⅛ DIN Dual Display, Temperature, Process and Strain PID Controllers

iSeries

CNi8D Series

CNi8DH33, shown smaller than actual size.

CNiS8DV33, shown smaller than actual size.

- **Embedded Ethernet Connectivity (Optional)**
- **Dual Display with Bright Color-Changing Feature**
- **Programmable Digital Filter**
- **2 Control or Alarm Outputs (Choice of DC Pulse, Solid State Relays, Mechanical Relays, Analog Voltage and Current)**
- **Full Autotune PID Control**
- **Built-In Excitation**
- **Front Removable**

The OMEGA™ CNi8DH and CNi8DV are high-quality, highly accurate single loop autotune PID temperature and process controllers for ⅛ DIN (92 x 45 mm) horizontal or vertical panel cutouts. Both devices feature the same state-of-the-art technology, uncompromising accuracy, and quality backed by an extended 5-year warranty.

The CNi8DH and CNi8DV are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

The CNi8DH and CNi8DV come standard with your choice of 2 control or alarm outputs in almost any combination: solid state relays rated at 0.5 A @ 120/240 Vac; Form "C" SPDT relays rated at 3 A @ 120/240 Vac; pulsed 10 Vdc output for use with an external SSR; or analog output (0 to 10 Vdc or 0 to 20 mA) selectable for control or retransmission of the process value.

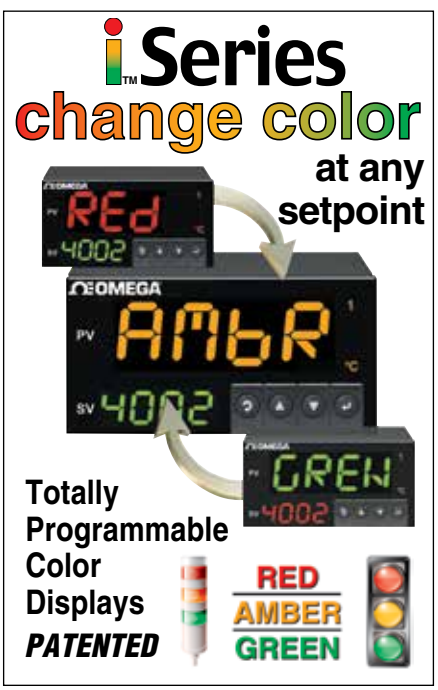
The universal temperature and process instrument (CNi8 models) offer a selection of 10 thermocouple types as well as 2-, 3- or 4-wire RTDs, process voltage and current. The CNi8DH and CNi8DV are ideal controllers for use with transmitters and amplified transducers. Built-in excitation is standard (24 Vdc @ 25 mA). The units handle 0 to 20 mA process current and process voltage in 3 scales: 0 to 100 mV, 0 to 1V, and 0 to 10V.

As with all iSeries devices, the process value display can be programmed to change color between **GREEN, AMBER,** and **RED** at any setpoint or alarm point. The LEDs displaying the process value on the CNi8DH (horizontal ⅛ DIN) are the largest digits of any ⅛ DIN controller.

The strain/process instrument (model iS) meters and controllers measure inputs from load cells, pressure transducers, and most any strain gage sensor. Input ranges include 0 to 100 mVdc; -100 mVdc to 1 Vdc; 0 to 10 Vdc in addition to 0 to 20 mA. Excitation for transducers of 5 V and 10 V is standard.

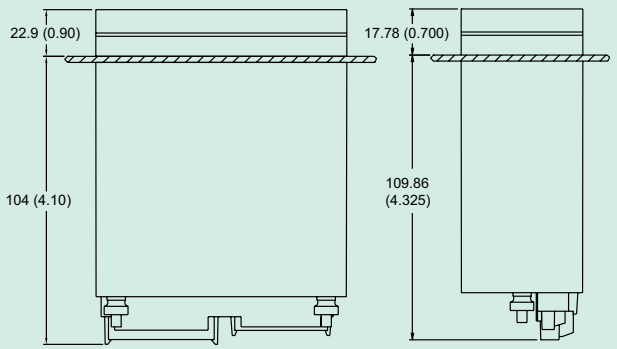
The highly recommended networking and communications options include direct Ethernet LAN connectivity with an embedded Web server, and serial communications. The C24 serial communications option includes both RS232 and RS485 which can be selected from the menu as well as both a straightforward ASCII protocol. The C4EIT option includes Ethernet and RS485 ASCII on 1 device.

The iSeries, with the network options, are designed for easy integration with popular industrial automation and control programs as well as Microsoft Visual Basic® and Excel®. OMEGA provides free configuration software which makes it fast and easy to get up and running with many applications. Available for download off the Internet.



The i/8 Series controllers feature plug/removable connectors and a sturdy panel mounting sleeve with adjustable thumb nuts for easy secure installation.

Dimensions: mm (inch)



Options

Ordering Suffix	Description
-AL	Limit alarm version (alarms only, no PID control)*2
-SM	Simplified menu (on/off control or alarms, no PID)*3
Network Options	
-EIT	Ethernet with embedded Web server
-C24	Isolated RS232 and RS485/422, 300 to 19.2 Kb*1
-C4EIT	Ethernet with embedded Web server + isolated RS485/422 hub for up to 31 devices*1
Power Supply	
	Standard power input: 90 to 240 Vac, 50 to 400 Hz (no entry required)
-DC	20 to 36 Vdc, 24 Vac*1
Factory Setup	
-FS	Factory setup and configuration
Software (Requires Network Option)	
Omega-Enterprise-Gateway	Logging/Alarming/Monitoring with Integration Capabilities

1 **"-DC", "-C24", and **"-C4EIT"** not available with excitation.*
2 Analog output is not available with **"-AL" units.*
3 **"-SM" option not available on CNiS strain models.*

To Order

Model No.	Output 1	Output 2
Dual Display Horizontal with 2 Control Outputs		
CNi8DH33	Relay	Relay
CNi8DH34	Relay	DC pulse
CNi8DH44	DC pulse	DC pulse
CNi8DH43	DC pulse	Relay
CNi8DH42	DC pulse	0.5 A SSR
CNi8DH22	0.5 A SSR	0.5 A SSR
CNi8DH23	0.5 A SSR	Relay
CNi8DH24	0.5 A SSR	DC pulse
CNi8DH53	Analog	Relay
CNi8DH54	Analog	DC pulse
CNi8DH52	Analog	0.5 A SSR
Dual Display Vertical with 2 Control Outputs		
CNi8DV33	Relay	Relay
CNi8DV34	Relay	DC pulse
CNi8DV44	DC pulse	DC pulse
CNi8DV43	DC pulse	Relay
CNi8DV42	DC pulse	0.5 A SSR
CNi8DV22	0.5 A SSR	0.5 A SSR
CNi8DV23	0.5 A SSR	Relay
CNi8DV24	0.5 A SSR	DC pulse
CNi8DV53	Analog	Relay
CNi8DV54	Analog	DC pulse
CNi8DV52	Analog	0.5 A SSR
Strain/Process Input, Dual Display Horizontal with 2 Control Outputs		
CNiS8DH33	Relay	Relay
CNiS8DH44	DC pulse	DC pulse
CNiS8DH43	DC pulse	Relay
CNiS8DH42	DC pulse	0.5 A SSR
CNiS8DH22	0.5 A SSR	0.5 A SSR
CNiS8DH23	0.5 A SSR	Relay
CNiS8DH24	0.5 A SSR	DC pulse
CNiS8DH53	Analog	Relay
CNiS8DH54	Analog	DC pulse
CNiS8DH52	Analog	0.5 A SSR
Strain/Process Input, Dual Display Vertical with 2 Control Outputs		
CNiS8DV33	Relay	Relay
CNiS8DV44	DC pulse	DC pulse
CNiS8DV43	DC pulse	Relay
CNiS8DV42	DC pulse	0.5 A SSR
CNiS8DV22	0.5 A SSR	0.5 A SSR
CNiS8DV23	0.5 A SSR	Relay
CNiS8DV24	0.5 A SSR	DC pulse
CNiS8DV53	Analog	Relay
CNiS8DV54	Analog	DC pulse
CNiS8DV52	Analog	0.5 A SSR

Comes with complete operator's manual.

***Ordering Examples: CNi8DH43**, horizontal ⅛ DIN dual display with pulse control and relay. **CNi8DV53**, ⅛ DIN dual display vertical controller with analogue output and relay. **CNiS8DH22**, ⅛ DIN dual display horizontal controller with 2 SSR outputs.*

iSeries 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 300 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/CNiS32,16,16D, 8C: NEMA 4X/Type 4 (IP65) front bezel
DPi/CNi/DPiS/CNiS8, 8DH, 8DV: NEMA 1/Type 1 front bezel
Approvals: UL, C-UL, CE per 2014/35/EU

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, ¼ DIN
i/32 Series: 22.5 H x 45 mm W (0.886 x 1.772"), ⅛ 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.*