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Find the *OMEGA CNi833-C24* at our website: *Click HERE*

Temperature, Process and Strain Controllers

CNi Series

5 YEAR WARRANTY

iSeries

MONOGRAM



CNi32, shown smaller than actual size.



CNi16, shown smaller than actual size.



CNi8, shown smaller than actual size.



CNi8DV, shown smaller than actual size.

- **Universal Inputs**
- **High Accuracy: 0.5°C (±0.9°F), 0.03% Reading**
- **Totally Programmable Color Displays (Visual Alarms)**
- **User-Friendly, Simple to Configure**
- **Free Software**
- **Full Autotune PID Control**
- **Embedded Internet Connectivity Optional**
- **RS232 and RS485 Serial Communications Optional**
- **Built-In Excitation**
- **2 Control/Alarm Outputs; Choice of DC, Pulse, Solid State Relays, Mechanical Relays, Analog Voltage and Current**
- **Output 3 Retransmission: Isolated Analog Voltage and Current Optional**
- **NEMA 4 (IP65) Front Bezel**
- **Temperature Stability ±0.04°C/°C RTD and ±0.05°C/°C Thermocouple @ 25°C (77°F)**
- **Front Removable and Plug Connectors**
- **AC or DC Powered Units**
- **Ratiometric Mode for Strain Gages**
- **Programmable Digital Filter**

The OMEGA™ iSeries is a family of microprocessor-based instruments offered in three true DIN sizes. All of the instruments share the same set-up and configuration menu and method of operation, a tremendous time saver for integration of a large system. The iSeries family includes extremely accurate digital panel meters "DPi" and single loop PID controllers "CNi" that are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

The CNi Series covers a broad selection of transducer and transmitter inputs with 2 input models.

The Universal temperature and process instrument (CNi models) handles 10 common types of thermocouples, multiple RTDs and several process (DC) voltage and current ranges. This model also features built-in excitation, 24 Vdc @ 25 mA. With its wide choice of signal inputs, this model is an excellent choice for measuring or controlling temperature with a thermocouple, RTD, or 4 to 20 mA transmitter.

The strain and process instruments (CNiS models) measure inputs from load cells, pressure transducers, and most any strain gage sensor as well as process voltage and current ranges. The CNiS has built-in 5 or 10 Vdc excitation for bridge transducers, 5 Vdc @ 40 mA or 10 Vdc @ 60 mA (any excitation voltage between 5 and 24 Vdc is available by special order). This CNiS model supports 4- and 6-wire bridge communications, ratiometric measurements. The CNiS features fast and easy "in process" calibration/ scaling of the signal inputs to any engineering units. This model also features 10-point linearization which allows the user to linearize the signal input from extremely nonlinear transducers of all kinds.

Control Functions

The iSeries can control simple manual operation to ON-OFF and full Autotune PID control. (Selectable preset tune, adaptive tune, PID, PI, PD control modes.) The dual control outputs can be configured for a variety of independent control and alarm applications such as heat/ heat, heat/cool, heat/alarm, cool/ cool, cool/alarm or alarm/alarm. The ramp to setpoint feature allows the user to define the rate of rise to setpoint, minimizing thermal shock to the load during start-up. For applications that do not require PID control, just simplified programming, there are 2 options available: -AL Limit Alarm and -SM Simplified Menu ON-OFF control.

Programmable Color Display

The iSeries are ⅛, 1/16 and 1/32 DIN controllers featuring the big iSeries color-changing display. The digits are twice the size of typical ⅛ DIN panel meters. The iSeries feature the only LED displays that can be programmed to change color between **GREEN**, **AMBER**, and **RED**.

Embedded Internet and Serial Communications

Featuring optional "embedded Internet" the iSeries connect directly to an Ethernet network and transmit data in standard TCP/IP packets, or serve Web pages over a LAN or the Internet. The iSeries are also available with serial communications. The user can select from the pushbutton menu between RS232, RS422, and RS485, with straightforward ASCII commands or MODBUS.

To Order *Visit omega.com/cni_series for Pricing and Details*					
Model No.	**Size/Cutout**	**Input Type**	**Output 1**	**Output 2**	**Other Features**
CNi3222	1/32 DIN	Temperature/process	0.5 A SSR	0.5 A SSR	—
CNi3223	1/32 DIN	Temperature/process	0.5 A SSR	Relay	—
CNi3224	1/32 DIN	Temperature/process	0.5 A SSR	DC pulse	—
CNi3233	1/32 DIN	Temperature/process	Relay	Relay	—
CNi3242	1/32 DIN	Temperature/process	DC pulse	0.5 A SSR	—
CNi3243	1/32 DIN	Temperature/process	DC pulse	Relay	—
CNi3244	1/32 DIN	Temperature/process	DC pulse	DC pulse	—
CNi3252	1/32 DIN	Temperature/process	Analog	0.5 A SSR	—
CNi3253	1/32 DIN	Temperature/process	Analog	Relay	—
CNi3254	1/32 DIN	Temperature/process	Analog	DC pulse	—
CNi833	1/8 DIN	Temperature/process	Relay	Relay	—
CNiS833	1/8 DIN	Strain/process	Relay	Relay	—
CNi8A33	1/8 DIN	Temperature/process	Relay	Relay	Analog Output
CNi8C33	1/8 DIN	Temperature/process	Relay	Relay	Compact Depth
CNiS8C33	1/8 DIN	Strain/process	Relay	Relay	Compact Depth
CNi8DH33	1/8 DIN	Temperature/process	Relay	Relay	Dual Display
CNiS8DH33	1/8 DIN	Strain/process	Relay	Relay	Dual Display
CNi8DV33	1/8 DIN	Temperature/process	Relay	Relay	Dual Display
CNiS8DV33	1/8 DIN	Strain/process	Relay	Relay	Dual Display
CNi1633	1/16 DIN	Temperature/process	Relay	Relay	—
CNi16A33	1/16 DIN	Temperature/process	Relay	Relay	Analog Output
CNi16D33	1/16 DIN	Temperature/process	Relay	Relay	Dual Display
CNiS1633	1/16 DIN	Strain/process	Relay	Relay	—
CNiS16D33	1/16 DIN	Strain/process	Relay	Relay	Dual Display

Comes with complete operator's manual.

Ordering Examples: CNi3233-C24-DC, *1/32 DIN temperature/process meter with two relay outputs plus RS232 and RS485 and 12 to 36 Vdc power supply.*

CNi16D22-EIT, *1/16 DIN dual display temperature/process meter with two SSR outputs plus ethernet with embedded web server.*

Ordering Suffix	**Description**
-AL	Limit alarm version (alarms only, no PID control)*3*4
-SM	Simplified menu (on/off control or alarms, no PID)*5
Networks Options	
-EIT	Ethernet with embedded Web server
-C24	Isolated RS232 and RS485/422, 300 to 19.2 Kb*2
-C4EIT	Ethernet with embedded Web server + isolated RS485/422 hub for up to 31 devices*1
Power Supply	
-DC	12 to 36 Vdc, 24 Vac; 20 to 36 Vdc for dual display, ethernet, or isolated analog output option*2
Factory Setup	
-FS	Factory setup and configuration
-FS(RTD-1N)	Customized "CNiS" model for MIL-T-7990B nickel RTD input, 0 to 200°C (32 to 392°F)
-FS(RTD-2N)	Customized "CNiS" model for MIL-T-7990B nickel RTD input, -40 to 300°C (-40 to 572°F)
Software (Requires Network Option)	
OPC-SERVER LICENSE	OPC server/driver software license

1 Ethernet options are not available for the **CNi8A, **CNi8C**, **CNi16**, **CNi16A** or **CNi32** controller.*

2 "-DC**", "**-C24**", and "**-C4EIT**" not available with excitation.*

3 Analog output is not available with "-AL**" units.*

4 **CNi8A0x-AL or **CNi16A0x-AL** contains 1 alarm and 1 analog retransmission.*

5 "-SM**" option not available on **CNiS** strain models.*

i Series Common Specifications (All i/8, i/16, i/32 DIN)

Universal Temperature and Process Input (DPi/CNi Models)

Accuracy: ±0.5°C temp; 0.03% rdg
Resolution: 1°/0.1°; 10 μV process
Temperature Stability:
RTD: 0.04°C/°C
TC @ 25°C (77°F): 0.05°C/°C
Cold Junction Compensation
Process: 50 ppm/°C
NMRR: 60 dB
CMRR: 120 dB
A/D Conversion: Dual slope
Reading Rate: 3 samples/s
Digital Filter: Programmable
Display: 4-digit 9-segment LED 10.2 mm (0.40"); i32, i16, i16D, i8DV 21 mm (0.83"); i8 10.2 mm (0.40") and 21 mm (0.83"); i8DH **RED**, **GREEN,** and **AMBER** programmable colors for process variable, setpoint and temperature units
Input Types: Thermocouple, RTD, analog voltage, analog current
Thermocouple Lead Resistance: 100 Ω max
Thermocouple Types (ITS 90): J, K, T, E, R, S, B, C, N, L (J DIN)
RTD Input (ITS 68): 100/500/1000 Ω Pt sensor, 2-, 3- or 4-wire; 0.00385 or 0.00392 curve
Voltage Input: 0 to 100 mV, 0 to 1V, 0 to 10 Vdc
Input Impedance: 10 MΩ for 100 mV 1 MΩ for 1 or 10 Vdc
Current Input: 0 to 20 mA (5 Ω load)
Configuration: Single-ended
Polarity: Unipolar
Step Response: 0.7 sec for 99.9%
Decimal Selection:
Temperature: None, 0.1
Process: None, 0.1, 0.01 or 0.001
Setpoint Adjustment: -1999 to 9999 counts
Span Adjustment: 0.001 to 9999 counts
Offset Adjustment: -1999 to 9999
Excitation (Not Included with Communication): 24 Vdc @ 25 mA (not available for low-power option)

Universal Strain and Process Input (DPiS/CNiS Models)

Accuracy: 0.03% reading
Resolution: 10/1μV
Temperature Stability: 50 ppm/°C
NMRR: 60 dB
CMRR: 120 dB
A/D Conversion: Dual slope
Reading Rate: 3 samples/s
Digital Filter: Programmable
Input Types: Analog voltage and current
Voltage Input: 0 to 100 mVdc, -100 mVdc to 1 Vdc, 0 to 10 Vdc
Input Impedance: 10 MΩ for 100 mV; 1 MΩ for 1V or 10 Vdc
Current Input: 0 to 20 mA (5 Ω load)
Linearization Points: Up to 10
Configuration: Single-ended
Polarity: Unipolar
Step Response: 0.7 sec for 99.9%
Decimal Selection: None, 0.1, 0.01 or 0.001
Setpoint Adjustment: -1999 to 9999 counts
Span Adjustment: 0.001 to 9999 counts
Offset Adjustment: -1999 to 9999
Excitation (Optional In Place Of Communication): 5 Vdc @ 40 mA; 10 Vdc @ 60 mA

Control

Action: Reverse (heat) or direct (cool)
Modes: Time and amplitude proportional control; selectable manual or auto PID, proportional, proportional with integral, proportional with derivative and anti-reset Windup, and on/off
Rate: 0 to 399.9 s
Reset: 0 to 3999 s
Cycle Time: 1 to 199 s; set to 0 for on/off
Gain: 0.5 to 100% of span; setpoints 1 or 2
Damping: 0000 to 0008
Soak: 00.00 to 99.59 (HH:MM), or OFF
Ramp to Setpoint: 00.00 to 99.59 (HH:MM), or OFF
Auto Tune: Operator initiated from front panel

Control Output 1 and 2

Relay: 250 Vac or 30 Vdc @ 3 A (resistive load); configurable for on/off, PID and ramp and soak
Output 1: SPDT, can be configured as alarm 1 output
Output 2: SPDT, can be configured as alarm 2 output
SSR: 20 to 265 Vac @ 0.05 to 0.5 A (resistive load); continuous
DC Pulse: Non-isolated; 10 Vdc @ 20 mA
Analog Output (Output 1 Only): Non-isolated, proportional 0 to 10 Vdc or 0 to 20 mA; 500 Ω max

Output 3 Retransmission

Isolated Analog Voltage and Current
Current: 10 V max @ 20 mA output
Voltage: 20 mA max for 0 to 10 V output

Network and Communications

Ethernet: Standards compliance IEEE 802.3 10 Base-T
Supported Protocols: TCP/IP, ARP, HTTPGET
RS232/RS422/RS485: Selectable from menu; both ASCII and MODBUS protocol selectable from menu; programmable 300 to 19.2 Kb; complete programmable setup capability; program to transmit current display, alarm status, min/max, actual measured input value and status
RS485: Addressable from 0 to 199
Connection: Screw terminals

Alarm 1 and 2 (Programmable)

Type: Same as output 1 and 2
Operation: High/low, above/below, band, latch/unlatch, normally open/ normally closed and process/deviation; front panel configurations
Analog Output (Programmable): Non-isolated, retransmission 0 to 10 Vdc or 0 to 20 mA, 500 Ω max (output 1 only); accuracy is ± 1% of FS when following conditions are satisfied: input is not scaled below 1% of input FS, analog output is not scaled below 3% of output FS

General

Power: 90 to 240 Vac ±10%, 50 to 400 Hz*, 110 to 375 Vdc, equivalent voltage
Low Voltage Power Option: 24 Vac**, 12 to 36 Vdc for DPi/CNi/DPiS/CNiS; 20 to 36 Vdc for dual display, ethernet and isolated analog output from qualified safety approved source

Isolation

Power to Input/Output: 2300 Vac per 1 minute test
For Low Voltage Power Option: 1500 Vac per 1 minute test
Power to Relay/SSR Output: 2300 Vac per 1 minute test
Relay/SSR to Relay/SSR Output: 2300 Vac per 1 minute test
RS232/485 to Input/Output: 500 Vac per 1 minute test
Environmental Conditions:
All Models: 0 to 55°C (32 to 131°F) 90% RH non-condensing
Dual Display Models: 0 to 50°C (32 to 122°F), 90% RH non-condensing (for UL only)
Protection:
DPi/CNi/DPiS/CNiS32, i16, i16D, i8C: NEMA 4X/Type 4 (IP65) front bezel
DPi/CNi8, CNi8DH, i8DV: NEMA 1/Type 1 front bezel
Approvals: UL, C-UL, CE per EN61010- 1:2001
Dimensions
i/8 Series: 48 H x 96 W x 127 mm D (1.89 x 3.78 x 5")
i/16 Series: 48 H x 48 W x 127 mm D (1.89 x 1.89 x 5")
i/32 Series: 25.4 H x 48 W x 127 mm D (1.0 x 1.89 x 5")
Panel Cutout
i/8 Series: 45 H x 92 mm W (1.772 x 3.622"), ⅛ DIN
i/16 Series: 45 mm (1.772") square, ¹⁄₁₆ DIN
i/32 Series: 22.5 H x 45 mm W (0.886 x 1.772"), ¹⁄₃₂ DIN
Weight
i/8 Series: 295 g (0.65 lb)
i/16 Series: 159 g (0.35 lb)
i/32 Series: 127 g (0.28 lb)

** No CE compliance above 60 Hz.*
*** Units can be powered safely with 24 Vac power, but no certification for CE/UL are claimed.*

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