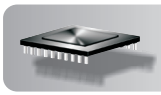
Carlin®
Combustion Technology

# EZ-Temp™
# MODEL 90200

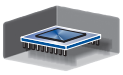
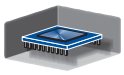


## Microprocessor Temperature Controls

## Data sheet


### Specifications

- Carlin's Model 90200A and G microprocessor-operated temperature controls are UL Recognized and provided as individual components with sensor and well available separately.
- Carlin's model 90200 microprocessor-operated temperature controls are available in two configurations described below. Each model provides one limit-duty-rated contact.
- Refer to separate product listing sheets for pre-defined models.

| | | |
|---|---|---|
|  | **90200A** | **Temperature limit control**<br>• 1 break-on-rise contact<br>• 1 electronic sensor<br>• lockout on diagnostic failure<br>• reset from lockout via power cycle |
|  | **90200G** | **Temperature limit control**<br>• 1 break-on-rise isolated contact<br>• 1 electronic sensor<br>• lockout on diagnostic failure<br>• reset from lockout via power cycle |

| **Control model** | | **A** | **G** |
|---|---|---|---|
| **Control power input** (red-white wire) | | 120 VAC, 11 VA | |
| **Contacts** (action on temperature rise:) | | (breaks) | (breaks) |
| **Contact rating** | Full load | 120 VAC, 10 AMPS | |
| | Locked rotor | 120 VAC, 60 AMPS | |
| **Wires** | Quantity | 1 | 1 |
| 120 VAC **H** & Limit **IN** / **N** | | red-white / white | |
| Break-on-rise **OUT** | | black | black/green / black |
| **Adjustable oper. limit range** | | Any range between 50°F to 240°F | |
| **Fixed differential (subtractive)** | | Any value from 5°F to 100°F | |
| **Operating temperature limits** | | +32°F to +140°F | |
| **Storage temperature limits** | | –40°F to +185°F | |
| **Agencies** | | UL & ULC **Recognized** United States & Canada | |

## Microprocessor-operated
(Processor coordinates limit and diagnostic functions)

## Easy remote sense
(Electronic sensor, wired to control)

## Self-checking program
(Control locks out on diagnostic failure)

## Diagnostic/status LEDs
(LED's indicate power, call for heat, and lockout)



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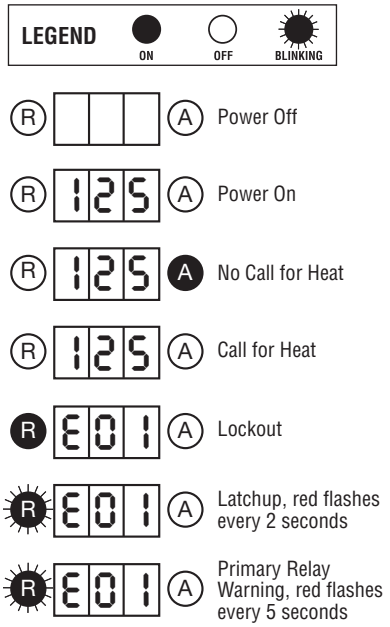
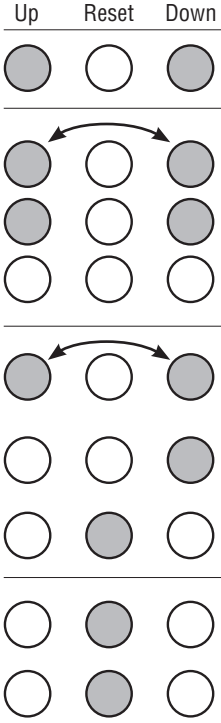
## Model 90200A and G Diagnostic LED's




## Button Press Instructions




| | |
|---|---|
| **Display Mode** | Quickly press the UP or DOWN button to display temperature. |
| **Set Temp Mode** | Press and hold UP and DOWN buttons for 5 seconds to enter "Set Temperature" mode.<br>Press the UP or DOWN button to increase or decrease the "Set Temperature".<br>Do not press any buttons for 5 seconds to exit the "Set Temperature" mode and save the new temperature. |
| **Diagnostic Mode** | Press and holde UP and DOWN buttons during power up to enter "Diagnostic Mode" mode.<br>Press the DOWN button to move to the next error recorded in the 16 deep error log. When you see an "E – –" displayed, you have reached the end of the log. If you press the DOWN button again, you will cycle back to the beginning of the log.<br>Press and hold RESET for 3 seconds to clear all recorded logs. |
| **Lockout Mode** | Press and hold RESET for 5 seconds to exit Lockout. |
| **Latchup Mode** | Press and hold RESET for 30 seconds to exit Latchup. |

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

## Operation Modes

**Power, Off –** (How to enter = No power is applied to the red-white wire)
- All lights and screen will be off.

**Power, On –** (How to enter = Power applied to red-white wire)
- System will power on and enter NORMAL OPERATION MODE

**Call for Heat/High Fire –** When the temperature at the operating sensor is at or below setpoint minus fixed differential, the control powers the limit relay (break-on-rise contact closes; make-on-rise contact open).

**Stand By/Low Fire –** When operating sensor reaches setpoint temperature or above, temp control will turn off the relay (break-on rise contact opens; make-on-rise contact closes).

**Normal Operation (Mode) –** (How to enter = Initial starting mode)
- The EZ-Temp will display the User Set Temperature.

**Display –** (How to enter = Pressing UP or DOWN key in NORMAL MODE)
- In DISPLAY MODE, the EZ-Temp will display current temperature reading for 5 seconds, then return to NORMAL OPERATION

**Setting –** (How to enter = Hold up and down buttons for 3 seconds while in NORMAL OPERATION)
- In SETTING MODE, the user is able to adjust the operating limit (via setting the set temperature). Once in this mode, the display will begin flashing the current set temperature. The display will increase one degree per UP or DOWN button push or 10 degrees per second the button is held.

**Diagnostic –** (How to enter = Power up the system with the UP and DOWN buttons depressed. Once buttons are released, the system will move into diagnostic mode)
- DIAGNOSTIC MODE displays recorded error codes. When powered in this mode, the display will show the newest recorded error code. As the DOWN key is pressed, the system will display error codes from newest to the oldest. When there are no more codes to display, the EZ-Temp will show a "—" to indicate end of error codes. If the user continues to push the down button, the system will go back to the newest error code and begin displaying the error codes again from newest to oldest. The only way to exit this mode is to power cycle the system. To clear error codes (while in diagnostic mode), push and hold RESET button for 3 seconds.

**High Limit Test –** (How to enter = In NORMAL OPERATION, hold RESET, UP and DOWN buttons for 3 seconds)
- During this operation, EZ-Temp will display a flashing 240 (high temperature setting). Pressing the DOWN button temporarily adjusts the high limit set point. The setting will decrease one degree for each press of the DOWN button or hold the button for faster decrease. If the DOWN button is not pressed for a period of 10 seconds, the unit will return to normal operation. When the high limit set point is lower than the actual temperature, the unit goes into hard lockout and displays the error code E05. Holding the RESET for 3 seconds clears the lockout and returns the high limit setting to the default (240°). If the lockout condition has driven the unit into latchup, the RESET must be held for 30 seconds.

**Soft Lockout –** (How to Enter = When any temperature sensor goes out of range or the system has detected a high temp condition and the primary and safety relays are still operational)
- When in this state, it will display the error code but will leave the lockout LED off. If the condition that caused the soft lockout clears, the system will return to normal operation.

**Lockout –** (How to Enter = Numerous Error Codes)
- The EZ-Temp will enter this state when an unsafe condition has occurred and the user must intervene and put the system in a safe state. Lockout can be cleared by pressing the RESET button for 3 seconds.

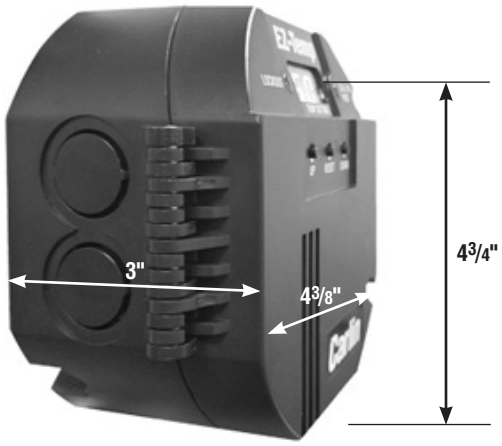
**Latchup –** (How to Enter = Occurs after 3 LOCKOUTs have been detected)
- The system will enter a safe mode and will not exit the mode without user intervention. You can exit latchup mode by depressing the RESET button for thirty seconds. By exiting this way, the system will reset the lockout count back to zero.

## Configurations

**Mounting –** 90200A and G controls mount to any standard well. Mount the 90200A & G directly to a well (new or existing) with hardware supplied in the separate well mounting kit. See below for dimensions.

**Well Kits –** Wells for 90200A and G 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 separately for 90200A and G only.



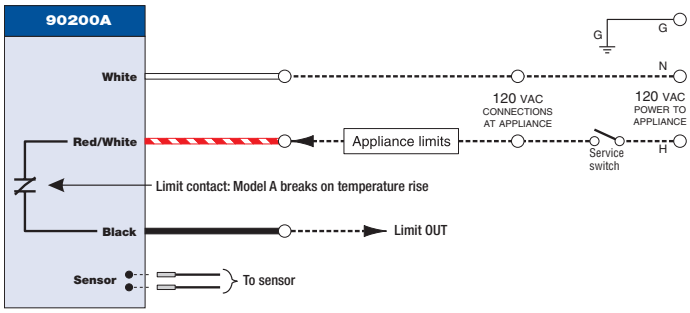


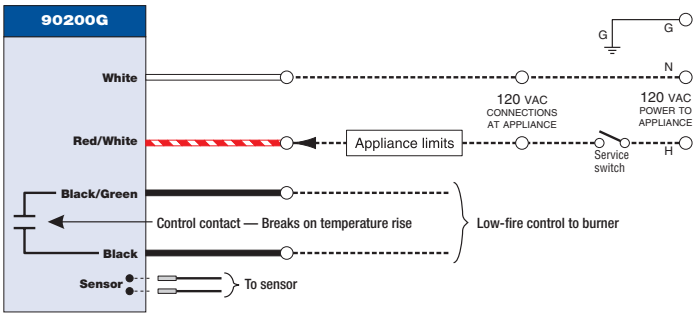
## Error Codes

| Error Code | Reason |
|---|---|
| 01 | Primary (K2) relay is welded on. **Note:** If the control is reset from error code 01, the red LED will flash every 5 seconds indicating the control must be replaced. |
| 02 | Primary & Safety relays (K1 and K2) on. The control cannot be reset from error code 02 and must be replaced. |
| 03 | Primary & Safety relays (K1 and K2) are off. **Note:** If this error is detected, the control will show error code **03** and enter soft lockout two times to try and resolve the issue. If the problem persists the control will enter hard lockout. |
| 05 | Simulated High Temp lockout. Push the RESET button. |
| 06 | Temp is above set high temp but below thermistor high (250°F). This is a common occurrence once the burner turns off. |

| Error Code | Reason |
|---|---|
| 20 | Temp sensor 1 out of range failure. Replace sensor 1. |
| 21 | Temp sensor 2 out of range failure. Push the RESET button. |
| 22 | High limit temp sensor out of range failure. Replace the high temp sensor. |
| 23 | Temp sensor 1 pin is open. Replace sensor 1. |
| 24 | Temp sensor 2 pin is open. Replace sensor 2. |
| 25 | High limit temp sensor is open. Replace the high temp sensor. |

| | |
|---|---|
| 10, 11, 12, 13, 14, 15 | Internal hardware safety failure – unit should be replaced. Contact customer service for additional information. 1-800-989-2275 |


90200A
White
Red/White
Black
Sensor
G
G
N
120 VAC
CONNECTIONS
AT APPLIANCE
120 VAC
POWER TO
APPLIANCE
Appliance limits
Service
switch
H
Limit contact: Model A breaks on temperature rise
Limit OUT
To sensor


90200G
White
Red/White
Black/Green
Black
Sensor
G
G
N
120 VAC
CONNECTIONS
AT APPLIANCE
120 VAC
POWER TO
APPLIANCE
Appliance limits
Service
switch
H
Control contact — Breaks on temperature rise
Low-fire control to burner
To sensor