

# ¼ DIN Temperature/Process Limit Controllers



## CN2504 Series



- ✓ Dual Display
- ✓ Universal Input
- ✓ High/Low Limit
- ✓ Limit Relay Output (Fixed)
- ✓ Additional Modular Outputs (Optional)
- ✓ RS485 (Optional)
- ✓ Digital Input Remote Reset (Optional)

The CN2504 Series is part of a range of new generation series of limit controllers that incorporate numerous product specification, communication, display interface and software improvements that surpass competitive limit device offerings in ease of use and programming.

By adding more versatile features and user-friendly functionality like digital inputs, an easy-to-use HMI, jumperless and auto-hardware configuration, 24 Vdc transmitter power supply and MODBUS® communication across the range, the CN2504 limit controller transform the complicated into the simple while saving you time (as much as 50% on product set-up), reducing inventory stock and virtually eliminating the likelihood of operator errors.

The CN2504 limit controllers are affordable, well-featured, easy to use and adaptable with performance features that work for you to make limit control simple. The CN2504 is a fail-safe protection device to prevent damage to equipment or products. It will shut down a process when a preset temperature is reached and cannot be reset by the operator until the process has returned to a safe condition.

## Specifications

### Environmental Characteristics

**Operating Temp:** 0 to 55°C (32 to 131°F)

**Storage Temp:** -20 to 80°C (-4 to 176°F)

**Humidity:** 20 to 95% non-condensing RH

### Electrical

**Supply Voltage:** 100 to 240V, 50/60 Hz, optional 20 to 48 Vac 50/60 Hz or 22 to 65 Vdc

**Power Consumption:** 5 W/7.5 VA maximum

### Inputs

**Thermocouples:** J, T, K, L, N, B, R, S, C; Pt Rh 20% vs. Pt 40% Rh

**RTD:** 3-wire, PT100 DC linear (scalable -1999 to +9999)

**Volts:** 0 to 5V, 1 to 5V, 0 to 10V, 2 to 10V

**DC milliamps:** 0 to 20 mA or 4 to 20 mA

**DC millivolts:** 0 to 50 mV, 10 to 50 mV



CN2504 shown smaller than actual size.

## Outputs

**Output 1:** (Limit relay) fixed

**Outputs 2 and 3:** (Alarm relay) are user-selectable and customized based on desired application

### Choose From the Following Output Types:

**Max # of Outputs:** 3 for alarm, 24 Vdc transmitter power supply or retransmit of process value/limit trip setpoint

**Limit Relay:** SPDT; 240 Vac 5 A resistive; lifetime >100,000 operations at rated voltage/current

**Alarm Relay:** Optional SPDT; 240 Vac 2A resistive; lifetime >500,000 operations at rated voltage/current

**SSR Drive (Optional Drive Capability):** >10 Vdc nominal into 500Ω minimum

**DC Linear:** Optional 0 to 20 mA, 4 to 20 mA into 500 Ω maximum; 0 to 10V, 1 to 5V, 2 to 10V, 0 to 5V into 500Ω minimum; outputs have 2% over/under drive applied; accuracy ±0.25% (mA into 250 Ω load, V into 2k Ω load); degrading linearity to ±0.5% for increasing burden to specified limits

**Triac:** Optional 0.01 to 1A AC, 20 to 280 Vrms, 47 to 63 Hz (limit 2)

**Transmitter Power Supply:** Optional 24 Vdc (limit 1)

## Output Functions

**Process Alarm:** (Reverse or direct)

**Modes (Alarm 1 and 2):** High/low, band, deviation, logical OR/AND

**Retransmit:** Process value or limit setpoint



### Electrical Performance

**Accuracy:** ±0.1% of input range ±1 LSD  
(thermocouple CJC better than 1°C)

**Input Sample Rate:** 4 per second, 14-bit resolution

**Impedance:** >10M Ω for the thermocouple and mV ranges,  
47k Ω for V ranges and 5 Ω for mA ranges

**Sensor Break Detection:** <2 seconds (except zero based  
DC ranges), limit output opens, low alarms activate for RTD,  
mA or V ranges

### Communications Interface

**User-Selectable:** 2-wire, RS485 serial communications  
option with choice of MODBUS RTU or ASCII protocol;  
1200 to 19200 baud

**PC Configuration:** Offline configuration from serial port to  
dedicated configuration socket (comms option not required)

### Protection

**IEC IP66 (NEMA 4X):** Front panel

**IEC IP20:** Behind the panel protection

### Dimensions

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

**Height:** 96 mm (3.77")

**Width:** 96 mm (3.77")

**Depth:** 100 mm (3.94")

**Weight:** 0.21 kg (0.46 lb)

**Mounting:** Plug in panel with fixing strap

Input Type	Range
K	-200 to 1373°C (-328 to 1399°F)
J	0 to 761°C (32 to 1401°F)
T	-200 to 262°C (-328 to 503°F)
N	0 to 1399°C (32 to 2550°F)
R	0 to 1650°C (32 to 3002°F)
S	0 to 1649°C (32 to 3000°F)
B	100 to 1824°C (211 to 3315°F)
L J DIN	0 to 762°C (32 to 1403°F)
C	0 to 2320°C (32 to 4208°F)
Pt 100 RTD (0.00385)	-199 to 800°C (-328 to 1472°F)
0 to 20 mA, 4 to 20 mA	-1999 to 9999
0 to 10 Vdc, 0 to 5 Vdc, 0 to 50 mVdc	-1999 to 9999



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.

### To Order Visit [omega.com/cn2504](http://omega.com/cn2504) for Pricing and Details

Model No	Description
CN2504-R1	Single output, relay
CN2504-R1-LV	Single output, relay, low voltage

### Output and Communications Options (Field Installable Modules)

Model No	Description
<b>Output 2 and 3 Slot</b>	
2500X-R	Relay module
2500X-DC	DC pulse module
2300X-F2	Linear DC module
2500X-T	Triac module (output 2 only)
2300X-TPS	Transmitter power supply (output 3 only)
<b>Option A Slot</b>	
2300X-485	RS485 communications
2300X-DI	Digital input (remote reset)

### Accessories (Field Installable)

Model Number	Description
CN2500-SOFT	Configuration software
CNQUENCHARC	Noise suppression kit, 110 to 230 Vac

Comes complete with mounting bracket and operator's manual.

**Ordering Example:** CN2504-R1, single output controller.

OCW-2, OMEGACARE<sup>SM</sup> extends standard 3-year warranty to a total of 5 years.