

# 1/8 DIN Ultra Compact Case, Temperature, Process and Strain PID Controllers



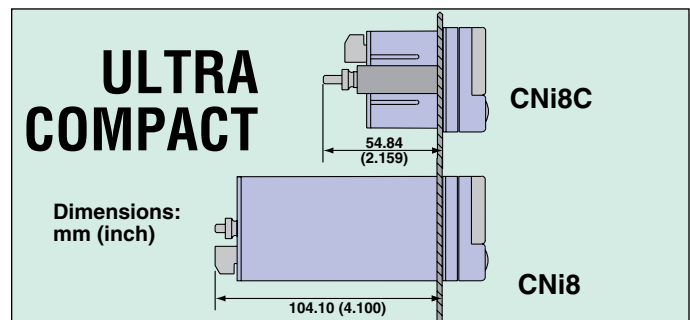
## CNi8C Series



CNi8C33, shown smaller than actual size.

- Ultra Compact 1/8 DIN Controller
- Full Autotune PID Control
- Built-In Excitation
- NEMA 4 (IP65) Bezel
- RS232, RS422/485 Communication, Menu Selectable

The ultra-compact CNi8C and CNi8SC controllers are similar to the full size CNi8 in an ultra-compact enclosure. Only 51 mm (2") behind the panel.



### Options

Ordering Suffix	Description
-AL	Limit alarm version (alarms only, no PID control)* <sup>2</sup>
-SM	Simplified menu (on/off control or alarms, no PID)* <sup>3</sup>
<b>Network Options</b>	
-C24	Isolated RS232 and RS485/422, 300 to 19.2 Kb* <sup>1</sup>
<b>Power Supply</b>	
	Standard power input: 90 to 240 Vac/dc, 50 to 400 Hz (no entry required)
-DC	12 to 36 Vdc, 24 Vac* <sup>1</sup>
<b>Factory Setup</b>	
-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)
<b>Software (Requires Network Option)</b>	
OPC-SERVER LICENSE	OPC server/driver software license

\*<sup>1</sup> "-DC" and "-C24" not available with excitation.

\*<sup>2</sup> Analog output is not available with "-AL" units.

\*<sup>3</sup> "-SM" option not available on CNiS strain models.

### To Order

Model No.	Output 1	Output 2
<b>1/8 DIN Compact Case with 2 Control Outputs</b>		
CNi8C33	Relay	Relay
CNi8C34	Relay	DC pulse
CNi8C44	DC pulse	DC pulse
CNi8C22	0.5 A SSR	0.5 A SSR
CNi8C23	0.5 A SSR	Relay
CNi8C24	0.5 A SSR	DC pulse
CNi8C53	Analog	Relay
CNi8C54	Analog	DC pulse
CNi8C52	Analog	0.5 A SSR
<b>1/8 DIN Compact Case Strain/Process Input with 2 Control Outputs</b>		
CNi8C33	Relay	Relay
CNi8C44	DC pulse	DC pulse
CNi8C43	DC pulse	Relay
CNi8C42	DC pulse	0.5 A SSR
CNi8C22	0.5 A SSR	0.5 A SSR
CNi8C23	0.5 A SSR	Relay
CNi8C24	0.5 A SSR	DC pulse
CNi8C53	Analog	Relay
CNi8C54	Analog	DC pulse
CNi8C52	Analog	0.5 A SSR

Comes complete with operator's manual.

Ordering Examples: CNi8C33, 1/8 DIN compact universal temperature process controller with 2 relay outputs.

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

## Universal Temperature and Process Input (DPi/CNi Models)

**Accuracy:**  $\pm 0.5^{\circ}\text{C}$  temp; 0.03% rdg

**Resolution:**  $1^{\circ}/0.1^{\circ}$ ; 10  $\mu\text{V}$  process

**Temperature Stability:**

**RTD:** 0.04 $^{\circ}\text{C}/^{\circ}\text{C}$

**TC @ 25 $^{\circ}\text{C}$  (77 $^{\circ}\text{F}$ ):** 0.05 $^{\circ}\text{C}/^{\circ}\text{C}$

**Cold Junction Compensation**

**Process:** 50 ppm/ $^{\circ}\text{C}$

**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  $\Omega$  max

**Thermocouple Types (ITS 90):**

J, K, T, E, R, S, B, C, N, L (J DIN)

**RTD Input (ITS 68):** 100/500/1000  $\Omega$  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 M $\Omega$  for 100 mV 1 M $\Omega$  for 1 or 10 Vdc

**Current Input:** 0 to 20 mA (5  $\Omega$  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:** 10/1 $\mu\text{V}$

**Temperature Stability:** 50 ppm/ $^{\circ}\text{C}$

**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 M $\Omega$  for 100 mV; 1 M $\Omega$  for 1V or 10 Vdc

**Current Input:** 0 to 20 mA (5  $\Omega$  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  $\Omega$  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  $\Omega$  max (output 1 only); accuracy is  $\pm 1\%$  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  $\pm 10\%$ , 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 $^{\circ}\text{C}$  (32 to 131 $^{\circ}\text{F}$ )

90% RH non-condensing

**Dual Display Models:**

0 to 50 $^{\circ}\text{C}$  (32 to 122 $^{\circ}\text{F}$ ), 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, FM (temperature

units only)

## 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"), 1/8 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.