

# Dual Channel Environmental Test Chamber Controller



CN3230 Series  
**\$1250**  
Basic Unit



- ✓ Two Process Inputs, 4 Control Outputs
- ✓ Heat/Cool and Humidify/De-Humidify
- ✓ 16 Field Configured Ramp/Soak Programs
- ✓ 8 Intervals Per Program, Total 128 Intervals
- ✓ 8 Solid State Event or Alarm Outputs
- ✓ Optional Digital Communications Port
- ✓ Analog Bar Graph for Added Visual Indication
- ✓ Metal Case for Noise Immunity

Shown smaller than actual size

PR-11-2-100-1/8-9-E RTD probes, \$72 each.  
Sold separately, see page C-8.

The OMEGA® CN3230 is a Dual Channel Environmental Test Chamber Controller. Along with its expansive memory and flexible programming capabilities, the CN3230 has the added features of two sensor inputs and four control outputs. The two control channels may both function as temperature control, or channel #1 as temperature and channel #2 as humidity, making the CN3230 the perfect choice for environmental chamber, oven and furnace applications requiring highly sophisticated control.

**The humidity control algorithm** accommodates both transmitter and wet bulb temperature inputs. The controller converts either input into a relative humidity value, thus functioning as a true humidity controller and requiring no calculations or conversions by the operator.

**16 ramp/soak programs**, each having a separate standby setpoint and 8 individually timed intervals, give you a total of 128 intervals. Any interval or sequence of intervals can be looped up to 255 times, and any of the 16 programs can be linked to another program. The CN3230 features nested program loops, allowing configuration of complex process profiles that loop from any interval in a program to any interval of the other 15 programs.

**8 event outputs per interval** are possible. Each controller is equipped with 4 SSR event outputs as standard, and an additional 4 outputs are available as an option. These event outputs give the CN3230 added control power to turn on conveyors, valves, fans, annunciators or other remote devices. The 4 alarm settings may be assigned to up to four of these solid state relay outputs, and each alarm can be set up as high, low or deviation alarms, normally energized or normally de-energized.

**Guaranteed soak, automatic hold and separate PID control parameters** for all 4 control outputs. Two different proportional band settings can be programmed for each control channel (easily accommodating applications where the gain of different processes dictates significantly different PID control parameters for precise control). When establishing a program profile, simply select the proportional band setting most appropriate for the process.

**Remote operation of ramp/soak programs** allows you to select

- START/CONT
- HOLD
- STOP/RESET

from a remote contact closure.

**An Optional 4 to 20 mA analog output** (field changeable to 1 to 5 Vdc) is available, in addition to the 4 standard SSR control outputs, and can be assigned to represent any one of the four control outputs, or the process variables or setpoints.

**Programming logically organized into 22 PAGES of like MENU numbers**, requiring only simple menu selections. The result is a specific address for each and every control adjustment or selection to be made, quick and easy programming, and no confusion!

**Programmed information is protected by non-volatile memory and 6 coded levels of security.** In the event of a power failure, the CN3230 will retain all of the programmed parameters and program profiles. The 6 security levels require codes to access and change parameters, to prevent unauthorized or accidental access to programming.

**Simple front panel pushbuttons and alphanumeric cues** make ramp/soak program operation and programming easy. The dual 4-digit LED displays give constant indication of channel #1 and channel #2 process variables and setpoints, while alphanumeric cues guide you through programming.

**Optional RS-232, RS-422, and RS485 Digital Communications** is available and can operate without a mainframe or PC interface. By connecting a standard ASCII data terminal or PC to the CN3230, you can select or adjust any parameter that can be accessed from the controller's front panel. Automatic datalogging gives you a printout and/or display of up to 11 different control parameters and variables as often as every minute, or whatever time interval chosen. If several controllers are on a single line, the user can write multidrop software, or use the OMEGA® software package, CN3200-SOFT.

### Specifications

**Control Mode (Field Selectable):** ON/OFF and PID

**Ramp/Soak Selections**

**128 Interval Capacity:** 16

programs, 8 intervals per program

**Selectable Time Ranges:** 1 to 9999 sec; 0.1 to 999.9 min; 0.01 to 99.99 hr; selectable for each interval

**Linking:** Programs can be linked together

**Interval Looping:** 3 assignable loops per program, 1 to 255 times or continuous



Shown with PR-11-2-100-1/8-9-E RTD probes, \$72 each. Sold separately, see page C-8.

### Nested Program Loops:

4 assignable loops from any interval of one program to any interval of another program, 0 to 255 times

**Automatic Hold:** Programmable for each interval

**Guaranteed Soak:** Programmable for each program; deadband adjustable 0.1 to 99.99% of span

**Event Outputs:** 8 assignable 0.5 A(120 Vac) SSR outputs

**Ramp/Soak Function Inputs:**

3 contact closures to digital ground for remote selection of START/CONT, HOLD, and STOP/RESET

**Control Adjustments**

**(Field Selectable) Deadband:** 0.01 to 25.00% of span

**Proportional Bands (Gain):** 0.1 to 999.9% of span (Indicate separate control adjustments for Heat and Cool outputs)

### Manual Reset (Integral):

100.0 to 100.0

**Automatic Reset\*:** 0.00 to 99.9 repeats per minute

**Rate\* (Derivative):** 0 to 100 sec

**Offset\*:** ±25.00% of full ON

**Overlap\*:** 0.0 to 1000.1% of full ON

**Output Cycle Time:** 0.1 to 65.0 sec

**Control Outputs:** 4 ac SSR, rated

**Event Outputs**

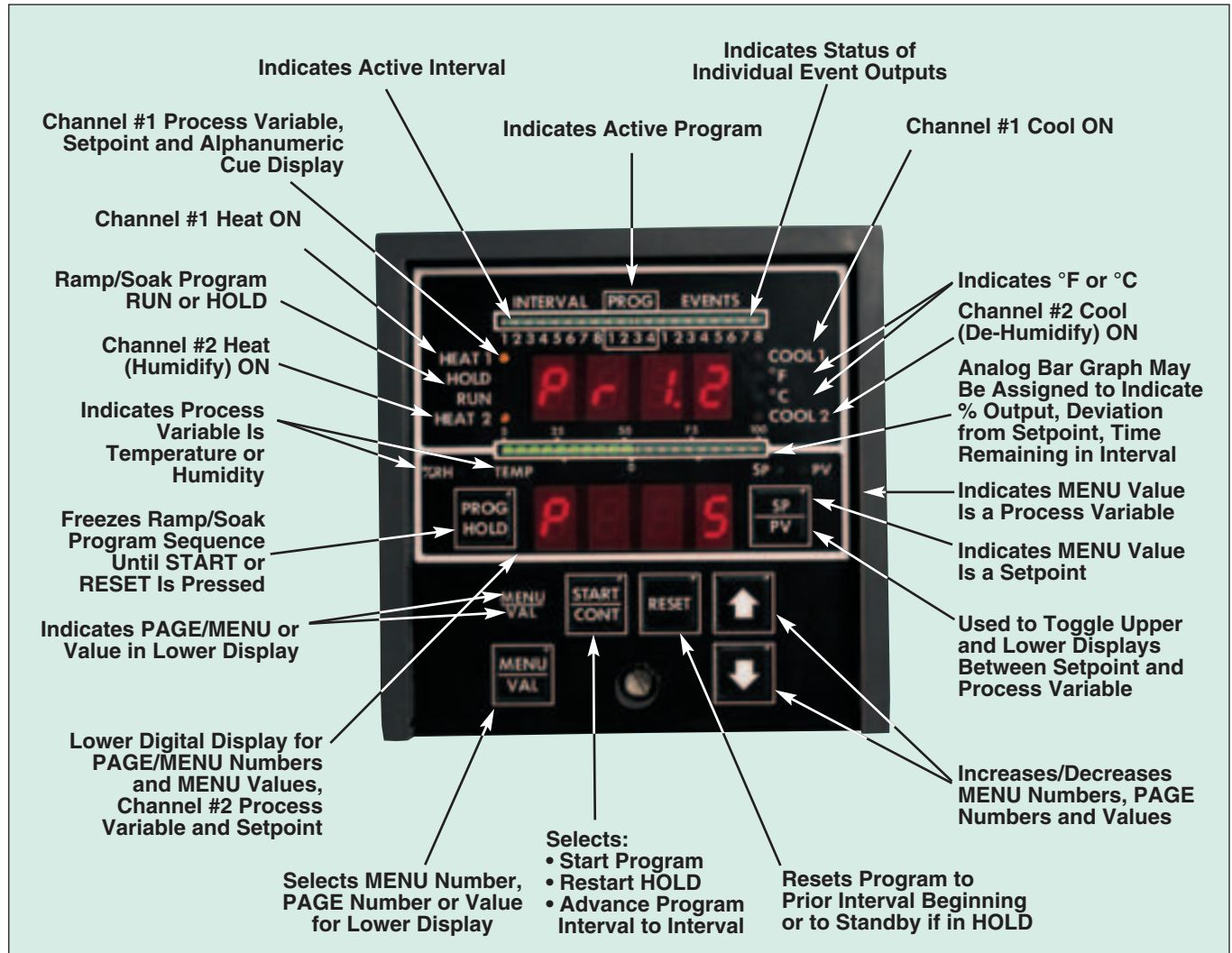
**Output Type:** ac SSR, rated 0.5 A at 120 Vac

**Assignment:** Programmed to be ON or OFF during intervals 1- to 8 and Standby

**Alarm Outputs:** 4 alarm functions, 2 per channel; event output (ac SSR, 0.5 A at 120 Vac) used as common alarm output for any combination of the 4 alarms

**For Additional Controllers and Indicators, See Section M**

# CN3230 Series Dual Channel Environmental Test Chamber Controller



## Alarm Modes (Field Selectable for Each Alarm)

**Type:** Non-latching, normally energized or de-energized; high and low, range 100% of span;  $\pm$ deviation, 0° to 250°F above/below setpoint

**Reset Differential:** 0.01 to 25.00% of span

**ON Time Delay:** 0.1 to 999.9 sec

**OFF Time Delay:** 0.1 to 999.9 sec

**Input Sample Rate:** 4 samples per second

**Open Sensor Condition:** Control output OFF; display indication "OPEN"

**Out of Range Condition:** Control output OFF; display indication "HHHH" for over-range condition; "LLLL" for under-range condition

## Process Analog Output Option

**Assignable Functions:** Any of 4 control output commands, primary setpoints, or linearized process variable signal for both channels #1 and #2

**Output Signal:** 4 to 20 mA standard, conversion to 1 to 5 Vdc by internal jumper change; 4 to 20 mA signal referenced to instrument common

**Accuracy:** 0.2% of span

**Digital Communications Option:** RS-232C: Single drop, non-isolated  
RS-422A/RS-485: Multi-drop, nonisolated

**Automatic Datalogging Interval:** 1 to 9999 minutes

**Power:** 120 Vac, -15% to +10%, 50-60 Hz; nominal power consumption 10 VA; power failure detection circuitry, watchdog timers

## Operating Environment:

0 to 55°C (30 to 130°F)  
up to 95% RH, non-condensing

## Noise Rejection

### Common Mode:

$<\pm 1^\circ\text{C}$  (2°F) 230 Vac, 50 Hz, sensor input to instrument case (with digital filter enabled)

**Series Mode:**  $<\pm 1^\circ\text{C}$  (2°F) with 30 mV peak-to-peak, 60 Hz series mode noise (with digital filter enabled)

### Dimensions:

96 H x 96 W x 213 mm D  
(3.8 x 3.8 x 8.4")

**Panel Cutout:** 92 H x 92 mm W  
(3.62 x 3.62")

**Weight:** 1.5 kg (3.5 lb)

**MOST POPULAR MODEL HIGHLIGHTED!**

To Order (Specify Model No.)		
Model No.	Price	Description
<b>CN3231(*)</b>	<b>\$1250</b>	Single input ramp/soak controller, 4 event/alarm SSR outputs, dual LED display, 2 dual output channel (total 4 outputs), PID or ON/OFF
<b>CN3232(*)-(*)</b>	<b>1450</b>	Dual input ramp/soak controller, 4 event/alarm SSR outputs, dual LED display, 2 dual output channel (total 4 outputs), PID or ON/OFF

\* Insert **INPUT CODE** from **Input Types and Ranges** table.

**Note:** For two inputs for model **CN3232**, any input type combination may be chosen. For temperature/humidity applications using wet bulb/dry bulb method, RTD Sensors (P1 input code) must be selected for primary and secondary inputs (order model **CN3232-P1-P1**). OMEGACARE<sup>SM</sup> extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE<sup>SM</sup> covers parts, labor, and equivalent loaners.

**Ordering Example:** **CN3232T-T-2**, is a dual input ramp/soak controller with four SSR outputs and two type T thermocouple inputs, with optional 4 additional event/alarm outputs (for 8 total), 3 remote ramp/soak operation inputs, and digital communications, \$1450 + 200 = **\$1650**

**OCW-3 OMEGACARE<sup>SM</sup>** extends standard 1-year warranty to a total of 4 years (\$350), \$1650 + 350 = **\$2000**.

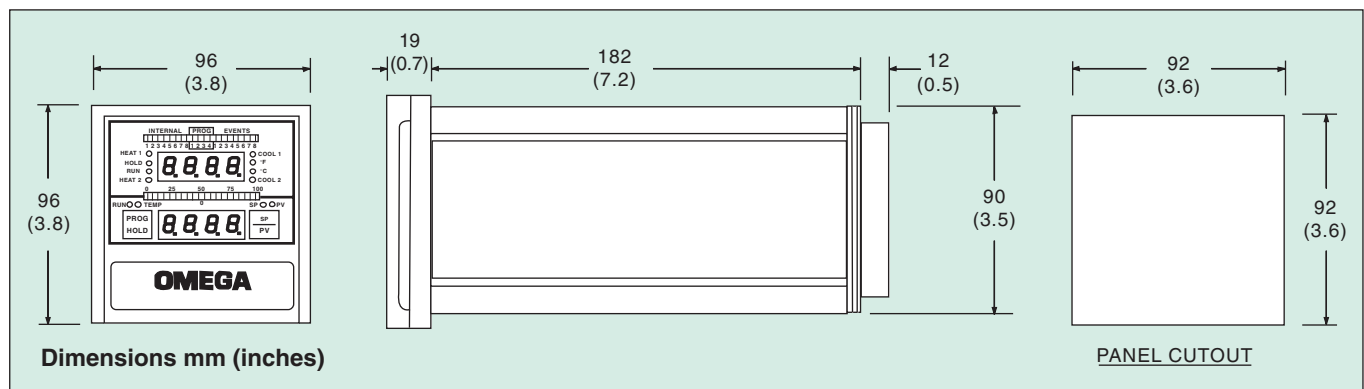
### Input Types and Ranges

Input Code	Type	Range	Accuracy
<b>T</b>	Copper-Constantan	-101 to 260°C -150 to 500°F	±1°F (<1°C)
<b>P1</b>	100Ω Pt RTD (High)	73.3 to 218.3°C -99.9 to 425.0°F	±0.5°F (0.25°C)
	100Ω Pt RTD (Low)	0.0 to 100.0°C 32.0 to 212.0°F	±0.2°F (0.1°C)
<b>CV*</b>	Current/Voltage	4 to 20 mA 1 to 5 Vdc	±0.2%

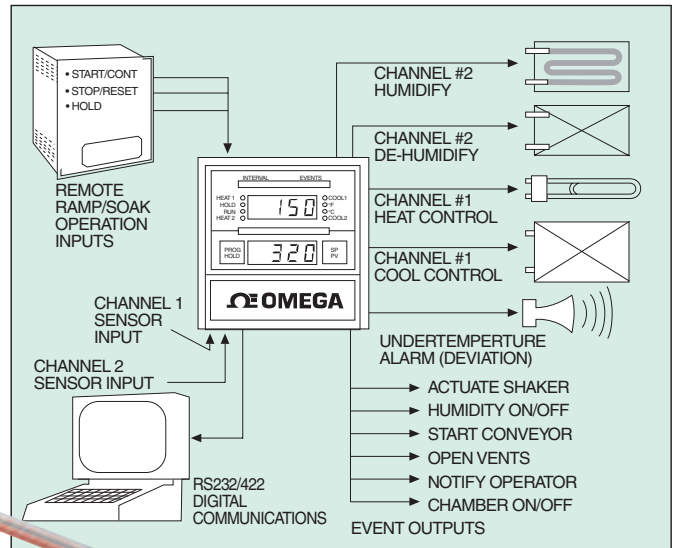
\* 0.00 to 99.9% fixed scale

Ordering Suffix	Add'l Price	Description
<b>-1</b>	<b>\$200</b>	4 to 20 mA control output, or 4 to 20 mA process or ramp profile scalable recorder output
<b>-2</b>	<b>200</b>	4 additional event/alarm outputs (for 8 total), 3 remote ramp/soak operation inputs, and digital communications RS-232 or RS-422A/RS-485
<b>-3</b>	<b>350</b>	Options 1 and 2

### CN3230 Dimensions and Panel Cutout

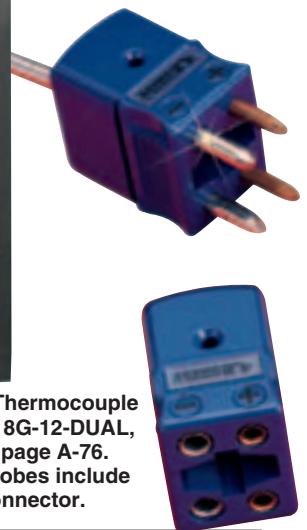


### Typical Environmental Test Chamber Application



Model CN3231T

Dual Element Thermocouple Probe, CPSS-18G-12-DUAL, \$57.50. See page A-76. All OMEGA probes include female connector.



### Accessories

Model No.	Price	Description
<b>CN3200-FRONT</b>	<b>\$80</b>	Splash cover
<b>CN3200-BR</b>	<b>45</b>	Surface mounting bracket
<b>CN3200-SOFT-WIN</b>	<b>330</b>	Software package for use with digital communications option, Windows version
<b>CNQUENCHARC</b>	<b>8</b>	Noise suppression kit, 110 to 230 Vac

**For Additional Controllers and Indicators, See Section M**



#### UNITED STATES

[www.omega.com](http://www.omega.com)  
1-800-TC-OMEGA  
Stamford, CT.

#### CANADA

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1-800-TC-OMEGA

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