

C SERIES 16CX Universal Temperature/Process Controller



The Athena 16CX is a 1/16 DIN panel mounted, auto-tuning controller that can be used for precise control of a single-loop process. The controller is equipped with universal inputs and independent outputs which are both menu selectable. The LCD display provides visual indication of the various control functions. The controller is also equipped with RS485 communications Modbus as standard.

Key Features

- Menu-driven, field-configurable
- Inputs: universal
- Outputs: On/off through full PID operation (P, PI, PD, PID)
- Configurable as alarms
- Alarms: Single or dual output capabilities configurable as process, deviation, latching, non-latching, band and inverse band
- Display: Decimal 0.1 degrees for measured temperature under 1000 degrees F or degrees C
- Functions: Ramp to set point, 8-level ramp/soak control
- Digital input, auxiliary outputs
- Bumpless auto/manual transfer
- NEMA 4X (IP65) dust- and splash-proof front panel
- DIN rail mount option
- Custom options available

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 1410°C)	100 ohm RTD (Decimal)	-328°F to 707°F (-200°C to 375°C)
"NNM"	32°F to 2570°F (0°C to 1410°C)	Current Linear (Scaleable)	4 to 20 mA, 0 to 20 mA
Millivolt Linear (Scaleable)	0 to 50 mV/10 to 50 mV 0 to 10 mV/0 to 50 V 0 to 100 mV	Volt Linear (Scaleable)	0 to 1 V/0 to 5 V 0 to 10 V 0 to 5 V

Ordering Information

1 6 C X A — — — — —

Input Calibration	Output 1	Output 2	Standard Options			Special Options
A = All	B = Relay	B = Relay	Communications	Dual Alarms, No Communications Available	Single Alarm, W/ Rs485 Modbus Protocol	00 = None
Units are calibrated for RTD TC Current Linear Volt Linear	E = 0 to 20 mA	E = 0 to 20 mA	45 = Modbus protocol (Default – all units come with communications standard.)	10 = Dual SSR, N.O.	11 = Single SSR, N.O.	Consult factory
	F = 4 to 20 mA	F = 4 to 20 mA	46 = RS485 Modbus protocol w/ digital input switch (normally open)	20 = Dual open collector	24 = Single open collector	
	S = Pulsed 20 VDC	S = Pulsed 20 VDC	47 = RS485 Modbus protocol w/ digital input switch (normally closed)	21 = Dual 24 VDC	25 = Single 24 VDC	
	T = SSR, 1 A	T = SSR, 1 A	48 = RS485 Modbus protocol w/ SV Input	22 = Dual SSR, N.C.	26 = Single SSR, N.C.	
	V = 0 to 5 V	V = 0 to 5 V		23 = Single Relay, N.O.		
	X = 0 to 10 V	X = 0 to 10 V				

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
Set Point 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
Noise Rejection	100 dB common mode 70 dB series mode
Process Sampling	10 Hz (100 ms)
Digital Filtering	Adjustable 0.1 to 10 sec

Performance

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 Set Point	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.

Outputs

S	20 VDC or 17 mA
T	1 A, solid-state relay
V	0 to 5 VDC
X	0 to 10 VDC

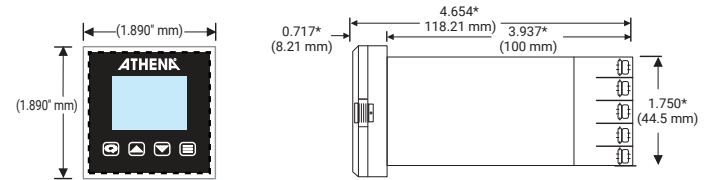
Alarm Type

10	Dual SSR: Alarm 1: 24-240 VAC, 1 A Alarm 2: 24 VAC only
20	Dual open collector, 24 V, 20 mA
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	LCD display Process value: white Set Point value: blue
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.



- P_V** **Process Value**
Displays measured process temperature in °F or °C or process value in engineering units
- S_V** **Set Point Value**
Displays programmed set point temperature in °F or °C or set point value in engineering units



Parameter/Access Key
Used to index through parameters or to access Menu Levels



Raise Key
Used to scroll up through available parameter settings, increase values or change menu levels (Hold for fast-step progression)



Lower Key
Used to scroll down through available parameter settings, decrease values or change menu levels (Hold for fast-step progression)



Mode Key
Used to access Standby, Tune, Run or Manual modes

