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Legacy Series 16 Universal Temperature/Process Controller



The Athena Legacy 16 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. The controller accepts thermocouple, RTD, voltage, or current input. RS-232 or RS-485 communications are available, and two digital LED displays provide visual indication of various controller functions.

- User-Selectable Ramp to Setpoint
- Bumpless Auto/Manual Transfer
- NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- On/Off through Full PID Operation (P,PI,PD,PID)
- Auto-Tuning, Heat or Cool
- Adjustable Hysteresis & Heat/Cool Spread
- Field-Configurable Process, Deviation, or Latching or Non-Latching Alarms
- Remote Setpoint Select Option
- Dual Output/Dual Alarm Capabilities
- Optional Process Variable Retransmission
- DIN Rail Option
- cUL and CE Approvals

Ordering Information

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Input	Range	Code
"E" TC	0 to 1292° F	EF
"E" TC	-18 to 700° C	EC
"J" TC	0 to 1400° F	JF
"J" TC	0 to 750° C	JC
"K" TC	0 to 2460° F	KF
"K" TC	0 to 1349° C	KC
"N" TC	0 to 2370° F	NF
"N" TC	0 to 1300° C	NC
"R" TC	0 to 3200° F	RF
"R" TC	0 to 1750° C	RC
"S" TC	0 to 3200° F	SF
"S" TC	0 to 1750° C	SC
"T" TC	-200 to 600° F	TF
"T" TC	-100 to 300° C	TC
100 ohm RTD	-328 to 1562° F	PF
100 ohm RTD	-200 to 850° C	PC
100 ohm RTD	-199.0 to 450.0° F	DF
100 ohm RTD	-100.0 to 225.0° C	DC
1000 ohm RTD	-328 to 1562° F	XF
1000 ohm RTD	-200 to 850° C	XC
1000 ohm RTD	-199.0 to 450.0° F	ZF
1000 ohm RTD	-100.0 to 225.0° C	ZC
1 to 5 V	Scaleable	L1
0 to 5 V	Scaleable	L4
10 to 50 mV	Scaleable	L2
0 to 50 mV	Scaleable	L5
4 to 20 mA*	Scaleable	L3
0 to 20 mA*	Scaleable	L6
0 to 10 Vdc	Scaleable	L7
2 to 10 Vdc	Scaleable	L8
0 to 1 Vdc	Scaleable	L9

Output 1 (Heating) Configuration Code

0 = 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 (Cooling) Configuration Code

0 = 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.

Special Options
00 = None
Consult Factory

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
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

*Milliamp ranges are available with 2.52 ohm resistor (supplied).

Technical Specifications

Operating Limits

Ambient Temperature	32°F to 131°F (0°C to 55°C)
Relative Humidity Tolerance	90% non-condensing
Line Voltage	100 to 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 count/0.1 count
Repeatability	±1.0 count
Temperature Stability	5 mV/°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

Control Characteristics

Setpoint Limits	Span of Sensor
Alarms	Adjustable for high/low; selectable for process or deviation
Rate	0 to 900 sec
Reset	0 to 2400 sec
Cycle Time	0=200 ms; 1-120 sec
Gain	0 to 400
Gain Ratio	0 to 2.0 (in 0.1 increments)
Control Hysteresis	1 to 100 (on/off configuration)
Spread (Output 2)	0 to 100 (above setpoint)
Ramp to Setpoint	0 to 100 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

#1 Reverse-acting (Heating)
#2 Direct-acting (Cooling)

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

G	4-20 mA, full output to load 800 ohm impedance max
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	1 A , normally closed relay

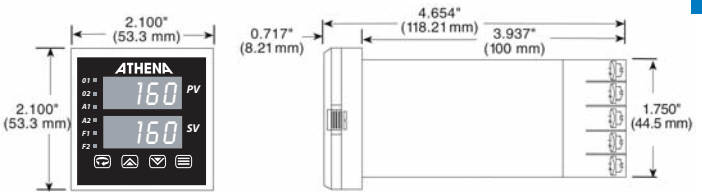
Alarm Outputs

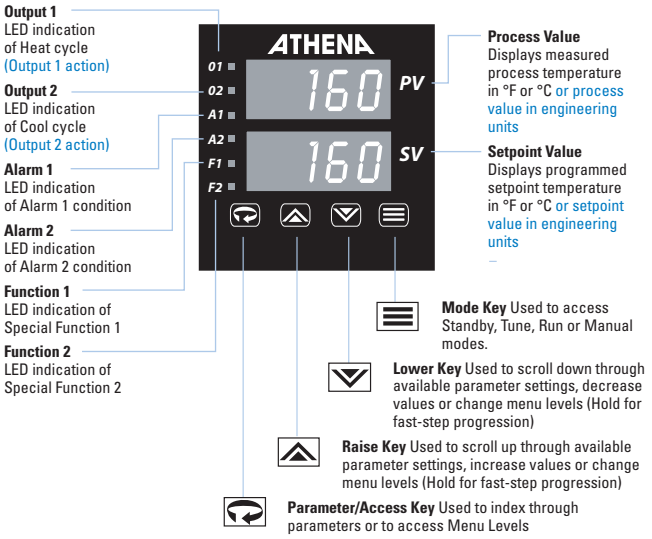
10	Alarm 1: Dual SSR, 24-240 Vac, 1 A Alarm 2: 24 Vac Only
20	Dual Open collector, 24 V, 20 mircoamps
21	Dual 24 V, 20 mA
22	Alarm 1: Dual SSR, NC, 24-240 Vac, 1 A Alarm 2: 24 Vac Only
23	5 A /3 A (120/240 Vac), mechanical relay

Mechanical Characteristics

Display	Dual, 4-digit 0.36˝ (9.2 mm) LED Display Process: 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.





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