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

Part Numbers

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

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • **www.opto22.com**
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • **SUPPORT** 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com

Standard Analog Current Input Modules

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
  Input-to-Analog-Supply
	4,000 Vrms
	n/a
		4,000 Vrms
		4,000 Vrms
			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
  Storage
	0 to 70 °C
	- 25 to 85 °C		

*Accuracy figures assume use of Gain and Offset commands.
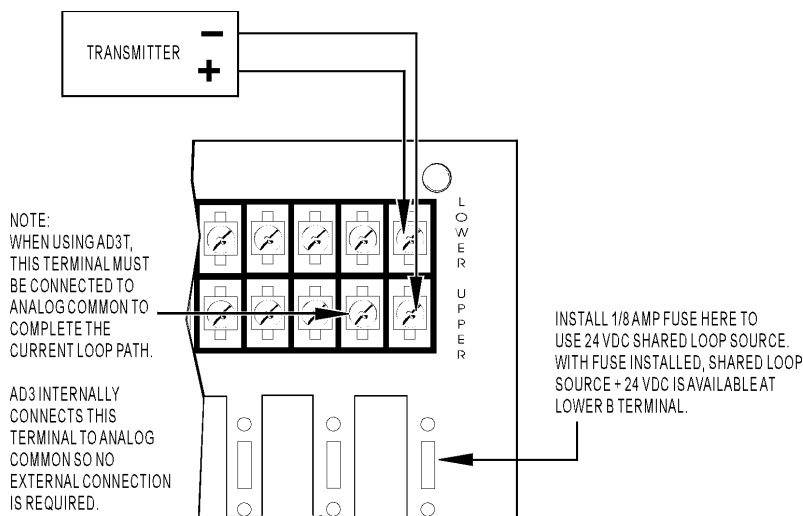
Standard Analog Current Input Modules

Connections
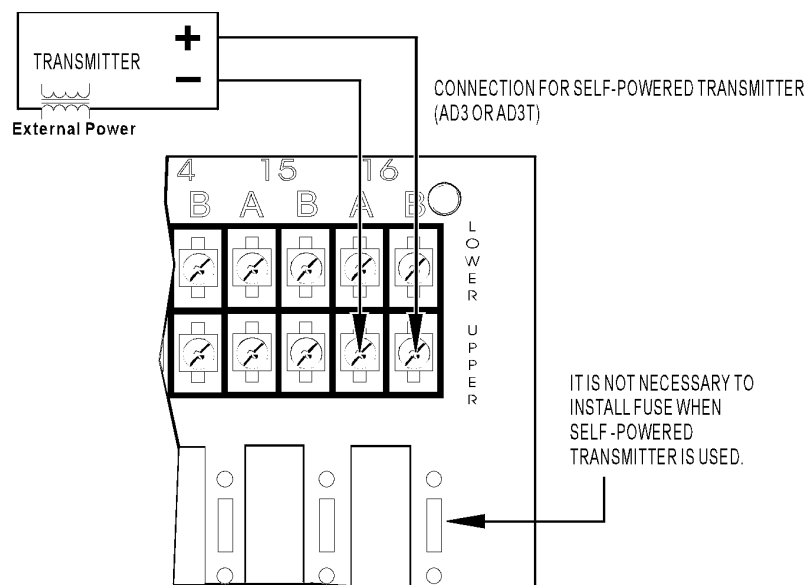
AD3 Modules Using Shared Loop Service

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

TRANSMITTER − +

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.
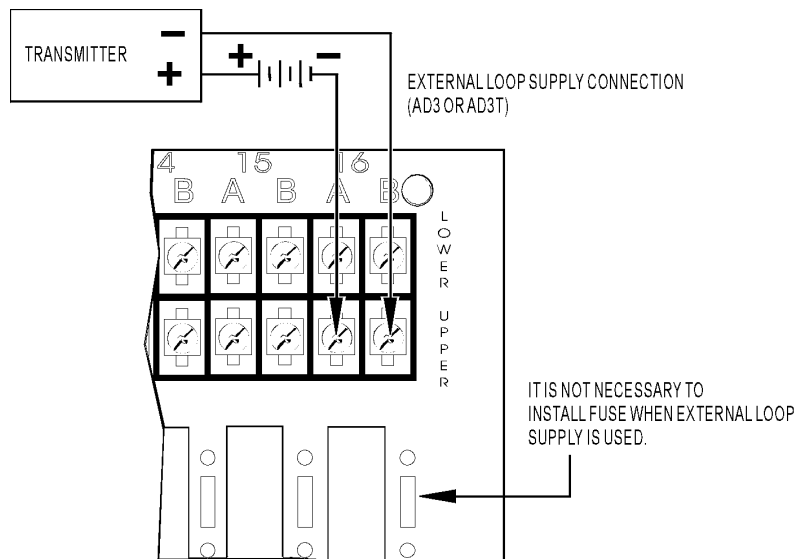
NOTE:
WHEN USING AD3T, THIS TERMINAL MUST BE CONNECTED TO ANALOG COMMON TO COMPLETE THE CURRENT LOOP PATH.

AD3 INTERNALLY CONNECTS THIS TERMINAL TO ANALOG COMMON SO NO EXTERNAL CONNECTION IS REQUIRED.

LOWER UPPER

INSTALL 1/8 AMP FUSE HERE TO USE 24 VDC SHARED LOOP SOURCE. WITH FUSE INSTALLED, SHARED LOOP SOURCE + 24 VDC IS AVAILABLE AT LOWER B TERMINAL.

AD3 Modules Using Self-powered Transmitter

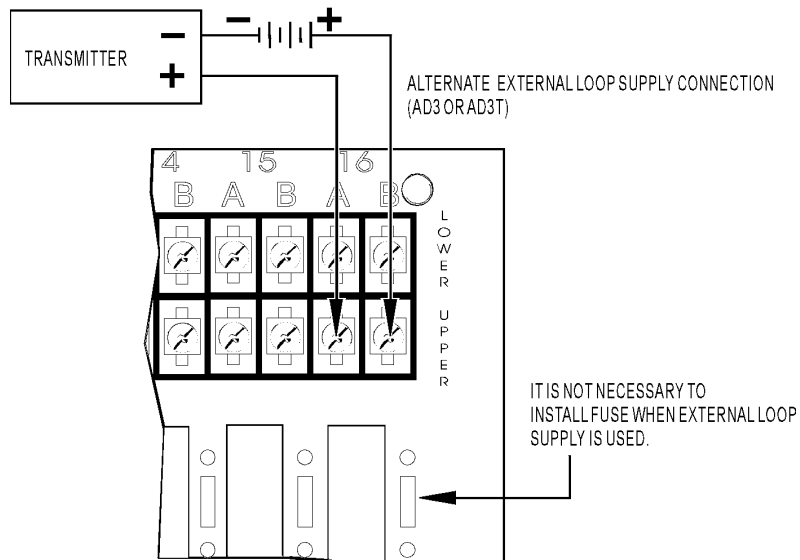NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.

TRANSMITTER + −

External Power

CONNECTION FOR SELF-POWERED TRANSMITTER (AD3 OR AD3T)

4 15 16
B A B A B

LOWER UPPER

IT IS NOT NECESSARY TO INSTALL FUSE WHEN SELF-POWERED TRANSMITTER IS USED.

Connections (cont)

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

TRANSMITTER

EXTERNAL LOOP SUPPLY CONNECTION (AD3 OR AD3T)

4   15   16
B A B A B
LOWER   UPPER

IT IS NOT NECESSARY TO INSTALL FUSE WHEN EXTERNAL LOOP SUPPLY IS USED.

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

TRANSMITTER

ALTERNATE EXTERNAL LOOP SUPPLY CONNECTION (AD3 OR AD3T)

4   15   16
B A B A B
LOWER   UPPER

IT IS NOT NECESSARY TO INSTALL FUSE WHEN EXTERNAL LOOP SUPPLY IS USED.

Standard Analog Current Input Modules

Connections, Loop Supply

Connections, Loop Supply (cont.)

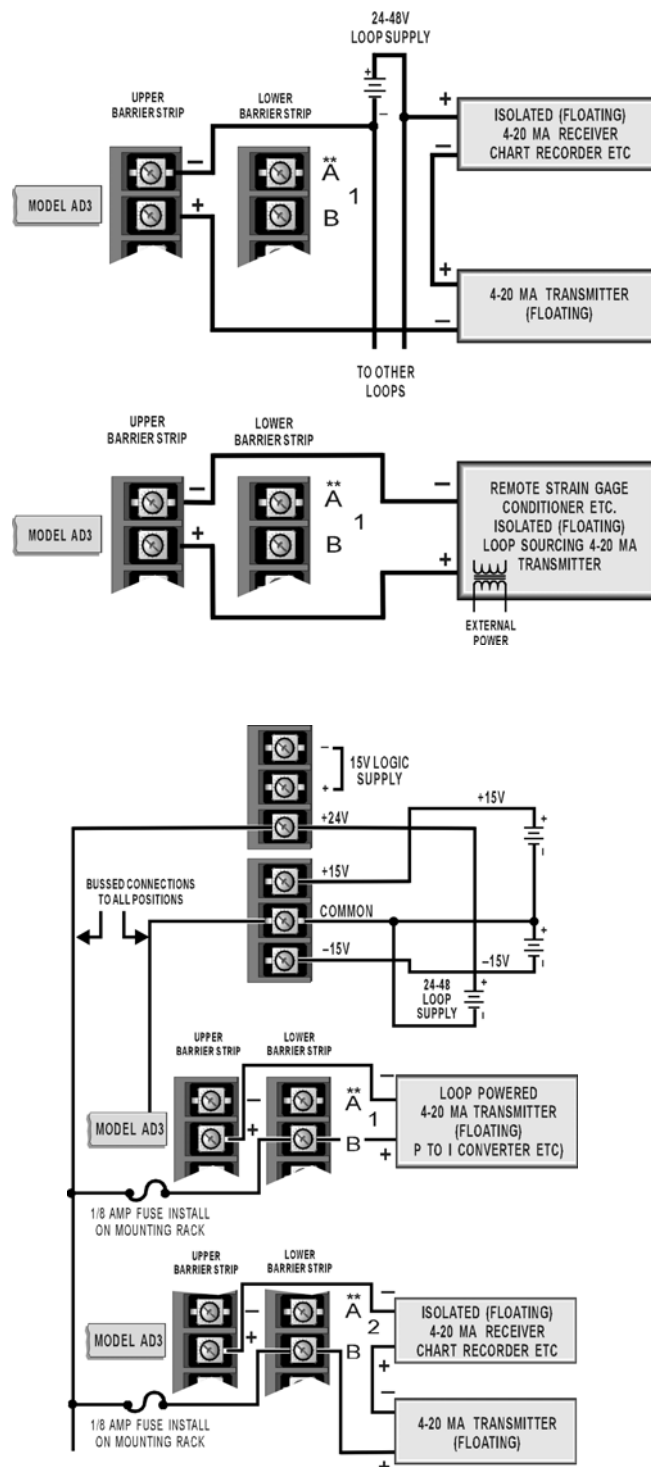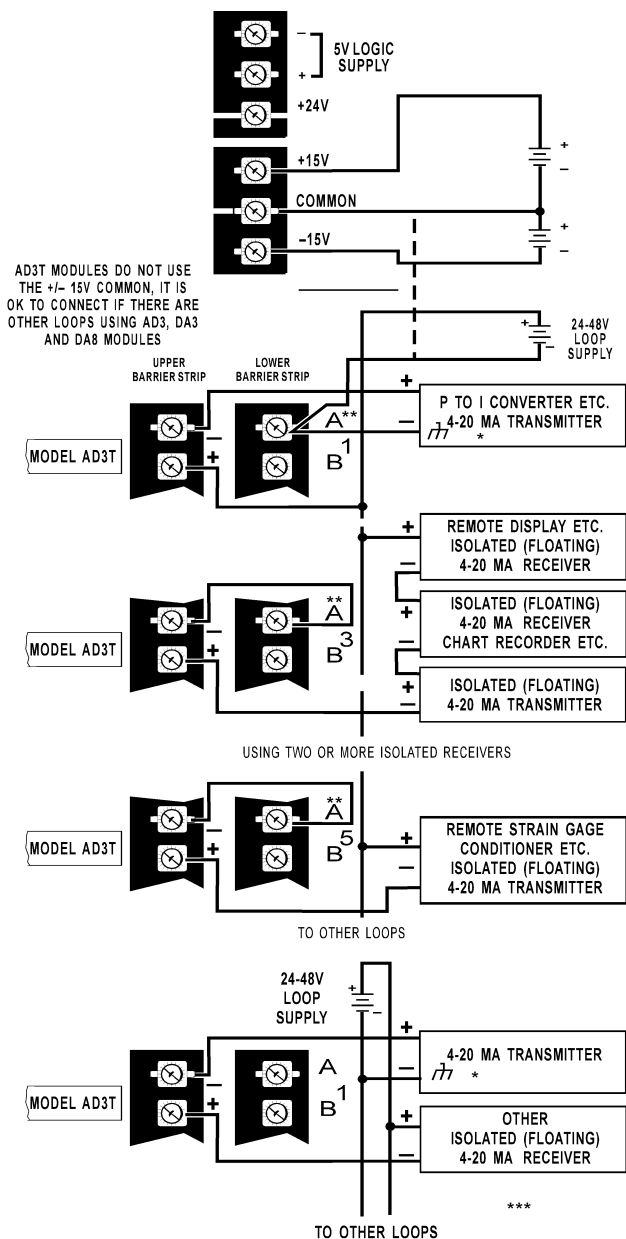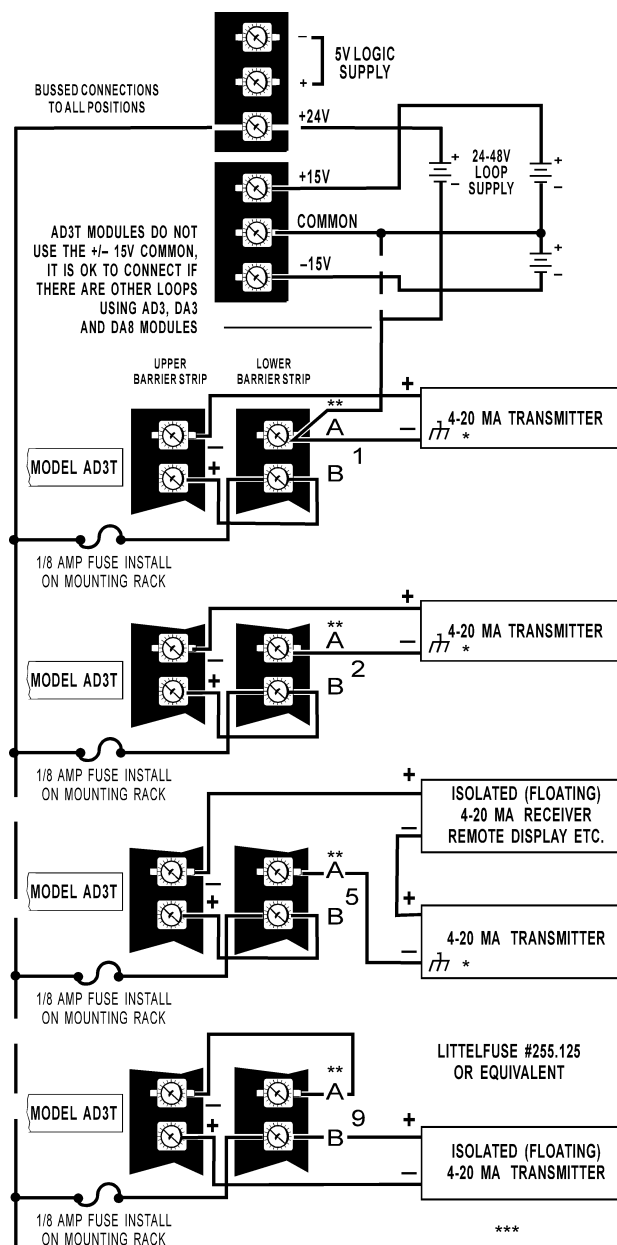NOTE: For connecting the AD2T module, use AD3T module diagrams and instructions.

Standard Analog Current Input Modules

Connections, Loop Supply (cont.)

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

BUSSED CONNECTIONS TO ALL POSITIONS

5V LOGIC SUPPLY

+24V

+15V

24-48V LOOP SUPPLY

COMMON

AD3T MODULES DO NOT USE THE +/- 15V COMMON, IT IS OK TO CONNECT IF THERE ARE OTHER LOOPS USING AD3, DA3 AND DA8 MODULES

−15V

UPPER BARRIER STRIP   LOWER BARRIER STRIP

MODEL AD3T

**A
B   1

4-20 MA TRANSMITTER *

1/8 AMP FUSE INSTALL ON MOUNTING RACK

MODEL AD3T

**A
B   2

4-20 MA TRANSMITTER *

1/8 AMP FUSE INSTALL ON MOUNTING RACK

MODEL AD3T

**A
B   5

ISOLATED (FLOATING) 4-20 MA RECEIVER REMOTE DISPLAY ETC.

4-20 MA TRANSMITTER *

1/8 AMP FUSE INSTALL ON MOUNTING RACK

MODEL AD3T

**A
B   9

LITTELFUSE #255.125 OR EQUIVALENT

ISOLATED (FLOATING) 4-20 MA TRANSMITTER

1/8 AMP FUSE INSTALL ON MOUNTING RACK

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Schematics

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

Standard Analog Current Input Modules
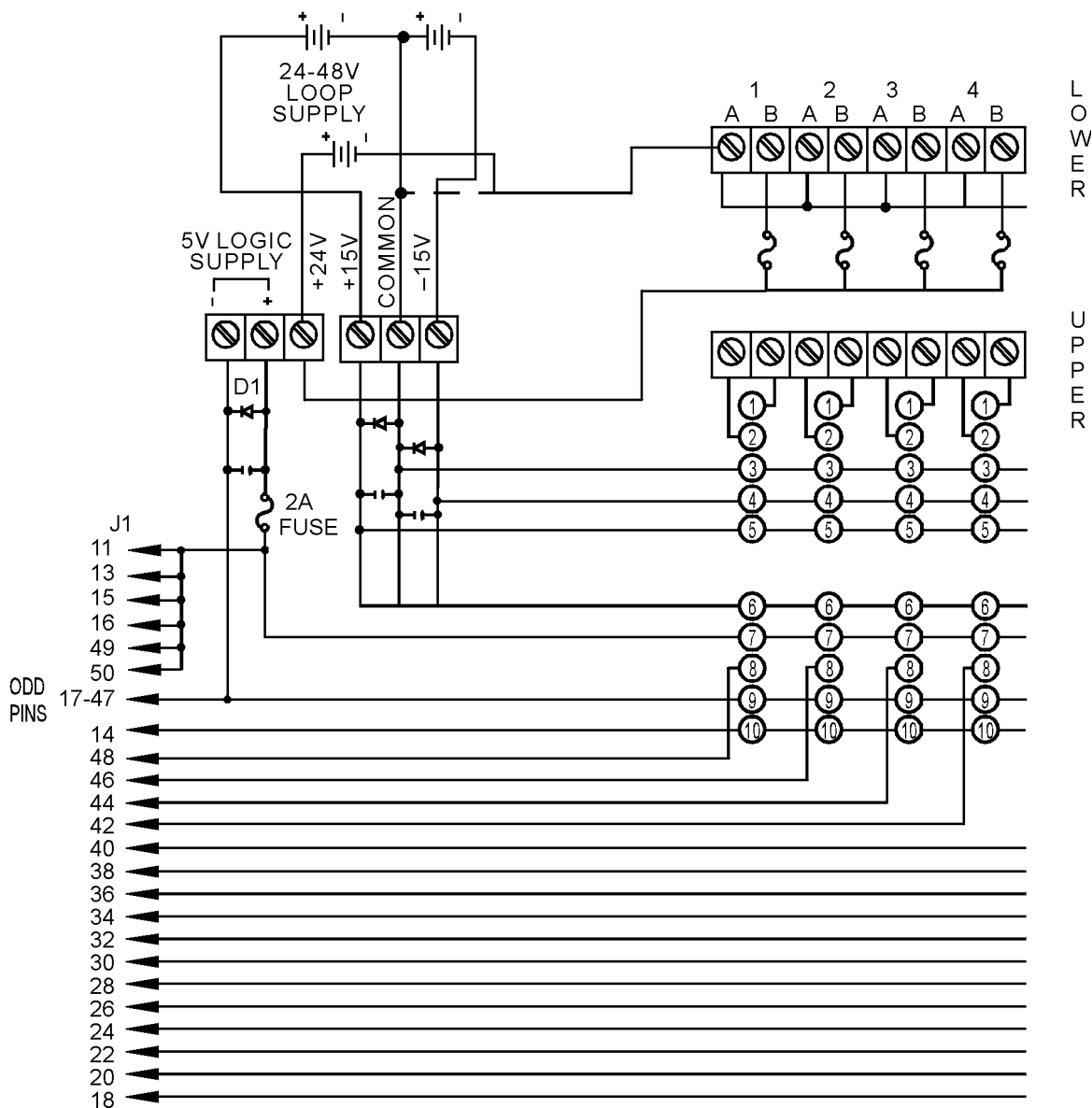
OPTO 22

More About Opto 22

Products

Opto 22 develops and manufactures reliable, flexible, easy-to-use hardware and software products for industrial automation, energy management, remote monitoring, and data acquisition applications.

OptoEMU Energy Management System

The easy-to-use OptoEMU Sensor monitors electrical energy use in your facility and delivers detailed, real-time data you can see and analyze. The Sensor can monitor energy data from pulsing meters, electrical panels or subpanels, and equipment. View energy data online using a software service or incorporate the data into your control system for complete energy management.

SNAP PAC System

Designed to simplify the typically complex process of selecting and applying an automation system, the SNAP PAC System consists of four integrated components:

- SNAP PAC controllers
- PAC Project™ Software Suite
- SNAP PAC brains
- SNAP I/O™

SNAP PAC Controllers

Programmable automation controllers (PACs) are multifunctional, modular controllers based on open standards.

Opto 22 has been manufacturing PACs for over two decades. The standalone SNAP PAC S-series and the rack-mounted SNAP PAC R-series both handle a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system easily, without the expense and limitations of proprietary networks and protocols.

PAC Project Software Suite

Opto 22's PAC Project Software Suite provides full-featured, cost-effective control programming, HMI (human machine interface) development and runtime, OPC server, and database connectivity software for your SNAP PAC System.

Control programming includes both easy-to-learn flowcharts and optional scripting. Commands are in plain English; variables and I/O point names are fully descriptive.

PAC Project Basic offers control and HMI tools and is free for download on our website, www.opto22.com. PAC Project Professional, available for separate purchase, adds

OptoOPCServer, OptoDataLink, options for controller redundancy or segmented networking, and support for legacy Opto 22 serial *mistic*™ I/O units.

SNAP PAC Brains

While SNAP PAC controllers provide central control and data distribution, SNAP PAC brains provide distributed intelligence for I/O processing and communications. Brains offer analog, digital, and serial functions, including thermocouple linearization; PID loop control; and optional high-speed digital counting (up to 20 kHz), quadrature counting, TPO, and pulse generation and measurement.

SNAP I/O

I/O provides the local connection to sensors and equipment. Opto 22 SNAP I/O offers 1 to 32 points of reliable I/O per module, depending on the type of module and your needs. Analog, digital, and serial modules are all mixed on the same mounting rack and controlled by the same processor (SNAP PAC brain or rack-mounted controller).

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 do no statistical testing and each part is tested twice before leaving our factory, we can 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, comprehensive technical support for Opto 22 products. Our staff of support engineers represents 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.

Additional support is always available on our website: how-to videos, OptoKnowledgeBase, self-training guide, troubleshooting and user's guides, and OptoForums.

In addition, hands-on training is available for free at our Temecula, California headquarters, and you can register online.

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 or 951-695-3000, or visit our website at www.opto22.com.

www.opto22.com