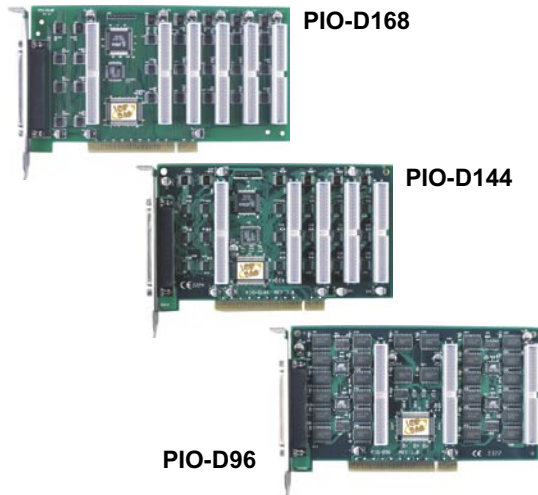


# PIO-D168/D144/D96

PCI bus 168/144/96-bit OPTO-22 compatible DIO board



### Features

- 32-bit +5V PCI Bus, Plug & Play
- 168/144/96-channel digital TTL/DTL I/O
- All I/O lines buffered on the board
- Emulate 7/6/4 industry standard 8255 PPI mode 0
- Direct interface with OPTO-22 compatible I/O modules
- High output driving capability
- Programmable direct-trigger interrupt source
- DIO response time is about 0.77 us (1.3 MHz max.)

### Functional Description

PIO-D168/D144/D96 are high density parallel digital I/O board equipped with 168/144/96-channel bi-direction I/O. The header connectors are fully compatible with industry OPTO-22 standard. The PIO-D168/D144/D96 emulate mode 0 of the industry standard 8255 programmable peripheral interface (PPI) chips. Each PPI offers three 8-bit ports, Port A, Port B and Port C. All groups are configured as inputs upon power-up or reset.

The flat cable can be connected to ADP-37/PCI or ADP-50/PCI adapter. The adapter can be fixed on the chassis. Refer to the above figure. It can be installed in a 5 V PCI bus and can support truly "Plug & Play."

### Applications

- Factory Automation
- Laboratory Automation
- Communication Switching
- Industrial Automation

### Specifications

- All inputs & outputs are TTL compatible
- Input Logic high voltage: 2.4V min
- Input Logic low voltage: 0.8V max
- Output sink current: 64 mA max
- Output source current: 32 mA max
- Programmable Interrupt source:
  - P2C0, P2C1, P2C2, P2C3 (PIO-D168, PIO-D144)
  - P2C0, P5C0, P8C0, P11C0 (PIO-D96)

### General Specifications

- I/O connector: one 37-pin D-Sub female
  - six 50-pin ribbon male (PIO-D168)
  - five 50-pin ribbon male (PIO-D144)
  - three 50-pin ribbon male (PIO-D96)
- Power requirements:

| Device | PIO-D168 | PIO-D144 | PIO-D96 |
|--------|----------|----------|---------|
| +5V    | 1300 mA  | 1100 mA  | 600 mA  |

- Operating temperature: 0 ~ 60°C
- Operating humidity: 0 ~ 90% non-condensing
- Storage temperature: -20 ~ 80°C
- Dimensions: 200 mm x 105 mm (PIO-D168)  
180 mm x 105 mm (PIO-D144/D96)

## PCI Digital I/O Board

# PIO-D48

PCI bus 48-bit OPTO-22 compatible DIO board



### Features

- 32-bit +5V PCI Bus, Plug & Play
- 48-channel digital TTL/DTL I/O
- All I/O lines buffered on the board
- Emulate 2 industry standard 8255 PPI mode 0
- Direct interface with OPTO-22 compatible I/O modules
- High output driving capability
- Programmable direct-trigger interrupt source
- On-board 8254 timer/counter chip
- Interrupt source: timer, event, direct trigger
- Pull-up or pull-down resistors on I/O lines
- DIO response time is about 0.77 us (1.3 MHz max.)

### Functional Description

The PIO-D48 provides 48 TTL digital I/O lines. The PIO-D48 consists of two 24-bit bi-direction ports. Each 24-bit port supports three of 8-bit groups (A, B, C) and the port C can be divided into 2 nibble\_wide (4-bit) ports. Each 8-bit group can be configured to function as either inputs or latched outputs. All groups are configured as inputs upon power-up or reset. Outputs of the I/O buffers are pulled up through 10K resistors to +5VDC. Outputs can be changed to pull-down by jumper selection on the board. This pull-up / pull-down mechanism assures that there are no erroneous outputs at power-up until the board is initialized by application software.

The PIO-D48 has one D-sub connector and one 50-pin flat-cable header. The header can be connected to a 50-pin flat-cable. The flat-cable can be connected to ADP-37 / PCI or ADP-50 / PCI adapters. The adapter can be fixed on the chassis. It can be installed in a 5 V PCI bus and can support truly "Plug & Play".

### Applications

- Factory Automation
- Laboratory Automation
- Communication Switching
- Industrial Automation

### Specifications

- All inputs & outputs are TTL compatible
- Input logic high voltage: 2.4V min
- Input logic low voltage: 0.8V max
- Output sink current: 64 mA max
- Output source current: 32 mA max
- Programmable interrupt source: P2C3, P2C7, P5C3, P5C7 (PIO-D48)

### General Specifications

- I/O connector: one 37-pin D-Sub female  
one 50-pin ribbon male
- Power requirements: +5V / 500 mA
- Operating temperature: 0 ~ 60°C
- Operating humidity: 0 ~ 90% non-condensing
- Storage temperature: -20 ~ 80°C
- Dimensions: 156 mm x 105 mm

# PIO-D168/D144/D96/D48

PCI bus 168/144/96/48-bit OPTO-22 compatible DIO board

## Pin Assignment

**CN1**

|      |    |   |    |      |
|------|----|---|----|------|
| PA_0 | 37 | ○ | 19 | GND  |
| PA_1 | 36 | ○ | 18 | Vcc  |
| PA_2 | 35 | ○ | 17 | GND  |
| PA_3 | 34 | ○ | 16 | N.C. |
| PA_4 | 33 | ○ | 15 | GND  |
| PA_5 | 32 | ○ | 14 | N.C. |
| PA_6 | 31 | ○ | 13 | GND  |
| PA_7 | 30 | ○ | 12 | N.C. |
| PC_0 | 29 | ○ | 11 | GND  |
| PC_1 | 28 | ○ | 10 | PB_0 |
| PC_2 | 27 | ○ | 9  | PB_1 |
| PC_3 | 26 | ○ | 8  | PB_2 |
| PC_4 | 25 | ○ | 7  | PB_3 |
| PC_5 | 24 | ○ | 6  | PB_4 |
| PC_6 | 23 | ○ | 5  | PB_5 |
| PC_7 | 22 | ○ | 4  | PB_6 |
| GND  | 21 | ○ | 3  | PB_7 |
| Vcc  | 20 | ○ | 2  | N.C. |
|      |    | ○ | 1  | N.C. |

## CN2, CN3, CN4, CN5, CN6 & CN7

|     |    |   |    |      |
|-----|----|---|----|------|
| GND | 50 | ○ | 49 | Vcc  |
| GND | 48 | ○ | 47 | PA_0 |
| GND | 46 | ○ | 45 | PA_1 |
| GND | 44 | ○ | 43 | PA_2 |
| GND | 42 | ○ | 41 | PA_3 |
| GND | 40 | ○ | 39 | PA_4 |
| GND | 38 | ○ | 37 | PA_5 |
| GND | 36 | ○ | 35 | PA_6 |
| GND | 34 | ○ | 33 | PA_7 |
| GND | 32 | ○ | 31 | PB_0 |
| GND | 30 | ○ | 29 | PB_1 |
| GND | 28 | ○ | 27 | PB_2 |
| GND | 26 | ○ | 25 | PB_3 |
| GND | 24 | ○ | 23 | PB_4 |
| GND | 22 | ○ | 21 | PB_5 |
| GND | 20 | ○ | 19 | PB_6 |
| GND | 18 | ○ | 17 | PB_7 |
| GND | 16 | ○ | 15 | PC_0 |
| GND | 14 | ○ | 13 | PC_1 |
| GND | 12 | ○ | 11 | PC_2 |
| GND | 10 | ○ | 9  | PC_3 |
| GND | 8  | ○ | 7  | PC_4 |
| GND | 6  | ○ | 5  | PC_5 |
| GND | 4  | ○ | 3  | PC_6 |
| GND | 2  | ○ | 1  | PC_7 |

## Ordering Information

### Standard

- PIO-D168:** PCI bus 168-bit OPTO-22 DIO board
- PIO-D144:** PCI bus 144-bit OPTO-22 DIO board
- PIO-D96:** PCI bus 96-bit OPTO-22 DIO board
- PIO-D48:** PCI bus 48-bit OPTO-22 DIO board

### Optional

- DB-24PD:** 24-channel isolated D/I board
- DB-24RD:** 24-channel relay board
- DB-24PRD:** 24-channel power relay board
- DB-16P8R:** 16-channel isolated D/I and 8-channel relay output board
- DB-24POR:** 24-channel PhotoMos relay output board
- DB-24SSR:** 24-channel solid state relay output board
- DB-24C:** 24-channel open-collector output board
- DB-24OD:** 24-channel open-drain output board
- DN-37:** DIN-rail mounting terminal board
- DN-50:** DIN-rail mounting terminal board
- ADP-37/PCI:** 50-pin OPTO-22 ports to DB-37 adapter
- ADP-50/PCI:** 50-pin extender