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Autotune Temperature/ Process Controllers

CN9300, CN9400, CN9500 and CN9600 Series





1/16 DIN

1/16 DIN

1/32 DIN

CN9300, CN9400, CN9500 and CN9600 Series

- Display Engineering Units °C, °F, bar, psi, pH, rH, SET (Universal Unit)
- 4-Digit Display
- 5 Alarm Configurations
- Single Ramp and Soak
- PID Heat-Cool Control
- NEMA 4 (IP66) Faceplate
- Sleeve Mounting
- Security Lockouts
- Easy-to-Use

CN9600 Series Unique Features

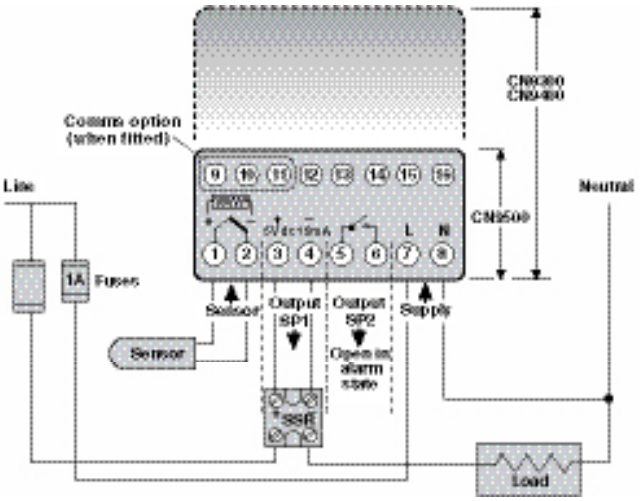
- Multi Ramp and Soak: 31 Programs, 126 Segments
- Assured Soak
- mA or V Linear Inputs
- mA or V Linear Outputs
- Three Outputs Standard
- Analog Retransmission
- High Accuracy ±0.1% Display of Linear Input

Optional

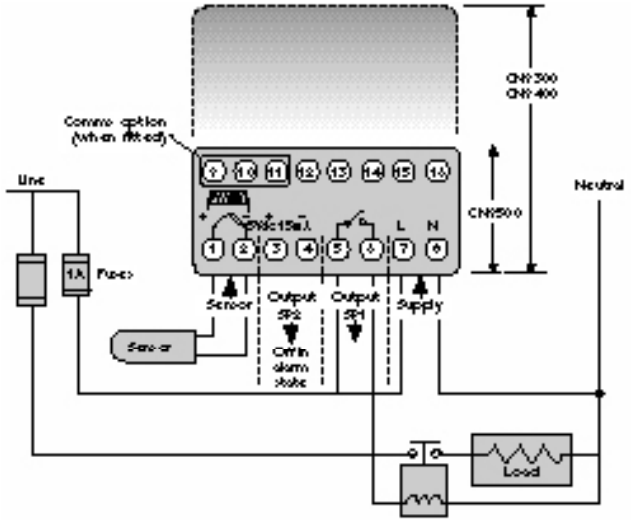
- Factory or Field Installable RS232 or RS485 (MODBUS® Protocol) Communications
- CN9-SW Charting and Remote Control Software
- Low Voltage Power (CN9300 and CN9500 Only)

The new 1/32 DIN CN9500, 1/16 DIN CN9300 single display, 1/16 DIN CN9400 and CN9600 dual display controllers follow the OMEGA tradition of innovative design. The new CN9600 offers powerful process control and programmer capabilities. Building on the success of the CN132 and CN9000A series, the new models include several new features, the most important being the option of a low cost serial communicating system with easy to use Windows based software.

The CN9-SW series software bridges the gap between the “stand alone” system and full SCADA of Fieldbus control networks by providing a facility for remote supervision of up to 128 instruments using MODBUS protocol. It requires only a modest investment and can be operated by anyone with a medium specification PC or laptop that can be run with Windows 95, 98 or Windows NT.



The DC Pulse output is allocated to SP1 and wired to switch the load (heater) using an SSR



The relay output is allocated to SP1 and wired to switch the load (heater) using a contactor

Specifications

Power: 100 to 240 Vac, ±10%, 50 to 60 Hz, 4 VA; optional 12 or 24 Vac/Vdc, ±20%, 50 to 60 Hz, 4 VA polarity is not required; the controllers are fitted with an internal 250 mA time lag fuse

Display: 4-digit LED, 10 mm (0.4"), high brightness green display

CN9400/CN9600 Dual Display:
- **Lower Display:** 9 mm (0.35") orange LED output indicators-flashing
- **SP1:** Square green
- **SP2:** Round red
- **SP3:** 2nd round red (CN9600 only)

Display Range: -199 to 9999 counts (hi-res mode -199.9 to 999.9)

Range: Sensor limited 2000°C (3500°F); -99.9 to 999.9° in 0.1° resolution

Thermocouple Cold Junction Compensation Rejection: 20:1 (0.05°/°C) typical

Thermocouple External Resistance: 100 Ω maximum

Thermocouple: 9 types

Standards: IPTS/68/DIN43710

RTD Input: Pt100 2-wire (0.00385)
- **CN9600 Only:** 3-wire RTD input

mV Range:
- **CN9300, CN9400, CN9500 Linear Process Inputs:** 0 to 50 mV (1 Ω shunt resistor supplied for mA inputs)
- **CN9600:** 0 to 50 mV ± 0.1%

Calibration Accuracy: ±0.25% of full scale ±1°C

Sampling Frequency: Input 10 Hz, CJC 2 seconds

Common Mode Rejection: Negligible effect up to 140 dB, 240 V, 50 to 60 Hz

Temperature Coefficient: 150 ppm/°C sensor maximum

Output Device Options:
- **Relay:** Form A/SPST contacts 2 A/250 Vac, resistive
- **SSd (DC Pulse Driver, CN9600):** To switch a remote SSR 5 Vdc (+0/-15%) 15 mA non-isolated -6 Vdc @ 20 mA

Analog (CN9600): Accuracy 0 to 1% full scale typical, 4 to 20 mA (500 Ω maximum), 0 to 5 Vdc 10 mA (500 Ω minimum), 0 to 10 Vdc 10 mA (1 kΩ minimum)

Operating Ambient Range: 0 to 50°C (32 to 122°F)

Case Material: Flame retardant polycarbonate

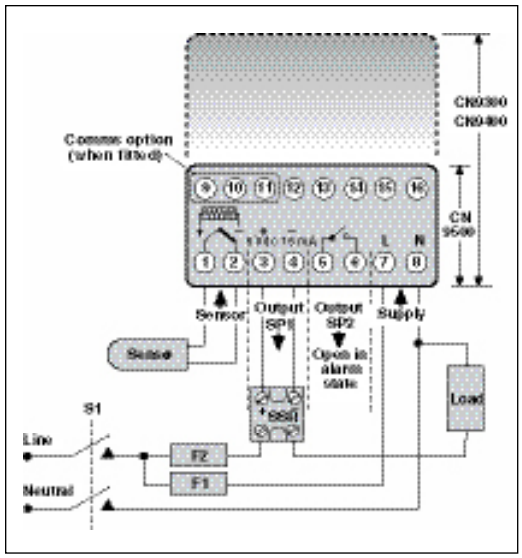
Weight:
- **CN9300, CN9400:** 120 g (4.3 oz)
- **CN9500:** 110 g (3.9 oz)
- **CN9600:** 180 g (6.4 oz)

1/32 DIN Panel Cutout Size: 45 x 22.2 mm (1.77 x 0.87") 9.5 mm (0.374") maximum panel thickness

1/16 DIN Panel Cutout Size: 45 mm square (1.772"), 9.5 mm (0.374") maximum panel thickness

Maximum Recommended Wire Size: 18 AWG

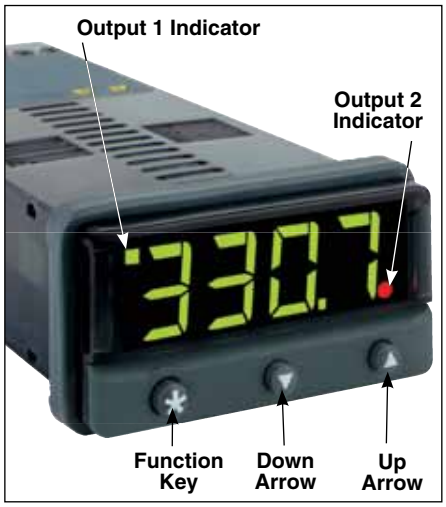
Inductive Loads: To prolong relay contact life and suppress interference, it is a recommended engineering practice to use a snubber circuit, such as OMEGA's CNQUENCHARC.



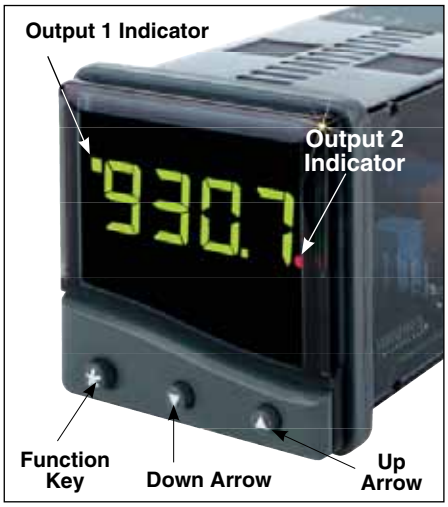
OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

For Additional Controllers and Indicators, See omega.com

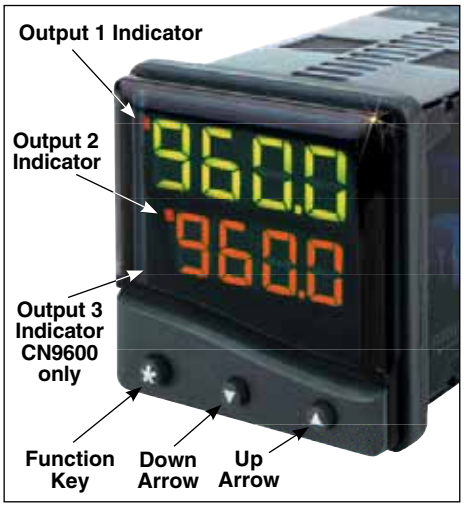
CN9500



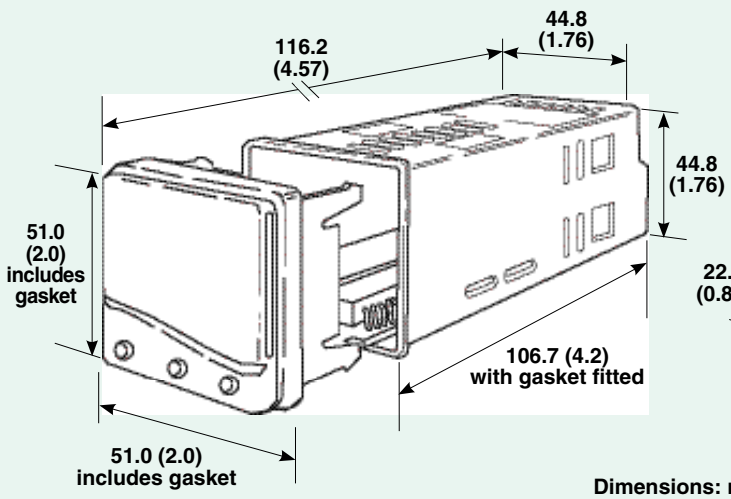
CN9300



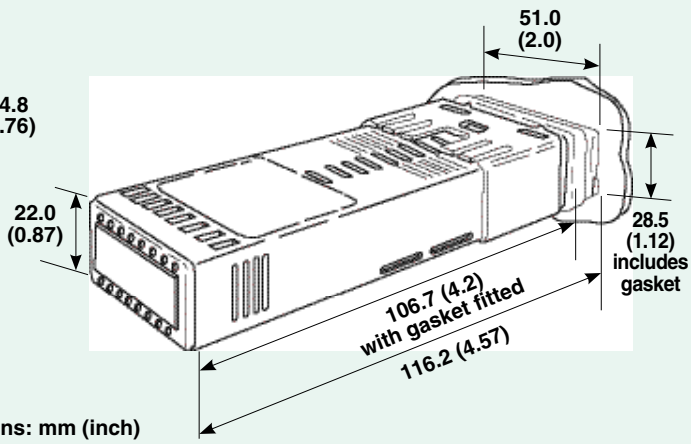
CN9400 and CN9600



CN9300, CN9400 and CN9600



CN9500



Dimensions: mm (inch)

Input Ranges

Thermocouple Type		Linearized Range (Units Are °C/°F Switchable)		Linearity °C
B	Pt-30%Rh/Pt-6%Rh	0 to 1800°C	32 to 3272°F	2.0
E	CHROMEGA®-Constantan	0 to 600°C	32 to 1112°F	0.5
J	Iron-Constantan	0 to 800°C	32 to 1472°F	0.5
K	CHROMEGA®-ALOMEGA®	-50 to 1200°C	-58 to 2192°F	0.25
L (J DIN)	Iron-Constantan	0 to 800°C	32 to 1472°F	0.5
N	OMEGA-P®-OMEGA-N®	-50 to 1200°C	-58 to 2192°F	0.25
S	Pt-13%Rh/Pt	0 to 1600°C	32 to 2912°F	2.0
R	Pt-10%Rh/Pt	0 to 1600°C	32 to 2912°F	2.0
T	Copper-Constantan	-200 to 250°C	-273 to 482°F	0.25

Notes: *Type B: 5° (70 to 500°C), Types K and N: 1° >350°C. Exceptions: Types R and S: 5° <300°C, Type T: 1°, -25° or >150°C RTD/Pt100: 0.5 <-100°C.*

Sensor Type	Sensor and Input Type	Linearized Range (Units are °C/°F Switchable)		Linearity* °C
RTD	2-wire, 100 ΩPt	200 to 400°C	-273 to 752°F	0.25
CN9600 ONLY	2- + 3-wire RTD input	200 to 400°C	-273 to 752°F	0.25

Linear Process Inputs (Input mV range: 0 to 50 mV) (1 Ω shunt resistor is supplied for mA inputs)			
Input Type	**Signal Span**	**Maximum Scale Settings**	**Accuracy**
Linear Process	0 to 20 mV	-250 to 3000	±0.5%
CN9600 ONLY	0 to 50mV	-199 to 9999	±0.1%

Autotune Temperature/Process Controllers

(Both Outputs can be Either Reverse or Direct Acting)

To Order

Model No.	Description	Output 1	Output 2	Output 3
CN9511	1/32 DIN single display controller	Relay	Relay	—
CN9512	1/32 DIN single display controller	Relay	DC pulse	—
CN9522	1/32 DIN single display controller	DC pulse	DC pulse	—
CN9311	1/16 DIN single display controller	Relay	Relay	—
CN9312	1/16 DIN single display controller	Relay	DC pulse	—
CN9322	1/16 DIN single display controller	DC pulse	DC pulse	—
CN9411	1/16 DIN dual display controller	Relay	Relay	—
CN9412	1/16 DIN dual display controller	Relay	DC pulse	—
CN9422	1/16 DIN dual display controller	DC pulse	DC pulse	—
CN96111(*)	1/16 DIN dual display controller	Relay	Relay	Relay
CN96211(*)	1/16 DIN dual display controller	DC pulse	Relay	Relay
CN96221(*)	1/16 DIN dual display controller	DC pulse	DC pulse	Relay
CN96411(*)	1/16 DIN dual display controller	4 to 20 mA	Relay	Relay
CN96421(*)	1/16 DIN dual display controller	4 to 20 mA	DC pulse	Relay
CN96511(*)	1/16 DIN dual display controller	5 Vdc	Relay	Relay
CN96521(*)	1/16 DIN dual display controller	5 Vdc	DC pulse	Relay
CN96611(*)	1/16 DIN dual display controller	10 Vdc	Relay	Relay
CN96621(*)	1/16 DIN dual display controller	10 Vdc	DC pulse	Relay

** To specify input type insert "**TR**" for standard thermocouple/RTD, or for a dedicated process input add "**MA**," "**5V**," or "**10V**."*

***Ordering Examples: CN9662110V**, 1/16 DIN triple output ramp/soak, process 10 V input controller, 10 Vdc output, DC pulse and a mechanical relay output.*

***CN9311-C4**, controller with relay output, and RS485 communications. **OCW-2,** OMEGACARE℠ extends standard 3-year warranty to a total of 5 years.*

Additional Options

Suffix	Description
-C2	RS232 communications
-C4	RS485 communications
-LV*	12 to 24 Vac/Vdc low voltage power

Note:** One communications option can be ordered per unit. Field installable communications boards can be installed in the field. ** Low voltage power option is not field installable and available only on the following models: CN9312, CN9322, CN9512 and CN9522.*



CN9400
1/16 DIN

Field Installable Boards and Accessories

Model Number	Description
BD9-C2	RS232 communications board
BD9-C4	RS485 communications board
BD9-PROTOCOL*	The MODBUS protocol manual is not required when using the CN9-SW software
CN9-SW	Software for either RS232 or RS485 communications (refer to specifications)
TP4	Trim plate adaptor, 1/16 to 1/4 DIN panel cutout
TP6	Trim plate adaptor, 1/16 to 1/8 DIN panel cutout
CNQUENCHARC	120/240 Vac snubber used for inductive loads
CN9-C2-CABLE-10	RS232 cable with female DB-9, 3 m (10')
CN9-C2-CABLE-25	RS232 cable with female DB-9, 8 m (25')

**** Note:** This protocol manual provides the address information necessary to communicate with the CN9300/CN9400/CN9500 series controllers, with communications options installed, when interacting with custom or other commercially available software.*

For Additional Controllers and Indicators, See omega.com

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