➤ 104-DIO8
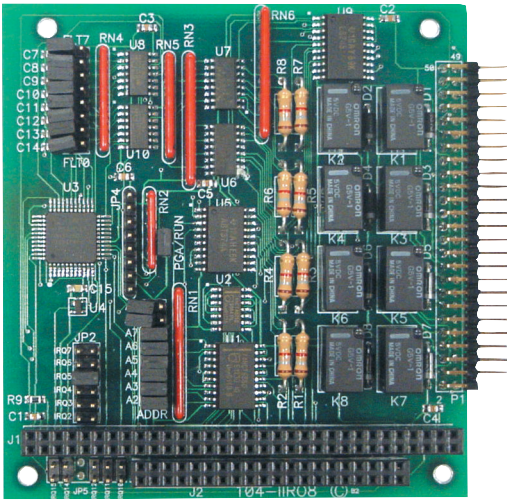
➤ PC/104 eight isolated and TTL inputs, eight electro-mechanical relay outputs digital card

➤ Rugged embedded monitoring and control

The 104-DIO8 is a PC/104 solution for digital control where on board relays are required and inputs must be isolated such as in test equipment, instrumentation and process control. The electro-mechanical relays are preferred in applications where no leakage is allowed and larger current is required than can be provided by reed relays. Standard default input range is 3 to 28VDC or AC and output relays can carry 1A @ 24VDC. The 104-DIO8 additionally has available eight TTL inputs for reading dry contact closures or any TTL compatible outputs from another device. The 104-DIO8, unlike our ISA DIO8-P and PCI-DIO8, offers eight Form C relays in addition to the eight additional TTL inputs because its I/O interfaces through a 50-pin IDC connector instead of a DB37. A standard 50-pin ribbon

header cable such as the CAB50A-3 or CAB50A-6 can be used with either the UTB or STB50 50-pin screw termination boards.

The 104-DIO8 is one of the few onboard relay and isolated input PC/104 boards that has the change-of-state interrupt feature that allows the PC/104 CPU to be notified when data has changed on the input ports which greatly frees up system resources by eliminating the need for constant polling of inputs. This can be critical in embedded applications where lower speed processors are used to reach higher temperatures or to maintain lower power use.

The isolated inputs can be driven by either AC or DC and are not polarity sensitive. Input signals are rectified by a diode bridge and

➤ **Eight electro-mechanical relay outputs**

➤ **Eight optically isolated AC or DC inputs**

➤ **Eight TTL digital inputs**

➤ **50-pin IDC ribbon cable connection**

➤ **Standard PC/104 compatibility**

➤ **Change-of-state interrupt on isolated inputs**

➤ **DOS, Linux®, Windows®98/2000/NT full I/O support**

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connected across an LED diode of an opto-isolator. A 1.8k ohm 0.5W resistor in series provides current limiting. Standard 12/24AC control transmitter outputs can be accepted as well as DC voltages. Although the standard input voltage range is 3 to 28V (rms), the input voltage range can be extended by connecting external resistors in series. Each input circuit contains a software switchable slow/fast filter that has a 5ms time constant. The filter must be selected for AC inputs in order to eliminate response to zero crossings. The filter is also valuable for use with slow DC input signals in a noisy environment. The filter may be switched out for DC inputs in order to obtain faster response. Filters are individually switched on or off by jumpers.

The electro-mechanical relay outputs are comprised of one group of eight Form C SPDT outputs. The relays are all de-energized at power-on. Data to the relays is latched.

104-DIO8

Pin #	Name	Function
1	OUT7(C)	Bit 7 relay common
2	OUT6(C)	Bit 6 relay common
3	OUT7(NC)	Bit 7 relay, normally-closed contact
4	OUT6(NC)	Bit 6 relay , normally-closed contact
5	OUT7(NO)	Bit 7 relay, normally-open contact
6	OUT6(NO)	Bit 6 relay, normally-open contact
7	OUT5(C)	Bit 5 relay common
8	OUT4(C)	Bit 4 relay common
9	OUT5(NC)	Bit 5 relay, normally-closed contact
10	OUT4(NC)	Bit 4 relay, normally-closed contact
11	OUT5(NO)	Bit 5 relay, normally-open contact
12	OUT4(NO)	Bit 4 relay, normally-open contact
13	OUT3(C)	Bit 3 relay common
14	OUT2(C)	Bit 2 relay common
15	OUT3(NC)	Bit 3 relay, normally-closed contact
16	OUT2(NC)	Bit 2 relay, normally-closed contact
17	OUT3(NO)	Bit 3 relay, normally-open contact
18	OUT2(NO)	Bit 2 relay, normally-open contact
19	OUT1(C)	Bit 1 relay common
20	OUT0(C)	Bit 0 relay common
21	OUT1(NC)	Bit 1 relay, normally-closed contact
22	OUT0(NC)	Bit 0 relay, normally-closed contact
23	OUT1(NO)	Bit 1 relay, normally-open contact
24	OUT0(NO)	Bit 0 relay, normally-open contact
25	IIN7 A	Insulated input 7 A

Pin #	Name	Function
26	IIN7 B	Insulated input 7 B
27	IIN6 A	Insulated input 6 A
28	IIN6 B	Insulated input 6 B
29	IIN5 A	Insulated input 5 A
30	IIN5 B	Insulated input 5 B
31	IIN4 A	Insulated input 4 A
32	IIN4 B	Insulated input 4 B
33	IIN3 A	Insulated input 3 A
34	IIN3 B	Insulated input 3 B
35	IIN2 A	Insulated input 2 A
36	IIN2 B	Insulated input 2 B
37	IIN1 A	Insulated input 1 A
38	IIN1 B	Insulated input 1 B
39	IIN0 A	Insulated input 0 A
40	IIN0 B	Insulated input 0 B
41	DIN 0	Digital input bit 0
42	DIN 1	Digital input bit 1
43	DIN 2	Digital input bit 2
44	DIN 3	Digital input bit 3
45	DIN 4	Digital input bit 4
46	DIN 5	Digital input bit 5
47	DIN 6	Digital input bit 6
48	DIN 7	Digital input bit 7
49	GND	Digital ground
50	GND	Digital ground

104-DIO8 - Technical Specifications

Bus
• PC/104
Channels
• Eight isolated inputs
• Eight TTL inputs
• Eight relay outputs

Isolated Inputs
Input Type
• Eight non-polarized, optically-isolated from each other and from the computer (not TTL/CMOS compatible)
Input Range
• 3 to 28VAC/VDC
Input Isolation
• 60V channel-to-ground or channel-to-channel onboard
• Optical isolators rated at 500V
Input Frequency Response
• 40 to 10,000Hz
Input Resistance
• 1.8k ohms in series with opto coupler diode
Input Response Time
• 4.7ms with filter, 10ms without filter

Digital Inputs
Input Type
• Eight TTL/CMOS compatible
Input Range
• 0 to 5VDC only, 10k pull up to 5V

Output Relays
Output Relay Contact Rating
• 1A @ 24VDC (60VDC max.)
• 0.5A @ 125VAC carry current
• Single crossbar, Ag with Au clad

Contact Arrangements
• All channels: SPDT Form C
Contact Resistance
• Initial, 100milli-ohms (max.)
Contact Life
Mechanical: 5million operations (min.)
Connectors
• One 50-pin header type on side of board
I/O Addressing
• Jumpered base address, occupies four consecutive addresses
• Between 100-3FF (except 1F0 through 1F8)
Interrupts
• One interrupt per card by jumper if required (IRQ 2-7, 10-12,14-15)
• When enabled by software, interrupts are generated when any input changes state (High to Low or Low to High, and from sign signal with AC inputs)

Power Requirement
• +5VAC @ 400mA (all relays ON)

Environmental
Operating Temperature
• -30 ° to 70 °C (-22 ° to 158 °F)
Humidity
• 0 to 90% RHNC (max.)
MTBF
• >150,000hrs (calculated)
Weight
• 4oz (113g)

Agency Approvals
• UL, CSA

OS Support
• DOS, Linux®, Windows®98/2000/NT full I/O support

Support
• Superior pre- and post sales technical support
• 2-year limited warranty

Ordering Guide
104-DIO8
• Board, manual & software CDs

Accessories
STB50
• 50-pin IDC screw termination board
2TK2D-6
• 6-inch section of SNAPTRAK (for mounting STB50)
TKAD
• Din rail mounting clips for SNAPTRAK (two required)
UTB-K
• Universal Termination Board kit with UTB screw termination board and UTB-B metal enclosure
CAB50A-3
• 50-pin header ribbon cable both ends, 3-foot length
CAB50A-6
• 50-pin header ribbon cable both ends, 6-foot length

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104-DIO8.1_11/2002