

1/16 DIN Universal Temperature and Process Controllers with 8-Segment Ramp/Soak

1/8 DIN and 1/4 DIN Versions Are Also Available! See the CN8240 and CN8260 Series

CN8200 Series



Standard Features

- ✓ Field-Configurable Universal Inputs
- ✓ Autotuning, Direct- or Reverse-Acting for Both Outputs
- ✓ User-Selectable Ramp to Setpoint
- ✓ 8 Ramp and 8 Soak Segments
- ✓ Decimal Display in 0.1° for Measured Temperatures Under 1000°F or °C
- ✓ NEMA 4X (IP65) Front Panel

Optional Features

- ✓ RS232/485 Digital Communications, Contact/Digital Remote Input, Transducer Excitation, and PV or SV Retransmission
- ✓ 24 Vac/Vdc Power Supply

The CN8200 temperature/process controller is extremely versatile and user-friendly. During setup, the user needs to review only those parameters relevant to the particular application. A dual digital display offers optimal process information at a glance. Individual LEDs identify the status of outputs, alarms, digital communications, and special options. The CN8200 features a NEMA 4X front panel



and a universal power supply that accepts 100 to 250 Vac and 120 to 250 Vdc. A 24 Vac/24 Vdc power supply option is also available. Available control algorithms are P, PI, PD, PID, or on/off. The autotune feature automatically sets proportional band, derivative, and integral before the process reaches setpoint. These parameters provide quick stabilization of processes with minimum overshoot, hunting, or cycling. Eight-level ramp/soak control is standard and includes a decimal display on thermocouple ranges, digital display and signal filtering, and a percentage of power limit setting. The dual control outputs can be configured for a variety of control and alarm applications, and 2 dedicated alarm outputs are also available.

The CN8200 offers a wide range of options, including RS232 and RS485 digital communications, 3 contact/digital input modes, 4 transducer excitation voltages, and 4 auxiliary output ranges.

Specifications Performance

Accuracy: $\pm 0.2\%$ FS, ± 1 digit
Setpoint Resolution: 1 count/0.1 count
Repeatability: ± 1 count
Temperature Stability: 5 $\mu\text{V}/^\circ\text{C}$ maximum

T/C Cold-Junction Tracking: 0.05 $^\circ\text{C}/^\circ\text{C}$ ambient

Common Mode Rejection: 100 dB

Series Mode Rejection: >70 dB

Process Sampling: 10 Hz (100 ms)

Inputs

Input Type: See input table on next page

Digital Input: For remote setpoint, remote standby or ramp/soak run and hold

Thermocouple Lead Resistance: 100 Ω maximum for rated accuracy

Decimal Position: Selectable

Outputs

Output #1: Reverse- or direct-acting, configured from menu

Output #2: Reverse- or direct-acting, configured from menu

Mechanical Relay: Rated 5 A @ 120 Vac, 3 A @ 240 Vac, normally open (NO), normally closed (NC) (output 1); rated 5 A @ 120 Vac, 3 A @ 240 Vac, NO (output 2)

Current: 4 to 20 mA,
500 Ω maximum (suffix F1, F2);
4 to 20 mA, 1000 Ω maximum
(suffix FH1, FH2)

Voltage: 20 Vdc pulse

Solid State Relay:

SSR, 120/240 Vac, zero voltage
switched, rated 1 A continuous,
10 A surge @ 25°C (77°F)

Alarms: Mechanical relay rated
5 A @ 120 Vac, 3 A @ 240 Vac, NO;
optically isolated SSR rated
1 A, 120/240 Vac @ 25°C (77°C);
DC alarms, 24 Vdc

Transducer Power Supply:

5, 10, 12, 15 Vdc $\pm 10\%$

Control Characteristics

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

Alarms: Adjustable for high/low;
selectable process or deviation

Rate (Derivative): 0 to 2400 seconds

Reset (Integral): 0 to 9600 seconds

Cycle Time: 0.2 to 120 seconds

Proportional Band: 1 to span
of sensor

Deadband: Negative span
to positive span of sensor

Hysteresis: 1 to span of sensor

Autotune Damping: Adjustable
(low, normal, or high)

Ramp to Setpoint:

1 to 9999 minutes

Autotune: Operator-initiated
from front panel

Manual Control: Operator-initiated from
front panel

General

Power: 100 to 250V, 50/60 Hz
(single-phase); 120 to 250 Vdc,
24 Vac/24 Vdc (optional)

Display: Dual LED—4-digit, orange:
process display; green: menu/
parameter display; 9.2 mm (0.36")

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

Weight: 226 g (8 oz)

Panel Cutout: 45 mm (1.771") square

Dimensions:

53.3 H x 53.3 W x 8.21 mm D
(2.1 x 2.1 x 0.72") bezel

Depth Behind Panel:

100 mm (3.937")

Front-Panel Rating: NEMA 4X (IP65)

Operating Ambient Range:

0 to 55°C (32 to 131°F) @ 90% RH
maximum, non-condensing

Memory Protection:

Solid state non-volatile memory

Connections: Screw terminals

Contacts: Twin bifurcated

Ramp/Soak Programming

Intervals: 8

Loops: 0 to 99

Ramp Time: 0 to 9999 minutes

Soak Time: 0 to 9999 minutes

Events/Alarms: 1 to 8

Ramp Setpoint: 1 to 9999 minutes

CN8-SW (Optional Software):

Minimum Hardware and

Software Requirements:

IBM PC or 100% compatible,
Windows 95/98/NT;

RS485 interface or RS232
to RS485 converter

Software Compatibility:

CN8200 Series controllers

Software Capability:

Supports up to 254 CN8200

Series controllers



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.



CN8202-R1
shown actual size.

Input and Range Table for Universal Input Controller

Input Type	Range
J Iron-Constantan	-200 to 760°C (-328 to 1400°F)
K CHROMEGA®-ALOMEGA®	-270 to 1354°C (-454 to 2469°F)
T Copper-Constantan	-270 to 400°C (-454 to 752°F)
N OMEGALLOY®	-268 to 1300°C (-450 to 2372°F)
R Pt/13%Rh-Pt	-50 to 1768°C (-58 to 3214°F)
S Pt/10%Rh-Pt	-50 to 1768°C (-58 to 3214°F)
B Pt/30%Rh-Pt/6%Rh	0 to 1820°C (32 to 3308°F)
C W/5%Re-W/26%Re	0 to 2315°C (32 to 4199°F)
E CHROMEGA®-Constantan	-150 to 1000°C (-238 to 1832°F)
NNM 18% molybdenum vs nickel -06% cobalt	0 to 1410°C (32 to 2570°F)
Platinel II	-100 to 1232°C (-148 to 2250°F)
RTD (3-wire) 100 Ω Pt	-200 to 850°C (-328 to 1562°F)
RTD (3-wire) 100 Ω Pt	-199.9 to 375.0°C (-199.9 to 707.0°F)
0 to 1V	Scalable (-1999 to 9999) selectable
1 to 5V	Scalable (-1999 to 9999) selectable
0 to 5V	Scalable (-1999 to 9999) selectable
0 to 10V	Scalable (-1999 to 9999) selectable
10 to 50 mV	Scalable (-1999 to 9999) selectable
0 to 50 mV	Scalable (-1999 to 9999) selectable
0 to 10 mV	Scalable (-1999 to 9999) selectable
0 to 100 mV	Scalable (-1999 to 9999) selectable
4 to 20 mA	Scalable (-1999 to 9999) selectable
0 to 20 mA	Scalable (-1999 to 9999) selectable



CN8201-DC1
shown smaller than
actual size.

To Order	
Model Number	Description
CN8201-(*)	Single-output ramp/soak controller
CN8202-(*)-(*)	Dual-output ramp/soak controller

Comes complete with operator's manual.

* Specify output type from output options table. The controller can have the “-LV” low voltage power and 1 additional option.

Ordering Example: CN8202-R1-R2-LV-AL3, 1/8 DIN dual mechanical relay outputs, ramp/soak process controller, low voltage power, with DC pulse alarms.

OCW-3 OMEGACARESM extends standard 2-year warranty to a total of 5 years.

Output Options (No Additional Cost)

Option Type	First Output—Heat or Cool (Reverse or Direct) Order Suffix	Second Output—Heat or Cool (Reverse or Direct) Order Suffix
Relay	-R1	-R2
DC Pulse	-DC1	-DC2
1 A SSR	-T1	-T2
4 to 20 mA (500 Ω maximum)	-F1	-F2
4 to 20 mA (800 Ω maximum)	-FH1	-FH2

Low-Voltage Power Supply (Optional)

Ordering Suffix	Description
-LV	24 Vac/24 Vdc

Additional Options (Only 1 Additional Option is Available Per Controller)

Ordering Suffix	Description
-AL1	Single-alarm mechanical relay
-AL2	Dual alarms, AC SSR
-AL3	Dual alarms, DC level (24 Vdc)
-C2	RS232 communications
-C4	RS485 communications
-C4-DIC	RS485 with digital input, switch closed
-C4-DIO	RS485 with digital input, switch open
-C4-DIV	RS485 with digital input, 0 or 5V
-C4-MOD	RS485 with MODBUS [®] protocol
-C4-MOD-DIC	RS485 with MODBUS protocol with digital input switch closed
-C4-MOD-DIO	RS485 with MODBUS protocol with digital input switch open
-C4-MOD-DIV	RS485 with MODBUS protocol with digital input 0 or 5V
-PVS1	Process output, 4 to 20 mA
-PVS2	Process output, PV or SV, 0 to 5 Vdc
-RSP1	Remote setpoint switch closed with 1 alarm
-RSP2	Remote setpoint switch open with 1 alarm
-RSP3	0 or 5 Vdc remote setpoint with 1 alarm
-XP1	Transducer power supply, 15 Vdc
-XP2	Transducer power supply, 12 Vdc
-XP3	Transducer power supply, 10 Vdc
-XP4	Transducer power supply, 5 Vdc

Optional Communications Software and Accessory

Model No.	Description
CN8-SW	Remote monitoring and control software
CNQUENCHARC	Noise suppression RC snubber (2 leads), 110 to 230 Vac

Includes 2 folders: 1 for standard and 1 for MODBUS[®] protocol. Free CN8-SW software download available at omega.com/cn8201