



# 1/16 DIN Limit Controller

CN6221 Series  
Starts at  
**\$195**



- ✓ Dual Display
- ✓ Universal Input
- ✓ High or Low Limit
- ✓ Digital Input for Remote Reset
- ✓ RS485 Communications (Optional)
- ✓ Alarms (Optional)
- ✓ Retransmission Output (Optional)

The CN6221 Series is an FM approved limit controller that can be configured either as a high limit or as a low limit controller. The CN6221 features universal input, 2 alarm outputs, retransmission output, a timer to count the total time the setpoint is exceeded, and a register to retain the maximum. The RS485 communication interface is available as an option.

## Specifications

**Power Supply**  
Voltage: 100 to 240 Vac ( $\pm 10\%$ ),  
Frequency: 50 or 60 Hz

**Maximum Power Consumption:**  
8 Va max (4 W max)

**Memory:** Non-volatile memory

**Withstanding Voltage (Between Primary and Secondary Terminals):** 1500 Vac for 1 min (see Note 1)

**Insulation Resistance (Between Primary and Secondary Terminals):** 20 M $\Omega$  or more at 500 Vdc (see Note 1)

**Note 1:** The primary terminals are the power supply terminals and relay output terminals. The secondary terminals are the analog input and output terminals, the voltage pulse output terminals, and the contact input terminals.

## Contact Input

**Function:** Resetting "exceeded status"

**Input:** 1 point

**Type:** Non-voltage contact or transistor contact

**Contact Capacity:** At least 12V/10 mA

**On/Off Judgment:** On state for 1 k $\Omega$  or less; off state for 20 k $\Omega$  or greater

## Measured Value (PV)

**Input:** 1 point

**Type:** Universal; selectable by software

**Accuracy (At 23  $\pm 2^\circ\text{C}$  Ambient Temperature):**

**Thermocouple:**  $\pm 2^\circ\text{C} \pm 1$  digit

At  $-200$  to  $-100^\circ\text{C}$ :  $\pm 4^\circ\text{C}$

At  $-100$  to  $0^\circ\text{C}$ :  $\pm 3^\circ\text{C}$

**Types R and S:**  $\pm 5^\circ\text{C}$  [ $\pm 9^\circ\text{C}$  for 0 to  $500^\circ\text{C}$  (32 to  $932^\circ\text{F}$ )]

**Type B:**  $\pm 9^\circ\text{C}$  (accuracy is not guaranteed for 0 to  $400^\circ\text{C}$ )

**RTD:**  $\pm 1^\circ\text{C} \pm 1$  digit

**Voltage (mV, V):**  $\pm 0.3\% \pm 1$  digit

**Sampling Period for Measured Value**

**Input:** 500 ms

**Burn-Out Detection:** Functions for thermocouple or RTD input (burn-out upscale only; cannot be switched off)

**Input Resistance:** 1 M $\Omega$  or greater for thermocouple or DC mV inputs; approx 1 M $\Omega$  for DC V input

**Maximum Allowable Signal Source**

**Resistance:** 250  $\Omega$  for thermocouple or DC mV input; 2 k $\Omega$  for DC V input

**Maximum Allowable Wiring**

**Resistance for RTD Input:** 10  $\Omega$ /wire (resistance values of 3 wires must be the same)

**Allowable Input Voltage:**  $\pm 10$  Vdc for thermocouple or DC mV input;  $\pm 20$  Vdc for DC V input

Panel Punches Available Visit [omega.com/panelpunches](http://omega.com/panelpunches)



CN6221-R, \$195, shown smaller than actual size.

## Noise Rejection Ratio:

**Normal Mode Noise:** Minimum 40 dB (50/60 Hz)

**Common Mode Noise:** Minimum 120 dB (90 dB for DC V input)

## Reference Junction Error

**Compensation:**  $\pm 1.5^\circ\text{C}$  (at 15 to  $35^\circ\text{C}$ ),  $\pm 2.0^\circ\text{C}$  (at 0 to  $50^\circ\text{C}$ )

**Note:** The reference junction compensation cannot be switched off

**Applicable Standards:** RTD, Thermocouple, JIS/IEC/DIN (ITS90)

## Input Table

Input Type		Range ( $^\circ\text{C}$ )	Range ( $^\circ\text{F}$ )
Thermocouple	K	-270 to 1370	-300 to 2500
		0 to 600	32 to 999.9
		0 to 400	32 to 750
		-199.9 to 200	-300 to 400
	J	-199.9 to 999.9	-300 to 2100
	T	-199.9 to 400	-300 to 750
	E	-199.9 to 999.9	-300 to 1800
	R	0 to 1700	32 to 3100
	S	0 to 1700	32 to 3100
	B	0 to 1800	32 to 3200
	N	-200 to 1300	-300 to 2400
	L	-199.9 to 900	-300 to 1600
U	-199.9 to 400	-300 to 750	
Platinel 2		0 to 1390	32 to 2500
RTD	Pt100	-199.9 to 850	-199.9 to 999.9
		0 to 400	32 to 750
		-199.9 to 200	-300 to 400
		-19.9 to 99.9	-199.9 to 999.9
		-199.9 to 500	
DC Voltage	JPt100	0 to 100 mV	0 to 100
		0 to 5V	0 to 5
		1 to 5V	1 to 5
		0 to 10V	0 to 10



## Control Output

**Output:** 1 point

**Type:** Relay contact

**Contact Capacity:** 3 A @ 240 Vac or 3 A @ 30 Vdc (with resistance load)

**Note:** The control output relay cannot be replaced by users.

## Alarm Functions (Optional)

**Alarm Types:** 22 types (waiting action can be set by software): PV high-limit, PV low-limit, deviation high-limit, deviation low-limit, de-energized on deviation highlimit, deenergized on deviation low-limit, deviation high- and low-limits, high- and low-limits within deviation, de-energized on PV high-limit, de-energized on PV low-limit, fault diagnosis output, fail output

**Alarm Output:** 2 relay contacts

**Relay Contact Capacity:** 1 A @ 240 Vac or 1 A @ 30 Vdc (with resistance load)

**Note:** The alarm output relays cannot be replaced by users.

## Retransmission Output (Optional)

The retransmission output is provided only when the "/RET" option is specified.

**Output Signal:** Measured value in 4 to 20 mA

**Maximum Load Resistance:** 600  $\Omega$

**Output Accuracy:**  $\pm 0.3\%$  of span (at  $23 \pm 2^\circ\text{C}$  ambient temperature)

## Communication Interface

**Applicable Standards:** Complies with EIA RS485

**Number of Controllers:** Up to 31

**Maximum Communication Distance:** 1200 m (3937')

**Communication Method:** 2-wire half-duplex, start-stop synchronization, non-procedural

**Construction, Mounting, and Wiring Construction:** Dust-proof and drip-proof front panel conforming to IP65; for side-by-side close installation, controller loses its dust-proof and drip-proof protection

**Casing:** ABS resin and polycarbonate

**Case Color:** Black

**Mounting:** Flush panel mounting

## Environmental Conditions

### Normal Operating Conditions

**Warm-Up Time:** At least 30 minutes

**Ambient Temperature:** 0 to  $50^\circ\text{C}$  (0 to  $40^\circ\text{C}$  when mounted side-by-side)

**Rate of Change of Temperature:**  $10^\circ\text{C}/\text{h}$  or less

**Ambient Humidity:** 20 to 90% RH (no condensation allowed)

**Magnetic Field:** 400 A/m or less

**Continuous Vibrations of 5 to 14 Hz:** Amplitude of 1.2 mm or less

**Continuous Vibrations of 14 to 150 Hz:**  $4.9 \text{ m/s}^2$  (0.5 G) or less

**Short-Period Vibrations:**  $14.7 \text{ m/s}^2$  (1.5 G) for 15 seconds or less

**Shock:**  $98 \text{ m/s}^2$  (10 G) for 11 ms or less

**Mounting Angle:** Upward incline of up to 30 degrees; no downward incline

**Altitude:**  $\leq 2000$  m above sea level

## Maximum Effects from Operating Conditions

### Temperature Effects

**Thermocouple, mVdc and Vdc**

**Inputs:**  $\pm 2 \mu\text{V}/^\circ\text{C}$  or  $\pm 0.02\%$  of FS/ $^\circ\text{C}$ , whichever is the larger

**Resistance Temperature**

**Detector:**  $\pm 0.05^\circ\text{C}/^\circ\text{C}$

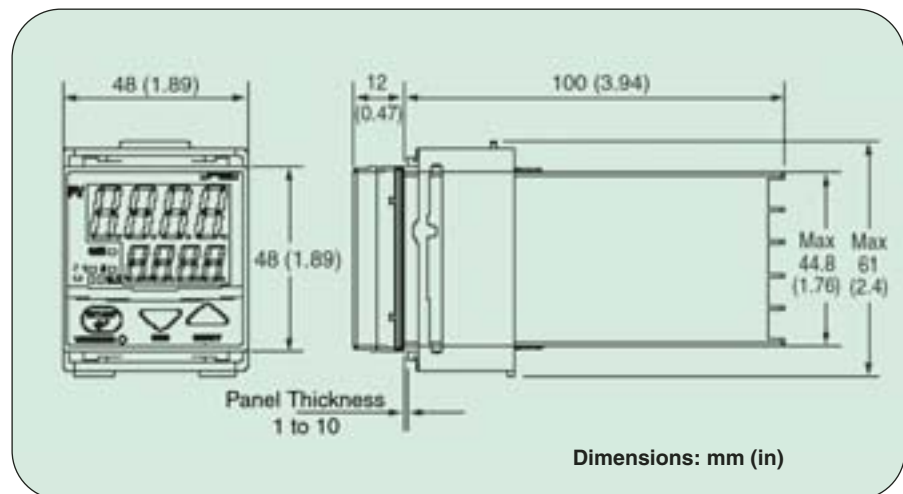
**Analog Output:**  $\pm 0.05\%$  of FS/ $^\circ\text{C}$

### Effect from Fluctuation of Power

**Supply Voltage (Within Rated Voltage Range)**

**Analog Input:**  $\pm 0.2 \mu\text{V}/\text{V}$  or  $\pm 0.002\%$  of FS/V, whichever is larger

**Analog Output:**  $\pm 0.05\%$  of FS/V



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## To Order (Specify Model Number)

Model No.	Price	Description
CN6221-R	\$195	Limit controller, single relay output

## Options

Ordering Suffix	Add'l Price	Description
-AL	\$20	Dual alarms
-PV	40	4 to 20 mA retransmission output
-C4*	95	RS485 communications
-DI *	20	Digital input switching

\* Only one option can be ordered.

## Accessories (Field Installable)

Model No.	Price	Description
CNQUENCHARC	\$8	Noise suppression kit, 110 to 230 Vac
DPP-4	475	$\frac{1}{16}$ DIN panel punch
EE-1319	85	Reference Book: Grounding and Shielding Techniques

Comes complete with operator's manual.

**Ordering Example:** CN6221-R-C4, single output limit controller, mechanical relay, RS485 communications, \$290.



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