



Athena® Series RMC Hot Runner Controller Quick Set-Up Guide

Who Can Use This Quick Guide

This quick set-up guide contains all the information you need to set up a new RMC controller if:

- you are already familiar with temperature control concepts,
– and –
- the factory settings shown on page 2 are OK,
– and –
- a J thermocouple will supply input to the RMC,
– and –
- the unit of measure degrees Fahrenheit is OK.

Where to Find More Information

The *Athena Series RMC Hot Runner Controller Configuration and Operation Manual* (p/n 900M056U00) contains detailed instructions for configuring and operating the controller.

That manual also contains instructions for changing switch settings to allow the controller to accept input from a K thermocouple and/or to display values in degrees Celsius.

Operating instructions are also in the *Athena Series RMC Hot Runner Controller Operator's Manual* (p/n 900M056U01).

To learn how to read and write RMC controller values using a MODBUS host, see *Using the MODBUS Protocol with Athena Series RMC Hot Runner Controllers* (p/n 900M057U00).

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Warning



The controllers are shipped with the SafeChange™ feature disabled.

Instructions for enabling SafeChange are in the *Athena Series RMC Hot Runner Controller Configuration and Operation Manual* (p/n 900M056U00).

To avoid serious personal injury and damage to equipment, read and heed the warnings and cautions in the *Athena Series RMC Hot Runner Controller Configuration and Operation Manual*, before installing and using the controller.

To avoid serious personal injury and damage to equipment, also follow all warnings and cautions provided in the manual supplied with the mainframe.

Factory Settings

All Series RMC Hot Runner controllers are shipped with their configuration parameters set to the values shown in the "Factory Setting" column. You can change any of these values.

For example, you can change the communication protocol to local, and assign the unit to one of three usage groups. RMC controllers that use local comm can act on commands from an All Master. Instructions for changing the comm protocol to local are on page 4.

Changing Parameter Values

The procedure for changing any configuration parameter value is: Press **MODE** to put the controller in Standby (STANDBY LED lit), press and hold **DISPLAY** until you see *P Id*. Press **DISPLAY** repeatedly until you see the menu you want. Press **MODE** repeatedly until you see the parameter you want. Use the **▲** and **▼** keys to set the value you want. Press and hold **DISPLAY** to return to the PV and SP display.

Displayed Menu Name	Parameters	Factory Setting
<i>P Id</i> (PID control)	<i>Pb</i> (proportional band)	24 °F
	<i>rALe</i> (derivative (rate) action)	7 seconds
	<i>AL DP</i> (Autotune operation)	once
<i>bSt</i> (boost)	<i>TYPE</i> (type)	open loop
	<i>dUr</i> (duration)	off
	<i>bPct</i> (boost output percent)	0 %
<i>Stb</i> (standby)	<i>TYPE</i> (type)	open loop
	<i>SPct</i> (standby output percent)	0 %
<i>InP</i> (input)	<i>b iRS</i> (input bias)	0 degrees
	<i>SPLL</i> (setpoint low limit)	32 °F
	<i>SPHL</i> (setpoint high limit)	999 °F
<i>ALr</i> (alarm)	<i>AL DP</i> (alarm operation)	enabled
	<i>dEH</i> (high deviation alarm setpoint)	30 °F
	<i>dEL</i> (low deviation alarm setpoint)	30 °F
	<i>InH</i> (alarm inhibit)	0 (off)
<i>SC I</i> (serial communication interface)	<i>Pro</i> (protocol)	MODBUS
	<i>S. Id</i> (system ID)	1
	<i>bAUd</i> (baud rate)	9600
	<i>dALF</i> (parity)	none
	<i>nnod</i> (IEEE register ordering)	yes
<i>SUP</i> (supervisor)	<i>LPbt</i> (loop break time)	999 seconds
	<i>HtS</i> (high-temperature safety value)	feature off
	<i>FSA</i> (failsafe action)	output off
	<i>H It</i> (highest temperature (PV) reading)	<i>read-only value</i>
	<i>LDE</i> (lowest temperature (PV) reading)	<i>read-only value</i>

Set-Up Procedure

1) Prepare the controller.

- Unpack the RMC controller.
- Inspect the controller for damage.
- Make sure the power switch on the front of the controller is set to off (O).

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

2) Install the controller.

This guide assumes that the mainframe has already been wired as described in the *Athena Hot Runner Temperature Control Systems Mainframe Installation Manual*.

- Make sure the plunger in the center of the locking pin is pulled out (or loosen the locking screw).
- With the controller and mainframe power switches set to off (O), align the RMC controller's printed circuit board with the guide channels in a slot in the Hot Runner mainframe.
- Slide the controller into the mainframe until the RMC connectors are firmly seated in the backplane of the mainframe.
- Lock the controller in the frame by pushing in the locking pin plunger (or by tightening the locking screw).

3) Apply power to the mainframe and controller.

When the controller is powered up, the output may be activated.

- Before powering up the controller, consider the effects on your process if the output is activated. Take site-specific precautions.
- Turn on the power to the mainframe.
- Set the power switch on the front of the controller to on (I).

When the controller is powered up, all segments of the display and all LEDs light

briefly, and then the firmware version number is displayed.

4) Adjust the setpoint.

When the controller is powered up, it will automatically do a CompuStep® soft start for heater bake out if the process value is below 200 °F. (PV is on the top line of the display. SP is on the lower line.) During the soft start the NORMAL LED flashes.

During the soft start (which lasts five minutes or until the PV is 200 °F), adjust the setpoint to a value that is representative of the setpoint you expect to use when the controller is in service.¹

To adjust the setpoint press the ▲ or ▼ key.

5) Wait for the controller to tune itself.

New RMC controllers are set to do a soft start every time they are powered up (if the PV is less than 200 °F), and then to do an Autotune operation each time the controller is powered up until a successful Autotune is completed.

Let the Autotune proceed without interruption. During Autotune, the process value alternates with **tun**.

At the conclusion of a successful Autotune, the flashing **tun** disappears. The display reverts to the normal mode operating display: PV on top line, SP on lower line. The proportional band and rate values calculated by the controller during the Autotune have been saved.²

RMC controllers do not require calibration. **The controller is ready to use.**

¹ If the PV is greater than 200 °F, then the controller will skip the soft start, and will Autotune as soon as you power up the controller the first time. However, the tuning will not be valid, because you have not yet entered the appropriate setpoint for your process. Press **MODE** once to interrupt the Autotune. With the controller in normal mode (NORMAL LED lit), adjust the setpoint, and then cycle power to start Autotune again with a valid setpoint.

² The integral (reset) action for PID control is always set to five times the rate (derivative) value in an RMC controller.

If Autotune is Unsuccessful

At the conclusion of an unsuccessful Autotune, you will see E_r plus a one-digit error code (alternating with E_{Ln}). The controller goes to the configured failsafe action automatically. (Default is output off.) Tuning errors and remedies are discussed in the *Series RMC Hot Runner Controller Configuration and Operation Manual*.

Tip: For Autotune to work, the PV must be at least 9 °F less than the SP. If you are replacing a controller in a working system, the difference between the PV and SP may be less than 9 °F. If you see E_r5 , press **MODE** twice to put the controller in standby, wait until the PV drops, and then cycle power to Autotune again.

Autotune Is Disabled Automatically

After a successful Autotune, the controller automatically sets itself to disable Autotune. Autotune remains disabled, even if you cycle power to the controller, until you enable Autotune again. Instructions for enabling Autotune are in the *Series RMC Hot Runner Controller Configuration and Operation Manual*. (Soft start is always enabled, unless you change a switch setting as described in the configuration and operation manual.)

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MODBUS® is a registered trademark of AEG Schneider Automation, Inc.

Local Communication

RMC controllers are shipped from the factory set for MODBUS communications. However, you can set the communication protocol to “local” and assign the controller to one of three usage groups: Tip, Manifold, or Other.

You can use any local comm controller in an RMC usage group as All Master.

To make a controller All Master, press the ▲ and ▼ keys at the same time. (ALL LED lights.)

Use the All Master’s front panel to activate the boost, change the mode, change the setpoint, or change the manual mode output in all the RMC controllers in the All Master’s usage group within the same mainframe (or in mainframes that are linked via an RS-485 network).

To set up local communication:

- Put the controller in standby:** Press the **MODE** key repeatedly until the STANDBY LED lights.
- Go to the serial communication menu:** Press and hold the **DISPLAY** key until P_{ld} is displayed on the top line, and then press **DISPLAY** repeatedly until you see $SC I$.

- Set the protocol to local:** When in the serial communications interface menu, press **MODE** once to display P_{ro} (protocol) on the lower line. It alternates with the default setting $bu5$ (MODBUS).
- Press ▲ to select $LocL$ (local).
- Select a usage group:** When you select local communication protocol, the controller is assigned to the usage group “Other”. If this is OK, go to step (f).

However, you can assign the controller to the group “tip” or the group “manifold”. Press **MODE** repeatedly to accept the default values for the baud rate and data format parameters.

Stop pressing **MODE** when you see $UUSE$ (usage group).

Use ▲ and ▼ to select t_{ip} (tip) or $FoLd$ (manifold).

- Return the controller to normal (auto) mode:** Press the **MODE** key repeatedly until the NORMAL LED lights.