NEW™ 1/16 DIN Universal Temperature/ Process Limit Controller

Shown larger than actual size

CN1602 Series

$205

Basic Unit

- **Dual Four-Digit Red LED Display**
- **Universal Sensor Input, Thermocouple, 3-Wire RTD or dc Linear (mA, mV or V)**
- **Limit Relay Output**
- **Input Range Selected from the Front Panel**
- **90 to 264 Vac Power Supply (Optional Low Voltage Power Available)**
- **Max/Min Hold**
- **Time Exceed Recording Feature**
- **NEMA-4 Type/IP65 Sealed Front Panel Standard**

Optional

- **Low Voltage Power Supply**
- **RS-485 Communications**
- **Remote Reset**
- **Up to Two Additional Outputs**
- **Fully Configurable with Laptop or PC**

The CN1602 is a new line of limit controllers designed to provide a programmable safety cutout and optional alarm for use in a wide variety of applications.

Packaged in 1/16 DIN, the CN1602 provides a latched relay output which is activated when process parameters either exceed or fall below the desired value, providing a fail safe shutoff which has to be manually reset before the process can continue.

The instrument can be configured to be either a high limit unit where the relay will de-energize when the Process Variable (PV) is above the limit point setpoint, or a low limit where the relay will drop out when the PV falls below the setpoint.

LED indication shows when limits have been exceeded and when the relay is latched out.

It offers a full range of universal sensor input options, versatile configuration and a front panel sealed to NEMA-4 type/IP65.

The CN1602 provides a valuable safety control element in most applications and systems.

Specifications

Input

Thermocouple Types:
J, K, T, R, S, B, L and N
RTD: 100 Ω (.00385 Ω/Ω/C)
Volts: 0 to 5 Vdc, 1 to 5 Vdc, 0 to 10 Vdc and 2 to 10 Vdc
Millivolts: 0 to 50 mV dc and 10 to 50 mV dc
Milliamps: 0 to 20 mA dc and 4 to 20 mA dc
Sensor Fault Detection: Displays "LL" or "HH" for thermocouple or RTD inputs and sensor break, SnSr. Limit outputs set to OFF (0% power); alarms operate as if the process variable has gone over-range (TC) and under-range (RTD & V, mV, mA)
Remote Reset: Voltage free contact, closure required to reset

Limit Output

Relay: SPDT 5 A resistive at 120/240 Vac

Alarm Output

Relay: 2 A resistive at 120/240 Vac
Retransmit Output
0 to 20 mA dc into 500 Ω max.
4 to 20 mA dc into 500 Ω max.
0 to 10 Vdc 500 Ω min.
0 to 5 Vdc 500 Ω min.

Resolution:

>10 bits in >1000 ms typical

Display

Digital Display: Four 7-segment LED's, top 10 mm (.39") high, bottom 7 mm (.28") high
Status Indicators: Individual LED indicators for OUT, Exceed, ALM, and when in Setup

Maximum/Minimum Hold

Feature that tracks and saves the maximum (high limit) or minimum (low limit) excursions of the process variable

Time Exceed

Feature that measures the amount of time that the limit is exceeded

Alarms

Maximum Number: Two "soft" alarms
Maximum # Outputs: Up to two outputs can be used for alarm purposes
Comb. of Alarms: Logical "ORing" and "ANDing" of alarms to an individual hardware output is available

Alarm Adjustment

Process Alarm: ±Input Span

Performance

Measurement Accuracy:
± 0.25% of span, ±1 LSD at 20°C/68°F
Note: Reduced performance with Type "B" thermocouple between 100 to 600°C (212 to 1112°F)
Ambient Temperature Error (TC and RTD): 0.01% of span/°C change in ambient
Linearization Accuracy:
Better than ± 0.2°C any point, any 0.1°C range (± 0.05°C typical). Better than ± 0.5°C any point, any 1°C range
Cold Junction Compensation:
Better than ± 0.7°C/±1.3°F
Scan Rate: 4 per second

Noise Rejection

Common mode: >120 dB at 50/60 Hz giving negligible effect at up to 264 V, 50/60 Hz
Series Mode: >500% of span (at 50/60 Hz) causes negligible effect
Line Voltage: 90 to 240 Vac Standard 20 to 50 Vac (50/60 Hz), 22 to 65 Vdc optional
Operating Temperature:
0 to 55°C (32 to 131°F)
Storage Temperature:
-20 to 80°C (-13 to 176°F)
Humidity: 20 to 95% non condensing
Source Resistance:
1000 Ω max. (thermocouple)
Lead Resistance:
50Ω per lead max. balanced (Pt100)

Dimensions:
1/16 DIN front panel, 4.33" (110 mm) deep

Digital Communications

Type: RS-485 serial communication port
Character Format: MODBUS RTU
Address: User configurable 1 to 32

Bit Rate: User configurable to 1200, 2400, 4800, 9600
Power Consumption: 4 watts
Front Panel Sealing: IP65/NEMA-4
Weight: 8 oz. max. (226.8 g)

Companion Limit Controllers: CN1612 (1/8 DIN) and CN1622 (1/4 DIN) available in this section

Input Types and Ranges

	Input Type	Range	
J	Iron-Constantan	0 to 450°C 0 to 761°C 0.0 to 205.4°C	32 to 842°F 32 to 1402°F 32.0 to 401.7°F
K	CHROMEGA®-ALOMEGA®	0 to 760°C 0 to 1373°C	32 to 1400°F 32 to 2503°F
T	Copper Constantan	-200 to 262°C 0.0 to 260.6°C	-328 to 504°F 32.0 to 501.1°F
L	Iron-Constantan (J DIN)	0 to 450°C 0 to 762°C 0.0 to 205.7°C	32 to 842°F 32 to 1404°F 32.0 to 402.3°F
S	Pt-13%Rh/Pt	0 to 1650°C	32 to 3002°F
R	Pt-10%Rh/Pt	0 to 1649°C	32 to 3000°F
B	Pt-30%Rh/Pt-6%Rh	100 to 1824°C	212 to 3315°F
N	OMEGA-P® OMEGA-N®	0 to 1399°C	32 to 2550°F
RTD	Pt, 385 100 Ω	-200 to 206°C 0 to 300°C 0 to 800°C -100.9 to 573.3°C -101.0 to 100.0°C 0.0 to 100.9°C	-328 to 403°F 32 to 572°F 32 to 1471°F -149.7 to 999.1°F -149.8 to 212.0°F 32.0 to 213.6°F
Process Voltage	0 to 50 mV, 10 to 50 mV, 0 to 5 V, 1 to 5 V, 0 to 10 V, 2 to 10 V		
Process Current	0 to 20 mA, 4 to 20 mA		

To Order *(Specify Model Number)*

Model Number	Price	Description
CN1602-R1	**$205**	Limit controller with single 5 A relay output

Note: *The single output models are standard. To order two or three outputs, specify output suffixes from the* ***Output Options*** *tables. OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order.*

Ordering Example: CN1602-R1-R2-F3*, 1/16 DIN single relay output process limit controller with alarm and analog retransmission output, $205 + 26 + 47 =* ***$278***

OCW-1 *OMEGACARE℠ extends standard 3-year warranty to a total of 4 years ($27), $278 + 27=* ***$305***

Output Options

Output 2 Suffix	Price	Description
-R2	**$26**	2 A alarm relay
Output 3 Suffix	**Price**	**Description**
-R3	**$26**	2 A alarm relay
-F3	**47**	Analog retransmission

Low Voltage Power Supply Option

Ordering Suffix	Add'l Price	Description
-LV	**$15**	20 to 50 Vac/22 to 65 Vdc

Additional Options: *(Only 1 Add'l option available per unit)*

Ordering Suffix	Add'l Price	Description
-C4	**$62**	RS-485 communications
-RR	**26**	Remote reset

Field Installable Plug-in Boards

Model Number	Price	Description
BD1600-R*	**$26**	2 A relay output (-R2 or -R3)
BD1600-F*	**47**	Analog output (-F3)
CN1600-SOFT	**105**	Software & cable for the configuration port
BD1600-C4	**62**	RS-485 communications

Note: *BD1600-R for Outputs 2 & 3 Only, BD1600-F for Output 3 Only*

For Additional Controllers and Indicators, See Section M

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