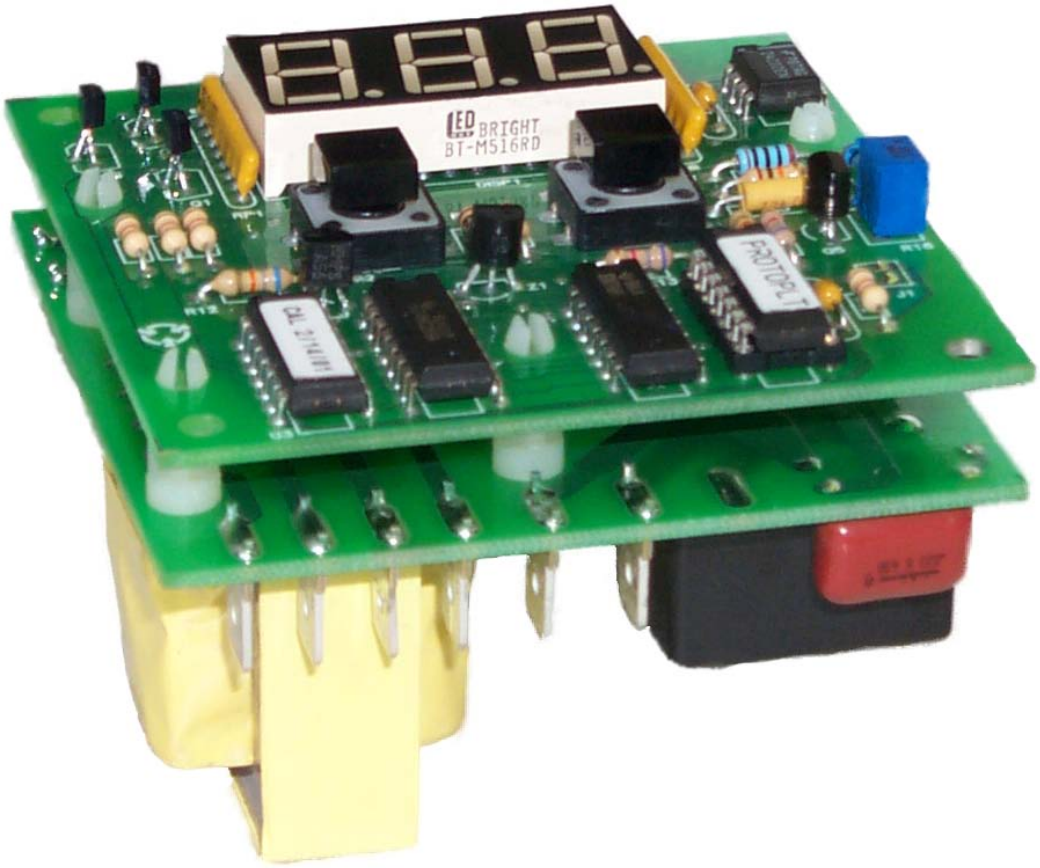
PC_CC_EN_06.2006
Replaced PC2094-8/01

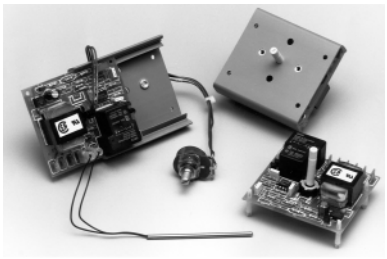


Product Catalog

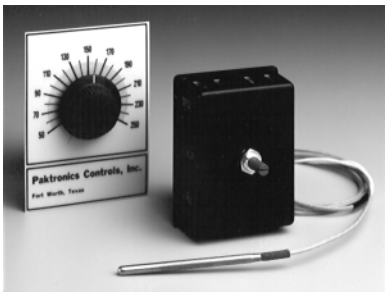
MAXITROL
Paktronics Controls Division

Table of Contents

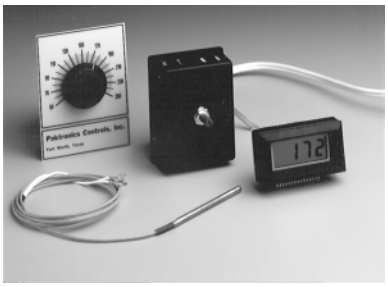
Trakstat®



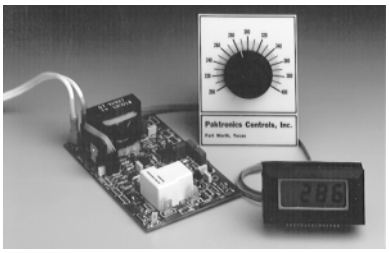
Pakstat® Series I



Pakstat® Series II



Beta Series Electronic Temperature Controller



MAXITROL

Paktronics® Controls Division

Trakstat® Electronic Thermostat

Specifications

Input Voltage:
120 VAC ± 10%, 50/60 Hz.
208/240 VAC ± 10%, 50/60 Hz.

Stability:
Better than ±1% of span or ±4°, whichever is greater.

Static Deadband: ±1° (nominal)

Operating Conditions:
Ambient Temperature:
0°C to +70°C
Relative Humidity: 5% to 95% (noncondensing)

Output Options
Normally open (1 form A) relay contact.

Relay Contact Ratings:
2 to 20 Amps at 12 to 240Vac, resistive load. (RC Snubber recommended with inductive loads)

1 to 20 Amps at 5 to 28 Vdc* (Arc suppression required)

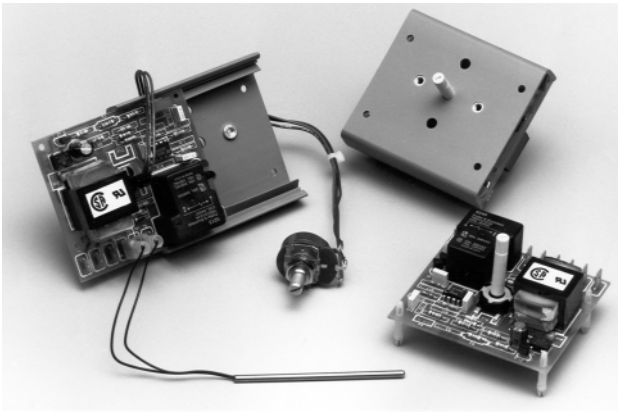
Solid State Relay (SSR) Option:
Switched 24Vdc @ 30mA to control external SSR.

Control Operation:
ON/OFF control.

Heating version:
Load is turned OFF with temperature rise above set point.

Cooling Version:
Load is turned ON with temperature rise above set point.

NOTE: Other options are available. Please consult factory.



Product Description

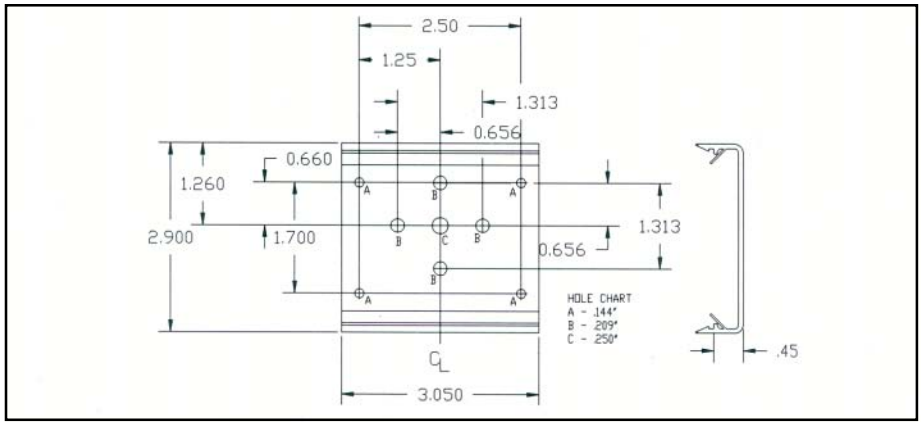
The Trakstat series of electronic thermostats, by Paktronics, is a cost-effective alternative to the use of mechanical and pneumatic controllers. The Trakstat's design flexibility and economical packaging offer a quality electronic thermostat which fits most original equipment manufacturer's (OEM) temperature control requirements.

The Trakstat control can incorporate either a resistance temperature device (RTD), thermistor sensor, or type J or K thermocouple. Sensors of this type eliminate the problems of capillary tube kinking and their calibration is not affected by atmospheric pressure changes.

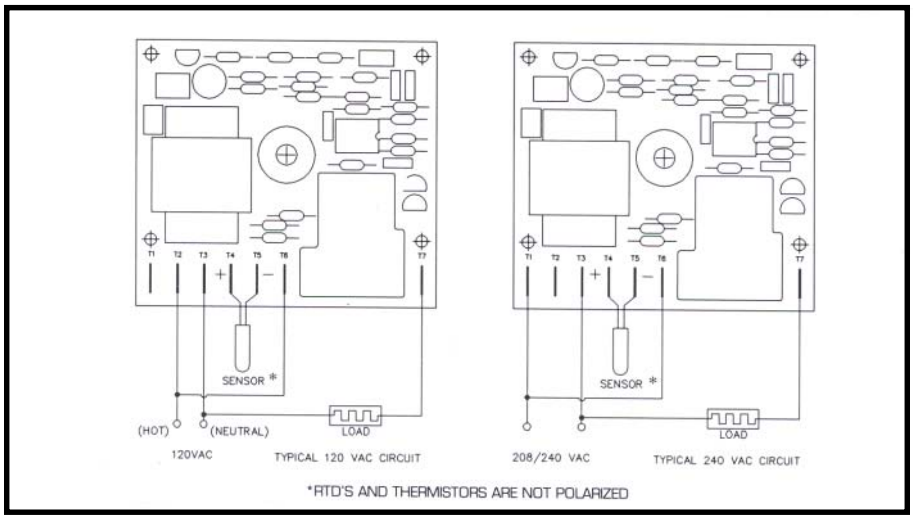
The Trakstat's versatile mounting capabilities offer the OEM many options from which to choose, including a factory-adjusted fixed setpoint, snap-in control shaft, or remote potentiometer when panel space is limited. The UL and CSA recognized 20 AMP output relay will handle most load requirements, or the output can be configured to drive a solid state relay. The quick connect terminals allow for fast installation and service.

Accurate, repeatable temperature control through a narrow deadband will result in better temperature control and a better product for your customers.

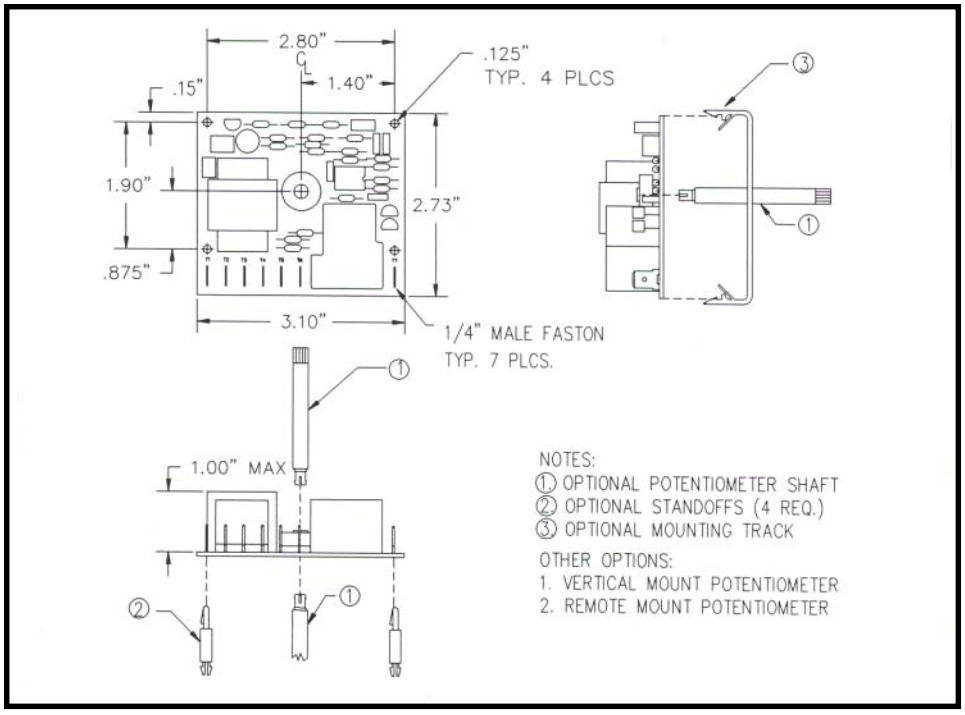
Track Dimensions



Wiring Diagram Trakstat



Trakstat Dimensions



Trakstat®

- Accurate/Repeatable Setpoint
- 20 Amp Relay Output Rating
- Factory Calibration
- On/Off Control
- Simple Installation
- Thermistor Sensor
- Platinum RTD Sensor
- Type J or K Thermocouple
- c UL us

Pakstat® Series I Electronic Thermostat

Specifications

Input Voltage:
120 VAC ± 10%, 50/60 Hz.
208/240 VAC ± 10%, 50/60 Hz.

Stability:
Better than ±1% of span or ±4°, whichever is greater.

Static Deadband: ±1° (nominal)

Operating Conditions:
Ambient Temperature:
0°C to +70°C
Relative Humidity: 5% to 95% (noncondensing)

Output Options
Normally open (1 form A) relay contact.

Relay Contact Ratings:
2 to 20 Amps at 12 to 240Vac, resistive load. (RC Snubber recommended with inductive loads)

1 to 20 Amps at 5 to 28 Vdc* (Arc suppression required)

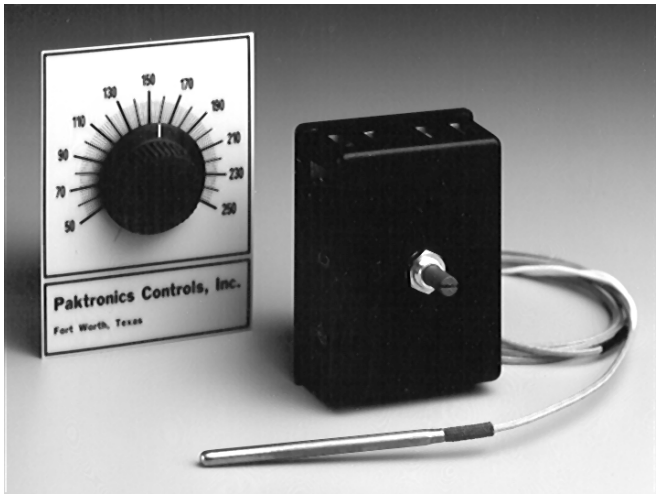
Solid State Relay (SSR) Option:
Switched 24Vdc @ 30mA to control external SSR.

Control Operation:
ON/OFF control.

Heating version:
Load is turned OFF with temperature rise above set point.

Cooling Version:
Load is turned ON with temperature rise above set point.

NOTE: Other options are available. Please consult factory.



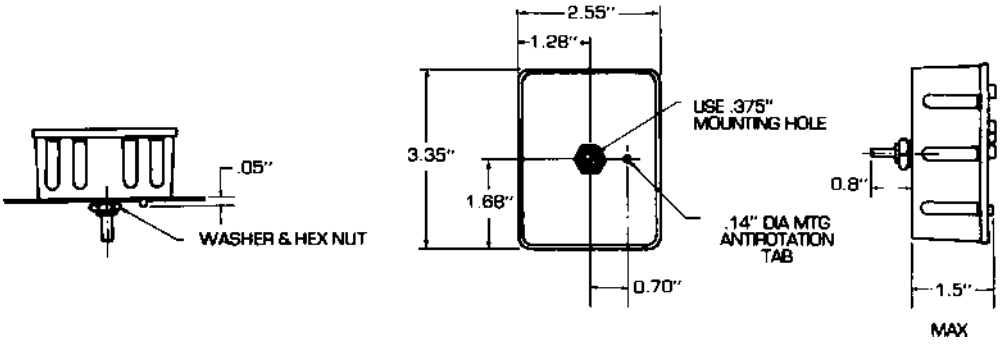
Product Description

The PAKSTAT SERIES I electronic thermostat by Paktronics is a low cost alternative to the use of mechanical, pneumatic or DIN packaged controllers. Part of the PAKSTAT SERIES of OEM controls, the PAKSTAT Series I offers a degree of flexibility and economy unavailable in other packaged controls.

With its flexible wire sensor, the PAKSTAT SERIES I controller eliminates the problems of capillary tube kinking and breakage. The quick connect terminals allow fast installation and service.

The PAKSTAT SERIES I is used where it is desirable to have accurate, repeatable temperature control through a narrow deadband. The result is better temperature control and a better product for your customer.

PAKSTAT is also available in digital indicating and cooling versions. For more information, contact your local PAKTRONICS representative or the factory.



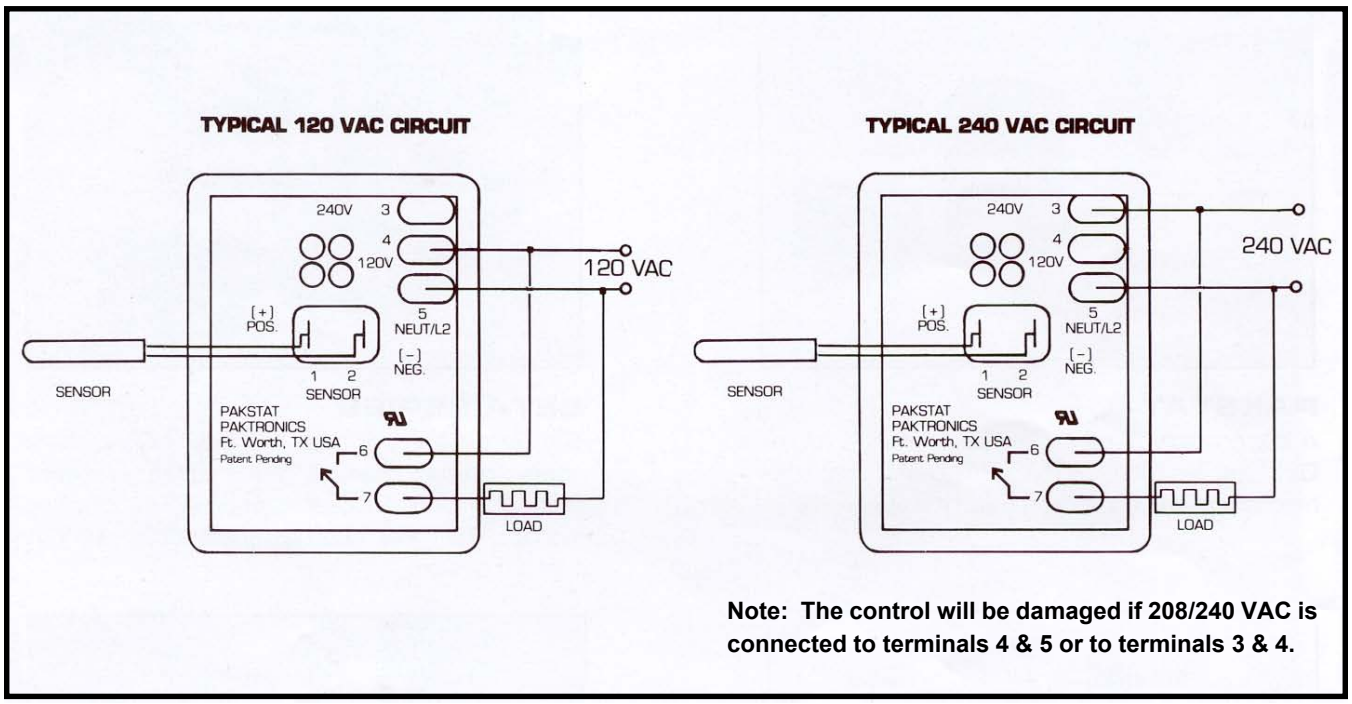
Wiring Diagram Pakstat Series I

1. Connect sensor leads to terminals 1 and 2. For thermocouples, the red (negative) lead attaches to terminal 2. (RTD SENSOR LEADS ARE NOT POLARIZED).

2. For 120 VAC operation, connect LINE to terminals 4 and 5. For 208 to 240 VAC operation, connect LINE to terminals 3 and 5.

3. Terminals 6 and 7 connect to an internal normally open relay contact that is independent of the controller's operating voltage.

4. Connect AC line to load using external wiring, as shown below.



Note: The control will be damaged if 208/240 VAC is connected to terminals 4 & 5 or to terminals 3 & 4.

Calibration Pakstat Series I

Simplified calibration decreases maintenance time without compromising accuracy. Our temperature controllers can be factory calibrated for convenience or calibrated as necessary at your facility.

1. Connect the PAKSTAT according to the wiring diagram and instructions.

2. Attach the knob with the setscrews provided.

3. Turn the knob until the potentiometer is located at the center of the dial.

4. Turn the power ON and allow 5 minutes for the system to stabilize.

5. Measure the temperature with an accurate thermometer next to the Pakstat sensor.

6. Loosen the knob setscrews and turn the knob, without turning the potentiometer, until the dial is set according to the thermometer reading.

7. Tighten the knob setscrews.

Calibration can now be performed on identical installations by noting the position of the potentiometer and duplicating the setting. Offsets to compensate for sensor location can be calibrated. Contact the factory for details.

Resistance Table for 1000 OHM Platinum Sensors

TEMP °F	RES OHMS	TEMP °F	RES OHMS	TEMP °F	RES OHMS	TEMP °F	RES OHMS
0	930	160	1275	320	1610	480	1937
10	952	170	1296	330	1631	490	1957
20	974	180	1317	340	1652	500	1977
30	996	190	1339	350	1672	510	1997
40	1017	200	1360	360	1693	520	2017
50	1039	210	1381	370	1713	530	2037
60	1061	220	1402	380	1734	540	2057
70	1082	230	1423	390	1754	550	2077
80	1104	240	1444	400	1775	560	2097
90	1125	250	1465	410	1795	570	2117
100	1147	260	1486	420	1816	580	2136
110	1168	270	1507	430	1836	590	2156
120	1190	280	1527	440	1856	600	2176
130	1211	290	1548	450	1876	610	2196
140	1232	300	1569	460	1897	620	2215
150	1254	310	1590	470	1917	630	2235

RTD Units Only

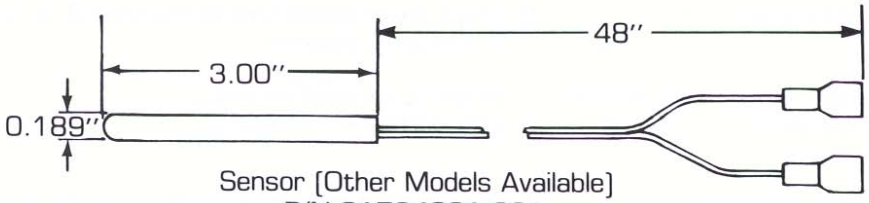
Specify Model Number:

P14 A0318 - ☐☐☐

cooling versions = F

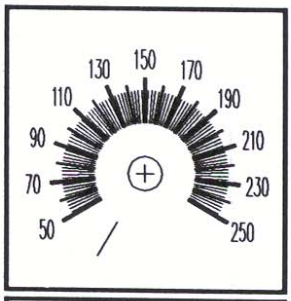
901— 50° to 250°F
903—150° to 550°F
904—200° to 400°F

Other Ranges Are Available - Contact Factory



Sensor [Other Models Available]
P/N 01724601-001

Example of Scale Plate



Paktronics Controls, Inc.
Fort Worth, Texas

Type J or K Thermocouple

Type J

P14 A0318 - ☐☐☐

cooling versions = F

351 - 50 to 250°F
353 - 150 to 550°F
318 - 0 to 1,000°F

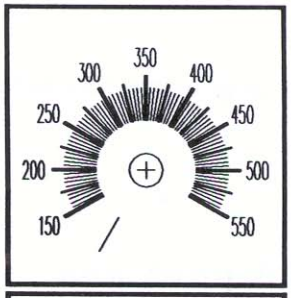
Type K

P14 A0318 - ☐☐☐

417 - 0 to 2,300°F

Other Ranges Are Available - Contact Factory

Example of Scale Plate



Paktronics Controls, Inc.
Fort Worth, Texas

Pakstat® Series II Electronic Thermostat

Specifications

Input Voltage:
120 VAC ± 10%, 50/60 Hz.
208/240 VAC ± 10%, 50/60 Hz.

Stability:
Better than ±1% of span or ±4°, whichever is greater.

Static Deadband: ±1° (nominal)

Operating Conditions:
Ambient Temperature:
0°C to +70°C
Relative Humidity: 5% to 95% (noncondensing)

Output Options
Normally open (1 form A) relay contact.

Relay Contact Ratings:
2 to 20 Amps at 12 to 240Vac, resistive load. (RC Snubber recommended with inductive loads)

1 to 20 Amps at 5 to 28 Vdc* (Arc suppression required)

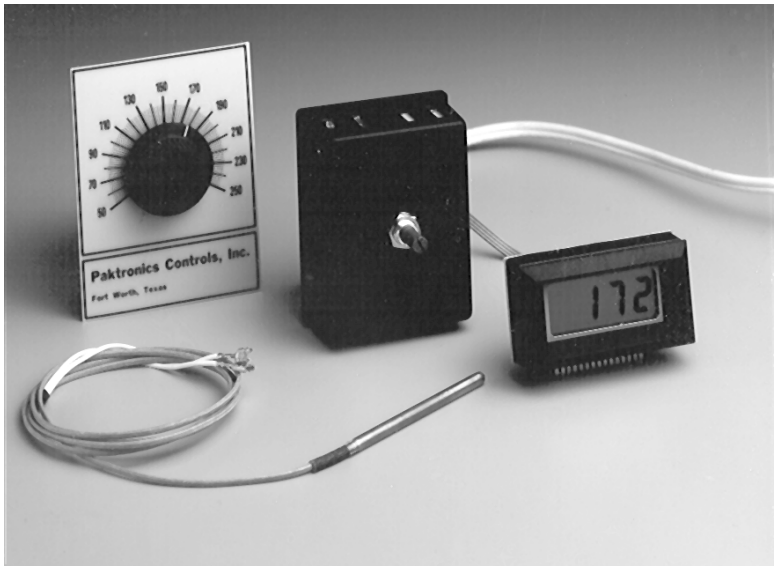
Solid State Relay (SSR) Option:
Switched 24Vdc @ 30mA to control external SSR.

Control Operation:
ON/OFF control.

Heating version:
Load is turned OFF with temperature rise above set point.

Cooling Version:
Load is turned ON with temperature rise above set point.

NOTE: Other options are available. Please consult factory.



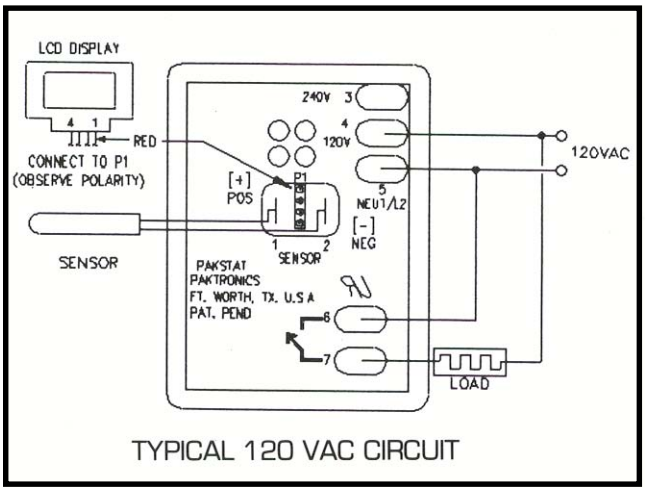
Product Description

The PAKSTAT SERIES II is an upgraded version of its predecessor, the PAKSTAT SERIES I.

When coupled with the model LCD3000 digital display, you can offer your customer the convenience of digital indication of process temperature. The LCD3000 is a 3½ digit display with resolution of 1°. Accuracy of 1%, ± one digit, meets most agency requirements for food storage.

c UL us **(on selected units)**

NOTE: Pakstat is also available in non-indicating and cooling versions. For more information, contact your local PAKTRONICS representative or the factory.



TYPICAL 120 VAC CIRCUIT

Wiring Diagram

1. Connect sensor leads to terminals 1 and 2. For thermocouples, the red (negative) lead connects to terminal 2. (RTD's and Thermistors are not polarized.)

2. For 120 VAC operation, connect LINE to terminals 4 and 5. For 208 to 240 VAC operation, connect LINE to terminals 3 and 5. **Note: The control will be damaged if 208/240 VAC is connected to terminals 4 & 5 or to terminals 3 & 4.**

3. Terminals 6 and 7 connect to an internal normally open relay contact that is independent of the controller's operating voltage.

4. Connect AC line to load using external wiring.

5. Connect LCD3000 as shown.

Calibration

Simplified calibration decreases maintenance time without compromising accuracy. Our temperature controllers can be factory calibrated for convenience or calibrated, as necessary, at your facility.

1. Connect the PAKSTAT according to the wiring diagram and instructions.

2. Attach the knob with the setscrews provided.

3. Turn the knob until the potentiometer is located at the center of the dial.

4. Turn the power ON and allow ample time for the system to stabilize.

5. Note the temperature reading on the LCD3000 display.

6. Loosen the knob setscrew and turn the knob, without turning the potentiometer, until the dial is set according to the display reading.

7. Tighten the knob setscrews.

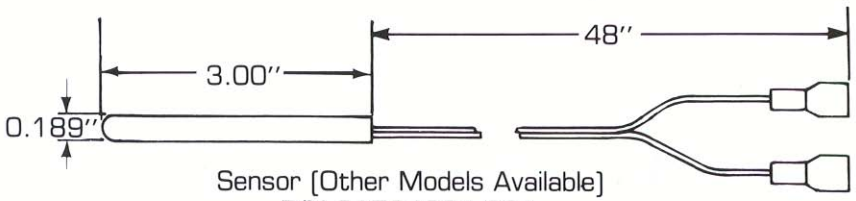
Calibration can now be performed on identical installations by noting the position of the potentiometer and duplicating the setting. Offsets to compensate for sensor location can be callibrated. Contact the factory for details.

Ordering Information

Specify Model Number:

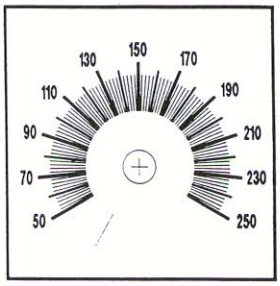
P64 A0 3 18- [ ][ ][ ]

901— 50° to 250°F
903—150° to 550°F
904—200° to 400°F



Sensor [Other Models Available]
P/N 01724601-001

Example of Scale Plate



Paktronics Controls, Inc.
Fort Worth, Texas

LCD3000 – Remote Mounted Digital Display

Product Description

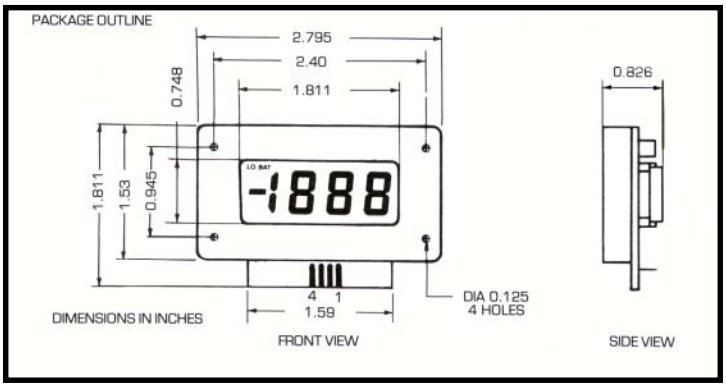
The LCD3000 liquid crystal display is the ideal companion to Paktronics PAKSTAT SERIES II controllers. The LCD3000, with its large ¾ inch display, offers high readability in ambient light conditions and at wide viewing angles.

The remote mounting from the PC board allows you to provide a custom look to your control panel, while still using a standard product. The mounting is a simple bezel arrangement.

LED DISPLAY ALSO AVAILABLE

Selected models only—consult factory.

Specifications



Terminal Definitions

TERMINAL	INPUT	DESCRIPTION
1	IN LO	2V full scale input, if "IN HI" is lower than "IN LO"
2	IN HI	display will show negative.
3	V +	Positive power supply.
4	V –	Negative power supply.

Absolute Maximum Ratings

Operating Voltage.....15Vdc
Operating Temperature.....0 to 60°C
Storage Temperature.....-10 to 80°C

Electrical Characteristics TA = 25°C, RH below 80%

CHARACTERISTICS	MIN	TYP	MAX	UNITS
Power Supply Voltage	7	9	12	V
Power Supply Current		1.3	2.0	mA
Sampling Rate		2.5		Reading/Sec.
Accuracy (Display Only)		0.1% ± 1 digit		% ± digits
Turn-on Voltage for "LO BAT" Indicator	7	7.2	7.5	V
Input Leakage Current (VIN = 0)		1	10	pA

Ordering Information

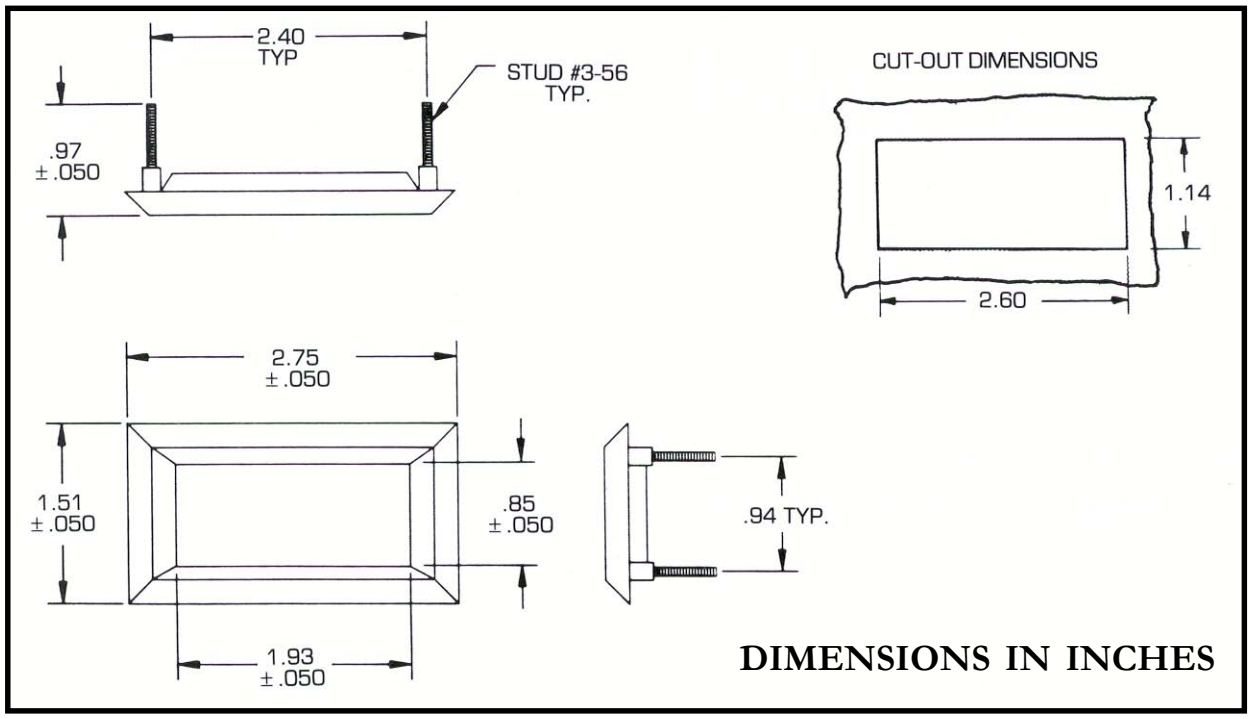
Specify Model Number:

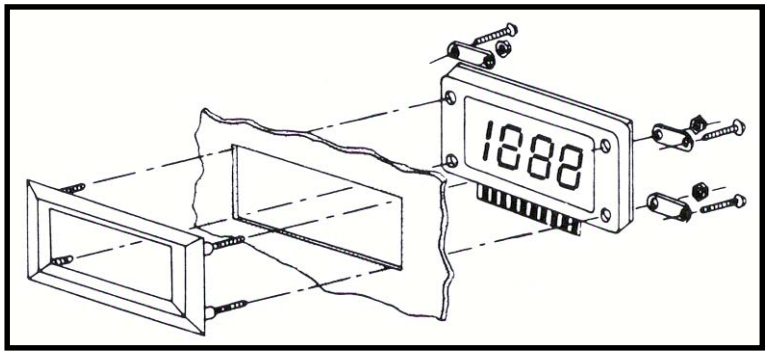
LCD3000 ☐☐☐

Configuration

001 24" connecting cable and complete bezel kit
002 5" connecting cable and complete bezel kit
003 24" connecting cable, no bezel
004 5" connecting cable, no bezel

Mounting





NOTE:
The following hardware accompanies the mounting bezel:
(A) #4-48 x 5/8" lg, phillips hd screw, (4).
(B) #3-56 nut, (4).
(C) fixing ears, (4).

Beta Series Electronic Temperature Controller

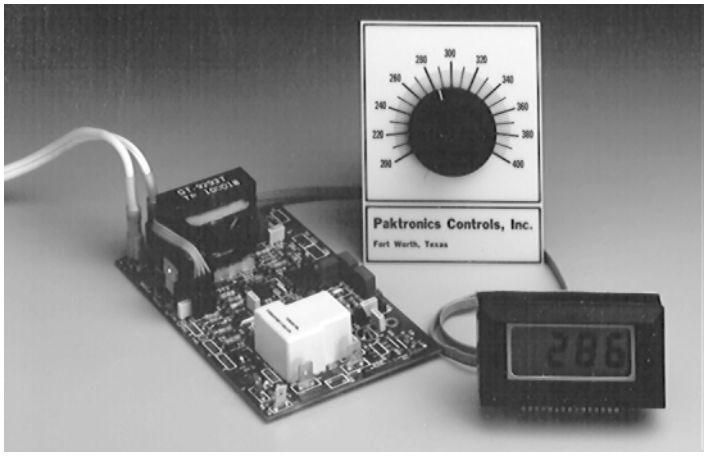
Specifications

Input Voltage:
120/208/240 Vac ± 10%, 50/60 Hz.

Operating Conditions:
Ambient Temperature:
0°C to +70°C
Relative Humidity:
5% to 95% (non-condensing)

Control Options:
Refer to the Beta Series design matrix for common configuration options.

For more information on how a Beta Series controller can be configured for your application, contact your local Paktronics representative, or call Paktronics Controls at (817) 284-5241.



Product Description

The BETA SERIES open-architecture electronic temperature controls, by Paktronics, offers a low cost alternative to the use of inaccurate mechanical or pneumatic thermostats, and expensive panel mounted temperature controllers. The BETA SERIES controllers offer the flexibility of custom controls with the pricing and delivery of standard products.

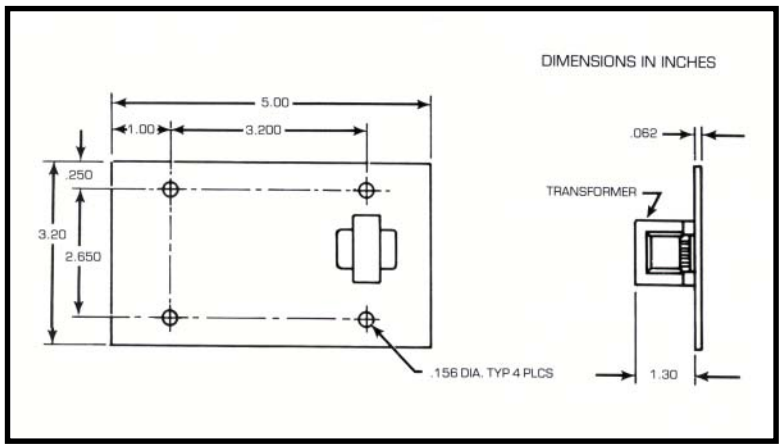
When coupled with the model LCD3000 digital display, the BETA SERIES electronic temperature controllers provide the convenience of digital indication of actual process temperature.

The LCD3000 is a 3½ digit LCD display with resolution of 1°. With its flexible wire sensor, the BETA SERIES of controllers eliminates the problems of capillary tube kinking and breakage. The quick-connect terminals allow fast installation and service.

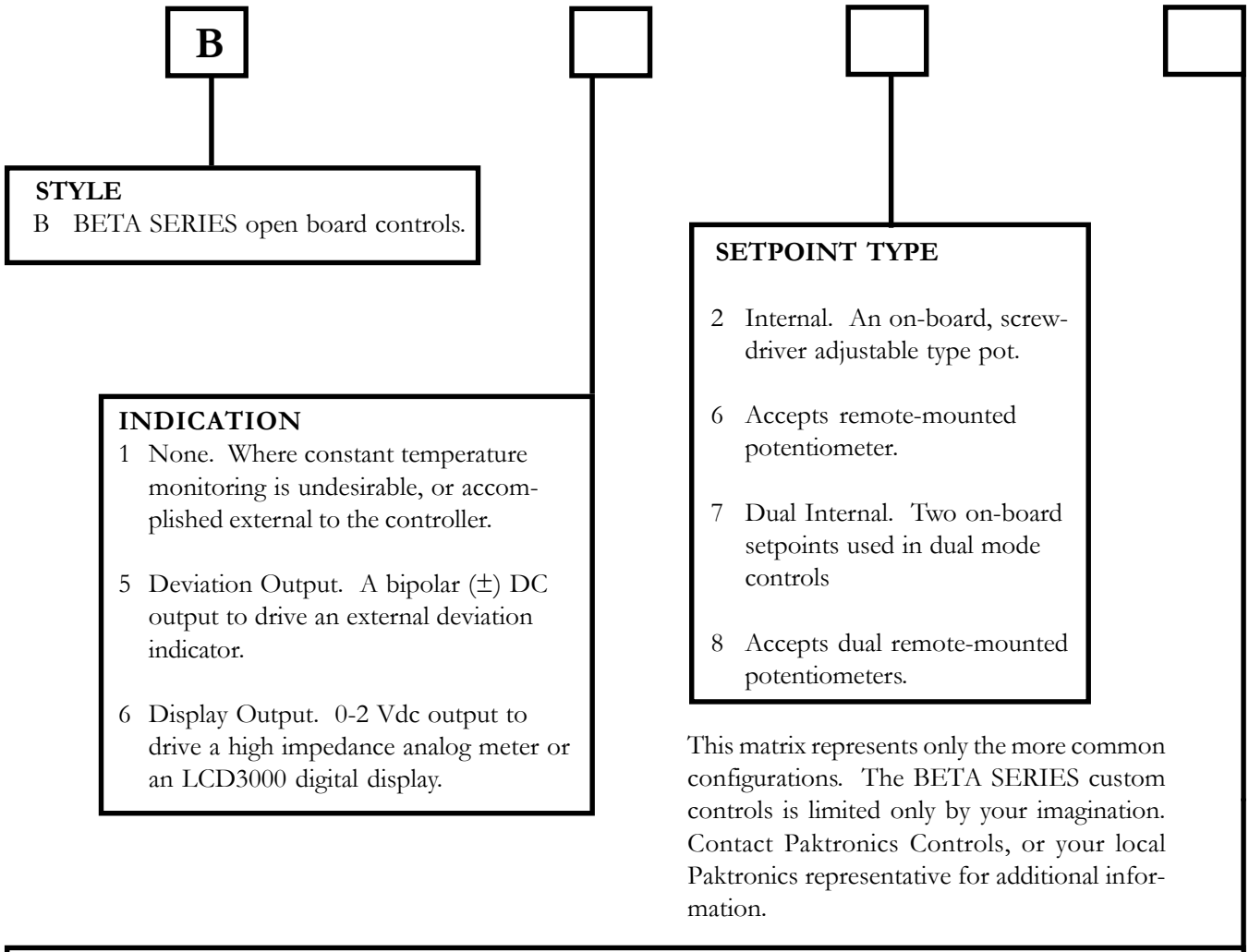
The BETA SERIES of controllers is used where it is desirable to have accurate, repeatable temperature control through a narrow deadband.

c UL us **(on selected units)**

Mounting Dimensions



Temperature Controls Model Matrix...



This matrix represents only the more common configurations. The BETA SERIES custom controls is limited only by your imagination. Contact Paktronics Controls, or your local Paktronics representative for additional information.

CONTROL MODE

A. On/Off (contacts open on temperature rise). Generally used in heating applications where there is a constant change in variables, such as load or setpoint, in a static system. On/Off can be set up with a very narrow deadband (or differential) for tight control, or with a wide deadband for use when mechanical limitations restrict cycling.

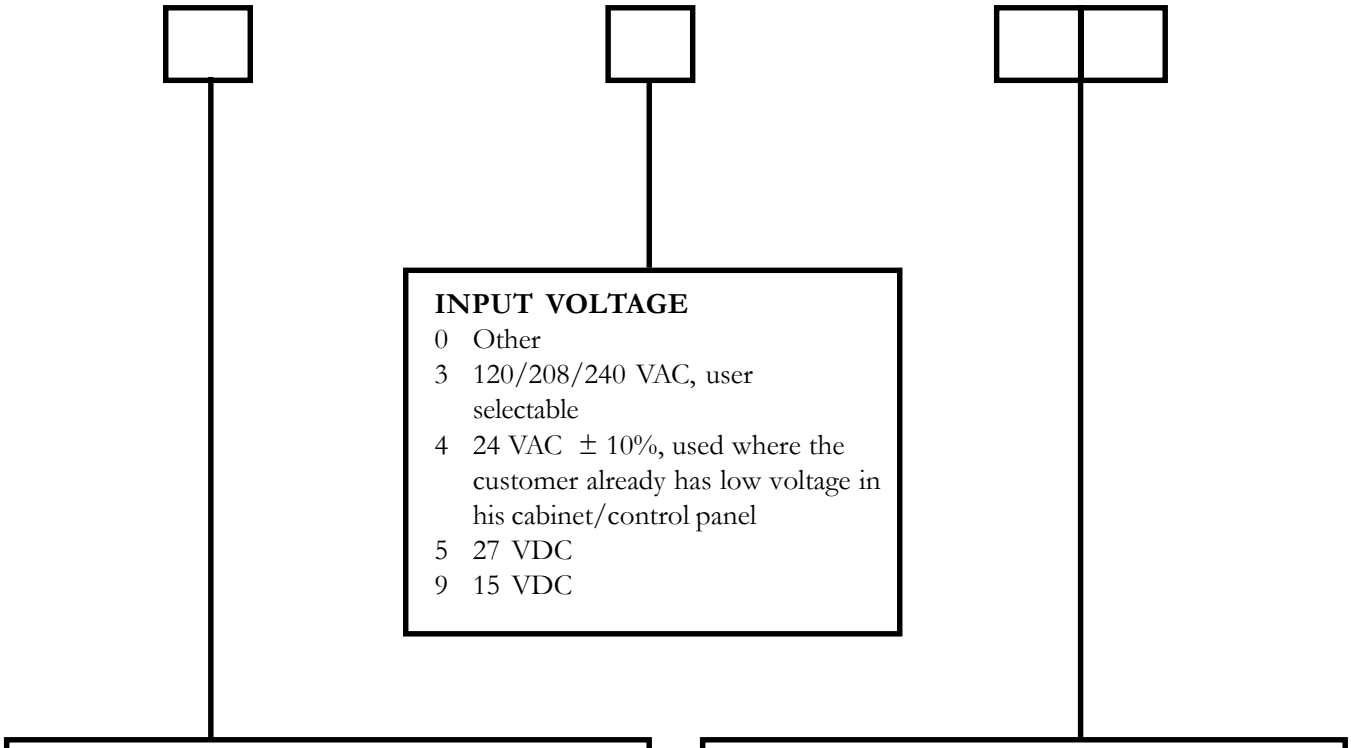
C. Fast Zero-Crossing Time Proportioning .25 second minimum cycle time (bandwidth is field-adjustable to 10% of span). Proportioning may be desirable in a dynamic system, where the load (such as flow rate) and setpoint are constant.

F. On/Off contacts close on temperature rise. Generally used for cooling applications.

K. Zero Crossing Proportional, reverse acting.

L. Window controller. Used where controlling action takes place when the process temperature is within a specific range of temperatures. Can also be made so that action occurs when temperatures are above or below the window. This type of control might be used in an application where heat would be called for if temperatures fell below the window, and cooling if the temperature exceeded the window.

Temperature Controls Model Matrix...



INPUT VOLTAGE

0 Other

3 120/208/240 VAC, user selectable

4 24 VAC ± 10%, used where the customer already has low voltage in his cabinet/control panel

5 27 VDC

9 15 VDC

SECONDARY OUTPUTS (alarms)

0 None

1 Single SPST relay (tracking) with automatic reset. Used as an over or under temperature alarm. Alarm is set relative to the process temperature, and changes along with any change in setpoint.

3 Dual SPST relays (tracking), automatic reset. Used where over and under temperature indication is needed. Both alarm points may be set above or below the setpoint.

4 Single SPST relay (tracking), manual reset.

7 Single SPST relay (absolute), automatic reset. Used where an absolute over, or under, temperature condition must be protected. Alarms must be changed each time the setpoint is changed.

8 Dual SPST relays (absolute), automatic reset.

9 Single SPST relay (absolute), latching.

NOTE: All alarm outputs rated at 0.4 amp

PRIMARY OUTPUT

01 24 VDC, 30 mA. Used to drive an external mechanical, or solid-state relay.

02 Dual 24 VDC, 30mA.

09 4-20 mA output to drive an external device such as a transmitter.

10 1 amp Triac. Generally used to drive a line voltage device such as a relay or solenoid.

17 Remote mounted 40 amp Triac can control up to 30 amp resistive load (AC voltage only). Note: Adequate heat sinking must be provided by user.

18 20 amp isolated SPST normally open relay.

24 0.4 amp isolated SPST normally open relay for use in driving contactors and coils.

25 Dual 20 amp SPST relay (window control).

26 Dual low current SPST relay (window control)

Troubleshooting Guide

SYMPTOM	POSSIBLE CAUSE	TEST AND REMEDY
A. Unit will not turn the heater on.	1. Control is not wired properly.	1. Connect the heater in series with the relay contacts. Please note that the output relay is internally isolated from power. See wiring diagram.
	2. Control setpoint is too low.	2. Adjust the control setpoint above the sensor temperature.
	3. Open sensor.	3. Disconnect and measure the sensor continuity. If the sensor resistance is infinite, replace the sensor.
	4. Control input power is not correct.	4. Check for the correct voltage and wiring at terminals.
B. Unit will not turn the heater off.	1. Control is not wired correctly.	1. Connect the heater in series with the relay contacts. Please note that output relay is internally isolated from power.
	2. Control setpoint too high.	2. Adjust the control setpoint below the sensor temperature.
	3. Shorted sensor.	3. Turn the system power off and disconnect the sensor. Replace the sensor if the load remains off when the power is reapplied.
	4. Sensor polarity (Thermocouple models only)	4. Check sensor polarity. For thermocouples, red wire is negative (-).
	5. Control power.	5. Check power connections at power terminals.
	6. Control cannot reach setpoint temperature.	6. Heater is not sized properly. Increase heater wattage.
C. Unit is not controlling the temperature at setpoint.	1. Sensor placement.	1. The temperature monitoring device is not placed next to the control sensor. Move the monitoring device.
	2. Sensor placement.	2. Sensor is not placed in the desired control area. Move the sensor to the area you want to control.
	3. Scale alignment.	3. Knob is not positioned properly on the setpoint potentiometer shaft. See calibration instructions.
D. Large temperature swings.	1. Sensor placement.	1. Move the sensor closer to the heater.
	2. Sensor response.	2. Move any object that may be in contact with the sensor body. Additional thermal mass at the sensor will result in a slower response.
E. Rapid heater cycling.	1. Sensor placement.	1. Move sensor away from the heater.
	2. Heater wattage.	2. Heater wattage is excessive. Reduce heater wattage.
F. Display shows 1__(display models only).	1. Sensor wiring.	1. Check sensor connections.
	2. Open sensor.	2. Measure sensor resistance. If resistance is infinite, replace sensor.
	3. Actual temperature exceeds display range.	3. Verify that actual process temperature is less than 2000° (F or C).
G. Display shows -1__or large negative number (display models only).	1. Sensor Wiring.	1. Check sensor connections.
	2. Shorted sensor (Rtd or thermistor units only).	2. Measure sensor resistance. If resistance is very low (≈ 0 ohms), replace sensor.
H. Display reading is close to ambient temperature, regardless of control setting (thermocouple units only).	1. Shorted sensor (thermocouple only).	1. Check sensor connections.
		2. Disconnect sensor and note whether display reads 1__ (open sensor indication). Correct wiring problem.
I. Display shows "LO BAT."	1. Control not wired correctly.	1. Check power connections. For 120V operation, power should be connected to terminals 4 & 5 (terminal 3 should not be connected for 120V operation).
J. Display is blank.	1. Display connector is reversed or connector is misaligned.	1. Reverse display cable connector on one end only. Verify that all four pins are connected.
		2. Check display cable for damage. Replace cable if wires or connector are damaged.

Paktronics Has a Solution For You

Product Performance

Paktronics has manufactured Temperature Controls for OEM's and replacement for over 30 years. These products have an international reputation for quality and reliability incorporated into practical, low-cost designs.

Quick Delivery

Most commonly used types and ranges of Paktronics Temperature Controllers are stocked by Authorized Distributors and Representatives located worldwide. In many instances, the Controller you need to get back into production can be obtained in hours.

Worldwide Sales

Authorized Paktronics Representatives and Distributors are able to assist you in the selection of the proper temperature controller. Whether it's a special controller for new equipment or processes, or a replacement for a worn controller or thermostat, take advantage of Paktronics to assure getting the right controller at the right price.

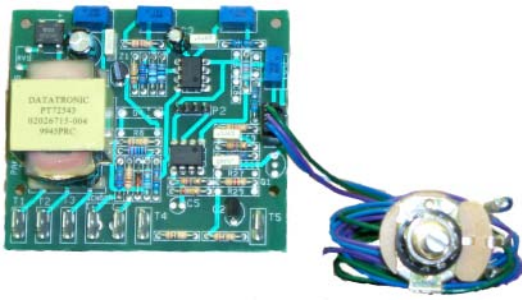
Taking the Right Steps Towards Custom Electronic Controls

Paktronics Controls has been synonymous with temperature control since the 1970's. We are a division of Maxitrol Company, who has been a leading manufacturer of gas pressure regulators since 1946.

Paktronics began in the industry by designing and manufacturing analog temperature controls. In order to meet the needs of more sophisticated equipment, we also design custom, microprocessor-based controllers. Our products can be found in medical and dental applications, process control, commercial foodservice equipment, HVAC, laminating equipment and many other industrial and commercial applications.

Over the years, Paktronics has designed numerous electronic temperature controllers for special applications. Whether you need one or 10,000, call upon Paktronics to build that special control.

Our R&D and engineering staff are ready to replace an obsolete unit, or design a totally new control for your new process or equipment. Our commitment to innovation and development is directed toward solving your temperature controlling problems and needs.



Install a back-up control for critical applications where control failure could endanger life, limb, or property. A back-up control to serve as a high limit control is especially recommended for applications where a runaway condition could result. Paktronics Controls' products are not authorized for use as critical components in life support devices.

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