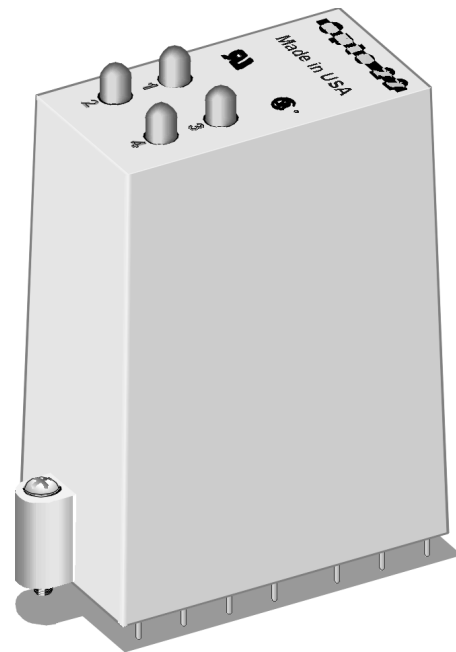# OPTO 22

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Description

Quad Pak modules contain the equivalent of four single-channel I/O circuits in a single high-density package. Each Quad Pak module can be divided into two pairs with each pair sharing a common connection. The Quad Pak modules are designed to plug into the Quad Pak high-density I/O mounting racks only and cannot be plugged into single-channel racks. Quad Pak modules are designed to work with a 5 VDC logic voltage only and can be used with Optomux, Pamux, and Mistic protocol brain boards and mounting racks, as well as racks using a direct cable connection to a computer.

DC input modules are used for sensing ON/OFF DC voltage levels. All DC input modules, with the exception of the IDC5BQ, are designed with filtering on the input and a hysteresis amplifier for high noise rejection and transient-free "clean" switching. The IDC5BQ module is a fast-switching input module for signals produced by photoelectric switches, encoders, DC proximity switches, or TTL devices. Each module provides up to 4,000 V_{rms} of optical isolation between field inputs and the logic side of the circuit.

Typical uses and applications include sensing the presence or absence of voltage or sensing contact closures from sources such as:

- Proximity switches
- Limit switches
- Selector switches
- Push button and toggle switches
- Photoelectric switches
- TTL-compatible devices

Part Numbers	Description
IDC5Q	4-Channel DC Input 10–32 VDC, 5 VDC Logic
IDC5BQ	4-Channel DC Input 4–16 VDC, 5 VDC Logic, High Speed
IAC5Q	4-Channel DC Input 90–140 VDC, 5 VDC Logic
IAC5AQ	4-Channel DC Input 180–280 VDC, 5 VDC Logic

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Specifications

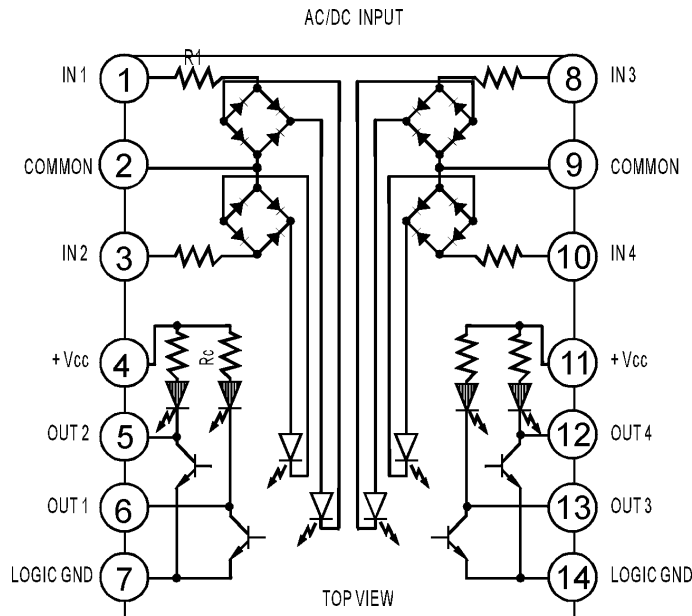| GENERAL-Applies To All Models	
Operating Ambient Temperature	-30° to 70° C
Isolation Input-to-Output	4,000 Vrms
Output Voltage Drop	0.4 volts @ 50 milliamperes
Output Current	50 milliamperes
Output Leakage With No Input	100 microamperes maximum @ 30 VDC
Output Transistor	30 volts breakdown

	Units	IDC5Q	IDC5BQ	IAC5Q	IAC5AQ
Input Voltage Range	VDC	10–32	4–16	90–140	180–280
Input Current @ Maximum Line	mA	29	45	11	6.5
Turn-on Time	msec	5	0.05	20	20
Turn-off Time	msec	5	0.01	20	20
Input Allowed For No Output	mA	1	0.7	3	1.7
	V	3	1	45	80
Logic Supply Voltage - Nominal	VDC	5	5	5	5
Logic Supply Voltage Range	VDC	4.5–6	4.5–6	4.5–6	4.5–6
Logic Supply Current @ Nominal Logic Voltage	mA	12	12	12	12
Input Resistance (R_1 in Schematic Diagram)	Ohms	1.5K	300	24K	66K
Control Resistance (R_2 in Schematic Diagram)	Ohms	220	220	220	220

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Dimensions

3.080" (78.23mm) MAX

2.880" (73.15mm)

0.500" (12.70mm)

0.04 (1.0) DIA   4-40 PAN HD SCREW   0.25" (6.4mm)

0.12" (3.0mm)

14 13 12 11   10 9 8

7 6 5 4   3 2 1

0.200" (5.08mm)   1.06" (26.9mm)
0.450" (11.43mm)
0.300" (7.62mm)
0.200" (5.08mm)
0.400" (10.16mm)
0.900" (22.86mm)
1.100" (27.94mm)
1.300" (33.02mm)
1.50" (38.10mm)
2.10" (53.34mm)

Schematics

AC/DC INPUT

IN 1   1   R1   8   IN 3

COMMON   2   9   COMMON

IN 2   3   10   IN 4

+Vcc   4   Rc   11   +Vcc

OUT 2   5   12   OUT 4

OUT 1   6   13   OUT 3

LOGIC GND   7   14   LOGIC GND

TOP VIEW
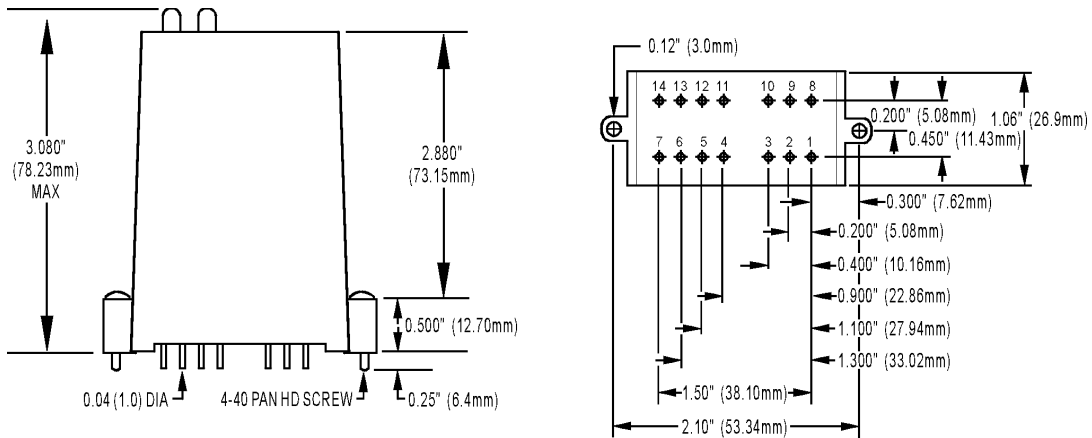
RED INDICATOR LED

INFRARED COUPLER LED

EQUIVALENT CIRCUIT ONLY

NEGATIVE TRUE LOGIC

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Connections
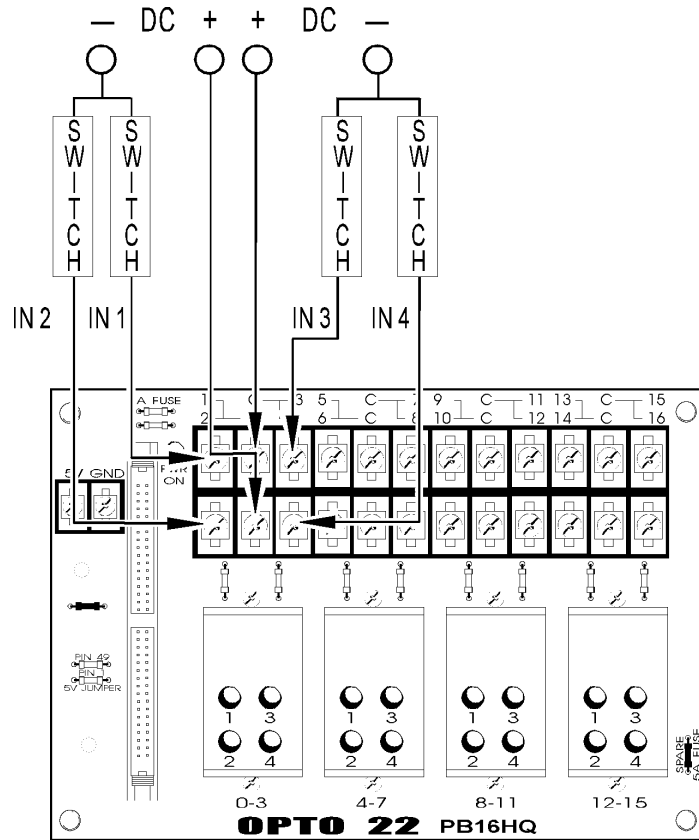
Products

Opto 22 produces a broad array of reliable, flexible hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications.

SNAP Ethernet Systems

Based on the Internet Protocol (IP), SNAP Ethernet systems offer flexibility in their network connectivity and in the software applications they work with. The physical network may be a wired Ethernet network, a cellular wireless network, or a modem. A wide variety of software applications can exchange data with SNAP Ethernet systems, including:

- Opto 22's own ioProject™ suite of control and HMI software
- Manufacturing resource planning (MRP), enterprise management, and other enterprise systems
- Human-machine interfaces (HMIs)
- Databases
- Email systems
- OPC client software
- Custom applications
- Modbus/TCP software and hardware.

SNAP Ethernet system hardware consists of controllers and I/O units. Controllers provide central control and data distribution. I/O units provide local connection to sensors and equipment.

SNAP OEM Systems

Opto 22 SNAP OEM I/O systems are highly configurable, programmable processors intended for OEMs, IT professionals, and others who need to use custom software with Opto 22 SNAP I/O modules.

Linux® applications running on these systems can read and write to analog, simple digital, and serial I/O points on SNAP I/O modules using easily implemented file-based operations. Applications can be developed using several common development tools and environments, including C or C++, Java, and shell scripts.

M2M Systems

Machine-to-machine (M2M) systems connect your business computer systems to the machines, devices, and environments you want to monitor, control, or collect data from. M2M systems often use wireless cellular communications to link remote facilities to central systems over the Internet, or to provide monitoring and control capability via a cellular phone.

Opto 22's Nvio™ systems include everything you need for M2M—interface and communications hardware, data service plan, and Web portal—in one easy-to-use package. Visit nvio.opto22.com for more information.

Opto 22 Software

Opto 22's ioProject and FactoryFloor® software suites provide full-featured and cost-effective control, HMI, and OPC software to power your Opto 22 hardware. These software applications help you develop control automation solutions, build easy-to-use operator interfaces, and expand your manufacturing systems' connectivity.

Quality

In delivering hardware and software solutions for worldwide device management and control, Opto 22 retains the highest commitment to quality. We do no statistical testing; each product is made in the U.S.A. and is tested twice before leaving our 160,000 square-foot manufacturing facility in Temecula, California. That's why we can guarantee solid-state relays and optically-isolated I/O modules *for life*.

Product Support

Opto 22's Product Support Group offers comprehensive technical support for Opto 22 products. The staff of support engineers represents years of training and experience, and can assist with a variety of project implementation questions. Product support is available in English and Spanish from Monday through Friday, 7 a.m. to 5 p.m. PST.

Opto 22 Web Sites

- www.opto22.com
- nvio.opto22.com
- www.internetio.com (live Internet I/O demo)

Other Resources

- OptoInfo CDs
- Custom integration and development
- Hands-on customer training classes.

About Opto 22

Opto 22 manufactures and develops hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's input/output and control systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, and electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel.

Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability.

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