

Part Numbers	Description
AC30A	4-wire RS-422/485 Multidrop Repeater 120 VAC
AC30B	4-wire RS-422/485 Multidrop Repeater 220 VAC

Description

The AC30A and AC30B adapter cards provide the ability to extend a multidrop RS-422/485 communications link beyond 5,000 feet and also allow branching from an RS-422/485 link. When used as a repeater, the AC30A/B retransmits data on the communications link, extending the total cable length an additional 5,000 feet. A star network topology can also be implemented using up to 100 AC30A/B adapter cards on a single RS-422/485 data link.

The AC30A/B operates at baud rates up to 38,400 in a half-duplex mode using two twisted pairs and a signal common.

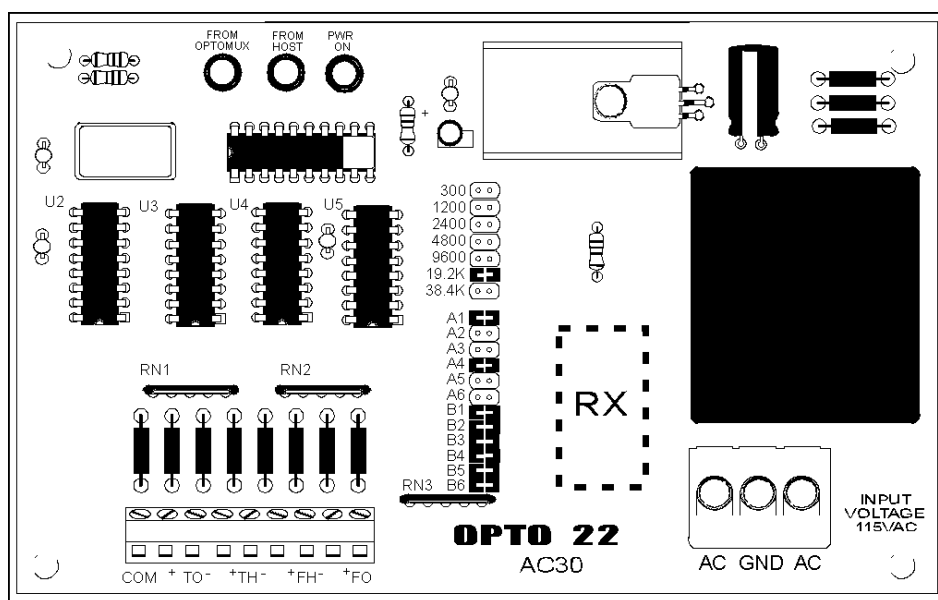
The AC30A includes an onboard 115 VAC power supply and the AC30B includes a 220 VAC power supply.

Introduction

The AC30A/B is an adapter card that extends or branches an Opto 22 RS-422/485 serial link. This allows the addition of up to 5,000 feet of cable for long runs. The AC30A/B uses four wires (two twisted pairs) on both the host (TO/FO) and slave (TH/FH) ports. The AC30A/B is not compatible with two-wire RS-485 communications links.

Summary of Features

- RS-422/485 balanced line drivers
- Operates with up to 5,000 feet of cable
- Visual transmit, receive and power indicators
- Transmission speeds from 300 to 38.4K baud
- Multidrop repeater station
- Network branching
- Onboard power supply
- Full termination and biasing options on all RS-422/485 lines

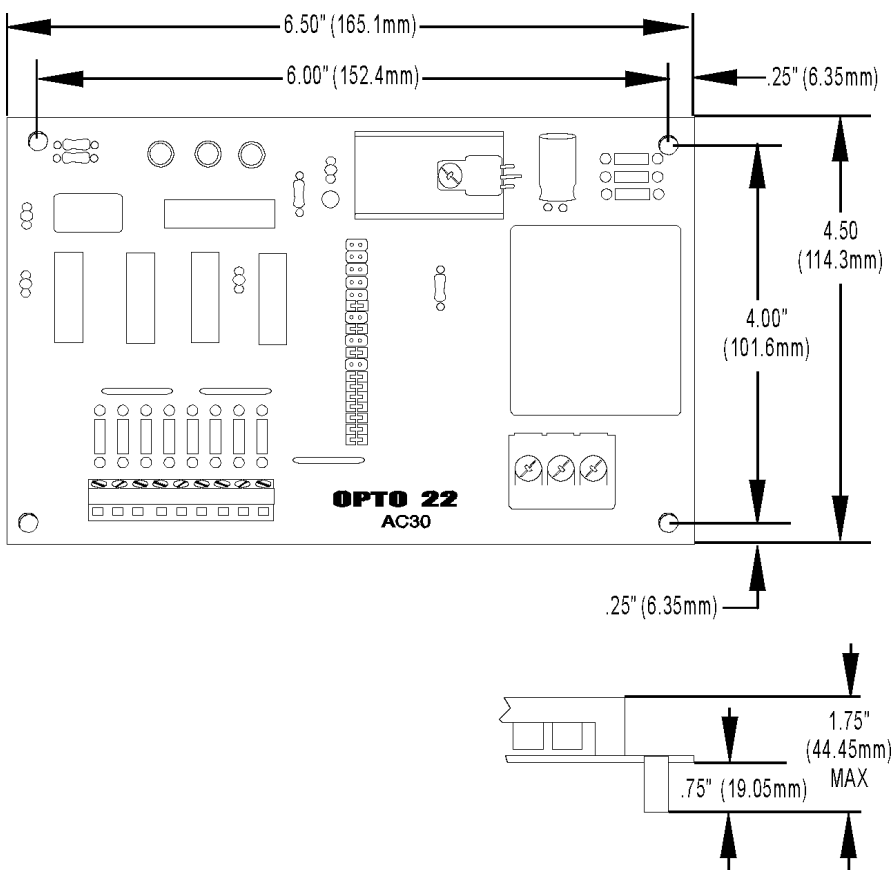


Opto 22 AC30 Adapter Card

Specifications

Power Requirements AC30A AC30B	115 VAC $\pm$ 10 VAC @ 50–60 Hz 220 VAC $\pm$ 20 VAC @ 50–60 Hz
Power Consumption	0.1 amps @ 115 VAC 5 watts (dissipation)
Operating Temperature Range	0° to 70° C 0 to 95% Humidity (non-condensing)
Isolation	None
Interface	RS-422/485 (4-40 screw terminals)
Baud Rate	Up to 38,400 baud
Distance	Up to 5,000 feet (RS-422/485)
Communications	Half-duplex over two twisted pairs plus a signal common with automatic transmit enable for multidrop
Indicators	Transmit, receive, and power

Dimensions



Configuration

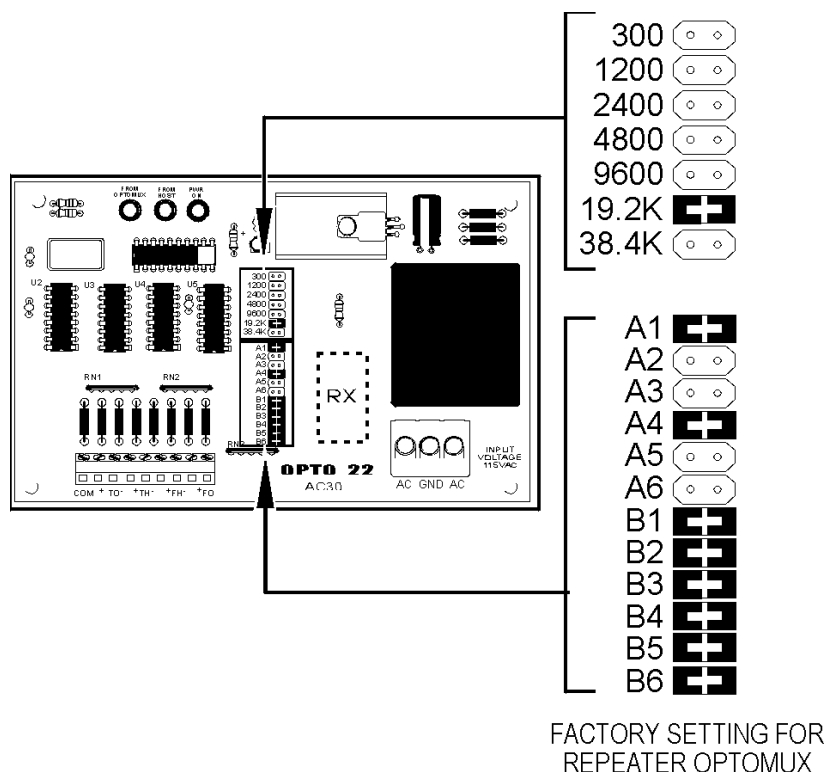
Before using the AC30A/B, it must be configured by selecting the appropriate termination, biasing, and baud rate jumpers. To set the baud rate, install jumper of desired setting. The options are 300, 1200, 2400, 4800, 9600, 19200 and 38400 baud.

Installing Jumpers B1 and B4 connects 220 Ohm terminating resistors from + to - on the transmitter (to Optomux) and receiver (from Optomux), respectively. In a normal Optomux network these jumpers should both be installed.

Installing Jumpers A1 and A4 connects 220 Ohm terminating resistors from + to - on the transmitter (to Host) and receiver (from Host), respectively. In a normal Optomux network these jumpers should both be installed.

The passive pull up/pull down resistors (A2, A3, B5, B6, A5, A6, B2, B3) should be installed only if no other device on the links have pull up/pull down resistors active.

On an Optomux link, if the AC30A/B is used as a repeater, the jumper setting should be A1, A4, and B1 through B6. See page 9 for schematic of the termination and biasing jumpers (A1-A6 and B1-B6).



Installation

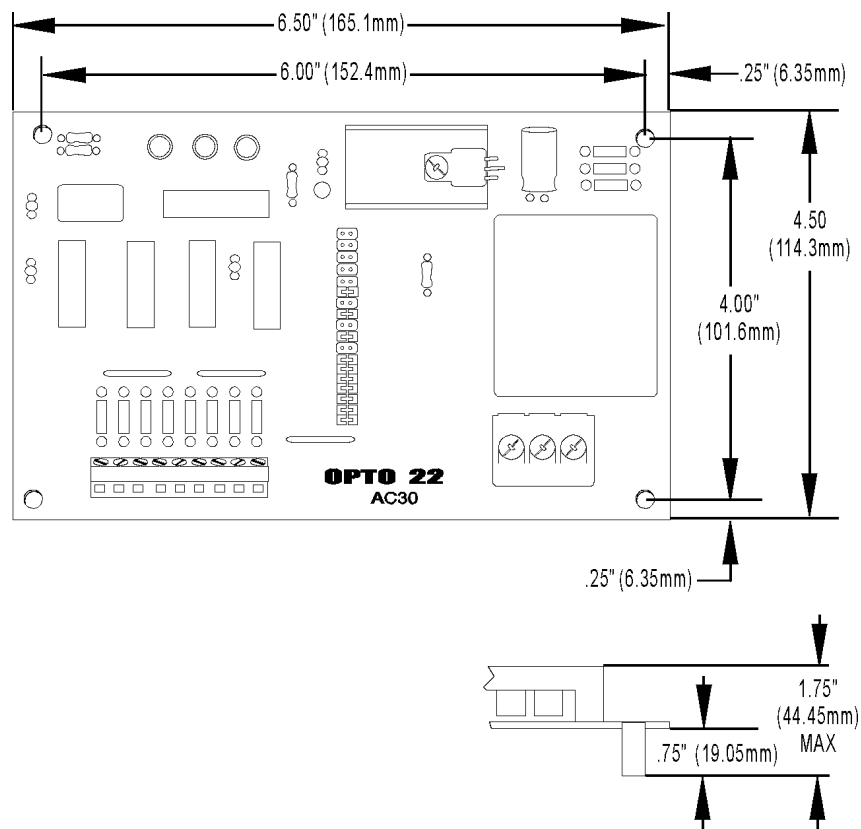
Equipment Required

The following should be available during AC30A/B installation.

- Medium size flat-blade screwdriver
- Small size flat-blade screwdriver
- Wire stripper
- Variety of color-coded wires
 - 22-gauge for data link
 - 18-gauge stranded for power supply wiring.

Mounting the AC30A/B

The AC30A/B can be mounted in any attitude on any flat surface. The AC30A/B is supplied with $\frac{3}{4}$ " standoffs. All the standoffs should be using #6 hardware to provide maximum physical strength. Leave sufficient space around the AC30A/B for data link and power wiring.

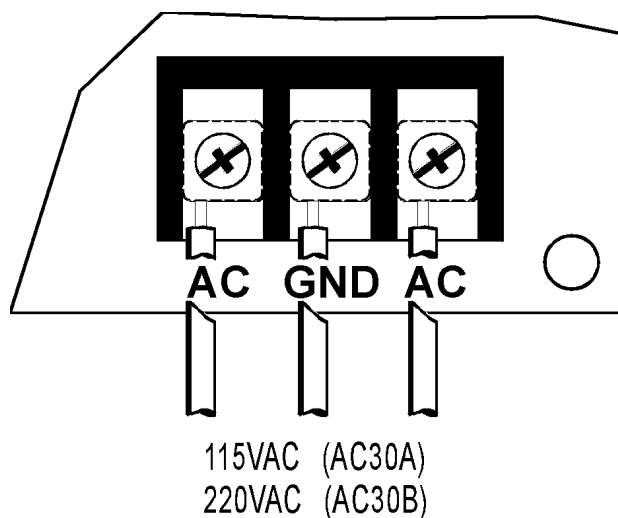


Power Supply Requirements

The AC30A and AC30B contain onboard DC power supplies. The AC30A requires 110 VAC and AC30B requires 220 VAC.

Connecting AC Power to AC30A and AC30B

Caution: Ensure that AC power is OFF while making or removing all connection to the AC30A/B.



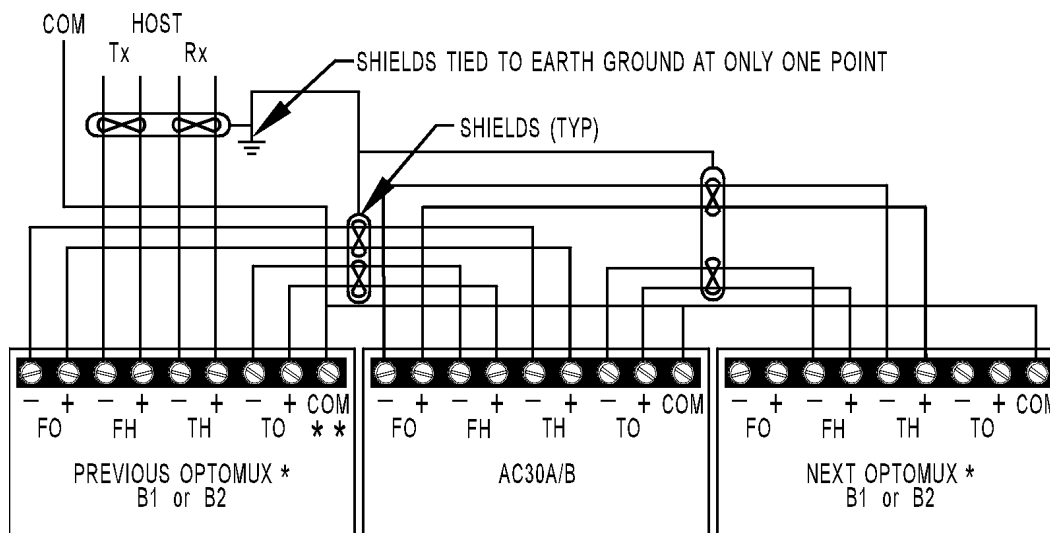
Connecting Common to Ground on AC30A and AC30B

The AC30A and AC30B provide the ability to tie the RS-422/RS-485 Common terminal to ground by installing a ½ watt, 100 ohm resistor at location RX. This is not normally necessary. Note that RS-422 communication links should only be grounded on one end, if at all, to avoid ground loops.

Connecting the Data Link

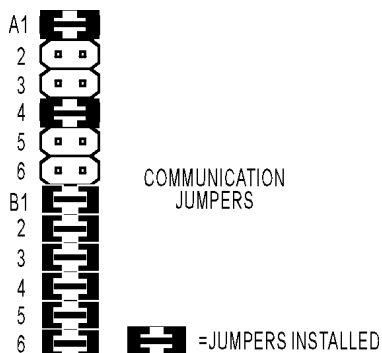
Multidrop Repeater Station

Examine the diagram below for installing the AC30A/B in your Optomux network as a multidrop repeater station.



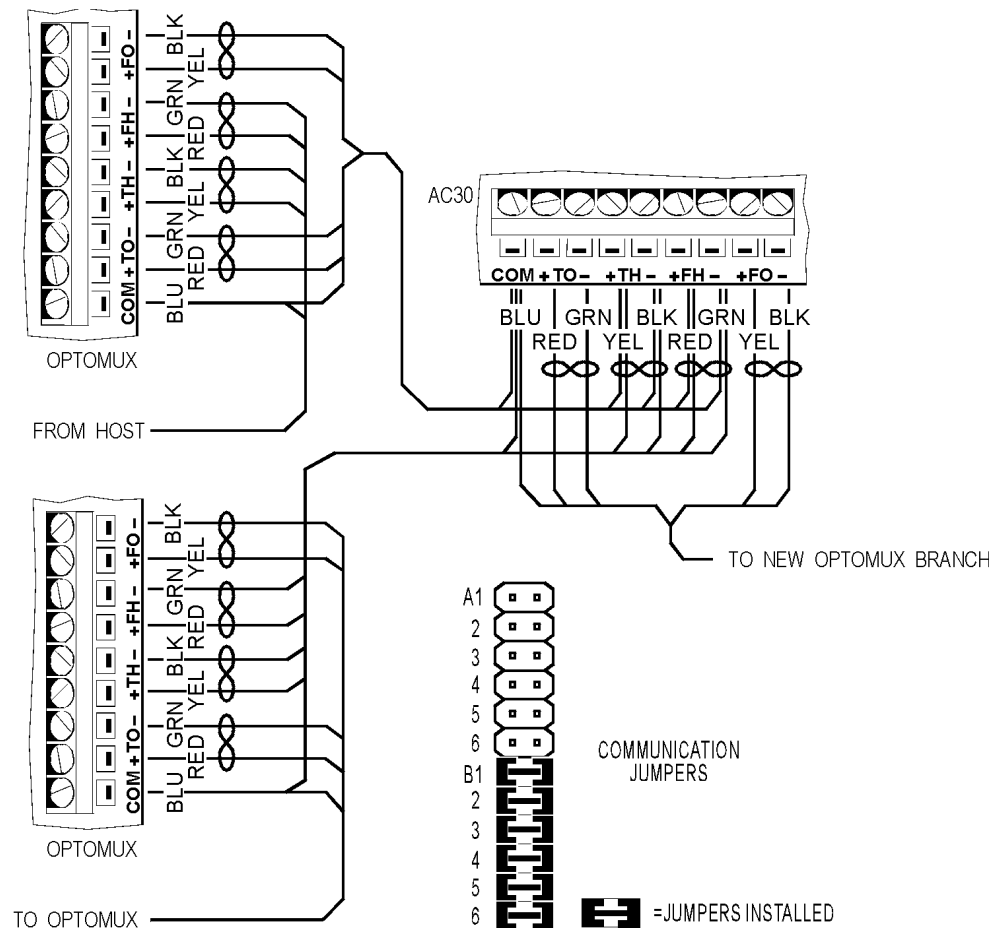
* B2 COMMUNICATION CONNECTIONS ARE MADE TO THE RACK (PB4AH, PA8AH OR PB16AH), NOT TO THE BRAIN BOARD.

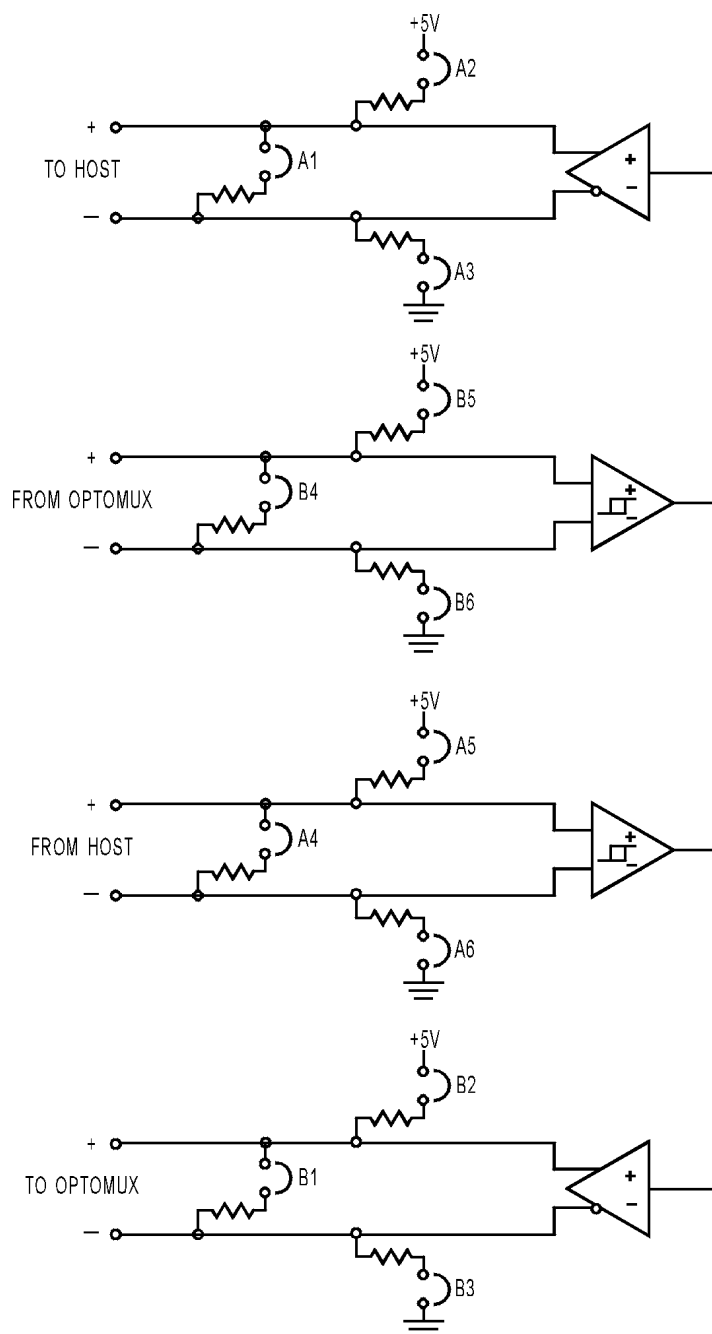
** DO NOT CONNECT ANY "COM" POINT TO EARTH GROUND.



Network Branch

Examine the diagram below for installing the AC30A/B in your Optomux network as a network branch.



AC30A/B Schematic

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 Nvivo™ 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.