



# EZ-Temp™ MODEL 90300

Microprocessor  
Temperature Controls  
*with Sensor Redundancy*

Data sheet

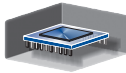
- **Multiple sensor option (3)**  
(Using individual and/or dual sensor assemblies)
- **Sensor Redundancy**  
(Higher temperature of two operating sensors used)
- **Easy remote sense**  
(Electronic sensors, wired to control)
- **Smart manual reset**  
(Manual reset only if operating limit doesn't open)
- **Serviceman reset protection**  
(Latch-up after three consecutive lockouts <sup>(1)</sup>)
- **Power-independent lockout**  
(Power cycling won't reset from lockout or latch-up)
- **Diagnostic LED's**  
(Power, call for heat, and lockout/latchup)
- **SMC Technology** <sup>(2)</sup>

(1) Latch-up mode shuts down the control after three consecutive lockouts, and requires a special procedure to reset. This ensures the owner will call in a licensed technician to troubleshoot and correct burner problems.

(2) The 90300 provides two limit relays. Carlin's patented SMC technology (Safety Monitoring Circuit) monitors the contacts of both relays. **Lockout** occurs if a limit relay contact is found closed when it should be open.

## Specifications

- Carlin's Model 90300 microprocessor-operated, multiple-contact temperature limit controls are available as described below. The model provides two contacts — one for operating limit and one from high limit.
- Refer to separate product listing sheets for pre-defined models, or request a control to meet your specifications, within the available ranges listed below.

	<b>90300B</b>	<b>Dual limit temperature control</b> <ul style="list-style-type: none"> <li>• operating and high limit action</li> <li>• smart manual reset on high limit</li> <li>• operating limit sensors, redundant</li> <li>• high limit sensor</li> <li>• operating and limit contacts in series</li> </ul>
--	---------------	--

<b>Control model</b>	<b>B</b>	
<b>Control power input</b> (red-white wire)	120 VAC, 11 VA	
<b>Contacts</b>	2 in series	
<b>Contact rating</b>	Full load	120 VAC, 10 AMPS
	Locked rotor	120 VAC, 60 AMPS
<b>Wires</b>	Quantity	3
	120 VAC Hot / Neutral	red-white / white
	Limits <b>OUT</b>	black
<b>Adjustable oper. limit range</b>	Any range between 50°F to 240°F	
<b>Fixed high limit temperature</b>	Any value from 160°F to 240°F	
<b>Fixed differential (subtractive)</b>	Any value from 5°F to 100°F	
<b>Operating temperature limits</b>	+32°F to +14.0°F	
<b>Storage temperature limits</b>	-40°F to +18.5°F	
<b>Agencies</b>	UL & ULC <b>recognized</b> component United States & Canada	

**Model 90300 diagnostic LED's**

- GREEN**    — OFF    — ON Power    — FLASHING Latch-up
- RED**        — OFF    — ON Lockout
- AMBER**    — OFF    — ON Control call for heat

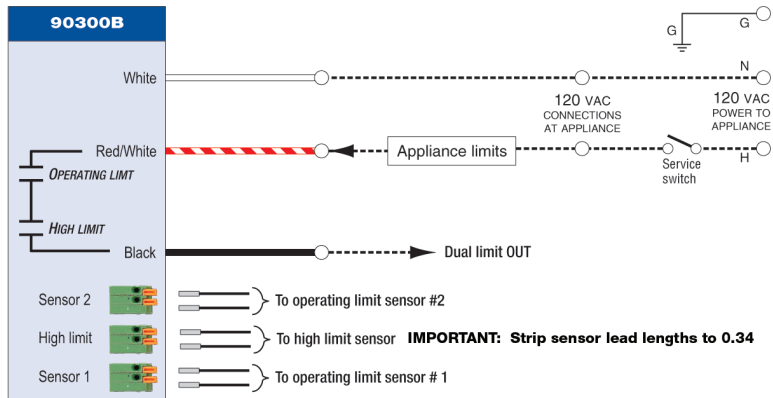
**WARNING** **Electrical shock hazard:** Disconnect power to appliance when wiring or servicing any electrical component.

**Operation**

(See wiring diagrams below for wiring connections.)

- Power OFF**    With no power applied to the red-white wire, all lights are off. Power can be wired directly from appliance 120 vac terminal to maintain power at all times.
- Power ON**        When power is applied to the red-white wire, the green LED turns on.
- Self-test**        When power is applied, the 90300 performs a self-test, checking sensor(s) and microprocessor and verifying limit contacts are open. The power-up test lasts from 3 to 5 seconds. The 90300 continues diagnostic checking during the operating cycle as well. Any self-check failure causes a lockout (see below).
- Operate**         If the temperature at both operating sensors is below setpoint by at least the fixed differential, the control closes the operating limit contacts. The amber LED turns on.
- Stand-by**        When either operating sensor sees setpoint temperature or above, the 90300 opens the operating limit contact. The amber LED turns off.
- Limit action**    If the high limit sensor sees a temperature above high limit setting, the 90300 opens the high limit contacts, turns on the red LED and checks the operating limit contacts. If the operating limit contacts are open, the control will automatically reset when temperature drops below high limit setting minus differential. The high limit contacts close and the red LED turns off.
- Lockout**         If the high limit sensor sees a temperature above high limit setting and the 90300 finds the operating limit contacts closed, the red LED turns on and **lockout** occurs. (Lockout also occurs on any diagnostic test failure.) When the temperature drops below high limit setting minus differential, reset the control by pressing the manual reset button. The control will not reset by cycling power off and on.
- Latch-up**        If the 90300 locks out three consecutive times, it enters latch-up. Reset from latch-up requires a special procedure, intended to require **licensed serviceman intervention**. During latch-up, the red LED stays on and the green LED flashes. Reset as follows:
  - ..... Temperature must be less than high limit setting minus differential.
  - ..... Hold reset button at least 10 seconds. The green LED flashes faster.
  - ..... Continue holding button another 20 seconds. The control resets and the red LED turns off.

**NOTICE** Power must flow through the contacts in the direction shown. Changing flow direction will cause the control to lockout or fail to operate.



**Configurations**

- **Control kits** — 90300 controls mount to a standard 4x4 J-box, supplied with the control. Mount the box directly to a well (new or existing) with hardware supplied, or panel mount. See below for dimensions.
- **Well kits** — Wells for 90300 sensors are available in the sizes shown below. Well kits include sensor mounting hardware designed to hold sensor securely in position.
- **Sensors** — Sensors are available in single and dual configurations.

