

# Series RMT Hot Runner Controller Operator's Guide



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## Precautions

### Warning



Use of this equipment in a manner not specified by the manufacturer may impair protection provided by the equipment.

In addition to presenting a potential fire hazard, high voltage and high temperature can damage equipment and cause severe injury or death. When installing or using this instrument, follow all instructions carefully and use approved safety controls.

Hazardous potentials exist on components inside the mainframe and controller. Always disconnect AC power to the mainframe when servicing the controllers or the mainframe.

Because these temperature controls or associated equipment may not always fail safe, an approved temperature and/or pressure safety control should be used for safe operation.

The controller power switch must be in the "OFF" position before you put a controller into an energized mainframe, or remove a controller from an energized mainframe. If the mainframe supports the SafeChange™ feature, enable SafeChange on the controller to reduce the possibility of damage to the controller when installing or removing a controller from the mainframe. Controllers are shipped with the SafeChange feature disabled. To determine whether the mainframe supports SafeChange and to enable SafeChange, follow the instructions in *Series RMT Hot Runner Controller Setup and Operation Manual*.

Turn off power to the controller before cleaning the exterior of the controller.

Failure to observe these precautions can result in exposure to a potentially lethal shock hazard.

Changing jumper settings and all wiring should be done by an experienced technician. The controller and wiring should be installed in accordance with national and local electrical codes. To avoid serious personal injury and damage to equipment, follow all warnings and cautions provided in the manual supplied with the mainframe.

## Caution



If a controller shows signs of having been damaged during shipping, do not power up or install the controller. Save all packing materials and report any damage to the carrier immediately.

When the controller is powered up, the output may be activated. Consider the effects on your process before powering up the controller.

Do not locate this instrument where it may be subjected to excessive shock, vibration, dirt, moisture, oil, or other liquids.

This is a Class A product. In domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Specified operating ambient temperature is 32 to 150 °F (0 to 65 °C).



## Notes on CE EMC Compliance

This unit is compliant with the following standards when properly installed into a grounded metal housing. EMC testing was conducted with a load of 1 amp and setpoint of 400 °F.

EMC directive (89/336/EEC)  
 EN 50081-1 (1992 edition)  
 EN 50082-1 (1992 edition)  
 Low Voltage Directive (73/23/EEC)  
 EN 61010-1 (1992 edition, Amendments 1, 2, 3, 4 and 11)



**USE OF THIS EQUIPMENT IN A MANNER NOT SPECIFIED BY THE MANUFACTURER MAY IMPAIR PROTECTION PROVIDED BY THE EQUIPMENT!**

UNIT	OUTPUT RATING (AMPS / VOLTS)	FUSE RATING (AMPS)	TYPE
RM SERIES	15 / 265	15	Fast-Acting 'F'

### CLEANING INSTRUCTIONS

- 1) Remove power from the unit prior to any cleaning operation.
- 2) Use a cotton cloth to gently and sparingly apply isopropyl alcohol only. Do not use cleansers or other solvents as they may damage the unit.
- 3) Allow the unit to dry completely prior to reapplying power.



**Caution (refer to accompanying documents)**



**Caution, risk of electrical shock!**

For more detailed cleaning instructions, see the *Series RMT Hot Runner Controller Setup and Operation Manual*.

# 1. Introduction

## 1.1 About This Guide

This manual contains instructions for operating the Series RMT Hot Runner controllers.

Instructions for setting up, maintaining, and cleaning the controllers are in the *Series RMT Hot Runner Controller Setup and Operation Manual*.

Instructions for wiring, installing, and troubleshooting the controllers are in the manual supplied with the mainframe.

## 1.2 About the Controllers

### 1.2.1 Zones Controlled

An RMT is designed to control two temperature zones.

### 1.2.2 Modes of Operation

Series RMT controllers can operate in:

- closed loop (auto) mode – Output is automatically calculated by controller, based on the difference between the setpoint and the process value.
- manual – You set the output percentage.

Instructions for changing the mode, setpoint, and output percentage are on page 3.

### 1.2.3 Soft Start for Heater Bake Out

All Series RMT Hot Runner controllers support a soft start feature to extend the life of the heaters and the molds.

The soft start allows slow dissipation of moisture in heaters by gradually applying power to the heaters.

The orange soft start indicator (item 1 in the photo on page 2) is on during soft start in normal (auto) mode.

### 1.2.4 Deviation Alarms

Each Series RMT Hot Runner controller supports deviation alarms. A zone's orange ALARM LED (item 11 in the photo on page 2) lights if the process value:

- falls below the zone setpoint minus the low alarm value (30 °F), or
- rises above the zone setpoint plus the high alarm value (30 °F).

The alarm status indicator remains lit as long as the process value deviates from the setpoint by at least 30 °F (the deviation alarm value).

While a zone is in alarm, **HI** or **LO** is also displayed.

### 1.2.5 Loop Break Detection

When loop break detection has been enabled during setup, the controller monitors input change.

If the input value does not change within five minutes while the controller is operating in closed loop (auto) mode, the controller goes to manual mode with 0% output, which can then be adjusted. See page 4 for error messages.

### 1.2.6 Sensor Error Monitoring

The controller can detect a reversed sensor or open sensor. See page 4 for error messages.

## 2. Operation

### 2.1 RMT Front Panel



Because an RMT model can control two zones, two sets of displays, keys, and indicators are provided. Zone B can be disabled; see the *Series RMT Hot Runner Controller Setup and Operation Manual* for details.

1 – soft start indicator – lit (orange) when soft start is active

2 – output status indicator – lit (orange) when output is on

3 – process value (PV) display (orange)

4 – Celsius indicator – lit (green) when PV and SP are displayed in degrees C

5 – output percentage indicator – lit (green) when manual mode output % is displayed on lower line

6 – Fahrenheit indicator – lit (green) when PV and SP are displayed in degrees F

7 – setpoint (SP) display (closed loop mode) or output percent (manual mode)

8 – up key – increases setpoint (closed loop mode) or output percent (manual mode); press and hold for rapid change

9 – mode key – changes mode; active indicated by lit LED (12–13)

10 – down key – decreases setpoint (closed loop mode) or output percent (manual mode); press and hold for rapid change

11 – alarm indicator – lit (orange) when zone PV varies from the SP by the deviation alarm value (low or high)

12 – closed loop (normal) mode indicator – lit when automatic control is active

13 – manual mode indicator – lit (green) when output percent can be set by operator

14 – power switch

**Power must be off when removing or installing controller.**

## 2.2 Operation Basics

### 2.2.1 See PV

**To see the process value:** Look at the top line of the display for the PV. The top line shows the PV for the zone, unless the controller detects an error. Error messages are on page 4.

### 2.2.2 See if Output is On

**To see if the output is on:** Look at the Heat indicator above the PV for the zone. This orange indicator is on when the output is on.

### 2.2.3 Monitor for Alarms

**To watch for process alarms:** Look at the orange ALARM LED.

This LED lights if the process value goes above or below the zone setpoint by the deviation alarm value (30 °F).

The alarm status indicator remains lit as long as the process value deviates from the setpoint by at least 30 °F.

While a zone is in alarm, **HI** or **Lo** is also displayed.

### 2.2.4 Change Mode

**To change the mode:** Press **MODE** to light the LED for the mode you want.

### 2.2.5 Change Setpoint or Output

**To change the setpoint (closed loop mode) or output (manual mode):** Press the ▲ or ▼ key until the displayed value has been changed to the new value you want.

## 2.3 What Happens When You Power Up the Controller

### 2.3.1 Turn on Controller

Turn on the controller by pressing the "I" end of the 16 A power switch on the front panel. When an RMT controller is powered up, it displays its firmware level. Next, all segments of the display and all LED indicators light. The output remains off.

### 2.3.2 Put Controller in Closed Loop Mode

**To put the controller into closed loop mode:** Push the MODE button. What happens next depends on the process value.

### 2.3.3 Watch Soft Start

A soft start is executed:

- every time the controller starts and the process value is less than 200 °F (93 °C), and
- every time the controller is returned to closed loop (auto) operation and the PV is less than 200°F (93 °C).

**To stop the soft start (not recommended):** Press the MODE key to take the controller out of closed loop (auto) mode. Press the MODE key again to return the controller to closed loop (auto) mode.

## 3. Error Messages

### 3.1 Introduction

Usually the controller displays the process variable on the top line and the setpoint on the lower line of the display.

However, when the controller detects a problem with the input messages are displayed to alert you to conditions that require your immediate attention.

### 3.2 Summary of Error Messages

If the controller detects a problem, an error message will be displayed. These messages are summarized below.

	Open Sensor Detected	Loop Break Detected	Reversed Sensor Leads Detected
top line display	goes high first briefly (see Note 1 below), then <i>OPn / tC</i>	goes low first (see Note 1 below), then after five minutes <i>Err</i>	goes low first (see Note 2 below), then <i>rEu / tC</i> / <i>changing numerical values</i>
lower line display	<i>0</i> (zero output %)	<i>LDP / Ht</i>	<i>0</i> (zero output %)
output	off (0 %)	on while low, then off (see Note 1)	on while low, then off (see Note 2)
alarm LED	on	on	on

Note 1: At first, a falsely increasing process value is displayed on the top line; the setpoint remains on display on the lower line, and the output remains on until the process value is greater than the setpoint.

Note 2: At first, **L** alternates with display of the decreasing process value on the top line; the setpoint remains on display on the lower line, and the output remains on until the sensor error is detected.