

1/32 DIN Temperature and Process Controllers



Shown larger than actual size.

CN1632 Series



Standard Features

- ✓ PID Autotune
- ✓ Universal Inputs, Accepts Thermocouple, RTD, Voltage or Current Inputs
- ✓ Large Display Available in Red or Green
- ✓ 2 Amp Relay and DC Pulse Standard
- ✓ NEMA 4 (IP66) Front Panel

Optional

- ✓ RS485 Communications MODBUS® RTU Protocol
- ✓ Second Alarm Relay
- ✓ 12 to 24 Vac/12 to 30 Vdc Low Voltage Power

The CN1632 series includes large, multi-colored LED's that indicate process deviation, instrument operating mode and alarm conditions, clearly identifying the status of your process at all times. The high visibility four-digit display, available in red or green, is the largest available in an indicator/controller of this size. For use in systems, RS485 MODBUS communications are available with up to 128 units addressable on the two-wire multi-drop line.

A specially developed PID tuning algorithm provides superb general control. For unique performance

requirements, you can select pre-tune followed by manual fine tuning.

Easy programming via three keys provides straightforward daily operation and set-up.

No internal hardware configuration is required. There are no switches or jumpers to change.

Outputs include a relay and DC Pulse for primary control and alarming. There is also a second alarm relay available when communications are not included.

The 2 A rated relays and a 10 Vdc pulse provide the highest capacity available in a 1/32 DIN controller.

The universal input accepts seven thermocouple types, 2- or 3- wire RTD, DC mV, and mA inputs.

Specifications

Input

Input Sample Rate: Four per second

Input Resolution: Approximately 14-bit

Input Impedance: >10 MΩ resistive

Isolation: 240 Vac isolation from all outputs except DC Pulse

Thermocouple Types: J, T, K, R, S, B and N

Calibration: Complies with BS4937, NBS125 and IEC584

Sensor Break Protection:

Break detected within 2 seconds

RTD: Pt100 (0.00385 curve), 3-wire

Current and Voltage: 0 to 20 mA, 4 to 20 mA, 0 to 50 mV, 10 to 50 mV, (scalable from -1999 to 999)

Output One

Types Available: Relay or DC pulse

Relay: Contact Type: SPST

Rating: 2A resistive at 120/240 Vac

Isolation: Inherent

DC Pulse Drive Capability: >10 Vdc into 500 Ω (50 mA maximum)

Isolation: Not isolated from input

Output Two

Types Available: Relay or DC pulse (whichever is not used for output one)

Contact Type: SPST

Rating: 2 A resistive at 120/240 Vac

Isolation: Inherent

Output Three (Relay or Communications)

Relay: Contact Type: SPST

Rating: 2 A resistive at 120/240 Vac

Isolation: Inherent

Digital Communications

Type: RS485 serial communication port

Character Format: MODBUS RTU

Bit Rate: User configurable to 1200, 2400, 4800, 9600

Address: User configurable 1 to 32

Control

Control Types: Direct/reverse acting PID or ON/OFF

Proportional Band: 0.5 to 999.9% at 0.1% resolution

Auto Reset: 1 second to 99 mins, 59 seconds and OFF

Rate: 0 (OFF) to 9 mins 59 seconds

Manual Reset (Bias): 0 to 100% of output power

ON/OFF Hysteresis: 0.1 to 10.0% of span

Output Cycle Time: Selectable from 0.5 sec (DC pulse only), 1, 2, 4, 16, 32, 64, 128, 256, and 512 seconds

Setpoint Range: Limited to configured range; setpoint lockable

Alarms

Maximum Number: 2, one standard and one ordered as "-AL"

Types of Alarm:

Process High: Range minimum to range maximum

Process Low: Range minimum to range maximum

Deviation: High or low

Band: 1 LSD to span

Performance

Reference Conditions:

Ambient Temperature: 20°C ±2°C
168°F ±3.6°F
Relative Humidity: 60 to 70%

Performance Under Reference Conditions:

Common Mode Rejection: >120 db at 50/60 Hz giving negligible effect at up to 264 V at 50/60 Hz
Series Mode Rejection: >500% of span at 50/60 Hz giving negligible effect

Measurement Accuracy:

DC Linear Inputs: ±0.1% of span ±1 LSD

Thermocouple Inputs: ±0.1% of span ±1 LSD typical (0.25% for Types J and T)

Note: Reduced performance with Type B between 100 to 600°C (212 to 1112°F)

Linearization Accuracy: Better than ±0.2°C at any point for any 0.1°C range (±0.05°C typical); better than ±0.5°C at any point for any 1°C range

Cold Junction Compensation:

Better than ±0.07°C

RTD Inputs

Measurement Accuracy:

±0.1% of span ±1 LSD

Linearization Accuracy: Better than ±0.2°C at any point for any 0.1°C range (±0.05°C typical); better than ±0.5°C at any point for any 1°C range

Operating Conditions

Ambient Operating Temperature: 0 to 55°C (32 to 131°F)

Ambient Storage Temperature: -20 to 80°C (-4 to 176°F)

Relative Humidity: 20 to 95% non-condensing

Supply Voltage: 90 to 264 Vac 50/60 Hz Standard or optional, 12 to 24 Vac, 50/60 Hz or 12 to 30 Vdc

Source Resistance: 1000Ω max (thermocouple)

Lead Resistance: 50Ω/lead max (Pt100)

Performance Under Operating Conditions:

Temperature Stability:

0.01% of span/°C change in ambient temperature (RTD and DC mA/mV 0.005% of span)

Cold Junction Compensation:

Better than ±1°C

Supply Voltage Influence: Negligible

Sensor Resistance Influence:

Thermocouple: 1000Ω <0.1% span

RTD: Pt100 50Ω/lead <0.25% span

Environmental

EMI Susceptibility: Complies with EN50082 Parts 1 (1992) and 2 (1995)

EMI Emissions: Complies with EN50081 Parts 1 (1992) and 2 (1994)

Safety Considerations: Complies with EN61010-1 insofar as it applies

Power Consumption: 4 W max

Front Panel Sealing: NEMA 4 (IP66)

Physical

Front Panel Dimensions:

25 H x 49 W x 100 mm D (0.98 x 1.93 x 3.94")

Mounting: Plug-in with panel mounting sleeve; panel cut-out: 45 x 22.5 mm (1.77 x 0.89")

Terminals: Screw type

Weight: 100 g (3.53 oz)



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

Quick Disconnect Thermocouple Probes. Visit us online for details.



Input Types and Range Table

Input	Range
J Iron-Constantan	-200 to 1200°C -128.0 to 537.0°C -328 to 2191°F -198.4 to 998.5°F
K CHROMEGA®-ALOMEGA®	-240 to 1371°C -128.0 to 536.7°C -400 to 2499°F -198.4 to 998.5°F
T Copper-Constantan	-240 to 401°C -128.0 to 400.6°C -400 to 753°F -198.4 to 753.0 °F
N OMEGA-P®-OMEGA-N®	0 to 1399°C 32 to 2550°F
R Pt-13% Rh/Pt	0 to 1759°C 32 to 3198°F
S Pt-10% Rh/Pt	0 to 1760°C 32 to 3217°F
B Pt-6% Rh/Pt-30% Rh	100 to 1824°C 211 to 3315°F
RTD 100 Ω Pt 3-wire	-199 to 802°C -127.9 to 537.0°C -327 to 1475°F -198.3 to 998.5°F
Current	0 to 20 mA, 4 to 20 mA -1999 to 9999, -1999 to 9999
Voltage	0 to 50 mV, 10 to 50 mV -1999 to 9999, -1999 to 9999

To Order

Model No.	Description
CN1632-R1	Single relay control output with DC pulse alarm and red LED display
CN1632-GN-R1	Single relay control output with DC pulse alarm and green LED display
CN1632-DC1	Single DC pulse control output with 2 A alarm relay and red LED display
CN1632-GN-DC1	Single DC pulse control output with 2 A alarm relay and green LED display

Ordering Example: CN1632-R1-AL-LV, 1/32 DIN controller with single relay output, DC pulse alarm, second alarm relay, and low voltage power supply. OCW-1 OMEGACARESM, extends standard 3-year warranty to a total of 4 years.

Options (only 1 option available per unit)

Optional Power Supply

Ordering Suffix	Description	Ordering Suffix	Description
-AL	Second 2A alarm relay	-LV	12 to 24 Vac, 12 to 30 Vdc
-C4	RS485 communications		