1/16 DIN Autotune Temperature Controllers

OMEGA®

Panel punches available, visit us online.

CN9000A Series

3 YEAR WARRANTY

115 V Models Only

CN9111A with KMTSS-125G-6 thermocouple sold separately, visit us online for details. Shown actual size.

- User Selectable Input from 9 Thermocouple Types or RTD Input
- Clear 3½ Digit High-Brightness Green LED
- 0.1° Resolution to 200°
- Constant Setpoint Deviation Indication
- Auto/Manual Output Control
- User Select from Autotune PID, PI, PD, P or On/Off Control
- Independent Second Setpoint and Output Models
- Comprehensive Alarm Features Deviation, Full Scale, Loop Break with Latching Option
- Fault Indication for Sensor Burnout, Sensor Short, Heater Break and Process Diagnostics
- Min/Max Data Storage and Autotune Diagnostics Eliminates Need for Chart Recorder
- Optional 24 Vac Power
- Field Replaceable Output Modules

The CN9000A digital temperature controllers feature high accuracy and reliability, and the sophisticated PID with approach control for optimal control during start-up and steady-state operation. These units are well suited for a broad range of applications, and are easy to install and operate. The unique, sophisticated autotune algorithm will calculate the optimum PID values, and additionally recommends the best value for cycle time.

For most applications, the user need only select the desired input type, simply by using the front pushbuttons. The autotune parameters can be changed by the operator at any time, allowing the operator to fine tune the controller to an individual process.

The microprocessor holds all data in non-volatile memory, with the ability to retain data for 10 years with no power. The CN9000A has a large, 3½ digit green LED readout, with auxiliary indicators for each output, and 3 LED's to indicate deviation from setpoint.

Selection of all operational controls is made through the keys on the front panel, with the display prompting the user through each step. After the parameters have been set, they can be locked in, simply by removing a jumper located behind the front bezel. The user can select the control mode and parameters, display resolution (1 or 0.1°), and units (°F/°C). The operator can also utilize the ranging feature, which limits the range in which the setpoint may be chosen, or lock out a user from changing the setpoint. The new single setpoint controller has rear termination. The optional second setpoint and output of the CN9000A model can be set for proportional, on-off or latching limit control, and can be set as either a tracking or non-tracking setpoint. Cycle time, proportional band and on-off deadband are all set independently of the primary setpoint.

Specifications

Accuracy: ±0.25% FS ±1°C (0.5°C in 0.1° resolution mode); 30 min warm-up; see also linearized tolerance from range chart
Control Stability: ±0.15% FS, typical
Sample Rate: 3 per second
Auto Calibration: Every 5 s, with re-zero of cold junction compensation
Temperature Coefficient: Less than 150 ppm/°C max
External Resistance: 100Ω max
Cold Junction Compensation: 0.05 degrees/degree ambient typical
Burnout Protection: Fault display, upscale/downscale selectable
Display: 3½ digit green LED; 10 mm (0.4") high; 1 or 0.1° resolution; error indication, 3 deviation from setpoint indicators
Setpoint 1: Selectable between autotune PID, PDPI, PD or on-off
Setpoint 2 (Optional): Deviation alarm high or low, "out of limits," or not used; proportional or on-off control; set as up to ±127° deviation from setpoint 1 or full scale (independent PV); high or low process alarm; control output for cooling alarm can be latching for limit control

Companion controller CN9500 Series, 1/32 DIN. Visit us online.

Cycle Time: 0.3, 1, 2, 3, 5, 7, 10, 14, 20, 30, 45, or 60 sec; setpoint 1 or 2
Auto-Tuning: Unit determines proportional band, integral and derivative values, and suggests optimal cycle time (setpoint 1 only)
Proportional Band: 0.5, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 10, 14, 20 or 100% of span (setpoint 1 or 2)
Derivative (Rate): Off, 1, 2, 3, 5, 10, 15, 20, 25, 35, 50, 75, 100, or 200 s; AT value
Integral (Auto Reset): Off, 0.2, 0.5, 1, 2, 3, 5, 7, 10, 13, 18, 25, 33, 43, or 600 min
Approach Control: Off, 0.5, 1, 1.5, 2, 2.5, 3, 4, or 5 times proportional band
Manual Reset: PD, proportional and on-off control; set as degrees deviation from setpoint 1
On-Off Deadband: 0.25, 0.5, 0.75, 1, 1.25, 1.5, 2, 2.5, 3, 4, 5, 7, 10 or 50% FS (setpoint 1 or 2)
Power: 24 Vac, 115 Vac, 230 Vac, ±15%, 50 to 60 Hz
Power Consumption: 6 VA
Output 1 Relay: SPDT relay, 5 A @ 250 Vac
Output 2 Relay: SPDT relay, 3 A @ 250 Vac
dc Pulse Output: Non-isolated 5 Vdc pulse for driving external DC solid state relay
Common Mode Noise Rejection: 140 dB, 240 Vac, 50/60 Hz
Normal Mode Noise Rejection: 60 dB, 50 Hz
Ambient Operating Range: 4 to 50°C (40 to 122°F)
Dimensions: 48 H x 48 W x 13 mm D bezel (1.89 x 1.89 x 0.5"); 115 mm (4.5") depth behind panel; 154 mm (6.1") with triac voltage or current output
Panel Cutout: 45 mm square (1.772"); 1/16 DIN
Weight: 0.38 kg (0.84 lb)

Input Types and Ranges

Input Type	Linearized Range (Units are °F/°C Switchable)		Linearized Tolerance	Preset Span*
J	32 to 1470°F	0 to 800°C	1°C/2°F	400°C
K	32 to 1999°F	0 to 1200°C	1°C/2°F	400°C
T	-199 to 500°F	-199 to 250°C	2°C/4°F	250°C
E	32 to 1100°F	0 to 600°C	1°C/2°F	500°C
R	32 to 572°F 572 to 1999°F	0 to 300°C 300 to 1600°C	5°C/9°F 2°C/4°F	1600°C
S	32 to 572°F 572 to 1999°F	0 to 300°C 300 to 1600°C	5°C/9°F 2°C/4°F	1600°C
B	1000 to 1999°F	500 to 1800°C	6°C/11°F	1600°C
N	32 to 1999°F	0 to 1200°C	1°C/2°F	400°C
L (J DIN)	32 to 1470°F	0 to 800°C	1°C/2°F	400°C
RTD	-199 to 750°F	-199 to 400°C	0.5°C/0.9°F	200°C

** User adjustable limit on setpoint.*

To Order

Model No.	Input	Output 1	Output 2
CN9110A	T/C, 2-wire RTD	Relay	–
CN9111A		Relay	Relay
CN9112A		Relay	Pulse
CN9120A		Pulse	–
CN9121A		Pulse	Relay
CN9122A		Pulse	Pulse
CN9131A		1 A SSR	Relay
CN9141A		4 to 20 mA	Relay
CN9151A		0 to 10 Vdc	Relay
CN9210A	3-wire RTD	Relay	–
CN9211A		Relay	Relay
CN9212A		Relay	Pulse
CN9220A		Pulse	–
CN9221A		Pulse	Relay
CN9222A		Pulse	Pulse
CN9231A		1 A SSR	Relay
CN9241A		4 to 20 mA	Relay
CN9251A		0 to 10 Vdc	Relay

Accessories and Replacement Output Modules

Model No.	Description
CN9000-14	1/4 DIN mounting adaptor
CN9000-18	1/8 DIN mounting adaptor
CN9000A-SOCKET	Terminal socket
BD9011A	Dual relay, field installable module
BD9021A	Pulse/relay, field installable module
BD9031A	1 A SSR and relay, field installable module
BD9041A	4 to 20 mA and relay, field installable module
BD9051A	0 to 10 Vdc and relay field installable module
BD9010A	Relay output board
BD9012A	Relay/pulse field installable module
BD9022A	Dual pulse field installable module
DPP-4	1/16 DIN panel punch

For Additional Controllers and Indicators, visit us online

Comes complete with operator's manual.
115 Vac models are UL recognized. UL not available for 230 Vac models.
*For 230 Vac power, add suffix "**-230VAC**" to model number, no additional charge. For 24 Vac power, add suffix "**-24VAC**" to model number, no additional charge. These alternate power options are not available for models with analog output (CNx4xA, CNx5xA).*
***Ordering Examples: CN9121A,** autotune controller with thermocouple/2-wire RTD input, pulse output (output 1) and relay output (output 2), with **CN9000-14** (1/4 DIN mounting adaptor).*
***OCW-2** OMEGACARE℠ extends standard 3-year warranty to a total of 5 years.*
***CN9210A,** autotune controller with 3-wire RTD input, relay output (output 1).*
***BD9011A,** replacement output board, dual relay module.*

OMEGACARE℠ Extended Warranty Program

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor, and equivalent loaners.