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Analog Series 4000 Short Case Temperature Controllers



The Athena 4000 is a 1/4 DIN panel mounted, short metal case enclosed controller that can be used for accurate proportional temperature control of most processes. The controller accepts thermocouple or RTD input, and offers a choice of standard single outputs for energizing most common output devices. A single, digital filtered LED display provides visual indication of various controller functions.

- Noise-Immune Analog Circuitry
- 25-turn Setpoint Pots-Optional Second (Alarm) Setpoint
- Adjustable Bandwidth and Manual Reset to Eliminate Offset Error
- 3-Mode PID Available
- Available as FM-Approved Limit Controller

Ordering Information

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Sensor Input Code
0 = Thermocouple
2 = RTD

Setpoint I Output type (Plug-In) Code
B = SPDT Relay, 7 A/5 A
F = 4-20 mAdc
S = Pulsed 20 Vdc
T = SPST SS Relay, 1 A
L = Limit Control*

Setpoint II Alarms
B = High deviation alarm only*
C = Low deviation alarm only*
D = High and low deviation alarm*
E = Full scale process alarm*

Control Options Code
O = Proportional (Standard)
A = 3-mode (PID)

Special Options
000 = None
Consult Factory

STANDARD RANGE CODE

Thermocouple

Code	Set Range	Type
01F	0 to +999°F	"J"
05C	0 to +500°C	"J"
02F	0 to +1999°F	"K"
01C	0 to +999°C	"K"

RTD (3-wire, 100 ohms)

01F	0 to +999°F
06C	0 to +600°C
22F	-199.9 to +199.9°F
22C	-199.9 to +199.9°C
09F	0 to +199.9°F
09C	0 to +199.9°C

Example
Model 4000-B-E-05C = a controller with a thermocouple sensor input; and SPDT relay output (non plug-in) for setpoint I; a full scale process alarm for setpoint II; and a thermocouple J input range of 0 to 500°C.

*Not available on 4200

Athena's ZC/PC solid state contactors, Series 19 and 39 SCR power controllers, can be added to boost ac load switching capacity.

Technical Specifications

Line Voltage	120/240 V ±10%, 50/60 Hz ±15%
Power Consumption	Less than 5 VA
Common Mode Rejection*	Maximum error ±1°C with 240 V, 60 Hz applied as a common mode signal between sensor input and chassis ground
Series Mode Rejection*	Maximum error ±1°C with series mode signal of 100 mV pk-to-pk at 60 Hz
Sensor Break Protection	Up scale standard, zero output for open sensor
Thermocouple	Maximum lead resistance 100Ω for rated accuracy, cold junction compensation standard
RTD	100 ohms (0°C) Platinum, DIN coefficient standard
Setpoints	Momentary switch displays Set I or Set II (optional), 25-turn pot provides 1 or 0.1 settability, range dependent; Set I-Adjustable over full span; Set II-process alarm (-E) adjustable over full span. Deviation alarm (-B,-C,-D), consult factory
Setpoint Repeatability	±0.1% to ±0.2% of span
Setpoint Resolution	1 or 0.1 (Range dependent)
Calibration Accuracy	a. T/C input ±0.4% of span over 10% to 90% of range b. RTD inputs ±0.1% of span for 1°F or 1°C ranges; ±0.2% of span for 0.1°F or 0.1°C ranges
Ambient Stability	a. T/C input 3 V/°F ambient to input b. RTD input 0.1% for 80°F to 130°F (27° to 55°C)
Process Indication	Filtered LED, 3 or 3-1/2 digits, 2 readings per second update; readability is 1°F, 1°C, 0.1°F or 0.1°C, range dependent
Dimensions	Front Panel - 3.780 sq. in. (96 mm²) Case - 4.646˝ (118 mm) Depth Behind Panel - 3.780˝ (92 mm) Panel Cut-out - 3.622 sq. in. (92 mm²)

*Note: Applies to all units with exception of "F" output controllers when used with other than Athena SCRs or stagers.

Output Type	Setpoint 1 (Plug-in)					Setpoint 2	
	B	F	S	T	L	B,C,D	E
	SPDT relay resistive load rating 7 A/120 V 5 A/240 V 50 VA inductive	4-20 mAdc into 1000 ohms maxmum; not isolated from thermocouple	Pulsed dc for driving SS contactors 0-20 V, open ckt 0-20 mA, short ckt not isolated from thermocouple	SPST SS relay, zero voltage switched 1 A 120/240 Vac, 10 A inrush, 2-4 mA leakage	Limit Controller	SPDT relay 3 A @ 120 Vac resistive (4000 only)	SPDT relay 3 A @ 120 Vac resistive
Proportional Band	Adjustable for .2-5% of span				Not applicable	On/Off (see differential)	On/Off (see differential)
Output cycle time (Switch selectable)	On-off 5-10-15 sec	Continuous Proportioning	0.5-1.0-1.5 sec	0.5-1.0-1.5 5-10-15 sec	Not applicable	Not applicable	Not applicable
Manual reset (Offset)	Standard-adjustable for full proportional bandwidth (eliminated if PID is ordered)				Not applicable	Not applicable	Not applicable
Optional 3-mode (PID) action	Past = 0.1 sec rate, 48 sec reset; medum = 18 sec rate, 90 sec reset; Slow = 65 sec rate, 300 sec reset				Not applicable	Not applicable	Not applicable
Differential	0-5° adjustable				Not applicable	±°F or ±°C	1% maximum of unit span
Indication	Red LED "ON" when output signal is present or relay is energized						
Operating Ambient	30°F to 131°F (0°C to 55°C)						

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