Industrial Automation Products

Digital Input/ Output

**DIGITAL I/O**

Interface boards that provide computers with digital signal I/O functions.

They monitor the status (ON/OFF) of relays, operating switches and measurement devices as well as controlling (ON/OFF) lamps, 7-segment display units and relays.

These boards can also be used as an interface for conducting digital communication with controllers such as PLC or microcomputers.

## Digital Input/ Output

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<th>Description</th>
<th>I/O Points</th>
<th>Supported softwares</th>
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<td>Windows Driver</td>
</tr>
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<td>Application</td>
<td>Digital output</td>
<td>Linux Driver</td>
</tr>
<tr>
<td>Application</td>
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</tr>
<tr>
<td>Application</td>
<td>Capability for</td>
<td>API-TOOL Drivers for Windows are provided. The license-free driver software (both development and runtime) provides commands to interface boards or cards using Windows standard Win32API function (DLL).</td>
</tr>
<tr>
<td>Application</td>
<td>Monitoring status of contact points and switches</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Inputs ON/OFF signals</td>
<td></td>
</tr>
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<td>Application</td>
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<td></td>
</tr>
<tr>
<td>Application</td>
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<td></td>
</tr>
<tr>
<td>Application</td>
<td>Connecting with measurement devices / controllers</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Controls BCD / binary data</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Connecting Relays / lamps</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Outputs ON/OFF signals</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Motor control</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Controls BCD / binary data</td>
<td></td>
</tr>
</tbody>
</table>

### Bus Specifications

<table>
<thead>
<tr>
<th>Bus</th>
<th>Description</th>
<th>Input/ Output</th>
<th>Board Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Express</td>
<td>Product is PCI Express standard compliant and can be used in the computer equipped with PCI Express bus expansion slot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCI</td>
<td>Product is PCI standard compliant and can be used in the computer equipped with PCI bus expansion slot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB 2.0</td>
<td>Product is USB standard compliant and can be used in the computer equipped with USB2.0/1.1 ports. Supports USB2.0 high-speed mode(480Mbps).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Card Bus</td>
<td>Product supports Cardbus that is a 32-bit PC card standard.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCMCIA</td>
<td>Product supports 16-bit PC card standard.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Supported Connectors

- 100-pin 8.8mm Pitch
- 68-pin 8.8mm Pitch
- 37-pin D-SUB
- 96-pin Half Pitch
- 50-pin Mini-Ribbon

Indicates the number of pins and shapes of connectors used for external connection. The supported cables and accessories will vary depending on these specifications.

CONTEC provides a wide variety of cables and accessories to suit your needs.

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>Connector Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cables with connectors on both ends</td>
<td>Q-07</td>
</tr>
<tr>
<td>Accessories (Terminal block, etc.)</td>
<td></td>
</tr>
<tr>
<td>Cables with a connector on one end</td>
<td>Q-11</td>
</tr>
<tr>
<td>Connector set</td>
<td></td>
</tr>
</tbody>
</table>

### I/O Point Descriptions

- **Isolated**: I/O interface and internal logical circuits are insulated by Opto-couplers and relay contacts in order to prevent electrical interference with the PC. Requires additional power to drive external circuits.
- **High Voltage**: I/O interface supports high-voltage circuits (those exceeding 24VDC). Some have an output interface that supports AC.
- **Non-isolated**: I/O interface and internal logical circuits are not insulated. These respond at a higher speed than insulated devices.
- **Hi-Speed Opto-coupler**
- **Power On board**: A power source is integrated on the device in order to drive input circuit Opto-couplers and I/O circuits. These are useful when additional power sources aren't available.
- **Disables level (ON/OFF) changes that take place faster than the set value and prevents incorrect input due to noise and chattering**
- **Negative Common**: I/O interface supports a current sourcing circuit. It is called "negative common" because the common polarity is reverse to that of a current sinking circuit.
- **Digital Filter**: Output interface is equipped with a Zener diode that prevents damage and / or malfunction due to a surge in voltage and incoming current.
- **Surge Protection**: Output interface is equipped with both a Zener diode which prevents damage and / or malfunction due to a surge in voltage and incoming current and a polycarbonate switch which guards against damage due to any current overages.
Product Lineup

You can choose from a variety of models according to your desired bus, I/O points and I/O type.

<table>
<thead>
<tr>
<th>Page</th>
<th>12-24VDC</th>
<th>5VDC-TTL</th>
<th>3.3VDC-LVTTL</th>
<th>5VDC-TTL</th>
<th>Printer Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI-nnnL-PE</td>
<td>J-04</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>DO-mmmL-PE</td>
<td>J-05</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>DIO-32F-PE</td>
<td>J-07</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>DIO-16TB-PE</td>
<td>J-08</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>DIO-16TB-LPE</td>
<td>J-09</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PI-32B(PCl)H</td>
<td>J-10</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PO-32B(PCl)H</td>
<td>J-11</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>P10-32F(PCl)H</td>
<td>J-12</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PI0-32DM(PCl)</td>
<td>J-13</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PI0-1616Y(PCl)</td>
<td>J-14</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PI0-1616Y(PCl)</td>
<td>J-15</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PI0-1616Y(PCl)</td>
<td>J-16</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
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<tr>
<td>PI0-1616Y(PCl)</td>
<td>J-17</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
</tr>
<tr>
<td>PI0-1616Y(PCl)</td>
<td>J-18</td>
<td>12-24VDC</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
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Global Portal: www.contec.com
### Digital I/O

#### Product Lineup

You can choose from a variety of models according to your desired bus, I/O points and I/O type.

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<tr>
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<th>USB</th>
<th>Compact PCI</th>
<th>ISA</th>
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<td>12–24VDC</td>
<td>12–24VDC</td>
<td>12–48VDC</td>
<td>12–24VDC</td>
<td>12–24VDC</td>
</tr>
<tr>
<td>3.3VDC-LVTTL</td>
<td>5VDC-TTL</td>
<td>3.3VDC-LVTTL</td>
<td>Opto-coupler isolation</td>
<td>Opto-coupler isolation</td>
</tr>
<tr>
<td>Non-isolated</td>
<td>Non-isolated</td>
<td>Non-isolated</td>
<td>Bi-direct</td>
<td>Digital Input Digital Output</td>
</tr>
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</table>

<table>
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<th>Page</th>
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<tbody>
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<td>Serial Communication</td>
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<tr>
<td>GPIB Communication</td>
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<tr>
<td>Remote I/O</td>
<td>J-24</td>
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<tr>
<td>Expansion Unit / Bus Adapter</td>
<td>J-24</td>
</tr>
<tr>
<td>Software</td>
<td>J-23</td>
</tr>
<tr>
<td>Accessories &amp; Cables</td>
<td>J-22</td>
</tr>
<tr>
<td>Distributed Motor &amp; Control Network</td>
<td>J-25</td>
</tr>
<tr>
<td>Multi-Programmable Display</td>
<td>J-25</td>
</tr>
<tr>
<td>Wireless LAN</td>
<td>J-25</td>
</tr>
<tr>
<td>Remote Monitoring Solution</td>
<td>J-26</td>
</tr>
<tr>
<td>Service &amp; Products</td>
<td>J-26</td>
</tr>
</tbody>
</table>

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**Opto-coupler**: Optocouplers provide galvanic isolation between the input and output signal.

**Non-isolated**: Direct connection between input and output signal without isolation.

**Bi-direct**: Bi-directional signal transmission, suitable for line drivers.

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Global Portal: [www.contec.com](http://www.contec.com)
**Measurement and Control Products**

**PCI Express**

**Opto-Isolated Digital Input**

**DI-32L-PE**

- **NEW**
- **32 opto-isolated input**
- All input signals can be used as interrupts
- Digital filtering function to prevent input error caused by noise and/or chattering
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PI-32L(PCI)/H

<table>
<thead>
<tr>
<th>Model</th>
<th>DI-32L-PE</th>
<th>DI-64L-PE</th>
<th>DI-128L-PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>32 (1 common every 16 channels)</td>
<td>64 (1 common every 16 channels)</td>
<td>128 (1 common every 16 channels)</td>
</tr>
<tr>
<td>Output channels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input specifications</td>
<td>Type: Opto-Isolated (for sink current output) (Negative logic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermittents</td>
<td>32 interrupt signals combine to one interrupt request signal as INTA</td>
<td>16 interrupt inputs combine to one interrupt request signal as INTA</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>4.7kΩ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output specifications</td>
<td>Rating:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>200μsec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Power</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>50m (depending on wiring environment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O Address</td>
<td>Any 32-byte boundary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Consumption (Max)</td>
<td>3.3VDC 350mA</td>
<td>3.3VDC 600mA</td>
<td></td>
</tr>
<tr>
<td>Bus / Dimensions (mm)</td>
<td>PCI Express Base Specification Rev. 1.0a +1 / 121.69(L) +110.18(W)</td>
<td>PCI Express Base Specification Rev. 1.0a +1 / 169.33(L) +110.18(W)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>37-pin female D-type: DCJL-J375AF-20L6E [AE] or equivalent</td>
<td>96-pin female half-pitch: 100-pin 0.8mm female half-pitch; HORA-PCI-EKULS-0-HO2TAH7 [STEP] or equivalent</td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cables / Connectors</td>
<td>PC37PS, PC37PS, PC37PS, PC37PS, PC37PS, CNS-D37M</td>
<td>PC37PS, PC37PS, PC37PS, PC37PS, PC37PS, CNS-D37M</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

*: Requires use of optional cable PCB37PS or PCB37PS
*: Requires use of optional cable PCB96PS or PCB96PS
*: Requires use of optional cable PCB96PS
*: Requires use of optional cable PCB100WS and 37-pin D-SUB cable
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS

As shown on the side of product’s images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

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**Digital I/O**

**Box-PCs**

**Panel-PCs**

**Flat Panel Displays**

**Silicon Disk Drives**

**Option**

**PCI Express**

**Low Profile PCI**

**PC Card**

**USB**

**Compact PCI**

**ISA**

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**Global Portal**: www.contec.com
Digital I/O

PCI Express

Opto-Isolated Digital Output
DO-32L-PE

- 32 opto-isolated open collector output
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PO-32L(PCI)H

Opto-Isolated Digital Output
DO-64L-PE

- 64 opto-isolated open collector output
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PO-64L(PCI)H

Opto-Isolated Digital Output
DO-128L-PE

- 128 opto-isolated open collector output
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PO-128L(PCI)H

### Model Comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>DO-32L-PE</th>
<th>DO-64L-PE</th>
<th>DO-128L-PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Output channels</td>
<td>32 (1 common every 16 channels)</td>
<td>64 (1 common every 16 channels)</td>
<td>128 (1 common every 16 channels)</td>
</tr>
<tr>
<td>Input specifications</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Output specifications</td>
<td>Opto-Isolated Open Collector (Current sinking type) (Negative logic)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>200µsec</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Internal Power</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>50m (depending on wiring environment)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>I/O Address</td>
<td>Any 32-byte boundary</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Power Consumption (Max.)</td>
<td>3.3VDC 450mA</td>
<td>3.3VDC 350mA</td>
<td>3.3VDC 600mA</td>
</tr>
<tr>
<td>Bus / Dimensions (mm)</td>
<td>PCI Express Base Specification Rev. 1.0a +1 / 121.65(L)x110.18(H)</td>
<td>PCI Express Base Specification Rev. 1.0a +1 / 169.33(L)x110.18(H)</td>
<td>-</td>
</tr>
<tr>
<td>Connector</td>
<td>37-pin female D-type: D1CJ (J570A/20.3/6.E [IAE] or equivalent)</td>
<td>96-pin female half pitch: PCI-E/96/31/10/20 [HITACHINOKI] or equivalent</td>
<td>100-pin 0.8mm female half pitch: +2-HERA-128K/31/10/20/HITACHINOKI or equivalent</td>
</tr>
<tr>
<td>Options</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cables / Connectors</td>
<td>PCB37P, PCB37PS, PCA37P, PCA37PS, C3NS, C3737</td>
<td>PCB96PS, PCQ96PS, PCQ96PS, C96PS, PCB96WS, C9669F</td>
<td>PCB100PS, PCB100/96PS, PC1A100P, PC1B100WS</td>
</tr>
</tbody>
</table>

Note:

1. Requires use of optional cable PCB37P or PCB37PS
2. Requires use of optional cable PCB96PS
3. Requires use of optional cable PCQ96PS
4. Requires use of optional cable PCQ96WS and 37-pin D-SUB cable
5. Requires use of optional cable PCB100/96PS
6. Requires use of optional cable PCB100WS
7. Requires use of optional cable PCB100PS

As shown on the side of product's image, RoHS compliant is a CONTAC original marking for RoHS-compliant products.

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**Digital I/O**

**PCI Express**

**Opto-Isolated Digital I/O**

**DIO-1616L-PE**

- 16 opto-isolated input, 16 opto-isolated open collector output
- All input signals can be used as interrupts
- Digital filtering function to prevent input error caused by noise and/or chattering
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board P10-1616L(PCI)H

**DIO-1616B-PE**

- 16 opto-isolated input, 16 opto-isolated open collector output
- On-board power supply (12VDC 240mA) to drive the input circuit opto coupler
- All input signals can be used as interrupts
- Digital filtering function to prevent input error caused by noise and/or chattering
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board P10-1616B(PCI)H

**DIO-3232L-PE**

- 32 opto-isolated input, 32 opto-isolated open collector output
- On-board power supply (12VDC 240mA) to drive the input circuit opto coupler
- All input signals can be used as interrupts
- Digital filtering function to prevent input error caused by noise and/or chattering
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board P10-3232L(PCI)H

**DIO-3232B-PE**

- 32 opto-isolated input, 32 opto-isolated open collector output
- On-board power supply (12VDC 240mA) to drive the input circuit opto coupler
- All input signals can be used as interrupts
- Digital filtering function to prevent input error caused by noise and/or chattering
- Output transistor has built-in circuit protection (voltage surge, zener diode, polyswitch)
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board P10-3232B(PCI)H

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**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>DIO-1616L-PE</th>
<th>DIO-1616B-PE</th>
<th>DIO-3232L-PE</th>
<th>DIO-3232B-PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Channels</td>
<td>16 (all available for interrupts)</td>
<td>16 (1 common every 16 channels)</td>
<td>32 (all available for interrupts)</td>
<td>32 (1 common every 16 channels)</td>
</tr>
<tr>
<td>Output Channels</td>
<td>16 (1 common)</td>
<td>16 (1 common)</td>
<td>32 (1 common)</td>
<td>32 (1 common)</td>
</tr>
<tr>
<td>Input Specifications</td>
<td>Opto-Isolated (for sink current output)</td>
<td>Opto-Isolated (for sink current output)</td>
<td>12 ~ 24VDC (±10%)</td>
<td>12 ~ 24VDC (±10%)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>Opto-Isolated (for sink current output)</td>
<td>Opto-Isolated (for sink current output)</td>
<td>12 ~ 24VDC (±10%)</td>
<td>12 ~ 24VDC (±10%)</td>
</tr>
<tr>
<td>Interrupts</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>32 interrupt signals combine to one interrupt request signal as INTA</td>
<td>32 interrupt signals combine to one interrupt request signal as INTA</td>
</tr>
<tr>
<td>Resistance</td>
<td>4.7kΩ</td>
<td>4.7kΩ</td>
<td>4.7kΩ</td>
<td>4.7kΩ</td>
</tr>
<tr>
<td>Output Specifications</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>35VDC 100mA (per channel)</td>
<td>35VDC 100mA (per channel)</td>
</tr>
<tr>
<td>Type</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
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<tr>
<td>Rating</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>35VDC 100mA (per channel)</td>
<td>35VDC 100mA (per channel)</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>within 200μsec</td>
<td>within 200μsec</td>
<td>within 200μsec</td>
<td>within 200μsec</td>
</tr>
<tr>
<td>Internal Power</td>
<td>50mW</td>
<td>50mW</td>
<td>50mW</td>
<td>50mW</td>
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<tr>
<td>Wiring Distance</td>
<td>Any 32-byte boundary</td>
<td>Any 32-byte boundary</td>
<td>Any 32-byte boundary</td>
<td>Any 32-byte boundary</td>
</tr>
<tr>
<td>Power Consumption (Max.)</td>
<td>3.3VDC 350mA</td>
<td>3.3VDC 350mA</td>
<td>3.3VDC 400mA</td>
<td>3.3VDC 400mA</td>
</tr>
<tr>
<td>Bus / Dimensions (mm)</td>
<td>PCI Express Base Specification</td>
<td>PCI Express Base Specification</td>
<td>1.0a x 1 / 169.33(L)1标准110.18(H)</td>
<td>1.0a x 1 / 169.33(L)1标准110.18(H)</td>
</tr>
<tr>
<td>Connector</td>
<td>37-pin female D-type: DCC/L3275/320L/H [AE] or equivalent</td>
<td>37-pin female D-type: DCC/L3275/320L/H [AE] or equivalent</td>
<td>37-pin female D-type: DCC/L3275/320L/H [AE] or equivalent</td>
<td>37-pin female D-type: DCC/L3275/320L/H [AE] or equivalent</td>
</tr>
<tr>
<td>Software</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*1: Requires use of optional cable PCB37P or PC37PS
*2: Requires use of optional cable PCB96P or PC96PS
*3: Requires use of optional cable PCB96PS and 37-pin D-SUB cable
*4: Requires use of optional cable PC96PS

---

As shown on the side of product's images, P inev is a CONTTEC original marking for lead-free products.

As shown on the side of product's images, RoHS compliant is a CONTTEC original marking for RoHS-compliant.
## Digital I/O

### PCI Express DIO-3232F-PE
- **Model**: High-speed Opto-Isolated Digital I/O
- **Input Channels**: 32 (1 common every 16 channels)
- **Output Channels**: 32 (1 common every 16 channels)
- **Specifications**:
  - **Input Type**: Opto-Isolated (for sink current output) (Negative logic)
  - **Input Signal Level**: 12 – 24VDC
  - **Input Interupts**: 32 interrupt signals combine to one interrupt request signal as INTA
  - **Input Resistance**: 2.2kΩ
  - **Input Response Time (Max.)**: 5μsec
- **Output Specifications**:
  - **Output Type**: Opto-Isolated Open Collector (Current sinking type) (Negative logic)
  - **Output Level**: 35VDC 50mA (per channel)
  - **Output Level**: 35VDC 100mA (per channel)
  - **Output Response Time (Max.)**: within 200μsec
- **Internal Power**: –
- **Wiring Distance**: 50m (depending on wiring environment)
- **I/O Address**: Any 32-byte boundary
- **Power Consumption (Max.)**: 3.3VDC 500mA
- **Bus / Dimensions (mm)**: PCI Express Base Specification Rev. 1.0a +1 / 169.33(L)×110.18(H)
- **Connector**: 96-pin female half-pitch: PCR-E06LMD-1 [HONDA Tsushin Kogyo] or equivalent

### PCI Express DIO-6464L-PE
- **Model**: Opto-Isolated Digital I/O
- **Input Channels**: 64 (1 common every 16 channels)
- **Output Channels**: 64 (1 common every 16 channels)
- **Specifications**:
  - **Input Type**: Opto-Isolated (for sink current output) (Negative logic)
  - **Input Signal Level**: 12 – 24VDC
  - **Input Interupts**: 16 interrupt signals combine to one interrupt request signal as INTA
  - **Input Resistance**: 4.7kΩ
  - **Input Response Time (Max.)**: within 200μsec
- **Output Specifications**:
  - **Output Type**: Opto-Isolated Open Collector (Current sinking type) (Negative logic)
  - **Output Level**: 35VDC 50mA (per channel)
  - **Output Level**: 35VDC 100mA (per channel)
- **Internal Power**: –
- **Wiring Distance**: 50m (depending on wiring environment)
- **I/O Address**: Any 32-byte boundary
- **Power Consumption (Max.)**: 3.3VDC 600mA
- **Bus / Dimensions (mm)**: PCI Express Base Specification Rev. 1.0a +1 / 169.33(L)×110.18(H)
- **Connector**: 109-pin 0.8mm female half pitch +2 DURA [HONDA Tsushin Kogyo] or equivalent

### Options
- **Accessories**:
  - DTP-3A³, DTP-4A², DTP-64/PC²
  - EPD-37A², EPD-37²
  - EPD-66A², EPD-66²
  - EPD-696², EPD-696
  - EPD-96², EPD-96
  - EPD-696², EPD-696
  - EPD-696², EPD-696
  - EPD-696², EPD-696

- **Cables / Connectors**:
  - PC896P, PC896P, PC896P
  - PC896P, PC896P, PC896P

### Note:
1. Requires use of optional cable PCB896WS
2. Requires use of optional cable PC896P or PC896S
3. Requires use of optional cable PCB1000WS
4. Requires use of optional cable PCB1000P
5. Requires use of optional cable PCB1000P

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### Measurement and Control Products

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**Digital I/O**

- **PCI Express**
- **TTL-level Digital I/O**
  - **DIO-1616T-PE**
  - 16 TTL-level input, 16 open collector outputs
  - All input signals can be used as interrupts
  - Digital filtering function to prevent input error caused by noise and/or chattering
  - Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PCl616T/PCI

- **High-speed Opto-Isolated TTL Level Digital I/O**
  - **DIO-1616TB-PE**
  - 16 opto-isolated TTL-level input, 16 opto-isolated TTL-level output
  - On-board battery (5VDC 600mA) to drive the input circuit photocoupler
  - All input signals can be used as interrupts
  - Digital filtering function to prevent input error caused by noise and/or chattering
  - Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PCl616TB/PCI

- **TTL-level Digital I/O**
  - **DIO-3232T-PE**
  - 32 TTL-level input, 32 open collector output
  - All input signals can be used as interrupts
  - Digital filtering function to prevent input error caused by noise and/or chattering
  - Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board PCl3232T/PCI

- **TTL-level Digital I/O**
  - **DIO-6464T-PE**
  - 64 TTL-level input, 64 open collector output
  - All input signals can be used as interrupts
  - Digital filtering function to prevent input error caused by noise and/or chattering

---

**Model** | **DIO-1616T-PE** | **DIO-1616T-PE** | **DIO-3232T-PE** | **DIO-6464T-PE**
--- | --- | --- | --- | ---
Input channels | 16 | 16 | 32 | 64 (common every 16 channels)
Output channels | 16 | 16 | 32 | 64 (common every 16 channels)
Input specifications Type | TTL-level (Negative logic) | Opto-isolated TTL-level (Negative logic) | TTL-level (Negative logic) | TTL-level (Negative logic)
Signal Level | 5VDC | 5VDC | 5VDC | 5VDC
Interrupts | 16 interrupt signals combine to one interrupt request signal as INTA | All interrupt signals combine to one interrupt request signal as INTA | 32 interrupt signals combine to one interrupt request signal as INTA | 16 interrupt signals combine to one interrupt request signal as INTA
Resistance Pull-up: 10k | 1.1k | Pull-up: 10k | 10k (1 TTL load)
Output specifications Rating | 30VDC 40mA | 5VDC avg. 6.4mA (4 TTL level) per channel | 30VDC 40mA | 30VDC 40mA (per channel)
Response Time (Max.) | 200ns | 1µsec | 200ns | 1.5µsec
Internal Power | 5VDC 600mA | 5VDC 600mA | 3.3VDC 300mA | 3.3VDC 800mA
Wiring Distance | 1.5m | 50m (depending on wiring environment) | 1.5m | 1.5m (depending on wiring environment)
I/O Address | Any 32-byte boundary | Any 32-byte boundary | Any 32-byte boundary | Any 32-byte boundary
Power Consumption (Max) | 3.3VDC 300mA | 3.3VDC 300mA | 3.3VDC 300mA | 3.3VDC 800mA
Bus / Dimensions (mm) | PCI Express Basic Specification Rev. 1.0a +1/121.69(L)+110.18(W) | PCI Express Basic Specification Rev. 1.0a +1/121.69(L)+110.18(W) | PCI Express Basic Specification Rev. 1.0a +1/121.69(L)+110.18(W) | PCI Express Basic Specification Rev. 1.0a +1/121.69(L)+110.18(W)
Connector | 32-pin female D-type: DCCCN-JSTF-221 [JAE] or equivalent | 37-pin female D-type: DCCCN-JSTF-221 [JAE] or equivalent | 96-pin female half-pitch: PICR-56 [Hioki, Tsuchin, Kogas] or equivalent | 100-pin 0.5mm female half-pitch: 2, HDRA, E1M2Y5A2550 [Hioki, Tsuchin, Kogas] or equivalent
Software | - | - | - | -
Options | - | - | - | -
Cables / Connectors | PCA37P-1.5, PCB37P-1.5, PC37PS-0.5P 1.5P, PC37PS-0.5P 1.5P, C8N-D37M | PCA37P, PC537P, PC37PS-0.5P 1.5P, C8N-D37M | PCA37P, PC537P, PC37PS-0.5P 1.5P, C8N-D37M | PCA37P, PC537P, PC37PS-0.5P 1.5P, C8N-D37M
Note: | - | - | - | -
-1: Requires use of optional cable PC616T or PC616T | -2: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable
-3: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable
-4: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable
-5: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable
-6: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable
-7: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable
-8: Requires use of optional cable PC616T-3.5P or PC616T-3.5P and 37-pin D-SUB cable

As shown on the side of product’s images, RoHS compliant is a CONTEC original marking for RoHS-compliant.
**Digital I/O**

**TTL level Digital I/O**

**DIO-1616T-LPE**

- 16 TTL level input, 16 open collector output
- 200ns high-speed response with non-isolated LVTTL level I/O
- All input signals can be used as interrupts, allow/forbid interrupts and select interruption trigger edge in bit unit.
- Digital filtering function to prevent input error caused by noise and/or chattering
- Output ratings can handle up to 35VDC and 40mA per channel
- Low Profile PCI - compliant (includes bracket for use in standard PCI slot)
- Equipped with function equivalent to those of PCI-compliant board P10-16/16T(LPCI)/H
- Connector pin assignment compatible with PIO-16/16T(LPCI)/H

**Bi-directional Digital I/O**

**DIO-48D-LPE**

- 48-point two-way digital I/O (8255 Mode 0-compliant)
- 200ns high-speed response with non-isolated LVTTL level I/O.
- All 48 input signals can be used as interrupts, allow/forbid interrupts and select interruption trigger edge in bit unit.
- Digital filtering function to prevent input error caused by noise and/or chattering.
- Input/output switching can be set via application software
- Low Profile PCI - compliant (includes bracket for use in standard PCI slot)
- Equipped with function equivalent to those of PCI bus-compatible board PIO-48D(PCI), PIO-48D(LPCI)/H and CardBus-compliant PIO-48D(CB)/H
- Connector pin assignment when using cable DIO-68M/96F is compatible with that of PIO-48D(PCI) when using PCB96P-**P series

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**Table: DIO-1616T-LPE**

<table>
<thead>
<tr>
<th>Model</th>
<th>DIO-1616T-LPE</th>
<th>DIO-48D-LPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>16 (all available for interrupts)</td>
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<tr>
<td>Output channels</td>
<td>16</td>
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<tr>
<td>I/O channels</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Type</td>
<td>TTL level input (Negative logic)</td>
<td>48 (all available for interrupts)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>5VDC</td>
<td>LVTTL level (Positive logic)</td>
</tr>
<tr>
<td>Inteupts</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>48 interrupt signals combine to one interrupt request signal as INTA</td>
</tr>
<tr>
<td>Resistance</td>
<td>10k (1 TTL load)</td>
<td>330Ω</td>
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<tr>
<td>Output Type</td>
<td>Open Collector (negative logic)</td>
<td>LVTTL level (positive logic)</td>
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<tr>
<td>Specifications</td>
<td>36VDC/40mA</td>
<td>3.3VDC Ixx=6mA lx÷l=8mA</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>Within 200ns</td>
<td>-</td>
</tr>
</tbody>
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**Table: DIO-48D-LPE**

<table>
<thead>
<tr>
<th>Model</th>
<th>DIO-48D-LPE</th>
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<tbody>
<tr>
<td>Input channels</td>
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</tr>
<tr>
<td>Output channels</td>
<td>-</td>
</tr>
<tr>
<td>I/O channels</td>
<td>-</td>
</tr>
<tr>
<td>Type</td>
<td>TTL level input (Negative logic)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>5VDC</td>
</tr>
<tr>
<td>Inteupts</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
</tr>
<tr>
<td>Resistance</td>
<td>10k (1 TTL load)</td>
</tr>
<tr>
<td>Output Type</td>
<td>Open Collector (negative logic)</td>
</tr>
<tr>
<td>Specifications</td>
<td>36VDC/40mA</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>Within 200ns</td>
</tr>
</tbody>
</table>

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**Note:**

1. Requires use of optional cable PCE50P-0.8P
2. Requires use of optional cable PCE50/37PS-0.5P and PCB37P or PCB37PS
3. Requires use of optional cable DIO-68M/96F
4. Requires use of optional cable PCB-68PS

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As shown on the side of product's images, Pbfree is a CONTEC original marking for lead-free products.
Opto-Isolated Digital Input

PI-32L(PCI)H
- 32 opto-isolated for superb noise resistance (12 to 24VDC)
- Fast response time (within 200μsec) / Power saving design
- All input signals can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software

PI-32B(PCI)H
- On-board power supply (12VDC 240mA) to drive the input circuit opto coupler
- Fast response time (within 200μsecs)
- All input signals can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software

PI-64L(PCI)H
- 64 opto-isolated for superb noise resistance (12 to 24VDC)
- Fast response time (within 200μsecs) / Power saving design
- 32 input signals can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software

PI-128L(PCI)H
- 128 inputs on a PCI short-size board
- Fast response time (within 200μsecs) / Power saving design
- 16 input signals can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software
- Optional Conversion cables (100-pin to 96-pin half pitch) available

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Model | PI-32L(PCI)H | PI-32B(PCI)H | PI-64L(PCI)H | PI-128L(PCI)H
--- | --- | --- | --- | ---
Input channels | 32 | 32 | 64 | 128
Output channels | - | - | - | -
Type | Opto-Isolated | Opto-Isolated | Opto-Isolated | Opto-Isolated
Signal Level | 12-24VDC | 12-24VDC | 12-24VDC | 12-24VDC
Interrupts | 32 | 32 | 32 | 32
Resistance (max.) | 47kΩ | 47kΩ | 47kΩ | 47kΩ
Internal Power | - | - | - | -
Wiring Distance | 50m | 50m | 50m | 50m
Power Consumption (max.) | 5VDC 200mA | 5VDC 200mA | 5VDC 250mA | 5VDC 500mA
Bus / Dimensions (mm) | PCI (32bit, 33MHz, 5V or 3.3V*) / 121.69(L) x 105.68(H) | PCI (32bit, 33MHz, 5V or 3.3V*) / 176.41(L) x 105.68(H) | PCI (32bit, 33MHz, 5V or 3.3V*) / 176.41(L) x 105.68(H) | PCI (32bit, 33MHz, 5V or 3.3V*) / 176.41(L) x 105.68(H)
Connector | 37-pin female D-type DCLC-J37SAF-20L9(JAE) or equivalent | 37-pin female D-type DCLC-J37SAF-20L9(JAE) or equivalent | 37-pin female D-type DCLC-J37SAF-20L9(JAE) or equivalent | 37-pin female D-type DCLC-J37SAF-20L9(JAE) or equivalent
Options | - | - | - | -
Software | - | - | - | -
Note: | *: 5V power must be supplied from PCI bus slot
*: Requires use of optional cable PCB96W or PCB96PS
*: Requires use of optional cable PCB96PS and 37-pin D-SUB
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
*: Requires use of optional cable PCB100WS
As shown on the side of product’s images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.
## Digital I/O

### Opto-Isolated Digital Output

**PO-32L(PCI)H**
- 32 opto-isolated open collector output (35VDC, 100mA)
- Fast response time (within 200µsec.)
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PO-32B(PCI)H**
- On-board power supply (12VDC 240mA) to drive the output circuit opto coupler
- Fast response time (within 200µsec.)
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PO-64L(PCI)H**
- 64 opto-isolated open collector output (35VDC, 100mA)
- Fast response time (within 200µsec.)
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PO-128L(PCI)H**
- 128 outputs on a PCI short-size board
- Fast response time (within 200µsec.)
- Output transistor has built-in circuit protection (voltage surge, overcurrent)
- Optional Conversion cables (100-pin to 96-pin half pitch) available

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Channels</th>
<th>Output Channels</th>
<th>Power Consumption (Max.)</th>
<th>Bus / Dimensions (mm)</th>
<th>Connector</th>
<th>Software</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO-32L(PCI)H</td>
<td>32</td>
<td>32</td>
<td>5VDC 200mA</td>
<td>37-pin female D-type DCLC-J37SAF-20L9 [JAE] or equivalent</td>
<td>PCR-E96LMD [HONDA Tsushin Kogyo] or equivalent</td>
<td>-</td>
<td>DTP-3A</td>
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<tr>
<td>PO-32B(PCI)H</td>
<td>64</td>
<td></td>
<td>5VDC 200mA</td>
<td>32bit, 33MHz, 5V or 3.3V or 121.69(1) x 105.68(H)</td>
<td></td>
<td>DTP-3A, DTP-4A, DTP-37A, DTP-37, CM-32(PC)</td>
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</tr>
<tr>
<td>PO-64L(PCI)H</td>
<td>128</td>
<td>64</td>
<td>5VDC 200mA</td>
<td>32bit, 33MHz, 5V or 3.3V or 121.69(1) x 105.68(H)</td>
<td></td>
<td>DTP-3A, DTP-4A, DTP-37A, DTP-37</td>
<td></td>
</tr>
<tr>
<td>PO-128L(PCI)H</td>
<td>128</td>
<td>128</td>
<td>5VDC 200mA</td>
<td>32bit, 33MHz, 5V or 3.3V or 121.69(1) x 105.68(H)</td>
<td></td>
<td>DTP-3A, DTP-4A, DTP-37A, DTP-37</td>
<td></td>
</tr>
</tbody>
</table>

### Notes

- 1: Power must be supplied from PCI bus slot.
- 2: Requires use of optional cable PGB37P or PGB37PS.
- 3: Requires use of optional cable PGB36P or PGB36PS.
- 4: Requires use of optional cable PGB100/96PS.
- 5: Requires use of optional cable PGB100/96PS.
- 6: Requires use of optional cable PGB100/96PS.
- 7: Requires use of optional cable PGB100/96PS.
- 8: Requires use of optional cable PGB100/96PS.

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Please see page Q-13 for optional accessories and cables/connectors, and page P-01 for supported software.
**Opto-Isolated Digital I/O**

**PIO-16/16L(PCI)H**
- 16 opto-isolated input, 16 opto-isolated open collector output
- Fast response time (within 200µs)
- Power saving design
- All input signals can be used as interrupts
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PIO-16/16B(PCI)H**
- On-board power supply (12VDC 240mA) to drive the input/output circuit opto coupler
- Fast response time (within 200µs)
- All input signals can be used as interrupts
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PIO-32/32L(PCI)H**
- 32 opto-isolated input, 32 points opto-isolated open collector output
- Fast response time (within 200µs)
- Power saving design
- All input signals can be used as interrupts
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PIO-32/32B(PCI)V**
- On-board power supply (12VDC 240mA) to drive the input/output circuit opto coupler
- Digital filter and interrupt trigger edge can be set via software
- Output ratings can handle up to 35VDC and 100mA per channel
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>PIO-16/16L(PCI)H</th>
<th>PIO-16/16B(PCI)H</th>
<th>PIO-32/32L(PCI)H</th>
<th>PIO-32/32B(PCI)V</th>
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<td>Input channels</td>
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<td>32</td>
</tr>
<tr>
<td>Output channels</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Type</td>
<td>Opto-Isolated</td>
<td>Opto-Isolated</td>
<td>Opto-Isolated</td>
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<tr>
<td>Signal Level</td>
<td>12-24VDC</td>
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<tr>
<td>Interrupts</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Resistance</td>
<td>4.7kΩ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Power</td>
<td></td>
<td>12VDC 240mA</td>
<td></td>
<td>12VDC 240mA</td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>50m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus / Dimensions (mm)</td>
<td>PCI (32bit, 33MHz, 5V or 3.3V*) / 121.68(L) x 105.68(H)</td>
<td>PCI (32bit, 33MHz, 5V or 3.3V*) / 176.41(L)x105.68(H)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>37-pin female D-type DCLC-J312CAF-20L9 [JAE] or equivalent</td>
<td>PCR-E96LMO [HONDA Tsuchin Kogyo] or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>DTP-3A*, DTP-4A*, DTP-4D(<em>) , DTP-64(PC)</em>, EPD-96*, CM-32(PC)E*</td>
<td>DTP-3A*, DTP-4A*, DTP-4D(<em>) , DTP-64(PC)</em>, EPD-96*, CM-32(PC)E*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. 45V power must be supplied from PCI bus slot.
2. Requires use of optional cable PCAB37P or PCAB37S.
3. Requires use of optional cable PCAB96P or PCAB96S.
4. Requires use of optional cable PCAB96PS and 37-pin D-SUB.
5. Requires use of optional cable PCAB96PS and 37-pin D-SUB.

As shown on the side of the product’s images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.
Digital I/O

**Opto-Isolated Digital I/O**

**PIO-64/64L(PCI)H**
- 128 I/O on a PCI short-size board
- Digital filtering function to prevent input error caused by noise and/or chattering
- 16 interrupts featuring Digital Filter Function
- Output transistor has built-in circuit protection (voltage surge, overcurrent)
- Optional Conversion cables (100-pin to 96-pin half pitch) available

**Opto-Isolated High-speed Digital I/O**

**PIO-32/32F(PCI)H**
- Features High-speed opto coupler with 5µs secs (max) response time
- Digital filter and interrupt trigger edge can be set via software
- Connector pin assignment compatible with PIO-32/32F(PCI)

**Negative-Common Opto-Isolated Digital I/O**

**PIO-16/16RL(PCI)H**
- 16 opto-isolated input (source current output)
- 16 opto-isolated output (Current sourcing type)
- Fast response time (within 200µsecs.)
- All input signals can be used as interrupts
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**PIO-32/32RL(PCI)H**
- 32 opto-isolated input (source current output)
- 32 opto-isolated output (Current sourcing type)
- Fast response time (within 200µsecs.)
- All input signals can be used as interrupts
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

---

**Specifications**

<table>
<thead>
<tr>
<th>Mode</th>
<th>PIO-64/64L(PCI)H</th>
<th>PIO-32/32F(PCI)H</th>
<th>PIO-16/16RL(PCI)H</th>
<th>PIO-32/32RL(PCI)H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>64</td>
<td>32</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>Output</td>
<td>64</td>
<td>32</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>Input Signal Level</td>
<td>12-24VDC</td>
<td>Opto-Isolated (for sink current output)</td>
<td>Opto-Isolated (for source current output)</td>
<td></td>
</tr>
<tr>
<td>Input Interrupts</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>32 interrupt signals combine to one interrupt request signal as INTA</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>32 interrupt signals combine to one interrupt request signal as INTA</td>
</tr>
<tr>
<td>Resistance</td>
<td>4.7kΩ</td>
<td>2.2kΩ</td>
<td>4.7kΩ</td>
<td>4.7kΩ</td>
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<tr>
<td>Output Type</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td>Opto-Isolated Open Collector (Current sourcing type)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rating</td>
<td>35VDC 100mA</td>
<td>35VDC 50mA</td>
<td>35VDC 100mA</td>
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</tr>
<tr>
<td>Response Time (Max.)</td>
<td>200µsec</td>
<td>200µsec</td>
<td>200µsec</td>
<td></td>
</tr>
<tr>
<td>Internal Power</td>
<td>Any 32-byte boundary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Consumption (Max.)</td>
<td>5VDC 500mA</td>
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<td></td>
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<tr>
<td>Bus Dimensions (mm)</td>
<td>HDRA-E100W1L-FTTEC3L</td>
<td>HDRA-E100W1L-FTTEC3L</td>
<td></td>
<td></td>
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<tr>
<td>Connector</td>
<td>HDRA-E100W1L-FTTEC3L</td>
<td>HDRA-E100W1L-FTTEC3L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td>37-pin female D-type DCLG-37SF-20.9 [AE] or equivalent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note</td>
<td>1: 5V power must be supplied from PCI bus slot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2: Requires use of optional cable PCI10096PS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3: Requires use of optional cable PCI96PS or PCI96PS</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4: Requires use of optional cable PCI96PS or PCI96PS</td>
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<td></td>
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</tr>
<tr>
<td>5: Requires use of optional cable PCI96PS or PCI96PS</td>
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<td></td>
<td></td>
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<tr>
<td>6: Requires use of optional cable PCI96PS or PCI96PS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7: Requires use of optional cable PCB896PS and 37-pin D-SUB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8: Requires use of optional cable PCB896PS is required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*As shown on the side of product’s images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.*
Opto-Isolated Digital I/O
PIO-16/16H(PCI)H

- Supports high voltage (24 to 48VDC) input/output.
- Due to its 16-point common configuration, each common supports different external power source.
- Speeder response time of 200μsec or less is achieved.
- All the input signal points can be used as interrupt input.
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

Opto-Isolated Digital I/O
PIO-32/32H(PCI)H

- Supports high voltage (24 to 48VDC) input/output.
- Due to its 16-point common configuration, each common supports different external power source.
- Speeder response time of 200μsec or less is achieved.
- All the input signal points can be used as interrupt input.
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

**Model** | PIO-16/16H(PCI)H | PIO-32/32H(PCI)H
---|---|---
Input channels | 16 | 32
Output channels | 16 | 32
Input specifications | Type: Opto-Isolated (for sink current output) | Type: Opto-Isolated (for sink current output)
Signal Level | VDC 24-48VDC (±10%) | VDC 24-48VDC (±10%)
Interupts | 16 interrupt signals combine to one interrupt request signal as INTA | 32 interrupt signals combine to one interrupt request signal as INTA
Resistance | 15kΩ | 15kΩ
Output specifications | Type: Opto-Isolated Open Collector (Current sinking type) | Type: Opto-Isolated Open Collector (Current sinking type)
Rating | 60VDC 100mA | 60VDC 100mA
Response Time (Max.) | 200μsec | 200μsec
Internal Power | - | -
Wiring Distance | 50m | 50m
I/O Address | Any 32-byte boundary | Any 32-byte boundary
Power Consumption (Max) | 5VDC 150mA | 5VDC 200mA
Bus / Dimensions (mm) | PCI (32bit, 33MHz, 5V or 3.3V*) / 121.68(L) × 105.68(H) | PCI (32bit, 33MHz, 5V or 3.3V*) / 176.41(L) × 105.68(H)
Connector | 37-pin female D-type DCLC- J371SAF-20LS [UAE] or equivalent | PC-E961MD [HONDA Tsushin Kogyo] or equivalent
Software | - | -
Note: | 1: 5V power must be supplied from PCI bus slot. | 2: Requires use of optional cable PCB37P or PCB37PS.
| 3: Requires use of optional cable PCB96P or PCB96PS. | 3: Requires use of optional cable PCB96P or PCB96PS.
| 4: Requires use of optional cable PCB96WS. | 4: Requires use of optional cable PCB96WS.

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Digital I/O

**PIO-16/16RY(PCI)**

- 16 semiconductor relay output
- Input/output supports both current sink and current source output
- Supports high-voltage input range - 12 to 48VDC / output - 120VAC/VDC
- All input signals can be used as interrupts
- Digital filtering function to prevent input error caused by noise and/or chattering

**RRY-16C(PCI)H**

- 16 independent relay outputs
- Output ratings can handle up to 125VAC/30VDC - 2A / channel
- Connector pin assignment compatible with RRY-16C(PCI)

**RRY-32(PCI)H**

- 32 relay outputs
- Output ratings can handle up to 100VAC/VDC and 500mA per channel, 1A per common (max) for total of 8 points and 10VA (10W)
- Connector pin assignment is compatible with RRY-32(PCI)

---

<table>
<thead>
<tr>
<th>Model</th>
<th>PIO-16/16RY(PCI)</th>
<th>RRY-16C(PCI)H</th>
<th>RRY-32(PCI)H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Output channels</td>
<td>16</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

**Output specifications**

- **Type**: Opto-Isolated (for sink/source output)
- **Signal Level**: 3-24VDC, 24-48VDC, Each point can be set
- **Interrupts**: 16 interrupt signals combine to one interrupt request signal as INTA
- **Resistance**: 3kΩ (<24VDC), 6kΩ (24-48VDC)

**Response Time (Max.)**

- Input: 200μsec
- Output: 1.0msec

**Internal Power**

- -

**Wiring Distance**

- 50m

**Options**

- **Software**: Windows Driver, Linux Driver, LabVIEW
- **Accessories**: PCI/ISA
- **Cable/Connectors**: DTP-3A, DTP-4A, DTP-3A*, DTP-4A*, EPD-37A, EPD-37A*, CM-32(PCI)E

**Note**

- *1*: +5V power must be supplied from PCI bus slot.
- *2*: Requires use of optional cable PCB37P or PCB37PS.

---

As shown on the side of product’s images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.
### Measurement and Control Products

Digital I/O

#### PCI

**TTL-level Digital Input**

**DI-128T2-PCI**

- **NEW**
- **128 TTL-level input**
- **16 input points can be used as interrupts**
- **Digital filtering function to prevent input error caused by noise and/or chattering**

<table>
<thead>
<tr>
<th>Model</th>
<th>DI-128T2-PCI</th>
<th>DO-128T2-PCI</th>
<th>DIO-6464T2-PCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>128 (1 common)</td>
<td>-</td>
<td>64 (1 common)</td>
</tr>
<tr>
<td>Output channels</td>
<td>-</td>
<td>64 (1 common)</td>
<td>-</td>
</tr>
<tr>
<td>Type</td>
<td>TTL-level (Negative logic)</td>
<td>-</td>
<td>TTL-level (Negative logic)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>-</td>
<td>SVDC</td>
<td>-</td>
</tr>
<tr>
<td>Input</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>-</td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
</tr>
<tr>
<td>Specifications</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Resistance</td>
<td>Pull-up: 10 kΩ (1 TTL load)</td>
<td>-</td>
<td>Pull-up: 10 kΩ (1 TTL load)</td>
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<tr>
<td>Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Type</td>
<td>Open Collector (Negative logic)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Rating</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>200ns</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Internal Power</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>1.5m (depending on wiring environment)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>I/O Address</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Power Consumption (Max)</td>
<td>SVDC 350mA</td>
<td>SVDC 500mA</td>
<td>SVDC 450mA</td>
</tr>
<tr>
<td>BUS / Dimensions (mm)</td>
<td>PCI (32bit, 33MHz, 5V or 3.3V*) / 121.69(L)x105.68(H)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Connector</td>
<td>100-pin 0.8mm female half pitch +2: HDR-A-E101W-1FDT11C-SL+ [HONDA Tsuchin Kosyo] or equivalent</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Software</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cables /</td>
<td>PCA100P-1.5, PCB100/96PS-1.5, PCB100WS-1.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Connectors</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**TTL-level Digital Output**

**DO-128T2-PCI**

- **128 open collector output**

**TTL-level Digital I/O**

**DIO-6464T2-PCI**

- **64 TTL-level input, 64 open collector output**
- **16 input points can be used as interrupts**
- **Digital filtering function to prevent input error caused by noise and/or chattering**

---

**Note:**

1. 5V power must be supplied from PCI bus slot.
2. Requires use of optional cable PCB100/96PS
3. Requires use of optional cable PCB100WS
4. Requires use of optional cable PCB1010WS

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Digital I/O

**TTL-Level Digital I/O**

**PIO-16/16T(PCI)**

- 16 TTL level input, 16 open collector output (40mA sink current max.)
- Digital filter and interrupt trigger edge can be set via software
- Connector pin assignment compatible with PIO-16/16T(PCI)
- All input signals can be used as interrupts

**PIO-32/32T(PCI)**

- 32 TTL level input, 32 open collector output
- Digital filter and interrupt trigger edge can be set via software
- Connector pin assignment compatible with PIO-32/32T(PCI)
- All input signals can be used as interrupts

**PIO-48D(PCI)**

- 48 TTL current drive bi-directional digital I/O / Emulates i8255 PPI mode 0
- 200ns high-speed response with non-isolated TTL level I/O
- All 48 input signals can be used as interrupts

---

**Options**

- **Accessories**: DTP-3A**, DTP-4A**, CM-32(PCIE)**
- **Cables / Connectors**: PCA37P-1.5, PCB37P-1.5, PCA37P-0.5P-1.5, PCB37PS-0.5P-1.5, CNS-3D7M

**Note**:

- 1. Requires use of optional cable PCB37P or PCB37PS
- 2. Requires use of optional cable PCB96PS-0.5P-1.5, PCB96PS-0.5P-1.5, PCB96PS-0.5P-1.5, PCB96PS-0.5P-1.5, CNS-3D7M
- 3. Requires use of optional cable PCB96PS-0.5P-1.5
- 4. Requires use of optional cable PCB96PS-0.5P-1.5
- 5. Requires use of optional cable PCB96PS-0.5P-1.5 and 37-pin D-SUB

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As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.
High Speed Bi-Directional Digital I/O
PIO-32DM(PCI)

**SPECIFICATIONS**

- Number of channels: 32ch (16 input signals, 16 I/O signals or 32 output signals - software selectable)
- I/O Circuit
  - Signal level: 5VDC
  - Internal power: 5VDC
- Input specifications
  - Type: TTL level (positive logic)
  - Interrupt: Error and various buttons, can interrupt request line as INTA
  - Resistance: 10kΩ
- Output specifications
  - Type: TTL level (positive logic)
  - Rating: 5VDC 24mA
  - Response time: 50ns (max)
- Wiring distance: 1.5m (max)
- I/O address: Occupies 2: any 32- and 64-bit boundary
- Power consumption: 5VDC 700mA (max)
- Bus / Dimensions (mm): PCI (32bit, 33MHz, 5V) / 176.41(L) x 106.68(W)
- Connector: Sync. Section: PS-10PE-D4L1 [JAE] or equivalent
- Options:
  - Software -
  - Accessories: EPD-96 1. DTP 84(PCI)!
- Cables / Connectors:
  - PC9803S-0.5-1.5, PC9803S-0.5-1.5, PC9803S-0.5-1.5
  - Connectors: PC9803S-1.5, PC9803S-1.5, CNS-H96F

**Features**

- Provides 2 interface channels IEEE 1284 / Centronics - compliant
- Supports 5 modes of IEEE 1284 (Compatibility, Nibble, Byte, EEP, ECP) user selectable dependent on OS and device
- Up to 16 PRN-2(PCI) boards can be used at the same time under Windows NT 4.0, and only one board can be used under Windows XP/2000/Me/98/95
- Equipped with sync control connection. By using a sync signal cable, multiple boards can operate in sync with one another.

**Functions**

- **Bus Master Transfer**
  - Utilizing Bus Master, the data transfer rate between the PC and CONTEC's PIO-32DM(PCI) board is 80MB / sec. (133MB /sec. -max) without putting additional burden on the host computer's CPU.

- **Synchronization Control**
  - The board is equipped with a synchronization control connector to allow easy inter-board synchronization.
  - 16 boards (max) can be interconnected (including the master).

- **Pattern Input / Output**
  - The PIO-32DM(PCI) stores digital signals at a sampling rate of 20 MHz and is capable of detecting patterns (pattern input). It can also be used as a 20 MHz digital pattern generator (pattern output).

Parallel Port Extension
PRN-2(PCI)

**SPECIFICATIONS**

- Channels: 2ch
- Communication standard: IEEE-1284
- Communication mode: IEEE-1284
- Communication speed: Compatibility, Nibble, Byte, EEP, ECP
- Hardware specifications
  - Controller: 517/82C228/C44(EXAR) or equivalent
  - Reference clock: 24MHz (Reference clock of on-chip LS)
  - Wiring distance: 5m max
  - Interrupts: 1 level
  - I/O address: 16 ports (control port) + (8 ports + 4 ports) + 2
  - Supply voltage: 5VDC (50%)
  - Power consumption: 5VDC 150mA (max)
- Dimensions (mm): 121.69(L) x 106.68(W)

**Features**

- LPT Driver for Windows® XP/NT/Me/98/95
- 36-pin Micro Ribbon Conversion Cable PRN-CB105 (5m)

**Support Software**

**PRN-DRV(W32)**
LPT driver software for PRN-2(PCI)

PRN-2(PCI) drivers for Windows®
PRN-DRV(W32) is a utility software that displays the LPT numbers assigned to the individual channels on CONTEC's PRN-2(PCI).

For latest driver versions, please visit our web site.

* Transfer mode is dependent on device type and operating system (refer to the following table.)

<table>
<thead>
<tr>
<th>Device Type</th>
<th>OS</th>
<th>Compatibility</th>
<th>Nibble</th>
<th>Byte</th>
<th>EEP</th>
<th>ECP</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM PC/AT Compatible</td>
<td>Windows XP/2000/Me/98/95</td>
<td>○</td>
<td>○</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>NEC-PC8h-NX</td>
<td>Windows NT 4.0</td>
<td>○</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>NEC PC-9800 series</td>
<td>Windows 2000/Me/98/95</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Windows NT 4.0</td>
<td>○</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

As shown on the side of product's image, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

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**Digital I/O**

- **Counter & Motion Controller**
- **Serial Communication**
- **USB**
- **Compact PCI**
- **ISA**

**Option**

- **Single Board Computer**
- **Backplane**
- **Chassis**

**Analog I/O**

**Digital I/O**

- **Counter & Motion Controller**
- **Serial Communication**

---

**Wireless LAN**

**Remote Monitoring Solution**

**Service & Products**

---

**J-18**

**Lineup**

**PCI Express**

**Low Profile PCI**

**PC Card**

**USB**

**Compact PCI**

**ISA**

---

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**Digital I/O**

### PIO-16/16L(LPCI)H
- **Opto-Isolated Digital I/O**
- 16 opto-isolated inputs, 16 opto-isolated open collector outputs
- Fast response time (200µs)
- All input signals can be used as interrupts
- Output transistor has built-in circuit protection (voltage surge, overcurrent)

### PIO-16/16B(LPCI)H
- **Opto-Isolated Digital I/O with On-board 12V Power Supply**
- 16 opto-isolated inputs, 16 open collector outputs
- Fast response time (200µs)
- All input signals can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software

### PIO-16/16T(LPCI)H
- **TTL-Level Digital I/O**
- 16 TTL inputs, 16 open collector outputs
- All input signals can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software

### PIO-48D(LPCI)H
- **TTL Level Bi-Directional Digital I/O**
- 48-point two-way digital I/O
- 200µsec high-speed response with non-isolated TTL level I/O
- All 48 input points can be used as interrupts
- Digital filter and interrupt trigger edge can be set via software

---

**Model** | **PIO-16/16L(LPCI)H** | **PIO-16/16B(LPCI)H** | **PIO-16/16T(LPCI)H** | **PIO-48D(LPCI)H**
---|---|---|---|---
Input channels | 16 | 16 | - | -
Output channels | - | - | 48 | -
I/O channels | - | - | - | -
Input specifications | **Type** | Opto-Isolated (for sink current output) | TTL level (negative logic) | TTL level (positive logic)
**Signal Level** | 12–24VDC | 5VDC | 5VDC | 5VDC
**Interruptions** | 16 interrupt signals combine to one interrupt request signal as INTA | 48 interrupt signals combine to one interrupt request signal as INTA | 48 interrupt signals combine to one interrupt request signal as INTA | 48 interrupt signals combine to one interrupt request signal as INTA
**Resistance** | 4.7kΩ | 10kΩ | 10kΩ | 3kΩ
Output specifications | **Type** | Opto-Isolated Open Collector (Current sinking type) | Open Collector (negative logic) | TTL level (positive logic)
**Rating** | 35VDC 100mA | 30VDC 40mA | 30VDC 40mA | 30VDC 40mA
**Response Time (Max.)** | 200µsec | 200µsec | 200µsec | 200µsec
**Internal Power** | 12VDC 125mA | - | - | -
**Wiring Distance** | 50m | - | 1.5m | -
**I/O Address** | Any 32-byte boundary | - | - | -
**Power Consumption (Max.)** | 5VDC 100mA | 5VDC 120mA (External), 5VDC 600mA (On-board) | 5VDC 100mA | 5VDC 600mA
**Bus / Dimensions (mm)** | PCI (32bit, 33MHz, 5V or 3.3V) / 121.69(L)×63.41(H) | - | - | -
**Connector** | 50-Pin Mini-Ribbon Connector | 10250-52A2JL, [3M] or equivalent | HDRA-E68LFD7+[HONDA Tsushin Kogyo] or equivalent | 68-pin 0.8mm pitch connector
|  | Cables / Connectors | PCAS50PS, PCB50PS, PCE50/37PS/0.5P | PCAS50PS/0.5P, 1.5P, PCB50PS/0.5P, 1.5P, PCE50/37PS/0.5P | PCAS50PS/0.5P, 1.5P, PCB50PS/0.5P, 1.5P, PCE50/37PS/0.5P |

---

As shown on the side of product’s images, **Pbfree** is a CONTEC original marking for lead-free products.
As shown on the side of product’s images, **RoHS compliant** is a CONTEC original marking for RoHS-compliant products.
Opto-Isolated Digital I/O
PIO-16/16L(CB)H

- The connector pin-out is compatible with PIO-16/16L(PCI)/H, PIO-16/16L(PCI) and PIO-16/16L(PM).
- Fast response time (within 200 µsec).
- Featuring a 16-point configuration, each common corresponds to a different external power source.
- All input signals can be used as interrupts.

Bi-Directional LVTTL Digital I/O
PIO-48D(CB)H

- 48-point two-way digital I/O i8255 Mode 0 - compliant.
- 200nsec high-speed response with non-Isolated LVTTL level I/O.
- Equipped with functions equivalent to those of PCI bus-compatible board PIO-48D(PCI).
- All input signals (Max. 48 points) can be used as interrupts.

---

### Model Comparison

<table>
<thead>
<tr>
<th></th>
<th>PIO-16/16L(CB)H</th>
<th>PIO-48D(CB)H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input channels</strong></td>
<td>16 channels share one common (all available for interrupts)</td>
<td></td>
</tr>
<tr>
<td><strong>Output channels</strong></td>
<td>16 (1 common)</td>
<td></td>
</tr>
<tr>
<td><strong>I/O channels</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Opto-Isolated (sink current output/negative logic)</td>
<td>LVTTL level (positive logic)</td>
</tr>
<tr>
<td><strong>Signal Level</strong></td>
<td>12~24VDC (±10%)</td>
<td>3.3VDC</td>
</tr>
<tr>
<td><strong>Input specifications</strong></td>
<td>16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>48 interrupt input signals are arranged into a signal output of interrupt signal INTA. An interrupt is generated at the falling edge (HIGH to LOW) or raising edge (LOW to HIGH), which is set by software.</td>
</tr>
<tr>
<td><strong>Resistance</strong></td>
<td>47.7kΩ</td>
<td></td>
</tr>
<tr>
<td><strong>Output specifications</strong></td>
<td>35VDC 100mA</td>
<td></td>
</tr>
<tr>
<td><strong>Response Time (Max.)</strong></td>
<td>200µsec</td>
<td>200µsec</td>
</tr>
<tr>
<td><strong>Internal Power</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Wiring Distance</strong></td>
<td>50m (Max.)</td>
<td>1.5m (Max.)</td>
</tr>
<tr>
<td><strong>I/O Address</strong></td>
<td>8-bit × 32-port boundary</td>
<td></td>
</tr>
<tr>
<td><strong>Power Consumption (Max)</strong></td>
<td>3.3V 200mA</td>
<td>3.3V 1200mA</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>37-pin female D-type DCL-J37SAF-20L9 [JAE] or equivalent</td>
<td>68-pin 0.8mm Pitch</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cables / Connectors</strong></td>
<td>PCA37P, PC37P, PCAM37P, PC37PS, CN5-D37M</td>
<td>DIO-68M96F, PC68PS, 0.5P/1.5P, PC68PPS, 0.5P, 1SP</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>*1. Requires use of optional cable PC37P or PC37PS.</td>
<td>*2. Requires use of optional cable DIO-68M96F.</td>
</tr>
</tbody>
</table>

---

As shown on the side of product’s images, Pbfree is a CONTEC original marking for lead-free products.
## Digital I/O

**Opto-Isolated Digital I/O**

### PIO-16/16L(PM)

- Connector pin assignment compatible with PIO-16/16L(PCI)/H, PIO-16/16L(PCI), PIO-16/16L(PCI)/V
- Digital filter can be applied to input signals
- All 16 input signals can be used as interrupts

**TTL-Level Digital I/O**

### PIO-32D(PM)

- Groups can be either input or output (user selectable) i.e. card can support different configurations, including 16 input/16 output; all 32 as input or all 32 as output
- High-speed response with non-isolated TTL level I/O
- All input signals (Max. 32 points) can be used as interrupts

---

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>PIO-16/16L(PM)</th>
<th>PIO-32D(PM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>16 channels share one common (all available for interrupts)</td>
<td>-</td>
</tr>
<tr>
<td>Output channels</td>
<td>16 (1 common)</td>
<td>-</td>
</tr>
<tr>
<td>I/O channels</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Controller Chip</td>
<td>Opto-Isolated (for sink current output) (negative logic)</td>
<td>TTL level (negative logic)</td>
</tr>
<tr>
<td>Type</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Specification</td>
<td>Signal Level: 12–24VDC, 16 interrupt signals combine to one interrupt request signal as INTA</td>
<td>-</td>
</tr>
<tr>
<td>Input</td>
<td>-</td>
<td>Pull-up 100KΩ</td>
</tr>
<tr>
<td>Output</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Type</td>
<td>Opto-Isolated Open Collector (Current sinking type) (negative logic)</td>
<td>TTL level (positive logic)</td>
</tr>
<tr>
<td>Specification</td>
<td>Rating: 35VDC 100mA, 1mA<del>8mA, 1mA</del>2mA</td>
<td>-</td>
</tr>
<tr>
<td>Response Time</td>
<td>1ms</td>
<td>2000μsec</td>
</tr>
<tr>
<td>Internal Power</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>50m (Max.)</td>
<td>1.5m (Max.)</td>
</tr>
<tr>
<td>I/O Address</td>
<td>8bit x 16 port boundary</td>
<td>-</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>5VDC 200mA</td>
<td>-</td>
</tr>
<tr>
<td>Bus / Dimensions</td>
<td>37-pin female D-type</td>
<td>-</td>
</tr>
<tr>
<td>Connector</td>
<td>37-pin female D-type</td>
<td>-</td>
</tr>
<tr>
<td>Connectors</td>
<td>37-pin female D-type</td>
<td>-</td>
</tr>
<tr>
<td>Software</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*1: Requires use of optional cable PCB37P or PCB37PS.

---

*This card cannot be used with another card requiring external connections when used on a PC with 2 TYPEII PC card slots. For simultaneous use, the other card must be a PC card (excluding memory card) that does not require an external connector.*

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Global Portal: www.contec.com
**Digital I/O**

**USB 2.0**

**Opto-isolated Digital I/O**

DIO-0808LY-USB

- 8 opto-isolated inputs, 8 opto-isolated open collector outputs (Output ratings can handle up to 35VDC and 100mA per channel)
- USB2.0/USB1.1-compliant, high-speed (480Mbps)
- Bus-powered for convenience and portability
- USB and I/O interface are opto-isolated to prevent noises
- Output transistor has built-in circuit protection (voltage surge, overcurrent)
- Screw-type connectors for easy wiring

14 pin screw-type terminal connector (6 in one) CN6-Y14

**USB 2.0**

**LVTTL Level Bi-Directional Digital I/O (USB cable included)**

DIO-24DY-USB

- 24 bi-directional digital I/O (eight channels, three groups)
- Non-isolated LVTTL level I/O (positive logic)
- USB2.0/USB1.1-compliant, high-speed (480Mbps)
- Bus-powered for convenience and portability
- Input/output switching can be set via application software
- Screw-type connectors for easy wiring

14 pin screw-type terminal connector (6 in one) CN6-Y14

---

<table>
<thead>
<tr>
<th>Model</th>
<th>DIO-0808LY-USB</th>
<th>DIO-24DY-USB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>8 (1 common)</td>
<td>-</td>
</tr>
<tr>
<td>Output channels</td>
<td>8 (1 common)</td>
<td>-</td>
</tr>
<tr>
<td>I/O channels</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>Input specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Opto-Isolated (for sink current output, negative logic)</td>
<td>LVTTL level (positive logic)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>12–24VDC (±10%)</td>
<td>3.3VDC</td>
</tr>
<tr>
<td>Resistance</td>
<td>4.7kΩ</td>
<td></td>
</tr>
<tr>
<td>Output specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Opto-Isolated Open Collector (current sinking type, negative logic)</td>
<td>LVTTL level (positive logic)</td>
</tr>
<tr>
<td>Rating</td>
<td>35VDC 100mA per point</td>
<td>3.3VDC 8mA</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>30μs/sec*1</td>
<td>200μsec*2</td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>50m (Max.)</td>
<td>1.5m (Max.)</td>
</tr>
<tr>
<td>USB speed</td>
<td>12Mbps «Full speed», 480Mbps «High speed»</td>
<td></td>
</tr>
<tr>
<td>Power Consumption (Max.)</td>
<td>5VDC 250mA</td>
<td></td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>64(W)×50(H)×24(D) (exclusive of protrusions)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>14-pin (screw-terminal) plug header</td>
<td></td>
</tr>
<tr>
<td>Weight (main unit)</td>
<td>70g (Not including the USB cable, attachment)</td>
<td></td>
</tr>
<tr>
<td>Included cable Length</td>
<td>USB cable 1.8m</td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cables</td>
<td>CN6-Y14</td>
<td></td>
</tr>
</tbody>
</table>

*1: Opto-coupler’s response time
*2: Actual throughput is 100μs seconds (Depends on the host PC environment, such as OS and USB host controller.)

---

**Note:**

As shown on the side of product's images, PI-Free is a CONTEC original marking for lead-free products.
Digital I/O

USB 2.0

**Opto-Isolated Digital Input (USB cable included)**

**DI-32(USB)**
- On-board trigger monitoring
- Screw-less connectors for easy wiring
- Input channels can be expanded by use of extension modules (3 modules - max)
- Sample development and utility debugging software included

**Opto-Isolated Digital Output (USB cable included)**

**DO-32(USB)**
- Transistor Output that is designed to work with large capacities: 12-24V, 150mA (max.) per channel; 36-48V, 50mA (max.) per channel (Drives LED display directly)
- Screw-less connectors for easy wiring
- Output channels can be expanded by use of extension modules (3 modules - max)
- Sample development and utility debugging software included

**Opto-Isolated Digital I/O (USB cable included)**

**DIO-16/16(USB)**
- On-board trigger monitoring (Digital Input)
- Transistor Output that is designed to work with large capacities: 12-24V, 150mA (max.) per channel; 36-48V, 50mA (max.) per channel (Drives LED display directly)
- Screw-less connectors for easy wiring
- I/O channels can be expanded by use of extension modules (3 modules - max)
- Sample development and utility debugging software included

---

**Model** | **DI-32(USB)** | **DO-32(USB)** | **DIO-16/16(USB)**
--- | --- | --- | ---
Input channels | 32 | - | 16
Output channels | 32 | - | 16
Input Type specification | Opto-isolated (for sink/source current output) | - | Opto-isolated (for high sink/source current output)
Signal Level | 12-24VDC | - | 12-24VDC
Resistence | 3kΩ | - | 3kΩ
Output Type specification | - | Opto-Isolated Open Collector (current sinking type) | -
Response Time (Max.) | 1ms
Connector | FMC 1.5/18-ST-3.5 [PHOENIX CONTACT]
Wiring Distance | 50m
USB speed | 12Mbps <Full speed>, 480Mbps <High speed>
Power Consumption (Max.) | 5VDC 450mA
Dimensions (mm) | 50.4(W) × 64.7(D) × 94.0(H)
Weight (main unit) | 100g
Included cable Length | USB cable 1.8m

**Options**
- Software: DI-32(FIT)/GY, DO-32(FIT)/GY, DIO-16/16(FIT)/GY
- Applicable Adapters: POA200-20

**Note:**
1. USB module will execute API function via USB communication. The time required for such execution is about several milliseconds.
2. Since current consumption may exceed 500mA when using extension modules, please use an optional power supply.
3. Please refer to P-04 or visit our web site for the details of Applicable Modules, Power supplies, Adapters.
**Digital I/O**

**Opto-Isolated Digital Input (USB cable included)**

**DI-16(USB)GY**
- On-board trigger monitoring
- 2 Screw-less connectors for easy wiring - no special tools needed
- Input channels can be expanded by use of extension modules (3 modules - max)
- Sample development and utility debugging software included

**Opto-Isolated Digital Output (USB cable included)**

**DO-16(USB)GY**
- Transistor Output that is designed to work with large capacities, 24VDC, 150mA (max) per channel (Drives LED display directly)
- 2 Screw-less connectors for easy wiring - no special tools needed
- Output channels can be expanded by use of extension modules (3 modules - max)
- Sample development and utility debugging software included

**Opto-Isolated Digital I/O (USB cable included)**

**DIO-8/8(USB)GY**
- On-board trigger monitoring (Digital Input)
- Transistor Output that is designed to work with large capacities, 24VDC, 150mA (max) per channel (Drives LED display directly)
- 2 Screw-less connectors for easy wiring - no special tools needed
- I/O channels can be expanded by use of extension modules (3 modules - max)
- Sample development and utility debugging software included

---

**Model Comparison Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>DI-16(USB)GY</th>
<th>DO-16(USB)GY</th>
<th>DIO-8/8(USB)GY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Channels</td>
<td>16</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Output Channels</td>
<td>-</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Input specifications</td>
<td>Opto-Isolated (for sink/source current output)</td>
<td>-</td>
<td>Opto-Isolated (for sink/source current output)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>12~24VDC</td>
<td>-</td>
<td>12~24VDC</td>
</tr>
<tr>
<td>Resistance</td>
<td>1kΩ</td>
<td>-</td>
<td>1kΩ</td>
</tr>
<tr>
<td>Output Type</td>
<td>-</td>
<td>Opto-Isolated Open Collector (current sinking type)</td>
<td>-</td>
</tr>
<tr>
<td>Specifications Rating</td>
<td>12~24VDC 150mA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Response Time (Max.)</td>
<td>1msec*1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Connector</td>
<td>FK-MC 0.5/9-ST-2.5 [PHOENIX CONTACT]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wiring Distance</td>
<td>50m</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USB speed</td>
<td>12Mbps «Full speed&gt;&gt;, 480Mbps «High speed»</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Power Consumption (Max.)</td>
<td>5VDC 450mA *2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>50.4(W) × 64.7(D) × 94.0(H)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Weight (main unit)</td>
<td>105g</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Included cable Length</td>
<td>USB cable 1.8m</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Options Software</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Application Modules</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Applicable Power Supplies</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Applicable Adapters</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*1: USB module will execute API function via USB communication. The time required for such execution is about several milliseconds.
*2: Since current consumption may exceed 900mA when using extension modules, please use an optional power supply.
*3: Please refer to P-04 or visit our web site for the details of Applicable Modules, Power supplies, Adapters.

**Note:**
# Digital I/O

## Opto-Isolated Digital Input
**PI-64L(CPCI)**
- 64 opto-isolated input with superb noise resistance (12 to 24VDC)
- Digital filter and interrupt trigger edge can be set via software
- Connector pin assignment compatible with PI-64L(CPCI)

## Opto-Isolated Digital Output
**PO-64L(CPCI)**
- 64 opto-isolated open collector output (35VDC, 100mA)
- Provides information on the state of the current output data without affecting that data
- Connector pin assignment compatible with PO-64L(CPCI)

## Opto-Isolated Digital I/O
**PIO-32/32L(CPCI)**
- 32 opto-isolated input, 32 points opto-isolated open collector output
- Digital filter and interrupt trigger edge can be set via software
- Connector pin assignment compatible with PIO-32/32L(PC)

## Specifications Table
<table>
<thead>
<tr>
<th>Model</th>
<th>PI-64L(CPCI)</th>
<th>PO-64L(CPCI)</th>
<th>PIO-32/32L(CPCI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input channels</td>
<td>64</td>
<td>-</td>
<td>32</td>
</tr>
<tr>
<td>Output channels</td>
<td>-</td>
<td>64</td>
<td>32</td>
</tr>
<tr>
<td>I/O Circuit</td>
<td>12-24VDC (±15%</td>
<td>12-24VDC (±15%</td>
<td>12-24VDC (±15%</td>
</tr>
<tr>
<td>Signal Level</td>
<td>Internal Power</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Type</td>
<td>Opto-Isolated (for sink current output)</td>
<td>-</td>
<td>Opto-Isolated (for sink current output)</td>
</tr>
<tr>
<td>Interupts</td>
<td>4 interrupt signals combine to one interrupt request signal as INTA</td>
<td>-</td>
<td>4 interrupt signals combine to one interrupt request signal as INTA</td>
</tr>
<tr>
<td>Resistance</td>
<td>3kΩ</td>
<td>3kΩ</td>
<td></td>
</tr>
<tr>
<td>Output Type</td>
<td>-</td>
<td>Opto-Isolated Open Collector (Current sinking type)</td>
<td></td>
</tr>
<tr>
<td>Rating</td>
<td>-</td>
<td>-</td>
<td>35VDC 100mA</td>
</tr>
</tbody>
</table>

## General Specifications
- **Response Time (Max.):** 1ms
- **Wiring Distance:** 50m (Max.)
- **I/O Address:** Any 32-byte boundary
- **Power Consumption (Max.):** 5VDC 300mA
- **Bus / Dimensions (mm):** Compact PCI / 3U x 4HP
- **Connector:** 96 pin Half Pitch (male)

## Options
- **Software:** API-PAC(W32)
- **Accessories:** DTP-3A, DTP-4A, DTP-64(PC), EPO-96A, EPO-96, CM-32(PC), CM-64(PC)
- **Cables / Connectors:** PCA96P, PC96PS, PC96WS

**Note:**
1. Requires use of optional cable PC96WS.
2. Requires use of optional cable PC96PS.

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**Global Portal:** www.contec.com
### Opto-Isolated Digital Input Board

#### PI-32L(PC)/V
- **Input channels**: 32
- **Output channels**: -
- **I/O Circuit Signal level**: 12-24VDC
- **Type**: Opto-Isolated (for sink current output)
- **Input specifications**: Can use 2 interrupt lines simultaneously from IRQ 3-7, 9-12, 14 and 15
- **Response time (Max.)**: 1ms
- **Wiring Distance**: 50m
- **I/O address**: 4 ports occupation
- **Power consumption (Max.)**: 5VDC 50mA
- **Bus / Dimensions (mm)**: ISA AT Bus / 163.0(L) x 122.0(H)
- **Connector**: 37-pin female D-type 96-pin half pitch connector (male)
- **Software**: API-PAC(W32)
- **Options**:
  - **Accessories**: DTP-3A, DTP-4A, EPD-37A, CM-32(PC), CM-32(PC/E)
  - **Cables / Connectors**: PCA37P, PCB37P, PCA37PS, PCB37PS

#### PI-64L(PC)
- **Input channels**: 64
- **Output channels**: -
- **I/O Circuit Signal level**: -
- **Type**: Opto-Isolated (for sink current output)
- **Input specifications**: Can use 4 interrupt lines simultaneously from IRQ 3-7, 9-12, 14 and 15
- **Response time (Max.)**: 1ms
- **Wiring Distance**: 50m
- **I/O address**: 4 ports occupation
- **Power consumption (Max.)**: 5VDC 200mA
- **Bus / Dimensions (mm)**: ISA AT / 6.5(L) x 4.75(H)
- **Connector**: 37-pin female D-type 96-pin half pitch connector (male)
- **Software**: API-PAC(W32)
- **Options**:
  - **Accessories**: DTP-3A, DTP-4A, EPD-37A, CM-32(PC), CM-32(PC/E)
  - **Cables / Connectors**: PCA37P, PCB37P, PCA37PS, PCB37PS

### TTL Digital Input Board

#### PI-32T(PC)/H
- **Input channels**: 32
- **Output channels**: -
- **I/O Circuit Signal level**: 5VDC
- **Type**: Opto-Isolated (for sink current output)
- **Input specifications**: Can use 2 interrupt lines simultaneously from IRQ 3-7, 9-12, 14 and 15
- **Response time (Max.)**: 10μs
- **Wiring Distance**: 50m
- **I/O address**: 4 ports occupation
- **Power consumption (Max.)**: 5VDC 420mA
- **Bus / Dimensions (mm)**: ISA XT / 5.5(L) x 4.25(H)
- **Connector**: 37-pin female D-type
- **Software**: API-PAC(W32)
- **Options**:
  - **Accessories**: DTP-3A, DTP-4A, EPD-37A, CM-32(PC), CM-32(PC/E)
  - **Cables / Connectors**: PCA37P, PCB37P, PCA37PS, PCB37PS

#### PI-64T(PC)
- **Input channels**: 64
- **Output channels**: -
- **I/O Circuit Signal level**: -
- **Type**: TTL level
- **Input specifications**: Can use 2 interrupt lines simultaneously from IRQ 3-7, 9-12, 14 and 15
- **Response time (Max.)**: 200μs
- **Wiring Distance**: 1.5m
- **I/O address**: 4 ports occupation
- **Power consumption (Max.)**: 5VDC 200mA
- **Bus / Dimensions (mm)**: ISA AT / 6.5(L) x 4.75(H)
- **Connector**: 37-pin female D-type 96-pin half pitch connector (male)
- **Software**: API-PAC(W32)
- **Options**:
  - **Accessories**: DTP-3A, DTP-4A, EPD-37A, CM-32(PC), CM-32(PC/E)
  - **Cables / Connectors**: PCA37P, PCB37P, PCA37PS, PCB37PS

### Notes:
1. Requires use of optional cable PCB37P or PCB37PS.
2. Requires use of optional cable PCB69P or PCB69PS.
3. Requires use of optional cable PCB96P or PCB96PS.
# Digital I/O

## Opto-Isolated Digital Output Board

<table>
<thead>
<tr>
<th>Model</th>
<th>PO-32L(PC)</th>
<th>PO-64L(PC)</th>
<th>PO-32B(PC)H</th>
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<tbody>
<tr>
<td><strong>SPECIFICATIONS</strong></td>
<td></td>
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<td>64</td>
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<tr>
<td>I/O Circuit</td>
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<td>12-24VDC</td>
<td>12VDC</td>
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<tr>
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<tr>
<td>Type</td>
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<tr>
<td>Rating</td>
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<td>35VDC 150mA</td>
<td>35VDC 100mA</td>
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<td>function</td>
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<tr>
<td>Wiring Distance</td>
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<td></td>
<td>30m</td>
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<td>I/O address</td>
<td>4 ports occupation</td>
<td>Any 8-byte boundary (general)</td>
<td>Any 16-byte boundary (optional)</td>
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<tr>
<td>Power consumption</td>
<td>5VDC 50mA</td>
<td>5VDC 250mA</td>
<td>5VDC 50mA (External)</td>
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<td>Bus / Dimensions (mm)</td>
<td>ISA AT Bus / 163.0(L) × 122.0(H)</td>
<td>6.5(L) × 4.75(H)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>37-pin female D-type</td>
<td>96-pin half pitch connector (male)</td>
<td>37-pin female D-type</td>
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## Negative-Common Digital Output Board

<table>
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<tr>
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<th>PO-32RL(PC)</th>
<th>PO-32T(PC)H</th>
<th>PO-64T(PC)</th>
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<tbody>
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<td>I/O Circuit</td>
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<td>12-24VDC</td>
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</tr>
<tr>
<td>Type</td>
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<tr>
<td>Input</td>
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<tr>
<td>Type</td>
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<tr>
<td>Type</td>
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<td>Rating</td>
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<td>5VDC 40mA</td>
<td>35VDC 40mA</td>
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<td>Response time</td>
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<td>200μsec</td>
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<td>Wiring Distance</td>
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<td>1.5m</td>
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<tr>
<td>I/O address</td>
<td>4 ports occupation</td>
<td>Any 8-byte boundary (general)</td>
<td>Any 16-byte boundary (optional)</td>
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<tr>
<td>Power consumption</td>
<td>5VDC 300mA</td>
<td>5VDC 550mA</td>
<td>5VDC 250mA</td>
</tr>
<tr>
<td>Bus / Dimensions (mm)</td>
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<td>ISA XT / 5.5(L) × 4.25(H)</td>
<td>ISA AT / 6.5(L) × 4.75(H)</td>
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<tr>
<td>Connector</td>
<td>37-pin female D-type</td>
<td>96-pin half pitch connector (male)</td>
<td></td>
</tr>
</tbody>
</table>

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*1: Requires use of optional cable PC37P or PC37PS.
2: Requires use of optional cable PB396W or PB396WS.
3: Requires use of optional cable PB396P or PB396PS.
## Digital I/O

### ISA Model
- **Opto-Isolated Digital I/O Board**
  - **Model**: PIO-16/16L(FC)\(V\)
  - **Model**: PIO-32/32L(FC)
  - **Model**: PIO-16/16B(FC)\(H\)

### Specifications
<table>
<thead>
<tr>
<th>Feature</th>
<th>PIO-16/16L(FC)(V)</th>
<th>PIO-32/32L(FC)</th>
<th>PIO-16/16B(FC)(H)</th>
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<tbody>
<tr>
<td>Input channels</td>
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<td>16</td>
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<td>Output channels</td>
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<td>16</td>
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<tr>
<td>I/O Circuit</td>
<td>12-24VDC</td>
<td>12-24VDC</td>
<td>12VDC 250mA</td>
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<tr>
<td>Input specifications</td>
<td>Opto-Isolated for sink current output</td>
<td>Opto-Isolated for sink current output</td>
<td>Opto-Isolated Open Collector (current sinks)</td>
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<tr>
<td>Output specifications</td>
<td>Opto-Isolated Open Collector (current sinks)</td>
<td>Opto-Isolated Open Collector (current sinks)</td>
<td>Opto-Isolated Open Collector (current sinks)</td>
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<tr>
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<td>1ms</td>
<td>1ms</td>
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<tr>
<td>Wiring Distance</td>
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<td>30m</td>
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<td>Any 4-byte boundary (general)</td>
<td>Any 2-byte boundary</td>
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<td>5VDC 50mA (External)</td>
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<td>ISA AT Bus / 160.0(L) (x) 122.0(W)</td>
<td>ISA AT Bus / 160.0(L) (x) 122.0(W)</td>
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<tr>
<td>Connector</td>
<td>37-pin female D-type</td>
<td>96-pin half pitch connector (male)</td>
<td>37-pin female D-type</td>
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</tbody>
</table>

### Options
- **Software**: API-PAC(W32)
- **Accessories**
  - DTP-3A**, DTP-4A**, DTP-64(PC)**
- **Cables / Connectors**
  - PCA37P, PCB37P, PCAM3PS, PBEM3PS, PCE6B6, PCE6B6S, CE marking | O | O |

*1: Requires use of optional cable PCB66P or PCB66S.*
*2: Requires use of optional cable PCB66W or PCB96WS.*
*3: Requires use of optional cable PCB66P or PCB96S.*

### ISA Model
- **Negative-Common I/O Board**
  - **Model**: PIO-16/16L(FC)\(+\)
  - **Model**: PIO-32/32L(FC)

### Specifications
<table>
<thead>
<tr>
<th>Feature</th>
<th>PIO-16/16L(FC)(+)</th>
<th>PIO-32/32L(FC)</th>
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<tbody>
<tr>
<td>Input channels</td>
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</tr>
<tr>
<td>Output channels</td>
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<tr>
<td>I/O Circuit</td>
<td>12-24VDC</td>
<td>12-24VDC</td>
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<tr>
<td>Input specifications</td>
<td>Opto-Isolated for source current output</td>
<td>Opto-Isolated for source current output</td>
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<tr>
<td>Output specifications</td>
<td>Opto-Isolated (source sinking)</td>
<td>Opto-Isolated (source sinking)</td>
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<tr>
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<td>Any 4-byte boundary (general)</td>
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<td>Bus / Dimensions (mm)</td>
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<tr>
<td>Connector</td>
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<td>96-pin half pitch connector (male)</td>
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</table>

### Options
- **Software**: API-PAC(W32)
- **Accessories**
  - DTP-3A**, DTP-4A**, DTP-64(PC)**
- **Cables / Connectors**
  - PCA37P, PCB37P, PCAM3PS, PBEM3PS, PCE6B6, PCE6B6S, CE marking | O | O |

*1: Requires use of optional cable PCB66P or PCB66S.*
*2: Requires use of optional cable PCB66W or PCB96WS.*
*3: Requires use of optional cable PCB66P or PCB96S.*

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## Digital I/O

### Specifications

<table>
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<tr>
<th>Specification</th>
<th>PIO-16/16T(PC)H</th>
<th>PIO-32/32T(PC)</th>
<th>PIO-48D(PC)</th>
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<tr>
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<td>TTL-level with Buffer</td>
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### Option

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<tr>
<th>Specification</th>
<th>PIO-16/16T(PC)H</th>
<th>PIO-32/32T(PC)</th>
<th>PIO-48D(PC)</th>
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<tr>
<td>Software</td>
<td>API-PAC(W32)</td>
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*1: Requires use of optional cable PCB37P or PCB37PS.
*2: Requires use of optional cable PCB96P or PCB96WS.
*3: Requires use of optional cable PCB96P or PCB96PS.