PID AUTOTUNE TEMPERATURE/ PROCESS CONTROLLERS

1/16 DIN

CN9300 Series
$180
Basic Unit

1/16 DIN

CN9400 Series
$199
Basic Unit

1/32 DIN

CN9500 Series
$169
Basic Unit

All units shown slightly larger than actual size

- 3-Year Warranty
- 4-Digit Display
- 5 Alarm Configurations
- Single Ramp and Soak
- PID Heat-Cool Control
- NEMA-4 (IP66) Faceplate
- Sleeve Mounting
- Security Lockouts

Optional:

- RS-232 or RS-485 Communications
- Communications Software: CN9-SW
- Low Voltage Power

The new 1/32 DIN CN9500, 1/16 DIN CN9300 Single Display and 1/16 DIN CN9400 Dual Display controllers follow the TRODEKS tradition of innovative design. 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 32 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 or Windows NT.

Application: Multiple CN9500 Series Controllers set up with the CN9-SW Software ($159), see page D-161.

Specifications

Power: 100 to 240 Vac, ±10%, 50 to 60 Hz, 4 VA; Optional 12 or 24 Vac/dc, ±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 -199 to 9999 counts

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

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

Display Indicators:
Process temperature (PV), Setpoint (SP), LED output indicators-flashing
Output 1 (SP1 square), green;
Output 2 (SP2 round), red;
error messages,
Function/Option mnemonics

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

Thermocouple External Resistance:
100 Ω max

Thermocouple: 9 types

Standards: IPTS/68/DIN43710
RTD Input: Pt100 2-wire (.00385)

Linear Process Inputs:
mV range: 0 to 50 mV
(1 ohm shunt resistor supplied for mA inputs)

Calibration Accuracy:
±0.25% of Full Scale ±1°C

Sampling Frequency:
Input 10 Hz, CJC 2 sec

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

Temperature Coefficient:
150 ppm/°C sensor max

Relay: Form A/SPST contacts 2 A/250 Vac, resistive

SSd (dc Pulse Driver):
To switch a remote SSR 5 Vdc (+0/-15%) 15 mA non-isolated

Operating Ambient Range:
0 to 50°C (32 to 130°F)

Case Material:
Flame retardant polycarbonate

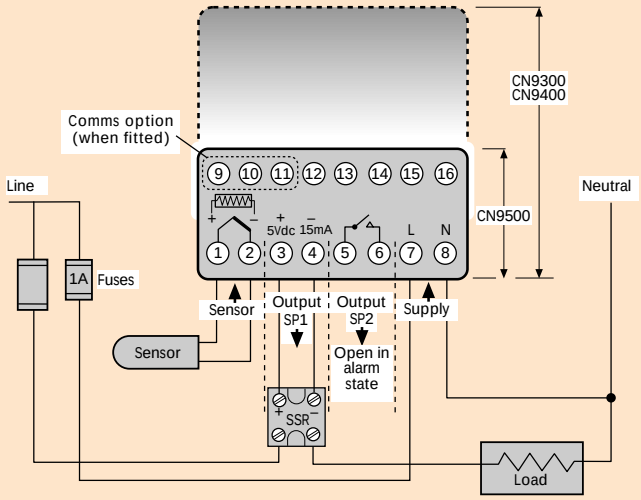
Weight:
CN9300: 120 g (4.3 oz)
CN9400: 120 g (4.3 oz)
CN9500: 110 g (3.9 oz)

⅛ DIN Panel Cutout Size:
45 x 22.2 mm (1.77 x 0.87")
9.5 mm (0.374") maximum panel thickness

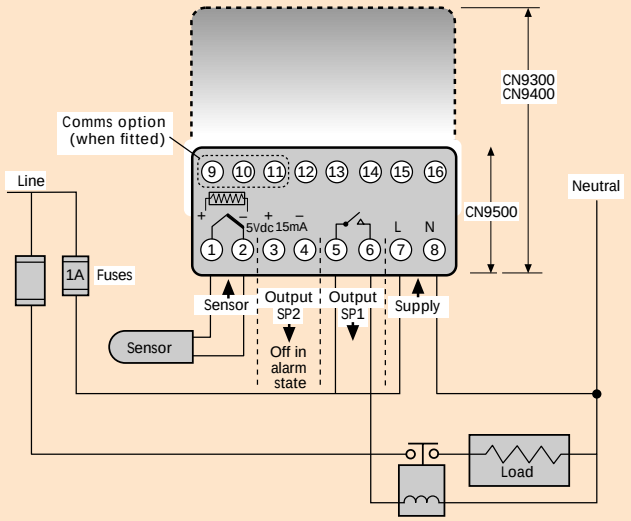
¼ DIN panel cutout size:
45 mm square (1.772")
9.5 mm (0.374") maximum panel thickness

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 TRODEKS's **CNQUENCHARC** (see "To Order")

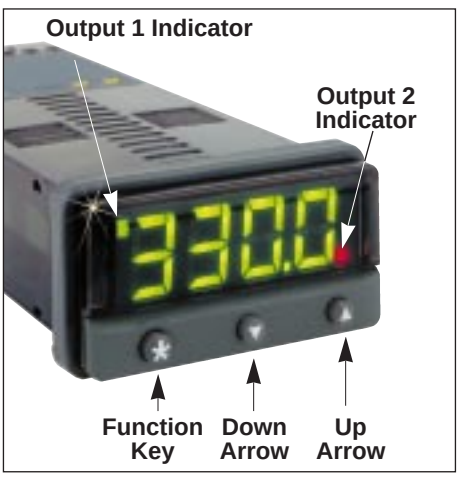
CN9300, CN9400 AND CN9500 Specification

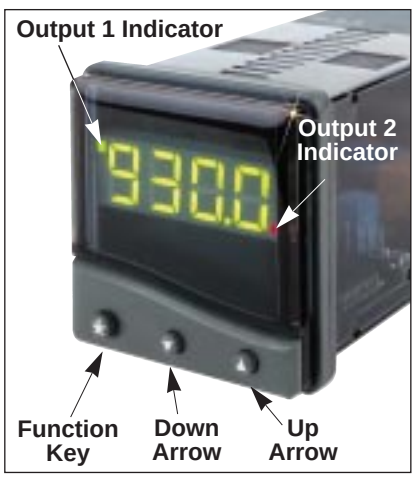


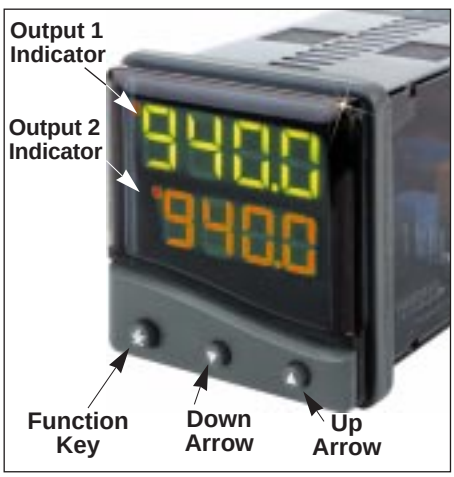
The dc Pulse output is allocated to SP1 and wired to switch the load (heater) using an SSR



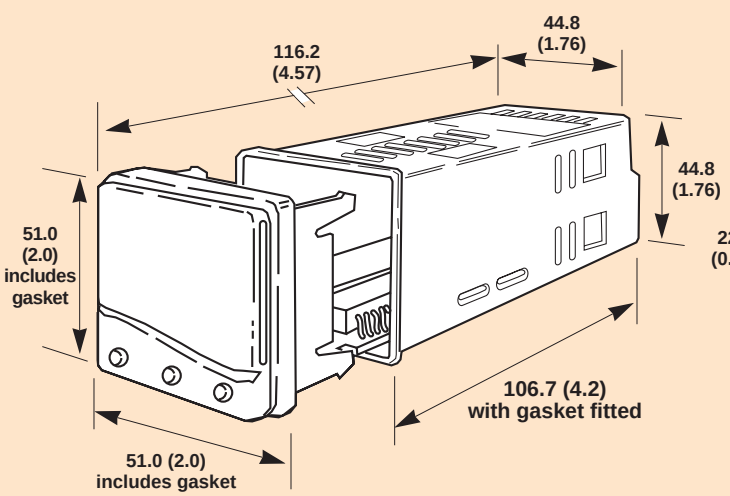
The relay output is allocated to SP1 and wired to switch the load (heater) using a contactor



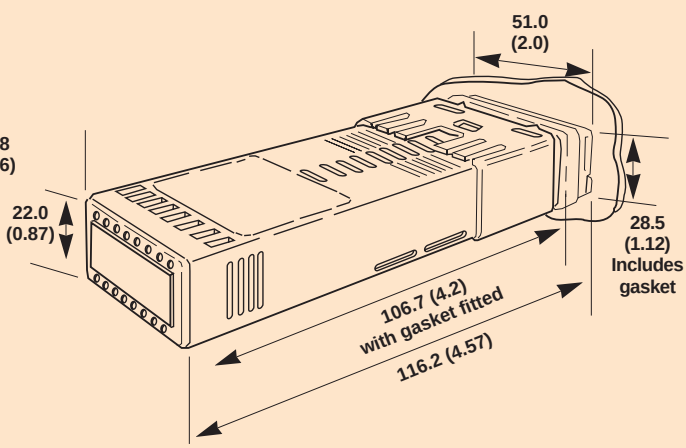




Model CN9300/CN9400
Dimensions in mm (in)



Model CN9500
Dimensions in mm (in)



Model
CN9500
½ DIN

Input Ranges

ThermocoupleType		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	CHRTRODEKS ®-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	CHRTRODEKS ®-ALTRODEKS ®	-50 to 1200 °C	-58 to 2192°F	0.25
L (J DIN)	Fe-Constantan	0 to 800 °C	32 to 1472°F	0.5
N	NiCrosil-NiSil	-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° (70-500°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

Linear Process Inputs (Input mV range: 0 to 50 mV) (1 ohm shunt resistor is supplied for mA inputs)			
Input Type	**Signal Span**	**Maximum Scale Settings**	**Linearity °C**
Linear Process	0 to 20 mV	-250 to 3000	±0.5%

To Order *(Specify Model Number)*

(Both Outputs can be Either Reverse or Direct Acting)

MODEL NO.	PRICE	DESCRIPTION	OUTPUT 1	OUTPUT 2
CN9311	**$186**	1/16 DIN Single Display	Relay	Relay
CN9312	**180**	1/16 DIN Single Display	Relay	Pulse
CN9322	**186**	1/16 DIN Single Display	dc Pulse	dc Pulse
CN9411	**205**	1/16 DIN Dual Display	Relay	Relay
CN9412	**199**	1/16 DIN Dual Display	Relay	dc Pulse
CN9422	**205**	1/16 DIN Dual Display	dc Pulse	dc Pulse
CN9511	**175**	1/32 DIN Single Display	Relay	Relay
CN9512	**169**	1/32 DIN Single Display	Relay	dc Pulse
CN9522	**175**	1/32 DIN Single Display	dc Pulse	dc Pulse

Additional Options

SUFFIX	PRICE	DESCRIPTION
-C2	**$50**	RS-232 Communications
-C4	**50**	RS-485 Communications
-LV*	**N/C**	12-24 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.*

Model CN9400
1/16 DIN

Field Installable Boards & Accessories

MODEL NO.	PRICE	DESCRIPTION
BD9-C2	**$50**	RS-232 Communications Board
BD9-C4	**50**	RS-485 Communications Board
CN9-SW-DEMO	**N/C**	Demonstration Software for Windows 95 and Windows NT
BD9-PROTOCOL*	**N/C**	The Modbus Protocol Manual is **not required** when using the CN9-SW software
CN9-SW	**159**	Software for either RS-232 or RS-485 communications (refer to specifications). Compatible with Windows 95 and Windows NT
TP4	**19**	Trim Plate adapter, 1/16 to ¼ DIN panel cutout
TP6	**19**	Trim Plate adapter, 1/16 to ⅛ DIN panel cutout
CNQUENCHARC	**8**	120/240 Vac Snubber used for Inductive Loads

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.*

CN9-SW SOFTWARE
COMPATIBLE WITH CN9300, CN9400 AND CN9500 SERIES CONTROLLERS

CN9-SW
$159
Windows 95 and Windows NT Compatible

- **Communications Software Designed for Either RS-232 or RS-485**
- **Remote Setpoint Adjustment**
- **Instrument Configuration**
- **Settings Saved to File**
- **Instrument Program Cloning**
- **Logging and Charting**
- **Log-On Change Feature**
- **Real-Time and Historical Mode with Zoom Facility**
- **Live Display**
- **Password Security**
- **Print Options**
- **Software Can Support Up to 128 CN9300, CN9400 or CN9500 Controllers**

Hardware Requirements

- **Pentium Processor with a Minimum of 16 Meg of RAM**
- **A Minimum of 20 Mb Free Hard Disk Space Is Recommended**
- **Graphic Display Adapter Capable of Displaying 256 Colors (VGA)**
- **Serial Port for Single RS-232 Instrument (or RS-485 Adaptor for Multiple Instruments)**
- **MS Mouse and Keyboard**
- **CN9300, CN9400, CN9500 Fitted with RS-232 or RS-485 Communications**

YEAR 2000 COMPLIANT

1/16 DIN

Model CN9300

The CN9-SW software is designed to interface with the CN9300, CN9400 and CN9500 series controllers with optional communication hardware. The CN9-SW takes up approximately 1Mb. The size is dependent on the number of controllers and the frequency that they are being logged. A very approximate figure is per reading: 12 bytes date/time plus 4 bytes for each instrument being logged. Designed for use on laptops or PC's, this new development provides the user with:

- Time saving benefit and convenience of remotely configuring and adjusting units.
- Saving and retrieving settings to and from files.
- Cloning settings to other instruments.
- Highly flexible logging and "real time" charting capability for providing hard copy QA records for ISO-9000 and other management purposes.

Screen displaying alarm condition on instrument 1.
Software alarms provide a screen indication if the measured value falls below the low alarm and/or rises above the high alarm settings.

Model CN9500, 1/32 DIN

To Order *(Specify Model Number)*		
Model Number	**Price**	**Description**
CN9-SW	**$159**	Software

Comes with complete operator's manual
Ordering Example: CN9-SW**, software for* CN9300, CN9400, CN9500 *Series Controller, **$159

The CN9-SW software is a powerful process development tool for the OEM customer or process engineer. With compatible modems and PC computers, remote site supervisory control and data acquisition can take place to facilitate periodic or continuous monitoring and troubleshooting.

Data is stored to file in a tamper resistant format to ensure the integrity of reports for quality monitoring requirements. Build your own multi-loop system with the CN9300/CN9400/CN9500 series controllers and CN9-SW software. Allows both local and remote adjustment. The CN9-SW software can be used as a production tool for the OEM. Downloading menu settings to controllers during production saves time and eliminates errors.

Screen depicting the setup of the cloning function for multiple controllers. When a satisfactory instrument configuration has been achieved, these settings can be cloned to other instruments on the network or saved to a file for later use.

Model CN9400
1/16 DIN

Sample of graph displaying "real time charting." Software is capable of logging readings from up to 128 instruments which it stores in data files. The data can be exported into text files in C.S.V. (Comma Separated Variable) format. In addition, up to 12 controllers can be displayed on a single chart, or individual charts can be set up for each instrument. Virtual full color chart recorder can log process variables such as: °C, °F, Bar, PSI, pH, or rH. User definable engineering unit "Set" can be selected on the controller to log other process variables.