

C-Series 16C Universal Temperature/Process Controller



- ▲ Field-Configurable Universal Inputs
- ▲ User-Selectable Ramp to Setpoint
- ▲ 8-Level Ramp/Soak Control
- ▲ Bumpless Auto/Manual Transfer
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ Decimal Display in 0.1° for Measured Temperatures Under 1000° F or C
- ▲ On/Off Through Full PID Operation (P, PI, PD, PID)
- ▲ Adjustable Hysteresis and Deadband
- ▲ Outputs Configurable as Alarms
- ▲ Field-Configurable Process or Deviation Alarms; Latching or Non-Latching; Band and Inverse Band
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ UL, cUL, and CE Approvals
- ▲ Options Include Multi-Function Contact/Digital Input, Transducer Excitation, and Auxiliary Output
- ▲ Special and Custom Options Available
- ▲ DIN Rail Option

The Athena 16C is a 1/16 DIN panel mounted, auto-tuning controller that can be used for precise control of a single loop with two independent outputs field-configurable as direct acting, reverse acting or alarm. RS-232 or RS-485 communications interfaces are available, and two digital LED displays provide visual indication of various controller functions.

Range Information



Input	Range	Input	Range
"B"	32°F to 3308°F (0°C to 1820°C)	"R"	-58°F to 3214°F (-50°C to 1768°C)
"C"	32°F to 4199°F (0°C to 2315°C)	"S"	-58°F to 3214°F (-50°C to 1768°C)
"E"	-238°F to 1832°F (-150°C to 1000°C)	"T"	-454°F to 752°F (-270°C to 400°C)
"J"	-328°F to 1400°F (-200°C to 760°C)	Platinel® II	-148°F to 2250°F (-100°C to 1232°C)
"K"	-454°F to 2462°F (-270°C to 1354°C)	100 ohm RTD	-328°F to 1562°F (-200°C to 850°C)
"N"	-450°F to 2372°F (-268°C to 1300°C)	100 ohm RTD (Decimal)	-328.0°F to 707.0°F (-200.0°C to 375.0°C)
"NNM"	32°F to 2570°F (0°C to 1410°C)	Current Linear (Scaleable)	4 to 20mA, 0 to 20mA
Millivolt Linear (Scaleable)	0 to 50mV/10 to 50mV 0 to 10mV/0 to 50mV 0 to 100mV	Volt Linear (Scaleable)	0 to 1V/0 to 5V 0 to 10V 0 to 5V

Ordering Information

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Input Calibration Code

T = Thermocouple
R = RTD
S = Decimal RTD
B = TC and RTD
M = Millivolt Linear
V = Volt Linear
C = Current Linear
A = All

Output 1 Code

O = None
B = Relay, N.O.
E = 0 to 20 mA
F = 4 to 20 mA (500 ohm max)
G = 4 to 20 mA (800 ohm max)
P = Pulsed 20 Vdc or 35 mA
S = Pulsed 20 Vdc or 17 mA
T = Solid-State Relay
V = 0 to 5 Vdc
X = 0 to 10 Vdc
Y = Relay, N.C.

Output 2 Code

O = None
B = Relay, N.O.
E = 0 to 20 mA
F = 4 to 20 mA (500 ohm max)
G = 4 to 20 mA (800 ohm max)
P = Pulsed 20 Vdc or 35 mA
S = Pulsed 20 Vdc or 17 mA
T = Solid-State Relay
V = 0 to 5 Vdc
X = 0 to 10 Vdc
Y = Relay, N.C.

Standard Options

Code Options
00 = None
Alarms
10 = Dual SSR, N.O.
20 = Dual Open Collector
21 = Dual 24 Vdc
22 = Dual SSR, N.C.
23 = Relay, N.O.
Communications
30 = RS-232 (Athena+ Protocol)
Communication, RS-485 Athena+ Protocol w/Contact/Digital Input
31 = RS-485, No Switch
36 = Switch Closed
37 = Switch Open
38 = 5 V Input

Code Options

Digital Input w/Alarm
40 = Switch Closed
41 = Switch Open
42 = 5 V Input
Communication RS-485 Modbus®
Protocol w/Contact/Digital Input
45 = RS-485, No Switch
46 = Switch Closed
47 = Switch Open
48 = 5 V Input
Transducer Excitation
50 = 10 Vdc
51 = 12 Vdc
52 = 15 Vdc
53 = 5 Vdc
Aux Output/PV Retransmit
60 = 4 to 20 mA
61 = 1 to 5 V
62 = 0 to 20 mA
63 = 0 to 5 V

Special Options

00 = None
Consult Factory

Technical Specifications

Operating Limits

Ambient Temperature	32°F to 131°F (0°C to 55°C)
Relative Humidity	
Tolerance	90%, non-condensing
Power	100-250 Vac 125 to 300 Vdc 24 Vac/dc optional
Power Consumption	Less than 6 VA (instrument)

Performance

Accuracy	±0.20% of full scale (±0.10% typical), ±1 digit
Setpoint Resolution	1.0 count / 0.1 count
Repeatability	±1.0 count
Temperature Stability	5 µV/°C (maximum)
TC Cold-End Tracking	0.05°C/°C ambient
Noise Rejection	100 dB common mode 70 dB series mode
Process Sampling	10 Hz (100 ms)
Digital Filtering	Adjustable 0.1 to 10 sec

Control Characteristics

Setpoint Limits	Span of Sensor
Alarms	Adjustable for high/low; selectable for process or deviation
Proportional Band	2 to span of sensor
Integral	0 to 9600 sec
Derivative	0 to 2400 sec
Cycle Time	0.2 to 120 sec
Control Hysteresis	1 to span of sensor
Dead Band (Output 1 & 2)	Range of Sensor
Ramp to Setpoint	1 to 9999 min
Auto-Tune	Operator initiated from front panel
Manual Control	Operator initiated from front panel

Inputs

Thermocouple	B, C, E, J, K, N, NNM, R, S, T, Platinel II Maximum lead resistance 100 ohms for rated accuracy
RTD	Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385)
Linear	0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V

Outputs

B	5 A/3 A (120/240 Vac), normally open
E	0-20 mA
F	4-20 mA, full output to load 500 ohm impedance, max.
G	4-20 mA, full output to load 800 ohm impedance, max.

Outputs

P	20 Vdc or 35 mA
S	20 Vdc or 17 mA
T	1 A, Solid-state relay
V	0 to 5 Vdc
X	0 to 10 Vdc
Y	5 A/3 A (120/240 Vac), normal closed relay

Alarm Type

10	Dual SSR: Alarm 1: 24-240 Vac, 1 A Alarm 2: 24 Vac Only
20	Dual Open collector, 24 V, 20 milliamps
21	Dual 24 V, 20 mA
22	Dual SSR: Alarm 1: NC, 24-240 Vac, 1 A Alarm 2: 24 Vac Only
23	5 A/3 A (120/240 Vac), mechanical relay

Mechanical Characteristics

Display	Dual, 4-digit 0.36" (9.2 mm) LED display Process Value: Orange Setpoint Value: Green
Numeric Range	-1999 to 9999
Front-Panel Rating	NEMA 4X (IP65)
Front-Panel Cutout	1.771" x 1.771" (45 mm x 45 mm)
Connections	Screw Terminals

Specifications subject to change without notice.

