

# KPCI-PIO32IOA KPCI-PDISO8A

# 32 and 16 Line, Optically Isolated, 0–60V, Digital I/O Boards



- Up to 32 optically isolated solid-state relays and digital inputs
- Direct, non-polarized switching and sensing: DC up to 60VDC, AC up to 30Vrms
- High load current capability up to 350mA
- High voltage transient protection
- Selectable low pass filter on inputs for AC or DC sensing
- External interrupt/latching capability
- 32-bit DriverLINX® software includes test panel, ExceLINX™, and DLL- and ActiveX-based drivers to use in programming languages such as Visual Basic, Visual C/C++, Delphi, LabVIEW™, and TestPoint™

these boards could be used to control gates on a conveyor, monitor limit switches, control a component handler, flag a pass/fail alarm, or monitor and control binning and sorting mechanisms. The boards could also be integrated into a custom switching and control system that controls mechanical and RF relays.

## Functional Description

The robust design of these boards includes on-board transient protection circuitry that absorbs the energy from high voltage spikes in the system. This increases the life of the product and protects it against unpredictable signals in the system.

The isolated, solid-state relays (FET switches) are designed for noisy production floors. The on-board optical isolation makes these boards more immune to noise and ground loops in the system. The solid-state switching provides longer life and lower maintenance compared to mechanical relays, especially in continuous process applications where switching is done frequently and around the clock.

These boards offer a digital input channel that can be used as an external interrupt to latch in data on a rising or falling edge. When an external signal is detected, the board generates a PC interrupt and a Windows message is sent to the application after a specified number of points is acquired. This feature gives the user the option to synchronize digital inputs with an external event instead of reading the digital input directly through a software call.

## ACCESSORIES AVAILABLE

CAB-1284CC-5	36-pin, half-meter Shielded Cable
CAB-1284CC-2	36-pin, two-meter Shielded Cable
STP-36	36-pin Screw Terminal Panel
STP-ENCL	General purpose enclosure for the STP-36
TESTPOINT	Graphical, object-oriented, TestPoint Software Development Package

## TYPICAL APPLICATIONS:

- Industrial monitoring and control
- Electronic manufacturing production testing
- Factory automation
- Security control
- Energy management
- Machine building and automation
- PLC interface

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## BENEFITS:

- Low cost, robust, and reliable performance
- Direct switching and sensing of industry standard 12V, 24V, and 48V loads such as relays, motors, alarms, lamps, fans, valves, and various solenoids
- Noise immunity and PC protection in industrial environments
- Low maintenance, longer life, solid-state switching
- Synchronizes digital inputs with external signals in the system
- Easy to use software to get up and running quickly

## Ordering Information

### KPCI-PIO32IOA

16 outputs and 16 inputs, optically isolated, 0–60V, digital I/O board

### KPCI-PDISO8A

8 outputs and 8 inputs, optically isolated, 0–60V, digital I/O board

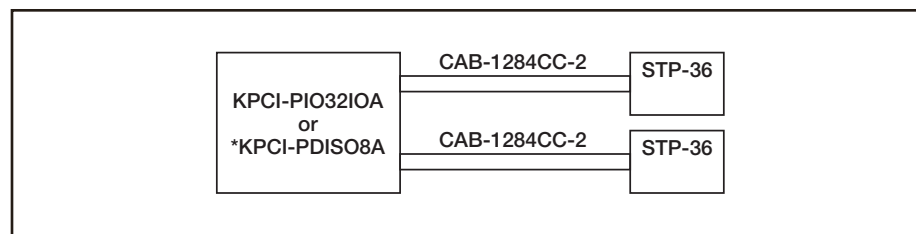
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For ease of use and reliability, industry standard IEEE-1284-CC connectors (mini Centronics) are used (two for the KPCI-PIO32IOA and one for the KPCI-PDISO8A). They offer a convenient snap-on connection and support shielded cables that are well suited for noisy industrial environments.

These boards increase signal reliability through their selectable on-board low pass filter. The filter rejects occasional high frequency noise in DC signals and enables the application to sense AC signals by preventing discontinuous logic readings from occurring at the zero crossing of an AC signal. This filter can be used with 50 to 60Hz signals from a motor controller or a step down transformer.

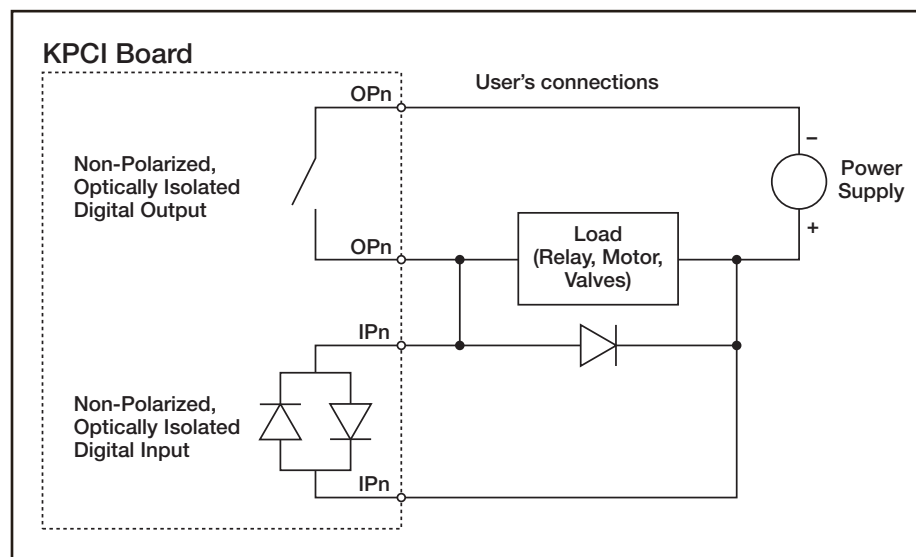
The low on-resistance of less than four ohms minimizes the voltage drop across the solid-state switch and the power draw on the system's supply.

## Configuration Guide



\*Only one STP-36 screw terminal and one CAB-1284CC-2 cables is needed for the KPCI-PDISO8A.

## Typical Circuit Diagram



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## Condensed Specifications

Check [www.keithley.com](http://www.keithley.com) for more detailed specifications.

### ISOLATED DIGITAL OUTPUTS

**CHANNELS:** 16 (on the KPCI-PIO32IOA) or 8 (on the KPCI-PDISO8A).

**TYPE:** Solid-state (MOSFET switches), optically isolated, N.O. Form A relays.

**VOLTAGE RANGE:** DC or AC, up to 60VDC, 30Vrms.

**MAXIMUM LOAD CURRENT:** 350mA.

**ON-RESISTANCE:** 3.5Ω typical (4Ω max.).

**RELAY ON TIME:** 1.0ms typical (3.5ms max.).

**RELAY OFF TIME:** 80μs typical (200μs max.).

**LEAKAGE CURRENT:** Typical 316nA at 60VDC, 50°C, 30% RH (2μA max.).

### ISOLATED DIGITAL INPUTS

**CHANNELS:** 16 (on the KPCI-PIO32IOA) or 8 (on the KPCI-PDISO8A).

**TYPE:** Solid-state, optically isolated.

**VOLTAGE RANGE:** DC or AC, up to 60VDC, 30Vrms (DC logic high:  $> |\pm 2.5V|$ , logic low:  $< |\pm 1.0V|$ ).

**RESPONSE TIME:** 0.6ms typical (1.0ms max.).

**SELECTABLE LOW PASS FILTER FOR AC OR DC SENSING:** 175ms time constant, jumper selectable.

### GENERAL

**ISOLATION:** 60V channel to channel and channel to chassis

#### ENVIRONMENTAL:

**Operating Temperature:** 0 to 50°C.

**Storage Temperature:** –20 to 70°.

**Humidity (non condensing):** 0 to 80% at 35°C.

**POWER:** 500mA max. required by the card (additional 1A can be drawn from pin 1, +5V).

**EMC:** Conforms to European Union Directive 89/336/EEC, EN61326-1.

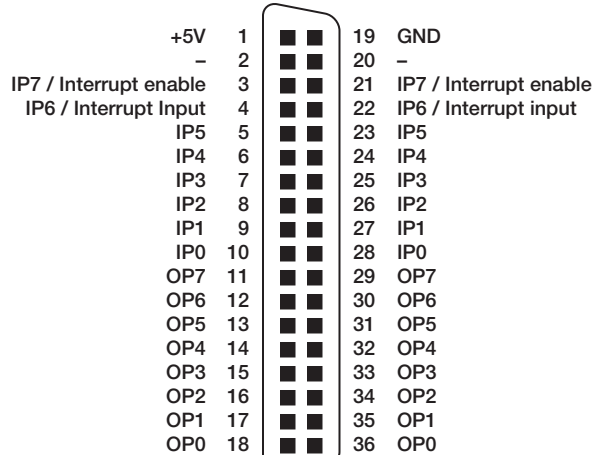
**SAFETY:** Conforms to European Union Directive 73/23/EEC, EN61010-1.

**DIMENSIONS OF BOARD:** 18.1cm × 10.8cm × 1.9cm (7.1 in × 4.25 in × 0.75 in).

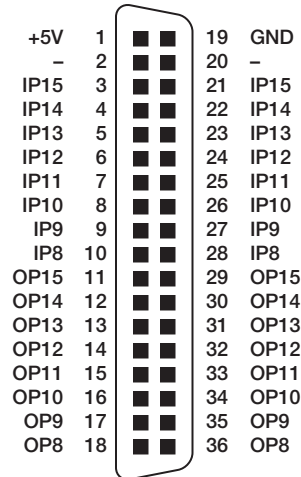
**DIMENSIONS OF STP-36 ACCESSORY:** 133mm × 72mm × 32mm (5.25 in × 2.75 in × 1.25 in).

**CONNECTORS:** Board connector part number by 3M: N10236-52B2VC. Mating connector by 3M: 10136-6000EC (IDC), 10136-3000VE (solder).

## Connector Pin Assignments



Top Connector



Bottom Connector (KPCI-PIO32IOA only)

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Optically isolated digital I/O boards

PCI/ISA/PCMCIA

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**Keithley Instruments, Inc.**

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