

## STANDARD ANALOG CURRENT INPUT MODULES

### Features

- > Single channel of optically-isolated current-to-digital conversion
- > AD3T and AD2T modules offer additional channel-to-channel isolation
- > "T" modules provide 4,000 Vrms channel-to-channel isolation which eliminates ground loop problems

### DESCRIPTION

Each Opto 22 AD3, AD3T, and AD2T analog input module provides a single channel of optically isolated current-to-digital conversion. The AD3T and AD2T modules offer additional channel-to-channel isolation.

For the AD3 and AD3T modules, the nominal input range is 4 to 20 mA with an under/over range capability from less than 3 mA to greater than 35 mA.

The AD2T module has a nominal input range of 0 to 20 mA with an under/over range capability from less than -1.25 mA to greater than 35 mA.

Both "T" modules also provide 4,000 Vrms channel-to-channel isolation, which eliminates ground loop problems. These modules plug into a Classic Standard analog I/O rack and are secured by a captive screw.



AD3T

### Part Numbers

Part	Description
AD2T	0 to 20 mA Input Isolated
AD3	4 to 20 mA Input
AD3T	4 to 20 mA Input Isolated

## SPECIFICATIONS

	AD3	AD3T	AD2T
Input Impedance	249 Ohms	249 Ohms	50 Ohms
Nominal Input Range	4 to 20 mA	4 to 20 mA	0 to 20 mA
Over/under Range	3 to 35 mA	3 to 35 mA	-1.25 to 35 mA
Accuracy	0.016 mA (0.1% of span)	0.016 mA (0.1% of span)	0.020 mA (0.1% of span)
Resolution	12 bits (0.0039 mA)	12 bits (0.0039 mA)	12 bits (0.0049 mA)
Response Time	Full-scale step change in 3 ms		
Isolation Transient			
Input-to-Output	4,000 Vrms	4,000 Vrms	4,000 Vrms
Input-to-Analog-Supply	n/a	4,000 Vrms	4,000 Vrms
Power Requirements	13 mA at +15 (+/- 0.25) VDC 7.5 mA at -15 (+/- 0.25) VDC	35 mA at +15 (+/- 0.25) VDC 35 mA at -15 (+/- 0.25) VDC	35 mA at +15 (+/- 0.25) VDC 35 mA at -15 (+/- 0.25) VDC
Ambient Temperature:			
Operating	0 to 70 °C		
Storage	- 25 to 85 °C		
Agency Approvals	UL, CE, UKCA	CE, UKCA	RoHS, CE, UKCA

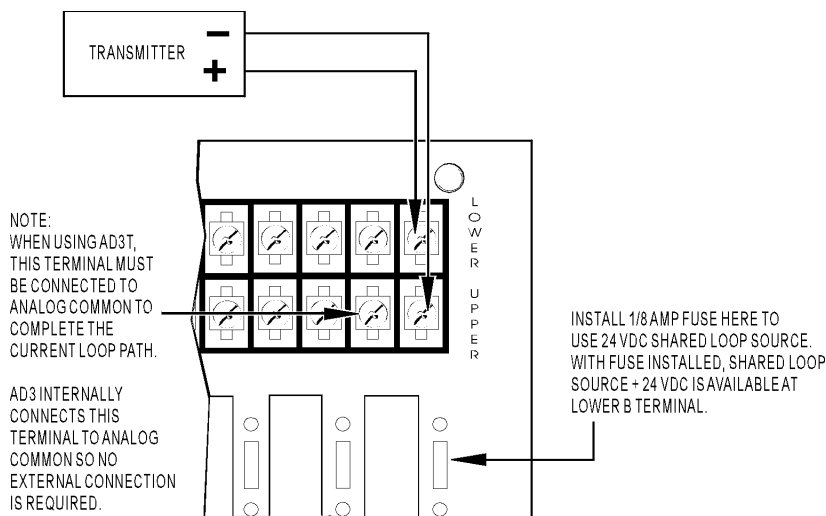
\*Accuracy figures assume use of Gain and Offset commands.

## CONNECTIONS

### AD3 Modules Using Shared Loop Service

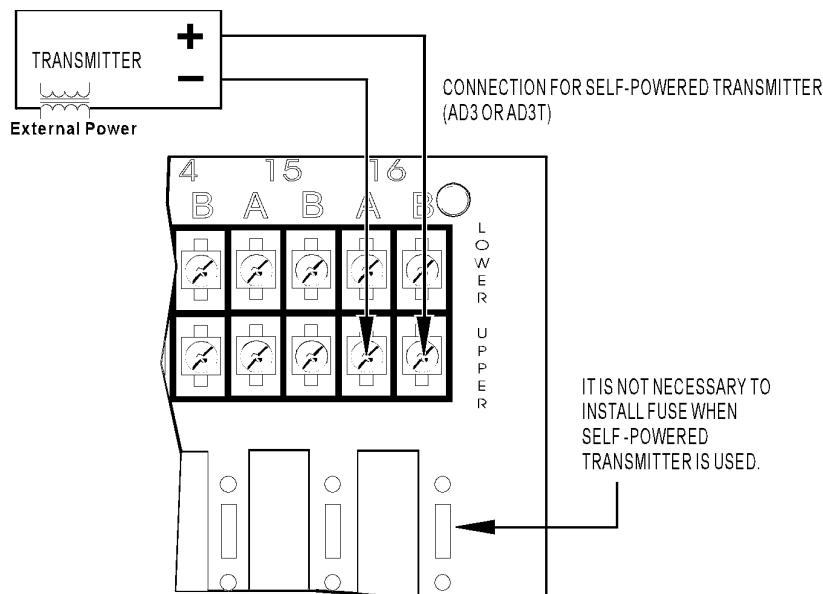
NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.

AD3T: All of the lower A terminals on the mounting rack are tied together. These provide a convenient tie point for shared loop source return. To use the AD3T module with a common loop power supply, connect any one lower A terminal to the shared loop source “-”, then jumper upper A to lower A for each AD3T.



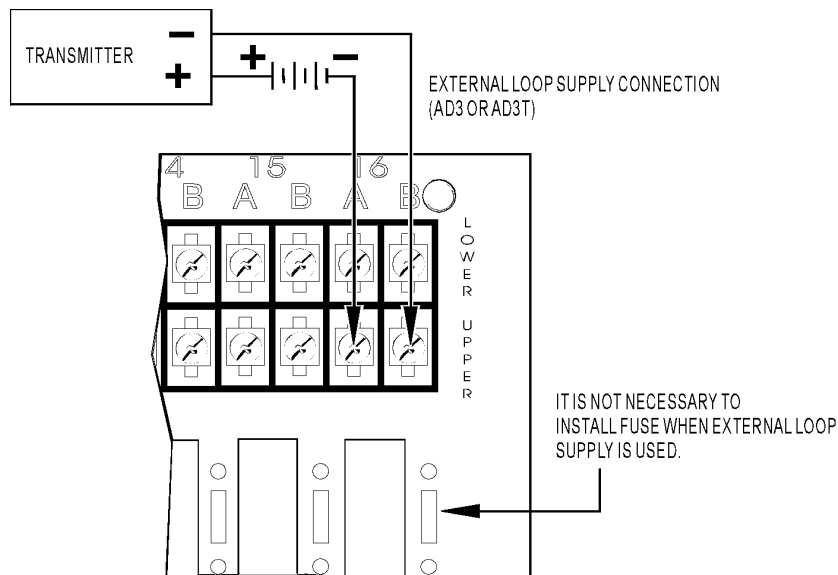
### AD3 Modules Using Self-powered Transmitter

NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.

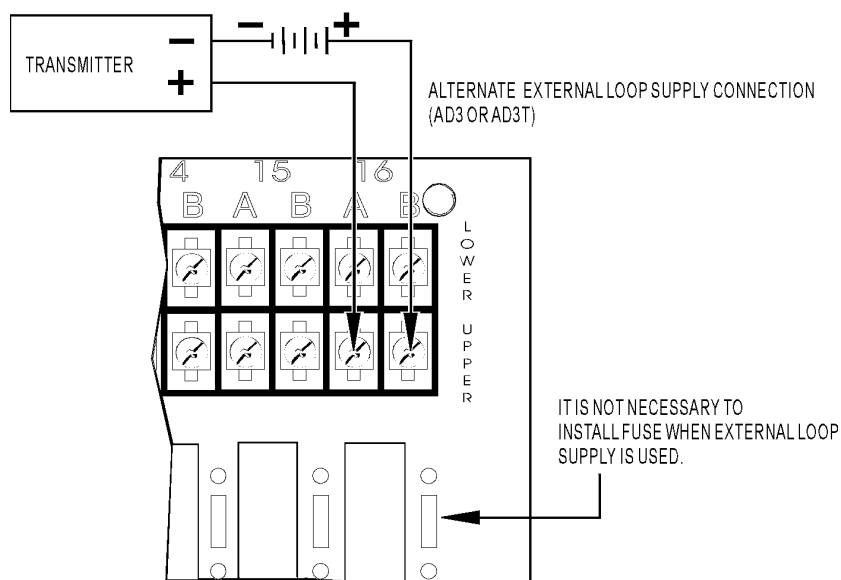


## CONNECTIONS (CONT)

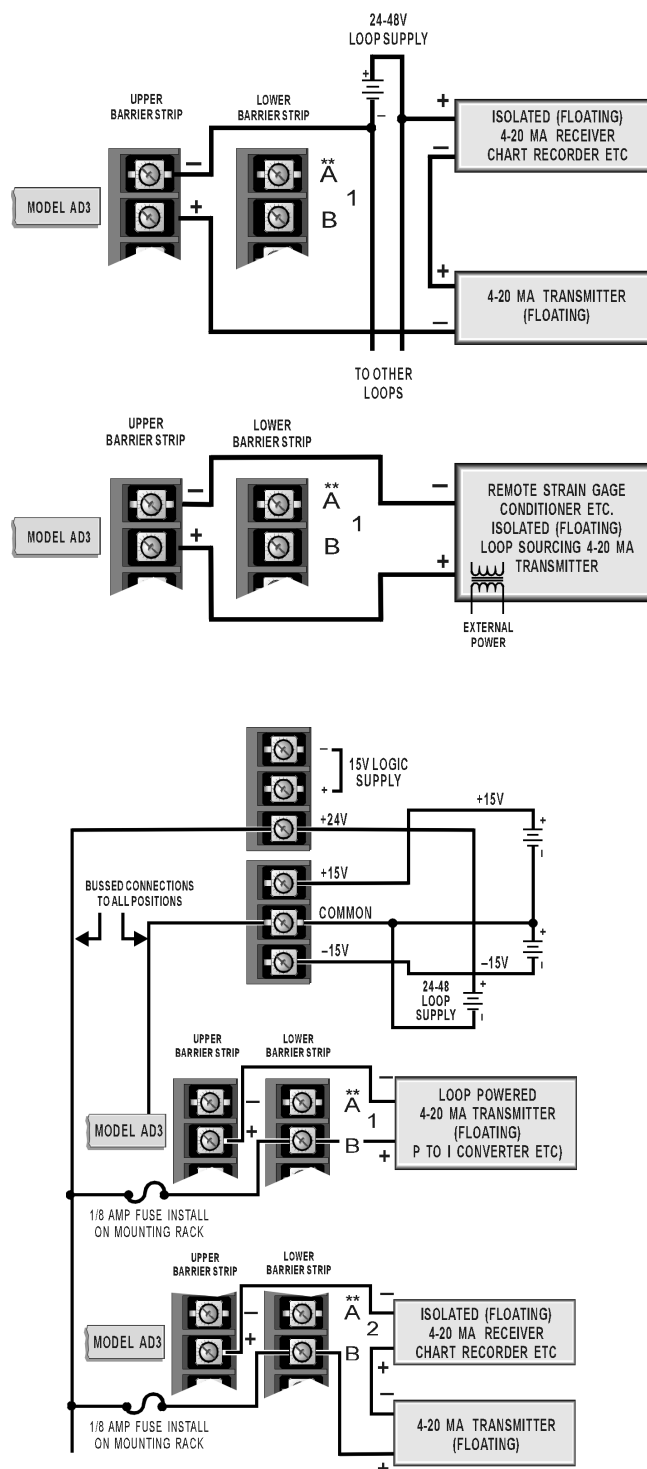
NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.



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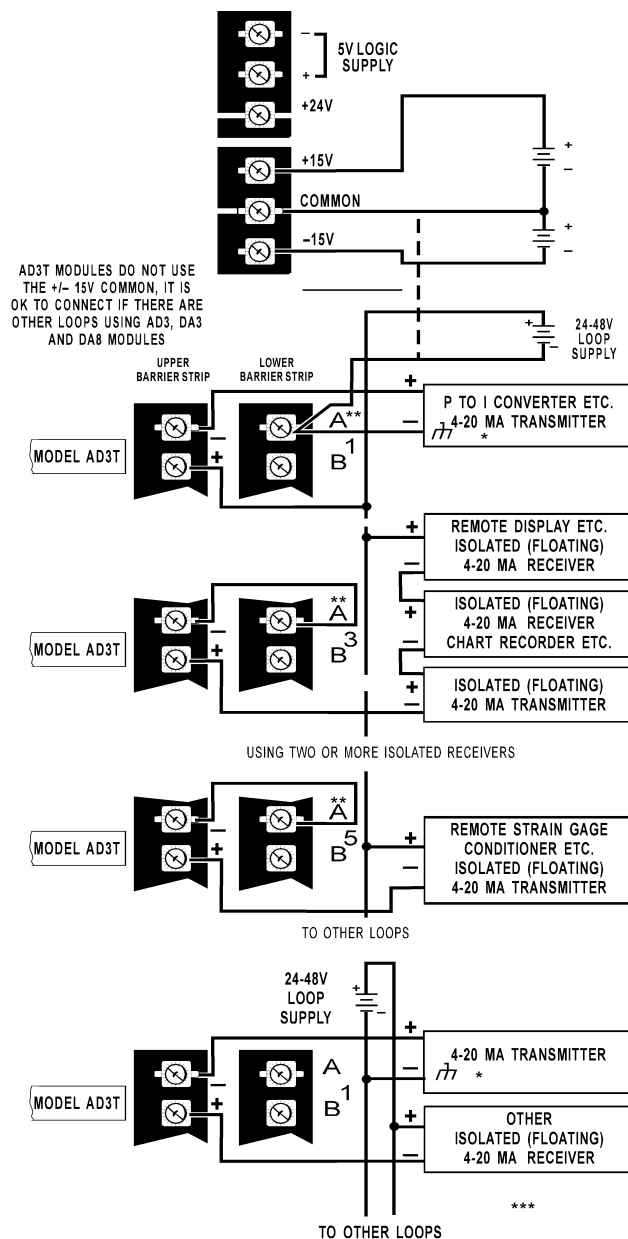


## CONNECTIONS, LOOP SUPPLY



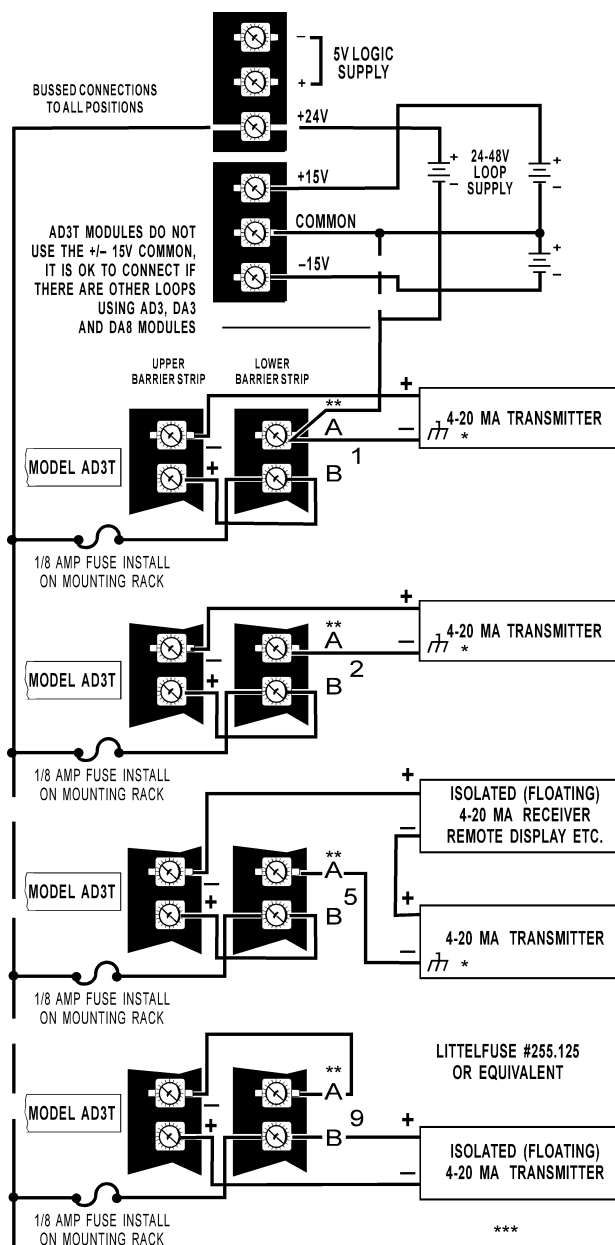
## CONNECTIONS, LOOP SUPPLY (CONT.)

NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.



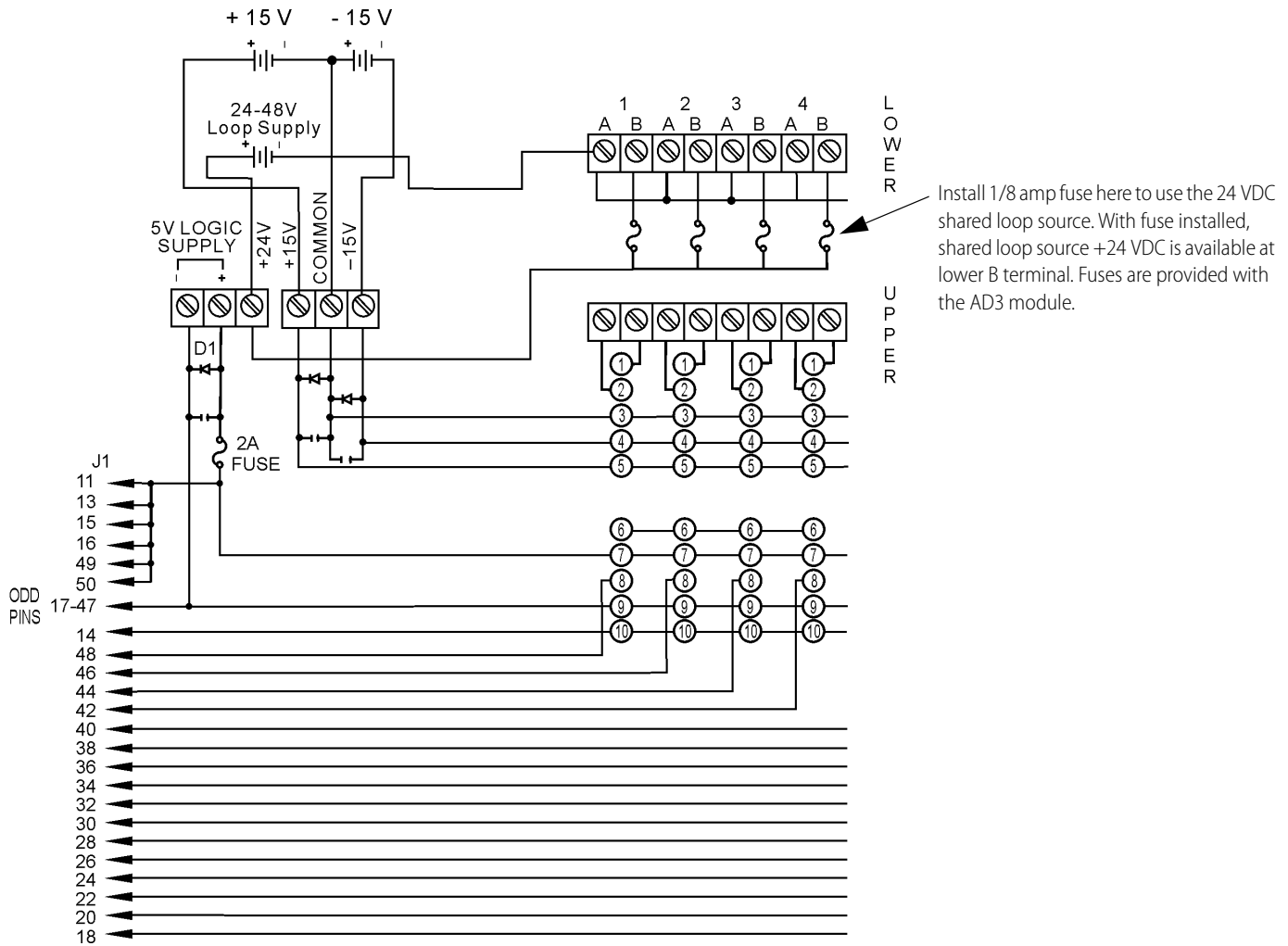
## CONNECTIONS, LOOP SUPPLY (CONT.)

NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.



## SCHEMATICS

### ANALOG MOUNTING RACK SCHEMATIC (PB4AH, PB8AH, PB16AH)





## PRODUCTS

Opto 22 develops and manufactures reliable, easy-to-use, open standards-based hardware and software products. Industrial automation, process control, remote monitoring, data acquisition, and industrial internet of things (IIoT) applications worldwide all rely on Opto 22.

### groov RIO®

[groov RIO edge I/O](#) offers a single, compact, PoE-powered industrial package with web-based configuration and IIoT software built in, support for multiple OT and IT protocols, and security features like a device firewall, data encryption, and user account control.

Standing alone, *groov* RIO connects to sensors, equipment, and legacy systems, collecting and securely publishing data from field to cloud. Choose a universal I/O model with thousands of possible field I/O configurations, with or without Ignition from Inductive Automation®, or a [RIO EMU energy monitoring unit](#) that reports 64 energy data values from 3-phase loads up to 600 VAC, Delta or Wye.

You can also use *groov* RIO with a Modbus/TCP master or as remote I/O for a *groov* EPIC system.

### groov EPIC® System

Opto 22's [groov Edge Programmable Industrial Controller \(EPIC\)](#) system gives you industrially hardened control with a flexible Linux®-based processor with gateway functions, guaranteed-for-life I/O, and software for your automation and IIoT applications.

#### groov EPIC Processor

The heart of the system is the *groov* EPIC processor. It handles a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

In addition, the EPIC provides secure data communications among physical assets, control systems, software applications, and online services, both on premises and in the cloud. No industrial PC needed.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution color touchscreen. Authorized users can manage the system locally on the touchscreen, on a monitor connected via the HDMI or USB ports, or on a PC or mobile device with a web browser.

#### groov EPIC I/O

*groov* I/O connects locally to sensors and equipment. Modules have a spring-clamp terminal strip, integrated wireway, swing-away cover, and LEDs indicating module health and discrete channel status. *groov* I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

#### groov EPIC Software

The *groov* EPIC processor comes ready to run the software you need:

- Programming: Choose flowchart-based PAC Control, CODESYS Development System for IEC61131-3 compliant programs, or secure shell access (SSH) to the Linux OS for custom applications
- Node-RED for creating simple IIoT logic flows from pre-built nodes
- Efficient MQTT data communications with string or Sparkplug data formats
- Multiple OPC UA server options
- HMI: *groov* View to build your own HMI viewable on touchscreen, PCs, and mobile devices; PAC Display for a

Windows HMI; Node-RED dashboard UI

- Ignition or Ignition Edge® from Inductive Automation (requires license purchase) with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT communications

## Older products

From solid state relays, to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and working hard at thousands of installations worldwide. You can count on us for the reliability and service you expect, now and in the future.

## QUALITY

Founded in 1974, Opto 22 has established a worldwide reputation for high-quality products. All are made in the U.S.A. at our manufacturing facility in Temecula, California.

Because we test each product twice before it leaves our factory rather than testing a sample of each batch, we can afford to guarantee most solid-state relays and optically isolated I/O modules for life.

## FREE PRODUCT SUPPORT

Opto 22's California-based Product Support Group offers free technical support for Opto 22 products from engineers with decades of training and experience. Support is available in English and Spanish by phone or email, Monday–Friday, 7 a.m. to 5 p.m. PST.

Support is always available on our website, including [free online training](#) at OptoU, how-to [videos](#), [user's guides](#), the Opto 22 KnowledgeBase, and [OptoForums](#).

## PURCHASING OPTO 22 PRODUCTS

Opto 22 products are sold directly and through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at **800-321-6786** (toll-free in the U.S. and Canada) or **+1-951-695-3000**, or visit our website at [www.opto22.com](http://www.opto22.com).

