

# Legacy Series 16 Universal Temperature/Process Controller



- ▲ 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

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.



## Ordering Information

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Input	Range	Code	Special Options 00 = None Consult Factory	
"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	
<b>Code</b>	
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	
<b>Code</b>	
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.	

  

Standard Options	
<b>Code Options</b>	
00 = None	
<b>Alarms</b>	
10 = Dual SSR, N.O.	40 = Switch Closed
20 = Dual Open Collector	41 = Switch Open
	42 = 5 V Input
21 = Dual 24 Vdc	Communication RS-485 Modbus®
22 = Dual SSR, N.C.	Protocol w/Contact/Digital Input
23 = Relay, N.O.	45 = RS-485, No Switch
<b>Communications</b>	
30 = RS-232 (Athena+ Protocol)	46 = Switch Closed
	47 = Switch Open
	48 = 5 V Input
<b>Communication, RS-485 Athena+ Protocol w/Contact/Digital Input</b>	
	50 = 10 Vdc
31 = RS-485, No Switch	51 = 12 Vdc
36 = Switch Closed	52 = 15 Vdc
37 = Switch Open	53 = 5 Vdc
38 = 5 V Input	<b>Aux Output/PV Retransmit</b>
	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 microamps
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.

