

Universal Temperature/Process Controllers 1/8 DIN and 1/4 DIN Sizes



CN8541TC-R1, \$314.

CN8561TC-R1, \$404.

CN8551TC-R1, \$317.

CN8500 Series
Starts at

\$314



- ✓ NEMA 4X (IP65)
Front Panel Standard
- ✓ Universal Power Supply
- ✓ User-Selectable
Ramp to Setpoint
- ✓ Smooth Auto/Manual
Operation
- ✓ Optional RS232 or
RS485 Communications
- ✓ Autotuning Heat or Cool

- ✓ Thermocouple, RTD,
Voltage, or Current Input
- ✓ Plug-In Outputs Modules
(Field Installable)
- ✓ Dual Outputs and Alarms
- ✓ Optional Heater Break
Alarm, Remote Setpoint,
Transducer Power Supply,
and Recorder Output

The CN8500 Series temperature controller is versatile and user-friendly. The operator needs to review only those parameters relevant to the particular application. A dual digital display offers optimal process information at a glance. The dedicated upper display shows the process temperature, while the lower display displays setpoint and setup parameters. Individual LEDs

identify the status outputs, alarms, digital communications, and special options. The CN8500 Series features a NEMA 4X front panel and a universal power supply that accepts 103 to 253 Vac and 103 to 330 Vdc.

Control algorithms available are P, PI, PD, PID, and on/off. The autotune feature automatically sets proportional band, rate, and reset before the process reaches setpoint. These parameters provide quick stabilization of both the heating and cooling process without overshoot, hunting, or cycling. The standard dual control outputs can be configured in a variety of control and alarm applications such as heat, heat/cool, heat/alarm, cool, or cool/alarm. The ramp-to-setpoint feature allows the user to define the rate of rise to reach the setpoint, thus minimizing thermal shock to the load during start-up.

Specifications Performance

Accuracy: $\pm 0.2\%$ FS, ± 1 digit

Setpoint Resolution:

1 count/0.1 count

Repeatability: ± 1.0 count

Temperature Stability: $5 \mu\text{V}/^\circ\text{C}$ max;
 $3 \mu\text{V}/^\circ\text{C}$ typical

Thermocouple Cold-Junction

Tracking: $0.05^\circ\text{C}/^\circ\text{C}$ ambient

Common Mode Rejection: >100 dBA

Series Mode Rejection: >70 dBA

Process Sampling: 10 Hz (100 ms)

Inputs

Thermocouple Lead Resistance:

100 Ω max for rated accuracy

Response Time: 0.1, 1.0 or 10 s

Decimal Position: Selectable

Outputs

Output #1: Reverse acting (heating)

Output #2: Direct acting (cooling)

Mechanical Relay:

Rated 5 A @ 120 Vac,

3 A @ 240 Vac

Current: 4 to 20 mA, 500 Ω max

Voltage: 20 Vdc pulse, 1 k Ω min load

Triac: Solid state relay, 120/240 Vac, zero voltage switched rated 1 A continuous, 10 A surge @ 25°C (77°F)

Alarms: Optically isolated triac rated 1 A, 120/240 Vac @ 25°C (77°F)

Control Characteristics

Setpoint Limits: Limited to configured range for thermocouple and RTD; limited to scaled range

Alarms: Adjustable for high/low, process or deviation

Rate: 0 to 900 s

Reset: 0 to 3600 s

Cycle Time: 0.2 to 120 s

Gain: 0 to 400

Gain Ratio:

0 to 2.0 (in 0.1 increments)

On/Off Deadband: 1 to 100 counts

Spread (Output 2):

0 to 100 counts (above setpoint)

Damping: Adjustable (low, normal or high)

Ramp to Setpoint: 1 to 100 minutes

Autotune: Operator-initiated from front panel

Manual Control: Operator-initiated from front panel

General

Power: 115 to 230 Vac $\pm 10\%$, 50/60 Hz; 115 to 300 Vdc $\pm 10\%$ (auto-polarity)

Display: Dual LED, 4-digit process display, green menu/parameter display; 9.2 mm (0.37") high for $\frac{1}{8}$ DIN models; 14 mm (0.55") process display for $\frac{1}{4}$ DIN units

Power Consumption: Less than 6 VA (instrument) @ 120 Vac



CN8561TC-R1, \$404, shown smaller than actual size.



CN8541TC-R1, \$314, shown smaller than actual size.



CN8551TC-R1, \$317, shown smaller than actual size.

Input Types and Ranges

Input Code	Type	Range	Resolution
TC	J Iron-constantan	-18 to 760 $^\circ\text{C}$ 0 to 1400 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
	K CHROMEALLOY [®] -ALOMEGA [®]	-18 to 1349 $^\circ\text{C}$ 0 to 2460 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
	T Copper-constantan	-129 to 316 $^\circ\text{C}$ -200 to 600 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
	N OMEGALLOY [®]	-18 to 1299 $^\circ\text{C}$ 0 to 2370 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
	R Pt/13% Rh-Pt	-18 to 1299 $^\circ\text{C}$ 0 to 3200 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
	S Pt/10% Rh-Pt	-18 to 1299 $^\circ\text{C}$ 0 to 3200 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
RTD	RTD 3-wire, 100 Ω Pt	-200 to 850 $^\circ\text{C}$ -328 to 1562 $^\circ\text{F}$	1 $^\circ\text{C}$ 1 $^\circ\text{F}$
	RTD 3-wire, 100 Ω Pt	-128.8 to 232.2 $^\circ\text{C}$ -199.0 to 450.0 $^\circ\text{F}$	0.1 $^\circ\text{C}$ 0.1 $^\circ\text{F}$
V5	1 to 5 V 0 to 5 V	Scalable (-1999 to 9999) Scalable (-1999 to 9999)	Selectable Selectable
V10	2 to 10 V 0 to 10 V	Scalable (-1999 to 9999) Scalable (-1999 to 9999)	Selectable Selectable
MV	10 to 50 mV 0 to 50 mV	Scalable (-1999 to 9999) Scalable (-1999 to 9999)	Selectable Selectable
MA	4 to 29 mA 0 to 20 mA	Scalable (-1999 to 9999) Scalable (-1999 to 9999)	Selectable Selectable

MOST POPULAR MODELS HIGHLIGHTED!



CN8551RTD-R1, \$317.



CN8541RTD-R1, \$314.

All models shown smaller than actual size.



CN8561RTD-R1, \$404.

- Weight (½ DIN):** 0.34 kg (12 oz)
- Weight (¼ DIN):** 0.425 kg (15 oz)
- Panel Cutout (½ DIN):** 45 x 92 mm (1.772 x 3.622")
- Panel Cutout (¼ DIN):** 92 mm (3.622") square
- Dimensions (½ DIN Horizontal):** 53 x 100 mm (2.1 x 3.95"); 18.3 mm (0.72") depth
- Dimensions (¼ DIN):** 100 W x 100 H x 18.3 min bezel (3.95 x 3.95 x 0.72")
- Panel Depth:** 100 mm (3.937")
- Front-Panel Rating:** NEMA 4X (IP65)
- Operating Ambient Range:** 0 to 55°C (32 to 131°F) @ 90% RH max, non-condensing
- Memory Protection:** Solid state non-volatile memory
- Connections:** Rear barrier strip with locking terminals
- Contacts:** Twin bifurcated

To Order (Specify Model Number)

Model No.	Price	Cutout	Description
CN8541(*)-(**)	\$314	½ DIN vertical	Single output
CN8542(*)-(**)-(**)	344	½ DIN vertical	Dual output
CN8551(*)-(**)	317	½ DIN horizontal	Single output
CN8552(*)-(**)-(**)	347	½ DIN horizontal	Dual output
CN8561(*)-(**)	404	¼ DIN	Single output
CN8562(*)-(**)-(**)	434	¼ DIN	Dual output

Comes complete with operator's manual.

* Specify input code: "-TC" (thermocouple), "-RTD", "-MV" (voltage to 50 mV) or "-MA" (current to 20 mA). See Input Table on page P-66 for details.

** Specify output code(s) from Output Types table below. Single output units can be ordered for either heat (reverse) or cool (direct) action.

Output Types (No Additional Cost)

Output Type	1st Output—Heat Only (Reverse) Order Suffix	2nd Output—Cool Only (Direct)* Order Suffix
5 A Relay	-R1	-R2
1 A SSR	-T1	-T2
4 to 20 mA	-F1	-F2
20 Vdc Pulse	-DC1	-DC2

* Single output controllers can be ordered for either heat (reverse) or cool (direct) acting.

Ordering Examples: CN8561TC-R2, ¼ DIN controller, thermocouple input, 5 A relay, 2nd output configured for cooling operation, \$404.

CN8561TC-DC1-AL1-C2-PV4, single-output controller for thermocouple input, 1st output DC pulse with 1 alarm output, RS232C communications and recorder output, \$404 + 25 + 95 + 75 = \$599. OCW-2, 2-year warranty extension \$599 + 108 = \$707.

Options*

Ordering Suffix	Add'l Price	Description
-AL1	\$25	Single alarm
-AL2	50	Dual alarms
-C2	95	RS232 communications†
-C4	95	RS485 communications†
-XP1	75	Transducer power supply, 15 Vdc

* 1 alarm option, 1 communications option and the XP1 option can be installed in a unit.

† Free CN8-SW software download available at omega.com/cn8500

Other Options (Only 1 Option Available Per Unit)

Ordering Suffix	Add'l Price	Description
-PV3	\$75	Recorder output, 4 to 20 mA
-PV4	75	Recorder output, 0 to 5 Vdc
-HB1	75	Heater break alarm, 0 to 20 A
-HB2	75	Heater break alarm, 0 to 60 A
-RSP4	75	Remoter setpoint, 0 to 5 Vdc
-RSP5	75	Remote setpoint, 1 to 5 Vdc
-RSP6	75	Remote setpoint, 0 to 20 mA
-RSP7	75	Remote setpoint, 4 to 20 mA

Accessories

Model No.	Price	Description
DPP-5	\$525	½ DIN panel punch
DPP-6	575	¼ DIN panel punch
CN8500-ALI	20	Alarm relay module
CN8500-DC	35	DC pulse output module
CN8500-F	35	4 to 20 mA output module
CN8500-R	35	Relay output module
CN8500-T	35	1 A SSR output module



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

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