

## Welcome –

To a new era in solid fuel heating. You have chosen to improve your household comfort and increase the efficiency of your heating dollars.

The Coal-trol Digital system has been specifically developed to improve the performance and convenience of your anthracite coal stove. A new type of digital thermostat and solid-state control module make this possible.

An investment of a small amount of time to review this manual will ensure proper performance of your Coal-Trol Digital system.

## Introduction

This manual is a companion to the the **Coal-trol Digital Installation Manual**. Here it is assumed that your Coal-trol Digital system is installed and working. Please refer to the **Coal-trol Digital Installation Manual** for installation, setup, and important safety information, not reprinted here.

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SYRACUSE • NY

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## Coal-trol Digital Feature Overview

The Coal-trol Digital Model-1 is a complete control system designed for automatically fed stoker stoves and furnaces utilizing anthracite fuel. The stove-mounted Power Module and the wall-mounted Coal-trol Thermostat work together to supervise all stove operations and maintain room temperature to within  $\pm 1^{\circ}\text{F}$  of the desired setting.

The Power Module controls the coal feed rate, combustion blower fan, convection blower fan, fire igniter (additional hardware required when available), and the power vent blower.

A safety interlock circuit for a high temperature (Bonnet Limit) and a loss of power vent air flow circuit (Fume Limit) are provided within the Power Module, and may be bypassed if not required by the particular installation.

All connections to stove blowers, motors, and safety interlocks are done through standard 120VAC cord receptacles.

The Power Module has a power On/Off switch, and LED status indicators for all control elements.

The Coal-trol Thermostat may be located up to 100 ft. from the Power Module. Proper temperature control only requires that the heat generated by the stove is readily communicated to the thermostat. (A forced air furnace located in the basement with the thermostat mounted upstairs can work fine).

Fuel feed is continuously adjusted to maintain room temperature as set on the Coal-trol thermostat. The Convection blower is automatically started and continuously adjusted to match the heat output of the stove.

Two temperature setbacks automatically change the temperature at prescribed times set by the user on a 24 hour time cycle.

A room high temperature limit shuts off the stove if feeder failure occurs.

The initial setup of minimum and maximum feed rates, and selection of either dual-motor or single motor (Tri-Burner) stoker styles, allow Coal-trol Digital application to a wide variety of stove configurations and brands.

A One-touch Feed mode assists in starting a fire by continuously stoking coal for 10 minutes at a 100% rate.

All settings, except for time of day clock, are maintained during power loss without batteries.

Power loss ride-through allows the thermostat to continue stove operation if power is restored within 1 minute.

Power-on Test Mode sequences all motors and blowers to assist in installation and troubleshooting.

The Coal-trol Thermostat features an LCD display, two LED indicators, and four pushbuttons for indication and control of all settings.

## For Service or Repair

Contact your dealer, or our company.

Automation Correct LLC  
405 Parrish Lane Syracuse, NY 13205

Phone: (315) 299-3589  
Email: [support@automationcorrect.com](mailto:support@automationcorrect.com)  
Web: [www.automationcorrect.com](http://www.automationcorrect.com)

## Coal-trol Digital Limited Warranty

**THREE-YEAR WARRANTY** – Automation Correct LLC (us) warrants this product to be free from defects in material and workmanship. If a defect is found within three years from the date of original installation of the product (whether or not actual use begins on that date) Automation Correct LLC will provide a new or remanufactured part, at our sole option, to replace any defective part, without charge for the part itself.

This warranty does not include labor or other costs incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts.

### Warranty Conditions:

1. Warranties only apply to products in their original installation location.
2. Installation, use, care, and maintenance must be normal and in accordance with the instructions contained in the Operation Manual, Installation Manual and Automation Correct LLC's Service Information.
3. Defective parts must be returned to us or an authorized dealer for credit.
4. All work performed during normal business hours.
5. This warranty applies only to residential use.

**LIMITATIONS OF WARRANTIES** – All implied warranties (including implied warranties of merchantability and fitness for a particular purpose) are hereby limited in duration to the period for which the LIMITED WARRANTY is given and applies. Some states do not allow limitations on how long an implied warranty lasts, so the above may not apply to you. The expressed warranties made in this warranty are exclusive and may not be altered, enlarged, or changed by any distributor, dealer, or other person whatsoever.

### Automation Correct LLC will not be responsible for:

1. Damage or repairs as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
2. Failure to operate due to voltage conditions, blown fuses, open circuit breakers or other conditions beyond the control of Automation Correct LLC.
3. Parts not supplied or designated by us, or damages resulting from their use.
4. Automation Correct LLC products installed outside the 50 US states or Canada.
5. Cost of heating fuel of any kind whatsoever including electricity.
6. Any special indirect or consequential property or commercial damage of any nature whatsoever. Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you.







**This warranty gives you specific legal rights, and you also may have other rights, which vary from state to state.**

## Stoker Stove Terminology

Ash Bin	The container to collect ash produced by burning coal.
Barometric Damper	An air-flow regulator to balance gas pressure in stove or furnace. This ensures proper draft conditions.
Bonnet Limit Switch	A temperature switch that shuts down the stove or furnace when a high-limit temperature is exceeded. <u>The Bonnet Limit must be used with stoves or furnaces that have it as original equipment i.e. Keystoker brand.</u>
Combustion Blower	A small motor designed to supply the air needed for combustion of coal. Tri-Burner type stoker mechanisms do not have a separate combustion blower. Also called a Draft Inducer.
Convection Blower	A large fraction horsepower blower designed to supply warm air into the room. Also called a Circulation Fan.
Fuel Hopper	The storage hopper for coal. Feeds coal (by gravity) into the stoker.
Fume Switch	A safety limit-switch which verifies proper chimney (flue) exhaust flow. Used with Power Vent chimney systems.
Power Vent	A Chimney(flue) system where an electric blower forces the airflow needed for exhaust of combustion gases. Also called Direct Vent. <u>The Fume Switch circuit must be used with a Power Vent chimney system.</u>
Round-robin	The action of the LCD display to indicate the current time, the temperature setting, and the actual temperature, sequentially in turn.
Stoker	The fuel grate, motor, and mechanism used to introduce coal to the burn chamber. This is also called the Feeder.
Stove	The term stove as used in this manual, refers to residential anthracite fired stoves and furnaces used for supplemental or primary space heating.
Tri-Burner	A stoker mechanism where one motor provides both the fuel feed and combustion air.

## Operating Features of the Thermostat

*Purpose of the Buttons and Lights*

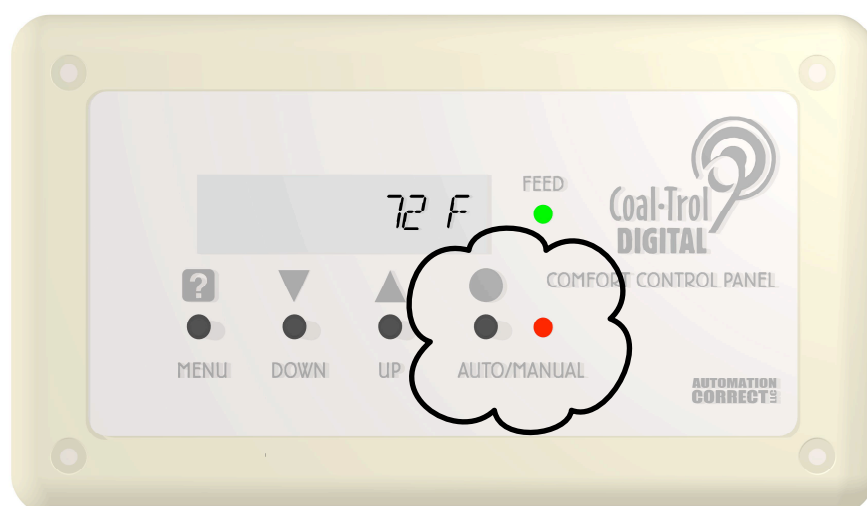
 <p>MENU</p>	<p>MENU button – each press will display next setting.</p>
 <p>DOWN</p>	<p>DOWN button – each press will decrease a setting. Press and hold to decrease fast. Also used to enter SETUP menu settings.</p>
 <p>UP</p>	<p>UP button – each press will increase a setting. Press and hold to increase fast. Also used to enter SETUP menu settings.</p>
 <p>AUTO/MANUAL</p>	<p>AUTO/MANUAL button –</p> <ol style="list-style-type: none"> <li>1) Each momentary press will switch thermostat between Automatic temperature control and Manual feeder control. When in AUTO the Manual light is Off. When in MANUAL the Manual Light is On. Must be in AUTO for control of room temperature.</li> <li>2) If the button is pressed for 3-seconds, fuel is stoked continuously at 75% of the maximum rate, for 5 minutes.</li> </ol>
 <p>MANUAL</p>	<p>MANUAL Light – Red LED that when On indicates that thermostat is in Manual Stoker control mode.</p>
 <p>FEED</p>	<p>FEED Light – Green LED that when On indicates that thermostat is commanding the stoker to feed fuel.</p>

## Automatic and Manual Stoker Control

Normally, the Coal-trol Thermostat should be set to AUTO mode. This is indicated by the MANUAL indicator light being off. This allows the thermostat to adjust the stove feeder to maintain the room temperature to the temperature setting.

Manual Feeder Control has been provided for initial stove setup, and to replicate non-thermostat control methods, found on many stoker fed stoves. For some stove owners, Manual Feeder control is useful to boil Maple syrup on their stovetop.


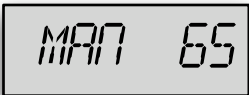
The Coal-trol Digital Thermostat operates similar to a car with a cruise control. If the cruise control is off, the speed of the car is controlled by how far the gas pedal is pressed down by the driver. When the cruise control is on, the speed setting determines how far the gas pedal is pressed down and the control automatically adjusts the setting when going up or down a hill, thereby maintaining the desired speed to the speed setting.



Like a car with a cruise control, your stove with the Coal-trol Digital thermostat can be operated with automatic temperature control on or off. This is the purpose of the AUTO/MANUAL button on the thermostat.

When the Coal-trol Digital Thermostat is in Automatic, the red Manual light is off, and the amount of fuel feed is controlled automatically to maintain the room temperature.

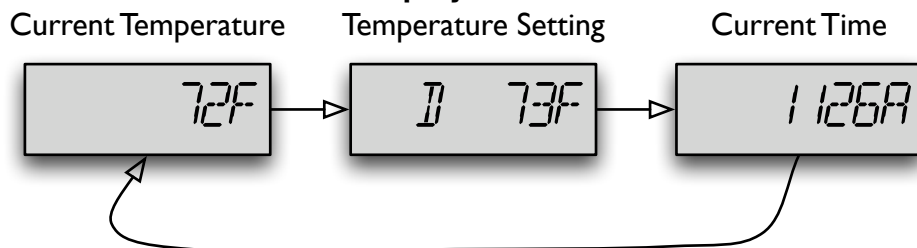
When the Coal-trol Digital Thermostat is in Manual, the red Manual light is on, and the amount of fuel feed is controlled directly by the INCREASE or DECREASE pushbuttons. The room temperature will vary with the Manual setting and other factors, such as outdoor temperature, insulation etc.

<u>DISPLAY</u>	<u>ACTION</u>	<u>NOTE</u>
	Feeder AUTO mode. Indication of feeder setting in percent. 0 to 99%.	Feeder cannot be adjusted in Feeder Automatic Mode.
	Feeder MANUAL mode, Indication of feeder setting in percent. 0 to 99%.	Feeder may be adjusted by using INCREASE or DECREASE pushbuttons.

**MENU Button Operation**

*Overview of the MENU items and their purpose.*

**Round-robin Display**



Starting from the Round-Robin display, each press of the MENU button will sequence through the displays below.

**DISPLAY**

**ACTION**

**NOTE**

MENU button



Time of Daytime Temperature setting.

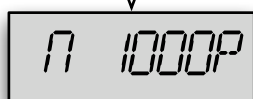
See Day Temperature Setting for instruction on adjusting setting.

MENU button



Daytime Temperature setting.

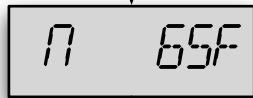
MENU button



Time of Nighttime Temperature setting.

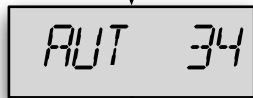
See Night Temperature Setting for instruction on adjusting setting.

MENU button



Nighttime Temperature setting.

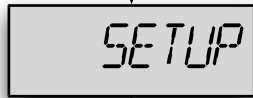
MENU button



Stoker AUTO or MANUAL indication and fuel feeder percentage indication.

See Automatic and Manual Stoker Control on page 6 for more information.

MENU button



Stove SETUP menu.

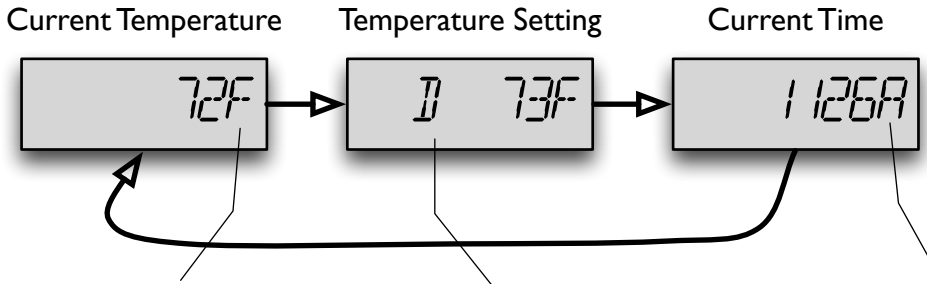
See Stove SETUP in the Installation Manual for more information.

MENU button

After SETUP, the next MENU button press will return the display to the Time of Daytime temperature setting.

**Round Robin Temperature/Time Display**

**DISPLAY**



"F" for Farenheit  
"C" for Celsius

"D" for Daytime Temperature setting.  
"N" for Nighttime Temperature setting.  
"M" for Manual Temperature setting.

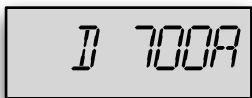
"A" for AM  
"P" for PM

**NOTE**

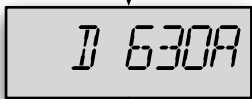
The Round-robin display occurs automatically if the Thermostat is left alone for 30 seconds. (No button presses)

**Day Temperature Setting (Daytime Setback)**

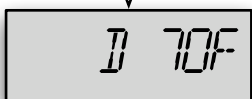
**DISPLAY**



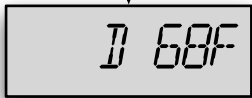
UP/DOWN button



MENU button



UP/DOWN button



**ACTION**

Press MENU key until display shows Daytime Time setting. "D" on left of display)

Press UP/DOWN buttons to set the time of day. Press and hold buttons to increase or decrease setting rapidly. When finished press MENU button.

Press UP/DOWN buttons to set desired daytime temperature setting. When finished press MENU button.

Press UP/DOWN buttons to set desired daytime temperature setting. When finished press MENU button.

**NOTE**

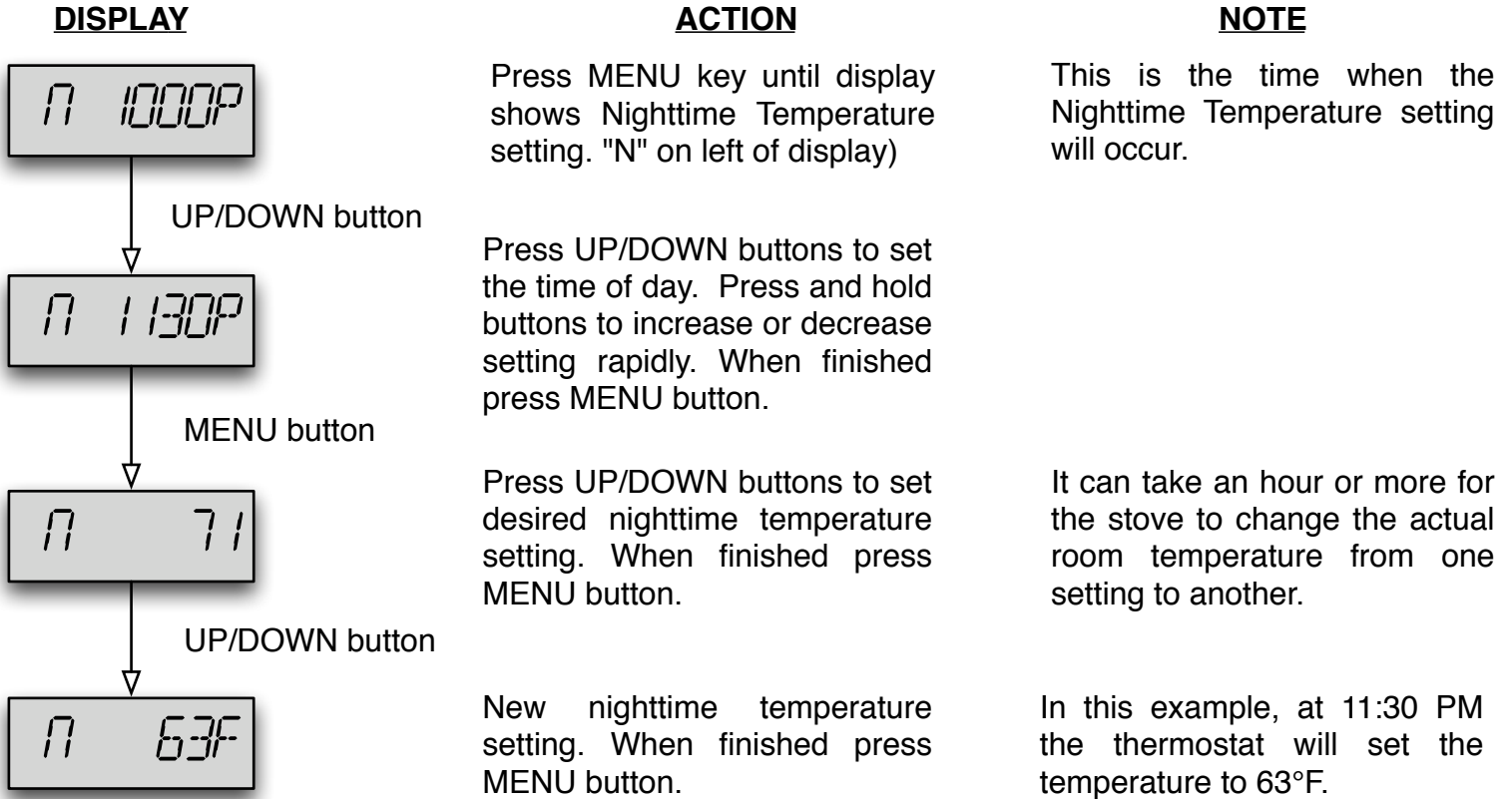
This is the time when the Daytime Temperature setting will occur.

It can take an hour or more for the stove to change the actual room temperature from one setting to another.

In this example, at 6:30 AM the thermostat will set the temperature to 68°F.

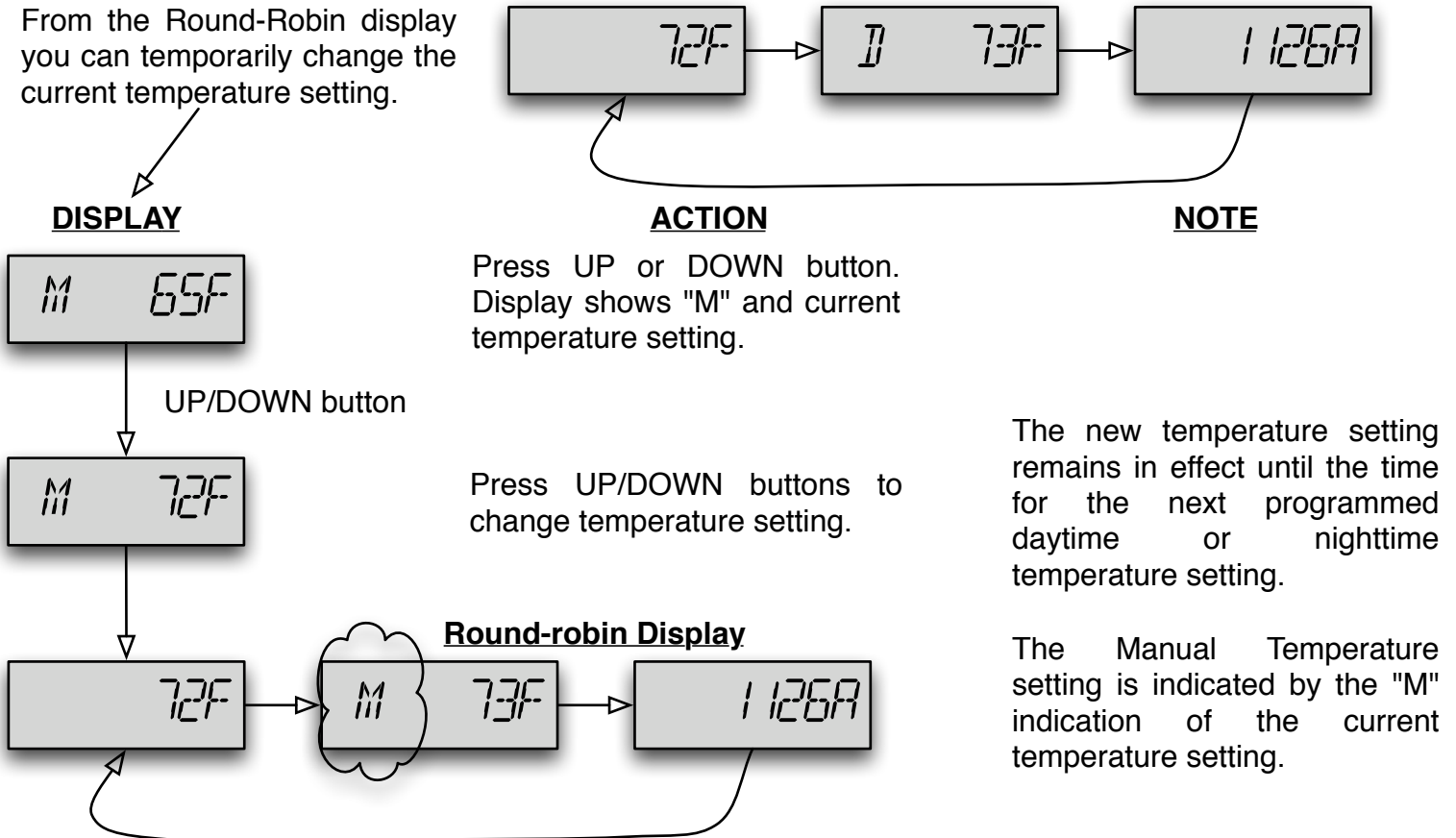


Night Temperature Setting (Nighttime Setback)



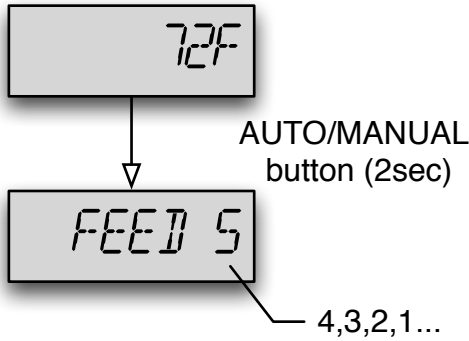
Manual Temperature Setting (Setback Override)

From the Round-Robin display you can temporarily change the current temperature setting.



**One-Touch Feed Mode**

**DISPLAY**



**ACTION**

Press and hold the AUTO/MANUAL button for two seconds.

The display counts down from 5, once a minute until complete.

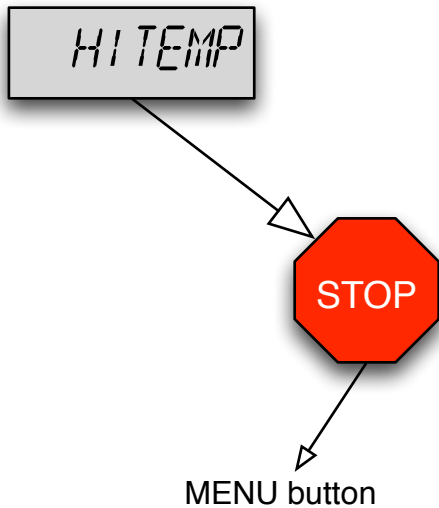
**NOTE**

Use One-touch Feed once or twice after first starting a fire to help fill and even-out the grate.

When complete, the thermostat will be left in the Stoker Control mode (Auto or Manual) it was in before the One-toch feed. (Refer to page 6)

**Room Over-Temperature Cutout**

**DISPLAY**



**ACTION**

The temperature sensor in the thermostat has detected a room temperature above 95°F/ 35°C and has disabled the Stoker motor, combustion air motor and the Convection Blower. If installed, the Power Vent motor continues to run.

**NOTE**

The MANUAL indicator light blinks every second.

**CAUTION: Before proceeding, investigate the cause of the over-temperature condition.**

The HI TEMP display may indicate a problem with your stove, chimney, or Coal-trol Digital System.

The thermostat will not allow the MENU button to reset the thermostat until the room temperature is less than 95°F/ 35°C

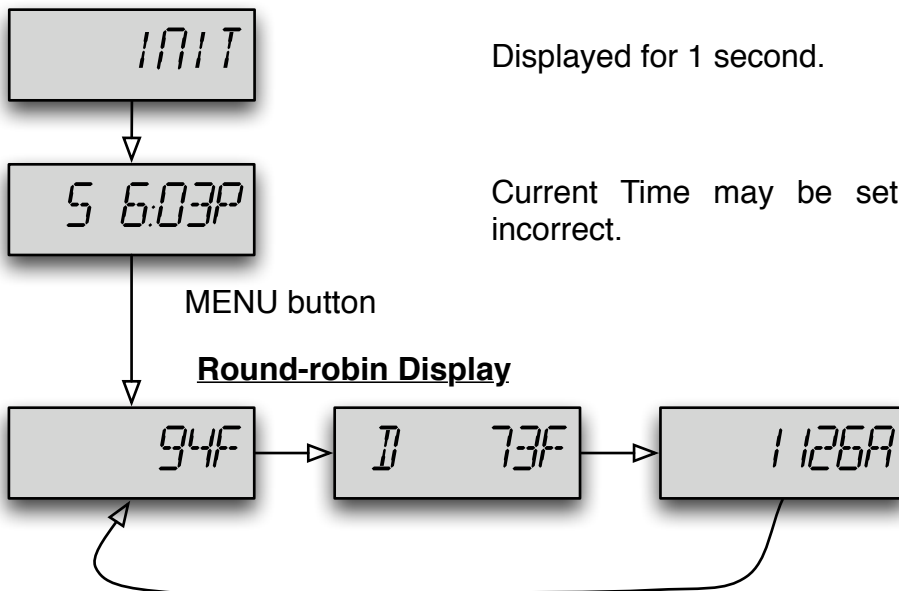
Displayed for 1 second.

Current Time may be set if incorrect.

The red MANUAL indicator light blinks every second.

MENU button

**Round-robin Display**



The red MANUAL indicator light is On. The Coal-trol is in MANUAL Stoker Control.

Refer to the **Installation Manual** for additional information.

## Coal-trol Digital Model 1 - Specifications

Note: Automation Correct LLC is constantly working to improve our products.  
For this reason, all specifications are subject to change without notice.

### Power Module: FOR INDOOR USE ONLY

#### Electrical:

Input Power	120VAC 60Hz, 1200W
Fuse	10A 120V Fast, (IR10kA/125V), ABC-10A or Equivalent.

#### Output Power

Stoker	1A Continuous, 2A MAX
Convection Blower	4 A Continuous, 8A MAX
Igniter	3A Continuous, 8A MAX
Combustion Blower	1.5A Continuous, 2A MAX
Power Vent	4.5A Continuous, 8A MAX

**All motors loads must be of the shaded-pole type.**

**Combined Output Power – 1200W MAX**

#### Mechanical:

Dimensions	6 1/2" L x 9" W x 2 1/2" H 16.5 cm L x 22.9 cm W x 6.35 cm H (With mounting bracket)
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Construction	22 GA Galvanneal
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#### Environmental:

Operating Temperature	113°F/45°C MAX
Storage Temperature	40°F to 120°F
Weight	Approx. 3.5lbs/1.59Kg

### Thermostat: FOR INDOOR USE ONLY

#### Temperature:

Displayed Precision	1°F/1°C
Accuracy	±2°F/±1.8°C @ 68°F/20°C

#### Electrical:

Input Power	8VAC, 2.5VA CLASS 2
Connection to Power Module	RJ45 – 8PIN, 100ft Maximum (Standard Ethernet Straight Cable)
Communication Connector	RJ11 – 4PIN RS232 Serial, 9600,N,8,1. ASCII

#### Mechanical:

Dimensions	3 1/4" L x 4 5/8" W x 1 3/4" H (8.25 cm L x 11.75 cm W x 4.45 cm) (With mounting bracket)
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Construction	ABS Plastic, UL94V-0
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#### Environmental:

Operating Temperature	95°F/35°C (Software Temperature Shutdown Limited)
Storage Temperature	40°F to 120°F
Weight	Less than 1 lb./0.45Kg



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Automation Correct LLC designs and manufactures technology products for home and industry. Combining over 75 years of practical experience, the Engineers and Technicians of Automation Correct LLC are dedicated to supporting our customers with innovative products.

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