. They, in turn, attach directly to relay panels available from UEI and many other sources.

## Block Diagram:



## Technical Specifications:

DC Electrical Characteristics Over Operating Range		
Input High Level	Guaranteed logic High level	2.0V min
Input Low Level	Guaranteed logic Low level	0.8V max
Input High Current	$V_I = 5V$	$\pm 1 \mu A$ max
Input Low Current	$V_I = Gnd$	$\pm 1 \mu A$ max
3-State Output Current	$V_O = 2.7V$	$\pm 1 \mu A$ max
3-State Output Current	$V_O = 0.5V$	$\pm 1 \mu A$ max
Short-Circuit Current	$V_O = Gnd$ (momentary)	-80 mA min -140 mA typ -250 mA max
Input Hysteresis		100 mV typ

Output Drive Characteristics		
Output Drive Current	$V_O = 2.5 V$	-32 mA per pin -180 mA per port
Output High Voltage	$I_{OH} = -3 mA$	3.5V typ, 4.8V max
Output High Voltage	$I_{OH} = -15 mA$	3.5V typ, 4.7V max
Output High Voltage	$I_{OH} = -32 mA$	2.4V min, 3.0V typ
Output High Voltage	$I_{OL} = 64 mA$	0.2V typ, 0.55V max
I/O Power Off Leakage	$V_{IO} \leq 4.5V$	$\pm 1 \mu A$ max

Counter /Timer	
Number of Channels	3
Resolution	24 bits
Maximum Frequency	16.5M S/s for external clock and 33M S/s for internal DSP clock
Minimum Frequency	0.0000002 S/s for internal clock, no low limit for external clock
Minimum Pulse Width	20 ns
Output High Level	2.0V min @ -4 mA
Output Low Level	0.5V max @ 4 mA
Input High range	from 11V to level of input supply voltage
Protection	7 kV ESD, $\pm 30V$ overshoot/undershoot
Input Low Voltage	0.0-0.8V
Input High Voltage	2.0-5.0V

ESSI Characteristics	
The Motorola 56301 DSP contains two fast Enhanced Synchronous Serial Interfaces. The PowerDAQ DIO board allows access to both. Each ESSI port contains three transmitters and one receiver and has a maximum operational speed of 15M bits/sec.	

## Pinout Diagram:

DIO1-1 49- DIO0  
 DGND-2 50- DGND  
 DIO3-3 51- DIO2  
 DGND-4 52- DGND  
 DIO5-5 53- DIO4  
 DGND-6 54- DGND  
 DIO7-7 55- DIO6  
 DGND-8 56- DGND  
 DIO9-9 57- DIO8  
 DGND-10 58- DGND  
 DIO11-11 59- DIO10  
 DGND-12 60- DGND  
 DIO13-13 61- DIO12  
 DGND-14 62- DGND  
 DIO15-15 63- DIO14  
 DGND-16 64- DGND  
 DIO17-17 65- DIO16  
 DIO19-18 66- DIO18  
 DIO21-19 67- DIO20  
 DIO23-20 68- DIO22  
 DGND-21 69- DGND  
 DIO25-22 70- DIO24  
 DIO27-23 71- DIO26  
 DIO29-24 72- DIO28  
 DIO31-25 73- DIO30  
 DIO33-26 74- DGND  
 DGND-27 75- DIO32  
 DIO35-28 76- DIO34  
 DIO37-29 77- DIO36  
 DIO39-30 78- DIO38  
 DGND-31 79- DGND  
 DIO41-32 80- DIO40  
 DIO43-33 81- DIO42  
 DIO45-34 82- DIO44  
 DIO47-35 83- DIO46  
 DGND-36 84- DGND  
 DIO49-37 85- DIO48  
 DIO51-38 86- DIO50  
 DGND-39 87- DGND  
 DIO53-40 88- DIO52  
 DIO55-41 89- DIO54  
 DIO57-42 90- DIO56  
 DIO59-43 91- DIO58  
 DIO61-44 92- DIO60  
 DIO63-45 93- DIO62  
 +5V-46 94- +5V  
 DGND-47 95- DGND  
 LINO-48 96- PROPO

**PowerDAQ PDXI-DIO  
Digital I/O Connector (J1)**

STD1-1 2- DGND  
 SRD1-3 4- DGND  
 SCK1-5 6- DGND  
 SCIO-7 8- DGND  
 SC11-9 10- DGND  
 SC12-11 12- DGND  
 DGND-13 14- DGND  
 STD0-15 16- DGND  
 SRD0-17 18- DGND  
 SCK0-19 20- DGND  
 SC00-21 22- DGND  
 SC01-23 24- DGND  
 SC02-25 26- DGND

**PowerDAQ PDXI-DIO  
ESSI Male Connector (J4)**

CTM0-1 2- DGND  
 CTM1-3 4- DGND  
 CTM2-5 6- DGND  
 IRQ\_A-7 8- DGND  
 IRQ\_B-9 10- DGND  
 IRQ\_C-11 12- DGND  
 IRQ\_D-13 14- DGND  
 N/C-15 16- N/C

**PowerDAQ PDXI-DIO  
Counter/Timers/IRQ Lines  
Male Connector (J3)**

## Connection Options:

Part Number	Description
PDXI-DIO-64	64 digital I/O channels, 3 counter/timers, 2 ESSI ports, 4 high-speed IRQ lines (100 ns)
PDXI-DIO-64ST	64 digital I/O channels, high-speed pattern generation and digital streaming
PDXI-DIO-64CT	64 digital I/O channels, high-speed event counts streaming (2 Mwords/s)