Standard Thermocouple Modules

Features

- Rugged Packaging
- 4000 Vrms Transient Isolation
- 12-bit Resolution
- Factory Calibrated, No User Adjustments
- Operating Temperature: 0 to 70 °C
- "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.

Part Numbers

Part	Description
AD5	J Thermocouple Input
AD5T	J Thermocouple Input, Isolated
AD8	K Thermocouple Input
AD8T	K Thermocouple Input, Isolated
AD17T	R Thermocouple Input, Isolated
AD18T	T Thermocouple Input, Isolated
AD19T	E Thermocouple Input, Isolated

Specifications

	AD5	AD5T	AD8	AD8T
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

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

Standard Thermocouple Modules

Specifications (continued)

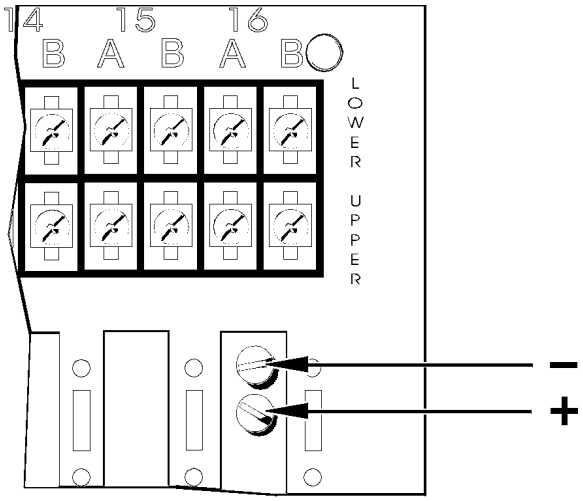
	AD17T	AD17T	AD18T	AD19T
Thermocouple Type	R	S	T	E
Nominal Temperature Range °C	0° to 960°	0° to 1034°	-200° to 224°	-100° to 435°
Nominal Temperature Range °F	32° to 1760°	32° to 1893°	-328° to 435°	-148° to 815°
Over/Under Range Capability °C	-50° to 1768°	-50° to 1768°	-200° to 400°	-100° to 900°
Over/Under 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

*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

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.

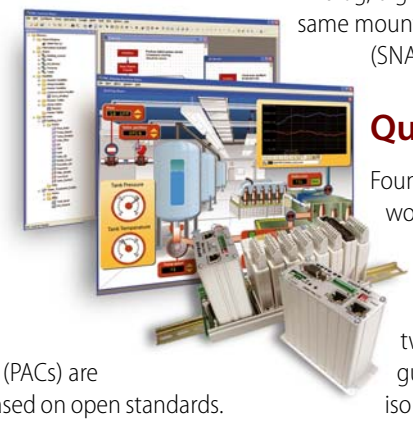
OptoEMU Energy Management System

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, 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.

comprehensive technical support for Opto 22 products. Our staff of support engineers represents decades of training and experience. Support is

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

contact Opto 22 headquarters at
or 951-695-3000, or visit our website at

Form 1335-110907