G4 DIGITAL 32-CHANNEL RACK

Features

> Rugged Packaging

> 4000 Vrms Transient Isolation

> 12-bit Resolution

> Factory Calibrated, No User Adjustments

> Operating Temperature: 0 to 70 ℃

> "T" Models Offer Channel-to-Channel Isolation

DESCRIPTION

The thermocouple analog modules provide a single channel of optically isolated temperature-to-digital conversion. The modules offer wide nominal input and special over/under range capabilities. The 'T' module also includes 4000 Vrms transient channel-to-channel isolation which eliminates any ground loop problems. Modules plug into a Classic standard analog I/O rack and are secured by a captive screw.

AD5T

Part Numbers

Part	Description
AD5 [Obsolete]	J Thermocouple Input (Obsolete)
AD5T	J Thermocouple Input, Isolated
AD8 [Obsolete]	K Thermocouple Input (Obsolete)
AD8T [Obsolete]	K Thermocouple Input, Isolated
AD17T [Obsolete]	R Thermocouple Input, Isolated
AD18T	T Thermocouple Input, Isolated
AD19T [Obsolete]	E Thermocouple Input, Isolated

MADE IN THE
USA

OPTO 22 • 800-321-6786 • 1-951-695-3000 • www.opto22.com • sales@opto22.com

SPECIFICATIONS

	AD5 [Obsolete]	AD5T	AD8 [Obsolete]	AD8T [Obsolete]
Thermocouple Type	J	J	K	K
Nominal Temperature Range °C	0° to 700°	0° to 700°	-100° to 924°	-100° to 924°
Nominal Temperature Range °F	32° to 1292°	32° to 1292°	-148° to 1695°	-148° to 1695°
Over/Under Range Capability °C	-20° to 1200°	-20° to 1200°	-125° to 1250°	-125° to 1250°
Over/Under Range Capability °F	- 4° to 2192°	- 4° to 2192°	-193° to 2282°	-193° to 2282°
Average Resolution	0.18 °C (0 to 700 °C) 0.36 °C (700 to 1200 °C)	0.18 °C (0 to 700 °C) 0.36 °C (700 to 1200 °C)	± 0.25 °C (-100 to 924 °C) ± 0.5 °C (924 to 1250 °C)	± 0.25 °C (-100 to 924 °C) ± 0.5 °C (924 to 1250 °C)
Accuracy*	± 3 °C (0 to 700 °C)	± 3 °C (0 to 700 °C)	± 3 °C (-100 to 924 °C)	± 3 °C (-100 to 924 °C)
Repeatability	± 1 °C	± 1 °C	± 1 °C	± 1 °C
Power Requirements	17 mA at +15 (+/- 0.25) VDC 12 mA at -15 (+/- 0.25) VDC	35 mA at +15 (+/- 0.25) VDC 35 mA at -15 (+/- 0.25) VDC	17 mA at +15 (+/- 0.25) VDC 12 mA at -15 (+/- 0.25) VDC	35 mA at +15 (+/- 0.25) VDC 35 mA at -15 (+/- 0.25) VDC
Agency Approvals	NA (Obsolete)	CE, UKCA	NA (Obsolete)	NA (Obsolete)

*Accuracy may be improved by the use of "Set Offset" and "Set Gain" commands in the OPTOMUX command set.

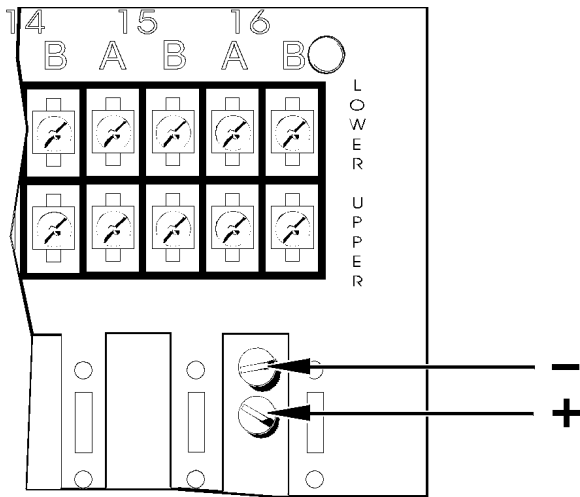# OPTO 22

SPECIFICATIONS (CONTINUED)

	AD17T [Obsolete]	AD17T [Obsolete]	AD18T	AD19T [Obsolete]
Thermocouple Type	R	S	T	E
Nominal Temperature Range °C	0° to 960°	0° to 1034°	-200° to 224°	-100° to 435°
Nominal Temperature Range °F	32° to 1760°	32° to 1893°	-328° to 435°	-148° to 815°
Over/Under Range Capability °C	-50° to 1768°	-50° to 1768°	-200° to 400°	-100° to 900°
Over/Under Range Capability °F	-58° to 3214°	-58° to 3214°	-328° to 752°	-148° to 1652°
Average Resolution	0.23 °C (200 to 960 °C) 0.35 °C (960 to 1768 °C)	0.25 °C (200 to 1034 °C) 0.48 °C (1034 to 1768 °C)	0.1 °C (-200 to 244 °C) 0.14 °C (244 to 400 °C)	0.13 °C (-100 to 435 °C) 0.23 °C (435 to 900 °C)
Accuracy*	± 5 °C (200 to 960 °C) ± 3.5 °C (960 to 1768 °C)	± 5.2 °C (200 to 1034 °C) ± 4.2 °C (1034 to 1768 °C)	± 3 °C (-100 to 224 °C) ± 2 °C (224 to 400 °C)	± 3 °C
Repeatability	± 2.5 °C (200 to 960 °C) ± 1.8 °C (960 to 1768 °C)	± 2.6 °C (200 to 1034 °C) ± 2.1 °C (1034 to 1768 °C)	± 1.0 °C (-100 to 0 °C) ± 0.6 °C (0 to 224 °C) ± 0.4 °C (224 to 400 °C)	± 0.8 °C (-100 to 0 °C) ± 0.6 °C (0 to 435 °C) ± 0.5 °C (435 to 900 °C)
Power Requirements	30 mA at +15 (+/- 0.25) VDC 30 mA at -15 (+/- 0.25) VDC	30 mA at +15 (+/- 0.25) VDC 30 mA at -15 (+/- 0.25) VDC	30 mA at +15 (+/- 0.25) VDC 30 mA at -15 (+/- 0.25) VDC	30 mA at +15 (+/- 0.25) VDC 30 mA at -15 (+/- 0.25) VDC
Agency Approvals	RoHS, CE, UKCA	RoHS, CE, UKCA	CE, UKCA	RoHS, CE, UKCA

*Accuracy may be improved by the use of "Set Offset" and "Set Gain" commands in the OPTOMUX command set.

GENERAL SPECIFICATIONS

Isolation:
    Input-to-Output
    Input-to-Analog Supply*
	4000 Vrms (Transient)
	4000 Vrms

Cold Junction Compensated:	Yes
Open Thermocouple Detection:	Yes
Input Response Time:	5% of scale change in 8.5 ms 63% of scale change in 165 ms

Ambient Temperature:
    Operating
    Storage
	0° to 70°C
	- 25° to 85°C

Resolution:	12 bits

CONNECTIONS

Model	T/C Type	Polarity/Color	
		+	**-**
AD5/AD5T	J	WHITE	RED
AD8/AD8T	K	YELLOW	RED
AD17T	R	BLACK	RED
AD18T	T	BLUE	RED
AD19T	E	PURPLE	RED
AD17T	S	BLACK	RED

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More about Opto 22

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 even write an IEC 61131-3 compliant control program to run on groov RIO, using CODESYS. 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.