

PC Card-compliant Opto-Isolated Digital I/O

PIO-16/16L(PM)



Drive Library [API-PAC]: Included

PIO-16/16L(PM) is a PC Card Standard compliant product for input/output of digital signals. Users can use the card in PC card slots that support the PCMCIA 2.1/JEIDA 4.2 or later.

The PC can be used to input the on/off state of a switch and to control a relay.

The PC card can input and output up to 16 channels.

With the included Driver library [API-PAC(W32)], users can configure Windows application software for this PC card in your favorite programming language supporting Win32 API functions, such as Visual Basic or Visual C/C++.

Features

- Individual external power supplies can be used for each common pin as it is shared by 16 signal points.
- The PC card slot side and the I/O interface are isolated from each other by an opto-coupler, offering good noise immunity.
- Users can use all of the input signals as interrupt inputs and select the interrupt trigger edge of the input signal.
- The PC card has a digital filter feature to prevent noise or chatter from causing erroneous inputs.
- Up to 35VDC, 100mA per signal, max. output.
- The output transistor has a surge absorber connected to protect the PC card from surge voltages.

Accessories

Screw Terminal	:EPD-37A *1
Screw Terminal	:EPD-37 *1
Termination Panel (M3)	:DTP-3(PC)
Termination Panel	:DTP-4(PC)
Signal Monitor for Digital I/O:CM-32(PC)E	*1

*1 A PCB37PS or PCB37PS optional cable is required separately.
* Check the CONTEC Web site for more information on these options.

Optional Cable & Connector

Flat Cable with a 37-Pin D-type Connectors on 2Ends:
PCB37P-1.5(1.5m), PCB37P-3 (3m), PCB37P-5 (5m)

Shielded cable with two 37-pin D-Type connectors:
PCB37PS-0.5P(0.5m), PCB37PS-1.5P (1.5m), PCB37PS-3P (3m),
PCB37PS-5P (5m)

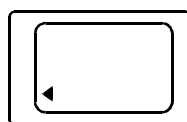
Flat Cable with a 37-pin D-type Connector:
PCA37P-1.5 (1.5m), PCA37P-3 (3m), PCA37P-5 (5m)

Shielded Cable with Two 37-pin D-Type Connectors:
PCA37PS-0.5P (0.5m), PCA37PS-1.5P (1.5m), PCA37PS-3P (3m)
PCA37PS-5P (5m)

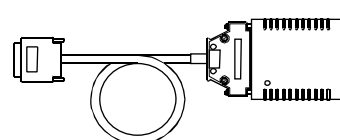
D-SUB37P Male Connector Set (5 Pieces):
CN5-D37M

Components in your package

- PC Card [PIO-16/16L(PM)] ...1
- Cable with isolation unit[PIO-16/16L(PM)-BOX and CB-PM68/37] ...1
- User's Guide...1
- CD-ROM [API-PAC(W32)] ...1



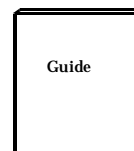
PC card



Cable with isolation unit



CD-ROM
[API-PAC(W32)]



Guide

Package contents

Item	Specification	
PC card		
Card slot specifications	PCMCIA 2.1/JEIDA 4.2 or later 16bit PC card	
Card size *1	PCMCIA/JEIDA TYPE II	
Input		
Input format	Opto-isolated input (Compatible with current sink output)(Negative logic)	
Number of input signal channels	16 channels (all available for interrupts) (1 common pin)	
Input resistance	3kΩ	
Input ON current	3.4mA or more	
Input OFF current	0.16mA or less	
Interrupt	16 interrupt input signals are arranged into a single output of interrupt signal INTA. An interrupt is generated at the rising edge (HIGH-to-LOW transition) or falling edge (LOW-to-HIGH transition).	
Response time	1msec within	
Output		
Output format	Opto-isolated open collector output (current sink type) (Negative logic)	
Number of Output signal channels	16 channels (1 common)	
Output	Output voltage	35VDC (Max.)
	Output current	100mA (par channel) (Max.)
Residual voltage with output on	0.5V or less (Output current≤50mA), 1.0V or less (Output current≤100mA)	
Surge protector	Surge absorber (Ishizuka Electronics Corporation) or equivalent	
Response time	1 msec within	
Common		
I/O address	8 bit x 16 port boundary (common to inputs and outputs)	
Interruption level	1 level use	
Dielectric strength	1000Vrms	
External circuit power supply	12 to 24VDC(±10%)	
Power consumption	5VDC 200mA (Max.)	
Operating condition	0 to 50°C, 10 to 90%RH (No condensation)	
Allowable distance of signal extension	Approx. 50 m (depending on wiring environment)	
Dimension	Refer to PC card Dimensions	
Weight	500g(Total weight of PC card, connection cable, isolation circuit box)	

Supported Software

Driver Software Package API-PAC(W32) (Included)

API-PAC(W32) is the library software that provides the commands for CONTEC hardware products in the form of Windows standard Win32 API functions (DLL). It makes it easy to create high-speed application software taking advantage of the CONTEC hardware using various programming languages that support Win32 API functions, such as Visual Basic and Visual C++.

It can also be used by the installed diagnosis program to check hardware operations.

CONTEC provides download services (at <http://www.contec.com/apipac/>) to supply the updated drivers and differential files.

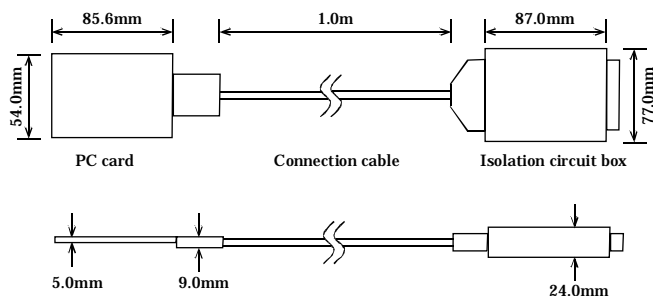
For details, read Help on the bundled CD-ROM or visit the CONTEC Web site.

< Operating environment >

OS: Windows XP, Server 2003, 2000, Me, 98, etc..

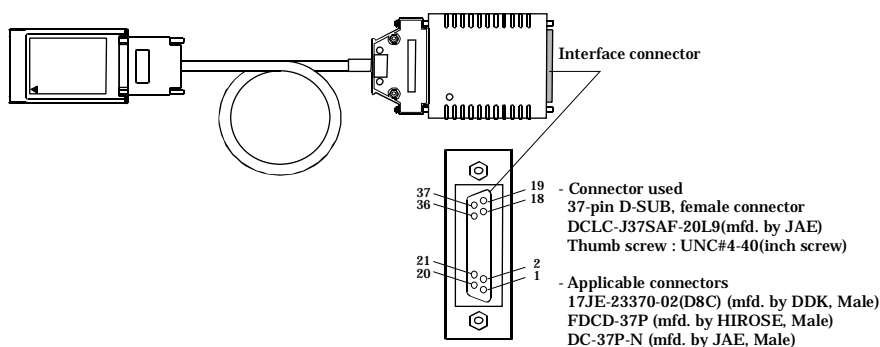
Language: Visual C++ .NET, Visual C# .NET, Visual Basic .NET, Visual C++, Visual Basic, Delphi, C++Builder, etc..

Physical dimension

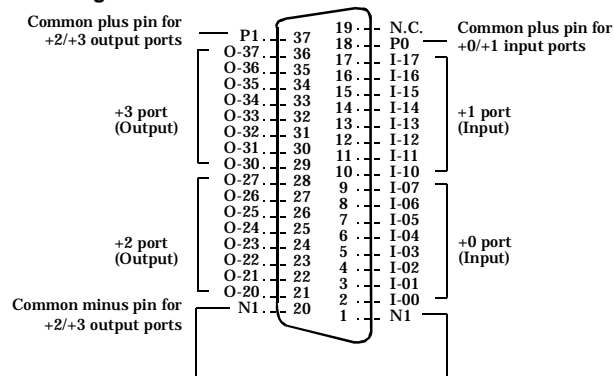


Connector Wiring

To connect an external device to this PC card, plug the cable from the device into the interface connector [37pin D-SUB(female)]shown below.



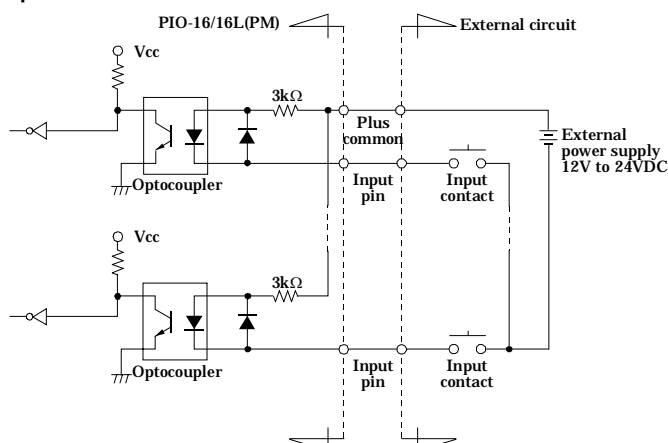
Pin Assignments of Interface Connector



Input Signals Connecting

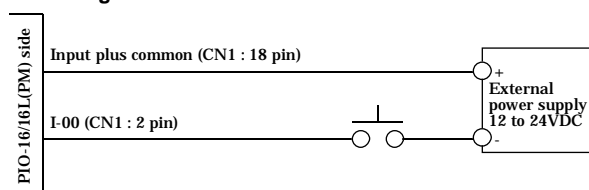
PIO-16/16L(PM) can be connected the input signals to a device which can be current-driven, such as a switch or transistor output device. The connection requires an external power supply to feed currents. The PC card inputs the ON/OFF state of the current-driven device as a digital value.

Input Circuit



The signal inputs are isolated by opto-couplers (ready to accept current sinking output signals). The PC card therefore requires an external power supply to drive the inputs. The power requirement for each input pin is about 8 mA at 24 VDC (about 4 mA at 12 VDC).

Connecting a Switch

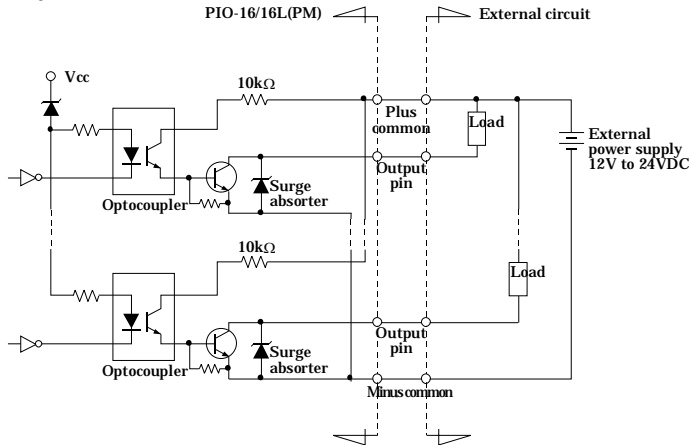


When the switch is ON, the corresponding bit contains 1.
When the switch is OFF, by contrast, the bit contains 0.

Output Signals Connecting

Connect the output signals to a current-driven controlled device such as a relay or LED.
The connection requires an external power supply to feed currents.
The PC card controls turning on/off the current-driven controlled device using a digital value.

Output Circuit

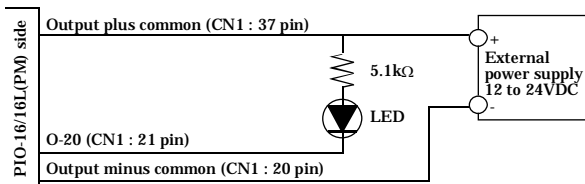


The signal output section is an opto-coupler isolated, open-collector output (current sink type). Driving the output section requires an external power supply.
The rated output current per channel is 100 mA at maximum.
The output section can also be connected to a TTL level input as it uses a low-saturated transistor for output. The residual voltage (low-level voltage) between the collector and emitter with the output on is 0.5 V or less at an output current within 50 mA or at most 1.0 V at an output current within 100 mA. As for the output transistor, the surge absorber is connected for protection from surge voltage.

CAUTION

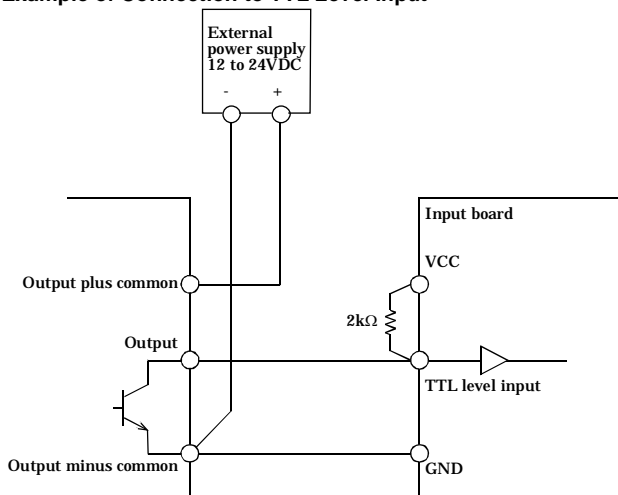
When the PC is turned on, all outputs are reset to OFF.

Connection to the LED



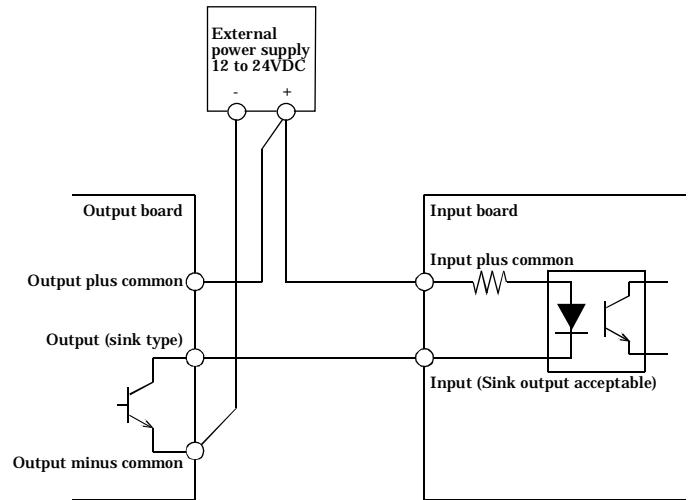
When "1" is output to a relevant bit, the corresponding LED comes on.
When "0" is output to the bit, in contrast, the LED goes out.

Example of Connection to TTL Level Input

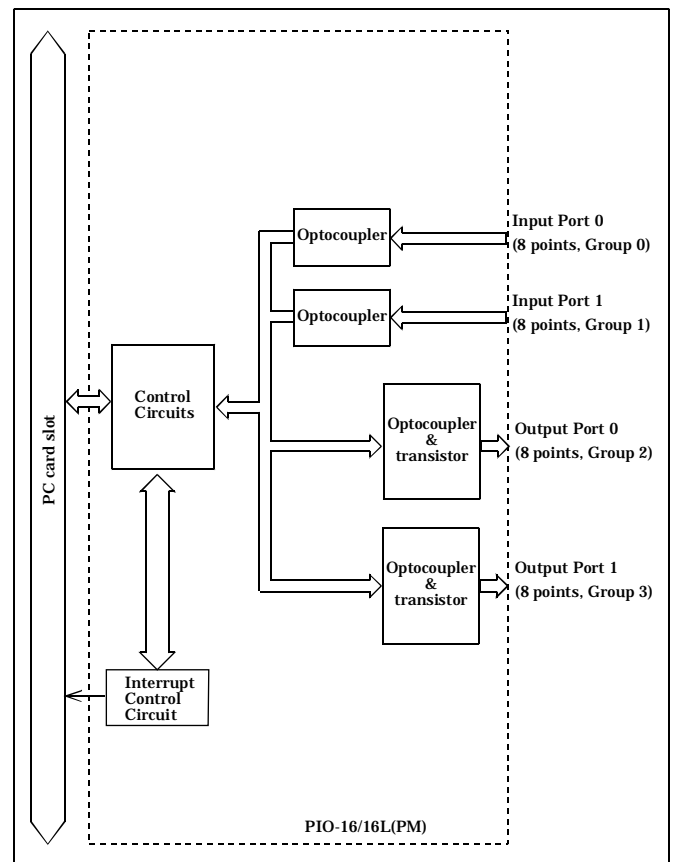


Sink Type Output & Sink Output support

Connecting the Sink Type Output and Sink Output Support Input
The following example shows a connection between a sink type output (output board(PC card)) and a sink output support input (input board(PC card)). Refer to this connection example when you connect such PC cards to each other.



Block Diagram



*Price, specification, color and design of the products may be changed without notice.